## 3.5 EMERGENCY CORE COOLING SYSTEM (ECCS) AND REACTOR CORE ISOLATION COOLING SYSTEM (RCIC)

### 3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > [150] psig.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. RCIC System inoperable. | A.1 | Verify by administrative means High Pressure Coolant Injection System is OPERABLE. | Immediately |
| | AND | | |
| | A.2 | Restore RCIC System to OPERABLE status. | 14 days |
| B. Required Action and associated Completion Time not met. | B.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | B.2 | Reduce reactor steam dome pressure to ≤ [150] psig. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.5.3.1 | Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve. | 31 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.5.3.2 | Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.5.3.3 | ---------- **- NOTE -** Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----------<br><br>Verify, with [reactor pressure] ≤ [1020] psig and ≥ [920] psig, the RCIC pump can develop a flow rate ≥ [400] gpm [against a system head corresponding to reactor pressure]. | 92 days |
| SR 3.5.3.4 | ---------- **- NOTE -** Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ----------<br><br>Verify, with [reactor pressure] ≤ [165] psig, the RCIC pump can develop a flow rate ≥ [400] gpm [against a system head corresponding to reactor pressure]. | [18] months |
| SR 3.5.3.5 | ---------- **- NOTE -** Vessel injection may be excluded. ----------<br><br>Verify the RCIC System actuates on an actual or simulated automatic initiation signal. | [18] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.1 Primary Containment

LCO 3.6.1.1 Primary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.1.1 | Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with the Primary Containment Leakage Rate Testing Program. | In accordance with the Primary Containment Leakage Rate Testing Program |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.1.2 | Verify drywell to suppression chamber differential pressure does not decrease at a rate > [0.25] inch water gauge per minute tested over a [10] minute period at an initial differential pressure of [1] psid. | [18] months<br><br>AND<br><br>----------<br>**- NOTE -**<br>Only required after two consecutive tests fail and continues until two consecutive tests pass<br>----------<br><br>[9] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.2 Primary Containment Air Lock

LCO 3.6.1.2 The primary containment air lock shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

**- NOTES -**

1. Entry and exit is permissible to perform repairs of the air lock components.
2. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when air lock leakage results in exceeding overall containment leakage rate acceptance criteria.

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One primary containment air lock door inoperable. | | **- NOTES -**<br>1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the air lock are inoperable and Condition C is entered.<br>2. Entry and exit is permissible for 7 days under administrative controls. | |
| | A.1 | Verify the OPERABLE door is closed. | 1 hour |
| | AND | | |
| | A.2 | Lock the OPERABLE door closed. | 24 hours |
| | AND | | |

ACTIONS (continued)

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | B.3 | ---------- **- NOTE -** Air lock doors in high radiation areas or areas with limited access due to inerting may be verified locked closed by administrative means. ---------- Verify an OPERABLE door is locked closed. | Once per 31 days |
| C. Primary containment air lock inoperable for reasons other than Condition A or B. | C.1 | Initiate action to evaluate primary containment overall leakage rate per LCO 3.6.1.1, using current air lock test results. | Immediately |
| | AND | | |
| | C.2 | Verify a door is closed. | 1 hour |
| | AND | | |
| | C.3 | Restore air lock to OPERABLE status. | 24 hours |
| D. Required Action and associated Completion Time not met. | D.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | D.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.2.1 | ---------- **- NOTES -** 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. ---------- Perform required primary containment air lock leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program. | In accordance with the Primary Containment Leakage Rate Testing Program |
| SR 3.6.1.2.2 | Verify only one door in the primary containment air lock can be opened at a time. | 24 months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

ACTIONS

**- NOTES -**

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. **- NOTE -** Only applicable to penetration flow paths with two [or more] PCIVs.<br><br>One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] D [and E]]. | 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.<br><br>AND | 4 hours except for main steam line<br><br>AND<br><br>8 hours for main steam line |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.2 ----------<br>**- 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>---------- | |
| | Verify the affected penetration flow path is isolated. | Once per 31 days for isolation devices outside primary containment<br><br><u>AND</u><br><br>Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary containment |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| B. ----------<br>**- NOTE -**<br>Only applicable to penetration flow paths with two [or more] PCIVs.<br>----------<br><br>One or more penetration flow paths with two [or more] PCIVs inoperable [for reasons other than Condition[s] D [and E]]. | B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. | 1 hour |
| C. ----------<br>**- NOTE -**<br>Only applicable to penetration flow paths with only one PCIV.<br>----------<br><br>One or more penetration flow paths with one PCIV inoperable [for reasons other than Condition[s] D [and E]]. | C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.<br><br>AND | [4] hours except for excess flow check valves (EFCVs) and penetrations with a closed system<br><br>AND<br><br>72 hours for EFCVs and penetrations with a closed system |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | C.2 ---------- **- NOTES -** 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated. | Once per 31 days |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| D. [ One or more [secondary containment bypass leakage rate,] [MSIV leakage rate,] [purge valve leakage rate,] [hydrostatically tested line leakage rate,] [or] [EFCV leakage rate] not within limit. | D.1 Restore leakage rate to within limit. | [4 hours for hydrostatically tested line leakage [not on a closed system]]<br><br>AND<br><br>[4 hours for secondary containment bypass leakage]<br><br>AND<br><br>[8 hours for MSIV leakage]<br><br>AND<br><br>[24 hours for purge valve leakage]<br><br>AND<br><br>[72 hours for hydrostatically tested line leakage [on a closed system] [and EFCV leakage] ] |
| E. [ One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits. | E.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>AND | 24 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | E.2 | ---------- **- NOTES -** 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- | |
| | | Verify the affected penetration flow path is isolated. | Once per 31 days for isolation devices outside containment |
| | AND | | AND |
| | | | Prior to entering MODE 2 or 3 from MODE 4 if not performed within the previous 92 days for isolation devices inside containment |
| | E.3 | Perform SR 3.6.1.3.7 for the resilient seal purge valves closed to comply with Required Action E.1. | Once per [92] days ] |
| F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met in MODE 1, 2, or 3. | F.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | F.2 | Be in MODE 4. | 36 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| G. [ Required Action and associated Completion Time of Condition A, B, C, D, or E not met for PCIV(s) required to be OPERABLE during movement of [recently] irradiated fuel assemblies in [secondary] containment. | G.1 | ---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. | Immediately ] |
| H. [ Required Action and associated Completion Time of Condition A, B, C, D, or E not met for PCIV(s) required to be OPERABLE during MODE 4 or 5 or during operations with a potential for draining the reactor vessel (OPDRVs). | H.1 | Initiate action to suspend OPDRVs. | Immediately |
| | OR | | |
| | H.2 | Initiate action to restore valve(s) to OPERABLE status. | Immediately ] |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.3.1 | ---------- **- NOTE -** [ [Only required to be met in MODES 1, 2, and 3.] ----------<br><br>Verify each [18] inch primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition E of this LCO. | 31 days ] |
| SR 3.6.1.3.2 | ---------- **- NOTES -** [ 1. [Only required to be met in MODES 1, 2, and 3.]<br><br>2. Not required to be met when the [18] inch primary containment purge valves are open for inerting, de-inerting, pressure control, ALARA or air quality considerations for personnel entry, or Surveillances that require the valves to be open. ----------<br><br>Verify each [18] inch primary containment purge valve is closed. | 31 days ] |
| SR 3.6.1.3.3 | ---------- **- NOTES -**<br>1. Valves and blind flanges in high radiation areas may be verified by use of administrative means.<br><br>2. Not required to be met for PCIVs that are open under administrative controls. ----------<br><br>Verify each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. | 31 days |

SURVEILLANCE REQUIREMENTS (continued)

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

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.3.8 | Verify the isolation time of each MSIV is ≥ [2] seconds and ≤ [8] seconds. | [In accordance with the Inservice Testing Program or 18 months] |
| SR 3.6.1.3.9 | Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal. | [18] months |
| | ---------- **- REVIEWER'S NOTE -** The bracketed portions of the SR apply to the representative sample as discussed in NEDO-32977-A. ---------- | |
| SR 3.6.1.3.10 | Verify each [a representative sample of] reactor instrumentation line EFCV actuates [on a simulated instrument line break to restrict flow to ≤ 1 gph]. | [18] months |
| SR 3.6.1.3.11 | Remove and test the explosive squib from each shear isolation valve of the TIP System. | [18] months on a STAGGERED TEST BASIS |
| SR 3.6.1.3.12 | ---------- **- NOTE -** [ [Only required to be met in MODES 1, 2, and 3.] ---------- Verify the combined leakage rate for all secondary containment bypass leakage paths is ≤ [ ] $L_a$ when pressurized to ≥ [ ] psig. | In accordance with the Primary Containment Leakage Rate Testing Program ] |
| SR 3.6.1.3.13 | ---------- **- NOTE -** [Only required to be met in MODES 1, 2, and 3.] ---------- Verify leakage rate through each MSIV is ≤ [11.5] scfh when tested at ≥ [28.8] psig. | [In accordance with the Primary Containment Leakage Rate Testing Program] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.3.14 | ---------- **- NOTE -** [Only required to be met in MODES 1, 2 and 3.] ---------- Verify combined leakage rate through hydrostatically tested lines that penetrate the primary containment is within limits. | In accordance with the Primary Containment Leakage Rate Testing Program |
| SR 3.6.1.3.15 | ---------- **- NOTE -** [ [Only required to be met in MODES 1, 2, and 3.] ---------- Verify each [ ] inch primary containment purge valve is blocked to restrict the valve from opening > [50]%. | [18] months ] |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.4 Drywell Pressure

LCO 3.6.1.4 Drywell pressure shall be [≤ 0.75 psig].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Drywell pressure not within limit. | A.1 | Restore drywell pressure to within limit. | 1 hour |
| B. Required Action and associated Completion Time not met. | B.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | B.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.5 Drywell Air Temperature

LCO 3.6.1.5 Drywell average air temperature shall be ≤ [135]°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Drywell average air temperature not within limit. | A.1 | Restore drywell average air temperature to within limit. | 8 hours |
| B. Required Action and associated Completion Time not met. | B.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | B.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.6 Low-Low Set (LLS) Valves

LCO 3.6.1.6 The LLS function of [four] safety/relief valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One LLS valve inoperable. | A.1 Restore LLS valve to OPERABLE status. | 14 days |
| B. Required Action and associated Completion Time of Condition A not met.<br><br>OR<br><br>Two or more LLS valves inoperable. | B.1 Be in MODE 3.<br><br>AND<br><br>B.2 Be in MODE 4. | 12 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.6.1 | ----------<br>**- NOTE -**<br>Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.<br>----------<br><br>Verify each LLS valve opens when manually actuated. | [18] months [on a STAGGERED TEST BASIS for each valve solenoid] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.6.2 | ---------- **- NOTE -** Valve actuation may be excluded. ---------- Verify the LLS System actuates on an actual or simulated automatic initiation signal. | 18 months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.7 Reactor Building-to-Suppression Chamber Vacuum Breakers

LCO 3.6.1.7 Each reactor building-to-suppression chamber vacuum breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each line.

