



NUREG-1431  
Volume 1  
Revision 4.0

# **Standard Technical Specifications**

## **Westinghouse Plants**

### **Revision 4.0**

#### **Volume 1, Specifications**





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## ABSTRACT

This NUREG contains the improved Standard Technical Specifications (STS) for Westinghouse plants. The changes reflected in Revision 4 result from the experience gained from plant operation using the improved STS and extensive public technical meetings and discussions among the Nuclear Regulatory Commission (NRC) staff and various nuclear power plant licensees and the Nuclear Steam Supply System (NSSS) Owners Groups.

The improved STS were developed based on the criteria in the Final Commission Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132), which was subsequently codified by changes to Section 36 of Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.36) (60 FR 36953). Licensees are encouraged to upgrade their technical specifications consistent with those criteria and conforming, to the practical extent, to Revision 4 to the improved STS. The Commission continues to place the highest priority on requests for complete conversions to the improved STS. Licensees adopting portions of the improved STS to existing technical specifications should adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.

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1.0 USE AND APPLICATION

1.1 Definitions

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-----NOTE-----

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

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| <u>Term</u>                 | <u>Definition</u>  |
|-----------------------------|--|
| ACTIONS                     | ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.  |
| ACTUATION LOGIC TEST        | An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices.  |
| AXIAL FLUX DIFFERENCE (AFD) | AFD shall be the difference in normalized flux signals between the [top and bottom halves of a two section excore neutron detector].   |
| CHANNEL CALIBRATION         | A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps. |
| CHANNEL CHECK               | A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.   |

1.1 Definitions

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|                                     |  |
|-------------------------------------|--|
| CHANNEL OPERATIONAL TEST (COT)      | A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps.  |
| CORE OPERATING LIMITS REPORT (COLR) | The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.3. Plant operation within these limits is addressed in individual Specifications.  |
| DOSE EQUIVALENT I-131               | DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/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, page 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity"]. |
| Ē - AVERAGE DISINTEGRATION ENERGY   | Ē shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > [15] minutes, making up at least 95% of the total noniodine activity in the coolant.  |

## 1.1 Definitions

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### ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF 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. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

### LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank,
2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE, or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

b. Unidentified LEAKAGE

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

c. Pressure Boundary LEAKAGE

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

## 1.1 Definitions

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|   |  |
|---|--|
| MASTER RELAY TEST                             | A MASTER RELAY TEST shall consist of energizing all master relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required master relay. The MASTER RELAY TEST shall include a continuity check of each associated required slave relay. The MASTER RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.   |
| MODE  | A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.   |
| OPERABLE – OPERABILITY                        | A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s). |
| PHYSICS TESTS                                 | PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: <ul style="list-style-type: none"><li>a. Described in Chapter [14, Initial Test Program] of the FSAR,</li><li>b. Authorized under the provisions of 10 CFR 50.59, or</li><li>c. Otherwise approved by the Nuclear Regulatory Commission.</li></ul>   |
| 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 and the low temperature overpressure protection arming temperature, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.4.  |



## 1.1 Definitions

---

|   |  |
|---|--|
| QUADRANT POWER TILT RATIO (QPTR)        | QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.   |
| RATED THERMAL POWER (RTP)               | RTP shall be a total reactor core heat transfer rate to the reactor coolant of [2893] MWt.   |
| REACTOR TRIP SYSTEM (RTS) RESPONSE TIME | The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.  |
| SHUTDOWN MARGIN (SDM)                   | <p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"><li>All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM, and</li><li>In MODES 1 and 2, the fuel and moderator temperatures are changed to the [nominal zero power design level].</li></ol> |
| SLAVE RELAY TEST                        | A SLAVE RELAY TEST shall consist of energizing all slave relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required slave relay. The SLAVE RELAY TEST shall include a continuity check of associated required testable actuation devices. The SLAVE RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.  |

1.1 Definitions

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|  |   |
|--|---|
| [ 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.  |
| TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) | A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.                   |

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Table 1.1-1 (page 1 of 1)  
MODES

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

(a) Excluding decay heat.

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

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



## 1.0 USE AND APPLICATION

### 1.2 Logical Connectors

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

1.2 Logical Connectors

---

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

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

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

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

| CONDITION       | REQUIRED ACTION   | COMPLETION TIME |
|-----------------|---|-----------------|
| A. LCO not met. | A.1 Trip . . .<br><u>OR</u><br>A.2.1 Verify . . .<br><u>AND</u><br>A.2.2.1 Reduce . . .<br><u>OR</u><br>A.2.2.2 Perform . . .<br><u>OR</u><br>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 | <p>The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.</p> <p>If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.</p> <p>Once a Condition has been entered, subsequent trains, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will <u>not</u> result in separate entry into the Condition, unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition.</p> <p>However, when a <u>subsequent</u> train, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:</p> <ol style="list-style-type: none"> <li>a. Must exist concurrent with the <u>first</u> inoperability and</li> </ol> |

1.3 Completion Times

DESCRIPTION (continued)

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

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

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

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

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ."

EXAMPLES

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

EXAMPLE 1.3-1

ACTIONS

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

1.3 Completion Times

EXAMPLES (continued)

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

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

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

EXAMPLE 1.3-2

ACTIONS

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

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

### 1.3 Completion Times

---

#### EXAMPLES (continued)

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.

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

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                  |
|---|---|----------------------------------|
| A. One Function X train inoperable.   | A.1 Restore Function X train to OPERABLE status.  | 7 days                           |
| B. One Function Y train inoperable.   | B.1 Restore Function Y train to OPERABLE status.  | 72 hours                         |
| C. One Function X train inoperable.<br><br><u>AND</u><br><br>One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status.<br><br><u>OR</u><br><br>C.2 Restore Function Y train to OPERABLE status. | 72 hours<br><br><br><br>72 hours |

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

1.3 Completion Times

EXAMPLES (continued)

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

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

EXAMPLE 1.3-4

ACTIONS

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

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

1.3 Completion Times

EXAMPLES (continued)

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

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

EXAMPLE 1.3-5

ACTIONS

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

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

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

1.3 Completion Times

EXAMPLES (continued)

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

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

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

EXAMPLE 1.3-6

ACTIONS

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



1.3 Completion Times

EXAMPLES (continued)

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

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

EXAMPLE 1.3-7

ACTIONS

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

### 1.3 Completion Times

---

#### EXAMPLES (continued)

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

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

---

|                              |  |
|------------------------------|--|
| IMMEDIATE<br>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 | <p>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.</p> <p>The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0.2, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.</p> <p>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.</p> <p>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.</p> <p>The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.</p> <p>Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 3.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated LCO if any of the following three conditions are satisfied:</p> |

## 1.4 Frequency

---

### DESCRIPTION (continued)

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

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

---

### EXAMPLES

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE           | FREQUENCY |
|------------------------|-----------|
| Perform CHANNEL CHECK. | 12 hours  |

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

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

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY       |
|--|-----------------|
| <p>-----NOTE-----<br/>                     Only required to be met in MODE 1.<br/>                     -----</p> |                 |
| <p>Verify leakage rates are within limits.</p>   | <p>24 hours</p> |

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



1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-5

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY     |
|--|---------------|
| <p>-----NOTE-----<br/>Only required to be performed in MODE 1.<br/>-----</p> |               |
| <p>Perform complete cycle of the valve.</p>                                  | <p>7 days</p> |

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

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

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

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-6

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY       |
|---|-----------------|
| <p>-----NOTE-----<br/>Not required to be met in MODE 3.<br/>-----</p> <p>Verify parameter is within limits.</p> | <p>24 hours</p> |

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

## 2.0 SAFETY LIMITS (SLs)

---

### 2.1 SLs

#### 2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR; and the following SLs shall not be exceeded:

2.1.1.1 The departure from nucleate boiling ratio (DNBR) shall be maintained  $\geq$  [1.17 for the WRB-1/WRB-2 DNB correlations].

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

#### 2.1.2 Reactor Coolant System Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained  $\leq$  [2735] psig.

---

### 2.2 SAFETY LIMIT VIOLATIONS

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

2.2.2 If SL 2.1.2 is violated:

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

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

---



### 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

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LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, LCO 3.0.7, LCO 3.0.8, and LCO 3.0.9.

---

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

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

---

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours,
- b. MODE 4 within 13 hours, and
- c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

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

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

---

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

- a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;
- b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or

### 3.0 LCO Applicability

---

#### LCO 3.0.4 (continued)

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

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

---

LCO 3.0.5      Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

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LCO 3.0.6      When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

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

---

LCO 3.0.7      Test Exception LCOs [3.1.8 and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

### 3.0 LCO Applicability

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- LCO 3.0.8            When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:
- a.    the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or
  - b.    the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

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

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- LCO 3.0.9            When one or more required barriers are unable to perform their related support function(s), any supported system LCO(s) are not required to be declared not met solely for this reason for up to 30 days provided that at least one train or subsystem of the supported system is OPERABLE and supported by barriers capable of providing their related support function(s), and risk is assessed and managed. This specification may be concurrently applied to more than one train or subsystem of a multiple train or subsystem supported system provided at least one train or subsystem of the supported system is OPERABLE and the barriers supporting each of these trains or subsystems provide their related support function(s) for different categories of initiating events.

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

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

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### 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

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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.

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SR 3.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.

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

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

---

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

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3.0 SR Applicability

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SR 3.0.4 (continued)

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

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.1.1.1 Verify SDM to be within the limits specified in the COLR. | [ 24 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Core Reactivity

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.1.2.1</p> <p>-----NOTE-----<br/> The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading.</p> <p>-----</p> <p>Verify measured core reactivity is within <math>\pm 1\% \Delta k/k</math> of predicted values.</p> | <p>Once prior to entering MODE 1 after each refueling</p> <p><u>AND</u></p> <p>-----NOTE-----<br/> Only required after 60 EFPD</p> <p>-----</p> <p>[ 31 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

### 3.1 REACTIVITY CONTROL SYSTEMS

#### 3.1.3 Moderator Temperature Coefficient (MTC)

LCO 3.1.3 The MTC shall be maintained within the limits specified in the COLR. The maximum upper limit shall be  $[\leq [ ] \Delta k/k^\circ F$  at hot zero power] [that specified in Figure 3.1.3-1].

APPLICABILITY: MODE 1 and MODE 2 with  $k_{eff} \geq 1.0$  for the upper MTC limit, MODES 1, 2, and 3 for the lower MTC limit.

#### ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. MTC not within upper limit.  | A.1 Establish administrative withdrawal limits for control banks to maintain MTC within limit. | 24 hours        |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 2 with $k_{eff} < 1.0$ .  | 6 hours         |
| C. MTC not within lower limit.  | C.1 Be in MODE 4.  | 12 hours        |

#### SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY              |
|---|------------------------|
| <p>SR 3.1.3.2</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 7 effective full power days (EFPD) after reaching the equivalent of an equilibrium RTP all rods out (ARO) boron concentration of 300 ppm.</li> <li>2. If the MTC is more negative than the 300 ppm Surveillance limit (not LCO limit) specified in the COLR, SR 3.1.3.2 shall be repeated once per 14 EFPD during the remainder of the fuel cycle.</li> <li>3. SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of <math>\leq 60</math> ppm is less negative than the 60 ppm Surveillance limit specified in the COLR.</li> </ol> <p>-----</p> <p>Verify MTC is within lower limit.</p> | <p>Once each cycle</p> |



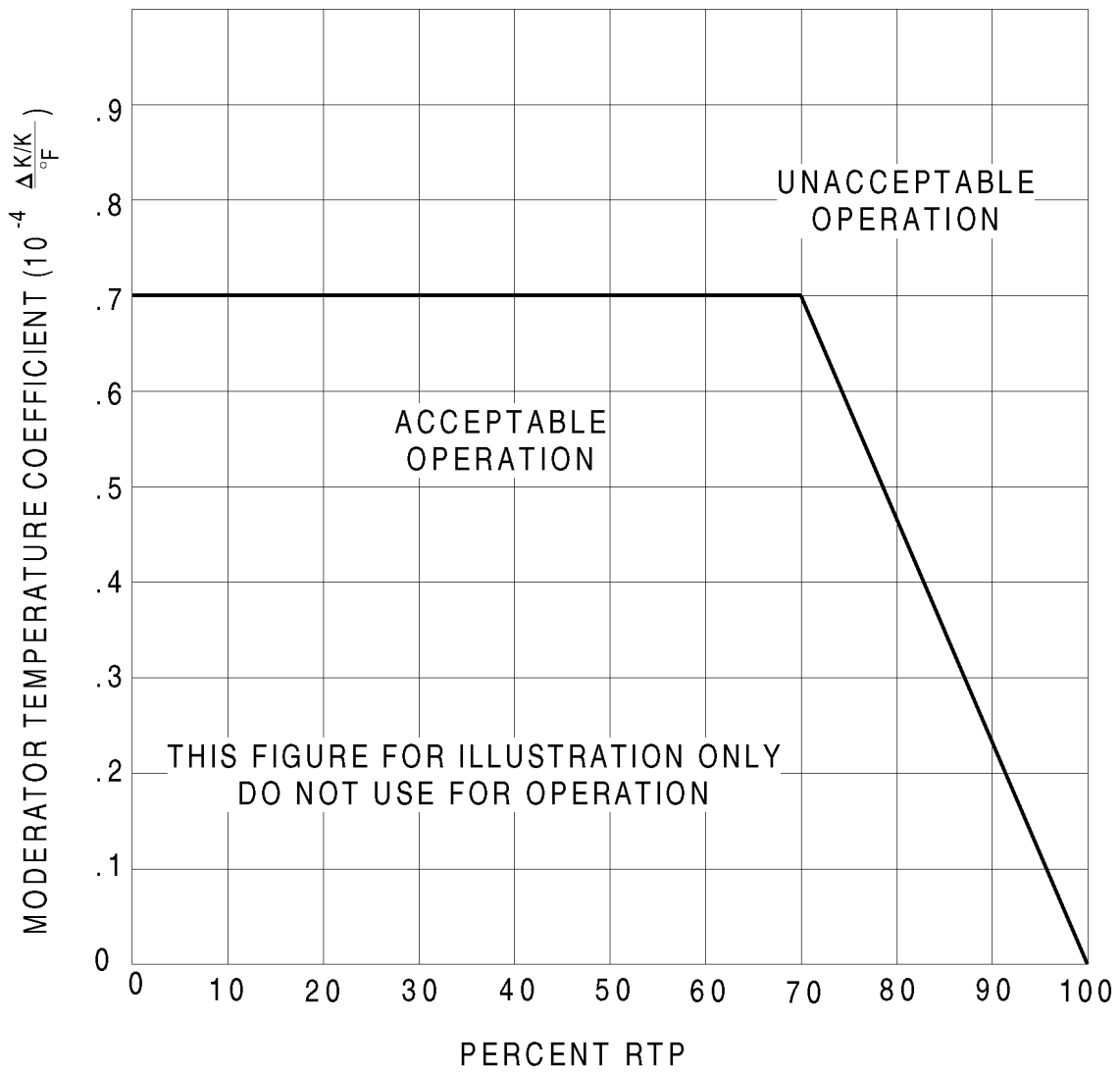


Figure 3.1.3 - 1 (page 1 of 1)  
Moderator Temperature Coefficient Vs. Rated Thermal Power



3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE.

AND

Individual indicated rod positions shall be within 12 steps of their group step counter demand position.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION                               | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One or more rod(s) inoperable.       | A.1.1 Verify SDM to be within the limits specified in the COLR.   | 1 hour          |
|   | <u>OR</u>   |                 |
|   | A.1.2 Initiate boration to restore SDM to within limit.           | 1 hour          |
|   | <u>AND</u>  |                 |
|   | A.2 Be in MODE 3.   | 6 hours         |
| B. One rod not within alignment limits. | B.1 Restore rod to within alignment limits.                       | 1 hour          |
|   | <u>OR</u>   |                 |
|   | B.2.1.1 Verify SDM to be within the limits specified in the COLR. | 1 hour          |
|   | <u>OR</u>   |                 |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|---|
|  | <p>B.2.1.2 Initiate boration to restore SDM to within limit.</p> <p><u>AND</u></p> <p>B.2.2 Reduce THERMAL POWER to <math>\leq 75\%</math> RTP.</p> <p><u>AND</u></p> <p>B.2.3 Verify SDM is within the limits specified in the COLR.</p> <p><u>AND</u></p> <p>B.2.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p> <p><u>AND</u></p> <p>B.2.5 Perform SR 3.2.2.1.</p> <p><u>AND</u></p> <p>B.2.6 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions.</p> | <p>1 hour</p> <p>2 hours</p> <p>Once per 12 hours</p> <p>72 hours</p> <p>72 hours</p> <p>5 days</p> |
| <p>C. Required Action and associated Completion Time of Condition B not met.</p> | <p>C.1 Be in MODE 3.</p>   | <p>6 hours</p>  |
| <p>D. More than one rod not within alignment limit.</p>                          | <p>D.1.1 Verify SDM is within the limits specified in the COLR.</p> <p><u>OR</u></p>   | <p>1 hour</p>   |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION  | COMPLETION TIME |
|-----------|--|-----------------|
|           | D.1.2 Initiate boration to restore required SDM to within limit.<br><br><u>AND</u> | 1 hour          |
|           | D.2 Be in MODE 3.  | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.1.4.1 Verify individual rod positions within alignment limit.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.1.4.2 Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core $\geq 10$ steps in either direction. | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.1.4.3      Verify rod drop time of each rod, from the fully withdrawn position, is <math>\leq [2.2]</math> seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with:</p> <ul style="list-style-type: none"> <li>a. <math>T_{avg} \geq 500^{\circ}\text{F}</math> and</li> <li>b. All reactor coolant pumps operating.</li> </ul> | <p>Prior to criticality after each removal of the reactor head</p> |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

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

APPLICABILITY: MODES 1 and 2.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.1.5.1      Verify each shutdown bank is within the insertion limits specified in the COLR. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

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

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

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

ACTIONS

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

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
|  | B.2 Restore control bank sequence and overlap to within limits. | 2 hours         |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 2 with $k_{eff} < 1.0$ .                         | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.1.6.1 Verify estimated critical control bank position is within the limits specified in the COLR.                           | Within 4 hours prior to achieving criticality  |
| SR 3.1.6.2 Verify each control bank insertion is within the insertion limits specified in the COLR.                              | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.1.6.3 Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core. | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The [Digital] Rod Position Indication ([D]RPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator.

-----

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME  |
|--|---|------------------|
| A. One [D]RPI per group inoperable for one or more groups. | A.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors. | Once per 8 hours |
|  | <u>OR</u><br>A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP.   | 8 hours          |
| B. More than one [D]RPI per group inoperable.              | B.1 Place the control rods under manual control.  | Immediately      |
|  | <u>AND</u><br>B.2 Monitor and record Reactor Coolant System $T_{avg}$ .<br><u>AND</u>                                 | Once per 1 hour  |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME                                 |
|---|--|---|
|   | <p>B.3 Verify the position of the rods with inoperable position indicators indirectly by using the movable incore detectors.</p> <p><u>AND</u></p> <p>B.4 Restore inoperable position indicators to OPERABLE status such that a maximum of one [D]RPI per group is inoperable.</p> | <p>Once per 8 hours</p> <p>24 hours</p>         |
| <p>C. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position.</p> | <p>C.1 Verify the position of the rods with inoperable position indicators indirectly by using movable incore detectors.</p> <p><u>OR</u></p> <p>C.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>   | <p>[4] hours</p> <p>8 hours</p>                 |
| <p>D. One demand position indicator per bank inoperable for one or more banks.</p>  | <p>D.1.1 Verify by administrative means all [D]RPIs for the affected banks are OPERABLE.</p> <p><u>AND</u></p> <p>D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are <math>\leq 12</math> steps apart.</p> <p><u>OR</u></p>                 | <p>Once per 8 hours</p> <p>Once per 8 hours</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION                             | COMPLETION TIME |
|--|---|-----------------|
|  | D.2 Reduce THERMAL POWER to $\leq$ 50% RTP. | 8 hours         |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3.                           | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.1.7.1 Verify each [D]RPI agrees within [12] steps of the group demand position for the [full indicated range] of rod travel. | Once prior to criticality after each removal of the reactor head |



3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 PHYSICS TESTS Exceptions – MODE 2

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

LCO 3.1.3, "Moderator Temperature Coefficient,"  
LCO 3.1.4, "Rod Group Alignment Limits,"  
LCO 3.1.5, "Shutdown Bank Insertion Limits,"  
LCO 3.1.6, "Control Bank Insertion Limits," and  
LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6 and 18.e, may be reduced to 3 required channels, provided:

- a. RCS lowest loop average temperature is  $\geq$  [531]°F,
- b. SDM is within the limits specified in the COLR, and
- c. THERMAL POWER is  $\leq$  5% RTP.

APPLICABILITY: During PHYSICS TESTS initiated in MODE 2.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. SDM not within limit.                                 | A.1 Initiate boration to restore SDM to within limit.            | 15 minutes      |
|  | <u>AND</u><br>A.2 Suspend PHYSICS TESTS exceptions.              | 1 hour          |
| B. THERMAL POWER not within limit.                       | B.1 Open reactor trip breakers.                                  | Immediately     |
| C. RCS lowest loop average temperature not within limit. | C.1 Restore RCS lowest loop average temperature to within limit. | 15 minutes      |

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.1.8.1 Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per [SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1]. | Prior to initiation of PHYSICS TESTS   |
| SR 3.1.8.2 Verify the RCS lowest loop average temperature is $\geq$ [531]°F.  | [ 30 minutes<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.1.8.3 Verify THERMAL POWER is $\leq$ 5% RTP.   | [ 30 minutes<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.1.8.4   | Verify SDM is within the limits specified in the COLR. | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.2 POWER DISTRIBUTION LIMITS

3.2.1A Heat Flux Hot Channel Factor (F<sub>Q</sub>(Z)) ( CAOC-F<sub>xy</sub> Methodology)

LCO 3.2.1A F<sub>Q</sub>(Z) shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME  |
|---|---|--|
| <p>A. -----NOTE-----<br/>Required Action A.4 shall be completed whenever this Condition is entered.<br/>-----</p> <p>F<sub>Q</sub>(Z) not within limit.</p> | <p>A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% F<sub>Q</sub>(Z) exceeds limit.</p> <p><u>AND</u></p> <p>A.2 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% F<sub>Q</sub>(Z) exceeds limit.</p> <p><u>AND</u></p> <p>A.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% F<sub>Q</sub>(Z) exceeds limit.</p> <p><u>AND</u></p> <p>A.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p> | <p>15 minutes after each F<sub>Q</sub>(Z) determination</p><br><p>72 hours after each F<sub>Q</sub>(Z) determination</p><br><p>72 hours after each F<sub>Q</sub>(Z) determination</p><br><p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> |
| <p>B. Required Action and associated Completion Time not met.</p>   | <p>B.1 Be in MODE 2.</p>  | <p>6 hours</p>   |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.2.1.1      Verify measured values of F <sub>Q</sub> (Z) are within limits specified in the COLR. | Once after each refueling prior to THERMAL POWER exceeding 75% RTP<br><br><u>AND</u><br><br>[ 31 EFPD thereafter<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.2.1.2</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. If <math>F_{XY}^C &gt; F_{XY}^L</math>, evaluate the effect of F<sub>xy</sub> on the predicted F<sub>Q</sub><sup>PR</sup> to determine if F<sub>Q</sub>(Z) is within its limits.</li> <li>2. If <math>F_{XY}^{RTP} &lt; F_{XY}^C \leq F_{XY}^L</math>, SR 3.2.1.2 shall be repeated within 24 hours after an increase in THERMAL POWER at which F<sub>XY</sub><sup>C</sup> was last determined, of at least 20% RTP.</li> </ol> <p style="text-align: center;">-----</p> <p>Verify <math>F_{XY}^C &lt; F_{XY}^L</math>.</p> | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>[ 31 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |





ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME   |
|---|--|---|
| <p>B. -----NOTE-----<br/>Required Action B.4 shall be completed whenever this Condition is entered.<br/>-----<br/>F<sub>Q</sub><sup>W</sup>(Z) not within limits.</p> | <p>B.1 Reduce AFD limits ≥ 1% for each 1% F<sub>Q</sub><sup>W</sup>(Z) exceeds limit.</p>  | 4 hours   |
|   | <u>AND</u>   |   |
|   | <p>B.2 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% that the maximum allowable power of the AFD limits is reduced.</p> | 72 hours  |
|   | <u>AND</u>   |   |
|   | <p>B.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% that the maximum allowable power of the AFD limits is reduced.</p>                    | 72 hours  |
|   | <u>AND</u>   |   |
|   | <p>B.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>  | Prior to increasing THERMAL POWER above the maximum allowable power of the AFD limits |
| <p>C. Required Action and associated Completion Time not met.</p>   | <p>C.1 Be in MODE 2.</p>   | 6 hours   |



SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

-----

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.2.1.1      Verify F<sub>Q</sub><sup>C</sup>(Z) is within limit.</p> | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>Once within [12] hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F<sub>Q</sub><sup>C</sup>(Z) was last verified</p> <p><u>AND</u></p> <p>[ 31 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.2.1.2</p> <p style="text-align: center;">-----NOTE-----</p> <p>If measurements indicate that the</p> <p style="padding-left: 40px;">maximum over z [ F<sub>Q</sub><sup>C</sup>(Z) / K(Z) ]</p> <p>has increased since the previous evaluation of F<sub>Q</sub><sup>C</sup>(Z):</p> <p>a. Increase F<sub>Q</sub><sup>W</sup>(Z) by the greater of a factor of [1.02] or by an appropriate factor specified in the COLR and reverify F<sub>Q</sub><sup>W</sup>(Z) is within limits or</p> <p>b. Repeat SR 3.2.1.2 once per 7 EFPD until either</p> <p style="padding-left: 20px;">a. above is met or two successive flux maps indicate that the</p> <p style="padding-left: 40px;">maximum over z [F<sub>Q</sub><sup>C</sup>(Z) / K(Z) ]</p> <p style="padding-left: 40px;">has not increased.</p> <p style="text-align: center;">-----</p> <p>Verify F<sub>Q</sub><sup>W</sup>(Z) is within limit.</p> | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>Once within [12] hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F<sub>Q</sub><sup>W</sup>(Z) was last verified</p> <p><u>AND</u></p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY   |
|--------------|---|
|              | [ 31 EFPD<br>thereafter<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |



3.2 POWER DISTRIBUTION LIMITS

3.2.1C Heat Flux Hot Channel Factor (F<sub>Q</sub>(Z) (CAOC-W(Z) Methodology)

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

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|---|
| <p>A. -----NOTE-----<br/>Required Action A.4 shall be completed whenever this Condition is entered.<br/>-----<br/>F<sub>Q</sub><sup>C</sup>(Z) not within limit.</p> | <p>A.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.<br/><br/><u>AND</u><br/>A.2 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.<br/><br/><u>AND</u><br/>A.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>C</sup>(Z) exceeds limit.<br/><br/><u>AND</u><br/>A.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p> | <p>15 minutes after each F<sub>Q</sub><sup>C</sup>(Z) determination</p> <p>72 hours after each F<sub>Q</sub><sup>C</sup>(Z) determination</p> <p>72 hours after each F<sub>Q</sub><sup>C</sup>(Z) determination</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME  |
|---|---|--|
| <p>B. -----NOTE-----<br/>Required Action B.4 shall be completed whenever this Condition is entered.<br/>-----<br/>F<sub>Q</sub><sup>W</sup>(Z) not within limits.</p> | <p>B.1 Reduce THERMAL POWER ≥ 1% RTP for each 1% F<sub>Q</sub><sup>W</sup>(Z) exceeds limit.</p>                              | 4 hours  |
|   | <u>AND</u>  |  |
|   | <p>B.2 Reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>W</sup>(Z) exceeds limit.</p> | 72 hours   |
|   | <u>AND</u>  |  |
|   | <p>B.3 Reduce Overpower ΔT trip setpoints ≥ 1% for each 1% F<sub>Q</sub><sup>W</sup>(Z) exceeds limit.</p>                    | 72 hours   |
|   | <u>AND</u>  |  |
|   | <p>B.4 Perform SR 3.2.1.1 and SR 3.2.1.2.</p>   | Prior to increasing THERMAL POWER above the limit of Required Action B.1 |
| <p>C. Required Action and associated Completion Time not met.</p>   | <p>C.1 Be in MODE 2.</p>  | 6 hours  |

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

-----

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.2.1.1      Verify F <sub>Q</sub> <sup>C</sup> (Z) is within limit. | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>Once within [12] hours after achieving equilibrium conditions after exceeding, by ≥ 10% RTP, the THERMAL POWER at which F<sub>Q</sub><sup>C</sup>(Z) was last verified</p> <p><u>AND</u></p> <p>[ 31 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.2.1.2</p> <p style="text-align: center;">-----NOTE-----</p> <p>If measurements indicate that the maximum over <math>z</math> [<math>F_Q^C(Z) / K(Z)</math>] has increased since the previous evaluation of <math>F_Q^C(Z)</math>:</p> <ol style="list-style-type: none"> <li>a. Increase <math>F_Q^W(Z)</math> by the greater of a factor of [1.02] or by an appropriate factor specified in the COLR and reverify <math>F_Q^W(Z)</math> is within limits or</li> <li>b. Repeat SR 3.2.1.2 once per 7 EFPD until either               <ol style="list-style-type: none"> <li>a. above is met or two successive flux maps indicate that the maximum over <math>z</math> [<math>F_Q^C(Z) / K(Z)</math>] has not increased.</li> </ol> </li> </ol> <p style="text-align: center;">-----</p> <p>Verify <math>F_Q^W(Z)</math> is within limit.</p> | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>Once within [12] hours after achieving equilibrium conditions after exceeding, by <math>\geq 10\%</math> RTP, the THERMAL POWER at which <math>F_Q^W(Z)</math> was last verified</p> <p><u>AND</u></p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY  |
|--------------|--|
|              | [31 EFPD<br>thereafter<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |



### 3.2 POWER DISTRIBUTION LIMITS

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

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

APPLICABILITY: MODE 1.

#### ACTIONS

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

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME  |
|---|---|--|
|   | <p>A.3 -----NOTE-----<br/>THERMAL POWER does not have to be reduced to comply with this Required Action.<br/>-----</p> <p>Perform SR 3.2.2.1.</p> | <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>24 hours after THERMAL POWER reaching ≥ 95% RTP</p> |
| <p>B. Required Action and associated Completion Time not met.</p> | <p>B.1 Be in MODE 2.</p>  | <p>6 hours</p>   |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.2.2.1      Verify $F_{\Delta H}^N$ is within limits specified in the COLR. | <p>Once after each refueling prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>[ 31 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



## 3.2 POWER DISTRIBUTION LIMITS

### 3.2.3A AXIAL FLUX DIFFERENCE (AFD) (Constant Axial Offset Control (CAOC) Methodology)

LCO 3.2.3A The AFD:

- a. Shall be maintained within the target band about the target flux difference. The target band is specified in the COLR.
- b. May deviate outside the target band with THERMAL POWER < 90% RTP but  $\geq$  50% RTP, provided AFD is within the acceptable operation limits and cumulative penalty deviation time is  $\leq$  1 hour during the previous 24 hours. The acceptable operation limits are specified in the COLR.
- c. May deviate outside the target band with THERMAL POWER < 50% RTP.

-----NOTES-----

1. The AFD shall be considered outside the target band when two or more OPERABLE excore channels indicate AFD to be outside the target band.
  2. With THERMAL POWER  $\geq$  50% RTP, penalty deviation time shall be accumulated on the basis of a 1 minute penalty deviation for each 1 minute of power operation with AFD outside the target band.
  3. With THERMAL POWER < 50% RTP and > 15 % RTP, penalty deviation time shall be accumulated on the basis of a 0.5 minute penalty deviation for each 1 minute of power operation with AFD outside the target band.
  4. A total of 16 hours of operation may be accumulated with AFD outside the target band without penalty deviation time during surveillance of power range channels in accordance with SR 3.3.1.6, provided AFD is maintained within acceptable operation limits.
- 

APPLICABILITY: MODE 1 with THERMAL POWER > 15% RTP.

ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME   |
|---|--|-------------------|
| <p>A. THERMAL POWER <math>\geq 90\%</math> RTP.</p> <p><u>AND</u></p> <p>AFD not within the target band.</p>  | <p>A.1 Restore AFD to within target band.</p>                  | <p>15 minutes</p> |
| <p>B. Required Action and associated Completion Time of Condition A not met.</p>  | <p>B.1 Reduce THERMAL POWER to <math>&lt; 90\%</math> RTP.</p> | <p>15 minutes</p> |
| <p>C. -----NOTE-----<br/>Required Action C.1 must be completed whenever Condition C is entered.<br/>-----</p> <p>THERMAL POWER <math>&lt; 90\%</math> and <math>\geq 50\%</math> RTP with cumulative penalty deviation time <math>&gt; 1</math> hour during the previous 24 hours.</p> <p><u>OR</u></p> <p>THERMAL POWER <math>&lt; 90\%</math> and <math>\geq 50\%</math> RTP with AFD not within the acceptable operation limits.</p> | <p>C.1 Reduce THERMAL POWER to <math>&lt; 50\%</math> RTP.</p> | <p>30 minutes</p> |
| <p>D. Required Action and associated Completion Time for Condition C not met.</p>   | <p>D.1 Reduce THERMAL POWER to <math>&lt; 15\%</math> RTP.</p> | <p>9 hours</p>    |



SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.2.3.1   | Verify AFD is within limits for each OPERABLE excore channel. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.2.3.2   | Update target flux difference.                                | Once within 31 EFPD after each refueling<br><br><u>AND</u><br><br>[ 31 EFPD thereafter<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.2.3.3</p> <p>-----NOTE-----<br/>                     The initial target flux difference after each refueling may be determined from design predictions.<br/>                     -----</p> <p>Determine, by measurement, the target flux difference.</p> | <p>Once within 31 EFPD after each refueling</p> <p><u>AND</u></p> <p>[ 92 EFPD thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.2 POWER DISTRIBUTION LIMITS

3.2.3B AXIAL FLUX DIFFERENCE (AFD) (Relaxed Axial Offset Control (RAOC) Methodology)

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

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

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

ACTIONS

| CONDITION                 | REQUIRED ACTION                        | COMPLETION TIME |
|---------------------------|--|-----------------|
| A. AFD not within limits. | A.1 Reduce THERMAL POWER to < 50% RTP. | 30 minutes      |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.2.3.1 Verify AFD within limits for each OPERABLE excore channel. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

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

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

ACTIONS

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION  | COMPLETION TIME   |
|-----------|--|---|
|           | <p>A.4    Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition.</p> <p><u>AND</u></p> <p>A.5    -----NOTES-----<br/>           1. Perform Required Action A.5 only after Required Action A.4 is completed.<br/><br/>           2. Required Action A.6 shall be completed whenever Required Action A.5 is performed.<br/>           -----<br/>           Normalize excore detectors to restore QPTR to within limit.</p> <p><u>AND</u></p> <p>A.6    -----NOTE-----<br/>           Perform Required Action A.6 only after Required Action A.5 is completed.<br/>           -----<br/>           Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.</p> | <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p>Prior to increasing THERMAL POWER above the limit of Required Action A.1</p> <p>Within 24 hours after achieving equilibrium conditions at RTP not to exceed 48 hours after increasing THERMAL POWER above the limit of Required Action A.1</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION                              | COMPLETION TIME |
|--|--|-----------------|
| B. Required Action and associated Completion Time not met. | B.1 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 4 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.2.4.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER <math>\leq 75\%</math> RTP, the remaining three power range channels can be used for calculating QPTR.</li> <li>2. SR 3.2.4.2 may be performed in lieu of this Surveillance.</li> </ol> <p>-----</p> <p>Verify QPTR is within limit by calculation.</p> | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.2.4.2</p> <p>-----NOTE-----<br/>           Not required to be performed until 12 hours after input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER &gt; 75% RTP.<br/>           -----</p> <p>Verify QPTR is within limit using the movable incore detectors.</p> | <p>[ 12 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



3.3 INSTRUMENTATION

3.3.1A Reactor Trip System (RTS) Instrumentation (Without Setpoint Control Program)

LCO 3.3.1A The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One or more Functions with one or more required channels or trains inoperable. | A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s). | Immediately     |
| B. One Manual Reactor Trip channel inoperable.                                    | B.1 Restore channel to OPERABLE status.   | 48 hours        |
|   | <u>OR</u><br>B.2 Be in MODE 3.  | 54 hours        |
| C. One channel or train inoperable.   | C.1 Restore channel or train to OPERABLE status.                                    | 48 hours        |
|   | <u>OR</u><br>C.2.1 Initiate action to fully insert all rods.<br><br><u>AND</u>      | 48 hours        |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME   |
|--|---|---|
|  | C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.  | 49 hours  |
| D. One Power Range Neutron Flux - High channel inoperable. | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels.<br/>-----<br/><br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability.<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.<br/>----- ]</p> <p>D.1.1 Place channel in trip.</p> <p style="text-align: center;"><u>AND</u></p> <p>D.1.2 Reduce THERMAL POWER to ≤ 75% RTP.</p> <p style="text-align: center;"><u>OR</u></p> <p>D.2.1 Place channel in trip.</p> <p style="text-align: center;"><u>AND</u></p> | <p style="text-align: center;">72 hours</p> <p style="text-align: center;">78 hours</p> <p style="text-align: center;">72 hours</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                          |
|--|--|--|
|  | <p>D.2.2 -----NOTE-----<br/>Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable.<br/>-----</p> <p style="padding-left: 40px;">Perform SR 3.2.4.2.</p> <p><u>OR</u></p> <p>D.3 Be in MODE 3.</p>  | <p>Once per 12 hours</p> <p>78 hours</p> |
| E. One channel inoperable.                                 | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>-----</p> <p>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability:<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> <p>E.1 Place channel in trip.</p> <p><u>OR</u></p> <p>E.2 Be in MODE 3.</p> | <p>72 hours</p> <p>78 hours</p>          |
| F. One Intermediate Range Neutron Flux channel inoperable. | <p>F.1 Reduce THERMAL POWER to &lt; P-6.</p> <p><u>OR</u></p>  | <p>24 hours</p>                          |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                   |
|---|---|-----------------------------------|
|   | F.2 Increase THERMAL POWER to > P-10.   | 24 hours                          |
| G. Two Intermediate Range Neutron Flux channels inoperable. | <p>G.1 -----NOTE-----<br/>                     Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br/>                     -----</p> <p>Suspend operations involving positive reactivity additions.</p> <p><u>AND</u></p> <p>G.2 Reduce THERMAL POWER to &lt; P-6.</p> | <p>Immediately</p> <p>2 hours</p> |
| H. One Source Range Neutron Flux channel inoperable.        | <p>H.1 -----NOTE-----<br/>                     Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br/>                     -----</p> <p>Suspend operations involving positive reactivity additions.</p>  | Immediately                       |
| I. Two Source Range Neutron Flux channels inoperable.       | I.1 Open reactor trip breakers (RTBs).  | Immediately                       |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| J. One Source Range Neutron Flux channel inoperable. | J.1 Restore channel to OPERABLE status.   | 48 hours        |
|  | <u>OR</u>   |                 |
|  | J.2.1 Initiate action to fully insert all rods.   | 48 hours        |
|  | <u>AND</u>  |                 |
|  | J.2.2. Place the Rod Control System in a condition incapable of rod withdrawal.   | 49 hours        |
| K. One channel inoperable.                           | [ -----NOTE-----<br>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br>-----<br><br>-----REVIEWER'S NOTE-----<br>The below Note should be used for plants with installed bypass test capability:<br><br>One channel may be bypassed for up to 12 hours for surveillance testing.<br>----- ] |                 |
|  | K.1 Place channel in trip.  | 72 hours        |
|  | <u>OR</u>   |                 |
|  | K.2 Reduce THERMAL POWER to < P-7.  | 78 hours        |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| L. One Reactor Coolant Pump Breaker Position (Single Loop) channel inoperable. | -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>----- | [6] hours       |
|  | L.1     Restore channel to OPERABLE status.<br><br><u>OR</u><br><br>L.2     Reduce THERMAL POWER to < P-8.                        |                 |
| M. One Reactor Coolant Breaker Position (Two Loops) channel inoperable.        | -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>----- | [6] hours       |
|  | M.1     Place the channel in trip.<br><br><u>OR</u><br><br>M.2     Reduce THERMAL POWER to <P-7.                                  |                 |

ACTIONS (continued)

| CONDITION                               | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| N. One Turbine Trip channel inoperable. | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>-----<br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability.<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> |                 |
|   | N.1    Place channel in trip.   | 72 hours        |
|   | <u>OR</u><br>N.2    Reduce THERMAL POWER to < [P-9].  | 76 hours        |
| O. One train inoperable.                | <p>-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p>  |                 |
|   | O.1    Restore train to OPERABLE status.  | 24 hours        |
|   | <u>OR</u><br>O.2    Be in MODE 3.   | 30 hours        |

ACTIONS (continued)

| CONDITION                                     | REQUIRED ACTION  | COMPLETION TIME                  |
|---|--|----------------------------------|
| P. One RTB train inoperable.                  | -----NOTE-----<br>One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE.<br>----- |                                  |
|   | P.1    Restore train to OPERABLE status.<br><br><u>OR</u><br>P.2    Be in MODE 3.  | [24] hours<br><br><br>[30] hours |
| Q. One or more channels inoperable.           | Q.1    Verify interlock is in required state for existing unit conditions.<br><br><u>OR</u>  | 1 hour                           |
|   | Q.2    Be in MODE 3.   | 7 hours                          |
| R. One or more channels inoperable.           | R.1    Verify interlock is in required state for existing unit conditions.<br><br><u>OR</u>  | 1 hour                           |
|   | R.2    Be in MODE 2.   | 7 hours                          |
| S. One trip mechanism inoperable for one RTB. | S.1    Restore inoperable trip mechanism to OPERABLE status.<br><br><u>OR</u>  | 48 hours                         |
|   | S.2    Be in MODE 3.   | 54 hours                         |



SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.3.1.1      Perform CHANNEL CHECK.   | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.1.2      -----NOTE-----<br>Not required to be performed until [12] hours after THERMAL POWER is $\geq$ 15% RTP.<br>-----<br>Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP. | [ 24 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.1.3</p> <p style="text-align: center;">-----NOTE-----</p> <p>Not required to be performed until [24] hours after THERMAL POWER is <math>\geq</math> [15]% RTP.</p> <p>-----</p> <p>Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is <math>\geq</math> 3%.</p> | <p>[ 31 effective full power days (EFPD)</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.4</p> <p style="text-align: center;">-----NOTE-----</p> <p>This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service.</p> <p>-----</p> <p>Perform TADOT.</p>   | <p>[ 62 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.1.5      Perform ACTUATION LOGIC TEST.</p>   | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.6      -----NOTE-----<br/>                     Not required to be performed until [24] hours after THERMAL POWER is <math>\geq</math> 50% RTP.<br/>                     -----<br/> <br/>                     Calibrate excore channels to agree with incore detector measurements.</p> | <p>[ [92] EFPD</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |
| <p>SR 3.3.1.7      -----NOTE-----<br/>                     Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3.<br/>                     -----<br/> <br/>                     Perform COT.</p>                | <p>[ 184 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                          |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.3.1.8</p> <p style="text-align: center;">-----NOTE-----</p> <p>This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions.</p> <p style="text-align: center;">-----</p> <p>Perform COT.</p> | <p style="text-align: center;">-----NOTE-----</p> <p>Only required when not performed within [ the Frequency specified in the Surveillance Frequency Control Program or previous 184 days ]</p> <p style="text-align: center;">-----</p> <p>Prior to reactor startup</p> <p><u>AND</u></p> <p>Four hours after reducing power below P-6 for source range instrumentation</p> <p><u>AND</u></p> <p>[Twelve] hours after reducing power below P-10 for power and intermediate range instrumentation</p> <p><u>AND</u></p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
|  | <p>[ Every 184 days thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.9</p> <p style="text-align: center;">-----NOTE-----</p> <p style="text-align: center;">Verification of setpoint is not required.</p> <p style="text-align: center;">-----</p> <p style="text-align: center;">Perform TADOT.</p>  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                 |
| <p>SR 3.3.1.10</p> <p style="text-align: center;">-----NOTE-----</p> <p style="text-align: center;">This Surveillance shall include verification that the time constants are adjusted to the prescribed values.</p> <p style="text-align: center;">-----</p> <p style="text-align: center;">Perform CHANNEL CALIBRATION.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>               |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.1.11</p> <p style="text-align: center;">-----NOTE-----</p> <p>Neutron detectors are excluded from CHANNEL CALIBRATION.</p> <p style="text-align: center;">-----</p> <p>Perform CHANNEL CALIBRATION.</p>  | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.12</p> <p style="text-align: center;">-----NOTE-----</p> <p>This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate.</p> <p style="text-align: center;">-----</p> <p>Perform CHANNEL CALIBRATION.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.13</p> <p>Perform COT.</p>   | <p>[ 18 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.3.1.14      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ]                                  |
| SR 3.3.1.15      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br>Perform TADOT. | Prior to exceeding<br>the [P-9] interlock<br>whenever the unit<br>has been in<br>MODE 3, if not<br>performed within<br>the previous<br>31 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.1.16      -----NOTE-----<br>Neutron detectors are excluded from response time testing.<br>-----<br>Verify RTS RESPONSE TIME is within limits. | [ [18] months on a STAGGERED TEST BASIS<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



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

| FUNCTION                            | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS   | ALLOWABLE<br>VALUE                                 | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|-------------------------------------|---|----------------------|------------|--|--|--|
| 1. Manual Reactor Trip              | 1,2   | 2                    | B          | SR 3.3.1.14  | NA   | NA   |
|                                     | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>  | 2                    | C          | SR 3.3.1.14  | NA   | NA   |
| 2. Power Range<br>Neutron Flux      |   |                      |            |  |  |  |
| a. High                             | 1,2   | 4                    | D          | SR 3.3.1.1<br>SR 3.3.1.2<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≤ [111.2]%<br>RTP                                  | [109]% RTP                                   |
| b. Low                              | 1 <sup>(d)</sup> ,2                                     | 4                    | E          | SR 3.3.1.1<br>SR 3.3.1.8 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup><br>SR 3.3.1.16               | ≤ [27.2]% RTP                                      | [25]% RTP                                    |
| 3. Power Range<br>Neutron Flux Rate |   |                      |            |  |  |  |
| a. High Positive<br>Rate            | 1,2   | 4                    | E          | SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup>  | ≤ [6.8]% RTP<br>with time<br>constant<br>≥ [2] sec | [5]% RTP with<br>time constant<br>≥ [2] sec  |
| b. High Negative<br>Rate            | 1,2   | 4                    | E          | SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup><br>SR 3.3.1.16                             | ≤ [6.8]% RTP<br>with time<br>constant<br>≥ [2] sec | [5]% RTP with<br>time constant<br>≥ [2] sec  |

- (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert.
- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Below the P-10 (Power Range Neutron Flux) interlocks.

-----REVIEWER'S NOTE-----

(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

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

| FUNCTION                           | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS   | ALLOWABLE<br>VALUE                    | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|------------------------------------|---|----------------------|------------|--|---------------------------------------|--|
| 4. Intermediate Range Neutron Flux | 1 <sup>(d)</sup> , 2 <sup>(e)</sup>                     | 2                    | F,G        | SR 3.3.1.1<br>SR 3.3.1.8 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup>  | ≤ [31]% RTP                           | [25]% RTP                                    |
| 5. Source Range Neutron Flux       | 2 <sup>(f)</sup>  | 2                    | H,I        | SR 3.3.1.1<br>SR 3.3.1.8 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup><br>SR 3.3.1.16                             | ≤ [1.4 E5] cps                        | [1.0 E5] cps                                 |
|                                    | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>  | 2                    | I,J        | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.11 <sup>(b)(c)</sup><br>SR 3.3.1.16                             | ≤ [1.4 E5] cps                        | [1.0 E5] cps                                 |
| 6. Overtemperature ΔT              | 1,2   | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.3<br>SR 3.3.1.6<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.12 <sup>(b)(c)</sup><br>SR 3.3.1.16 | Refer to<br>Note 1 (Page<br>3.3.1-19) | Refer to<br>Note 1 (Page<br>3.3.1-19)        |
| 7. Overpower ΔT                    | 1,2   | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.12 <sup>(b)(c)</sup><br>SR 3.3.1.16                             | Refer to<br>Note 2 (Page<br>3.3.1-20) | Refer to<br>Note 2 (Page<br>3.3.1-20)        |

- (a) With Rod Control System capable of rod withdrawal or one or more rods not fully insert.
- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Below the P-10 (Power Range Neutron Flux) interlocks.
- (e) Above the P-6 (Intermediate Range Neutron Flux) interlocks.
- (f) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

-----REVIEWER'S NOTE-----

(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

-----

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

| FUNCTION  | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS   | ALLOWABLE<br>VALUE | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|---|---|----------------------|------------|--|--------------------|--|
| 8. Pressurizer Pressure                         |   |                      |            |  |                    |  |
| a. Low  | 1 <sup>(h)</sup>  | [4]                  | K          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≥ [1886] psig      | [1900] psig                                  |
| b. High   | 1,2   | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≤ [2396] psig      | [2385] psig                                  |
| 9. Pressurizer Water Level - High               |   |                      |            |  |                    |  |
|   | 1 <sup>(g)</sup>  | 3                    | K          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup>                | ≤ [93.8]%          | [92]%  |
| 10. Reactor Coolant Flow - Low                  |   |                      |            |  |                    |  |
|   | 1 <sup>(g)</sup>  | 3 per loop           | K          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≥ [89.2]%          | [90]%  |
| 11. Reactor Coolant Pump (RCP) Breaker Position |   |                      |            |  |                    |  |
| a. Single Loop                                  | 1 <sup>(h)</sup>  | 1 per RCP            | L          | SR 3.3.1.14  | NA                 | NA   |
| b. Two Loops                                    | 1 <sup>(i)</sup>  | 1 per RCP            | M          | SR 3.3.1.14  | NA                 | NA   |
| 12. Undervoltage RCPs                           |   |                      |            |  |                    |  |
|   | 1 <sup>(g)</sup>  | [3] per bus          | K          | SR 3.3.1.9<br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16                                 | ≥ [4760] V         | [4830] V                                     |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (g) Above the P-7 (Low Power Reactor Trips Block) interlock.
- (h) Above the P-8 (Power Range Neutron Flux) interlock.
- (i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
-

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

| FUNCTION  | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS   | ALLOWABLE<br>VALUE               | [NOMINAL <sup>(i)</sup><br>TRIP<br>SETPOINT] |
|---|---|----------------------|------------|--|----------------------------------|--|
| 13. Underfrequency RCPs   | 1 <sup>(g)</sup>  | [3] per bus          | K          | SR 3.3.1.9<br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16                                 | ≥ [57.1] Hz                      | [57.5] Hz                                    |
| 14. Steam Generator (SG) Water Level - Low Low  | 1,2   | [4 per SG]           | E          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≥ [30.4]%                        | [32.3]%                                      |
| 15. SG Water Level - Low  | 1,2   | 2 per SG             | E          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≥ [30.4]%                        | [32.3]%                                      |
| Coincident with Steam Flow/Feedwater Flow Mismatch                                      | 1,2   | 2 per SG             | E          | SR 3.3.1.1<br>SR 3.3.1.7 <sup>(b)(c)</sup><br>SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.16 | ≤ [42.5]% full steam flow at RTP | [40]% full steam flow at RTP                 |
| 16. Turbine Trip  |   |                      |            |  |                                  |  |
| a. Low Fluid Oil Pressure   | 1 <sup>(j)</sup>  | 3                    | N          | SR 3.3.1.10 <sup>(b)(c)</sup><br>SR 3.3.1.15   | ≥ [750] psig                     | [800] psig                                   |
| b. Turbine Stop Valve Closure   | 1 <sup>(j)</sup>  | 4                    | N          | SR 3.3.1.10<br>SR 3.3.1.15   | ≥ [1]% open                      | [1]% open                                    |
| 17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) | 1,2   | 2 trains             | O          | SR 3.3.1.14  | NA                               | NA   |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (g) Above the P-7 (Low Power Reactor Trips Block) interlock.
- (j) Above the P-9 (Power Range Neutron Flux) interlock.

-----REVIEWER'S NOTE-----

(i) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

-----

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

| FUNCTION  | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS               | ALLOWABLE<br>VALUE                   | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|---|---|----------------------|------------|--|--------------------------------------|--|
| 18. Reactor Trip System Interlocks              |   |                      |            |  |                                      |  |
| a. Intermediate Range Neutron Flux, P-6         | 2 <sup>(f)</sup>  | 2                    | Q          | SR 3.3.1.11<br>SR 3.3.1.13                 | ≥ [6E-11] amp                        | [1E-10] amp                                  |
| b. Low Power Reactor Trips Block, P-7           | 1   | 1 per train          | R          | SR 3.3.1.5                                 | NA                                   | NA   |
| c. Power Range Neutron Flux, P-8                | 1   | 4                    | R          | SR 3.3.1.11<br>SR 3.3.1.13                 | ≤ [50.2]% RTP                        | [48]% RTP                                    |
| d. Power Range Neutron Flux, P-9                | 1   | 4                    | R          | SR 3.3.1.11<br>SR 3.3.1.13                 | ≤ [52.2]% RTP                        | [50]% RTP                                    |
| e. Power Range Neutron Flux, P-10               | 1,2   | 4                    | Q          | SR 3.3.1.11<br>SR 3.3.1.13                 | ≥ [7.8]% RTP<br>and ≤ [12.2]%<br>RTP | [10]% RTP                                    |
| f. Turbine Impulse Pressure, P-13               | 1   | 2                    | R          | [SR 3.3.1.1]<br>SR 3.3.1.10<br>SR 3.3.1.13 | ≤ [12.2]%<br>turbine power           | 10% turbine<br>power                         |
| 19. Reactor Trip Breakers <sup>(k)</sup> (RTBs) |   |                      |            |  |                                      |  |
|   | 1,2   | 2 trains             | P          | SR 3.3.1.4                                 | NA                                   | NA   |
|   | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>  | 2 trains             | C          | SR 3.3.1.4                                 | NA                                   | NA   |

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

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

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

-----REVIEWER'S NOTE-----

(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

-----

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

| FUNCTION   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS | ALLOWABLE<br>VALUE | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|--|---|----------------------|------------|------------------------------|--------------------|--|
| 20. Reactor Trip Breaker<br>Undervoltage and<br>Shunt Trip<br>Mechanisms | 1,2   | 1 each per<br>RTB    | S          | SR 3.3.1.4                   | NA                 | NA   |
|  | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>  | 1 each per<br>RTB    | C          | SR 3.3.1.4                   | NA                 | NA   |
| 21. Automatic Trip Logic   | 1,2   | 2 trains             | O          | SR 3.3.1.5                   | NA                 | NA   |
|  | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup>  | 2 trains             | C          | SR 3.3.1.5                   | NA                 | NA   |

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

-----REVIEWER'S NOTE-----

(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

-----

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

Note 1: Overtemperature  $\Delta T$

The Overtemperature  $\Delta T$  Function Allowable Value shall not exceed the following [Nominal Trip Setpoint] by more than [3.8]% of  $\Delta T$  span.

$$\Delta T \frac{(1+T_1S)}{(1+T_2S)} \left( \frac{1}{1+T_3S} \right) \leq \Delta T_Q \left\{ K_1 - K_2 \frac{(1+T_4S)}{(1+T_5S)} \left[ T \frac{1}{(1+T_6S)} - T' \right] + K_3 (P - P') - f_1(\Delta I) \right\}$$

Where:  $\Delta T$  is measured RCS  $\Delta T$ , °F.  
 $\Delta T_Q$  is the indicated  $\Delta T$  at RTP, °F.  
 $s$  is the Laplace transform operator, sec<sup>-1</sup>.  
 $T$  is the measured RCS average temperature, °F.  
 $T'$  is the nominal  $T_{avg}$  at RTP,  $\leq$  [\*]°F.

$P$  is the measured pressurizer pressure, psig  
 $P'$  is the nominal RCS operating pressure,  $\geq$  [\*] psig

|                    |                    |                     |
|--------------------|--------------------|---------------------|
| $K_1 \leq$ [*]     | $K_2 \geq$ [*]/°F  | $K_3 \geq$ [*]/psig |
| $T_1 \geq$ [*] sec | $T_2 \leq$ [*] sec | $T_3 \leq$ [*] sec  |
| $T_4 \geq$ [*] sec | $T_5 \leq$ [*] sec | $T_6 \leq$ [*] sec  |

|   |   |
|---|---|
| $f_1(\Delta I) =$ [*] {[*] - ( $q_t - q_b$ )} | when $q_t - q_b \leq$ [%] RTP           |
| 0% of RTP                                     | when [%] RTP < $q_t - q_b \leq$ [%] RTP |
| [*] {( $q_t - q_b$ ) - [*]}                   | when $q_t - q_b >$ [%] RTP              |

Where  $q_t$  and  $q_b$  are percent RTP in the upper and lower halves of the core, respectively, and  $q_t + q_b$  is the total THERMAL POWER in percent RTP.

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

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

Note 2: Overpower  $\Delta T$

The Overpower  $\Delta T$  Function Allowable Value shall not exceed the following [Nominal Trip Setpoint] by more than [3]% of  $\Delta T$  span.

$$\Delta T \frac{(1+T_1S)}{(1+T_2S)} \left( \frac{1}{1+T_3S} \right) \leq \Delta T_Q \left\{ K_4 - K_5 \frac{T_7S}{1+T_7S} \left( \frac{1}{1+T_6S} \right) T - K_6 \left[ T \frac{1}{1+T_6S} - T'' \right] - f_2(\Delta I) \right\}$$

Where:  $\Delta T$  is measured RCS  $\Delta T$ , °F.  
 $\Delta T_Q$  is the indicated  $\Delta T$  at RTP, °F.  
 $s$  is the Laplace transform operator, sec<sup>-1</sup>.  
 $T$  is the measured RCS average temperature, °F.  
 $T''$  is the nominal  $T_{avg}$  at RTP,  $\leq$  [\*]°F.

|                    |   |  |
|--------------------|---|--|
| $K_4 \leq$ [*]     | $K_5 \geq$ [*]/°F for increasing $T_{avg}$<br>[*]/°F for decreasing $T_{avg}$ | $K_6 \geq$ [*]/°F when $T > T''$<br>[*]/°F when $T \leq T''$ |
| $T_1 \geq$ [*] sec | $T_2 \leq$ [*] sec  | $T_3 \leq$ [*] sec   |
| $T_6 \leq$ [*] sec | $T_7 \geq$ [*] sec  |  |

$f_2(\Delta I) =$  [\*]

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



3.3 INSTRUMENTATION

3.3.1B Reactor Trip System (RTS) Instrumentation (With Setpoint Control Program)

LCO 3.3.1B The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One or more Functions with one or more required channels or trains inoperable. | A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s). | Immediately     |
| B. One Manual Reactor Trip channel inoperable.                                    | B.1 Restore channel to OPERABLE status.   | 48 hours        |
|   | <u>OR</u><br>B.2 Be in MODE 3.  | 54 hours        |
| C. One channel or train inoperable.   | C.1 Restore channel or train to OPERABLE status.                                    | 48 hours        |
|   | <u>OR</u><br>C.2.1 Initiate action to fully insert all rods.<br><br><u>AND</u>      | 48 hours        |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME   |
|--|---|---|
|  | C.2.2 Place the Rod Control System in a condition incapable of rod withdrawal.  | 49 hours  |
| D. One Power Range Neutron Flux - High channel inoperable. | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels.<br/>-----<br/><br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability.<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.<br/>----- ]</p> <p>D.1.1 Place channel in trip.</p> <p style="text-align: center;"><u>AND</u></p> <p>D.1.2 Reduce THERMAL POWER to ≤ 75% RTP.</p> <p style="text-align: center;"><u>OR</u></p> <p>D.2.1 Place channel in trip.</p> <p style="text-align: center;"><u>AND</u></p> | <p style="text-align: center;">72 hours</p> <p style="text-align: center;">78 hours</p> <p style="text-align: center;">72 hours</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                          |
|--|--|--|
|  | <p>D.2.2 -----NOTE-----<br/>Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable.<br/>-----</p> <p style="padding-left: 40px;">Perform SR 3.2.4.2.</p> <p><u>OR</u></p> <p>D.3 Be in MODE 3.</p>  | <p>Once per 12 hours</p> <p>78 hours</p> |
| E. One channel inoperable.                                 | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>-----</p> <p>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability:<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> <p>E.1 Place channel in trip.</p> <p><u>OR</u></p> <p>E.2 Be in MODE 3.</p> | <p>72 hours</p> <p>78 hours</p>          |
| F. One Intermediate Range Neutron Flux channel inoperable. | <p>F.1 Reduce THERMAL POWER to &lt; P-6.</p> <p><u>OR</u></p>  | <p>24 hours</p>                          |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                   |
|---|---|-----------------------------------|
|   | F.2 Increase THERMAL POWER to > P-10.   | 24 hours                          |
| G. Two Intermediate Range Neutron Flux channels inoperable. | <p>G.1 -----NOTE-----<br/>Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br/>-----</p> <p>Suspend operations involving positive reactivity additions.</p> <p><u>AND</u></p> <p>G.2 Reduce THERMAL POWER to &lt; P-6.</p> | <p>Immediately</p> <p>2 hours</p> |
| H. One Source Range Neutron Flux channel inoperable.        | <p>H.1 -----NOTE-----<br/>Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.<br/>-----</p> <p>Suspend operations involving positive reactivity additions.</p>  | Immediately                       |
| I. Two Source Range Neutron Flux channels inoperable.       | I.1 Open reactor trip breakers (RTBs).  | Immediately                       |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| J. One Source Range Neutron Flux channel inoperable. | J.1 Restore channel to OPERABLE status.  | 48 hours        |
|  | <u>OR</u>  |                 |
|  | J.2.1 Initiate action to fully insert all rods.  | 48 hours        |
|  | <u>AND</u>   |                 |
|  | J.2.2. Place the Rod Control System in a condition incapable of rod withdrawal.  | 49 hours        |
| K. One channel inoperable.                           | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>-----<br/><br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability:<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> |                 |
|  | K.1 Place channel in trip.   | 72 hours        |
|  | <u>OR</u>  |                 |
|  | K.2 Reduce THERMAL POWER to < P-7.   | 78 hours        |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| L. One Reactor Coolant Pump Breaker Position (Single Loop) channel inoperable. | -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>----- | [6] hours       |
|  | L.1     Restore channel to OPERABLE status.<br><br><u>OR</u><br><br>L.2     Reduce THERMAL POWER to < P-8.                        |                 |
| M. One Reactor Coolant Breaker Position (Two Loops) channel inoperable.        | -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>----- | [6] hours       |
|  | M.1     Place the channel in trip.<br><br><u>OR</u><br><br>M.2     Reduce THERMAL POWER to <P-7.                                  |                 |

ACTIONS (continued)

| CONDITION                               | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| N. One Turbine Trip channel inoperable. | <p>[ -----NOTE-----<br/>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>-----<br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability.<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> |                 |
|   | N.1    Place channel in trip.   | 72 hours        |
|   | <u>OR</u><br>N.2    Reduce THERMAL POWER to < [P-9].  | 76 hours        |
| O. One train inoperable.                | <p>-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p>  |                 |
|   | O.1    Restore train to OPERABLE status.  | 24 hours        |
|   | <u>OR</u><br>O.2    Be in MODE 3.   | 30 hours        |

ACTIONS (continued)

| CONDITION                                     | REQUIRED ACTION  | COMPLETION TIME                  |
|---|--|----------------------------------|
| P. One RTB train inoperable.                  | -----NOTE-----<br>One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE.<br>----- |                                  |
|   | P.1    Restore train to OPERABLE status.<br><br><u>OR</u><br>P.2    Be in MODE 3.  | [24] hours<br><br><br>[30] hours |
| Q. One or more channels inoperable.           | Q.1    Verify interlock is in required state for existing unit conditions.<br><br><u>OR</u>  | 1 hour                           |
|   | Q.2    Be in MODE 3.   | 7 hours                          |
| R. One or more channels inoperable.           | R.1    Verify interlock is in required state for existing unit conditions.<br><br><u>OR</u>  | 1 hour                           |
|   | R.2    Be in MODE 2.   | 7 hours                          |
| S. One trip mechanism inoperable for one RTB. | S.1    Restore inoperable trip mechanism to OPERABLE status.<br><br><u>OR</u>  | 48 hours                         |
|   | S.2    Be in MODE 3.   | 54 hours                         |



SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.3.1.1      Perform CHANNEL CHECK.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.1.2      -----NOTE-----<br>Not required to be performed until [12] hours after THERMAL POWER is $\geq 15\%$ RTP.<br>-----<br><br>Compare results of calorimetric heat balance calculation to power range channel output. Adjust power range channel output if calorimetric heat balance calculations results exceed power range channel output by more than +2% RTP. | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.1.3</p> <p>-----NOTE-----<br/>Not required to be performed until [24] hours after THERMAL POWER is <math>\geq</math> [15]% RTP.<br/>-----</p> <p>Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is <math>\geq</math> 3%.</p> | <p>[ 31 effective full power days (EFPD)</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.4</p> <p>-----NOTE-----<br/>This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service.<br/>-----</p> <p>Perform TADOT.</p>   | <p>[ 62 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.1.5      Perform ACTUATION LOGIC TEST.</p>  | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.6      -----NOTE-----<br/>Not required to be performed until [24] hours after THERMAL POWER is <math>\geq</math> 50% RTP.<br/>-----<br/><br/>Calibrate excore channels to agree with incore detector measurements.</p>                                  | <p>[ [92] EFPD</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |
| <p>SR 3.3.1.7      -----NOTE-----<br/>Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3.<br/>-----<br/><br/>Perform COT in accordance with the Setpoint Control Program.</p> | <p>[ 184 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                          |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.3.1.8</p> <p>-----NOTE-----<br/> This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions.<br/> -----</p> <p>Perform COT in accordance with the Setpoint Control Program.</p> | <p>-----NOTE-----<br/> Only required when not performed within [ the Frequency specified in the Surveillance Frequency Control Program or previous 184 days ]<br/> -----</p> <p>Prior to reactor startup</p> <p><u>AND</u></p> <p>Four hours after reducing power below P-6 for source range instrumentation</p> <p><u>AND</u></p> <p>[Twelve] hours after reducing power below P-10 for power and intermediate range instrumentation</p> <p><u>AND</u></p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
|  | <p>[ Every 184 days thereafter</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.9</p> <p>-----NOTE-----<br/>Verification of setpoint is not required.<br/>-----</p> <p>Perform TADOT.</p>  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                 |
| <p>SR 3.3.1.10</p> <p>-----NOTE-----<br/>This Surveillance shall include verification that the time constants are adjusted to the prescribed values.<br/>-----</p> <p>Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>               |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.1.11</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.</p>  | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.12</p> <p>-----NOTE-----<br/>This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate.<br/>-----</p> <p>Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.1.13</p> <p>Perform COT.</p>   | <p>[ 18 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.3.1.14      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ]                                  |
| SR 3.3.1.15      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | Prior to exceeding<br>the [P-9] interlock<br>whenever the unit<br>has been in<br>MODE 3, if not<br>performed within<br>the previous<br>31 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.1.16</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from response time testing.<br/>-----</p> <p>Verify RTS RESPONSE TIME is within limits.</p> | <p>[ [18] months on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



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

| FUNCTION                           | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS   | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS   |
|------------------------------------|--|----------------------|------------|--|
| 1. Manual Reactor Trip             | 1,2  | 2                    | B          | SR 3.3.1.14  |
|                                    | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup> | 2                    | C          | SR 3.3.1.14  |
| 2. Power Range Neutron Flux        |  |                      |            |  |
| a. High                            | 1,2  | 4                    | D          | SR 3.3.1.1<br>SR 3.3.1.2<br>SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16               |
| b. Low                             | 1 <sup>(b)</sup> ,2                                    | 4                    | E          | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11<br>SR 3.3.1.16                             |
| 3. Power Range Neutron Flux Rate   |  |                      |            |  |
| a. High Positive Rate              | 1,2  | 4                    | E          | SR 3.3.1.7<br>SR 3.3.1.11  |
| b. High Negative Rate              | 1,2  | 4                    | E          | SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16   |
| 4. Intermediate Range Neutron Flux | 1 <sup>(b)</sup> , 2 <sup>(c)</sup>                    | 2                    | F,G        | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11  |
| 5. Source Range Neutron Flux       |  |                      |            |  |
|                                    | 2 <sup>(d)</sup>                                       | 2                    | H,I        | SR 3.3.1.1<br>SR 3.3.1.8<br>SR 3.3.1.11<br>SR 3.3.1.16                             |
|                                    | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup> | 2                    | I,J        | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.11<br>SR 3.3.1.16                             |
| 6. Overtemperature ΔT              | 1,2  | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.3<br>SR 3.3.1.6<br>SR 3.3.1.7<br>SR 3.3.1.12<br>SR 3.3.1.16 |

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

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

(c) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

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

Table 3.3.1-1 (page 2 of 4)  
Reactor Trip System Instrumentation

| FUNCTION   | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                           |
|--|--|----------------------|------------|--|
| 7. Overpower $\Delta T$                            | 1,2  | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.12<br>SR 3.3.1.16 |
| 8. Pressurizer Pressure                            |  |                      |            |  |
| a. Low   | 1 <sup>(f)</sup>                                     | [4]                  | K          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |
| b. High  | 1,2  | [4]                  | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |
| 9. Pressurizer Water Level - High                  | 1 <sup>(e)</sup>                                     | 3                    | K          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10                |
| 10. Reactor Coolant Flow - Low                     | 1 <sup>(e)</sup>                                     | 3 per loop           | K          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |
| 11. Reactor Coolant Pump (RCP) Breaker<br>Position |  |                      |            |  |
| a. Single Loop                                     | 1 <sup>(f)</sup>                                     | 1 per RCP            | L          | SR 3.3.1.14  |
| b. Two Loops                                       | 1 <sup>(g)</sup>                                     | 1 per RCP            | M          | SR 3.3.1.14  |
| 12. Undervoltage RCPs                              | 1 <sup>(e)</sup>                                     | [3] per bus          | K          | SR 3.3.1.9<br>SR 3.3.1.10<br>SR 3.3.1.16               |
| 13. Underfrequency RCPs                            | 1 <sup>(e)</sup>                                     | [3] per bus          | K          | SR 3.3.1.9<br>SR 3.3.1.10<br>SR 3.3.1.16               |
| 14. Steam Generator (SG) Water Level -<br>Low Low  | 1,2  | [4 per SG]           | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |

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

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

(g) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) Interlock

Table 3.3.1-1 (page 3 of 4)  
Reactor Trip System Instrumentation

| FUNCTION  | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                           |
|---|--|----------------------|------------|--|
| 15. SG Water Level - Low  | 1,2  | 2 per SG             | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |
| Coincident with Steam<br>Flow/Feedwater Flow Mismatch   | 1,2  | 2 per SG             | E          | SR 3.3.1.1<br>SR 3.3.1.7<br>SR 3.3.1.10<br>SR 3.3.1.16 |
| 16. Turbine Trip  |  |                      |            |  |
| a. Low Fluid Oil Pressure   | 1 <sup>(h)</sup>                                     | 3                    | N          | SR 3.3.1.10<br>SR 3.3.1.15                             |
| b. Turbine Stop Valve Closure   | 1 <sup>(h)</sup>                                     | 4                    | N          | SR 3.3.1.10<br>SR 3.3.1.15                             |
| 17. Safety Injection (SI) Input from<br>Engineered Safety Feature Actuation<br>System (ESFAS) | 1,2  | 2 trains             | O          | SR 3.3.1.14  |
| 18. Reactor Trip System Interlocks  |  |                      |            |  |
| a. Intermediate Range Neutron Flux,<br>P-6  | 2 <sup>(d)</sup>                                     | 2                    | Q          | SR 3.3.1.11<br>SR 3.3.1.13                             |
| b. Low Power Reactor Trips Block,<br>P-7  | 1  | 1 per train          | R          | SR 3.3.1.5   |
| c. Power Range Neutron Flux, P-8  | 1  | 4                    | R          | SR 3.3.1.11<br>SR 3.3.1.13                             |
| d. Power Range Neutron Flux, P-9  | 1  | 4                    | R          | SR 3.3.1.11<br>SR 3.3.1.13                             |
| e. Power Range Neutron Flux, P-10   | 1,2  | 4                    | Q          | SR 3.3.1.11<br>SR 3.3.1.13                             |
| f. Turbine Impulse Pressure, P-13   | 1  | 2                    | R          | [SR 3.3.1.1]<br>SR 3.3.1.10<br>SR 3.3.1.13             |