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more lines with one reactor building-to-suppression chamber vacuum breaker not closed. | A.1 | Close the open vacuum breaker. | 72 hours |
| B. One or more lines with two reactor building-to-suppression chamber vacuum breakers not closed. | B.1 | Close one open vacuum breaker. | 1 hour |
| C. One line with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening. | C.1 | Restore the vacuum breaker(s) to OPERABLE status. | 72 hours |
| D. Two [or more] lines with one or more reactor building-to-suppression chamber vacuum breakers inoperable for opening. | D.1 | Restore all vacuum breakers in [one] line to OPERABLE status. | 1 hour |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Required Action and Associated Completion Time not met. | E.1 Be in MODE 3.<br><br>AND<br><br>E.2 Be in MODE 4. | 12 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.7.1 | ---<br>**- NOTES -**<br>1. Not required to be met for vacuum breakers that are open during Surveillances.<br><br>2. Not required to be met for vacuum breakers open when performing their intended function.<br>---<br><br>Verify each vacuum breaker is closed. | 14 days |
| SR 3.6.1.7.2 | Perform a functional test of each vacuum breaker. | [92] days |
| SR 3.6.1.7.3 | Verify the opening setpoint of each vacuum breaker is ≤ [0.5] psid. | [18] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.8 Suppression Chamber-to-Drywell Vacuum Breakers

LCO 3.6.1.8 [Nine] suppression chamber-to-drywell vacuum breakers shall be OPERABLE for opening.

AND

[Twelve] suppression chamber-to-drywell vacuum breakers shall be closed, except when performing their intended function.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One required suppression chamber-to-drywell vacuum breaker inoperable for opening. | A.1 | Restore one vacuum breaker to OPERABLE status. | 72 hours |
| B. One suppression chamber-to-drywell vacuum breaker not closed. | B.1 | Close the open vacuum breaker. | 2 hours |
| C. Required Action and associated Completion Time not met. | C.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.8.1 | ---------- **- NOTE -** Not required to be met for vacuum breakers that are open during Surveillances. ---------- | |
| | Verify each vacuum breaker is closed. | 14 days<br><br>AND<br><br>Within 2 hours after any discharge of steam to the suppression chamber from the safety/ relief valves (S/RVs) or any operation that causes the drywell-to-suppression chamber differential pressure to be reduced by ≥ [0.5] psid |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.8.2 | Perform a functional test of each required vacuum breaker. | 31 days<br><br>AND<br><br>Within 12 hours after any discharge of steam to the suppression chamber from the S/RVs<br><br>AND<br><br>Within 12 hours following an operation that causes any of the vacuum breakers to open |
| SR 3.6.1.8.3 | Verify the opening setpoint of each required vacuum breaker is ≤ [0.5] psid. | [18] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.1.9 Main Steam Isolation Valve (MSIV) Leakage Control System (LCS)

LCO 3.6.1.9 Two MSIV LCS subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One MSIV LCS subsystem inoperable. | A.1 | Restore MSIV LCS subsystem to OPERABLE status. | 30 days |
| B. Two MSIV LCS subsystems inoperable. | B.1 | Restore one MSIV LCS subsystem to OPERABLE status. | 7 days |
| C. Required Action and associated Completion Time not met. | C.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.1.9.1 | Operate each MSIV LCS blower ≥ [15] minutes. | 31 days |
| SR 3.6.1.9.2 | Verify electrical continuity of each inboard MSIV LCS subsystem heater element circuitry. | 31 days |
| SR 3.6.1.9.3 | Perform a system functional test of each MSIV LCS subsystem. | [18] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression pool average temperature shall be:

a. ≤ [95]°F [when any OPERABLE intermediate range monitor (IRM) channel is > [25/40] divisions of full scale on Range 7] [with THERMAL POWER > 1% RTP] and no testing that adds heat to the suppression pool is being performed,

b. ≤ [105]°F [when any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7] [with THERMAL POWER > 1% RTP] and testing that adds heat to the suppression pool is being performed, and

c. ≤ [110]°F [when all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7] [with THERMAL POWER ≤ 1% RTP].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Suppression pool average temperature > [95]°F but ≤ [110]°F.<br><br>AND<br><br>[Any OPERABLE IRM channel > [25/40] divisions of full scale on Range 7] [THERMAL POWER > 1% RTP].<br><br>AND<br><br>Not performing testing that adds heat to the suppression pool. | A.1 Verify suppression pool average temperature ≤ [110]°F.<br><br>AND<br><br>A.2 Restore suppression pool average temperature to ≤ [95]°F. | Once per hour<br><br><br><br>24 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| B. Required Action and associated Completion Time of Condition A not met. | B.1 | Reduce THERMAL POWER [until all OPERABLE IRM channels ≤ [25/40] divisions of full scale on Range 7] [to ≤ 1% RTP.] | 12 hours |
| C. Suppression pool average temperature > [105]°F.<br><br>AND<br><br>[Any OPERABLE IRM channel > [25/40] divisions of full scale on Range 7] [THERMAL POWER > 1% RTP].<br><br>AND<br><br>Performing testing that adds heat to the suppression pool. | C.1 | Suspend all testing that adds heat to the suppression pool. | Immediately |
| D. Suppression pool average temperature > [110]°F but ≤ [120]°F. | D.1 | Place the reactor mode switch in the shutdown position. | Immediately |
| | AND | | |
| | D.2 | Verify suppression pool average temperature ≤ [120]°F. | Once per 30 minutes |
| | AND | | |
| | D.3 | Be in MODE 4. | 36 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. Suppression pool average temperature > [120]°F. | E.1 Depressurize the reactor vessel to < [200] psig.<br><br>AND<br><br>E.2 Be in MODE 4. | 12 hours<br><br><br><br>[36 hours] |

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression pool water level shall be ≥ [12 ft 2 inches] and ≤ [12 ft 6 inches].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Suppression pool water level not within limits. | A.1 | Restore suppression pool water level to within limits. | 2 hours |
| B. Required Action and associated Completion Time not met. | B.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | B.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One RHR suppression pool cooling subsystem inoperable. | A.1 | Restore RHR suppression pool cooling subsystem to OPERABLE status. | 7 days |
| B. Two RHR suppression pool cooling subsystems inoperable. | B.1 | Restore one RHR suppression pool cooling subsystem to OPERABLE status. | 8 hours |
| C. Required Action and associated Completion Time not met. | C.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.2.3.1 | Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | 31 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.2.3.2 | Verify each RHR pump develops a flow rate > [7700] gpm through the associated heat exchanger while operating in the suppression pool cooling mode. | [In accordance with the Inservice Testing Program or 92 days] |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.2.4 Residual Heat Removal (RHR) Suppression Pool Spray

LCO 3.6.2.4 Two RHR suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One RHR suppression pool spray subsystem inoperable. | A.1 | Restore RHR suppression pool spray subsystem to OPERABLE status. | 7 days |
| B. Two RHR suppression pool spray subsystems inoperable. | B.1 | Restore one RHR suppression pool spray subsystem to OPERABLE status. | 8 hours |
| C. Required Action and associated Completion Time not met. | C.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.2.4.1 | Verify each RHR suppression pool spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | 31 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.2.4.2 | [ Verify each RHR pump develops a flow rate ≥ [400] gpm through the heat exchanger while operating in the suppression pool spray mode. | In accordance with the Inservice Testing Program or 92 days ] |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.2.5 Drywell-to-Suppression Chamber Differential Pressure

LCO 3.6.2.5 The drywell pressure shall be maintained ≥ [1.5] psid above the pressure of the suppression chamber.

APPLICABILITY: MODE 1 during the time period:

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

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Drywell-to-suppression chamber differential pressure not within limit. | A.1 Restore differential pressure to within limit. | 8 hours |
| B. Required Action and associated Completion Time not met. | B.1 Reduce THERMAL POWER to ≤ [15]% RTP. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.2.5.1 | Verify drywell-to-suppression chamber differential pressure is within limit. | 12 hours |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.3.1 Primary Containment Hydrogen Recombiners (if permanently installed)

LCO 3.6.3.1 Two primary containment hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.6 CONTAINMENT SYSTEMS

### 3.6.3.2 [Drywell Cooling System Fans]

LCO 3.6.3.2 Two [drywell cooling system fans] shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One [required] [drywell cooling system fan] inoperable. | A.1 | ---------- **- NOTE -** LCO 3.0.4 is not applicable. ---------- Restore [required] [drywell cooling system fan] to OPERABLE status. | 30 days |
| B. Two [required] [drywell cooling system fans] inoperable. | B.1 | Verify by administrative means that the hydrogen control function is maintained. | 1 hour<br>AND<br>Once per 12 hours thereafter |
| | AND | | |
| | B.2 | Restore one [required] [drywell cooling system fan] to OPERABLE status. | 7 days |
| C. Required Action and Associated Completion Time not met. | C.1 | Be in MODE 3. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.2.1 | Operate each [required] [drywell cooling system fan] for ≥ [15] minutes. | 92 days |
| SR 3.6.3.2.2 | [ Verify each [required] [drywell cooling system fan] flow rate is ≥ [500] scfm. | [18] months ] |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.3.3 Primary Containment Oxygen Concentration

LCO 3.6.3.3 The primary containment oxygen concentration shall be < 4.0 volume percent.

APPLICABILITY: MODE 1 during the time period:

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.3.1 | Verify primary containment oxygen concentration is within limits. | 7 days |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.3.4 Containment Atmosphere Dilution (CAD) System

LCO 3.6.3.4 Two CAD subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.3.4.1 | Verify ≥ [4350] gal of liquid nitrogen are contained in the CAD System. | 31 days |
| SR 3.6.3.4.2 | Verify each CAD subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. | 31 days |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.4.1 [Secondary] Containment

LCO 3.6.4.1 The [secondary] containment shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.4.1.1 | [ Verify [secondary] containment vacuum is ≥ [0.25] inch of vacuum water gauge. | 24 hours ] |
| SR 3.6.4.1.2 | Verify all [secondary] containment equipment hatches are closed and sealed. | 31 days |
| SR 3.6.4.1.3 | Verify one [secondary] containment access door in each access opening is closed. | 31 days |
| SR 3.6.4.1.4 | [ Verify [secondary] containment can be drawn down to ≥ [0.25] inch of vacuum water gauge in ≤ [120] seconds using one standby gas treatment (SGT) subsystem. | [18] months on a STAGGERED TEST BASIS for each subsystem ] |
| SR 3.6.4.1.5 | Verify the [secondary] containment can be maintained ≥ [0.25] inch of vacuum water gauge for 1 hour using one SGT subsystem at a flow rate ≤ [4000] cfm. | [18] months on a STAGGERED TEST BASIS for each SGT subsystem |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

LCO 3.6.4.2 Each SCIV shall be OPERABLE.

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

ACTIONS

**- NOTES -**

1. Penetration flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by SCIVs.

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

ACTIONS (continued)

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

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.4.2.1 | ---------- **- NOTES -** 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. ---------- Verify each secondary containment isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. | 31 days |
| SR 3.6.4.2.2 | Verify the isolation time of each power operated, automatic SCIV is within limits. | [In accordance with the Inservice Testing Program or 92 days] |
| SR 3.6.4.2.3 | Verify each automatic SCIV actuates to the isolation position on an actual or simulated actuation signal. | [18] months |

## 3.6 CONTAINMENT SYSTEMS

### 3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 [Two] SGT subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One SGT subsystem inoperable. | A.1 | Restore SGT subsystem to OPERABLE status. | 7 days |
| B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3. | B.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | B.2 | Be in MODE 4. | 36 hours |
| C. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. | | - NOTE -<br>LCO 3.0.3 is not applicable. | |
| | C.1 | Place OPERABLE SGT subsystem in operation. | Immediately |
| | OR | | |
| | C.2.1 | Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. | Immediately |
| | AND | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | C.2.2 Initiate action to suspend OPDRVs. | Immediately |
| D. Two SGT subsystems inoperable in MODE 1, 2, or 3. | D.1 Enter LCO 3.0.3. | Immediately |
| E. Two SGT subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. | E.1 ---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. | Immediately |
| | AND | |
| | E.2 Initiate action to suspend OPDRVs. | Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.7 PLANT SYSTEMS

### 3.7.1 Residual Heat Removal Service Water (RHRSW) System

LCO 3.7.1 Two RHRSW subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One RHRSW pump inoperable. | A.1 | Restore RHRSW pump to OPERABLE status. | 30 days |
| B. One RHRSW pump in each subsystem inoperable. | B.1 | Restore one RHRSW pump to OPERABLE status. | 7 days |
| C. One RHRSW subsystem inoperable for reasons other than Condition A. | C.1 | ---------- **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown," for [RHR shutdown cooling] made inoperable by RHRSW System. ---------- Restore RHRSW subsystem to OPERABLE status. | 7 days |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. Both RHRSW subsystems inoperable for reasons other than Condition B. | D.1 | ---------- **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.4.8 for [RHR shutdown cooling] made inoperable by RHRSW System. ---------- Restore one RHRSW subsystem to OPERABLE status. | [8] hours |
| E. Required Action and associated Completion Time not met. | E.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | E.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.1.1 | Verify each RHRSW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position. | 31 days |

## 3.7 PLANT SYSTEMS

### 3.7.2 [Plant Service Water (PSW)] System and [Ultimate Heat Sink (UHS)]

LCO 3.7.2 Two [PSW] subsystems and [UHS] shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One [PSW] pump inoperable. | A.1 | Restore [PSW] pump to OPERABLE status. | 30 days |
| B. One [PSW] pump in each subsystem inoperable. | B.1 | Restore one [PSW] pump to OPERABLE status. | 7 days |
| C. [ One or more cooling towers with one cooling tower fan inoperable. | C.1 | Restore cooling tower fan(s) to OPERABLE status. | 7 days ] |
| ---------- **- REVIEWER'S NOTE -** 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. ---------- D. [ Water temperature of the UHS > [90]°F and ≤ [ ]°F. | D.1 | Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period. | Once per hour] |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. One [PSW] subsystem inoperable for reasons other than Condition[s] A [and C]. | E.1 ---------- **- NOTES -** 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for diesel generator made inoperable by [PSW]. 2. Enter applicable Conditions and Required Actions of LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown," for [RHR shutdown cooling] made inoperable by [PSW]. ---------- Restore the [PSW] subsystem to OPERABLE status. | 72 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. Required Action and associated Completion Time of Condition A, B [or D] not met.<br><br>OR<br><br>Both [PSW] subsystems inoperable for reasons other than Condition[s] B [and C].<br><br>[ OR<br><br>[UHS] inoperable for reasons other than Condition C [or D]. ] | F.1 Be in MODE 3.<br><br>AND<br><br>F.2 Be in MODE 4. | 12 hours<br><br><br><br>36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.2.1 | [ Verify the water level of each [PSW] cooling tower basin is ≥ [ ] ft. | 24 hours ] |
| SR 3.7.2.2 | [ Verify the water level [in each PSW pump well of the intake structure] is ≥ [60.1] ft [mean sea level]. | 24 hours ] |
| SR 3.7.2.3 | [ Verify the average water temperature of [UHS] is ≤ [ ]°F. | 24 hours ] |
| SR 3.7.2.4 | [ Operate each [PSW] cooling tower fan for ≥ [15] minutes. | 31 days ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.2.5 | ---------- **- NOTE -** Isolation of flow to individual components does not render [PSW] System inoperable. ----------<br><br>Verify each [PSW] subsystem manual, power operated, and automatic valve in the flow paths servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.7.2.6 | Verify each [PSW] subsystem actuates on an actual or simulated initiation signal. | [18] months |

## 3.7 PLANT SYSTEMS

### 3.7.3 Diesel Generator (DG) [1B] Standby Service Water (SSW) System

LCO 3.7.3 The DG [1B] SSW System shall be OPERABLE.

APPLICABILITY: When DG [1B] is required to be OPERABLE.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. DG [1B] SSW System inoperable. | | ---------- **- NOTE -** LCO 3.0.4 is not applicable. ---------- | |
| | A.1 | Align cooling water to DG [1B] from a Unit [1] plant service water (PSW) subsystem. | 8 hours |
| | AND | | |
| | A.2 | Verify cooling water is aligned to DG [1B] from a Unit [1] PSW subsystem. | Once per 31 days |
| | AND | | |
| | A.3 | Restore DG [1B] SSW System to OPERABLE status. | 60 days |
| B. Required Action and Associated Completion Time not met. | B.1 | Declare DG [1B] inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.3.1 | Verify each DG [1B] SSW System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | 31 days |
| SR 3.7.3.2 | Verify the DG [1B] SSW System pump starts automatically when DG [1B] starts and energizes the respective bus. | [18] months |

## 3.7 PLANT SYSTEMS

### 3.7.4 [Main Control Room Environmental Control (MCREC)] System

LCO 3.7.4 Two [MCREC] subsystems shall be OPERABLE.

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**- NOTE -**

The main control room boundary may be opened intermittently under administrative control

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One [MCREC] subsystem inoperable. | A.1 | Restore [MCREC] subsystem to OPERABLE status. | 7 days |
| B. Two [MCREC] subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3. | B.1 | Restore control room boundary to OPERABLE status. | 24 hours |
| C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3. | C.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | C.2 | Be in MODE 4. | 36 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. Required Action and associated Completion Time of Condition A not met during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. | | ---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- | |
| | D.1 | ---------- **- NOTE -** [ Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ] ---------- | |
| | | Place OPERABLE [MCREC] subsystem in [pressurization] mode. | Immediately |
| | <u>OR</u> | | |
| | D.2.1 | Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment. | Immediately |
| | <u>AND</u> | | |
| | D.2.2 | Initiate action to suspend OPDRVs. | Immediately |
| E. Two [MCREC] subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B. | E.1 | Enter LCO 3.0.3. | Immediately |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| F. Two [MCREC] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. | | ---------- **- NOTE -** LCO 3.0.3 is not applicable. ---------- | |
| | F.1 | Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment. | Immediately |
| | AND | | |
| | F.2 | Initiate action to suspend OPDRVs. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.4.1 | Operate each [MCREC] subsystem for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes]. | 31 days |
| SR 3.7.4.2 | Perform required [MCREC] filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)]. | In accordance with the [VFTP] |
| SR 3.7.4.3 | Verify each [MCREC] subsystem actuates on an actual or simulated initiation signal. | [18] months |
| SR 3.7.4.4 | [ Verify each [MCREC] subsystem can maintain a positive pressure of ≥ [0.1] inches water gauge relative to the [turbine building] during the [pressurization] mode of operation at a flow rate of ≤ [400] cfm. | [18] months on a STAGGERED TEST BASIS ] |

## 3.7 PLANT SYSTEMS

### 3.7.5 [Control Room Air Conditioning (AC)] System

LCO 3.7.5 Two [control room AC] subsystems shall be OPERABLE.