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

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

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

| FUNCTION   | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS   | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS |
|--|--|----------------------|------------|------------------------------|
| 19. Reactor Trip Breakers <sup>(i)</sup> (RTBs)                    | 1,2  | 2 trains             | P          | SR 3.3.1.4                   |
|  | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup> | 2 trains             | C          | SR 3.3.1.4                   |
| 20. Reactor Trip Breaker Undervoltage<br>and Shunt Trip Mechanisms | 1,2  | 1 each per RTB       | S          | SR 3.3.1.4                   |
|  | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup> | 1 each per RTB       | C          | SR 3.3.1.4                   |
| 21. Automatic Trip Logic   | 1,2  | 2 trains             | O          | SR 3.3.1.5                   |
|  | 3 <sup>(a)</sup> , 4 <sup>(a)</sup> , 5 <sup>(a)</sup> | 2 trains             | C          | SR 3.3.1.5                   |

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

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

3.3 INSTRUMENTATION

3.3.2A Engineered Safety Feature Actuation System (ESFAS) Instrumentation (Without Setpoint Control Program)

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

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

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

ACTIONS (continued)

| CONDITION                  | REQUIRED ACTION   | COMPLETION TIME                                 |
|----------------------------|---|---|
| C. One train inoperable.   | <p style="text-align: center;">-----NOTE-----</p> <p>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.</p> <p style="text-align: center;">-----</p> <p>C.1     Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>C.2.1   Be in MODE 3.</p> <p style="text-align: center;"><u>AND</u></p> <p>C.2.2   Be in MODE 5.</p>  | <p>24 hours</p> <p>30 hours</p> <p>60 hours</p> |
| D. One channel inoperable. | <p>[ -----NOTE-----</p> <p>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</p> <p style="text-align: center;">-----</p> <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The below Note should be used for plants with installed bypass test capability:</p> <p>One channel may be bypassed for up to 12 hours for surveillance testing.</p> <p style="text-align: center;">----- ]</p> <p>D.1     Place channel in trip.</p> <p><u>OR</u></p> | <p>72 hours</p>                                 |

ACTIONS (continued)

| CONDITION                                       | REQUIRED ACTION   | COMPLETION TIME                          |
|---|---|--|
|   | D.2.1 Be in MODE 3.<br><br><u>AND</u><br>D.2.2 Be in MODE 4.  | 78 hours<br><br>84 hours                 |
| E. One Containment Pressure channel inoperable. | [ -----NOTE-----<br>One additional channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br>-----<br><br>-----REVIEWER'S NOTE-----<br>The below Note should be used for plants with installed bypass test capability.<br><br>One channel may be bypassed for up to 12 hours for surveillance testing.<br>----- ] |  |
|   | E.1 Place channel in bypass.<br><br><u>OR</u><br>E.2.1 Be in MODE 3.<br><br><u>AND</u><br>E.2.2 Be in MODE 4.   | 72 hours<br><br>78 hours<br><br>84 hours |
| F. One channel or train inoperable.             | F.1 Restore channel or train to OPERABLE status.<br><br><u>OR</u><br>F.2.1 Be in MODE 3.<br><br><u>AND</u>  | 48 hours<br><br>54 hours                 |

ACTIONS (continued)

| CONDITION                | REQUIRED ACTION  | COMPLETION TIME                                 |
|--------------------------|--|---|
|                          | F.2.2 Be in MODE 4.  | 60 hours  |
| G. One train inoperable. | <p style="text-align: center;">-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p> <p>G.1 Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>G.2.1 Be in MODE 3.</p> <p style="text-align: center;"><u>AND</u></p> <p>G.2.2 Be in MODE 4.</p> | <p>24 hours</p> <p>30 hours</p> <p>36 hours</p> |
| H. One train inoperable. | <p style="text-align: center;">-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p> <p>H.1 Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>H.2 Be in MODE 3.</p>  | <p>24 hours</p> <p>30 hours</p>                 |



ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                   |
|--|--|-----------------------------------|
| I. One channel inoperable.                           | <p>[ -----NOTE-----<br/>                     The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>                     -----<br/>                     -----REVIEWER'S NOTE-----<br/>                     The below Note should be used for plants with installed bypass test capability.<br/>                     One channel may be bypassed for up to 12 hours for surveillance testing.<br/>                     ----- ]</p> |                                   |
|  | I.1 Place channel in trip.   | 72 hours                          |
|  | <u>OR</u><br>I.2 Be in MODE 3.   | 78 hours                          |
| J. One Main Feedwater Pumps trip channel inoperable. | <p>J.1 Restore channel to OPERABLE status.<br/> <u>OR</u><br/>                     J.2 Be in MODE 3.</p>   | <p>48 hours<br/><br/>54 hours</p> |

ACTIONS (continued)

| CONDITION                           | REQUIRED ACTION   | COMPLETION TIME                                      |
|-------------------------------------|---|--|
| K. One channel inoperable.          | <p>[ -----NOTE-----<br/>One additional channel may be bypassed for up to [4] hours for surveillance testing.<br/>-----<br/>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability:<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> <p>K.1 Place channel in bypass.</p> <p><u>OR</u></p> <p>K.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>K.2.2 Be in MODE 5.</p> | <p>[6] hours</p> <p>[12] hours</p> <p>[42] hours</p> |
| L. One or more channels inoperable. | <p>L.1 Verify interlock is in required state for existing unit condition.</p> <p><u>OR</u></p> <p>L.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>L.2.2 Be in MODE 4.</p>  | <p>1 hour</p> <p>7 hours</p> <p>13 hours</p>         |

SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.3.2.1      Perform CHANNEL CHECK.  | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.2.2      Perform ACTUATION LOGIC TEST.   | [ 92 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.2.3      -----NOTE-----<br>The continuity check may be excluded.<br>-----<br><br>Perform ACTUATION LOGIC TEST. | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The Frequency remains at 31 days on a STAGGERED TEST BASIS for plants with a Relay Protection System.</p> <p style="text-align: center;">-----</p> |  |
| SR 3.3.2.4      Perform MASTER RELAY TEST.   | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| SR 3.3.2.5      Perform COT.   | <p>[ 184 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                          |
| SR 3.3.2.6      Perform SLAVE RELAY TEST.  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.2.7</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of relay setpoints not required.</p> <p style="text-align: center;">-----</p> <p>Perform TADOT.</p>                          | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| <p>SR 3.3.2.8</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of setpoint not required for manual initiation functions.</p> <p style="text-align: center;">-----</p> <p>Perform TADOT.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.2.9</p> <p style="text-align: center;">-----NOTE-----</p> <p>This Surveillance shall include verification that the time constants are adjusted to the prescribed values.</p> <p>-----</p> <p>Perform CHANNEL CALIBRATION.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                           |
| <p>SR 3.3.2.10</p> <p style="text-align: center;">-----NOTE-----</p> <p>Not required to be performed for the turbine driven AFW pump until [24] hours after SG pressure is <math>\geq</math> [1000] psig.</p> <p>-----</p> <p>Verify ESFAS RESPONSE TIMES are within limit.</p> | <p>[ [18] months on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.2.11</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of setpoint not required.</p> <p>-----</p> <p>Perform TADOT.</p>   | <p>Once per reactor trip breaker cycle</p>   |

Table 3.3.2-1 (page 1 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE          | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|--|---|----------------------|------------|---|-----------------------------|--|
| 1. Safety Injection                                |   |                      |            |   |                             |  |
| a. Manual Initiation                               | 1,2,3,4   | 2                    | B          | SR 3.3.2.8  | NA                          | NA   |
| b. Automatic Actuation Logic and Actuation Relays  | 1,2,3,4   | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                          | NA   |
| c. Containment Pressure - High 1                   | 1,2,3   | 3                    | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10   | ≤ [3.86] psig               | [3.6] psig                                   |
| d. Pressurizer Pressure - Low                      | 1,2,3 <sup>(a)</sup>                                    | [3]                  | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10   | ≥ [1839] psig               | [1850] psig                                  |
| e. Steam Line Pressure                             |   |                      |            |   |                             |  |
| (1) Low  | 1,2,3 <sup>[(a)]</sup>                                  | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10   | ≥ [635] <sup>(d)</sup> psig | [675] <sup>(d)</sup> psig                    |
| (2) High Differential Pressure Between Steam Lines | 1,2,3   | 3 per steam line     | D          | [SR 3.3.2.1]<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [106] psig                | [97] psig                                    |

- (a) Above the P-11 (Pressurizer Pressure) interlock.
- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Time constants used in the lead/lag controller are  $t_1 \geq [50]$  seconds and  $t_2 \leq [5]$  seconds.

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

Table 3.3.2-1 (page 2 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION                                   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS     | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE             | [NOMINAL <sup>(i)</sup><br>TRIP<br>SETPOINT] |
|--|---|--------------------------|------------|---|--------------------------------|--|
| 1. Safety Injection                        |   |                          |            |   |                                |  |
| f. High Steam Flow in Two Steam Lines      | 1,2,3 <sup>(e)</sup>                                    | 2 per steam line         | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | (f)                            | (g)  |
| Coincident with T <sub>avg</sub> - Low Low | 1,2,3 <sup>(e)</sup>                                    | 1 per loop               | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [550.6]°F                    | [553]°F                                      |
| g. High Steam Flow in Two Steam Lines      | 1,2,3 <sup>(e)</sup>                                    | 2 per steam line         | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | (f)                            | (g)  |
| Coincident with Steam Line Pressure - Low  | 1,2,3 <sup>(e)</sup>                                    | 1 per steam line         | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [635] <sup>(d)</sup><br>psig | [675] psig                                   |
| 2. Containment Spray                       |   |                          |            |   |                                |  |
| a. Manual Initiation                       | 1,2,3,4   | 2 per train,<br>2 trains | B          | SR 3.3.2.8  | NA                             | NA   |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Time constants used in the lead/lag controller are  $t_1 \geq [50]$  seconds and  $t_2 \leq [5]$  seconds.
- (e) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.
- (f) Less than or equal to a function defined as  $\Delta P$  corresponding to [44]% full steam flow below [20]% load, and  $\Delta P$  increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and  $\Delta P$  corresponding to [114]% full steam flow above 100% load.
- (g) Less than or equal to a function defined as  $\Delta P$  corresponding to [40]% full steam flow between [0]% and [20]% load and then a  $\Delta P$  increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.

-----REVIEWER'S NOTE-----

- (i) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.



Table 3.3.2-1 (page 3 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS                               | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE | [NOMINAL <sup>(1)</sup><br>TRIP<br>SETPOINT] |
|--|---|----------------------|------------|---|--------------------|--|
| 2. Containment Spray                               |   |                      |            |   |                    |  |
| b. Automatic Actuation Logic and Actuation Relays  | 1,2,3,4   | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| c. Containment Pressure High - 3 (High High)       | 1,2,3   | 4                    | E          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [12.31] psig     | [12.05] psig                                 |
| d. Containment Pressure High - 3 (Two Loop Plants) | 1,2,3   | [3] sets of [2]      | E          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [12.31] psig     | [12.05] psig                                 |
| 3. Containment Isolation                           |   |                      |            |   |                    |  |
| a. Phase A Isolation                               |   |                      |            |   |                    |  |
| (1) Manual Initiation                              | 1,2,3,4   | 2                    | B          | SR 3.3.2.8  | NA                 | NA   |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4   | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| (3) Safety Injection                               | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |                    |  |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
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Table 3.3.2-1 (page 4 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS     | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE | [NOMINAL <sup>(i)</sup><br>TRIP<br>SETPOINT] |
|--|---|--------------------------|------------|---|--------------------|--|
| 3. Containment Isolation                           |   |                          |            |   |                    |  |
| b. Phase B Isolation                               |   |                          |            |   |                    |  |
| (1) Manual Initiation                              | 1,2,3,4   | 2 per train,<br>2 trains | B          | SR 3.3.2.8  | NA                 | NA   |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| (3) Containment Pressure High - 3 (High High)      | 1,2,3   | [4]                      | E          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [12.31] psig     | [12.05] psig                                 |
| 4. Steam Line Isolation                            |   |                          |            |   |                    |  |
| a. Manual Initiation                               | 1,2 <sup>(i)</sup> ,3 <sup>(i)</sup>                    | 2                        | F          | SR 3.3.2.8  | NA                 | NA   |
| b. Automatic Actuation Logic and Actuation Relays  | 1,2 <sup>(i)</sup> ,3 <sup>(i)</sup>                    | 2 trains                 | G          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| c. Containment Pressure - High 2                   | 1,2 <sup>(i)</sup> ,3 <sup>(i)</sup>                    | [4]                      | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [6.61] psig      | [6.35] psig                                  |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (j) Except when all MSIVs are closed and [de-activated].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

Table 3.3.2-1 (page 5 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION                 | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE           | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|--------------------------|---|----------------------|------------|---|------------------------------|--|
| 4. Steam Line Isolation  |   |                      |            |   |                              |  |
| d. Steam Line Pressure   |   |                      |            |   |                              |  |
| (1) Low                  | 1,2 <sup>(j)</sup> ,3 <sup>(j)(a)</sup>                 | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [635] <sup>(d)</sup> psig  | [675] <sup>(d)</sup> psig                    |
| (2) Negative Rate - High | 3 <sup>(h)(j)</sup>                                     | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [121.6] <sup>(i)</sup> psi | [110] <sup>(l)</sup> psi                     |

- (a) Above the P-11 (Pressurizer Pressure) interlock.
- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Time constants used in the lead/lag controller are  $t_1 \geq [50]$  seconds and  $t_2 \leq [5]$  seconds.
- (h) Below the P-11 (Pressurizer Pressure) interlock.
- (i) Time constant utilized in the rate/lag controller is  $\geq [50]$  seconds.
- (j) Except when all MSIVs are closed and [de-activated].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
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Table 3.3.2-1 (page 6 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION                                   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE          | [NOMINAL <sup>(i)</sup><br>TRIP<br>SETPOINT] |
|--|---|----------------------|------------|---|-----------------------------|--|
| <b>4. Steam Line Isolation</b>             |   |                      |            |   |                             |  |
| e. High Steam Flow in Two Steam Lines      | 1,2 <sup>(j)</sup> ,3 <sup>(j)</sup>                    | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | (f)                         | (g)  |
| Coincident with T <sub>avg</sub> - Low Low | 1,2 <sup>(j)</sup> ,3 <sup>(e)(j)</sup>                 | 1 per loop           | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [550.6]°F                 | [553]°F                                      |
| f. High Steam Flow in Two Steam Lines      | 1,2 <sup>(j)</sup> ,3 <sup>(j)</sup>                    | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | (f)                         | (g)  |
| Coincident with Steam Line Pressure - Low  | 1,2 <sup>(j)</sup> ,3 <sup>(j)</sup>                    | 1 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [635] <sup>(d)</sup> psig | [675] <sup>(d)</sup> psig                    |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (d) Time constants used in the lead/lag controller are  $t_1 \geq [50]$  seconds and  $t_2 \leq [5]$  seconds.
- (e) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.
- (f) Less than or equal to a function defined as  $\Delta P$  corresponding to [44]% full steam flow below [20]% load, and  $\Delta P$  increasing linearly from [44]% full steam flow at [20]% load to [114]% full steam flow at [100]% load, and  $\Delta P$  corresponding to [114]% full steam flow above 100% load.
- (g) Less than or equal to a function defined as  $\Delta P$  corresponding to [40]% full steam flow between [0]% and [20]% load and then a  $\Delta P$  increasing linearly from [40]% steam flow at [20]% load to [110]% full steam flow at [100]% load.
- (j) Except when all MSIVs are closed and [de-activated].

-----REVIEWER'S NOTE-----

- (i) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
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Table 3.3.2-1 (page 7 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION                                      | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS                               | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE  | [NOMINAL <sup>(j)</sup><br>TRIP<br>SETPOINT]                |
|---|---|----------------------|------------|---|---|---|
| 4. Steam Line Isolation                       |   |                      |            |   |   |   |
| g. High Steam Flow                            | 1,2 <sup>(j)</sup> ,3 <sup>(j)</sup>  | 2 per<br>steam line  | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [25]% of full<br>steam flow at<br>no load steam<br>pressure       | [ ] full steam<br>flow at no<br>load steam<br>pressure      |
| Coincident with<br>Safety Injection           | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |   |   |
| and   |   |                      |            |   |   |   |
| Coincident with<br>T <sub>avg</sub> - Low Low | 1,2 <sup>(j)</sup> ,3 <sup>(e)(j)</sup>   | [2] per loop         | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [550.6]°F   | [553]°F   |
| h. High High Steam<br>Flow                    | 1,2 <sup>(j)</sup> ,3 <sup>(j)</sup>  | 2 per<br>steam line  | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [130]% of<br>full steam flow<br>at full load<br>steam<br>pressure | [ ] of full steam<br>flow at full<br>load steam<br>pressure |
| Coincident with<br>Safety Injection           | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |   |   |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (e) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.
- (j) Except when all MSIVs are closed and [de-activated].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
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Table 3.3.2-1 (page 8 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS                               | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE | [NOMINAL <sup>(j)</sup><br>TRIP<br>SETPOINT] |
|---|---|----------------------|------------|---|--------------------|--|
| 5. Turbine Trip and Feedwater Isolation   |   |                      |            |   |                    |  |
| a. Automatic Actuation Logic and Actuation Relays                                 | 1, 2 <sup>(k)</sup> , [3] <sup>(k)</sup>  | 2 trains             | H[G]       | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| b. SG Water Level - High High (P-14)  | 1, 2 <sup>(k)</sup> , [3] <sup>(k)</sup>  | [3] per SG           | I[D]       | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≤ [84.2]%          | [82.4]%                                      |
| c. Safety Injection   | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |                    |  |
| 6. Auxiliary Feedwater  |   |                      |            |   |                    |  |
| a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System) | 1,2,3   | 2 trains             | G          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                 | NA   |
| b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)        | 1,2,3   | 2 trains             | G          | SR 3.3.2.3  | NA                 | NA   |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].
- (k) Except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve].

-----REVIEWER'S NOTE-----

- (j) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
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Table 3.3.2-1 (page 9 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION   | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS                               | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE                   | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|--|---|----------------------|------------|---|--------------------------------------|--|
| 6. Auxiliary Feedwater   |   |                      |            |   |                                      |  |
| c. SG Water Level - Low Low  | 1,2,3   | [3] per SG           | D          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [30.4]%                            | [32.2]%                                      |
| d. Safety Injection  | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |                                      |  |
| e. Loss of Offsite Power   | 1,2,3   | [3] per bus          | F          | SR 3.3.2.7 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10               | ≥ [2912] V with ≤ 0.8 sec time delay | [2975] V with ≤ 0.8 sec time delay           |
| f. Undervoltage Reactor Coolant Pump                                   | 1,2   | [3] per bus          | I          | SR 3.3.2.7 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10               | ≥ [69]% bus voltage                  | [70]% bus voltage                            |
| g. Trip of all Main Feedwater Pumps                                    | 1,2   | [2] per pump         | J          | SR 3.3.2.8 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10               | ≥ [ ] psig                           | [ ] psig                                     |
| h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low | 1,2,3   | [2]                  | F          | SR 3.3.2.1<br>SR 3.3.2.7 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup>                | ≥ [20.53] [psia]                     | [ ] [psia]                                   |
| 7. Automatic Switchover to Containment Sump                            |   |                      |            |   |                                      |  |
| a. Automatic Actuation Logic and Actuation Relays                      | 1,2,3,4   | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6  | NA                                   | NA   |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

Table 3.3.2-1 (page 10 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS                               | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS  | ALLOWABLE<br>VALUE                  | [NOMINAL <sup>(l)</sup><br>TRIP<br>SETPOINT] |
|---|---|----------------------|------------|---|-------------------------------------|--|
| 7. Automatic<br>Switchover to<br>Containment Sump               |   |                      |            |   |                                     |  |
| b. Refueling Water<br>Storage Tank<br>(RWST) Level -<br>Low Low | 1,2,3,4   | 4                    | K          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [15]% and<br>≤ [ ]%               | [ ]% and [ ]%                                |
| Coincident with<br>Safety Injection                             | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |                                     |  |
| c. RWST Level -<br>Low Low                                      | 1,2,3,4   | 4                    | K          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [15]%                             | [18]%  |
| Coincident with<br>Safety Injection                             | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |                                     |  |
| and   |   |                      |            |   |                                     |  |
| Coincident with<br>Containment<br>Sump Level -<br>High          | 1,2,3,4   | 4                    | K          | SR 3.3.2.1<br>SR 3.3.2.5 <sup>(b)(c)</sup><br>SR 3.3.2.9 <sup>(b)(c)</sup><br>SR 3.3.2.10 | ≥ [30] in.<br>above el.<br>[703] ft | [ ] in. above<br>el. [ ] ft                  |

- (b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
- (c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The NTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

-----REVIEWER'S NOTE-----

- (l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.
-



Table 3.3.2-1 (page 11 of 11)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION                               | APPLICABLE MODES<br>OR OTHER<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS     | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS           | ALLOWABLE<br>VALUE | [NOMINAL <sup>(1)</sup><br>TRIP<br>SETPOINT] |
|--|---|--------------------------|------------|--|--------------------|--|
| 8. ESFAS Interlocks                    |   |                          |            |  |                    |  |
| a. Reactor Trip, P-4                   | 1,2,3   | 1 per train,<br>2 trains | F          | SR 3.3.2.11                            | NA                 | NA   |
| b. Pressurizer<br>Pressure, P-11       | 1,2,3   | 3                        | L          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9 | ≤ [1996] psig      | [ ] psig                                     |
| c. T <sub>avg</sub> - Low Low,<br>P-12 | 1,2,3   | [1] per<br>loop          | L          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9 | ≥ [550.6]°F        | [553]° F                                     |

-----REVIEWER'S NOTE-----

(l) Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit.

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3.3 INSTRUMENTATION

3.3.2B Engineered Safety Feature Actuation System (ESFAS) Instrumentation (With Setpoint Control Program)

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

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

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

ACTIONS (continued)

| CONDITION                  | REQUIRED ACTION   | COMPLETION TIME                                 |
|----------------------------|---|---|
| C. One train inoperable.   | <p style="text-align: center;">-----NOTE-----</p> <p>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.</p> <p style="text-align: center;">-----</p> <p>C.1     Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>C.2.1   Be in MODE 3.</p> <p style="text-align: center;"><u>AND</u></p> <p>C.2.2   Be in MODE 5.</p>  | <p>24 hours</p> <p>30 hours</p> <p>60 hours</p> |
| D. One channel inoperable. | <p>[ -----NOTE-----</p> <p>The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</p> <p style="text-align: center;">-----</p> <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The below Note should be used for plants with installed bypass test capability:</p> <p>One channel may be bypassed for up to 12 hours for surveillance testing.</p> <p style="text-align: center;">----- ]</p> <p>D.1     Place channel in trip.</p> <p><u>OR</u></p> | <p>72 hours</p>                                 |

ACTIONS (continued)

| CONDITION                                       | REQUIRED ACTION   | COMPLETION TIME                          |
|---|---|--|
|   | D.2.1 Be in MODE 3.<br><br><u>AND</u><br>D.2.2 Be in MODE 4.  | 78 hours<br><br>84 hours                 |
| E. One Containment Pressure channel inoperable. | [ -----NOTE-----<br>One additional channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br>-----<br><br>-----REVIEWER'S NOTE-----<br>The below Note should be used for plants with installed bypass test capability.<br><br>One channel may be bypassed for up to 12 hours for surveillance testing.<br>----- ] |  |
|   | E.1 Place channel in bypass.<br><br><u>OR</u><br>E.2.1 Be in MODE 3.<br><br><u>AND</u><br>E.2.2 Be in MODE 4.   | 72 hours<br><br>78 hours<br><br>84 hours |
| F. One channel or train inoperable.             | F.1 Restore channel or train to OPERABLE status.<br><br><u>OR</u><br>F.2.1 Be in MODE 3.<br><br><u>AND</u>  | 48 hours<br><br>54 hours                 |

ACTIONS (continued)

| CONDITION                | REQUIRED ACTION  | COMPLETION TIME                                 |
|--------------------------|--|---|
|                          | F.2.2 Be in MODE 4.  | 60 hours  |
| G. One train inoperable. | <p style="text-align: center;">-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p> <p>G.1 Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>G.2.1 Be in MODE 3.</p> <p style="text-align: center;"><u>AND</u></p> <p>G.2.2 Be in MODE 4.</p> | <p>24 hours</p> <p>30 hours</p> <p>36 hours</p> |
| H. One train inoperable. | <p style="text-align: center;">-----NOTE-----<br/>One train may be bypassed for up to [4] hours for surveillance testing provided the other train is OPERABLE.<br/>-----</p> <p>H.1 Restore train to OPERABLE status.</p> <p><u>OR</u></p> <p>H.2 Be in MODE 3.</p>  | <p>24 hours</p> <p>30 hours</p>                 |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                   |
|--|--|-----------------------------------|
| I. One channel inoperable.                           | <p>[ -----NOTE-----<br/>                     The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.<br/>                     -----<br/>                     -----REVIEWER'S NOTE-----<br/>                     The below Note should be used for plants with installed bypass test capability.<br/>                     One channel may be bypassed for up to 12 hours for surveillance testing.<br/>                     ----- ]</p> |                                   |
|  | I.1 Place channel in trip.   | 72 hours                          |
|  | <u>OR</u><br>I.2 Be in MODE 3.   | 78 hours                          |
| J. One Main Feedwater Pumps trip channel inoperable. | <p>J.1 Restore channel to OPERABLE status.<br/> <u>OR</u><br/>                     J.2 Be in MODE 3.</p>   | <p>48 hours<br/><br/>54 hours</p> |

ACTIONS (continued)

| CONDITION                           | REQUIRED ACTION  | COMPLETION TIME                                      |
|-------------------------------------|--|--|
| K. One channel inoperable.          | <p>[ -----NOTE-----<br/>One additional channel may be bypassed for up to [4] hours for surveillance testing.<br/>-----</p> <p>-----REVIEWER'S NOTE-----<br/>The below Note should be used for plants with installed bypass test capability:<br/><br/>One channel may be bypassed for up to 12 hours for surveillance testing.<br/>----- ]</p> <p>K.1 Place channel in bypass.</p> <p><u>OR</u></p> <p>K.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>K.2.2 Be in MODE 5.</p> | <p>[6] hours</p> <p>[12] hours</p> <p>[42] hours</p> |
| L. One or more channels inoperable. | <p>L.1 Verify interlock is in required state for existing unit condition.</p> <p><u>OR</u></p> <p>L.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>L.2.2 Be in MODE 4.</p>   | <p>1 hour</p> <p>7 hours</p> <p>13 hours</p>         |



SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.3.2.1      Perform CHANNEL CHECK.  | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.2.2      Perform ACTUATION LOGIC TEST.   | [ 92 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.2.3      -----NOTE-----<br>The continuity check may be excluded.<br>-----<br><br>Perform ACTUATION LOGIC TEST. | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The Frequency remains at 31 days on a STAGGERED TEST BASIS for plants with a Relay Protection System.</p> <p style="text-align: center;">-----</p> |  |
| <p>SR 3.3.2.4      Perform MASTER RELAY TEST.</p>  | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.2.5      Perform COT in accordance with the Setpoint Control Program.</p>  | <p>[ 184 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                          |
| <p>SR 3.3.2.6      Perform SLAVE RELAY TEST.</p>   | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.2.7</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of relay setpoints not required.</p> <p>-----</p> <p>Perform TADOT.</p>  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| <p>SR 3.3.2.8</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of setpoint not required for manual initiation functions.</p> <p>-----</p> <p>Perform TADOT in accordance with the Setpoint Control Program.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.2.9</p> <p style="text-align: center;">-----NOTE-----</p> <p>This Surveillance shall include verification that the time constants are adjusted to the prescribed values.</p> <p>-----</p> <p>Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                           |
| <p>SR 3.3.2.10</p> <p style="text-align: center;">-----NOTE-----</p> <p>Not required to be performed for the turbine driven AFW pump until [24] hours after SG pressure is <math>\geq</math> [1000] psig.</p> <p>-----</p> <p>Verify ESFAS RESPONSE TIMES are within limit.</p>         | <p>[ [18] months on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.2.11</p> <p style="text-align: center;">-----NOTE-----</p> <p>Verification of setpoint not required.</p> <p>-----</p> <p>Perform TADOT.</p>   | <p>Once per reactor trip breaker cycle</p>   |

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

| FUNCTION   | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                            |
|--|--|----------------------|------------|---|
| 1. Safety Injection                                |  |                      |            |   |
| a. Manual Initiation                               | 1,2,3,4  | 2                    | B          | SR 3.3.2.8  |
| b. Automatic Actuation Logic and Actuation Relays  | 1,2,3,4  | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                  |
| c. Containment Pressure - High 1                   | 1,2,3  | 3                    | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| d. Pressurizer Pressure - Low                      | 1,2,3 <sup>(a)</sup>                                 | [3]                  | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| e. Steam Line Pressure                             |  |                      |            |   |
| (1) Low  | 1,2,3 <sup>(a)</sup>                                 | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| (2) High Differential Pressure Between Steam Lines | 1,2,3  | 3 per steam line     | D          | [SR 3.3.2.1]<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| f. High Steam Flow in Two Steam Lines              | 1,2,3 <sup>(b)</sup>                                 | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| Coincident with T <sub>avg</sub> - Low Low         | 1,2,3 <sup>(b)</sup>                                 | 1 per loop           | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| g. High Steam Flow in Two Steam Lines              | 1,2,3 <sup>(b)</sup>                                 | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |
| Coincident with Steam Line Pressure - Low          | 1,2,3 <sup>(b)</sup>                                 | 1 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10   |

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

(b) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.

Table 3.3.2-1 (page 2 of 6)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS                                  | REQUIRED<br>CHANNELS     | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                          |
|---|---|--------------------------|------------|---|
| 2. Containment Spray                                  |   |                          |            |   |
| a. Manual Initiation                                  | 1,2,3,4   | 2 per train, 2<br>trains | B          | SR 3.3.2.8  |
| b. Automatic Actuation Logic and<br>Actuation Relays  | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| c. Containment Pressure High - 3<br>(High High)       | 1,2,3   | 4                        | E          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| d. Containment Pressure High - 3<br>(Two Loop Plants) | 1,2,3   | [3] sets of [2]          | E          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| 3. Containment Isolation                              |   |                          |            |   |
| a. Phase A Isolation                                  |   |                          |            |   |
| (1) Manual Initiation                                 | 1,2,3,4   | 2                        | B          | SR 3.3.2.8  |
| (2) Automatic Actuation Logic<br>and Actuation Relays | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| (3) Safety Injection                                  | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                          |            |   |
| b. Phase B Isolation                                  |   |                          |            |   |
| (1) Manual Initiation                                 | 1,2,3,4   | 2 per train, 2<br>trains | B          | SR 3.3.2.8  |
| (2) Automatic Actuation Logic<br>and Actuation Relays | 1,2,3,4   | 2 trains                 | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| (3) Containment Pressure High -<br>3 (High High)      | 1,2,3   | [4]                      | E          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |

Table 3.3.2-1 (page 3 of 6)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                          |
|---|--|----------------------|------------|---|
| 4. Steam Line Isolation                           |  |                      |            |   |
| a. Manual Initiation                              | 1,2 <sup>(c)</sup> , 3 <sup>(c)</sup>                | 2                    | F          | SR 3.3.2.8  |
| b. Automatic Actuation Logic and Actuation Relays | 1,2 <sup>(c)</sup> , 3 <sup>(c)</sup>                | 2 trains             | G          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| c. Containment Pressure - High 2                  | 1, 2 <sup>(c)</sup> , 3 <sup>(c)</sup>               | [4]                  | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| d. Steam Line Pressure                            |  |                      |            |   |
| (1) Low   | 1, 2 <sup>(c)</sup> , 3 <sup>(a)(c)</sup>            | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| (2) Negative Rate - High                          | 3 <sup>(d)(c)</sup>                                  | 3 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| e. High Steam Flow in Two Steam Lines             |  |                      |            |   |
| Coincident with T <sub>avg</sub> - Low Low        | 1, 2 <sup>(c)</sup> , 3 <sup>(b)(c)</sup>            | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| f. High Steam Flow in Two Steam Lines             | 1, 2 <sup>(c)</sup> , 3 <sup>(c)</sup>               | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| Coincident with Steam Line Pressure - Low         | 1,2 <sup>(c)</sup> , 3 <sup>(c)</sup>                | 1 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |

- (a) Above the P-11 (Pressurizer Pressure) interlock.
- (b) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.
- (c) Except when all MSIVs are closed and [de-activated].
- (d) Below the P-11 (Pressurizer Pressure) interlock.

Table 3.3.2-1 (page 4 of 6)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS                                  | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                          |
|---|---|----------------------|------------|---|
| 4. Steam Line Isolation   |   |                      |            |   |
| g. High Steam Flow  | 1,2 <sup>(c)</sup> , 3 <sup>(c)</sup>   | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| Coincident with Safety Injection<br>and<br>Coincident with T <sub>avg</sub> - Low Low | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |
|   | 1,2 <sup>(c)</sup> , 3 <sup>(b)(c)</sup>  | [2] per loop         | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| h. High High Steam Flow   | 1,2 <sup>(c)</sup> , 3 <sup>(c)</sup>   | 2 per steam line     | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| Coincident with Safety Injection  | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |
| 5. Turbine Trip and Feedwater Isolation   |   |                      |            |   |
| a. Automatic Actuation Logic and Actuation Relays                                     | 1, 2 <sup>(e)</sup> , [3] <sup>(e)</sup>  | 2 trains             | H[G]       | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| b. SG Water Level - High High (P-14)  | 1,2 <sup>(e)</sup> , [3] <sup>(e)</sup>   | [3] per SG           | I[D]       | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| c. Safety Injection   | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |

(b) Above the P-12 (T<sub>avg</sub> - Low Low) interlock.

(c) Except when all MSIVs are closed and [de-activated].

(e) Except when all MFIVs, MFRVs, [and associated bypass valves] are closed and [de-activated] [or isolated by a closed manual valve].



Table 3.3.2-1 (page 5 of 6)  
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION  | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS                                  | REQUIRED<br>CHANNELS | CONDITIONS | SURVEILLANCE<br>REQUIREMENTS                          |
|---|---|----------------------|------------|---|
| 6. Auxiliary Feedwater  |   |                      |            |   |
| a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System) | 1,2,3   | 2 trains             | G          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)        | 1,2,3   | 2 trains             | G          | SR 3.3.2.3  |
| c. SG Water Level - Low Low   | 1,2,3   | [3] per SG           | D          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| d. Safety Injection   | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |
| e. Loss of Offsite Power  | 1,2,3   | [3] per bus          | F          | SR 3.3.2.7<br>SR 3.3.2.9<br>SR 3.3.2.10               |
| f. Undervoltage Reactor Coolant Pump  | 1,2   | [3] per bus          | I          | SR 3.3.2.7<br>SR 3.3.2.9<br>SR 3.3.2.10               |
| g. Trip of all Main Feedwater Pumps   | 1,2   | [2] per pump         | J          | SR 3.3.2.8<br>SR 3.3.2.9<br>SR 3.3.2.10               |
| h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low            | 1,2,3   | [2]                  | F          | SR 3.3.2.1<br>SR 3.3.2.7<br>SR 3.3.2.9                |
| 7. Automatic Switchover to Containment Sump                                       |   |                      |            |   |
| a. Automatic Actuation Logic and Actuation Relays                                 | 1,2,3,4   | 2 trains             | C          | SR 3.3.2.2<br>SR 3.3.2.4<br>SR 3.3.2.6                |
| b. Refueling Water Storage Tank (RWST) Level - Low Low                            | 1,2,3,4   | 4                    | K          | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| Coincident with Safety Injection  | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                      |            |   |

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

| FUNCTION                                      | APPLICABLE MODES OR<br>OTHER SPECIFIED<br>CONDITIONS                                  | REQUIRED<br>CHANNELS     | CONDITION<br>S | SURVEILLANCE<br>REQUIREMENTS                          |
|---|---|--------------------------|----------------|---|
| 7. Automatic Switchover to Containment Sump   |   |                          |                |   |
| c. RWST Level - Low Low                       | 1,2,3,4   | 4                        | K              | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| Coincident with Safety Injection              | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. |                          |                |   |
| and   |   |                          |                |   |
| Coincident with Containment Sump Level - High | 1,2,3,4   | 4                        | K              | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9<br>SR 3.3.2.10 |
| 8. ESFAS Interlocks                           |   |                          |                |   |
| a. Reactor Trip, P-4                          | 1,2,3   | 1 per train, 2<br>trains | F              | SR 3.3.2.11   |
| b. Pressurizer Pressure, P-11                 | 1,2,3   | 3                        | L              | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9                |
| c. T <sub>avg</sub> - Low Low, P-12           | 1,2,3   | [1] per loop             | L              | SR 3.3.2.1<br>SR 3.3.2.5<br>SR 3.3.2.9                |

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. One or more Functions with one required channel inoperable.            | A.1 Restore required channel to OPERABLE status.                     | 30 days         |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Initiate action in accordance with Specification 5.6.5.          | Immediately     |
| C. One or more Functions with two required channels inoperable.           | C.1 Restore one channel to OPERABLE status.                          | 7 days          |
| D. Required Action and associated Completion Time of Condition C not met. | D.1 Enter the Condition referenced in Table 3.3.3-1 for the channel. | Immediately     |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| E. As required by Required Action D.1 and referenced in Table 3.3.3-1. | E.1 Be in MODE 3.   | 6 hours         |
|  | <u>AND</u>  |                 |
|  | E.2 Be in MODE 4.   | 12 hours        |
| F. As required by Required Action D.1 and referenced in Table 3.3.3-1. | F.1 Initiate action in accordance with Specification 5.6.5. | Immediately     |

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.3.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.3.2</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

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

| FUNCTION  | REQUIRED CHANNELS                              | CONDITION REFERENCED FROM REQUIRED ACTION D.1 |
|---|--|---|
| 1. Power Range Neutron Flux                                   | 2  | E   |
| 2. Source Range Neutron Flux                                  | 2  | E   |
| 3. Reactor Coolant System (RCS) Hot Leg Temperature           | 2 per loop                                     | E   |
| 4. RCS Cold Leg Temperature                                   | 2 per loop                                     | E   |
| 5. RCS Pressure (Wide Range)                                  | 2  | E   |
| 6. Reactor Vessel Water Level                                 | 2  | F   |
| 7. Containment Sump Water Level (Wide Range)                  | 2  | E   |
| 8. Containment Pressure (Wide Range)                          | 2  | E   |
| 9. Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path <sup>(a),(b)</sup> | E   |
| 10. Containment Area Radiation (High Range)                   | 2  | F   |
| 11. Pressurizer Level   | 2  | E   |
| 12. Steam Generator Water Level (Wide Range)                  | 2 per steam generator                          | E   |
| 13. Condensate Storage Tank Level                             | 2  | E   |
| 14. Core Exit Temperature - Quadrant [1]                      | 2 <sup>(c)</sup>                               | E   |
| 15. Core Exit Temperature - Quadrant [2]                      | 2 <sup>(c)</sup>                               | E   |
| 16. Core Exit Temperature - Quadrant [3]                      | 2 <sup>(c)</sup>                               | E   |
| 17. Core Exit Temperature - Quadrant [4]                      | 2 <sup>(c)</sup>                               | E   |
| 18. Auxiliary Feedwater Flow                                  | 2  | E   |

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

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

(c) A channel consists of two core exit thermocouples (CETs).

-----REVIEWER'S NOTE-----

Table 3.3.3-1 shall be amended for each unit as necessary to list:

1. All Regulatory Guide 1.97, Type A instruments and
  2. All Regulatory Guide 1.97, Category I, non-Type A instruments in accordance with the unit's Regulatory Guide 1.97, Safety Evaluation Report.
-

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

| CONDITION  | REQUIRED ACTION                                   | COMPLETION TIME |
|--|---|-----------------|
| A. One or more required Functions inoperable.              | A.1 Restore required Function to OPERABLE status. | 30 days         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                 | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 4.                   | 12 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.4.1 [ Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ] |

SURVEILLANCE REQUIREMENTS (continued)

|            |  |   |
|------------|--|---|
| SR 3.3.4.2 | Verify each required control circuit and transfer switch is capable of performing the intended function.   | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.4.3 | <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION for each required instrumentation channel.</p> | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.4.4 | [ Perform TADOT of the reactor trip breaker open/closed indication.  | [ 18 months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ] |



3.3 INSTRUMENTATION

3.3.5A Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation (Without Setpoint Control Program)

LCO 3.3.5A [Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function shall be OPERABLE.

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

ACTIONS

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

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One or more Functions with one channel per bus inoperable.          | A.1 -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>-----<br>Place channel in trip. | [6] hours       |
| B. One or more Functions with two or more channels per bus inoperable. | B.1 Restore all but one channel per bus to OPERABLE status.   | 1 hour          |
| C. Required Action and associated Completion Time not met.             | C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.                                 | Immediately     |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.5.1      [ Perform CHANNEL CHECK.   | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ]  |
| SR 3.3.5.2      Perform TADOT.   | [ [31] days<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.5.3      Perform CHANNEL CALIBRATION with [Nominal Trip Setpoint and Allowable Value] as follows:<br><br>a. [ Loss of voltage Allowable Value $\geq$ [2912] V and $\leq$ [ ] V with a time delay of [0.8] $\pm$ [ ] second.<br><br>Loss of voltage Nominal Trip Setpoint [2975] V with a time delay of [0.8] $\pm$ [ ] second. ]<br><br>b. [ Degraded voltage Allowable Value $\geq$ [3683] V and $\leq$ [ ] V with a time delay of [20] $\pm$ [ ] seconds.<br><br>Degraded voltage Nominal Trip Setpoint [3746] V with a time delay of [20] $\pm$ [ ] seconds. ] | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

3.3 INSTRUMENTATION

3.3.5B Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation (With Setpoint Control Program)

LCO 3.3.5B [Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function shall be OPERABLE.

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

ACTIONS

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

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One or more Functions with one channel per bus inoperable.          | A.1 -----NOTE-----<br>The inoperable channel may be bypassed for up to [4] hours for surveillance testing of other channels.<br>-----<br>Place channel in trip. | [6] hours       |
| B. One or more Functions with two or more channels per bus inoperable. | B.1 Restore all but one channel per bus to OPERABLE status.   | 1 hour          |
| C. Required Action and associated Completion Time not met.             | C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation.                                 | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.5.1      [ Perform CHANNEL CHECK.   | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]  |
| SR 3.3.5.2      Perform TADOT in accordance with the Setpoint Control Program.               | [ [31] days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.5.3      Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.3 INSTRUMENTATION

3.3.6A Containment Purge and Exhaust Isolation Instrumentation (Without Setpoint Control Program)

LCO 3.3.6A The Containment Purge and Exhaust Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One radiation monitoring channel inoperable.   | A.1 Restore the affected channel to OPERABLE status.  | 4 hours         |
| <p>B. -----NOTE-----<br/>Only applicable in MODE 1, 2, 3, or 4.<br/>-----</p> <p>One or more Functions with one or more manual or automatic actuation trains inoperable.</p> <p><u>OR</u></p> <p>Two or more radiation monitoring channels inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A not met.</p> | B.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation. | Immediately     |



SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

| SURVEILLANCE                                  | FREQUENCY   |
|---|---|
| SR 3.3.6.1      Perform CHANNEL CHECK.        | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.6.2      Perform ACTUATION LOGIC TEST. | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.6.3      Perform MASTER RELAY TEST.    | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the actuation logic processed through the Relay or Solid State Protection System.<br/>                     -----</p> <p>[SR 3.3.6.4      -----NOTE-----<br/>                     This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform ACTUATION LOGIC TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS ]</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the master relays processed through the Solid State Protection System.<br/>                     -----</p> <p>[SR 3.3.6.5      -----NOTE-----<br/>                     This Surveillance is only applicable to the master relays of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform MASTER RELAY TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ] ]</p> |
| <p>SR 3.3.6.6      Perform COT.</p>  | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                             |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.3.6.7   | Perform SLAVE RELAY TEST.  | [ [92] days<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.6.8   | -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.6.9   | Perform CHANNEL CALIBRATION.   | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

Table 3.3.6-1 (page 1 of 1)  
Containment Purge and Exhaust Isolation Instrumentation

| FUNCTION  | APPLICABLE<br>MODES OR<br>OTHER<br>SPECIFIED<br>CONDITIONS   | REQUIRED<br>CHANNELS | SURVEILLANCE<br>REQUIREMENTS   | TRIP SETPOINT        |
|---|--|----------------------|--|----------------------|
| 1. Manual Initiation                              | 1,2,3,4, (a)   | 2                    | SR 3.3.6.8   | NA                   |
| 2. Automatic Actuation Logic and Actuation Relays | 1,2,3,4, (a)   | 2 trains             | SR 3.3.6.2<br>SR 3.3.6.3<br>[SR 3.3.6.4]<br>[SR 3.3.6.5]<br>SR 3.3.6.7 | NA                   |
| 3. [ Containment Radiation                        |  |                      |  |                      |
| a. Gaseous  | 1,2,3,4, (a)   | [1]                  | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 | ≤ [2 x background]   |
| b. Particulate                                    | 1,2,3,4, (a)   | [1]                  | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 | ≤ [2 x background]   |
| c. Iodine   | 1,2,3,4, (a)   | [1]                  | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 | ≤ [2 x background]   |
| d. Area Radiation                                 | 1,2,3,4, (a)   | [1]                  | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 | ≤ [2 x background] ] |
| 4. Containment Isolation - Phase A                | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 3.a., for all initiation functions and requirements. |                      |  |                      |

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



3.3 INSTRUMENTATION

3.3.6B Containment Purge and Exhaust Isolation Instrumentation (With Setpoint Control Program)

LCO 3.3.6B The Containment Purge and Exhaust Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One radiation monitoring channel inoperable.   | A.1 Restore the affected channel to OPERABLE status.  | 4 hours         |
| <p>B. -----NOTE-----<br/>Only applicable in MODE 1, 2, 3, or 4.<br/>-----</p> <p>One or more Functions with one or more manual or automatic actuation trains inoperable.</p> <p><u>OR</u></p> <p>Two or more radiation monitoring channels inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A not met.</p> | B.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment purge and exhaust isolation valves made inoperable by isolation instrumentation. | Immediately     |



SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

| SURVEILLANCE                                  | FREQUENCY   |
|---|---|
| SR 3.3.6.1      Perform CHANNEL CHECK.        | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.6.2      Perform ACTUATION LOGIC TEST. | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.6.3      Perform MASTER RELAY TEST.    | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the actuation logic processed through the Relay or Solid State Protection System.<br/>                     -----</p> <p>[SR 3.3.6.4      -----NOTE-----<br/>                     This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform ACTUATION LOGIC TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS ]</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the master relays processed through the Solid State Protection System.<br/>                     -----</p> <p>[SR 3.3.6.5      -----NOTE-----<br/>                     This Surveillance is only applicable to the master relays of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform MASTER RELAY TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ] ]</p> |
| <p>SR 3.3.6.6      Perform COT in accordance with the Setpoint Control Program.</p>  | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                             |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.3.6.7   | Perform SLAVE RELAY TEST.  | [ [92] days<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.6.8   | -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.6.9   | Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.               | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

Table 3.3.6-1 (page 1 of 1)  
Containment Purge and Exhaust Isolation Instrumentation

| FUNCTION  | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS  | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS  |
|---|---|-------------------|--|
| 1. Manual Initiation                              | 1,2,3,4, (a)  | 2                 | SR 3.3.6.8   |
| 2. Automatic Actuation Logic and Actuation Relays | 1,2,3,4, (a)  | 2 trains          | SR 3.3.6.2<br>SR 3.3.6.3<br>[SR 3.3.6.4]<br>[SR 3.3.6.5]<br>SR 3.3.6.7 |
| 3. [ Containment Radiation                        |   |                   |  |
| a. Gaseous  | 1,2,3,4, (a)  | [1]               | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 |
| b. Particulate                                    | 1,2,3,4, (a)  | [1]               | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 |
| c. Iodine   | 1,2,3,4, (a)  | [1]               | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9                                 |
| d. Area Radiation                                 | 1,2,3,4, (a)  | [1]               | SR 3.3.6.1<br>SR 3.3.6.6<br>SR 3.3.6.9 ]                               |
| 4. Containment Isolation - Phase A                | Refer to LCO 3.3.2 "ESFAS Instrumentation," Function 3.a., for all initiation functions and requirements. |                   |  |

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



3.3 INSTRUMENTATION

3.3.7A Control Room Emergency Filtration System (CREFS) Actuation Instrumentation  
(Without Setpoint Control Program)

LCO 3.3.7A The CREFS actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7-1.

ACTIONS

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

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One or more Functions with one channel or train inoperable.       | A.1 -----NOTE-----<br>[ Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]<br>-----<br>Place one CREFS train in emergency [radiation protection] mode.                         | 7 days          |
| B. One or more Functions with two channels or two trains inoperable. | -----NOTE-----<br>[ Place in the toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]<br>-----<br>B.1.1 Place one CREFS train in emergency [radiation protection] mode.<br><br><u>AND</u> | Immediately     |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME  |
|--|---|--|
|  | B.1.2 Enter applicable Conditions and Required Actions for one CREFS train made inoperable by inoperable CREFS actuation instrumentation.<br><br><u>OR</u><br>B.2 Place both trains in emergency [radiation protection] mode. | Immediately<br><br><br><br><br><br><br><br><br><br>Immediately |
| C. Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.                                    | C.1 Be in MODE 3.<br><br><u>AND</u><br>C.2 Be in MODE 5.  | 6 hours<br><br><br><br><br><br><br><br><br><br>36 hours        |
| D. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies. | D.1 Suspend movement of [recently] irradiated fuel assemblies.  | Immediately  |
| E. [ Required Action and associated Completion Time for Condition A or B not met in MODE 5 or 6.   | E.1 Initiate action to restore one CREFS train to OPERABLE status.  | Immediately ]  |

SURVEILLANCE REQUIREMENTS

-----NOTE-----  
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.  
-----

| SURVEILLANCE                                  | FREQUENCY   |
|---|---|
| SR 3.3.7.1      Perform CHANNEL CHECK.        | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.7.2      Perform COT.                  | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                           |
| SR 3.3.7.3      Perform ACTUATION LOGIC TEST. | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.7.4      Perform MASTER RELAY TEST.</p>   | <p>[ 31 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the actuation logic processed through the Relay or Solid State Protection System.<br/>                     -----</p> <p>SR 3.3.7.5      -----NOTE-----<br/>                     This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform ACTUATION LOGIC TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the master relays processed through the Solid State Protection System.</p> <p style="text-align: center;">-----</p> <p>SR 3.3.7.6      -----NOTE-----</p> <p style="padding-left: 40px;">This Surveillance is only applicable to the master relays of the ESFAS Instrumentation.</p> <p style="text-align: center;">-----</p> <p style="padding-left: 40px;">Perform MASTER RELAY TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.7.7      Perform SLAVE RELAY TEST.</p>  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.7.8      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |
| SR 3.3.7.9      Perform CHANNEL CALIBRATION.   | [ [18] months<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |

Table 3.3.7-1 (page 1 of 1)  
CREFS Actuation Instrumentation

| FUNCTION  | APPLICABLE<br>MODES OR<br>OTHER<br>SPECIFIED<br>CONDITIONS  | REQUIRED<br>CHANNELS | SURVEILLANCE<br>REQUIREMENTS                                       | TRIP SETPOINT |
|---|---|----------------------|--|---------------|
| 1. Manual Initiation                              | 1, 2, 3, 4, [5, 6], (a)   | 2 trains             | SR 3.3.7.8   | NA            |
| 2. Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4, [5, 6], (a)   | 2 trains             | SR 3.3.7.3<br>SR 3.3.7.4<br>SR 3.3.7.5<br>SR 3.3.7.6<br>SR 3.3.7.7 | NA            |
| 3. Control Room Radiation                         |   |                      |  |               |
| a. Control Room Atmosphere                        | 1, 2, 3, 4 [5, 6], (a)  | [2]                  | SR 3.3.7.1<br>SR 3.3.7.2<br>SR 3.3.7.9                             | ≤ [2] mR/hr   |
| b. Control Room Air Intakes                       | 1, 2, 3, 4, [5, 6], (a)   | [2]                  | SR 3.3.7.1<br>SR 3.3.7.2<br>SR 3.3.7.9                             | ≤ [2] mR/hr   |
| 4. Safety Injection                               | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements. |                      |  |               |

(a) During movement of [recently] irradiated fuel assemblies.

3.3 INSTRUMENTATION

3.3.7B Control Room Emergency Filtration System (CREFS) Actuation Instrumentation  
(With Setpoint Control Program)

LCO 3.3.7B The CREFS actuation instrumentation for each Function in Table 3.3.7-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7-1.

ACTIONS

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

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One or more Functions with one channel or train inoperable.       | A.1 -----NOTE-----<br>[ Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]<br>-----<br>Place one CREFS train in emergency [radiation protection] mode.                         | 7 days          |
| B. One or more Functions with two channels or two trains inoperable. | -----NOTE-----<br>[ Place in the toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]<br>-----<br>B.1.1 Place one CREFS train in emergency [radiation protection] mode.<br><br><u>AND</u> | Immediately     |



SURVEILLANCE REQUIREMENTS

-----NOTE-----  
Refer to Table 3.3.7-1 to determine which SRs apply for each CREFS Actuation Function.  
-----

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.7.1      Perform CHANNEL CHECK.                                       | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                          |
| SR 3.3.7.2      Perform COT in accordance with the Setpoint Control Program. | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                           |
| SR 3.3.7.3      Perform ACTUATION LOGIC TEST.                                | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.3.7.4      Perform MASTER RELAY TEST.</p>   | <p>[ 31 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>-----REVIEWER'S NOTE-----<br/>                     The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the actuation logic processed through the Relay or Solid State Protection System.<br/>                     -----</p> <p>SR 3.3.7.5      -----NOTE-----<br/>                     This Surveillance is only applicable to the actuation logic of the ESFAS Instrumentation.<br/>                     -----</p> <p>Perform ACTUATION LOGIC TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The Frequency of 92 days on a STAGGERED TEST BASIS is applicable to the master relays processed through the Solid State Protection System.</p> <p style="text-align: center;">-----</p> <p>SR 3.3.7.6      -----NOTE-----</p> <p style="padding-left: 40px;">This Surveillance is only applicable to the master relays of the ESFAS Instrumentation.</p> <p style="text-align: center;">-----</p> <p style="padding-left: 40px;">Perform MASTER RELAY TEST.</p> | <p>[ 92 days on a STAGGERED TEST BASIS</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.3.7.7      Perform SLAVE RELAY TEST.</p>  | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>                         |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.7.8      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.3.7.9      Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.               | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

Table 3.3.7-1 (page 1 of 1)  
CREFS Actuation Instrumentation

| FUNCTION  | APPLICABLE<br>MODES OR OTHER<br>SPECIFIED CONDITIONS   | REQUIRED<br>CHANNELS | SURVEILLANCE<br>REQUIREMENTS                                       |
|---|--|----------------------|--|
| 1. Manual Initiation                              | 1, 2, 3, 4, [5, 6], (a)  | 2 trains             | SR 3.3.7.8   |
| 2. Automatic Actuation Logic and Actuation Relays | 1, 2, 3, 4, [5, 6], (a)  | 2 trains             | SR 3.3.7.3<br>SR 3.3.7.4<br>SR 3.3.7.5<br>SR 3.3.7.6<br>SR 3.3.7.7 |
| 3. Control Room Radiation                         |  |                      |  |
| a. Control Room Atmosphere                        | 1, 2, 3, 4 [5, 6], (a)   | [2]                  | SR 3.3.7.1<br>SR 3.3.7.2<br>SR 3.3.7.9                             |
| b. Control Room Air Intakes                       | 1, 2, 3, 4, [5, 6], (a)  | [2]                  | SR 3.3.7.1<br>SR 3.3.7.2<br>SR 3.3.7.9                             |
| 4. Safety Injection                               | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function1, for all initiation functions and requirements. |                      |  |

(a) During movement of [recently] irradiated fuel assemblies.

3.3 INSTRUMENTATION

3.3.8A Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation (Without Setpoint Control Program)

LCO 3.3.8A The FBACS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

-----NOTES-----

1. LCO 3.0.3 is not applicable.
  2. Separate Condition entry is allowed for each Function.
- 

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One or more Functions with one channel or train inoperable.       | A.1 Place one FBACS train in operation.  | 7 days          |
| B. One or more Functions with two channels or two trains inoperable. | B.1.1 Place one FBACS train in operation.  | Immediately     |
|  | <u>AND</u>   |                 |
|  | B.1.2 Enter applicable Conditions and Required Actions of LCO 3.7.13, "Fuel Building Air Cleanup System (FBACS)," for one train made inoperable by inoperable actuation instrumentation. | Immediately     |
|  | <u>OR</u>  |                 |
|  | B.2 Place both trains in emergency [radiation protection] mode.  | Immediately     |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME           |
|---|---|---------------------------|
| C. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies in the fuel building. | C.1 Suspend movement of [recently] irradiated fuel assemblies in the fuel building. | Immediately               |
| D. [ Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.   | D.1 Be in MODE 3.<br><br><u>AND</u><br>D.2 Be in MODE 5.                            | 6 hours<br><br>36 hours ] |

SURVEILLANCE REQUIREMENTS

-----NOTE-----  
Refer to Table 3.3.8-1 to determine which SRs apply for each FBACS Actuation Function.  
-----

| SURVEILLANCE                           | FREQUENCY  |
|--|--|
| SR 3.3.8.1      Perform CHANNEL CHECK. | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.8.2      Perform COT.   | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                             |
| SR 3.3.8.3      [ Perform ACTUATION LOGIC TEST.  | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.3.8.4      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                         |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |                              | FREQUENCY   |
|--------------|------------------------------|---|
| SR 3.3.8.5   | Perform CHANNEL CALIBRATION. | [ [18] months<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |

Table 3.3.8-1 (page 1 of 1)  
FBACS Actuation Instrumentation

| FUNCTION   | APPLICABLE<br>MODES OR<br>SPECIFIED<br>CONDITIONS | REQUIRED<br>CHANNELS | SURVEILLANCE<br>REQUIREMENTS           | TRIP<br>SETPOINT |
|--|---|----------------------|--|------------------|
| 1. Manual Initiation                                   | [1,2,3,4], (a)                                    | 2                    | SR 3.3.8.4                             | NA               |
| 2. [ Automatic Actuation Logic<br>and Actuation Relays | 1,2,3,4, (a)                                      | 2 trains             | SR 3.3.8.3                             | NA ]             |
| 3. Fuel Building Radiation                             |   |                      |  |                  |
| a. Gaseous   | [1,2,3,4], (a)                                    | [2]                  | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 | ≤ [2] mR/hr      |
| b. Particulate   | [1,2,3,4], (a)                                    | [2]                  | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 | ≤ [2] mR/hr      |

(a) During movement of [recently] irradiated fuel assemblies in the fuel building.





3.3 INSTRUMENTATION

3.3.8B Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation (With Setpoint Control Program)

LCO 3.3.8B The FBACS actuation instrumentation for each Function in Table 3.3.8-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.8-1.

ACTIONS

-----NOTES-----

1. LCO 3.0.3 is not applicable.
  2. Separate Condition entry is allowed for each Function.
- 

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One or more Functions with one channel or train inoperable.       | A.1 Place one FBACS train in operation.  | 7 days          |
| B. One or more Functions with two channels or two trains inoperable. | B.1.1 Place one FBACS train in operation.  | Immediately     |
|  | <u>AND</u>   |                 |
|  | B.1.2 Enter applicable Conditions and Required Actions of LCO 3.7.13, "Fuel Building Air Cleanup System (FBACS)," for one train made inoperable by inoperable actuation instrumentation. | Immediately     |
|  | <u>OR</u>  |                 |
|  | B.2 Place both trains in emergency [radiation protection] mode.  | Immediately     |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME           |
|---|---|---------------------------|
| C. Required Action and associated Completion Time for Condition A or B not met during movement of [recently] irradiated fuel assemblies in the fuel building. | C.1 Suspend movement of [recently] irradiated fuel assemblies in the fuel building. | Immediately               |
| D. [ Required Action and associated Completion Time for Condition A or B not met in MODE 1, 2, 3, or 4.   | D.1 Be in MODE 3.<br><br><u>AND</u><br>D.2 Be in MODE 5.                            | 6 hours<br><br>36 hours ] |

SURVEILLANCE REQUIREMENTS

-----NOTE-----  
Refer to Table 3.3.8-1 to determine which SRs apply for each FBACS Actuation Function.  
-----

| SURVEILLANCE                           | FREQUENCY  |
|--|--|
| SR 3.3.8.1      Perform CHANNEL CHECK. | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.3.8.2      Perform COT in accordance with the Setpoint Control Program.                               | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                             |
| SR 3.3.8.3      [ Perform ACTUATION LOGIC TEST.  | [ 31 days on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.3.8.4      -----NOTE-----<br>Verification of setpoint is not required.<br>-----<br><br>Perform TADOT. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                         |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.3.8.5   | Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

Table 3.3.8-1 (page 1 of 1)  
FBACS Actuation Instrumentation

| FUNCTION  | APPLICABLE MODES OR SPECIFIED CONDITIONS | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS              |
|---|--|-------------------|--|
| 1. Manual Initiation                                | [1,2,3,4], (a)                           | 2                 | SR 3.3.8.4                             |
| 2. [ Automatic Actuation Logic and Actuation Relays | 1,2,3,4, (a)                             | 2 trains          | SR 3.3.8.3 ]                           |
| 3. Fuel Building Radiation                          |  |                   |  |
| a. Gaseous  | [1,2,3,4], (a)                           | [2]               | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 |
| b. Particulate                                      | [1,2,3,4], (a)                           | [2]               | SR 3.3.8.1<br>SR 3.3.8.2<br>SR 3.3.8.5 |

(a) During movement of [recently] irradiated fuel assemblies in the fuel building.



3.3 INSTRUMENTATION

3.3.9A Boron Dilution Protection System (BDPS) (Without Setpoint Control Program)

LCO 3.3.9A Two trains of the BDPS shall be OPERABLE.

APPLICABILITY: MODES [2,] 3, 4, and 5.

-----NOTE-----  
 The boron dilution flux doubling signal may be blocked in MODES 2 and 3 during reactor startup.  
 -----

ACTIONS

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME   |
|--|---|---|
| A. One train inoperable.   | A.1 Restore train to OPERABLE status.   | 72 hours  |
| B. Two trains inoperable.<br><br><u>OR</u><br><br>Required Action and associated Completion Time of Condition A not met. | B.1 -----NOTE-----<br>Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM.<br>-----<br><br>Suspend operations involving positive reactivity additions.<br><br><u>AND</u><br><br>B.2.1 Restore one train to OPERABLE status.<br><br><u>OR</u> | Immediately<br><br><br><br><br><br><br><br><br><br>1 hour |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME  |
|-----------|---|--|
|           | B.2.2.1 Close unborated water source isolation valves.<br><br><u>AND</u><br><br>B.2.2.2 Perform SR 3.1.1.1. | 1 hour<br><br><br><br>1 hour<br><br><u>AND</u><br><br>Once per 12 hours thereafter |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                           | FREQUENCY  |
|--|--|
| SR 3.3.9.1      Perform CHANNEL CHECK. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.9.2      Perform COT.           | [ [184] days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.9.3</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |





ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME  |
|-----------|---|--|
|           | B.2.2.1 Close unborated water source isolation valves.<br><br><u>AND</u><br><br>B.2.2.2 Perform SR 3.1.1.1. | 1 hour<br><br><br><br>1 hour<br><br><u>AND</u><br><br>Once per 12 hours thereafter |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.3.9.1      Perform CHANNEL CHECK.                                       | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.3.9.2      Perform COT in accordance with the Setpoint Control Program. | [ [184] days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.3.9.3</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION in accordance with the Setpoint Control Program.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified below:

- a. Pressurizer pressure is greater than or equal to the limit specified in the COLR,
- b. RCS average temperature is less than or equal to the limit specified in the COLR, and
- c. RCS total flow rate  $\geq$  [284,000] gpm and greater than or equal to the limit specified in the COLR.

APPLICABILITY: MODE 1.

-----NOTE-----  
Pressurizer pressure limit does not apply during:

- a. THERMAL POWER ramp > 5% RTP per minute or
  - b. THERMAL POWER step > 10% RTP.
- 

ACTIONS

| CONDITION  | REQUIRED ACTION                                   | COMPLETION TIME |
|--|---|-----------------|
| A. One or more RCS DNB parameters not within limits.       | A.1 Restore RCS DNB parameter(s) to within limit. | 2 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 2.                                 | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.1.1   | Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.                         | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.1.2   | Verify RCS average temperature is less than or equal to the limit specified in the COLR.                         | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.1.3   | Verify RCS total flow rate is $\geq$ [284,000] gpm and greater than or equal to the limit specified in the COLR. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.4.1.4</p> <p>-----NOTE-----<br/>                     Not required to be performed until 24 hours after<br/>                     ≥ [90]% RTP.<br/>                     -----</p> <p>Verify by precision heat balance that RCS total flow<br/>                     rate is ≥ [284,000] gpm and greater than or equal to<br/>                     the limit specified in the COLR.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance<br/>                     with the<br/>                     Surveillance<br/>                     Frequency<br/>                     Control Program ]</p> |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature ( $T_{avg}$ ) shall be  $\geq [541]^{\circ}\text{F}$ .

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.4.2.1 Verify RCS $T_{avg}$ in each loop $\geq [541]^{\circ}\text{F}$ . | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the PTLR.

APPLICABILITY: At all times.

#### ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.4.3.1</p> <p>-----NOTE-----<br/>           Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing.<br/>           -----</p> <p>Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.</p> | <p>[ 30 minutes</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops - MODES 1 and 2

LCO 3.4.4 [Four] RCS loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION                       | REQUIRED ACTION   | COMPLETION TIME |
|---------------------------------|-------------------|-----------------|
| A. Requirements of LCO not met. | A.1 Be in MODE 3. | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                                     | FREQUENCY  |
|--|--|
| SR 3.4.4.1 Verify each RCS loop is in operation. | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |





3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 [Two] RCS loops shall be OPERABLE and either:

- a. [Two] RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal or
- b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

-----NOTE-----

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

- a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
- 

APPLICABILITY: MODE 3.

ACTIONS

| CONDITION   | REQUIRED ACTION                                   | COMPLETION TIME |
|---|---|-----------------|
| A. One required RCS loop inoperable.                                      | A.1 Restore required RCS loop to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 4.                                 | 12 hour         |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME  |
|---|--|--|
| <p>C. [ One required RCS loop not in operation with Rod Control System capable of rod withdrawal.</p>           | <p>C.1 Restore required RCS loop to operation.</p> <p><u>OR</u></p> <p>C.2 Place the Rod Control System in a condition incapable of rod withdrawal.</p>  | <p>1 hour</p> <p>1 hour ]</p>                            |
| <p>D. [Two] [required] RCS loops inoperable.</p> <p><u>OR</u></p> <p>Required RCS loop(s) not in operation.</p> | <p>D.1 Place the Rod Control System in a condition incapable of rod withdrawal.</p> <p><u>AND</u></p> <p>D.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.</p> <p><u>AND</u></p> <p>D.3 Initiate action to restore one RCS loop to OPERABLE status and operation.</p> | <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.5.1   | Verify required RCS loops are in operation.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.5.2   | Verify steam generator secondary side water levels are $\geq$ [17]% for required RCS loops.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.5.3   | -----NOTE-----<br>Not required to be performed until 24 hours after a required pump is not in operation.<br>-----<br><br>Verify correct breaker alignment and indicated power are available to each required pump. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

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

- NOTES-----
1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for  $\leq 1$  hour per 8 hour period provided:
    - a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
    - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
  2. No RCP shall be started with any RCS cold leg temperature  $\leq [275^\circ\text{F}]$  [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each steam generator (SG) is  $\leq [50]^\circ\text{F}$  above each of the RCS cold leg temperatures.
- 

APPLICABILITY: MODE 4.

ACTIONS

| CONDITION                        | REQUIRED ACTION  | COMPLETION TIME |
|----------------------------------|--|-----------------|
| A. One required loop inoperable. | A.1 Initiate action to restore a second loop to OPERABLE status.<br><br><u>AND</u> | Immediately     |

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.4.6.1      Verify required RHR or RCS loop is in operation.</p> | <p>[ 12 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.4.6.2      Verify SG secondary side water levels are <math>\geq</math> [17]% for required RCS loops.</p>  | <p>[ 12 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.4.6.3      -----NOTE-----<br/>Not required to be performed until 24 hours after a required pump is not in operation.<br/>-----</p> <p>Verify correct breaker alignment and indicated power are available to each required pump.</p> | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |





### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.7 RCS Loops - MODE 5, Loops Filled

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

- a. One additional RHR loop shall be OPERABLE or
- b. The secondary side water level of at least [two] steam generators (SGs) shall be  $\geq$  [17]%.  
-----

-----NOTES-----

1. The RHR pump of the loop in operation may be removed from operation for  $\leq$  1 hour per 8 hour period provided:
  - a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
  - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures  $\leq$  [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each SG is  $\leq$  [50]°F above each of the RCS cold leg temperatures.
4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.  
-----

APPLICABILITY: MODE 5 with RCS Loops Filled.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                       |
|--|--|---------------------------------------|
| <p>A. One required RHR loop inoperable.</p> <p><u>AND</u></p> <p>One RHR loop OPERABLE.</p>  | <p>A.1 Initiate action to restore a second RHR loop to OPERABLE status.</p> <p><u>OR</u></p> <p>A.2 Initiate action to restore required SGs secondary side water level to within limit.</p>  | <p>Immediately</p> <p>Immediately</p> |
| <p>B. One or more required SGs with secondary side water level not within limit.</p> <p><u>AND</u></p> <p>One RHR loop OPERABLE.</p> | <p>B.1 Initiate action to restore a second RHR loop to OPERABLE status.</p> <p><u>OR</u></p> <p>B.2 Initiate action to restore required SGs secondary side water level to within limit.</p>  | <p>Immediately</p> <p>Immediately</p> |
| <p>C. No required RHR loops OPERABLE.</p> <p><u>OR</u></p> <p>Required RHR loop not in operation.</p>                                | <p>C.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.</p> <p><u>AND</u></p> <p>C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.</p> | <p>Immediately</p> <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.7.1   | Verify required RHR loop is in operation.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.7.2   | Verify SG secondary side water level is $\geq$ [17]% in required SGs.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.7.3   | -----NOTE-----<br>Not required to be performed until 24 hours after a required pump is not in operation.<br>-----<br><br>Verify correct breaker alignment and indicated power are available to each required RHR pump. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

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

-----NOTES-----

1. All RHR pumps may be removed from operation for  $\leq 15$  minutes when switching from one loop to another provided:
  - [ a. The core outlet temperature is maintained  $> 10^{\circ}\text{F}$  below saturation temperature, ]
  - b. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
  - c. No draining operations to further reduce the RCS water volume are permitted.
2. One RHR loop may be inoperable for  $\leq 2$  hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

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



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.4.8.2</p> <p>-----NOTE-----<br/>                     Not required to be performed until 24 hours after a<br/>                     required pump is not in operation.<br/>                     -----</p> <p>Verify correct breaker alignment and indicated<br/>                     power are available to each required RHR pump.</p> | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance<br/>                     with the<br/>                     Surveillance<br/>                     Frequency<br/>                     Control Program ]</p> |





### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

- a. Pressurizer water level  $\leq$  [92]% and
- b. [Two groups of] pressurizer heaters OPERABLE with the capacity [of each group]  $\geq$  [125] kW [and capable of being powered from an emergency power supply].

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. Pressurizer water level not within limit.                              | A.1 Be in MODE 3.<br><u>AND</u>  | 6 hours         |
|   | A.2 Fully insert all rods.<br><u>AND</u>   | 6 hours         |
|   | A.3 Place Rod Control System in a condition incapable of rod withdrawal.<br><u>AND</u> | 6 hours         |
|   | A.4 Be in MODE 4.  | 12 hours        |
| B. One [required] group of pressurizer heaters inoperable.                | B.1 Restore [required] group of pressurizer heaters to OPERABLE status.                | 72 hours        |
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Be in MODE 3.<br><u>AND</u>  | 6 hours         |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME |
|-----------|-------------------|-----------------|
|           | C.2 Be in MODE 4. | 12 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.4.9.1      Verify pressurizer water level is $\leq$ [92]%.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]    |
| <p style="text-align: center;">-----REVIEWER'S NOTE-----</p> <p>The frequency for performing Pressurizer heater capacity testing shall be either 18 months or 92 days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For non-dedicated safety-related heaters, which normally operate, 18 months is applied.</p> <p>-----</p> SR 3.4.9.2      Verify capacity of each required group of pressurizer heaters is $\geq$ [125] kW. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.4.9.3 [ Verify required pressurizer heaters are capable of being powered from an emergency power supply. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 [Three] pressurizer safety valves shall be OPERABLE with lift settings  $\geq$  [2460] psig and  $\leq$  [2510] psig.

APPLICABILITY: MODES 1, 2, and 3, MODE 4 with all RCS cold leg temperatures  $>$  [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR].