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

ACTIONS

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | C.2.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.<br><br>AND<br><br>C.2.2 Initiate action to suspend OPDRVs. | Immediately<br><br><br><br><br>Immediately |
| D. Two [control room AC] subsystems inoperable in MODE 1, 2, or 3. | D.1 Enter LCO 3.0.3. | Immediately |
| E. Two [control room AC] subsystems inoperable during movement of [recently] irradiated fuel assemblies in the [secondary] containment or during OPDRVs. | ---------- **- NOTE -** LCO 3.0.3 is not applicable. ----------<br><br>E.1 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.<br><br>AND<br><br>E.2 Initiate actions to suspend OPDRVs. | <br><br>Immediately<br><br><br><br><br>Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.5.1 | Verify each [control room AC] subsystem has the capability to remove the assumed heat load. | [18] months |

## 3.7 PLANT SYSTEMS

### 3.7.6 Main Condenser Offgas

LCO 3.7.6 The gross gamma activity rate of the noble gases measured at [the main condenser evacuation system pretreatment monitor station] shall be ≤ [240] mCi/second [after decay of 30 minutes].

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Gross gamma activity rate of the noble gases not within limit. | A.1 Restore gross gamma activity rate of the noble gases to within limit. | 72 hours |
| B. Required Action and associated Completion Time not met. | B.1 [ Isolate all mainsteam lines. | 12 hours ] |
| | OR | |
| | B.2 Isolate SJAE. | 12 hours |
| | OR | |
| | B.3.1 Be in MODE 3. | 12 hours |
| | AND | |
| | B.3.2 Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.6.1 | ---------- **- NOTE -** Not required to be performed until 31 days after any [main steam line not isolated and] SJAE in operation. ---------- | |
| | Verify the gross gamma activity rate of the noble gases is ≤ [240] mCi/second [after decay of 30 minutes]. | 31 days<br><br><u>AND</u><br><br>Once within 4 hours after a ≥ 50% increase in the nominal steady state fission gas release after factoring out increases due to changes in THERMAL POWER level |

## 3.7 PLANT SYSTEMS

### 3.7.7 The Main Turbine Bypass System

LCO 3.7.7 The Main Turbine Bypass System shall be OPERABLE.

OR

The following limits are made applicable:

[ a. LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," limits for an inoperable Main Turbine Bypass System, as specified in the [COLR]; and ]

[ b. LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," limits for an inoperable Main Turbine Bypass System, as specified in the [COLR]. ]

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. [Requirements of the LCO not met or Main Turbine Bypass System inoperable]. | A.1 [Satisfy the requirements of the LCO or restore Main Turbine Bypass System to OPERABLE status]. | 2 hours |
| B. Required Action and associated Completion Time not met. | B.1 Reduce THERMAL POWER to < 25% RTP. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.7.1 | Verify one complete cycle of each main turbine bypass valve. | 31 days |

SURVEILLANCE REQUIREMENTS (continued)

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

## 3.7 PLANT SYSTEMS

### 3.7.8 Spent Fuel Storage Pool Water Level

LCO 3.7.8 The spent fuel storage pool water level shall be ≥ [23] ft over the top of irradiated fuel assemblies seated in the spent fuel storage pool racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.7.8.1 | Verify the spent fuel storage pool water level is ≥ [23] ft over the top of irradiated fuel assemblies seated in the spent fuel storage pool racks. | 7 days |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.1 AC Sources - Operating

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

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

b. [Three] diesel generators (DGs), and

[ c. Three automatic sequencers. ]

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One [required] offsite circuit inoperable. | A.1 | Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit. | 1 hour<br><br>AND<br><br>Once per 8 hours thereafter |
| | AND | | |
| | A.2 | Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable. | 24 hours from discovery of no offsite power to one division concurrent with inoperability of redundant required feature(s) |
| | AND | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | A.3 | Restore [required] offsite circuit to OPERABLE status. | 72 hours<br><br>AND<br><br>6 days from discovery of failure to meet LCO |
| B. One [required] DG inoperable. | B.1 | Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit(s). | 1 hour<br><br>AND<br><br>Once per 8 hours thereafter |
| | AND | | |
| | B.2 | Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable. | 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) |
| | AND | | |
| | B.3.1 | Determine OPERABLE DG(s) are not inoperable due to common cause failure. | [24] hours |
| | OR | | |
| | B.3.2 | Perform SR 3.8.1.2 for OPERABLE DG(s). | [24] hours |
| | AND | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | B.4 | Restore [required] DG to OPERABLE status. | 72 hours<br><br>AND<br><br>6 days from discovery of failure to meet LCO |
| C. Two [required] offsite circuits inoperable. | C.1 | Declare required feature(s) inoperable when the redundant required feature(s) are inoperable. | 12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s) |
| | AND | | |
| | C.2 | Restore one [required] offsite circuit to OPERABLE status. | 24 hours |
| D. One [required] offsite circuit inoperable. | | ---------- **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any division. ---------- | |
| | D.1 | Restore [required] offsite circuit to OPERABLE status. | 12 hours |
| | OR | | |
| | D.2 | Restore [required] DG to OPERABLE status. | 12 hours |
| E. Two [or three] [required] DGs inoperable. | E.1 | Restore one [required] DG to OPERABLE status. | 2 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. [ One [required] [automatic load sequencer] inoperable. | ---------- **- REVIEWER'S NOTE -** 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. ---------- | |
| | F.1 Restore [required] [automatic load sequencer] to OPERABLE status. | [12] hours ] |
| G. Required Action and Associated Completion Time of Condition A, B, C, D, E, or [F] not met. | G.1 Be in MODE 3. | 12 hours |
| | AND | |
| | G.2 Be in MODE 4. | 36 hours |
| H. Three or more [required] AC sources inoperable [for reasons other than Condition E]. | H.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.1 | Verify correct breaker alignment and indicated power availability for each [required] offsite circuit. | 7 days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.2 | ---------- **- NOTES -** 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. [ 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. ] ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. | 31 days |
| SR 3.8.1.3 | ---------- **- NOTES -** 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ [1710] kW and ≤ [2000] kW. | 31 days |
| SR 3.8.1.4 | Verify each day tank [and engine mounted tank] contain[s] ≥ [900] gal of fuel oil. | 31 days |
| SR 3.8.1.5 | Check for and remove accumulated water from each day tank [and engine mounted tank]. | [31] days |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| 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]. | [92] days |
| SR 3.8.1.7 | ---------- **- NOTE -** All DG starts may be preceded by an engine prelube period. ----------<br><br>Verify each DG starts from standby condition and achieves:<br><br>a. In ≤ [12] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and<br><br>b. Steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. | 184 days |
| SR 3.8.1.8 | ---------- **- NOTE -** [ This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ] ----------<br><br>[ Verify [automatic [and] manual] transfer of [unit power supply] from the [normal offsite circuit to the alternate] offsite circuit. | [18] months ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.9 | ---------- **- NOTES -** [ 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.<br><br>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ] ---------- | |
| | Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:<br><br>a. Following load rejection, the frequency is ≤ [65.5] Hz,<br><br>b. Within [3] seconds following load rejection, the voltage is ≥ [3740] V and ≤ [4580] V, and<br><br>[ c. Within [6] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz. ] | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.10 | ---------- **- NOTES -** [1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.<br><br>2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ] ---------- | |
| | Verify each DG does not trip and voltage is maintained ≤ [4800] V during and following a load rejection of ≥ [1710] kW and ≤ [2000] kW. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.11 | ---------- **- NOTES -** 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- | |
| | Verify on an actual or simulated loss of offsite power signal:<br>a. De-energization of emergency buses,<br>b. Load shedding from emergency buses, and<br>c. DG auto-starts from standby condition and:<br>1. Energizes permanently connected loads in ≤ [12] seconds,<br>2. Energizes auto-connected shutdown loads through [automatic load sequencer],<br>3. Maintains steady state voltage ≥ [3740] V and ≤ [4580] V,<br>4. Maintains steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and<br>5. Supplies permanently connected and auto-connected shutdown loads for ≥ [5] minutes. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.12 | ---------- **- NOTES -** 1. [ All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not 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. ---------- | |
| | Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: | [18] months ] |
| | a. In ≤ [12] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and frequency ≥ [58.8] Hz, | |
| | b. Achieves steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz, | |
| | c. Operates for ≥ [5] minutes, | |
| | d. Permanently connected loads remain energized from the offsite power system, and | |
| | e. Emergency loads are energized [or auto-connected through the automatic load sequencer] from the offsite power system. | |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.13 | ---------- **- NOTE -** [ This Surveillance shall not normally be performed in MODE 1, 2 or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ] ---------- | |
| | Verify each DG's automatic trips are bypassed on [actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ECCS initiation signal] except:<br>a. Engine overspeed,<br>b. Generator differential current,<br>[ c. Low lube oil pressure,<br>d. High crankcase pressure, and<br>e. Start failure relay. ] | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.14 | ---------- **- NOTES -** 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not 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. 3. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. ---------- | |
| | Verify each DG operating at a power factor ≤ [0.9] operates for ≥ 24 hours:<br>a. For ≥ [2] hours loaded ≥ [3100] kW and ≤ [3400] kW and<br>b. For the remaining hours of the test loaded ≥ [2850] kW and ≤ [3150] kW. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.15 | ---------- **- NOTES -** 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [1710] kW and ≤ [2000] kW.<br><br>Momentary transients outside of load range do not invalidate this test.<br><br>2. All DG starts may be preceded by an engine prelube period. ----------<br><br>Verify each DG starts and achieves:<br><br>a. In ≤ [12] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and<br><br>b. Steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. | [18] months |
| SR 3.8.1.16 | ---------- **- NOTE -** This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ----------<br><br>Verify each DG:<br><br>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power,<br><br>b. Transfers loads to offsite power source, and<br><br>c. Returns to ready-to-load operation. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.17 | ---------- **- NOTE -** [ This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- | |
| | Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by:<br><br>a. Returning DG to ready-to-load operation and<br><br>[ b. Automatically energizing the emergency load from offsite power. ] | [18] months ] |
| SR 3.8.1.18 | ---------- **- NOTE -** [ This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ] ---------- | |
| | [ Verify interval between each sequenced load block is within ± [10% of design interval] [for each load sequencer timer ]. | [18] months ] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.19 | ---------- **- NOTES -** 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- | |
| | Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:<br>a. De-energization of emergency buses,<br>b. Load shedding from emergency buses, and<br>c. DG auto-starts from standby condition and:<br>1. Energizes permanently connected loads in ≤ [12] seconds,<br>2. Energizes auto-connected emergency loads through [load sequencer],<br>3. Achieves steady state voltage ≥ [3740] V and ≤ [4580] V,<br>4. Achieves steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and<br>5. Supplies permanently connected and auto-connected emergency loads for ≥ [5] minutes. | [18] months |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.20 | ---------- **- NOTE -** All DG starts may be preceded by an engine prelube period. ---------- | |
| | Verify, when started simultaneously from standby condition, [each] [2A and 2C] DG achieves:<br><br>a. In ≤ [12] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and<br><br>b. Steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. | 10 years |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.2 AC Sources - Shutdown