-----NOTE-----

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

-----

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME               |
|--|--|-------------------------------|
| A. One pressurizer safety valve inoperable.  | A.1 Restore valve to OPERABLE status.  | 15 minutes                    |
| B. Required Action and associated Completion Time not met.<br><br><u>OR</u><br><br>Two or more pressurizer safety valves inoperable. | B.1 Be in MODE 3.<br><br><u>AND</u><br><br>B.2 Be in MODE 4 with any RCS cold leg temperatures $\leq$ [275°F] [LTOP arming temperature specified in the PTLR]. | 6 hours<br><br><br>[24] hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.4.10.1  | Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within $\pm 1\%$ . | In accordance with the Inservice Testing Program |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each PORV and each block valve.  
-----

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One or more PORVs inoperable and capable of being manually cycled.        | A.1 Close and maintain power to associated block valve. | 1 hour          |
| B. One [or two] PORV[s] inoperable and not capable of being manually cycled. | B.1 Close associated block valve[s].                    | 1 hour          |
|  | <u>AND</u>  |                 |
|  | B.2 Remove power from associated block valve[s].        | 1 hour          |
|  | <u>AND</u>  |                 |
|  | B.3 Restore PORV[s] to OPERABLE status.                 | 72 hours        |

ACTIONS (continued)

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



ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                  |
|--|--|----------------------------------|
| <p>F. Two [or three] block valves inoperable.</p>                                | <p>F.1 -----NOTE-----<br/>                     Required Action F.1 does not apply when block valve is inoperable solely as a result of complying with Required Actions B.2 or E.2<br/>                     -----<br/>                     Restore one block valve to OPERABLE status [if three block valves are inoperable].</p> | <p>[2 hours]</p>                 |
| <p>G. Required Action and associated Completion Time of Condition F not met.</p> | <p>G.1 Be in MODE 3.<br/> <u>AND</u><br/>                     G.2 Be in MODE 4.</p>  | <p>6 hours<br/><br/>12 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.4.11.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed with block valve closed in accordance with the Required Actions of this LCO.</li> <li>2. Only required to be performed in MODES 1 and 2.</li> </ol> <p>-----</p> <p>Perform a complete cycle of each block valve.</p> | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>       |
| <p>SR 3.4.11.2</p> <p>-----NOTE-----</p> <p>Only required to be performed in MODES 1 and 2.</p> <p>-----</p> <p>Perform a complete cycle of each PORV.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| <p>SR 3.4.11.3</p> <p>[ Perform a complete cycle of each solenoid air control valve and check valve on the air accumulators in PORV control systems.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ] ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.4.11.4 [ Verify PORVs and block valves are capable of being powered from emergency power sources. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]] |



### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.12 Low Temperature Overpressure Protection (LTOP) System

- LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of [one] [high pressure injection (HPI)] pump [and one charging pump] capable of injecting into the RCS and the accumulators isolated and one of the following pressure relief capabilities:
- a. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR,
  - [ b. Two residual heat removal (RHR) suction relief valves with setpoints  $\geq$  [436.5] psig and  $\leq$  [463.5] psig, ]
  - [ c. One PORV with a lift setting within the limits specified in the PTLR and one RHR suction relief valve with a setpoint  $\geq$  [436.5] psig and  $\leq$  [463.5] psig, ] or
  - d. The RCS depressurized and an RCS vent of  $\geq$  [2.07] square inches.

-----NOTES-----

1. [Two charging pumps] may be made capable of injecting for  $\leq$  1 hour for pump swap operations.
  2. Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.
- 

APPLICABILITY: MODE 4 when any RCS cold leg temperature is  $\leq$  [275°F] [LTOP arming temperature specified in the PTLR],  
MODE 5,  
MODE 6 when the reactor vessel head is on.

ACTIONS

-----NOTE-----

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

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME          |
|--|--|--------------------------|
| A. Two or more [HPI] pumps capable of injecting into the RCS.  | A.1 Initiate action to verify a maximum of [one] [HPI] pump is capable of injecting into the RCS.  | Immediately              |
| B. [ Two or more charging pumps capable of injecting into the RCS.   | B.1 Initiate action to verify a maximum of [one] charging pump is capable of injecting into the RCS.   | Immediately ]            |
| C. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR. | C.1 Isolate affected accumulator.  | 1 hour                   |
| D. Required Action and associated Completion Time of Condition [C] not met.  | D.1 Increase RCS cold leg temperature to > [275°F] [LTOP arming temperature specified in the PTLR].<br><br><u>OR</u><br>D.2 Depressurize affected accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR. | 12 hours<br><br>12 hours |
| E. One required RCS relief valve inoperable in MODE 4.   | E.1 Restore required RCS relief valve to OPERABLE status.  | 7 days                   |

ACTINS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| F. One required RCS relief valve inoperable in MODE 5 or 6.  | F.1 Restore required RCS relief valve to OPERABLE status.                   | 24 hours        |
| <p>G. Two required RCS relief valves inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A, [B,] D, E, or F not met.</p> <p><u>OR</u></p> <p>LTOP System inoperable for any reason other than Condition A, [B,] C, D, E, or F.</p> | G.1 Depressurize RCS and establish RCS vent of $\geq [2.07]$ square inches. | 12 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.4.12.1 Verify a maximum of [one] [HPI] pump is capable of injecting into the RCS. | <p>[ 12 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.12.2  | [ Verify a maximum of one charging pump is capable of injecting into the RCS.  | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.4.12.3  | Verify each accumulator is isolated.   | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.4.12.4  | [ Verify RHR suction valve is open for each required RHR suction relief valve. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.12.5  | Verify required RCS vent $\geq$ [2.07] square inches open.   | [ 12 hours for unlocked open vent valve(s)<br><br><u>AND</u><br><br>31 days for other vent path(s)<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.12.6  | Verify PORV block valve is open for each required PORV.  | [ 72 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.4.12.7  | [ Verify associated RHR suction isolation valve is locked open with operator power removed for each required RHR suction relief valve. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.4.12.8</p> <p>-----NOTE-----<br/>           Not required to be performed until 12 hours after decreasing RCS cold leg temperature to <math>\leq</math> [275°F] [LTOP arming temperature specified in the PTLR].<br/>           -----</p> <p>Perform a COT on each required PORV, excluding actuation.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>     |
| <p>SR 3.4.12.9</p> <p>Perform CHANNEL CALIBRATION for each required PORV actuation channel.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE,
- b. 1 gpm unidentified LEAKAGE,
- c. 10 gpm identified LEAKAGE, and
- d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.4.13.1 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed until 12 hours after establishment of steady state operation.</li> <li>2. Not applicable to primary to secondary LEAKAGE.</li> </ol> <p>-----</p> <p>Verify RCS operational LEAKAGE is within limits by performance of RCS water inventory balance.</p> | <p>[ 72 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.4.13.2 -----NOTE-----</p> <p>Not required to be performed until 12 hours after establishment of steady state operation.</p> <p>-----</p> <p>Verify primary to secondary LEAKAGE is <math>\leq</math> 150 gallons per day through any one SG.</p>  | <p>[ 72 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.14 Leakage from each RCS PIV shall be within limit.

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

ACTIONS

-----NOTES-----

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

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| <p>A. One or more flow paths with leakage from one or more RCS PIVs not within limit.</p> | <p>-----NOTE-----<br/>Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.14.1 and be in the reactor coolant pressure boundary [or the high pressure portion of the system].</p> <hr/> <p>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.</p> <p><u>AND</u></p> | <p>4 hours</p>  |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                   |
|---|---|-----------------------------------|
|   | <p>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.</p> <p>[or]</p> <p>Restore RCS PIV to within limits.</p> | <p>72 hours</p> <p>72 hours ]</p> |
| <p>B. Required Action and associated Completion Time for Condition A not met.</p> | <p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 5.</p>   | <p>6 hours</p> <p>36 hours</p>    |
| <p>C. [ RHR System autoclosure interlock function inoperable.</p>                 | <p>C.1 Isolate the affected penetration by use of one closed manual or deactivated automatic valve.</p>   | <p>4 hours ]</p>                  |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.4.14.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Not required to be performed in MODES 3 and 4.</li> <li>2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation.</li> <li>3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided.</li> </ol> <p>-----</p> <p>Verify leakage from each RCS PIV is equivalent to <math>\leq 0.5</math> gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure <math>\geq [2215]</math> psig and <math>\leq [2255]</math> psig.</p> | <p>In accordance with the Inservice Testing Program, and [ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> <p><u>AND</u></p> <p>Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months</p> <p><u>AND</u></p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
|   | Within 24 hours following valve actuation due to automatic or manual action or flow through the valve        |
| <p>SR 3.4.14.2 -----NOTE-----<br/>[ Not required to be met when the RHR System autoclosure interlock is disabled in accordance with SR 3.4.12.7.<br/>-----</p> <p>Verify RHR System autoclosure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal <math>\geq</math> [425] psig.</p>    | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]]</p> |
| <p>SR 3.4.14.3 -----NOTE-----<br/>[ Not required to be met when the RHR System autoclosure interlock is disabled in accordance with SR 3.4.12.7.<br/>-----</p> <p>Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal <math>\geq</math> [600] psig.</p> | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]]</p> |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

- LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:
- a. One containment sump (level or discharge flow) monitor,
  - b. One containment atmosphere radioactivity monitor (gaseous or particulate), and
  - [ c. One containment air cooler condensate flow rate monitor. ]

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

ACTIONS

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



ACTIONS (continued)

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME                                      |
|--|---|--|
| <p>----- NOTE -----<br/>Only applicable when the containment atmosphere gaseous radiation monitor is the only OPERABLE monitor.<br/>-----</p> <p>D. Required containment sump monitor inoperable.</p> <p><u>AND</u></p> <p>[ Containment air cooler condensate flow rate monitor inoperable. ]</p> | <p>D.1 Analyze grab samples of the containment atmosphere.</p> <p><u>AND</u></p> <p>D.2.1 Restore required containment sump monitor to OPERABLE status.</p> <p><u>OR</u></p> <p>[ D.2.2 Restore containment air cooler condensate flow rate monitor to OPERABLE status. ]</p> | <p>Once per 12 hours</p> <p>7 days</p> <p>7 days</p> |
| <p>E. [ Required containment atmosphere radioactivity monitor inoperable.</p> <p><u>AND</u></p> <p>[ Containment air cooler condensate flow rate monitor inoperable. ]</p>   | <p>E.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status.</p> <p><u>OR</u></p> <p>[ E.2 Restore containment air cooler condensate flow rate monitor to OPERABLE status. ]</p>  | <p>30 days</p> <p>30 days ]</p>                      |
| <p>F. Required Action and associated Completion Time not met.</p>  | <p>F.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>F.2 Be in MODE 5.</p>   | <p>6 hours</p> <p>36 hours</p>                       |
| <p>G. All required monitors inoperable.</p>  | <p>G.1 Enter LCO 3.0.3.</p>   | <p>Immediately</p>                                   |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.4.15.1  | Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.15.2  | Perform COT of the required containment atmosphere radioactivity monitor.           | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.15.3  | Perform CHANNEL CALIBRATION of the required containment sump monitor.                              | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.4.15.4  | [ Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.        | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.4.15.5  | [ Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

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

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME  |
|---|---|------------------|
| A. DOSE EQUIVALENT<br>I-131 > 1.0 $\mu$ Ci/gm.                            | -----NOTE-----<br>LCO 3.0.4.c is applicable.<br>-----   | Once per 4 hours |
|   | A.1 Verify DOSE EQUIVALENT<br>I-131 within the acceptable<br>region of Figure 3.4.16-1.<br><br><u>AND</u><br>A.2 Restore DOSE<br>EQUIVALENT I-131 to<br>within limit. |                  |
| B. Gross specific activity of<br>the reactor coolant not<br>within limit. | B.1 Be in MODE 3 with<br>$T_{avg}$ < 500°F.   | 6 hours          |

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.4.16.1      Verify reactor coolant gross specific activity <math>\leq 100/\bar{E}</math> <math>\mu Ci/gm</math>.</p> | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.4.16.2</p> <p>-----NOTE-----<br/>Only required to be performed in MODE 1.<br/>-----</p> <p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity <math>\leq 1.0 \mu\text{Ci/gm}</math>.</p> | <p>[ 14 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> <p><u>AND</u></p> <p>Between 2 and 6 hours after a THERMAL POWER change of <math>\geq 15\%</math> RTP within a 1 hour period</p> |

SURVEILLANCE REQUIREMENTS (continued)

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

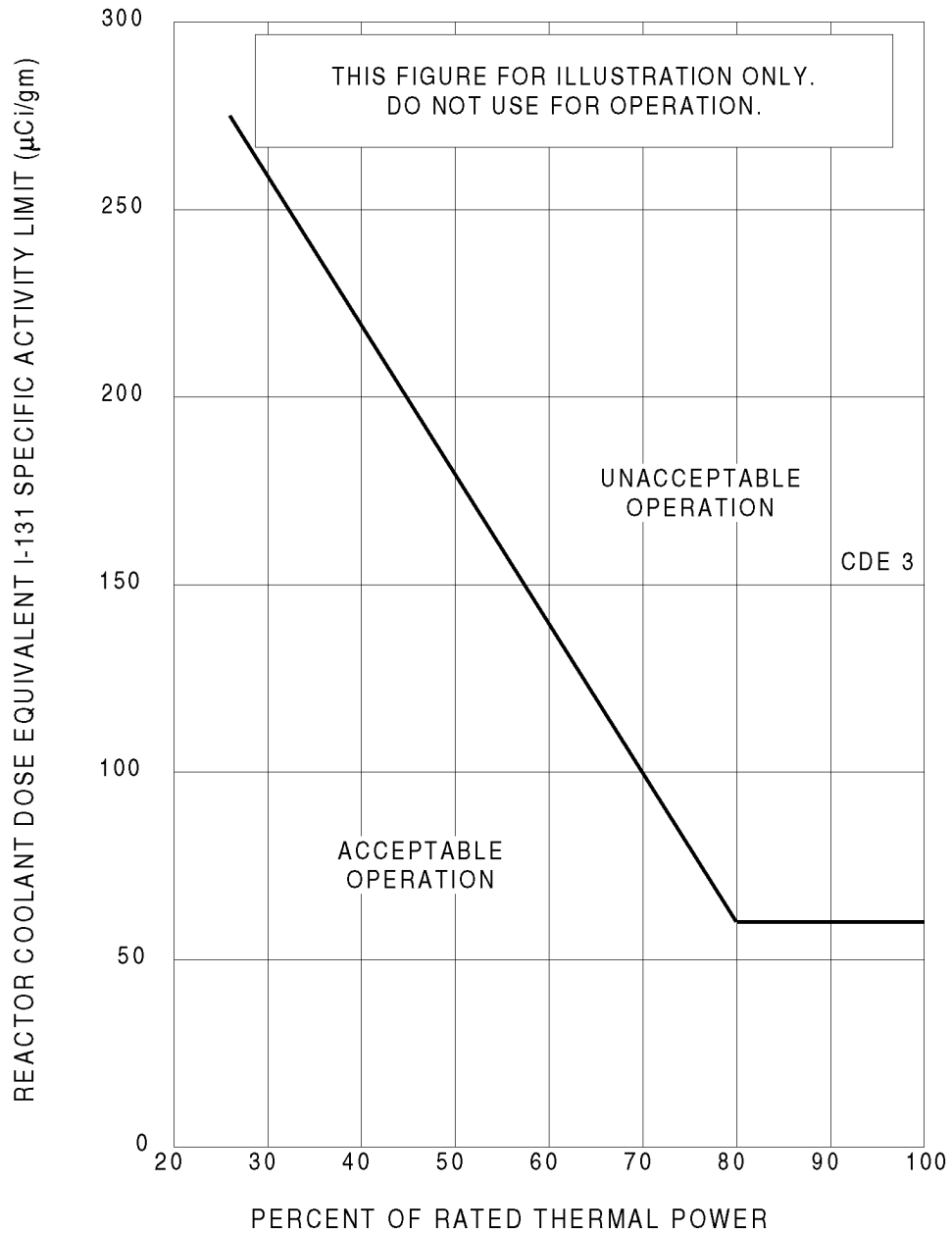


Figure 3.4.16-1 (page 1 of 1)  
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity  
Limit Versus Percent of RATED THERMAL POWER



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Loop Isolation Valves

LCO 3.4.17 Each RCS hot and cold leg loop isolation valve shall be open with power removed from each isolation valve operator.

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

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each RCS loop isolation valve.  
-----

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME                            |
|--|---|--|
| A. Power available to one or more loop isolation valve operators.  | A.1 Remove power from loop isolation valve operators.   | 30 minutes                                 |
| B. -----NOTE-----<br>All Required Actions shall be completed whenever this Condition is entered.<br>-----<br>One or more RCS loop isolation valves closed. | B.1 Maintain valve(s) closed.<br><u>AND</u><br>B.2 Be in MODE 3.<br><u>AND</u><br>B.3 Be in MODE 5. | Immediately<br><br>6 hours<br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.4.17.1      Verify each RCS loop isolation valve is open and power is removed from each loop isolation valve operator. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 RCS Isolated Loop Startup

LCO 3.4.18 Each RCS isolated loop shall remain isolated with:

- a. The hot and cold leg isolation valves closed if boron concentration of the isolated loop is less than boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1 and
- b. The cold leg isolation valve closed if the cold leg temperature of the isolated loop is > [20]°F below the highest cold leg temperature of the operating loops.

APPLICABILITY: MODES 5 and 6.

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME    |
|---|---|--------------------|
| <p>A. Isolated loop hot or cold leg isolation valve open with LCO requirements not met.</p> | <p>A.1 -----NOTE-----<br/>Only required if boron concentration requirement not met.<br/>-----</p>   | <p>Immediately</p> |
|   | <p>Close hot and cold leg isolation valves.</p> <p><u>OR</u></p> <p>A.2 -----NOTE-----<br/>Only required if temperature requirement not met.<br/>-----</p> <p>Close cold leg isolation valve.</p> |                    |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.4.18.1  | Verify cold leg temperature of isolated loop is $\leq [20]^{\circ}\text{F}$ below the highest cold leg temperature of the operating loops.                                 | Within 30 minutes prior to opening the cold leg isolation valve in isolated loop     |
| SR 3.4.18.2  | Verify boron concentration of isolated loop is greater than or equal to the boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1. | Within 2 hours prior to opening the hot or cold leg isolation valve in isolated loop |



### 3.4 REACTOR COOLANT SYSTEM (RCS)

#### 3.4.19 RCS Loops - Test Exceptions

LCO 3.4.19 The requirements of LCO 3.4.4, "RCS Loops - MODES 1 and 2," may be suspended with THERMAL POWER < P-7.

APPLICABILITY: MODES 1 and 2 during startup and PHYSICS TESTS.

#### ACTIONS

| CONDITION               | REQUIRED ACTION                 | COMPLETION TIME |
|-------------------------|---------------------------------|-----------------|
| A. THERMAL POWER ≥ P-7. | A.1 Open reactor trip breakers. | Immediately     |

#### SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.4.19.1 Verify THERMAL POWER is < P-7.  | [ 1 hour<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.4.19.2 Perform a COT for each power range neutron flux - low channel, intermediate range neutron flux channel, P-10, and P-13. | Prior to initiation of startup and PHYSICS TESTS   |
| SR 3.4.19.3 Perform an ACTUATION LOGIC TEST on P-7.   | Prior to initiation of startup and PHYSICS TESTS   |



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.20 Steam Generator (SG) Tube Integrity

LCO 3.4.20 SG tube integrity shall be maintained.

AND

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

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

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each SG tube.  
-----

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.4.20.1  | Verify SG tube integrity in accordance with the Steam Generator Program.  | In accordance with the Steam Generator Program          |
| SR 3.4.20.2  | Verify that each inspected SG tube that satisfies the tube repair criteria is plugged [or repaired] in accordance with the Steam Generator Program. | Prior to entering MODE 4 following a SG tube inspection |

### 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

#### 3.5.1 Accumulators

LCO 3.5.1 [Four] ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS pressure > [1000] psig.

#### ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One accumulator inoperable due to boron concentration not within limits.    | A.1 Restore boron concentration to within limits.            | 72 hours        |
| B. One accumulator inoperable for reasons other than Condition A.              | B.1 Restore accumulator to OPERABLE status.                  | 24 hours        |
| C. Required Action and associated Completion Time of Condition A or B not met. | C.1 Be in MODE 3.  | 6 hours         |
|  | <u>AND</u><br>C.2 Reduce RCS pressure to $\leq$ [1000] psig. | 12 hours        |
| D. Two or more accumulators inoperable.  | D.1 Enter LCO 3.0.3.   | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.5.1.1   | Verify each accumulator isolation valve is fully open.   | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.5.1.2   | Verify borated water volume in each accumulator is $\geq$ [ 7853 gallons ( )% and $\leq$ 8171 gallons ( )%]. | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.5.1.3   | Verify nitrogen cover pressure in each accumulator is $\geq$ [385] psig and $\leq$ [481] psig.               | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.5.1.4      Verify boron concentration in each accumulator is <math>\geq</math> [1900] ppm and <math>\leq</math> [2100] ppm.</p>           | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> <p><u>AND</u></p> <p>-----NOTE-----<br/>Only required to be performed for affected accumulators<br/>-----</p> <p>Once within 6 hours after each solution volume increase of <math>\geq</math> [ [ ] ] gallons, ( )% of indicated level ] that is not the result of addition from the refueling water storage tank</p> |
| <p>SR 3.5.1.5      Verify power is removed from each accumulator isolation valve operator when RCS pressure is <math>\geq</math> [2000] psig.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |





3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

-----NOTES-----

- [ 1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
  - 2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds [375°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus [25]°F], whichever comes first. ]
- 

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION  | REQUIRED ACTION                          | COMPLETION TIME |
|--|--|-----------------|
| A. One or more trains inoperable.  | A.1 Restore train(s) to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met.                               | B.1 Be in MODE 3.                        | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 4.          | 12 hours        |
| C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. | C.1 Enter LCO 3.0.3.                     | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  |   | FREQUENCY  |                 |                 |     |     |     |     |     |     |     |     |     |   |
|---------------|---|--|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| SR 3.5.2.1    | <p>[ Verify the following valves are in the listed position with power to the valve operator removed.</p> <table border="0"> <thead> <tr> <th><u>Number</u></th> <th><u>Position</u></th> <th><u>Function</u></th> </tr> </thead> <tbody> <tr> <td>[ ]</td> <td>[ ]</td> <td>[ ]</td> </tr> <tr> <td>[ ]</td> <td>[ ]</td> <td>[ ]</td> </tr> <tr> <td>[ ]</td> <td>[ ]</td> <td>[ ]</td> </tr> </tbody> </table> | <u>Number</u>  | <u>Position</u> | <u>Function</u> | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | [ ] | <p>[ 12 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <u>Number</u> | <u>Position</u>   | <u>Function</u>  |                 |                 |     |     |     |     |     |     |     |     |     |   |
| [ ]           | [ ]   | [ ]  |                 |                 |     |     |     |     |     |     |     |     |     |   |
| [ ]           | [ ]   | [ ]  |                 |                 |     |     |     |     |     |     |     |     |     |   |
| [ ]           | [ ]   | [ ]  |                 |                 |     |     |     |     |     |     |     |     |     |   |
| SR 3.5.2.2    | <p>Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>   | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |                 |                 |     |     |     |     |     |     |     |     |     |   |
| SR 3.5.2.3    | <p>[ Verify ECCS piping is full of water.</p>   | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ] ]</p> |                 |                 |     |     |     |     |     |     |     |     |     |   |
| SR 3.5.2.4    | <p>Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.</p>   | <p>In accordance with the Inservice Testing Program</p>  |                 |                 |     |     |     |     |     |     |     |     |     |   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.5.2.5   | Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.5.2.6   | Verify each ECCS pump starts automatically on an actual or simulated actuation signal.   | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.5.2.7   | <p>[ Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.</p> <p><u>Valve Number</u></p> <p>[ ]</p> <p>[ ]</p> <p>[ ]</p>                       | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.5.2.8      Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

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

APPLICABILITY: MODE 4.

ACTIONS

-----NOTE-----  
LCO 3.0.4.b is not applicable to ECCS high head subsystem.  
-----

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. [ Required ECCS residual heat removal (RHR) subsystem inoperable.        | A.1 Initiate action to restore required ECCS RHR subsystem to OPERABLE status. | Immediately ]   |
| B. Required ECCS [high head subsystem] inoperable.                          | B.1 Restore required ECCS [high head subsystem] to OPERABLE status.            | 1 hour          |
| C. Required Action and associated Completion Time [of Condition B] not met. | C.1 Be in MODE 5.  | 24 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY                         |
|--------------|--|-----------------------------------|
| SR 3.5.3.1   | <p>The following SRs are applicable for all equipment required to be OPERABLE:</p> <p>[SR 3.5.2.1]                      [SR 3.5.2.7]<br/> [SR 3.5.2.3]                      SR 3.5.2.8<br/> SR 3.5.2.4</p> | In accordance with applicable SRs |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                |
|---|---|--------------------------------|
| <p>A. RWST boron concentration not within limits.</p> <p><u>OR</u></p> <p>RWST borated water temperature not within limits.</p> | <p>A.1 Restore RWST to OPERABLE status.</p>                         | <p>8 hours</p>                 |
| <p>B. RWST inoperable for reasons other than Condition A.</p>   | <p>B.1 Restore RWST to OPERABLE status.</p>                         | <p>1 hour</p>                  |
| <p>C. Required Action and associated Completion Time not met.</p>   | <p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p> | <p>6 hours</p> <p>36 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.5.4.1</p> <p>-----NOTE-----<br/>           [ Only required to be performed when ambient air temperature is &lt; [35]°F or &gt; [100]°F. ]<br/>           -----</p> <p>Verify RWST borated water temperature is ≥ [35]°F and ≤ [100]°F.</p> | <p>[ 24 hours</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.5.4.2</p> <p>Verify RWST borated water volume is ≥ [466,200 gallons ( )%].</p>   | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| <p>SR 3.5.4.3</p> <p>Verify RWST boron concentration is ≥ [2000] ppm and ≤ [2200] ppm.</p>   | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |



3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Seal Injection Flow

LCO 3.5.5 Reactor coolant pump seal injection flow [resistance] shall be  $\leq$  [40] gpm with [centrifugal charging pump discharge header] pressure  $\geq$  [2480] psig and the [charging flow] control valve full open or  $\geq$  [0.2117] ft/gpm<sup>2</sup> or within the limits of Figure 3.5.5-1].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. Seal injection flow [resistance] not within limit.      | A.1 Adjust manual seal injection throttle valves to give a flow [resistance] within limit. | 4 hours         |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.  | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 4.  | 12 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.5.5.1</p> <p>-----NOTE-----<br/>           Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at <math>\geq</math> [2215 psig and <math>\leq</math> 2255 psig].<br/>           -----</p> <p>Verify manual seal injection throttle valves are adjusted to give a flow [resistance] [of <math>\leq</math> [40 gpm] with [centrifugal charging pump discharge header] pressure <math>\geq</math> [2480] psig and the [charging flow] control valve full open or <math>\geq</math> [0.2117] ft/gpm<sup>2</sup> or within the limit of Figure 3.5.5-1.]</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

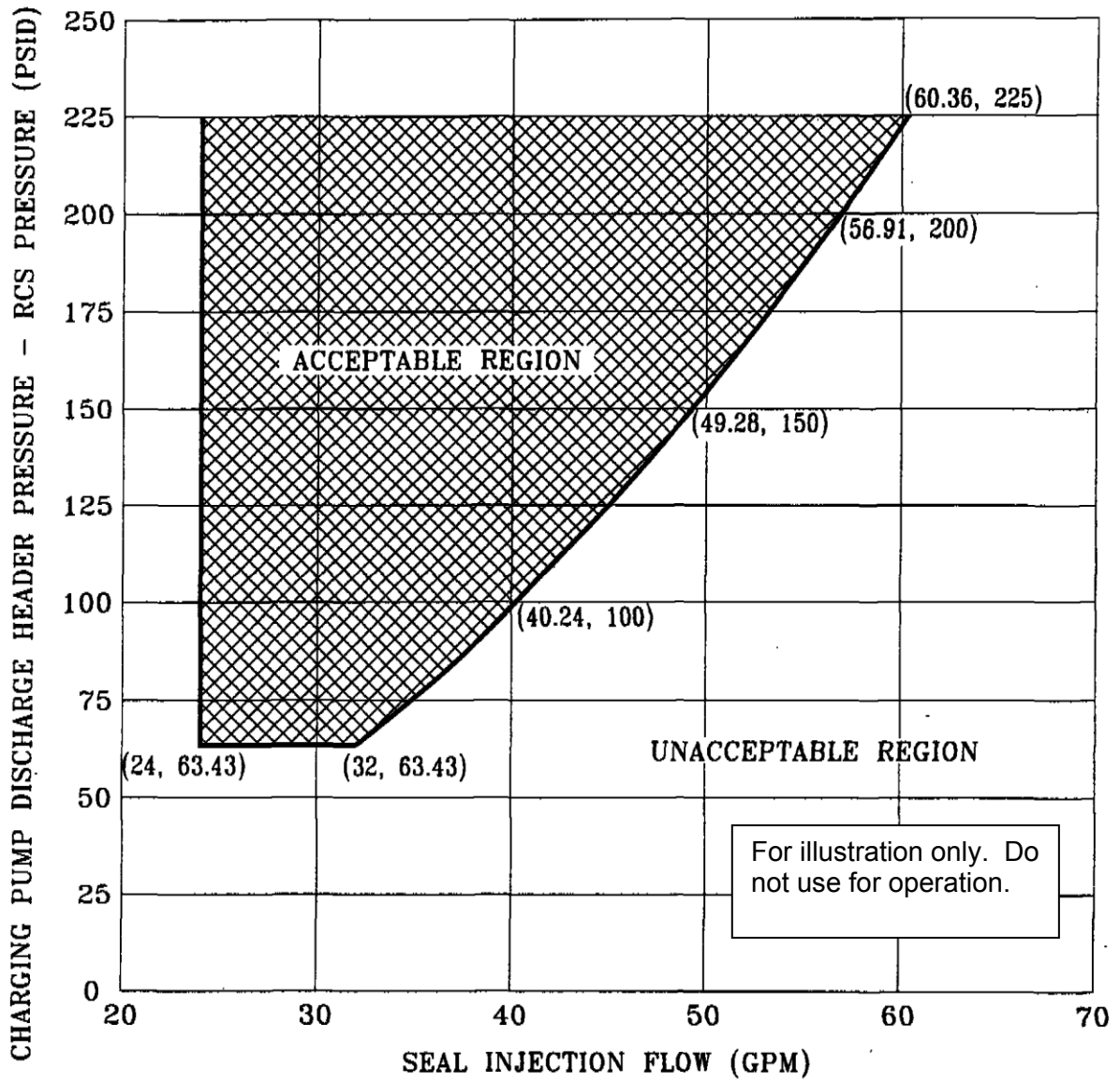


Figure 3.5.5-1 (page 1 of 1)  
Seal Injection Flow Limits



3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.6 Boron Injection Tank (BIT)

LCO 3.5.6 The BIT shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION   | REQUIRED ACTION                      | COMPLETION TIME |
|---|--------------------------------------|-----------------|
| A. BIT inoperable.  | A.1 Restore BIT to OPERABLE status.  | 1 hour          |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3.                    | 6 hours         |
|   | <u>AND</u>                           |                 |
|   | B.2 Borate to SDM specified in COLR. | 6 hours         |
| C. Required Action and associated Completion Time of Condition B not met. | <u>AND</u>                           |                 |
|   | B.3 Restore BIT to OPERABLE status.  | 7 days          |
|   | C.1 Be in MODE 4.                    | 12 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.5.6.1   | Verify BIT borated water temperature is $\geq$ [145]°F.                        | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.5.6.2   | [ Verify BIT borated water volume is $\geq$ [1100] gallons.                    | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.5.6.3   | Verify BIT boron concentration is $\geq$ [20,000] ppm and $\leq$ [22,500] ppm. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.1 Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

LCO 3.6.1 Containment shall be OPERABLE.

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

#### ACTIONS

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

#### SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.6.1.1 Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program. | In accordance with the Containment Leakage Rate Testing Program  |
| SR 3.6.1.2 [ Verify containment structural integrity in accordance with the Containment Tendon Surveillance Program.   | In accordance with the Containment Tendon Surveillance Program ] |





3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

LCO 3.6.2 [Two] containment air lock[s] shall be OPERABLE.

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

ACTIONS

-----NOTES-----

1. Entry and exit is permissible to perform repairs on the affected air lock components.
  2. Separate Condition entry is allowed for each air lock.
  3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.
- 

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| <p>A. One or more containment air locks with one containment air lock door inoperable.</p> | <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. Entry and exit is permissible for 7 days under administrative controls [if both air locks are inoperable].</li> </ol> <p style="text-align: center;">-----</p> <p>A.1    Verify the OPERABLE door is closed in the affected air lock.</p> <p><u>AND</u></p> | <p>1 hour</p>   |





SURVEILLANCE REQUIREMENTS

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

### 3.6 CONTAINMENT SYSTEMS

#### 3.6.3 Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

LCO 3.6.3 Each containment isolation valve (CIV) shall be OPERABLE.

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

#### ACTIONS

-----NOTES-----

1. Penetration flow path(s) [except for [42] inch purge valve flow paths] may be unisolated intermittently under administrative controls.
  2. Separate Condition entry is allowed for each penetration flow path.
  3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.
  4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.
-

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|---|
| <p>A. [ One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] E [and F]].</p> <p><u>AND</u></p> <p>Containment isolation valve pressure boundary intact.</p> | <p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p><u>AND</u></p> | <p>4 hours for Category 1 CIVs</p> <p><u>AND</u></p> <p>8 hours for Category 2 CIVs</p> <p><u>AND</u></p> <p>12 hours for Category 3 CIVs</p> <p><u>AND</u></p> <p>24 hours for Category 4 CIVs</p> <p><u>AND</u></p> <p>48 hours for Category 5 CIVs</p> <p><u>AND</u></p> <p>72 hours for Category 6 CIVs</p> <p><u>AND</u></p> <p>7 days for Category 7 CIVs</p> |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME   |
|-----------|---|---|
|           | <p>A.2</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Isolation devices in high radiation areas may be verified by use of administrative means.</li> <li>2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.</li> </ol> <p>-----</p> <p>Verify the affected penetration flow path is isolated.</p> | <p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment ]</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME  |
|--|--|--|
| <p>B. [ One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] E [and F]].</p> <p><u>AND</u></p> <p>Containment isolation valve pressure boundary not intact.</p> | <p>B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p><u>AND</u></p> | <p>4 hours for Category 8 CIVs</p> <p><u>AND</u></p> <p>8 hours for Category 9 CIVs</p> <p><u>AND</u></p> <p>12 hours for Category 10 CIVs</p> <p><u>AND</u></p> <p>24 hours for Category 11 CIVs</p> <p><u>AND</u></p> <p>48 hours for Category 12 CIVs</p> <p><u>AND</u></p> <p>72 hours for Category 13 CIVs</p> <p><u>AND</u></p> <p>7 days for Category 14 CIVs</p> |



ACTIONS (continued)

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

Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)  
3.6.3

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME  |
|--|--|--|
| D. Two or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] E [and F]]. | D.1 Isolate all but one penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.                      | 4 hours  |
| E. [ One or more shield building bypass leakage [or purge valve leakage] not within limit.   | E.1 Restore leakage within limit.  | 4 hours for shield building bypass leakage<br><br><u>AND</u><br><br>24 hours for purge valve leakage ] |
| F. [ One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.               | F.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].<br><br><u>AND</u> | 24 hours   |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME   |
|---|--|---|
|   | <p>F.2 -----NOTES-----<br/>                     1. Isolation devices in high radiation areas may be verified by use of administrative means.<br/><br/>                     2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.<br/>                     -----<br/><br/>                     Verify the affected penetration flow path is isolated.</p> <p><u>AND</u></p> <p>F.3 Perform SR 3.6.3.7 for the resilient seal purge valves closed to comply with Required Action F.1.</p> | <p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p> <p>Once per [92] days ]</p> |
| <p>G. Required Action and associated Completion Time not met.</p> | <p>G.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>G.2 Be in MODE 5.</p>  | <p>6 hours</p> <p>36 hours</p>  |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.6.3.1   | [ Verify each [42] inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.  | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.6.3.2   | [ Verify each [8] inch purge valve is closed, except when the [8] inch containment purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.6.3.3   | <p>-----NOTE-----<br/>Valves and blind flanges in high radiation areas may be verified by use of administrative controls.<br/>-----</p> <p>Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p> | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.6.3.4</p> <p>-----NOTE-----<br/>Valves and blind flanges in high radiation areas may be verified by use of administrative means.<br/>-----</p> <p>Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p> | <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days</p>   |
| <p>SR 3.6.3.5</p> <p>Verify the isolation time of each automatic power operated containment isolation valve is within limits.</p>  | <p>[In accordance with the Inservice Testing Program</p> <p><u>OR</u></p> <p>[92 days]</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.6.3.6</p> <p>[ Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is <math>\leq</math> [1.2] psid and opens when the differential pressure in the direction of flow is <math>\geq</math> [1.2] psid and <math>&lt;</math> [5.0] psid.</p>  | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.6.3.7   | [ Perform leakage rate testing for containment purge valves with resilient seals.  | [ 184 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]<br><br><u>AND</u><br><br>Within 92 days after opening the valve ] |
| SR 3.6.3.8   | Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.  | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |
| SR 3.6.3.9   | [ Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is $\leq$ [1.2] psid and opens when the differential pressure in the direction of flow is $\geq$ [1.2] psid and $<$ [5.0] psid. | [ 18 months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.6.3.10  | [ Verify each [ ] inch containment purge valve is blocked to restrict the valve from opening > [50]%. ]                               | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.6.3.11  | [ Verify the combined leakage rate for all shield building bypass leakage paths is $\leq [L_a]$ when pressurized to $\geq [psig]$ . ] | In accordance with the Containment Leakage Rate Testing Program ]                                       |





3.6 CONTAINMENT SYSTEMS

3.6.4A Containment Pressure (Atmospheric, Dual, and Ice Condenser)

LCO 3.6.4A Containment pressure shall be  $\geq$  [-0.3] psig and  $\leq$  [+1.5] psig.

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.6.4A.1 Verify containment pressure is within limits. | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.4B Containment Pressure (Subatmospheric)

LCO 3.6.4B Containment air partial pressure shall be  $\geq$  [9.0] psia and within the acceptable operation range shown on Figure 3.6.4B-1.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.6.4B.1 Verify containment air partial pressure is within limits. | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

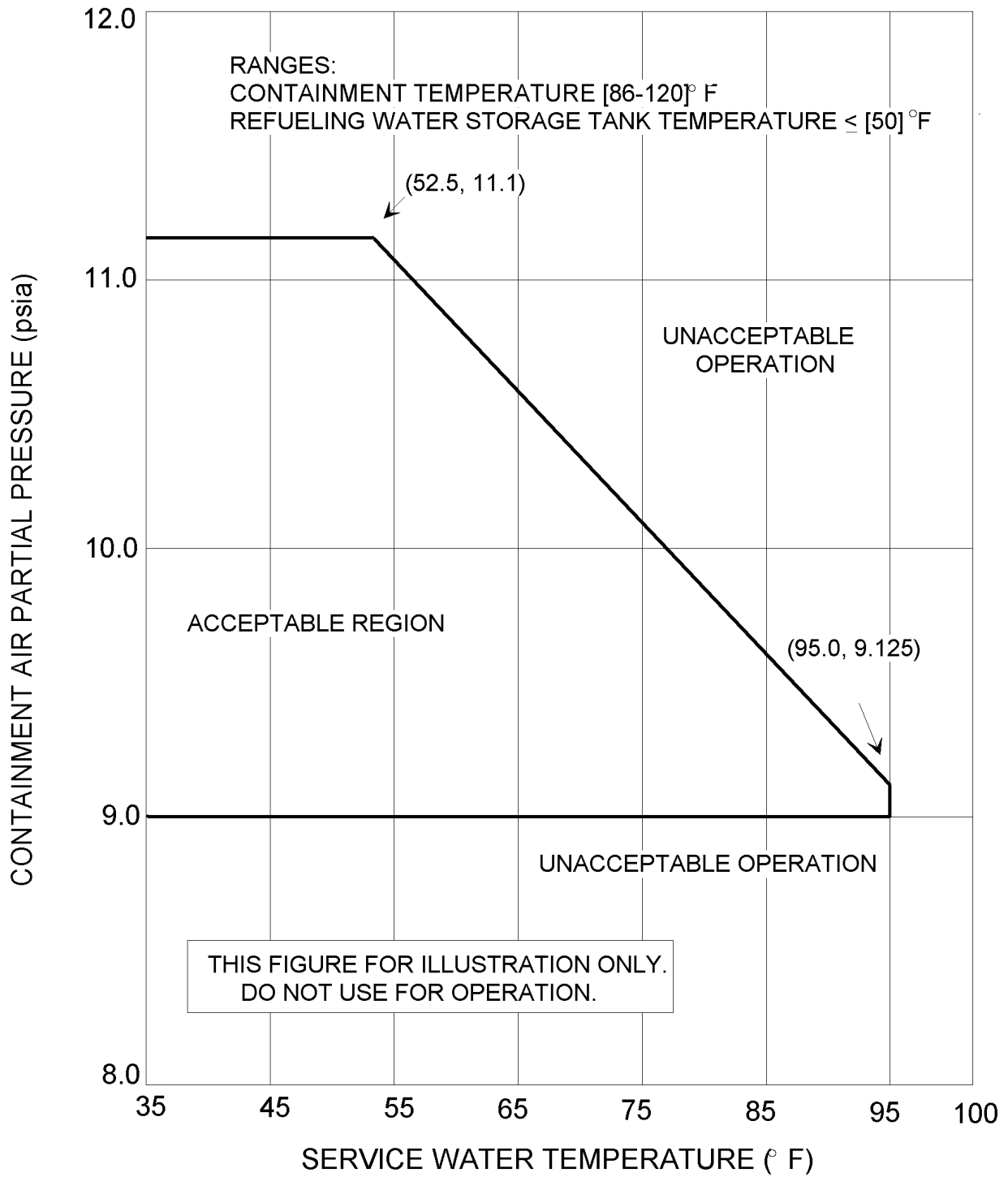


Figure 3.6.4B-1 (page 1 of 1)  
Containment Air Partial Pressure Versus  
Service Water Temperature

3.6 CONTAINMENT SYSTEMS

3.6.5A Containment Air Temperature (Atmospheric and Dual)

LCO 3.6.5A Containment average air temperature shall be  $\leq$  [120]°F.

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.6.5A.1 Verify containment average air temperature is within limit. | [ 24 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.5B Containment Air Temperature (Ice Condenser)

LCO 3.6.5B Containment average air temperature shall be:

- a.  $\geq [85]^{\circ}\text{F}$  and  $\leq [110]^{\circ}\text{F}$  for the containment upper compartment and
- b.  $\geq [100]^{\circ}\text{F}$  and  $\leq [120]^{\circ}\text{F}$  for the containment lower compartment.

-----NOTE-----

The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to  $[60]^{\circ}\text{F}$ .

-----

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.6.5B.1  | Verify containment upper compartment average air temperature is within limits. | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.5B.2  | Verify containment lower compartment average air temperature is within limits. | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.5C Containment Air Temperature (Subatmospheric)

LCO 3.6.5C Containment average air temperature shall be  $\geq [86]^{\circ}\text{F}$  and  $\leq [120]^{\circ}\text{F}$ .

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.6.5C.1 Verify containment average air temperature is within limits. | [ 24 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.6A Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit taken for iodine removal by the Containment Spray System)

LCO 3.6.6A Two containment spray trains and [two] containment cooling trains shall be OPERABLE.

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

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One containment spray train inoperable.                                     | A.1 Restore containment spray train to OPERABLE status.                  | 72 hours        |
| B. Required Action and associated Completion Time of Condition A not met.      | B.1 Be in MODE 3.  | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.  | 84 hours        |
| C. One [required] containment cooling train inoperable.                        | C.1 Restore [required] containment cooling train to OPERABLE status.     | 7 days          |
| D. Two [required] containment cooling trains inoperable.                       | D.1 Restore one [required] containment cooling train to OPERABLE status. | 72 hours        |
| E. Required Action and associated Completion Time of Condition C or D not met. | E.1 Be in MODE 3.  | 6 hours         |
|  | <u>AND</u><br>E.2 Be in MODE 5.  | 36 hours        |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION      | COMPLETION TIME |
|---|----------------------|-----------------|
| F. Two containment spray trains inoperable.<br><br><u>OR</u><br><br>Any combination of three or more trains inoperable. | F.1 Enter LCO 3.0.3. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6A.1      Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.6A.2      Operate each [required] containment cooling train fan unit for ≥ 15 minutes.  | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.6.6A.3  | Verify each [required] containment cooling train cooling water flow rate is $\geq$ [700] gpm.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.6A.4  | Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.   | In accordance with the Inservice Testing Program  |
| SR 3.6.6A.5  | Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.6A.6  | Verify each containment spray pump starts automatically on an actual or simulated actuation signal.   | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6A.7      Verify each [required] containment cooling train starts automatically on an actual or simulated actuation signal. | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.6.6A.8      Verify each spray nozzle is unobstructed.   | <p>[At first refueling]</p> <p><u>AND</u></p> <p>[ 10 years</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.6 CONTAINMENT SYSTEMS

3.6.6B Containment Spray and Cooling Systems (Atmospheric and Dual (Credit not taken for iodine removal by the Containment Spray System))

LCO 3.6.6B Two containment spray trains and [two] containment cooling trains shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One containment spray train inoperable.  | A.1 Restore containment spray train to OPERABLE status.                           | 7 days          |
| B. One [required] containment cooling train inoperable.                                 | B.1 Restore [required] containment cooling train to OPERABLE status.              | 7 days          |
| C. Two containment spray trains inoperable.   | C.1 Restore one containment spray train to OPERABLE status.                       | 72 hours        |
| D. One containment spray train and one [required] containment cooling train inoperable. | D.1 Restore containment spray train to OPERABLE status.                           | 72 hours        |
|   | <u>OR</u><br>D.2 Restore [required] containment cooling train to OPERABLE status. | 72 hours        |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME         |
|--|--|-------------------------|
| E. Two [required] containment cooling trains inoperable.                                 | E.1 Restore one [required] containment cooling train to OPERABLE status. | 72 hours                |
| F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. | F.1 Be in MODE 3.<br><br><u>AND</u><br>F.2 Be in MODE 5.                 | 6 hours<br><br>36 hours |
| G. Any combination of three or more trains inoperable.                                   | G.1 Enter LCO 3.0.3.   | Immediately             |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6B.1      Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6B.2      Operate each [required] containment cooling train fan unit for $\geq$ 15 minutes.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.6B.3      Verify each [required] containment cooling train cooling water flow rate is $\geq$ [700] gpm.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.6B.4      Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.   | In accordance with the Inservice Testing Program  |
| SR 3.6.6B.5      Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6B.6      Verify each containment spray pump starts automatically on an actual or simulated actuation signal.               | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.6.6B.7      Verify each [required] containment cooling train starts automatically on an actual or simulated actuation signal. | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.6.6B.8      Verify each spray nozzle is unobstructed.   | <p>[At first refueling]</p> <p><u>AND</u></p> <p>[ 10 years</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.6 CONTAINMENT SYSTEMS

3.6.6C Containment Spray System (Ice Condenser)

LCO 3.6.6C Two containment spray trains shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One containment spray train inoperable.                 | A.1 Restore containment spray train to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                       | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.                         | 84 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.6.6C.1 Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.6.6C.2  | Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.   | In accordance with the Inservice Testing Program   |
| SR 3.6.6C.3  | Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]                                    |
| SR 3.6.6C.4  | Verify each containment spray pump starts automatically on an actual or simulated actuation signal.   | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]                                    |
| SR 3.6.6C.5  | Verify each spray nozzle is unobstructed.   | [At first refueling]<br><u>AND</u><br>[ 10 years<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

3.6 CONTAINMENT SYSTEMS

3.6.6D Quench Spray (QS) System (Subatmospheric)

LCO 3.6.6D Two QS trains shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                          | COMPLETION TIME |
|--|--|-----------------|
| A. One QS train inoperable.                                | A.1 Restore QS train to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                        | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.          | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.6.6D.1 Verify each QS 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<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.6D.2 Verify each QS pump's developed head at the flow test point is greater than or equal to the required developed head.   | In accordance with the Inservice Testing Program  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.6.6D.3  | Verify each QS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |
| SR 3.6.6D.4  | Verify each QS pump starts automatically on an actual or simulated actuation signal.   | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |
| SR 3.6.6D.5  | Verify each spray nozzle is unobstructed.  | [At first refueling]<br><br><u>AND</u><br><br>[ 10 years<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.6 CONTAINMENT SYSTEMS

3.6.6E Recirculation Spray (RS) System (Subatmospheric)

LCO 3.6.6E Four RS subsystems [and a casing cooling tank] shall be OPERABLE.

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

ACTIONS

| CONDITION  | REQUIRED ACTION                                      | COMPLETION TIME         |
|--|--|-------------------------|
| A. One RS subsystem inoperable.                            | A.1 Restore RS subsystem to OPERABLE status.         | 7 days                  |
| B. Two RS subsystems inoperable in one train.              | B.1 Restore one RS subsystem to OPERABLE status.     | 72 hours                |
| C. [ Two inside RS subsystems inoperable.                  | C.1 Restore one RS subsystem to OPERABLE status.     | 72 hours ]              |
| D. [ Two outside RS subsystems inoperable.                 | D.1 Restore one RS subsystem to OPERABLE status.     | 72 hours ]              |
| E. [ Casing cooling tank inoperable.                       | E.1 Restore casing cooling tank to OPERABLE status.  | 72 hours ]              |
| F. Required Action and associated Completion Time not met. | F.1 Be in MODE 3.<br><u>AND</u><br>F.2 Be in MODE 5. | 6 hours<br><br>84 hours |
| G. Three or more RS subsystems inoperable.                 | G.1 Enter LCO 3.0.3.                                 | Immediately             |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.6.6E.1  | Verify casing cooling tank temperature is $\geq$ [35] $^{\circ}$ F and $\leq$ [50] $^{\circ}$ F.  | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.6E.2  | Verify casing cooling tank contained borated water volume is $\geq$ [116,500] gal.  | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.6E.3  | Verify casing cooling tank boron concentration is $\geq$ [2300] ppm and $\leq$ [2400] ppm.  | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.6E.4  | Verify each RS [and casing cooling] 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<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]  |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.6.6E.5  | Verify each RS [and casing cooling] pump's developed head at the flow test point is greater than or equal to the required developed head.  | In accordance with the Inservice Testing Program  |
| SR 3.6.6E.6  | <p>Verify on an actual or simulated actuation signal(s):</p> <ul style="list-style-type: none"> <li>a. Each RS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position,</li> <li>b. Each RS pump starts automatically, and</li> <li>c. [ Each casing cooling pump starts automatically. ]</li> </ul> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |
| SR 3.6.6E.7  | Verify each spray nozzle is unobstructed.  | <p>[ At first refueling ]</p> <p><u>AND</u></p> <p>[ 10 years</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



3.6 CONTAINMENT SYSTEMS

3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

LCO 3.6.7 The Spray Additive System shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                                       | COMPLETION TIME |
|--|---|-----------------|
| A. Spray Additive System inoperable.                       | A.1 Restore Spray Additive System to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                     | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.                       | 84 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.6.7.1 Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

|            |  |   |
|------------|--|---|
| SR 3.6.7.2 | Verify spray additive tank solution volume is $\geq$ [2568] gal and $\leq$ [4000] gal.   | [ 184 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]    |
| SR 3.6.7.3 | Verify spray additive tank [NaOH] solution concentration is $\geq$ [30]% and $\leq$ [32]% by weight.   | [ 184 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]    |
| SR 3.6.7.4 | Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.7.5 | Verify spray additive flow [rate] from each solution's flow path.  | [ 5 years<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |

3.6 CONTAINMENT SYSTEMS

3.6.8 Shield Building (Dual and Ice Condenser)

LCO 3.6.8 The shield building shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                                 | COMPLETION TIME |
|--|---|-----------------|
| A. Shield building inoperable.                             | A.1 Restore shield building to OPERABLE status. | 24 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                               | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.                 | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.6.8.1 [ Verify annulus negative pressure is > [5] inches water gauge. | [ 12 hours<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.6.8.2   | Verify one shield building access door in each access opening is closed.  | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.8.3   | [ Verify shield building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the shield building.   | During shutdown for SR 3.6.1.1 Type A tests ]   |
| SR 3.6.8.4   | Verify the shield building can be maintained at a pressure equal to or more negative than [-0.5] inch water gauge in the annulus by one Shield Building Air Cleanup System train with final flow $\leq$ [ ] cfm within [22] seconds after a start signal. | [ [18] months on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System train<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)

LCO 3.6.9 [Two] HMS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                                      |
|--|--|--|
| A. One HMS train inoperable.                               | A.1 Restore HMS train to OPERABLE status.  | 30 days  |
| B. Two HMS trains inoperable.                              | B.1 Verify by administrative means that the hydrogen control function is maintained. | 1 hour<br><u>AND</u><br>Once per 12 hours thereafter |
|  | <u>AND</u><br>B.2 Restore one HMS train to OPERABLE status.                          | 7 days   |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3.  | 6 hours  |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.6.9.1   | Operate each HMS train for $\geq 15$ minutes.                            | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.9.2   | Verify each HMS train flow rate on slow speed is $\geq [4000]$ cfm.      | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.9.3   | Verify each HMS train starts on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)

LCO 3.6.10 Two HIS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One HIS train inoperable.                                 | A.1 Restore HIS train to OPERABLE status.   | 7 days          |
|  | <u>OR</u><br>A.2 Perform SR 3.6.10.1 on the OPERABLE train.                             | Once per 7 days |
| B. One containment region with no OPERABLE hydrogen ignitor. | B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status. | 7 days          |
| C. Required Action and associated Completion Time not met.   | C.1 Be in MODE 3.   | 6 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.6.10.1  | Energize each HIS train power supply breaker and verify $\geq$ [32] ignitors are energized in each train. | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.10.2  | Verify at least one hydrogen ignitor is OPERABLE in each containment region.                              | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]     |
| SR 3.6.10.3  | Energize each hydrogen ignitor and verify temperature is $\geq$ [1700]°F.                                 | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.6 CONTAINMENT SYSTEMS

3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)

LCO 3.6.11 Two ICS trains shall be OPERABLE.

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.6.11.1 Operate each ICS train for $\geq 10$ continuous hours with heaters operating or (for systems without heaters) $\geq 15$ minutes]. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.11.2 Perform required ICS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).                             | In accordance with the VFTP   |

SURVEILLANCE REQUIREMENTS (continued)

|             |  |   |
|-------------|--|---|
| SR 3.6.11.3 | Verify each ICS train actuates on an actual or simulated actuation signal. | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.11.4 | [ Verify each ICS filter bypass damper can be opened.                      | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ] |

3.6 CONTAINMENT SYSTEMS

3.6.12 Vacuum Relief Valves (Atmospheric and Ice Condenser)

LCO 3.6.12 [Two] vacuum relief lines shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                                    | COMPLETION TIME |
|--|--|-----------------|
| A. One vacuum relief line inoperable.                      | A.1 Restore vacuum relief line to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                                  | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.                    | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.6.12.1 Verify each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program. | In accordance with the Inservice Testing Program |



3.6 CONTAINMENT SYSTEMS

3.6.13 Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)

LCO 3.6.13 Two SBACS trains shall be OPERABLE.

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

**ACTIONS**

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

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.6.13.1 Operate each SBACS train for [ $\geq$ 10 continuous hours with heaters operating or (for systems without heaters) $\geq$ 15 minutes]. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.13.2 Perform required SBACS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).                               | In accordance with the VFTP   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.6.13.3  | Verify each SBACS train actuates on an actual or simulated actuation signal. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                           |
| SR 3.6.13.4  | [ Verify each SBACS filter bypass damper can be opened.                      | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]                         |
| SR 3.6.13.5  | Verify each SBACS train flow rate is $\geq$ [ ] cfm.                         | [[18] months on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.6 CONTAINMENT SYSTEMS

3.6.14 Air Return System (ARS) (Ice Condenser)

LCO 3.6.14 Two ARS trains shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                           | COMPLETION TIME |
|--|---|-----------------|
| A. One ARS train inoperable.                               | A.1 Restore ARS train to OPERABLE status. | 72 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                         | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.           | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.6.14.1 Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of $\geq$ [9.0] minutes and $\leq$ [11.0] minutes, and operates for $\geq$ 15 minutes. | [ [92] days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.6.14.2  | Verify, with the ARS fan dampers closed, each ARS fan motor current is $\geq$ [20.5] amps and $\leq$ [35.5] amps [when the fan speed is $\geq$ [840] rpm and $\leq$ [900] rpm].  | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program     |
| SR 3.6.14.3  | Verify, with the ARS fan not operating, each ARS fan damper opens when $\leq$ [11.0] lb is applied to the counterweight.   | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.14.4  | [ Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after a delay of $\geq$ [9.0] minutes and $\leq$ [11.0] minutes. | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |

3.6 CONTAINMENT SYSTEMS

3.6.15 Ice Bed (Ice Condenser)

LCO 3.6.15 The ice bed shall be OPERABLE.

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

**ACTIONS**

| CONDITION  | REQUIRED ACTION                         | COMPLETION TIME |
|--|---|-----------------|
| A. Ice bed inoperable.                                     | A.1 Restore ice bed to OPERABLE status. | 48 hours        |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.                       | 6 hours         |
|  | <u>AND</u><br>B.2 Be in MODE 5.         | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.6.15.1 Verify maximum ice bed temperature is $\leq [27]^{\circ}\text{F}$ . | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.6.15.2      Verify total mass of stored ice is <math>\geq [2,200,000]</math> lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of <math>\geq 30</math> ice baskets in each Radial Zone, and</p> <p>Verify:</p> <ol style="list-style-type: none"> <li>1. Zone A (radial rows [7,8,9]), has a total mass of <math>\geq [733,400]</math> lbs.</li> <li>2. Zone B (radial rows [4,5,6]), has a total mass of <math>\geq [733,400]</math> lbs.</li> <li>3. Zone C (radial rows [1,2,3]), has a total mass of <math>\geq [733,400]</math> lbs.</li> </ol> | <p>[ 18 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.6.15.3      Verify that the ice mass of each basket sampled in SR 3.6.15.2 is <math>\geq 600</math> lbs.</p>  | <p>[ 18 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.6.15.4      Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is <math>\leq 15</math> percent blockage of the total flow area for each safety analysis section.</p>  | <p>[ 18 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.6.15.5</p> <p>-----NOTE-----<br/>The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below.<br/>-----</p> <p>Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed:</p> <ul style="list-style-type: none"> <li>a. Boron concentration is a <math>\geq</math> [1800] ppm and <math>\leq</math> [2000] ppm and</li> <li>b. pH is <math>\geq</math> [9.0] and <math>\leq</math> [9.5].</li> </ul> | <p>[ [54] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.6.15.6</p> <p>Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below:</p> <ul style="list-style-type: none"> <li>a. Group 1 - bays 1 through 8;</li> <li>b. Group 2 - bays 9 through 16; and</li> <li>c. Group 3 - bays 17 through 24.</li> </ul>  | <p>[ 40 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| <p>SR 3.6.15.7</p> <p>-----NOTE-----<br/>The chemical analysis may be performed on either the liquid solution or on the resulting ice.<br/>-----</p> <p>Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.15.5.</p>   | <p>Each ice addition</p>   |



### 3.6 CONTAINMENT SYSTEMS

#### 3.6.16 Ice Condenser Doors (Ice Condenser)

LCO 3.6.16            The ice condenser inlet doors, intermediate deck doors, and top deck [doors] shall be OPERABLE and closed.

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

#### ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each ice condenser door.

-----

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME  |
|--|--|------------------|
| A. One or more ice condenser inlet doors inoperable due to being physically restrained from opening. | A.1    Restore inlet door to OPERABLE status.  | 1 hour           |
| B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.      | B.1    Verify maximum ice bed temperature is $\leq [27]^{\circ}\text{F}$ .               | Once per 4 hours |
|  | <u>AND</u><br>B.2    Restore ice condenser door to OPERABLE status and closed positions. | 14 days          |
| C. Required Action and associated Completion Time of Condition B not met.                            | C.1    Restore ice condenser door to OPERABLE status and closed positions.               | 48 hours         |
| D. Required Action and associated Completion Time of Condition A or C not met.                       | D.1    Be in MODE 3.   | 6 hours          |
|  | <u>AND</u><br>D.2    Be in MODE 5.   | 36 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.6.16.1  | Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System.                           | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.16.2  | Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.6.16.3  | Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.                        | [3 months during first year after receipt of license]<br><br><u>AND</u><br><br>[ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.6.16.4  | Verify torque required to cause each inlet door to begin to open is $\leq$ [675] in-lb. | [3 months during first year after receipt of license]<br><br><u>AND</u><br><br>[ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.16.5  | Perform a torque test on [a sampling of $\geq$ 25% of the] inlet doors.                 | [3 months during first year after receipt of license]<br><br><u>AND</u><br><br>[ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.6.16.6      Verify for each intermediate deck door:</p> <ul style="list-style-type: none"> <li>a. No visual evidence of structural deterioration,</li> <li>b. Free movement of the vent assemblies, and</li> <li>c. Free movement of the door.</li> </ul> | <p>[3 months during first year after receipt of license]</p> <p><u>AND</u></p> <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.6.16.7      Verify, by visual inspection, each top deck [door]:</p> <ul style="list-style-type: none"> <li>a. Is in place; and</li> <li>b. Has no condensation, frost, or ice formed on the [door] that would restrict its opening.</li> </ul>            | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |

3.6 CONTAINMENT SYSTEMS

3.6.17 Divider Barrier Integrity (Ice Condenser)

LCO 3.6.17 Divider barrier integrity shall be maintained.

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

ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME                  |
|---|--|----------------------------------|
| <p>A. -----NOTE-----<br/>For this action, separate Condition entry is allowed for each personnel access door or equipment hatch.<br/>-----</p> <p>One or more personnel access doors or equipment hatches open or inoperable, other than for personnel transit entry.</p> | <p>A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.</p> | <p>1 hour</p>                    |
| <p>B. Divider barrier seal inoperable.</p>  | <p>B.1 Restore seal to OPERABLE status.</p>  | <p>1 hour</p>                    |
| <p>C. Required Action and associated Completion Time not met.</p>   | <p>C.1 Be in MODE 3.<br/><u>AND</u><br/>C.2 Be in MODE 5.</p>  | <p>6 hours<br/><br/>36 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.6.17.1  | Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.  | Prior to entering MODE 4 from MODE 5  |
| SR 3.6.17.2  | Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: <ul style="list-style-type: none"> <li>a. No detrimental misalignments,</li> <li>b. No cracks or defects in the sealing surfaces, and</li> <li>c. No apparent deterioration of the seal material.</li> </ul> | Prior to final closure after each opening<br><br><u>AND</u><br><br>-----NOTE-----<br>Only required for seals made of resilient materials<br>-----<br><br>[ 10 years<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.6.17.3  | Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.  | After each opening  |
| SR 3.6.17.4  | Remove two divider barrier seal test coupons and verify: <ul style="list-style-type: none"> <li>a. Both test coupons' tensile strength is <math>\geq</math> [120] psi and</li> <li>[ b. Both test coupons' elongation is <math>\geq</math> [100]%. ]</li> </ul>  | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.6.17.5  | <p>Visually inspect <math>\geq</math> [95]% of the divider barrier seal length, and verify:</p> <ul style="list-style-type: none"> <li>a. Seal and seal mounting bolts are properly installed and</li> <li>b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.</li> </ul> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



3.6 CONTAINMENT SYSTEMS

3.6.18 Containment Recirculation Drains (Ice Condenser)

LCO 3.6.18            The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

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

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One ice condenser floor drain inoperable.               | A.1    Restore ice condenser floor drain to OPERABLE status. | 1 hour          |
| B. One refueling canal drain inoperable.                   | B.1    Restore refueling canal drain to OPERABLE status.     | 1 hour          |
| C. Required Action and associated Completion Time not met. | C.1    Be in MODE 3.   | 6 hours         |
|  | <u>AND</u><br>C.2    Be in MODE 5.                           | 36 hours        |

**SURVEILLANCE REQUIREMENTS**

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.6.18.1      Verify, by visual inspection, that:</p> <ul style="list-style-type: none"> <li>a. Each refueling canal drain plug is removed,</li> <li>b. Each refueling canal drain is not obstructed by debris, and</li> <li>c. No debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.</li> </ul>   | <p>[ 92 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal</p> |
| <p>SR 3.6.18.2      Verify for each ice condenser floor drain that the:</p> <ul style="list-style-type: none"> <li>a. Valve opening is not impaired by ice, frost, or debris,</li> <li>b. Valve seat shows no evidence of damage,</li> <li>c. Valve opening force is <math>\leq</math> [66] lb, and</li> <li>d. Drain line from the ice condenser floor to the lower compartment is unrestricted.</li> </ul> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |



### 3.7 PLANT SYSTEMS

#### 3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 [Five] MSSVs per steam generator shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

#### ACTIONS

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

-----REVIEWER'S NOTE-----  
The \* noted text is required for units that are licensed to operate at partial power with a positive Moderator Temperature Coefficient (MTC).  
-----

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. One or more steam generators with one MSSV inoperable [and the Moderator Temperature Coefficient (MTC) zero or negative at all power levels]*.                                       | A.1 Reduce THERMAL POWER to $\leq$ [72] % RTP.   | 4 hours         |
| B. One or more steam generators with two or more MSSVs inoperable.<br><br>[ OR<br><br>One or more steam generators with one MSSV inoperable and the MTC positive at any power level. ]* | B.1 Reduce THERMAL POWER to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.<br><br><u>AND</u> | 4 hours         |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME                |
|---|--|--------------------------------|
|   | <p>B.2 -----NOTE-----<br/>Only required in MODE 1.<br/>-----</p> <p>Reduce the Power Range Neutron Flux - High reactor trip setpoint to less than or equal to the Maximum Allowable % RTP specified in Table 3.7.1-1 for the number of OPERABLE MSSVs.</p> | 36 hours                       |
| <p>C. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more steam generators with <math>\geq</math> [4] MSSVs inoperable.</p> | <p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 4.</p>  | <p>6 hours</p> <p>12 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.7.1.1 -----NOTE-----<br/>Only required to be performed in MODES 1 and 2.<br/>-----</p> <p>Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within <math>\pm 1\%</math>.</p> | <p>In accordance with the Inservice Testing Program</p> |

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

| NUMBER OF OPERABLE<br>MSSVs PER STEAM<br>GENERATOR | MAXIMUM ALLOWABLE<br>POWER (% RTP) |
|--|------------------------------------|
| [4]  | [65]                               |
| 3  | [46]                               |
| 2  | [28]                               |

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

| VALVE NUMBER           |     |      |      | LIFT SETTING<br>(psig ± [3]%) |
|------------------------|-----|------|------|-------------------------------|
| <u>STEAM GENERATOR</u> |     |      |      |                               |
| #1                     | #2  | [#3] | [#4] |                               |
| [ ]                    | [ ] | [ ]  | [ ]  | [ ]                           |
| [ ]                    | [ ] | [ ]  | [ ]  | [ ]                           |
| [ ]                    | [ ] | [ ]  | [ ]  | [ ]                           |
| [ ]                    | [ ] | [ ]  | [ ]  | [ ]                           |

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 [Four] MSIVs shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.7.2.1</p> <p>-----NOTE-----<br/>Only required to be performed in MODES 1 and 2.<br/>-----</p> <p>Verify the isolation time of each MSIV is within limits.</p>  | <p>In accordance with the Inservice Testing Program</p>  |
| <p>SR 3.7.2.2</p> <p>-----NOTE-----<br/>Only required to be performed in MODES 1 and 2.<br/>-----</p> <p>Verify each MSIV actuates to the isolation position on an actual or simulated actuation signal.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulation Valves (MFRVs) and [Associated Bypass Valves]

LCO 3.7.3 [Four] MFIVs, [four] MFRVs, [and associated bypass valves] shall be OPERABLE.

APPLICABILITY: MODES 1, [and 2] [2, and 3] except when MFIV, MFRV, [or associated bypass valve] is closed and [de-activated] [or isolated by a closed manual valve].

ACTIONS

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

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|-------------------|
| A. One or more MFIVs inoperable.                               | A.1 Close or isolate MFIV.                                   | [72] hours        |
|  | <u>AND</u><br>A.2 Verify MFIV is closed or isolated.         | Once per 7 days   |
| B. One or more MFRVs inoperable.                               | B.1 Close or isolate MFRV.                                   | [72] hours        |
|  | <u>AND</u><br>B.2 Verify MFRV is closed or isolated.         | Once per 7 days   |
| C. [ One or more [MFRV or preheater] bypass valves inoperable. | C.1 Close or isolate bypass valve.                           | [72] hours        |
|  | <u>AND</u><br>C.2 Verify bypass valve is closed or isolated. | Once per 7 days ] |

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.7.3.1      Verify the isolation time of each MFIV, MFRV[, and associated bypass valve] is within limits.   | In accordance with the Inservice Testing Program  |
| SR 3.7.3.2      Verify each MFIV, MFRV[, and associated bypass valves] actuates to the isolation position on an actual or simulated actuation signal. | [ [18] months<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



### 3.7 PLANT SYSTEMS

#### 3.7.4 Atmospheric Dump Valves (ADVs)

LCO 3.7.4 [Three] ADV lines shall be OPERABLE.

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

#### ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.7.4.1   | Verify one complete cycle of each ADV.               | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>   |
| SR 3.7.4.2   | [ Verify one complete cycle of each ADV block valve. | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ] ]</p> |

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 [Three] AFW trains shall be OPERABLE.

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

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

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| <p>A. [ Turbine driven AFW train inoperable due to one inoperable steam supply.</p> <p><u>OR</u></p> <p>-----NOTE-----<br/>Only applicable if MODE 2 has not been entered following refueling.<br/>-----</p> <p>One turbine driven AFW pump inoperable in MODE 3 following refueling.</p> | <p>A.1 Restore affected equipment to OPERABLE status.</p> | <p>7 days ]</p> |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                                 |
|---|---|---|
| <p>B. One AFW train inoperable in MODE 1, 2, or 3 [for reasons other than Condition A].</p>   | <p>B.1 Restore AFW train to OPERABLE status.</p>  | <p>72 hours</p>                                 |
| <p>C. Turbine driven AFW train inoperable due to one inoperable steam supply.</p> <p><u>AND</u></p> <p>One motor driven AFW train inoperable.</p>   | <p>C.1 Restore the steam supply to the turbine driven train to OPERABLE status.</p> <p><u>OR</u></p> <p>C.2 Restore the motor driven AFW train to OPERABLE status.</p>  | <p>[24 or 48] hours</p> <p>[24 or 48] hours</p> |
| <p>D. Required Action and associated Completion Time of Condition A [, B, or C] not met.</p> <p>[ <u>OR</u></p> <p>Two AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C. ]</p> | <p>D.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 [ Be in MODE 4.</p>   | <p>6 hours</p> <p>[18] hours ]</p>              |
| <p>E. [ Three] AFW trains inoperable in MODE 1, 2, or 3.</p>  | <p>E.1 -----NOTE-----<br/> LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status.<br/> -----</p> <p>Initiate action to restore one AFW train to OPERABLE status.</p> | <p>Immediately ]</p>                            |

ACTIONS (continued)

| CONDITION                                   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| F. Required AFW train inoperable in MODE 4. | F.1 Initiate action to restore AFW train to OPERABLE status. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.7.5.1</p> <p>-----NOTE-----<br/>[ AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation. ]<br/>-----</p> <p>Verify each AFW manual, power operated, and automatic valve in each water flow path, [and in both steam supply flow paths to the steam turbine driven pump,] that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.7.5.2</p> <p>-----NOTE-----<br/>[ Not required to be performed for the turbine driven AFW pump until [24 hours] after <math>\geq</math> [1000] psig in the steam generator. ]<br/>-----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p>  | <p>In accordance with the Inservice Testing Program</p>  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.7.5.3</p> <p>-----NOTE-----<br/>           [ AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation. ]<br/>           -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.7.5.4</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. [ Not required to be performed for the turbine driven AFW pump until [24 hours] after <math>\geq</math> [1000] psig in the steam generator. ]</li> <li>2. [ AFW train(s) may be considered OPERABLE during alignment and operation for steam generator level control, if it is capable of being manually realigned to the AFW mode of operation. ]</li> </ol> <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

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





3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

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

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME  |
|--|--|--|
| A. CST inoperable.   | <p>A.1 Verify by administrative means OPERABILITY of backup water supply.</p> <p><u>AND</u></p> <p>A.2 Restore CST to OPERABLE status.</p> | <p>4 hours</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>7 days</p> |
| B. Required Action and associated Completion Time not met. | <p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 4, without reliance on steam generator for heat removal.</p>                  | <p>6 hours</p> <p>[24] hours</p>   |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.7.6.1      Verify the CST level is $\geq$ [110,000 gal]. | [ 12 hours<br><br><u>OR</u><br><br>In accordance<br>with the<br>Surveillance<br>Frequency<br>Control Program ] |

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME              |
|---|---|------------------------------|
| A. One CCW train inoperable.  | <p>A.1 -----NOTE-----<br/> Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by CCW.<br/> -----<br/> Restore CCW train to OPERABLE status.</p> | 72 hours                     |
| B. Required Action and associated Completion Time of Condition A not met. | <p>B.1 Be in MODE 3.<br/> <u>AND</u><br/> B.2 Be in MODE 5.</p>   | <p>6 hours<br/> 36 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.7.7.1   | <p>-----NOTE-----<br/>Isolation of CCW flow to individual components does not render the CCW System inoperable.<br/>-----</p> <p>Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>     |
| SR 3.7.7.2   | <p>Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>  | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| SR 3.7.7.3   | <p>Verify each CCW pump starts automatically on an actual or simulated actuation signal.</p>  | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.7 PLANT SYSTEMS

3.7.8 Service Water System (SWS)

LCO 3.7.8 Two SWS trains shall be OPERABLE.