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

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

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

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

ACTIONS

**- NOTE -**

LCO 3.0.3 is not applicable.

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One required offsite circuit inoperable. | | **- NOTE -**<br>Enter applicable Condition and Required Actions of LCO 3.8.10, with one required division de-energized as a result of Condition A. | |
| | A.1 | Declare affected required feature(s), with no offsite power available, inoperable. | Immediately |
| | OR | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment. | Immediately |
| | AND | |
| | A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs). | Immediately |
| | AND | |
| | A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status. | Immediately |
| B. One required DG inoperable. | B.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | B.2 Suspend movement of [recently] irradiated fuel assemblies in [secondary] containment. | Immediately |
| | AND | |
| | B.3 Initiate action to suspend OPDRVs. | Immediately |
| | AND | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | B.4 Initiate action to restore required DG to OPERABLE status. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.2.1 | ---------- **- NOTES -** 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.16, [SR 3.8.1.18], and SR 3.8.1.19. 2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2., "ECCS-Shutdown." ---------- | |
| | For AC sources required to be OPERABLE the SRs of Specification 3.8.1, except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable. | In accordance with applicable SRs |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

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

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each DG.

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more DGs with fuel oil level < [33,000] gal and > [28,285] gal in storage tank. | A.1 | Restore fuel oil level to within limits. | 48 hours |
| B. One or more DGs with lube oil inventory < [500] gal and > [425] gal. | B.1 | Restore lube oil inventory to within limits. | 48 hours |
| C. One or more DGs with stored fuel oil total particulates not within limit. | C.1 | Restore fuel oil total particulates to within limit. | 7 days |
| D. One or more DGs with new fuel oil properties not within limits. | D.1 | Restore stored fuel oil properties to within limits. | 30 days |
| 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 |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| 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 ≥ [33,000] gal of fuel. | 31 days |
| SR 3.8.3.2 | Verify lube oil inventory is ≥ [500] gal. | 31 days |
| SR 3.8.3.3 | Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program. | In accordance with the Diesel Fuel Oil Testing Program |
| SR 3.8.3.4 | Verify each DG air start receiver pressure is ≥ [225] psig. | 31 days |
| SR 3.8.3.5 | Check for and remove accumulated water from each fuel oil storage tank. | [31] days |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.4 DC Sources - Operating

LCO 3.8.4 The [Division 1 and Division 2 station service, and DG 1B, 2A, and 2C] DC electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One [or two] battery charger[s on one division] inoperable. | A.1 | Restore battery terminal voltage to greater than or equal to the minimum established float voltage. | 2 hours |
| | AND | | |
| | A.2 | Verify battery float current ≤ [2] amps. | Once per [12] hours |
| | AND | | |
| | A.3 | Restore battery charger[s] to OPERABLE status. | 7 days |
| [B. One [or two] batter[y][ies on one division] 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 of Condition A[, B, or C] not met for station service DC subsystem. | D.1 | Be in MODE 3. | 12 hours |
| | AND | | |
| | D.2 | Be in MODE 4. | 36 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| E. [ Required Action and associated Completion Time of Condition A[, B, or C] not met for DG DC subsystem. | E.1 Declare associated DG inoperable. | Immediately ] |

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 |
| SR 3.8.4.2 | Verify each required battery charger supplies ≥ [400 amps for station service subsystems, and ≥ 100 amps for DG subsystems] at greater than or equal to the minimum established float voltage for ≥ [4] hours.<br><br>OR<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] |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.4.3 | ---------- **- NOTES -** 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3. 2. This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test. | [18] months |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.5 DC Sources - Shutdown

LCO 3.8.5 [DC electrical power subsystems 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 and the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a licensing basis (CTS) requiring the same level of DC electrical power subsystem support as is required for power operating conditions.

---

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

ACTIONS

---

**- NOTE -**

LCO 3.0.3 is not applicable.

---

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| [A. One [or two] battery charger[s on one division] inoperable.<br><br>AND | A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage.<br><br>AND | 2 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| The redundant division battery and charger[s] OPERABLE. | A.2 Verify battery float current ≤ [2] amps.<br><br>AND<br><br>A.3 Restore battery charger[s] to OPERABLE status. | Once per [12] hours<br><br><br><br>7 days ] |
| B. One [or more] required DC electrical power subsystem[s] inoperable [for reasons other than Condition A.<br><br>OR<br><br>Required Action and associated Completion Time of Condition A not met.] | B.1 Declare affected required feature(s) inoperable.<br><br>OR<br><br>B.2.1 Suspend CORE ALTERATIONS.<br><br>AND<br><br>B.2.2 Suspend movement of [recently] irradiated fuel assemblies in the [secondary] containment.<br><br>AND<br><br>B.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.<br><br>AND<br><br>B.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status. | Immediately<br><br><br><br>Immediately<br><br><br><br>Immediately<br><br><br><br><br><br><br><br>Immediately<br><br><br><br><br><br>Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.6 Battery Parameters

**- REVIEWER'S NOTE -**

Licensees must implement a program, as specified in Specification 5.5.14, to monitor battery parameters that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications."

LCO 3.8.6 Battery parameters for the [station service and DG] batteries shall be within limits.

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

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each battery.

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| **- NOTE -**<br>Required Action C.2 shall be completed if electrolyte level was below the top of plates. | | **- NOTE -**<br>Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. | |
| C. One [or two] batter[y][ies on one division] with one or more cells electrolyte level less than minimum established design limits. | C.1 | Restore electrolyte level to above top of plates. | 8 hours |
| | AND | | |
| | C.2 | Verify no evidence of leakage. | 12 hours |
| | AND | | |
| | C.3 | Restore electrolyte level to greater than or equal to minimum established design limits. | 31 days |
| D. One [or two] batter[y][ies on one division] with pilot cell electrolyte temperature less than minimum established design limits. | D.1 | Restore battery pilot cell temperature to greater than or equal to minimum established design limits. | 12 hours |
| E. One or more batteries in redundant divisions with battery parameters not within limits. | E.1 | Restore battery parameters for batteries in one division to within limits. | 2 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.<br><br>OR<br><br>One [or two] batter[y][ies on one division] with one or more battery cells float voltage < [2.07] V and float current > [2] amps. | F.1 Declare associated battery inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.6.5 | Verify each battery connected cell voltage is ≥ [2.07] V. | 92 days |
| SR 3.8.6.6 | ---------- **- NOTE -** This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- | |
| | Verify battery capacity is ≥ [80%] of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. | 60 months<br><br><u>AND</u><br><br>12 months when battery shows degradation, or has reached [85]% of the expected life with capacity < 100% of manufacturer's rating<br><br><u>AND</u><br><br>24 months when battery has reached [85]% of the expected life with capacity ≥ 100% of manufacturer's rating |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.7 Inverters - Operating

LCO 3.8.7 The [Division 1] and [Division 2] 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 transformers] [inverter using internal AC source] and

b. All other AC vital buses are energized from their associated OPERABLE inverters. ]

---

APPLICABILITY: MODES 1, 2, and 3.

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>Restore inverter to OPERABLE status. | 24 hours |
| B. Required Action and associated Completion Time not met. | B.1 | Be in MODE 3. | 12 hours |
| | <u>AND</u> | | |
| | B.2 | Be in MODE 4. | 36 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.8 Inverters - Shutdown

LCO 3.8.8 [Inverter(s) shall be OPERABLE to support 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 licensing basis (CTS) requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions.

---

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

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> | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.2.2 Suspend handling of [recently] irradiated fuel assemblies in the [secondary] containment. | Immediately |
| | AND | |
| | A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel. | Immediately |
| | AND | |
| | A.2.4 Initiate action to restore [required] inverters to OPERABLE status. | Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.9 Distribution Systems - Operating

LCO 3.8.9 [Division 1] and [Division 2] AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more AC electrical power distribution subsystems inoperable. | | ---------- **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC divisions made inoperable by inoperable power distribution subsystems. ---------- | |
| | A.1 | Restore AC electrical power distribution subsystem(s) to OPERABLE status. | 8 hours<br><br><u>AND</u><br><br>16 hours from discovery of failure to meet LCO |
| B. [ One or more AC vital buses inoperable. | B.1 | Restore AC vital bus distribution subsystem(s) to OPERABLE status. | 2 hours<br><br><u>AND</u><br><br>16 hours from discovery of failure to meet LCO ] |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| C. One or more [station service] DC electrical power distribution subsystems inoperable. | C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status. | 2 hours<br><br>AND<br><br>16 hours from discovery of failure to meet LCO |
| D. Required Action and associated Completion Time of Condition A, B, or C not met. | D.1 Be in MODE 3.<br><br>AND<br><br>D.2 Be in MODE 4. | 12 hours<br><br><br><br>36 hours |
| E. [ One or more DG DC electrical power distribution subsystems inoperable. | E.1 Declare associated DG(s) inoperable. | Immediately ] |
| F. Two or more electrical power distribution subsystems inoperable that result in a loss of function. | F.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portions of the AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

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

ACTIONS

- NOTE -

LCO 3.0.3 is not applicable.

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

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

### 3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required refueling equipment interlocks inoperable. | A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s). | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.1.1 | Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs:<br>a. All-rods-in,<br>b. Refuel platform position,<br>c. Refuel platform [fuel grapple], fuel loaded,<br>[d. Refuel platform fuel grapple fully retracted position,]<br>[e. Refuel platform frame mounted hoist, fuel loaded,]<br>[f. Refuel platform monorail mounted hoist, fuel loaded,] and<br>[g. Service platform hoist, fuel loaded.] | 7 days |

## 3.9 REFUELING OPERATIONS

### 3.9.2 Refuel Position One-Rod-Out Interlock

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

### 3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

### 3.9.4 Control Rod Position Indication

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

APPLICABILITY: MODE 5.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each required channel.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required control rod position indication channels inoperable. | A.1.1 Suspend in vessel fuel movement. | Immediately |
| | AND | |
| | A.1.2 Suspend control rod withdrawal. | Immediately |
| | AND | |
| | A.1.3 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies. | Immediately |
| | OR | |
| | A.2.1 Initiate action to fully insert the control rod associated with the inoperable position indicator. | Immediately |
| | AND | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.2.2 Initiate action to disarm the control rod drive associated with the fully inserted control rod. | Immediately |

SURVEILLANCE REQUIREMENTS

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

## 3.9 REFUELING OPERATIONS

### 3.9.5 Control Rod OPERABILITY - Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.5.1 | ---------- **- NOTE -** Not required to be performed until 7 days after the control rod is withdrawn. ---------- Insert each withdrawn control rod at least one notch. | 7 days |
| SR 3.9.5.2 | Verify each withdrawn control rod scram accumulator pressure is ≥ [940] psig. | 7 days |

## 3.9 REFUELING OPERATIONS

### 3.9.6 [Reactor Pressure Vessel (RPV)] Water Level - [Irradiated Fuel]

LCO 3.9.6 [RPV] water level shall be ≥ [23] ft above the top of the [RPV flange].

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.6.1 | Verify [RPV] water level is ≥ [23] ft above the top of the [RPV flange]. | 24 hours |

## 3.9 REFUELING OPERATIONS

### 3.9.7 [ Reactor Pressure Vessel (RPV)] Water Level - [New Fuel or Control Rods ]

LCO 3.9.7 [RPV] water level shall be ≥ [23] ft above the top of irradiated fuel assemblies seated within the [RPV].

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.7.1 | Verify [RPV] water level is ≥ [23] ft above the top of irradiated fuel assemblies seated within the [RPV]. | 24 hours |

## 3.9 REFUELING OPERATIONS

### 3.9.8 Residual Heat Removal (RHR) - High Water Level

LCO 3.9.8 One RHR shutdown cooling subsystem shall be OPERABLE and in operation.

---

**- NOTE -**

The required RHR shutdown cooling subsystem may be not in operation for up to 2 hours per 8 hour period.

---

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level ≥ [23] ft above the top of the [RPV flange].

ACTIONS

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | B.3 | Initiate action to restore one standby gas treatment subsystem to OPERABLE status. | Immediately |
| | AND | | |
| | B.4 | Initiate action to restore isolation capability in each required [secondary] containment penetration flow path not isolated. | Immediately |
| C. No RHR shutdown cooling subsystem in operation. | C.1 | Verify reactor coolant circulation by an alternate method. | 1 hour from discovery of no reactor coolant circulation<br>AND<br>Once per 12 hours thereafter |
| | AND | | |
| | C.2 | Monitor reactor coolant temperature. | Once per hour |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.8.1 | Verify one RHR shutdown cooling subsystem is operating. | 12 hours |

## 3.9 REFUELING OPERATIONS

### 3.9.9 Residual Heat Removal (RHR) - Low Water Level

LCO 3.9.9 Two RHR shutdown cooling subsystems shall be OPERABLE, and one RHR shutdown cooling subsystem shall be in operation.

---

**- NOTE -**

The required operating shutdown cooling subsystem may be not in operation for up to 2 hours per 8 hour period.

---

APPLICABILITY: MODE 5 with irradiated fuel in the reactor pressure vessel (RPV) and the water level < [23] ft above the top of the [RPV flange].

ACTIONS

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| | B.3 | Initiate action to restore isolation capability in each required [secondary] containment penetration flow path not isolated. | Immediately |
| C. No RHR shutdown cooling subsystem in operation. | C.1 | Verify reactor coolant circulation by an alternate method. | 1 hour from discovery of no reactor coolant circulation<br><br>AND<br><br>Once per 12 hours thereafter |
| | AND | | |
| | C.2 | Monitor reactor coolant temperature. | Once per hour |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.9.1 | Verify one RHR shutdown cooling subsystem is operating. | 12 hours |

## 3.10 SPECIAL OPERATIONS

### 3.10.1 Inservice Leak and Hydrostatic Testing Operation

LCO 3.10.1 The average reactor coolant temperature specified in Table 1.1-1 for MODE 4 may be changed to "NA," and operation considered not to be in MODE 3; and the requirements of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System - Cold Shutdown," may be suspended, to allow performance of an inservice leak or hydrostatic test provided the following MODE 3 LCOs are met:

a. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions [1, 3, 4 and 5] of Table 3.3.6.2-1,

b. LCO 3.6.4.1, "Secondary Containment,"

c. LCO 3.6.4.2, "Secondary Containment Isolation Valves (SCIVs)," and

d. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

APPLICABILITY: MODE 4 with average reactor coolant temperature > [200]°F.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more of the above requirements not met. | A.1 **- NOTE -** Required Actions to be in MODE 4 include reducing average reactor coolant temperature to ≤ [200]°F. | |
| | Enter the applicable Condition of the affected LCO. | Immediately |
| | OR | |
| | A.2.1 Suspend activities that could increase the average reactor coolant temperature or pressure. | Immediately |
| | AND | |
| | A.2.2 Reduce average reactor coolant temperature to ≤ [200]°F. | 24 hours |

SURVEILLANCE REQUIREMENTS

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

## 3.10 SPECIAL OPERATIONS

### 3.10.2 Reactor Mode Switch Interlock Testing

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

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

b. No CORE ALTERATIONS are in progress.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more of the above requirements not met. | A.1 | Suspend CORE ALTERATIONS except for control rod insertion. | Immediately |
| | AND | | |
| | A.2 | Fully insert all insertable control rods in core cells containing one or more fuel assemblies. | 1 hour |
| | AND | | |
| | A.3.1 | Place the reactor mode switch in the shutdown position. | 1 hour |
| | OR | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.3.2 ---------- **- NOTE -** Only applicable in MODE 5. ---------- Place the reactor mode switch in the refuel position. | 1 hour |

SURVEILLANCE REQUIREMENTS

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

## 3.10 SPECIAL OPERATIONS

### 3.10.3 Single Control Rod Withdrawal - Hot Shutdown

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

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

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

c. All other control rods are fully inserted, and

d.1. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," MODE 5 requirements for Functions [1.a, 1.b, 7.a, 7.b, 10, and 11] of Table 3.3.1.1-1 and LCO 3.9.5, "Control Rod OPERABILITY - Refueling,"

<u>OR</u>

2. All other control rods in a five by five array centered on the control rod being withdrawn are disarmed; at which time LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 3 requirements may be changed to allow the single control rod withdrawn to be assumed to be the highest worth control rod.

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

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each requirement of the LCO.

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

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

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

## 3.10 SPECIAL OPERATIONS

### 3.10.4 Single Control Rod Withdrawal - Cold Shutdown

LCO 3.10.4 The reactor mode switch position specified in Table 1.1-1 for MODE 4 may be changed to include the refuel position, and operation considered not to be in MODE 2, to allow withdrawal of a single control rod, and subsequent removal of the associated control rod drive (CRD) if desired, provided the following requirements are met:

a. All other control rods are fully inserted,

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

<u>OR</u>

2. A control rod withdrawal block is inserted,

c.1. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," MODE 5 requirements for Functions [1.a, 1.b, 7.a, 7.b, 10, and 11] of Table 3.3.1.1-1 and LCO 3.9.5, "Control Rod OPERABILITY - Refueling,"

<u>OR</u>

2. All other control rods in a five by five array centered on the control rod being withdrawn are disarmed; at which time LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 4 requirements may be changed to allow the single control rod withdrawn to be assumed to be the highest worth control rod.

APPLICABILITY: MODE 4 with the reactor mode switch in the refuel position.

ACTIONS

**- NOTE -**

Separate Condition entry is allowed for each requirement of the LCO.