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

ACTIONS

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME                                       |
|--|---|---|
| <p>A. One SWS train inoperable.</p>  | <p>A.1 -----NOTES-----<br/>                     1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency diesel generator made inoperable by SWS.<br/><br/>                     2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by SWS.<br/><br/>                     -----<br/>                     Restore SWS train to OPERABLE status.</p> | <p>72 hours</p>                                       |
| <p>B. Required Action and associated Completion Time of Condition A not met.</p> | <p>B.1 Be in MODE 3.<br/><br/> <u>AND</u><br/><br/>                     B.2 Be in MODE 5.</p>   | <p>6 hours<br/><br/>                     36 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.7.8.1</p> <p>-----NOTE-----<br/>Isolation of SWS flow to individual components does not render the SWS inoperable.<br/>-----</p> <p>Verify each SWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>     |
| <p>SR 3.7.8.2</p> <p>Verify each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.7.8.3</p> <p>Verify each SWS pump starts automatically on an actual or simulated actuation signal.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME                |
|---|--|--------------------------------|
| A. [ One or more cooling towers with one cooling tower fan inoperable.  | A.1 Restore cooling tower fan(s) to OPERABLE status.   | 7 days ]                       |
| <p>-----REVIEWER'S NOTE-----<br/>           The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.<br/>           -----</p> <p>B. [ Water temperature of the UHS &gt; [90]°F and ≤ [ ]°F.</p> | B.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period. | Once per hour]                 |
| <p>C. [ Required Action and associated Completion Time of Condition A or B not met.</p> <p><u>OR</u> ]</p> <p>UHS inoperable [for reasons other than Condition A or B].</p>   | <p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>                            | <p>6 hours</p> <p>36 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY  |
|--------------|--|--|
| SR 3.7.9.1   | [ Verify water level of UHS is $\geq$ [562] ft [mean sea level]. | [ [24] hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |
| SR 3.7.9.2   | [ Verify average water temperature of UHS is $\leq$ [90]°F.      | [ 24 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]   |
| SR 3.7.9.3   | [ Operate each cooling tower fan for $\geq$ [15] minutes.        | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]    |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.7.9.4   | [ Verify each cooling tower fan starts automatically on an actual or simulated actuation signal. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]] |



3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Filtration System (CREFS)

LCO 3.7.10 Two CREFS trains shall be OPERABLE.

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

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

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One CREFS train inoperable for reasons other than Condition B.                            | A.1 Restore CREFS train to OPERABLE status.  | 7 days          |
| B. One or more CREFS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4. | B.1 Initiate action to implement mitigating actions.   | Immediately     |
|  | <u>AND</u>   |                 |
|  | B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. | 24 hours        |
|  | <u>AND</u>   |                 |
|  | B.3 Restore CRE boundary to OPERABLE status.   | 90 days         |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|---|
| <p>C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.</p>  | <p>C.1 Be in MODE 3.<br/><u>AND</u><br/>C.2 Be in MODE 5.</p>  | <p>6 hours<br/><br/>36 hours</p>  |
| <p>D. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p> | <p>D.1 -----NOTE-----<br/>[ Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ]<br/>-----<br/><br/>Place OPERABLE CREFS train in emergency mode.<br/><br/><u>OR</u><br/><br/>D.2 Suspend movement of [recently] irradiated fuel assemblies.</p> | <p><br/><br/><br/><br/><br/>Immediately<br/><br/><br/><br/><br/>Immediately</p> |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME    |
|---|---|--------------------|
| <p>E. Two CREFS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p> <p><u>OR</u></p> <p>One or more CREFS trains inoperable due to an inoperable CRE boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.</p> | <p>E.1 Suspend movement of [recently] irradiated fuel assemblies.</p> | <p>Immediately</p> |
| <p>F. Two CREFS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.</p>   | <p>F.1 Enter LCO 3.0.3.</p>   | <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.7.10.1 Operate each CREFS train for <math>\geq 10</math> continuous hours with the heaters operating or (for systems without heaters) <math>\geq 15</math> minutes].</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.7.10.2  | Perform required CREFS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].                | In accordance with the [VFTP]   |
| SR 3.7.10.3  | Verify each CREFS train actuates on an actual or simulated actuation signal.   | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.7.10.4  | Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program. | In accordance with the Control Room Envelope Habitability Program                                     |

3.7 PLANT SYSTEMS

3.7.11 Control Room Emergency Air Temperature Control System (CREATCS)

LCO 3.7.11 Two CREATCS trains shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One CREATCS train inoperable.  | A.1 Restore CREATCS train to OPERABLE status.                               | 30 days         |
| B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.   | B.1 Be in MODE 3.   | 6 hours         |
|   | <u>AND</u><br>B.2 Be in MODE 5.   | 36 hours        |
| C. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies. | C.1 Place OPERABLE CREATCS train in operation.                              | Immediately     |
|   | <u>OR</u><br>C.2 Suspend movement of [recently] irradiated fuel assemblies. | Immediately     |
| D. Two CREATCS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.   | D.1 Suspend movement of [recently] irradiated fuel assemblies.              | Immediately     |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION      | COMPLETION TIME |
|---|----------------------|-----------------|
| E. Two CREATCS trains inoperable in MODE 1, 2, 3, or 4. | E.1 Enter LCO 3.0.3. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.7.11.1 Verify each CREATCS train has the capability to remove the assumed heat load. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.7 PLANT SYSTEMS

3.7.12 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)

LCO 3.7.12 Two ECCS PREACS trains shall be OPERABLE.

-----NOTE-----  
The ECCS pump room boundary may be opened intermittently under administrative control.  
-----

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One ECCS PREACS train inoperable.  | A.1 Restore ECCS PREACS train to OPERABLE status.       | 7 days          |
| B. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary. | B.1 Restore ECCS pump room boundary to OPERABLE status. | 24 hours        |
| C. Required Action and associated Completion Time not met.                      | C.1 Be in MODE 3.                                       | 6 hours         |
|   | <u>AND</u><br>C.2 Be in MODE 5.                         | 36 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.7.12.1  | Operate each ECCS PREACS train for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                               |
| SR 3.7.12.2  | Perform required ECCS PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].  | In accordance with the [VFTP]   |
| SR 3.7.12.3  | Verify each ECCS PREACS train actuates on an actual or simulated actuation signal.   | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                           |
| SR 3.7.12.4  | Verify one ECCS PREACS train can maintain a pressure ≤ [-0.125] inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [3000] cfm. | [ [18] months on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.7.12.5 [ Verify each ECCS PREACS filter bypass damper can be closed. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]] |



3.7 PLANT SYSTEMS

3.7.13 Fuel Building Air Cleanup System (FBACS)

LCO 3.7.13 Two FBACS trains shall be OPERABLE.

-----NOTE-----  
The fuel building boundary may be opened intermittently under administrative control.  
-----

APPLICABILITY: [MODES 1, 2, 3, and 4, ]  
During movement of [recently] irradiated fuel assemblies in the fuel building.

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

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME |
|--|--|-----------------|
| A. One FBACS train inoperable.   | A.1 Restore FBACS train to OPERABLE status.            | 7 days          |
| B. Two FBACS trains inoperable due to inoperable fuel building boundary in MODE 1, 2, 3, or 4. | B.1 Restore fuel building boundary to OPERABLE status. | 24 hours        |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME                       |
|---|---|---------------------------------------|
| <p>C. [ Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.</p> <p><u>OR</u></p> <p>Two FBACS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.</p> | <p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 5.</p>   | <p>6 hours</p> <p>36 hours ]</p>      |
| <p>D. Required Action and associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building.</p>  | <p>D.1 Place OPERABLE FBACS train in operation.</p> <p><u>OR</u></p> <p>D.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.</p> | <p>Immediately</p> <p>Immediately</p> |
| <p>E. Two FBACS trains inoperable during movement of [recently] irradiated fuel assemblies in the fuel building.</p>  | <p>E.1 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.</p>  | <p>Immediately</p>                    |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.7.13.1  | Operate each FBACS train for $\geq 10$ continuous hours with the heaters operating or (for systems without heaters) $\geq 15$ minutes].   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                               |
| SR 3.7.13.2  | Perform required FBACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].   | In accordance with the [VFTP]   |
| SR 3.7.13.3  | [ Verify each FBACS train actuates on an actual or simulated actuation signal.  | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ]                         |
| SR 3.7.13.4  | Verify one FBACS train can maintain a pressure $\leq [-0.125]$ inches water gauge with respect to atmospheric pressure during the [post accident] mode of operation at a flow rate $\leq [20,000]$ cfm. | [ [18] months on a STAGGERED TEST BASIS<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.7.13.5 [ Verify each FBACS filter bypass damper can be closed. | [[18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |



3.7 PLANT SYSTEMS

3.7.14 Penetration Room Exhaust Air Cleanup System (PREACS)

LCO 3.7.14 Two PREACS trains shall be OPERABLE.

-----NOTE-----  
The penetration room boundary may be opened intermittently under administrative control.  
-----

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

ACTIONS

| CONDITION  | REQUIRED ACTION   | COMPLETION TIME |
|--|---|-----------------|
| A. One PREACS train inoperable.  | A.1 Restore PREACS train to OPERABLE status.              | 7 days          |
| B. Two PREACS trains inoperable due to inoperable penetration room boundary. | B.1 Restore penetration room boundary to OPERABLE status. | 24 hours        |
| C. Required Action and associated Completion Time not met.                   | C.1 Be in MODE 3.   | 6 hours         |
|  | <u>AND</u><br>C.2 Be in MODE 5.                           | 36 hours        |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.7.14.1  | Operate each PREACS train for [ $\geq 10$ continuous hours with heaters operating or (for systems without heaters) $\geq 15$ minutes].  | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ]                                 |
| SR 3.7.14.2  | Perform required PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].  | In accordance with the [VFTP]   |
| SR 3.7.14.3  | [ Verify each PREACS train actuates on an actual or simulated actuation signal.   | [ [18] months<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ]                           |
| SR 3.7.14.4  | [ Verify one PREACS train can maintain a pressure $\leq [-0.125]$ inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of $\leq [3000]$ cfm. | [ [18] months on a STAGGERED TEST BASIS<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.7.14.5 [ Verify each PREACS filter bypass damper can be closed. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] ] |

3.7 PLANT SYSTEMS

3.7.15 Fuel Storage Pool Water Level

LCO 3.7.15 The fuel storage pool water level shall be  $\geq$  23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.7.15.1 Verify the fuel storage pool water level is $\geq$ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.7 PLANT SYSTEMS

3.7.16 [ Fuel Storage Pool Boron Concentration ]

LCO 3.7.16 The fuel storage pool boron concentration shall be  $\geq$  [2300] ppm.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.7.16.1      Verify the fuel storage pool boron concentration is within limit. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.7 PLANT SYSTEMS

3.7.17 [ Spent Fuel Pool Storage ]

LCO 3.7.17 The combination of initial enrichment and burnup of each fuel assembly stored in [Region 2] shall be within the Acceptable [Burnup Domain] of Figure 3.7.17-1 or in accordance with Specification 4.3.1.1.

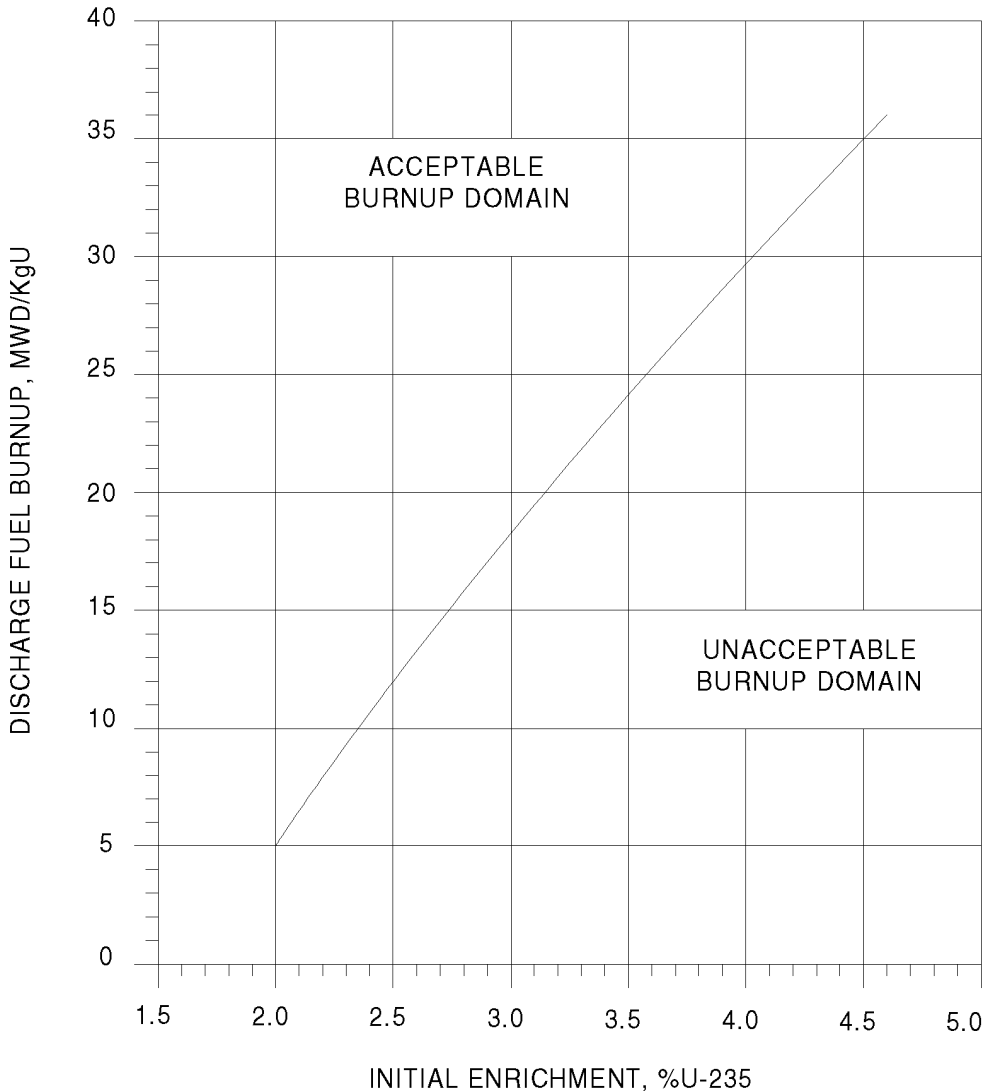
APPLICABILITY: Whenever any fuel assembly is stored in [Region 2] of the spent fuel storage pool.

ACTIONS

| CONDITION                           | REQUIRED ACTION  | COMPLETION TIME |
|-------------------------------------|--|-----------------|
| A. Requirements of the LCO not met. | A.1 -----NOTE-----<br>LCO 3.0.3 is not applicable.<br>-----<br><br>Initiate action to move the noncomplying fuel assembly from [Region 2]. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.7.17.1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.17-1 or Specification 4.3.1.1. | Prior to storing the fuel assembly in [Region 2] |



Not to be used for Operation.  
For illustration purposes only.

Figure 3.7.17-1 (page 1 of 1)  
Fuel Assembly Burnup Limits in Region 2



3.7 PLANT SYSTEMS

3.7.18 Secondary Specific Activity

LCO 3.7.18 The specific activity of the secondary coolant shall be  $\leq [0.10] \mu\text{Ci/gm}$   
DOSE EQUIVALENT I-131.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| SR 3.7.18.1 Verify the specific activity of the secondary coolant is $\leq [0.10] \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131. | [ 31 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

- a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System,
- b. Two diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s), and
- [ c. Automatic load sequencers for Train A and Train B. ]

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

ACTIONS

-----NOTE-----  
LCO 3.0.4.b is not applicable to DGs.  
-----

| CONDITION                                     | REQUIRED ACTION  | COMPLETION TIME   |
|---|--|---|
| A. One [required] offsite circuit inoperable. | <p>A.1 Perform SR 3.8.1.1 for [required] OPERABLE offsite circuit.</p> <p><u>AND</u></p> <p>A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> | <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p> |

ACTIONS (continued)

| CONDITION                        | REQUIRED ACTION  | COMPLETION TIME  |
|----------------------------------|--|--|
|                                  | A.3 Restore [required] offsite circuit to OPERABLE status.   | 72 hours   |
| B. One [required] DG inoperable. | <p>B.1 Perform SR 3.8.1.1 for the [required] offsite circuit(s).</p> <p><u>AND</u></p> <p>B.2 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p> <p><u>AND</u></p> <p>B.3.1 Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p> <p><u>OR</u></p> <p>B.3.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</p> <p><u>AND</u></p> <p>B.4 Restore [required] DG to OPERABLE status.</p> | <p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p> <p>[24] hours</p> <p>[24] hours</p> <p>72 hours</p> |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME  |
|---|--|--|
| <p>C. Two [required] offsite circuits inoperable.</p>   | <p>C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>C.2 Restore one [required] offsite circuit to OPERABLE status.</p>  | <p>12 hours from discovery of Condition C concurrent with inoperability of redundant required features</p> <p>24 hours</p> |
| <p>D. One [required] offsite circuit inoperable.</p> <p><u>AND</u></p> <p>One [required] DG inoperable.</p> | <p>-----NOTE-----<br/>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train.<br/>-----</p> <p>D.1 Restore [required] offsite circuit to OPERABLE status.</p> <p><u>OR</u></p> <p>D.2 Restore [required] DG to OPERABLE status.</p> | <p>12 hours</p> <p>12 hours</p>  |
| <p>E. Two [required] DGs inoperable.</p>  | <p>E.1 Restore one [required] DG to OPERABLE status.</p>   | <p>2 hours</p>   |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME                  |
|--|--|----------------------------------|
| <p>-----REVIEWER'S NOTE-----<br/>This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.<br/>-----</p> <p>F. [ One [required] [automatic load sequencer] inoperable.</p> | <p>F.1 Restore [required] [automatic load sequencer] to OPERABLE status.</p> | <p>[12] hours ]</p>              |
| <p>G. Required Action and associated Completion Time of Condition A, B, C, D, E, or [F] not met.</p>   | <p>G.1 Be in MODE 3.<br/><u>AND</u><br/>G.2 Be in MODE 5.</p>                | <p>6 hours<br/><br/>36 hours</p> |
| <p>H. Three or more [required] AC sources inoperable.</p>  | <p>H.1 Enter LCO 3.0.3.</p>  | <p>Immediately</p>               |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each [required] offsite circuit.</p> | <p>[ 7 days<br/><u>OR</u><br/>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.1.2</p> <p>-----NOTES-----</p> <p>1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading.</p> <p>[ 2. 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. ]</p> <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage <math>\geq</math> [3740] V and <math>\leq</math> [4580] V, and frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.1.3</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. DG loadings may include gradual loading as recommended by the manufacturer.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This Surveillance shall be conducted on only one DG at a time.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load <math>\geq [4500]</math> kW and <math>\leq [5000]</math> kW.</p> | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.8.1.4</p> <p>Verify each day tank [and engine mounted tank] contains <math>\geq [220]</math> gal of fuel oil.</p>   | <p>[ 31 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.5      Check for and remove accumulated water from each day tank [and engine mounted tank].</p>  | <p>[ [31] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.8.1.6      Verify the fuel oil transfer system operates to [automatically] transfer fuel oil from storage tank[s] to the day tank [and engine mounted tank].</p>   | <p>[ [92] days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.8.1.7      -----NOTE-----<br/>All DG starts may be preceded by an engine prelube period.<br/>-----</p> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. In <math>\leq</math> [10] seconds, voltage <math>\geq</math> [3740] V and frequency <math>\geq</math> 58.8] Hz and</p> <p>b. Steady state voltage <math>\geq</math> [3740] V and <math>\leq</math> [4580] V, and frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz.</p> | <p>[ 184 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p>  |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.8</p> <p>-----NOTE-----<br/>           [ This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.<br/>           -----</p> <p>Verify [automatic [and] manual] transfer of AC power sources from the normal offsite circuit to each alternate [required] offsite circuit.</p> | <p>[[18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.9</p> <p style="text-align: center;">-----NOTES-----</p> <p>[1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor <math>\leq</math> [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ]</p> <p>-----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <p>a. Following load rejection, the frequency is <math>\leq</math> [63] Hz,</p> <p>b. Within [3] seconds following load rejection, the voltage is <math>\geq</math> [3740] V and <math>\leq</math> [4580] V, and</p> <p>c. Within [3] seconds following load rejection, the frequency is <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.10</p> <p>-----NOTES-----</p> <p>[ 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>2. If performed with DG synchronized with offsite power, it shall be performed at a power factor <math>\leq</math> [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ]</p> <p>-----</p> <p>Verify each DG does not trip and voltage is maintained <math>\leq</math> [5000] V during and following a load rejection of <math>\geq</math> [4500] kW and <math>\leq</math> [5000] kW.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.1.11</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses,</li> <li>b. Load shedding from emergency buses,</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. Energizes permanently connected loads in <math>\leq</math> [10] seconds,</li> <li>2. Energizes auto-connected shutdown loads through [automatic load sequencer],</li> <li>3. Maintains steady state voltage <math>\square</math> <math>\geq</math> [3740] V and <math>\leq</math> [4580] V,</li> <li>4. Maintains steady state frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz, and</li> <li>5. Supplies permanently connected [and auto-connected] shutdown loads for <math>\geq</math> 5 minutes.</li> </ol> </li> </ol> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.1.12</p> <p>-----NOTES-----</p> <p>[ 1. All DG starts may be preceded by prelube period.</p> <p>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <p>a. In <math>\leq</math> [10] seconds after auto-start and during tests, achieves voltage <math>\geq</math> [3740] V and frequency <math>\geq</math> [58.8] Hz,</p> <p>b. Achieves steady state voltage <math>\geq</math> [3740] V and <math>\leq</math> [4580] V and frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz,</p> <p>c. Operates for <math>\geq</math> 5 minutes,</p> <p>d. Permanently connected loads remain energized from the offsite power system, and</p> <p>e. Emergency loads are energized [or auto-connected through the automatic load sequencer] from the offsite power system.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.13</p> <p>-----NOTE-----<br/>           [ This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ]<br/>           -----</p> <p>Verify each DG's noncritical automatic trips are bypassed on [actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal].</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.14</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Momentary transients outside the load and power factor ranges do not invalidate this test.</li> <li>2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> <li>3. If performed with DG synchronized with offsite power, it shall be performed at a power factor <math>\leq</math> [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.</li> </ol> <p>-----</p> <p>Verify each DG operates for <math>\geq</math> 24 hours:</p> <ol style="list-style-type: none"> <li>a. For <math>\geq</math> [2] hours loaded <math>\geq</math> [5250] kW and <math>\leq</math> [5500] kW and</li> <li>b. For the remaining hours of the test loaded <math>\geq</math> [4500] kW and <math>\leq</math> [5000] kW.</li> </ol> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.15</p> <p>-----NOTES-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq</math> [2] hours loaded <math>\geq</math> [4500] kW and <math>\leq</math> [5000] kW.</p> <p>Momentary transients outside of load range do not invalidate this test.</p> <p>2. All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts and achieves:</p> <p>a. In <math>\leq</math> [10] seconds, voltage <math>\geq</math> [3740] V and frequency <math>\geq</math> [58.8] Hz and</p> <p>b. Steady state voltage <math>\geq</math> [3740] V, and <math>\leq</math> [4580] V and frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.8.1.16</p> <p>-----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <p>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power,</p> <p>b. Transfers loads to offsite power source, and</p> <p>c. Returns to ready-to-load operation.</p>   | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.17</p> <p>-----NOTE-----<br/>           [ This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ]<br/>           -----</p> <p>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> <li>a. Returning DG to ready-to-load operation and</li> <li>b. [Automatically energizing the emergency load from offsite power].</li> </ul> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |
| <p>SR 3.8.1.18</p> <p>-----NOTE-----<br/>           [ This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ]<br/>           -----</p> <p>Verify interval between each sequenced load block is within <math>\pm</math> [10% of design interval] for each emergency [and shutdown] load sequencer.</p>  | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.8.1.19</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses,</li> <li>b. Load shedding from emergency buses, and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. Energizes permanently connected loads in <math>\leq [10]</math> seconds,</li> <li>2. Energizes auto-connected emergency loads through load sequencer,</li> <li>3. Achieves steady state voltage <math>\geq [3740]</math> V and <math>\leq [4580]</math> V,</li> <li>4. Achieves steady state frequency <math>\geq [58.8]</math> Hz and <math>\leq [61.2]</math> Hz, and</li> <li>5. Supplies permanently connected [and auto-connected] emergency loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.8.1.20</p> <p>-----NOTE-----<br/>All DG starts may be preceded by an engine prelube period.<br/>-----</p> <p>Verify when started simultaneously from standby condition, each DG achieves:</p> <p>a. In <math>\leq</math> [10] seconds, voltage <math>\geq</math> [3740] V and frequency <math>\geq</math> [58.8] Hz and</p> <p>b. Steady state voltage <math>\geq</math> [3744] V and <math>\leq</math> [4576] V, and frequency <math>\geq</math> [58.8] Hz and <math>\leq</math> [61.2] Hz.</p> | <p>[ 10 years</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources - Shutdown

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

- a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown" and
- b. One diesel generator (DG) capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.

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

ACTIONS

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

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

ACTIONS (continued)

| CONDITION                             | REQUIRED ACTION  | COMPLETION TIME  |
|---------------------------------------|--|--|
|                                       | <p>A.2.1 Suspend movement of [recently] irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>A.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>A.2.3 Initiate action to restore required offsite power circuit to OPERABLE status.</p> | <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> |
| <p>B. One required DG inoperable.</p> | <p>B.1 Suspend movement of [recently] irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>B.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>B.3 Initiate action to restore required DG to OPERABLE status.</p>                          | <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.2.1</p> <p>-----NOTE-----<br/>                     The following SRs are not required to be performed:<br/>                     SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11,<br/>                     SR 3.8.1.13 through SR 3.8.1.16, and<br/>                     [SR 3.8.1.18].</p> <p>-----</p> <p>For AC sources required to be OPERABLE, the SRs<br/>                     of Specification 3.8.1, "AC Sources - Operating,"<br/>                     except SR 3.8.1.8, SR 3.8.1.12, SR 3.8.1.17,<br/>                     SR 3.8.1.19, and SR 3.8.1.20, are applicable.</p> | <p>In accordance<br/>                     with applicable<br/>                     SRs</p> |





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 level less than a [7] day supply and greater than a [6] day supply in storage tank. | A.1 Restore fuel oil level to within limits.              | 48 hours        |
| B. One or more DGs with lube oil inventory less than a [7] day supply and greater than a [6] day supply.         | B.1 Restore lube oil inventory to within limits.          | 48 hours        |
| C. One or more DGs with stored fuel oil total particulates not within limit.                                     | C.1 Restore fuel oil total particulates to within limits. | 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         |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| E. One or more DGs with starting air receiver pressure < [225] psig and ≥ [125] psig.   | E.1 Restore starting air receiver pressure to ≥ [225] psig. | 48 hours        |
| F. Required Action and associated Completion Time not met.<br><br><u>OR</u><br><br>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 ≥ a [7] day supply of fuel. | [ 31 days<br><br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |  | FREQUENCY   |
|--------------|--|---|
| SR 3.8.3.2   | Verify lubricating oil inventory is $\geq$ a [7] day supply.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.8.3.3   | Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program. | In accordance with the Diesel Fuel Oil Testing Program  |
| SR 3.8.3.4   | Verify each DG air start receiver pressure is $\geq$ [225] psig.   | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |
| SR 3.8.3.5   | Check for and remove accumulated water from each fuel oil storage tank.  | [ [31] days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.8.4.1   | Verify battery terminal voltage is greater than or equal to the minimum established float voltage.  | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]      |
| SR 3.8.4.2   | Verify each battery charger supplies $\geq$ [400] amps at greater than or equal to the minimum established float voltage for $\geq$ [8] hours.<br><br><u>OR</u><br><br>Verify each battery charger can recharge the battery to the fully charged state within [24] hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state. | [ [18] months<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| <p>SR 3.8.4.3</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3.</li> <li>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</li> </ol> <p>-----</p> <p>Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |





3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 [DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]

[One DC electrical power subsystem shall be OPERABLE.]

-----REVIEWER'S NOTE-----  
This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only one DC electrical power subsystem to be OPERABLE. Action A the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem support as is required for power operating conditions.  
-----

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

ACTIONS

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

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME                           |
|---|--|---|
| <p>[A. One [or two] battery charger[s on one subsystem] inoperable.</p> <p><u>AND</u></p> <p>The redundant subsystem battery and charger[s] OPERABLE.</p> | <p>A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.</p> <p><u>AND</u></p> <p>A.2 Verify battery float current ≤ [2] amps.</p> <p><u>AND</u></p> | <p>2 hours</p> <p>Once per [12] hours</p> |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|---|
|  | A.3 Restore battery charger[s] to OPERABLE status.   | [72] hours ]  |
| <p>B. One [or more] required DC electrical power subsystem[s] inoperable [for reasons other than Condition A.</p> <p><u>OR</u></p> <p>Required Actions and associated Completion Time of Condition A not met].</p> | <p>B.1 Declare affected required feature(s) inoperable.</p> <p><u>OR</u></p> <p>B.2.1 Suspend movement of [recently] irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>B.2.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>B.2.3 Initiate action to restore required DC electrical power subsystems to OPERABLE status.</p> | <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

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



3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Parameters

LCO 3.8.6 Battery parameters for Train A and Train B batteries electrical power subsystem shall be within limits.

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

ACTIONS

-----NOTE-----

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

| CONDITION  | REQUIRED ACTION                                       | COMPLETION TIME |
|--|---|-----------------|
| A. One [or two] batter[y][ies on one subsystem] with one or more battery cells float voltage < [2.07] V. | A.1 Perform SR 3.8.4.1.                               | 2 hours         |
|  | <u>AND</u>  |                 |
|  | A.2 Perform SR 3.8.6.1.                               | 2 hours         |
|  | <u>AND</u>  |                 |
|  | A.3 Restore affected cell voltage $\geq$ [2.07] V.    | 24 hours        |
| B. One [or two] batter[y][ies on one subsystem] with float current > [2] amps.                           | B.1 Perform SR 3.8.4.1.                               | 2 hours         |
|  | <u>AND</u>  |                 |
|  | B.2 Restore battery float current to $\leq$ [2] amps. | [12] hours      |

ACTIONS (continued)

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

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION                                   | COMPLETION TIME    |
|--|---|--------------------|
| <p>F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.</p> <p><u>OR</u></p> <p>One [or two] batter[y][ies on one subsystem] with one or more battery cells float voltage &lt; [2.07] V and float current &gt; [2] amps.</p> | <p>F.1 Declare associated battery inoperable.</p> | <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| <p>SR 3.8.6.1</p> <p>-----NOTE-----</p> <p>Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1.</p> <p>-----</p> <p>Verify each battery float current is <math>\leq</math> [2] amps.</p> | <p>[ 7 days</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE |   | FREQUENCY   |
|--------------|---|---|
| SR 3.8.6.2   | Verify each battery pilot cell float voltage is $\geq [2.07]$ V.  | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.8.6.3   | Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.8.6.4   | Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.           | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.8.6.5   | Verify each battery connected cell float voltage is $\geq [2.07]$ V.  | [ 92 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE  | FREQUENCY   |
|---|---|
| <p>SR 3.8.6.6</p> <p>-----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify battery capacity is <math>\geq</math> [80%] of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p> | <p>[ 60 months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> <p><u>AND</u></p> <p>12 months when battery shows degradation, or has reached [85]% of the expected life with capacity &lt; 100% of manufacturer's rating</p> <p><u>AND</u></p> <p>24 months when battery has reached [85]% of the expected life with capacity <math>\geq</math> 100% of manufacturer's rating</p> |



3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

-----NOTE-----

[ [One/two] inverter[s] may be disconnected from [its/their] associated DC bus for ≤ 24 hours to perform an equalizing charge on [its/their] associated [common] battery, provided:

- a. The associated AC vital bus(es) [is/are] energized from [its/their] [Class 1E constant voltage source transformers] [inverter using internal AC source], and
- b. All other AC vital buses are energized from their associated OPERABLE inverters. ]

-----

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

ACTIONS

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME |
|-----------|-------------------|-----------------|
|           | B.2 Be in MODE 5. | 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<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters - Shutdown

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

[One] inverter[s] shall be OPERABLE.]

-----REVIEWER'S NOTE-----  
This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only [one] inverter to be OPERABLE. The "[or more]" optional wording in Condition A is also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions.  
-----

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

ACTIONS

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

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One [or more] [required] inverter[s] inoperable. | A.1 Declare affected required feature(s) inoperable.                          | Immediately     |
|   | <u>OR</u><br>A.2.1 Suspend movement of [recently] irradiated fuel assemblies. | Immediately     |
|   | <u>AND</u>  |                 |



3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Train A and Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| <p>A. One or more AC electrical power distribution subsystems inoperable.</p> | <p>A.1 -----NOTE-----<br/>Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC trains made inoperable by inoperable power distribution subsystems.<br/>-----<br/>Restore AC electrical power distribution subsystem(s) to OPERABLE status.</p> | <p>8 hours</p>  |
| <p>B. One or more AC vital buses inoperable.</p>                              | <p>B.1 Restore AC vital bus subsystem(s) to OPERABLE status.</p>  | <p>2 hours</p>  |
| <p>C. One or more DC electrical power distribution subsystems inoperable.</p> | <p>C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status.</p>  | <p>2 hours</p>  |

ACTIONS (continued)

| CONDITION  | REQUIRED ACTION      | COMPLETION TIME |
|--|----------------------|-----------------|
| D. Required Action and associated Completion Time not met.   | D.1 Be in MODE 3.    | 6 hours         |
|  | <u>AND</u>           |                 |
|  | D.2 Be in MODE 5.    | 36 hours        |
| E. Two or more electrical power distribution subsystems inoperable that result in a loss of safety function. | E.1 Enter LCO 3.0.3. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.8.9.1 Verify correct breaker alignments and voltage to [required] AC, DC, and AC vital bus electrical power distribution subsystems. | [ 7 days<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

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

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

ACTIONS

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

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



3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

APPLICABILITY: MODE 6.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.9.1.1      Verify boron concentration is within the limit specified in the COLR. | [ 72 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |



SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY   |
|--|---|
| SR 3.9.2.1      Verify each valve that isolates unborated water sources is secured in the closed position. | [ 31 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

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

AND

[ One source range audible [alarm] [count rate] circuit shall be OPERABLE. ]

APPLICABILITY: MODE 6.

ACTIONS

| CONDITION  | REQUIRED ACTION  | COMPLETION TIME   |
|--|--|-------------------|
| A. One [required] source range neutron flux monitor inoperable.  | A.1 Suspend positive reactivity additions.   | Immediately       |
|  | <u>AND</u><br>A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately       |
| B. Two [required] source range neutron flux monitors inoperable. | B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status.   | Immediately       |
|  | <u>AND</u><br>B.2 Perform SR 3.9.1.1.  | Once per 12 hours |

ACTIONS (continued)

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME      |
|---|--|----------------------|
| <p>-----REVIEWER'S NOTE-----<br/>Condition C is included only for plants that assume a boron dilution event is mitigated by operator response to an audible source range indication.<br/>-----</p> <p>C. [ Required source range audible [alarm] [count rate] circuit inoperable.</p> | <p>C.1 Initiate action to isolate unborated water sources.</p> | <p>Immediately ]</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE                             | FREQUENCY   |
|--|---|
| <p>SR 3.9.3.1 Perform CHANNEL CHECK.</p> | <p>[ 12 hours<br/><u>OR</u><br/>In accordance with the Surveillance Frequency Control Program ]</p> |



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| <p>SR 3.9.3.2</p> <p>-----NOTE-----<br/>Neutron detectors are excluded from CHANNEL CALIBRATION.<br/>-----</p> <p>Perform CHANNEL CALIBRATION.</p> | <p>[ [18] months</p> <p><u>OR</u></p> <p>In accordance with the Surveillance Frequency Control Program ]</p> |



3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

LCO 3.9.4 The containment penetrations shall be in the following status:

- a. The equipment is hatch closed and held in place by [four] bolts,
- b. One door in each air lock is [capable of being] closed, and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:
  - 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent or
  - 2. Capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

-----NOTE-----  
 Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.  
 -----

APPLICABILITY: During movement of [recently] irradiated fuel assemblies within containment.