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

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | B.2.2 Initiate action to satisfy the requirements of this LCO. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.10.4.1 | Perform the applicable SRs for the required LCOs. | According to the applicable SRs |
| SR 3.10.4.2 | ---------- **- NOTE -** Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. ----------<br>Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed. | 24 hours |
| SR 3.10.4.3 | Verify all control rods, other than the control rod being withdrawn, are fully inserted. | 24 hours |
| SR 3.10.4.4 | ---------- **- NOTE -** Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. ----------<br>Verify a control rod withdrawal block is inserted. | 24 hours |

## 3.10 SPECIAL OPERATIONS

### 3.10.5 Single Control Rod Drive (CRD) Removal - Refueling

LCO 3.10.5 The requirements of:

LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation,"

LCO 3.3.8.2, "Reactor Protection System (RPS) Electric Power Monitoring,"

LCO 3.9.1, "Refueling Equipment Interlocks,"

LCO 3.9.2, "Refuel Position One Rod Out Interlock,"

LCO 3.9.4, "Control Rod Position Indication," and

LCO 3.9.5, "Control Rod OPERABILITY - Refueling,"

may be suspended in MODE 5 to allow the removal of a single CRD associated with a control rod withdrawn from a core cell containing one or more fuel assemblies, provided the following requirements are met:

a. All other control rods are fully inserted,

b. All other control rods in a five by five array centered on the withdrawn control rod are disarmed,

c. A control rod withdrawal block is inserted and LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," MODE 5 requirements may be changed to allow the single control rod withdrawn to be assumed to be the highest worth control rod, and

d. No other CORE ALTERATIONS are in progress.

APPLICABILITY: MODE 5 with LCO 3.9.5 not met.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.10 SPECIAL OPERATIONS

### 3.10.6 Multiple Control Rod Withdrawal - Refueling

LCO 3.10.6 The requirements of:

LCO 3.9.3, "Control Rod Position,"

LCO 3.9.4, "Control Rod Position Indication," and

LCO 3.9.5, "Control Rod OPERABILITY - Refueling,"

may be suspended, and the "full in" position indicators may be bypassed for any number of control rods in MODE 5, to allow withdrawal of these control rods, removal of associated control rod drives (CRDs), or both, provided the following requirements are met:

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

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

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

APPLICABILITY: MODE 5 with LCO 3.9.3, LCO 3.9.4, or LCO 3.9.5 not met.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One or more of the above requirements not met. | A.1 | Suspend withdrawal of control rods and removal of associated CRDs. | Immediately |
| | AND | | |
| | A.2 | Suspend loading fuel assemblies. | Immediately |
| | AND | | |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| | A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies. | Immediately |
| | OR | |
| | A.3.2 Initiate action to satisfy the requirements of this LCO. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.10.6.1 | Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed. | 24 hours |
| SR 3.10.6.2 | Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted. | 24 hours |
| SR 3.10.6.3 | ---------- **- NOTE -** Only required to be met during fuel loading. ---------- Verify fuel assemblies being loaded are in compliance with an approved [spiral] reload sequence. | 24 hours |

## 3.10 SPECIAL OPERATIONS

### 3.10.7 Control Rod Testing - Operating

LCO 3.10.7 The requirements of LCO 3.1.6, "Rod Pattern Control," may be suspended to allow performance of SDM demonstrations, control rod scram time testing, control rod friction testing, and the Startup Test Program, provided:

a. The banked position withdrawal sequence requirements of SR 3.3.2.1.8 are changed to require the control rod sequence to conform to the specified test sequence,

OR

b. The RWM is bypassed; the requirements of LCO 3.3.2.1, "Control Rod Block Instrumentation," Function 2 are suspended; and conformance to the approved control rod sequence for the specified test is verified by a second licensed operator or other qualified member of the technical staff.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.10.7.1 | ---------- **- NOTE -** Not required to be met if SR 3.10.7.2 satisfied. ----------<br><br>Verify movement of control rods is in compliance with the approved control rod sequence for the specified test by a second licensed operator or other qualified member of the technical staff. | During control rod movement |
| SR 3.10.7.2 | ---------- **- NOTE -** Not required to be met if SR 3.10.7.1 satisfied. ----------<br><br>Verify control rod sequence input to the RWM is in conformance with the approved control rod sequence for the specified test. | Prior to control rod movement |

## 3.10 SPECIAL OPERATIONS

### 3.10.8 SHUTDOWN MARGIN (SDM) Test - Refueling

LCO 3.10.8 The reactor mode switch position specified in Table 1.1-1 for MODE 5 may be changed to include the startup/hot standby position, and operation considered not to be in MODE 2, to allow SDM testing, provided the following requirements are met:

a. LCO 3.3.1.1, "Reactor Protection System Instrumentation," MODE 2 requirements for Functions 2.a and 2.e of Table 3.3.1.1-1,

b.1. LCO 3.3.2.1, "Control Rod Block Instrumentation," MODE 2 requirements for Function 2 of Table 3.3.2.1-1, with the banked position withdrawal sequence requirements of SR 3.3.2.1.8 changed to require the control rod sequence to conform to the SDM test sequence,

<u>OR</u>

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

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

d. All control rod withdrawals [during out of sequence control rod moves] shall be made in notch out mode,

e. No other CORE ALTERATIONS are in progress, and

f. CRD charging water header pressure ≥ [940] psig.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. ---------- **- NOTE -** Separate Condition entry is allowed for each control rod. ---------- One or more control rods not coupled to its associated CRD. | | ---------- **- NOTE -** Rod worth minimizer may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow insertion of inoperable control rod and continued operation. ---------- | |
| | A.1 | Fully insert inoperable control rod. | 3 hours |
| | <u>AND</u> | | |
| | A.2 | Disarm the associated CRD. | 4 hours |
| B. One or more of the above requirements not met for reasons other than Condition A. | B.1 | Place the reactor mode switch in the shutdown or refuel position. | Immediately |

SURVEILLANCE REQUIREMENTS

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

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.10.8.3 | ---------- **- NOTE -** Not required to be met if SR 3.10.8.2 satisfied. ----------<br><br>Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff. | During control rod movement |
| SR 3.10.8.4 | Verify no other CORE ALTERATIONS are in progress. | 12 hours |
| SR 3.10.8.5 | Verify each withdrawn control rod does not go to the withdrawn overtravel position. | Each time the control rod is withdrawn to "full out" position<br><br><u>AND</u><br><br>Prior to satisfying LCO 3.10.8.c requirement after work on control rod or CRD System that could affect coupling |
| SR 3.10.8.6 | Verify CRD charging water header pressure ≥ [940] psig. | 7 days |

## 3.10 SPECIAL OPERATIONS

### 3.10.9 Recirculation Loops - Testing

LCO 3.10.9 The requirements of LCO 3.4.1, "Recirculation Loops Operating," may be suspended for ≤ 24 hours to allow:

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

b. Performance of the Startup Test Program.

APPLICABILITY: MODES 1 and 2 with less than two recirculation loops in operation.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

## 3.10 SPECIAL OPERATIONS

### 3.10.10 Training Startups

LCO 3.10.10 The low pressure coolant injection (LPCI) OPERABILITY requirements specified in LCO 3.5.1, "Emergency Core Cooling Systems (ECCS) - Operating," may be changed to allow one residual heat removal subsystem to be aligned in the shutdown cooling mode for training startups, provided the following requirements are met:

a. All OPERABLE intermediate range monitor (IRM) channels are ≤ [25/40] divisions of full scale on Range 7 and

b. Average reactor coolant temperature is < 200°F.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.10.10.1 | Verify all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7. | 1 hour |
| SR 3.10.10.2 | Verify average reactor coolant temperature is < 200°F. | 1 hour |

# 4.0 DESIGN FEATURES

## 4.1 Site Location

[ Text description of site location. ]

## 4.2 Reactor Core

### 4.2.1 Fuel Assemblies

The reactor shall contain [560] 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 ($UO_2$) as fuel material and [water rods]. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with NRC staff approved codes and methods and have been shown by tests or analyses to comply with all safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

### 4.2.2 Control Rod Assemblies

The reactor core shall contain [137] cruciform shaped control rod assemblies. The control material shall be [boron carbide, hafnium metal] as approved by the NRC.

## 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 [k-infinity of [1.31] in the normal reactor core configuration at cold conditions] [average 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], and

c. A nominal [6.5] inch center to center distance between fuel assemblies placed in the storage racks.

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

## 4.0 DESIGN FEATURES

### 4.3 Fuel Storage (continued)

a. Fuel assemblies having a maximum [k-infinity of [1.31] in the normal reactor core configuration at cold conditions] [average 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. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR], and

d. A nominal [6.50] inch center to center distance between fuel assemblies placed in 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 [185 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 [2845] fuel assemblies.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.1 Responsibility

**- 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 5.2, 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.

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, or 3, 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 4 or 5, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.2 Organization

### 5.2.1 Onsite and Offsite Organizations

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

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

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, or 3.

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**- 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

### 5.2.2 Unit Staff (continued)

b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2.f for a period of time not 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. Administrative procedures shall be developed and implemented to limit the working hours of personnel who perform safety related functions (e.g., [licensed Senior Reactor Operators (SROs), licensed Reactor Operators (ROs), health physicists, auxiliary operators, and key maintenance personnel]).

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

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

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

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

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

# 5.0 ADMINISTRATIVE CONTROLS

## 5.3 Unit Staff Qualifications

**- REVIEWER'S NOTE -**

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

5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications of [Regulatory Guide 1.8, Revision 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 TS 5.3.1, perform the functions described in 10 CFR 50.54(m).

# 5.0 ADMINISTRATIVE CONTROLS

## 5.4 Procedures

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

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

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

c. Quality assurance for effluent and environmental monitoring;

d. Fire Protection Program implementation, and

e. All programs specified in Specification 5.5.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.5 Programs and Manuals

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

### 5.5.1 Offsite Dose Calculation Manual (ODCM)

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

b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release Reports required by Specification [5.6.2] and Specification [5.6.3].

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

5.5.2 Primary Coolant Sources Outside Containment

This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include [the Low Pressure Core Spray, High Pressure Coolant Injection, Residual Heat Removal, Reactor Core Isolation Cooling, hydrogen recombiner, process sampling, and Standby Gas Treatment]. 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

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

a. Training of personnel,

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,

## 5.5 Programs and Manuals

### 5.5.4 Radioactive Effluent Controls Program (continued)

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 lease every 31 days. Determination of projected dose contributions from radioactive effluents in accordance with the methodology in the ODCM at least every 31 days,

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

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

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

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

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

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

5.5 Programs and Manuals

5.5.4 Radioactive Effluent Controls Program (continued)

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, and

k. Limitations on venting and purging of the Mark II containment through the Standby Gas Treatment System to maintain releases as low as reasonably achievable (in BWR/4s with Mark II containments).

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 [Regulatory Guide 1.35, Revision 3, 1989].

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Tendon Surveillance Program inspection frequencies. ]

5.5.7 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 specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as follows:

| ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice testing activities | Required Frequencies for performing inservice testing activities |
|---|---|
| Weekly | At least once per 7 days |

5.5 Programs and Manuals

5.5.7 Inservice Testing Program (continued)

| ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice testing activities | Required Frequencies for performing inservice testing activities |
|---|---|
| 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 for performing inservice testing activities,

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

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

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

| ESF Ventilation System | Flowrate |
|---|---|
| [ ] | [ ] |

5.5 Programs and Manuals

5.5.8 Ventilation Filter Testing Program (continued)

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

| ESF Ventilation System | Flowrate |
|---|---|
| [ ] | [ ] |

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] |

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**- 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.

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 Efficiently * 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.

5.5 Programs and Manuals

5.5.8 Ventilation Filter Testing Program (continued)

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.

5.5.9 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"].

5.5 Programs and Manuals

5.5.9 Explosive Gas and Storage Tank Radioactivity Monitoring Program (continued)

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 ≥ 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.

5.5.10 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,

5.5 Programs and Manuals

5.5.10 Diesel Fuel Oil Testing Program (continued)

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

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

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

5.5.11 Technical Specifications (TS) Bases Control Program

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

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

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

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

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

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

d. Proposed changes that meet the criteria of Specification 5.5.11b 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).

5.5.12 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:

5.5 Programs and Manuals

5.5.12 Safety Function Determination Program (continued)

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 one of the following exists:

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

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

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

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

5.5.13 Primary 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.

5.5 Programs and Manuals

5.5.13 Primary Containment Leakage Rate Testing Program (continued)

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

2. Air lock testing acceptance criteria are:

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

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

d. The provisions of SR 3.0.3 are applicable to the Primary 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.

[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. . . .]

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:

5.5 Programs and Manuals

5.5.13 Primary Containment Leakage Rate Testing Program (continued)

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

2. Air lock testing acceptance criteria are:

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

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

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

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

[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. . . .]

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

5.5 Programs and Manuals

5.5.13 Primary Containment Leakage Rate Testing Program (continued)

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] [≤ 0.75 $L_a$ for Option B type A tests].

2. Air lock testing acceptance criteria are:

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

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

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

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

5.5.14 Battery Monitoring and Maintenance Program

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

a. Actions to restore battery cells with float voltage < [2.13] V, and

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

# 5.0 ADMINISTRATIVE CONTROLS

## 5.6 Reporting Requirements

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

### 5.6.1 Occupational Radiation Exposure Report

**- NOTE -**

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

A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors), for whom monitoring was performed, receiving an annual deep dose equivalent > 100 mrems and the associated collective deep dose equivalent (reported in person - rem) according to work and job functions (e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance [describe maintenance], waste processing, and refueling). This tabulation supplements the requirements of 10 CFR 20.2206. The dose assignments to various duty functions may be estimated based on pocket ionization chamber, thermoluminescence dosimeter (TLD), electronic dosimeter, or film badge measurements. Small exposures totaling < 20 percent of the individual total dose need not be accounted for. In the aggregate, at least 80 percent of the total deep dose equivalent received from external sources should be assigned to specific major work functions. The report covering the previous calendar year shall be submitted by April 30 of each year. [The initial report shall be submitted by April 30 of the year following the initial criticality.]

### 5.6.2 Annual Radiological Environmental Operating Report

**- NOTE -**

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

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

5.6 Reporting Requirements

5.6.2 Annual Radiological Environmental Operating Report (continued)

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.

5.6.3 Radiological Effluent Release Report

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

5.6.4 Monthly Operating Reports

Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report.

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

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

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

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (continued)

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

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

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

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

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

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

[ The individual specifications that address RCS pressure and temperature limits must be referenced here. ]

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

[ Identify the 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.

5.6 Reporting Requirements

5.6.6 RCS PRESSURE AND TEMPERATURE LIMITS REPORT (continued)

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

7. 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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5.6.7 Post Accident Monitoring Report

When a report is required by Condition B or G of LCO 3.3.[3.1], "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of

5.6 Reporting Requirements

5.6.7 Post Accident Monitoring Report (continued)

monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

**- REVIEWER'S NOTE -**

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

## 5.0 ADMINISTRATIVE CONTROLS

## [ 5.7 High Radiation Area ]

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

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

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

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

## 5.7 High Radiation Area

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)

continuously displays radiation does rates in the area; who is responsible for controlling personnel exposure within the area, or

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

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

5.7.2 <u>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</u>

a. Each entryway to such an area shall be conspicuously posted as a high radiation area and shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry, and, in addition:

1. All such door and gate keys shall be maintained under the administrative control of the shift supervisor, radiation protection manager, or his or her designee.

2. Doors and gates shall remain locked except during periods of personnel or equipment entry or exit.

b. Access to, and activities in, each such area shall be controlled by means of an RWP or equivalent that includes specification of radiation does 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

5.7 High Radiation Area

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)

surveys in such areas provided that they are otherwise following plant radiation protection procedures for entry to, exit from, and work in such areas.

d. Each individual or group entering such an area shall possess one of the following:

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

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

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

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

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

4. In those cases where option (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

5.7 High Radiation Area

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)

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

f. Such individual areas that are within a larger area where no enclosure exists for the purpose of locking and where no enclosure can reasonably be constructed around the individual area need not be controlled by a locked door or gate, nor continuously guarded, but shall be barricaded, conspicuously posted, and a clearly visible flashing light shall be activated at the area as a warning device.

NRC FORM 335
(2-89)
NRCM 1102,
3201, 3202

U.S. NUCLEAR REGULATORY COMMISSION

# BIBLIOGRAPHIC DATA SHEET

*(See instructions on the reverse)*

1. REPORT NUMBER
(Assigned by NRC, Add Vol., Supp., Rev., and Addendum Numbers, if any.)

NUREG-1433
Vol 1, Rev. 2

TITLE AND SUBTITLE

Standard Technical Specifications
General Electric Plants,
BWR/4

Specifications

3. DATE REPORT PUBLISHED

| MONTH | YEAR |
|---|---|
| June | 2001 |

4. FIN OR GRANT NUMBER

5. AUTHOR(S)

6. TYPE OF REPORT

Final

7. PERIOD COVERED *(Inclusive Dates)*

04/95-04/01

8. PERFORMING ORGANIZATION - NAME AND ADDRESS *(If NRC, provide Division, Office or Region, U.S. Nuclear Regulatory Commission, and mailing address; if contractor, provide name and mailing address.)*

Office of Nuclear Reactor Regulation, Division of Regulatory Improvement Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

9. SPONSORING ORGANIZATION - NAME AND ADDRESS *(If NRC, type "Same as above"; if contractor, provide NRC Division, Office or Region, U.S. Nuclear Regulatory Commission, and mailing address.)*

Same as above

10. SUPPLEMENTARY NOTES

11. ABSTRACT *(200 words or less)*

This NUREG contains the improved Standard Technical Specifications (STS) for General Electric (GE) BWR/4 plants. Revision 2 incorporates the cumulative changes to Revision 1, which was published in April 1995. The changes reflected in Revision 2 resulted from the experience gained from license amendment applications to convert to these improved STS or to adopt partial improvements to existing technical specifications. This publication is the result of extensive public technical meetings and discussions among the Nuclear Regulatory Commission (NRC) staff and various nuclear power plant licensees, Nuclear Steam Supply System (NSSS) Owners Groups, and the Nuclear Energy Institute (NEI). 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 (58FR39132), which was subsequently codified by changes to Section 36 of Part 50 of Title 10 of the Code of Federal Regulations (10CFR50.36) (60 FR 36953). 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.

12. KEY WORDS/DESCRIPTORS *(List words or phrases that will assist researchers in locating the report.)*

Technical Specifications

13. AVAILABILITY STATEMENT

unlimited

14. SECURITY CLASSIFICATION

*(This Page)*

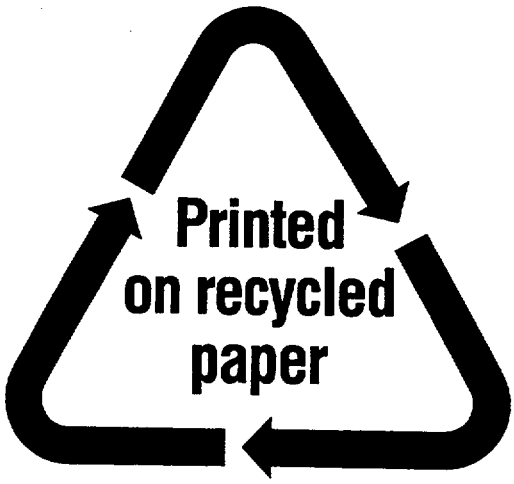
unclassified

*(This Report)*

unclassified

15. NUMBER OF PAGES

16. PRICE

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