ACTIONS

| CONDITION   | REQUIRED ACTION   | COMPLETION TIME |
|---|---|-----------------|
| A. One or more containment penetrations not in required status. | A.1 Suspend movement of [recently] irradiated fuel assemblies within containment. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE |   | FREQUENCY  |
|--------------|---|--|
| SR 3.9.4.1   | Verify each required containment penetration is in the required status.   | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]                 |
| SR 3.9.4.2   | <p>-----NOTE-----<br/>           Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.4.c.1.<br/>           -----</p> <p>Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.</p> | <p>[ [18] months<br/><br/><u>OR</u><br/><br/>In accordance with the Surveillance Frequency Control Program ]</p> |

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

-----NOTE-----  
The required RHR loop may be removed from operation for  $\leq 1$  hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.  
-----

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

ACTIONS

| CONDITION                         | REQUIRED ACTION  | COMPLETION TIME |
|-----------------------------------|--|-----------------|
| A. RHR loop requirements not met. | A.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately     |
|                                   | <u>AND</u>   |                 |
|                                   | A.2 Suspend loading irradiated fuel assemblies in the core.  | Immediately     |
|                                   | <u>AND</u>   |                 |
|                                   | A.3 Initiate action to satisfy RHR loop requirements.  | Immediately     |
|                                   | <u>AND</u>   |                 |

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE  | FREQUENCY  |
|---|--|
| SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq$ [2800] gpm. | [ 12 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |

3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

-----NOTES-----

1. All RHR pumps may be removed from operation for  $\leq 15$  minutes when switching from one train to another provided:
  - a. The core outlet temperature is maintained  $> 10$  degrees F below saturation temperature,
  - b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, and
  - c. No draining operations to further reduce RCS water volume are permitted.
2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other RHR loop is OPERABLE and in operation.

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

ACTIONS

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

ACTIONS (continued)

| CONDITION                           | REQUIRED ACTION  | COMPLETION TIME    |
|-------------------------------------|--|--------------------|
| <p>B. No RHR loop in operation.</p> | <p>B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.</p>                  | <p>Immediately</p> |
|                                     | <p><u>AND</u></p>  |                    |
|                                     | <p>B.2 Initiate action to restore one RHR loop to operation.</p>   | <p>Immediately</p> |
|                                     | <p><u>AND</u></p>  |                    |
|                                     | <p>B.3 Close equipment hatch and secure with [four] bolts.</p>   | <p>4 hours</p>     |
|                                     | <p><u>AND</u></p>  |                    |
|                                     | <p>B.4 Close one door in each air lock.</p>  | <p>4 hours</p>     |
|                                     | <p><u>AND</u></p>  |                    |
|                                     | <p>B.5.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.</p> | <p>4 hours</p>     |
|                                     | <p><u>OR</u></p>   |                    |



ACTIONS (continued)

| CONDITION | REQUIRED ACTION   | COMPLETION TIME |
|-----------|---|-----------------|
|           | B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. | 4 hours         |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.9.6.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of $\geq$ [2800] gpm.          | [ 12 hours<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ] |
| SR 3.9.6.2 Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation. | [ 7 days<br><br><u>OR</u><br><br>In accordance with the Surveillance Frequency Control Program ]   |



3.9 REFUELING OPERATIONS

3.9.7 Refueling Cavity Water Level

LCO 3.9.7 Refueling cavity water level shall be maintained  $\geq$  23 ft above the top of reactor vessel flange.

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

| CONDITION   | REQUIRED ACTION  | COMPLETION TIME |
|---|--|-----------------|
| A. Refueling cavity water level not within limit. | A.1 Suspend movement of irradiated fuel assemblies within containment. | Immediately     |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE   | FREQUENCY  |
|--|--|
| SR 3.9.7.1 Verify refueling cavity water level is $\geq$ 23 ft above the top of reactor vessel flange. | [ 24 hours<br><u>OR</u><br>In accordance with the Surveillance Frequency Control Program ] |



## 4.0 DESIGN FEATURES

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### 4.1 Site Location

[ Text description of site location. ]

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### 4.2 Reactor Core

#### 4.2.1 Fuel Assemblies

The reactor shall contain [157] fuel assemblies. Each assembly shall consist of a matrix of [Zircalloy or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

#### 4.2.2 [Control Rod] Assemblies

The reactor core shall contain [48] [control rod] assemblies. The control material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC.

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### 4.3 Fuel Storage

#### 4.3.1 Criticality

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

- a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent,
- b.  $k_{eff} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR],

[ c. A nominal [9.15] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks], ]

[ d. A nominal [10.95] inch center to center distance between fuel assemblies placed in [low density fuel storage racks], ]

## 4.0 DESIGN FEATURES

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### 4.3 Fuel Storage (continued)

- [ e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure [3.7.17-1] may be allowed unrestricted storage in [either] fuel storage rack(s), and ]
- [ f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.17-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure]. ]

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

- a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent,
- b.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR],
- c.  $k_{\text{eff}} \leq 0.98$  if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR], and
- d. A nominal [10.95] inch center to center distance between fuel assemblies placed in the storage racks.

#### 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [23 ft].

#### 4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than [1737] fuel assemblies.

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## 5.0 ADMINISTRATIVE CONTROLS

### 5.1 Responsibility

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-----REVIEWER'S NOTES-----

1. Titles for members of the unit staff shall be specified by use of an overall statement referencing an ANSI Standard acceptable to the NRC staff from which the titles were obtained, or an alternative title may be designated for this position. Generally, the first method is preferable; however, the second method is adaptable to those unit staffs requiring special titles because of unique organizational structures.
2. The ANSI Standard shall be the same ANSI Standard referenced in Section 5.3, Unit Staff Qualifications. If alternative titles are used, all requirements of these Technical Specifications apply to the position with the alternative title as apply with the specified title. Unit staff titles shall be specified in the Final Safety Analysis Report or Quality Assurance Plan. Unit staff titles shall be maintained and revised using those procedures approved for modifying/revising the Final Safety Analysis Report or Quality Assurance Plan.

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5.1.1 The plant manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

The plant manager or his designee shall approve, prior to implementation, each proposed test, experiment or modification to systems or equipment that affect nuclear safety.

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

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## 5.0 ADMINISTRATIVE CONTROLS

### 5.2 Organization

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#### 5.2.1 Onsite and Offsite Organizations

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

- a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements including the plant-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications shall be documented in the [FSAR/QA Plan],
- b. The plant manager shall be responsible for overall safe operation of the plant and shall have control over those onsite activities necessary for safe operation and maintenance of the plant,
- c. A specified corporate officer shall have corporate responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety, and
- d. The individuals who train the operating staff, carry out health physics, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from operating pressures.

#### 5.2.2 Unit Staff

The unit staff organization shall include the following:

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

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

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### 5.2.2 Unit Staff (continued)

- b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2.e for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.
  - c. A radiation protection technician shall be on site when fuel is in the reactor. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position.
  - d. The operations manager or assistant operations manager shall hold an SRO license.
  - e. An individual shall provide advisory technical support to the unit operations shift crew in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. This individual shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift.
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.3 Unit Staff Qualifications

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-----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.

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

### 5.4 Procedures

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- 5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:
- a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978,
  - b. The emergency operating procedures required to implement the requirements of NUREG-0737 and to NUREG-0737, Supplement 1, as stated in [Generic Letter 82-33],
  - c. Quality assurance for effluent and environmental monitoring,
  - d. Fire Protection Program implementation, and
  - e. All programs specified in Specification 5.5.
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.5 Programs and Manuals

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

#### 5.5.1 Offsite Dose Calculation Manual (ODCM)

- a. The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints, and in the conduct of the radiological environmental monitoring program, and
- b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release Reports required by Specification [5.6.1] and Specification [5.6.2].

Licensee initiated changes to the ODCM:

- a. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:
  1. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s) and
  2. A determination that the change(s) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations,
- b. Shall become effective after the approval of the plant manager, and
- c. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

## 5.5 Programs and Manuals

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### 5.5.2 Primary Coolant Sources Outside Containment

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

- a. Preventive maintenance and periodic visual inspection requirements and
- b. Integrated leak test requirements for each system at least once per [18] months.

The provisions of SR 3.0.2 are applicable.

### 5.5.3 [ Post Accident Sampling

-----REVIEWER'S NOTE-----  
This program may be eliminated based on the implementation of WCAP-14986, Rev. 1, "Post Accident Sampling System Requirements: A Technical Basis," and the associated NRC Safety Evaluation dated June 14, 2000, and implementation of the following commitments:

1. [Licensee] has developed contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump, and containment atmosphere. The contingency plans will be contained in emergency plan implementing procedures and implemented with the implementation of the License amendment. Establishment of contingency plans is considered a regulatory commitment.
2. The capability for classifying fuel damage events at the Alert level threshold has been established for [Plant] at radioactivity levels of 300 mCi/cc dose equivalent iodine. This capability may utilize the normal sampling system and/or correlations of sampling or letdown line dose rates to coolant concentrations. This capability will be described in emergency plan implementing procedures and implemented with the implementation of the License amendment. The capability for classifying fuel damage events is considered a regulatory commitment.
3. [Licensee] has established the capability to monitor radioactive iodines that have been released to offsite environs. This capability is described in our emergency plan implementing procedures. The capability to monitor radioactive iodines is considered a regulatory commitment.

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This program provides controls that ensure the capability to obtain and analyze reactor coolant, radioactive gases, and particulates in plant gaseous effluents



## 5.5 Programs and Manuals

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### 5.5.3 Post Accident Sampling (continued)

and containment atmosphere samples under accident conditions. The program shall include the following:

- a. Training of personnel,
- b. Procedures for sampling and analysis, and
- c. Provisions for maintenance of sampling and analysis equipment. ]

### 5.5.4 Radioactive Effluent Controls Program

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

- a. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance tests and setpoint determination in accordance with the methodology in the ODCM,
- b. Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to ten times the concentration values in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2402,
- c. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302 and with the methodology and parameters in the ODCM,
- d. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each unit to unrestricted areas, conforming to 10 CFR 50, Appendix I,
- e. Determination of cumulative dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days. Determination of projected dose contributions from radioactive effluents in accordance with the methodology in the ODCM at least every 31 days,
- f. Limitations on the functional capability and use of the liquid and gaseous effluent treatment systems to ensure that appropriate portions of these systems are used to reduce releases of radioactivity when the projected doses in a period of 31 days would exceed 2% of the guidelines for the annual dose or dose commitment, conforming to 10 CFR 50, Appendix I,

## 5.5 Programs and Manuals

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### 5.5.4 Radioactive Effluent Controls Program (continued)

- g. Limitations on the dose rate resulting from radioactive material released in gaseous effluents from the site to areas at or beyond the site boundary shall be in accordance with the following:
  - 1. For noble gases: a dose rate  $\leq 500$  mrem/yr to the whole body and a dose rate  $\leq 3000$  mrem/yr to the skin and
  - 2. For iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half-lives greater than 8 days: a dose rate  $\leq 1500$  mrem/yr to any organ,
- h. Limitations on the annual and quarterly air doses resulting from noble gases released in gaseous effluents from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I,
- i. Limitations on the annual and quarterly doses to a member of the public from iodine-131, iodine-133, tritium, and all radionuclides in particulate form with half lives  $> 8$  days in gaseous effluents released from each unit to areas beyond the site boundary, conforming to 10 CFR 50, Appendix I, and
- j. Limitations on the annual dose or dose commitment to any member of the public, beyond the site boundary, due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

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

### 5.5.5 Component Cyclic or Transient Limit

This program provides controls to track the FSAR, Section [ ], cyclic and transient occurrences to ensure that components are maintained within the design limits.

### 5.5.6 [ Pre-Stressed Concrete Containment Tendon Surveillance Program

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

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

5.5 Programs and Manuals

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5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at 20 year intervals.

-----REVIEWER'S NOTE-----  
 The inspection interval and scope for RCP flywheels stated above can be applied to plants that satisfy the requirements in WCAP-15666, "Extension of Reactor Coolant Pump Motor Flywheel Examination."  
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5.5.8 Inservice Testing Program

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

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

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

- b. The provisions of SR 3.0.2 are applicable to the above required Frequencies and to other normal and accelerated Frequencies specified as 2 years or less in the Inservice Testing Program for performing inservice testing activities,
- c. The provisions of SR 3.0.3 are applicable to inservice testing activities, and

## 5.5 Programs and Manuals

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### 5.5.8 Inservice Testing Program (continued)

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

### 5.5.9 Steam Generator (SG) Program

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

- a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging [or repair] of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected, plugged, [or repaired] to confirm that the performance criteria are being met.
- b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.
  - 1. Structural integrity performance criterion: All in-service steam generator tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down and all anticipated transients included in the design specification) and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary-to-secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary-to-secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.
  - 2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to

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5.5.9 Steam Generator (SG) Program (continued)

exceed [1 gpm] per SG [, except for specific types of degradation at specific locations as described in paragraph c of the Steam Generator Program.

3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."
- c. Provisions for SG tube repair criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding [40%] of the nominal tube wall thickness shall be plugged [or repaired].

-----REVIEWER'S NOTE-----

Alternate tube repair criteria currently permitted by plant technical specifications are listed here. The description of these alternate tube repair criteria should be equivalent to the descriptions in current technical specifications and should also include any allowed accident induced leakage rates for specific types of degradation at specific locations associated with tube repair criteria.

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

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

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5.5.9 Steam Generator (SG) Program (continued)

-----REVIEWER'S NOTE-----

Plants are to include the appropriate Frequency (e.g., select the appropriate Item 2.) for their SG design. The first Item 2 is applicable to SGs with Alloy 600 mill annealed tubing. The second Item 2 is applicable to SGs with Alloy 600 thermally treated tubing. The third Item 2 is applicable to SGs with Alloy 690 thermally treated tubing.

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1. Inspect 100% of the tubes in each SG during the first refueling outage following SG replacement.
  - [2. Inspect 100% of the tubes at sequential periods of 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. No SG shall operate for more than 24 effective full power months or one refueling outage (whichever is less) without being inspected.]
  - [2. Inspect 100% of the tubes at sequential periods of 120, 90, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outage nearest the end of the period. No SG shall operate for more than 48 effective full power months or two refueling outages (whichever is less) without being inspected.]
  - [2. Inspect 100% of the tubes at sequential periods of 144, 108, 72, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outage nearest the end of the period. No SG shall operate for more than 72 effective full power months or three refueling outages (whichever is less) without being inspected.]
  3. If crack indications are found in any SG tube, then the next inspection for each SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever is less). If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with a crack(s), then the indication need not be treated as a crack.
- e. Provisions for monitoring operational primary to secondary LEAKAGE.

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5.5.9 Steam Generator (SG) Program (continued)

- [f. Provisions for SG tube repair methods. Steam generator tube repair methods shall provide the means to reestablish the RCS pressure boundary integrity of SG tubes without removing the tube from service. For the purposes of these Specifications, tube plugging is not a repair. All acceptable tube repair methods are listed below.

-----REVIEWER'S NOTE-----

Tube repair methods currently permitted by plant technical specifications are to be listed here. The description of these tube repair methods should be equivalent to the descriptions in current technical specifications. If there are no approved tube repair methods, this section should not be used.

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1. . . .]

5.5.10 Secondary Water Chemistry Program

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

- a. Identification of a sampling schedule for the critical variables and control points for these variables,
- b. Identification of the procedures used to measure the values of the critical variables,
- c. Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage,
- d. Procedures for the recording and management of data,
- e. Procedures defining corrective actions for all off control point chemistry conditions, and
- f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

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5.5.11 Ventilation Filter Testing Program (VFTP)

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

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

| ESF Ventilation System | Flowrate |
|------------------------|----------|
| [ ]                    | [ ]      |

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

| ESF Ventilation System | Flowrate |
|------------------------|----------|
| [ ]                    | [ ]      |

- 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 (86°F) and the relative humidity specified below.

| ESF Ventilation System | Penetration           | RH                    | Face Velocity (fps)   |
|------------------------|-----------------------|-----------------------|-----------------------|
| [ ]                    | [See Reviewer's Note] | [See Reviewer's Note] | [See Reviewer's Note] |

-----REVIEWER'S NOTE-----  
 The use of any standard other than ASTM D3803-1989 to test the charcoal sample may result in an overestimation of the capability of the charcoal to adsorb radioiodine. As a result, the ability of the charcoal filters to perform in a manner consistent with the licensing basis for the facility is indeterminate.



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5.5.11 Ventilation Filter Testing Program (continued)

ASTM D 3803-1989 is a more stringent testing standard because it does not differentiate between used and new charcoal, it has a longer equilibration period performed at a temperature of 30°C (86°F) and a relative humidity (RH) of 95% (or 70% RH with humidity control), and it has more stringent tolerances that improve repeatability of the test.

Allowable Penetration = [(100% - Methyl Iodide Efficiency \* for Charcoal Credited in Licensee's Accident Analysis) / Safety Factor]

When ASTM D3803-1989 is used with 30°C (86°F) and 95% RH (or 70% RH with humidity control) is used, the staff will accept the following:

Safety factor ≥ 2 for systems with or without humidity control.

Humidity control can be provided by heaters or an NRC-approved analysis that demonstrates that the air entering the charcoal will be maintained less than or equal to 70 percent RH under worst-case design-basis conditions.

If the system has a face velocity greater than 110 percent of 0.203 m/s (40 ft/min), the face velocity should be specified.

\*This value should be the efficiency that was incorporated in the licensee's accident analysis which was reviewed and approved by the staff in a safety evaluation.

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- 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 |
|------------------------|---------|----------|
| [ ]                    | [ ]     | [ ]      |

- [ 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 ] |
|------------------------|-----------|
| [ ]                    | [ ]       |

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

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### 5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

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

The program shall include:

- a. The limits for concentrations of hydrogen and oxygen in the [Waste Gas Holdup 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 contained in [each gas storage tank and fed into the offgas treatment system] is less than the amount that would result in a whole body exposure of  $\geq 0.5$  rem to any individual in an unrestricted area, in the event of [an uncontrolled release of the tanks' contents], and
- c. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the [Liquid Radwaste Treatment System] is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

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

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### 5.5.13 Diesel Fuel Oil Testing Program

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

- a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:
  1. An API gravity or an absolute specific gravity within limits,
  2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and
  3. A clear and bright appearance with proper color or a water and sediment content within limits.
- b. Within 31 days following addition of the new fuel oil to storage tanks, verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits for ASTM 2D fuel oil, and
- c. Total particulate concentration of the fuel oil is  $\leq 10$  mg/l when tested every 31 days.

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

### 5.5.14 Technical Specifications (TS) Bases Control Program

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

- a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:
  1. A change in the TS incorporated in the license or
  2. A change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.

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### 5.5.14 Technical Specifications (TS) Bases Control Program (continued)

- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the FSAR.
- d. Proposed changes that meet the criteria of Specification 5.5.14b above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

### 5.5.15 Safety Function Determination Program (SFDP)

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

- a. Provisions for cross train checks to ensure a loss of the capability to perform the safety function assumed in the accident analysis does not go undetected,
- b. Provisions for ensuring the plant is maintained in a safe condition if a loss of function condition exists,
- c. Provisions to ensure that an inoperable supported system's Completion Time is not inappropriately extended as a result of multiple support system inoperabilities, and
- d. Other appropriate limitations and remedial or compensatory actions.

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

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

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### 5.5.15 Safety Function Determination Program (SFDP) (continued)

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

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

### 5.5.16 Containment Leakage Rate Testing Program

#### [OPTION A]

- a. A program shall establish the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option A, as modified by approved exemptions.
- b. The maximum allowable containment leakage rate,  $L_a$ , at  $P_a$ , shall be [ ]% of containment air weight per day.
- c. Leakage rate acceptance criteria are:
  - 1. Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $< 0.60 L_a$  for the Type B and C tests and  $< 0.75 L_a$  for Type A tests.
  - 2. Air lock testing acceptance criteria are:
    - a) Overall air lock leakage rate is  $\leq [0.05 L_a]$  when tested at  $\geq P_a$ .
    - b) For each door, leakage rate is  $\leq [0.01 L_a]$  when pressurized to  $[\geq 10 \text{ psig}]$ .
- d. The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.
- e. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

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5.5.16 Containment Leakage Rate Testing Program (continued)

[OPTION B]

- a. A program shall establish the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September, 1995, as modified by the following exceptions:
1. The visual examination of containment concrete surfaces intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWL, except where relief has been authorized by the NRC.
  2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B, will be performed in accordance with the requirements of and frequency specified by the ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.
  - [ 3. . . . ]
- b. The calculated peak containment internal pressure for the design basis loss of coolant accident,  $P_a$ , is [45 psig]. The containment design pressure is [50 psig].
- c. The maximum allowable containment leakage rate,  $L_a$ , at  $P_a$ , shall be [ ]% of containment air weight per day.
- d. Leakage rate acceptance criteria are:
1. Containment leakage rate acceptance criterion is  $1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $< 0.60 L_a$  for the Type B and C tests and  $\leq 0.75 L_a$  for Type A tests.
  2. Air lock testing acceptance criteria are:
    - a) Overall air lock leakage rate is  $\leq [0.05 L_a]$  when tested at  $\geq P_a$ .
    - b) For each door, leakage rate is  $\leq [0.01 L_a]$  when pressurized to  $[\geq 10 \text{ psig}]$ .

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### 5.5.16 Containment Leakage Rate Testing Program (continued)

- e. The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.
- f. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

[OPTION A/B Combined]

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

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

[ 3. . . . ]

- b. The calculated peak containment internal pressure for the design basis loss of coolant accident,  $P_a$ , [45 psig]. The containment design pressure is [50 psig].
- c. The maximum allowable containment leakage rate,  $L_a$ , at  $P_a$ , shall be [ ]% of containment air weight per day.
- d. Leakage rate acceptance criteria are:

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### 5.5.16 Containment Leakage Rate Testing Program (continued)

1. Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $< 0.60 L_a$  for the Type B and C tests and [ $< 0.75 L_a$  for Option A Type A tests] [ $\leq 0.75 L_a$  for Option B Type A tests].
2. Air lock testing acceptance criteria are:
  - a) Overall air lock leakage rate is  $\leq [0.05 L_a]$  when tested at  $\geq P_a$ .
  - b) For each door, leakage rate is  $\leq [0.01 L_a]$  when pressurized to  $[\geq 10 \text{ psig}]$ .
- e. The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.
- f. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

### 5.5.17 Battery Monitoring and Maintenance Program

-----REVIEWER'S NOTE-----

This program and the corresponding requirements in LCO 3.8.4, LCO 3.8.5, and LCO 3.8.6 require providing the information and verifications requested in the Notice of Availability for TSTF-500, Revision 2, "DC Electrical Rewrite - Update to TSTF-360," (76FR54510).

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

- a. The program allows the following RG 1.129, Revision 2 exceptions:
  1. Battery temperature correction may be performed before or after conducting discharge tests.
  2. RG 1.129, Regulatory Position 1, Subsection 2, "References," is not applicable to this program.



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### 5.5.17 Battery Monitoring and Maintenance Program (continued)

3. In lieu of RG 1.129, Regulatory Position 2, Subsection 5.2, "Inspections," the following shall be used: "Where reference is made to the pilot cell, pilot cell selection shall be based on the lowest voltage cell in the battery."
  4. In Regulatory Guide 1.129, Regulatory Position 3, Subsection 5.4.1, "State of Charge Indicator," the following statements in paragraph (d) may be omitted: "When it has been recorded that the charging current has stabilized at the charging voltage for three consecutive hourly measurements, the battery is near full charge. These measurements shall be made after the initially high charging current decreases sharply and the battery voltage rises to approach the charger output voltage."
  5. In lieu of RG 1.129, Regulatory Position 7, Subsection 7.6, "Restoration," the following may be used: "Following the test, record the float voltage of each cell of the string."
- b. The program shall include the following provisions:
1. Actions to restore battery cells with float voltage  $< [2.13] \text{ V}$ ;
  2. Actions to determine whether the float voltage of the remaining battery cells is  $\geq [2.13] \text{ V}$  when the float voltage of a battery cell has been found to be  $< [2.13] \text{ V}$ ;
  3. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates;
  4. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and
  5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

### 5.5.18 Control Room Envelope (CRE) Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Filtration System (CREFS), CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of [5 rem whole body or its equivalent to any part of the body] [5 rem total

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### 5.5.18 Control Room Envelope (CRE) Habitability Program (continued)

effective dose equivalent (TEDE)] for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air leakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

[The following are exceptions to Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0:

1. ;and]

- d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one train of the CREFS, operating at the flow rate required by the VFTP, at a Frequency of [18] months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the [18] month assessment of the CRE boundary.
- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by the testing described in paragraph c. The unfiltered air leakage limit for radiological challenges is the leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air leakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.
- f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

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5.5.19 [ Setpoint Control Program

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

- a. The program shall list the Functions in the following specifications to which it applies:
  1. LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation;"
  2. LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation Functions;"
  3. LCO 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation;"
  4. LCO 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation;"
  5. LCO 3.3.7, "Control Room Emergency Filtration System (CREFS) Actuation Instrumentation;"
  6. LCO 3.3.8, "Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation;" and
  7. LCO 3.3.9, "Boron Dilution Protection System (BDPS)."
- b. The program shall require the Nominal Trip Setpoint (NTSP), Allowable Value (AV), As-Found Tolerance (AFT), and As-Left Tolerance (ALT) (as applicable) of the Functions described in paragraph a. are calculated using the NRC approved setpoint methodology, as listed below. In addition, the program shall contain the value of the NTSP, AV, AFT, and ALT (as applicable) for each Function described in paragraph a. and shall identify the setpoint methodology used to calculate these values.

-----Reviewer's Note-----  
List the NRC safety evaluation report by letter, date, and ADAMS accession number (if available) that approved the setpoint methodologies.  
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1. [Insert reference to NRC safety evaluation that approved the setpoint methodology.]
- c. The program shall establish methods to ensure that Functions described in paragraph a. will function as required by verifying the as-left and as-found settings are consistent with those established by the setpoint methodology.

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5.5.19 Setpoint Control Program (continued)

- d. -----REVIEWER'S NOTE-----
- A license amendment request to implement a Setpoint Control Program must list the instrument functions to which the program requirements of paragraph d. will be applied. Paragraph d. shall apply to all Functions in the Reactor Trip System and Engineered Safety Feature Actuation System specifications unless one or more of the following exclusions apply:
1. Manual actuation circuits, automatic actuation logic circuits or to instrument functions that derive input from contacts which have no associated sensor or adjustable device, e.g., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc. are excluded. In addition, those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function are excluded.
  2. Settings associated with safety relief valves are excluded. The performance of these components is already controlled (i.e., trended with as-left and as-found limits) under the ASME Code for Operation and Maintenance of Nuclear Power Plants testing program.
  3. Functions and Surveillance Requirements which test only digital components are normally excluded. There is no expected change in result between SR performances for these components. Where separate as-left and as-found tolerance is established for digital component SRs, the requirements would apply.

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The program shall identify the Functions described in paragraph a. that are automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A). The NTSP of these Functions are Limiting Safety System Settings. These Functions shall be demonstrated to be functioning as required by applying the following requirements during CHANNEL CALIBRATIONS, CHANNEL OPERATIONAL TESTS, and TRIP ACTUATING DEVICE OPERATIONAL TESTS that verify the NTSP.

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

## 5.5 Programs and Manuals

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### 5.5.19 Setpoint Control Program (continued)

3. If the as-found value of the instrument channel trip setting is less conservative than the specified AV, then the SR is not met and the instrument channel shall be immediately declared inoperable.
  4. The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the NTSP at the completion of the surveillance test; otherwise, the channel is inoperable (setpoints may be more conservative than the NTSP provided that the as-found and as-left tolerances apply to the actual setpoint used to confirm channel performance).
- e. The program shall be specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference]. ]

### 5.5.20 [ Surveillance Frequency Control Program

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

- a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.
  - b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.
  - c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program. ]
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5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

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

5.6.1 Annual Radiological Environmental Operating Report

-----REVIEWER'S NOTE-----  
[ A single submittal may be made for a multiple unit station. The submittal should combine sections common to all units at the station. ]  
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The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

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

5.6.2 Radioactive Effluent Release Report

-----REVIEWER'S NOTE-----  
[ A single submittal may be made for a multiple unit station. The submittal shall combine sections common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit. ]  
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The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

5.6 Reporting Requirements

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5.6.3 CORE OPERATING LIMITS REPORT

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

[ 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:

-----REVIEWER'S NOTE-----  
Licensees that have received prior NRC approval to relocate Topical Report revision numbers and dates to licensee control need only list the number and title of the Topical Report, and the COLR will contain the complete identification for each of the Technical Specification referenced Topical Reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements). See NRC ADAMS Accession No: ML110660285 for details.  
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[ 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.

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

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

[ The individual specifications that address RCS pressure and temperature limits must be referenced here. ]



5.6 Reporting Requirements

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5.6.4 RCS PRESSURE AND TEMPERATURE LIMITS REPORT (continued)

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

-----REVIEWER'S NOTE-----  
Licensees that have received prior NRC approval to relocate Topical Report revision numbers and dates to licensee control need only list the number and title of the Topical Report, and the PTLR will contain the complete identification for each of the Technical Specification referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements). See NRC ADAMS Accession No: ML110660285 for details.  
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[ Identify the NRC staff approval document by date.]

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

-----REVIEWER'S NOTE-----  
The methodology for the calculation of the P-T limits for NRC approval should include the following provisions:

1. The methodology shall describe how the neutron fluence is calculated (reference new Regulatory Guide when issued).
2. The Reactor Vessel Material Surveillance Program shall comply with Appendix H to 10 CFR 50. The reactor vessel material irradiation surveillance specimen removal schedule shall be provided, along with how the specimen examinations shall be used to update the PTLR curves.
3. Low Temperature Overpressure Protection (LTOP) System lift setting limits for the Power Operated Relief Valves (PORVs), developed using NRC-approved methodologies may be included in the PTLR.
4. The adjusted reference temperature (ART) for each reactor beltline material shall be calculated, accounting for radiation embrittlement, in accordance with Regulatory Guide 1.99, Revision 2.
5. The limiting ART shall be incorporated into the calculation of the pressure and temperature limit curves in accordance with NUREG-0800 Standard Review Plan 5.3.2, Pressure-Temperature Limits.
6. LTOP arming temperature limit development methodology.

5.6 Reporting Requirements

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5.6.4 RCS PRESSURE AND TEMPERATURE LIMITS REPORT (continued)

7. The minimum temperature requirements of Appendix G to 10 CFR Part 50 shall be incorporated into the pressure and temperature limit curves.
  8. Licensees who have removed two or more capsules should compare for each surveillance material the measured increase in reference temperature ( $RT_{NDT}$ ) to the predicted increase in  $RT_{NDT}$ ; where the predicted increase in  $RT_{NDT}$  is based on the mean shift in  $RT_{NDT}$  plus the two standard deviation value ( $2\sigma_{\Delta}$ ) specified in Regulatory Guide 1.99, Revision 2. If the measured value exceeds the predicted value (increase  $RT_{NDT} + 2\sigma_{\Delta}$ ), the licensee should provide a supplement to the PTLR to demonstrate how the results affect the approved methodology.
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5.6.5 Post Accident Monitoring Report

When a report is required by Condition B or F of LCO 3.3.[3], "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.6 [ Tendon Surveillance Report

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

5.6.7 Steam Generator Tube Inspection Report

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

- a. The scope of inspections performed on each SG,
- b. Active degradation mechanisms found,
- c. Nondestructive examination techniques utilized for each degradation mechanism,

5.6 Reporting Requirements

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5.6.7 Steam Generator Tube Inspection Report (continued)

- d. Location, orientation (if linear), and measured sizes (if available) of service induced indications,
  - e. Number of tubes plugged [or repaired] during the inspection outage for each active degradation mechanism,
  - f. Total number and percentage of tubes plugged [or repaired] to date,
  - g. The results of condition monitoring, including the results of tube pulls and in-situ testing,
  - [h. The effective plugging percentage for all plugging [and tube repairs] in each SG, and]
  - [i. Repair method utilized and the number of tubes repaired by each repair method.]
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## 5.0 ADMINISTRATIVE CONTROLS

### 5.7 High Radiation Area

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

- 5.7.1 High Radiation Areas with Dose Rates Not Exceeding 1.0 rem/hour at 30 Centimeters from the Radiation Source or from any Surface Penetrated by the Radiation
- a. Each entryway to such an area shall be barricaded and conspicuously posted as a high radiation area. Such barricades may be opened as necessary to permit entry or exit of personnel or equipment.
  - b. Access to, and activities in, each such area shall be controlled by means of Radiation Work Permit (RWP) or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.
  - c. Individuals qualified in radiation protection procedures and personnel continuously escorted by such individuals may be exempted from the requirement for an RWP or equivalent while performing their assigned duties provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.
  - d. Each individual or group entering such an area shall possess:
    1. A radiation monitoring device that continuously displays radiation dose rates in the area, or
    2. A radiation monitoring device that continuously integrates the radiation dose rates in the area and alarms when the device's dose alarm setpoint is reached, with an appropriate alarm setpoint, or
    3. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area, or
    4. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,
      - (i) Be under the surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or

## 5.7 High Radiation Area

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

- (ii) Be under the surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, of personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with individuals in the area who are covered by such surveillance.
- e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

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

- a. Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry, and, in addition:
  - 1. All such door and gate keys shall be maintained under the administrative control of the shift supervisor, radiation protection manager, or his or her designees, and
  - 2. Doors and gates shall remain locked except during periods of personnel or equipment entry or exit.
- b. Access to, and activities in, each such area shall be controlled by means of an RWP or equivalent that includes specification of radiation dose rates in the immediate work area(s) and other appropriate radiation protection equipment and measures.
- c. Individuals qualified in radiation protection procedures may be exempted from the requirement for an RWP or equivalent while performing radiation surveys in such areas provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

## 5.7 High Radiation Area

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

- d. Each individual group entering such an area shall possess:
  1. A radiation monitoring device that continuously integrates the radiation rates in the area and alarms when the device's dose alarm setpoint is reached, with an appropriate alarm setpoint, or
  2. A radiation monitoring device that continuously transmits dose rate and cumulative dose information to a remote receiver monitored by radiation protection personnel responsible for controlling personnel radiation exposure within the area with the means to communicate with and control every individual in the area, or
  3. A self-reading dosimeter (e.g., pocket ionization chamber or electronic dosimeter) and,
    - (i) Be under surveillance, as specified in the RWP or equivalent, while in the area, of an individual qualified in radiation protection procedures, equipped with a radiation monitoring device that continuously displays radiation dose rates in the area; who is responsible for controlling personnel exposure within the area, or
    - (ii) Be under surveillance as specified in the RWP or equivalent, while in the area, by means of closed circuit television, or personnel qualified in radiation protection procedures, responsible for controlling personnel radiation exposure in the area, and with the means to communicate with and control every individual in the area.
  4. In those cases where options (2) and (3), above, are impractical or determined to be inconsistent with the "As Low As is Reasonably Achievable" principle, a radiation monitoring device that continuously displays radiation dose rates in the area.
- e. Except for individuals qualified in radiation protection procedures, or personnel continuously escorted by such individuals, entry into such areas shall be made only after dose rates in the area have been determined and entry personnel are knowledgeable of them. These continuously escorted personnel will receive a pre-job briefing prior to entry into such areas. This dose rate determination, knowledge, and pre-job briefing does not require documentation prior to initial entry.

5.7 High Radiation Area

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

- f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated at the area as a warning device.
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11. ABSTRACT (200 words or less)

This NUREG contains the improved Standard Technical Specifications (STS) for Westinghouse plants. The changes reflected in Revision 4 result from the experience gained from plant operation using the improved STS and extensive public technical meetings and discussions among the Nuclear Regulatory Commission (NRC) staff and various nuclear power plant licensees and the Nuclear Steam Supply System (NSSS) Owners Groups.

The improved STS were developed based on the criteria in the Final Commission Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132), which was subsequently codified by changes to Section 36 of Part 50 of Title 10 of the Code of Federal Regulations (10 CFR 50.36) (60 FR 36953). Licensees are encouraged to upgrade their technical specifications consistent with those criteria and conforming, to the practical extent, to Revision 4 to the improved STS. The Commission continues to place the highest priority on requests for complete conversions to the improved STS. Licensees adopting portions of the improved STS to existing technical specifications should adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.

Users may access the STS NUREGs in the PDF format at (<http://www.nrc.gov>). Users may print or download copies from the NRC Web site.

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