ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| E. One channel inoperable. | ----------NOTE----------<br>The inoperable channel or another channel may be bypassed for up to 4 hours for surveillance testing of other channels.<br>---------- | | |
| | E.1 | Place channel in trip. | 6 hours |
| | OR | | |
| | E.2 | Be in MODE 3. | 12 hours |
| F. One Intermediate Range Neutron Flux channel inoperable. | F.1 | Reduce THERMAL POWER to < P-6. | 24 hours |
| | OR | | |
| | F.2 | Increase THERMAL POWER to > P-10. | 24 hours |
| G. Two Intermediate Range Neutron Flux channels inoperable. | G.1 | ----------NOTE----------<br>Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed.<br>----------<br>Suspend operations involving positive reactivity additions. | Immediately |
| | AND | | |
| | G.2 | Reduce THERMAL POWER to < P-6. | 2 hours |
| H. Not used. | | | |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| I. One Source Range Neutron Flux channel inoperable. | I.1 | ----------NOTE---------- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. ---------- Suspend operations involving positive reactivity additions. | Immediately |
| J. Two Source Range Neutron Flux channels inoperable. | J.1 | Open reactor trip breakers (RTBs). | Immediately |
| K. One Source Range Neutron Flux channel inoperable. | K.1 | Restore channel to OPERABLE status. | 48 hours |
| | OR | | |
| | K.2.1 | Initiate action to fully insert all rods. | 48 hours |
| | AND | | |
| | K.2.2 | Place the Rod Control System in a condition incapable of rod withdrawal. | 49 hours |
| L. Not used. | | | |

(continued)

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.5 RCS Loops — MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and either:

a. Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

---NOTE---

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

a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

---

APPLICABILITY: MODE 3

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One required RCS loop inoperable. | A.1 | Restore required RCS loop to OPERABLE status. | 72 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| B. Required Action and associated Completion Time of Condition A not met. | B.1 | Be in MODE 4. | 12 hours |
| C. One required RCS loop not in operation, with Rod Control System capable of rod withdrawal. | C.1 | Restore required RCS loop to operation. | 1 hour |
| | OR | | |
| | C.2 | Place the Rod Control System in a condition incapable of rod withdrawal. | 1 hour |
| D. Four RCS loops inoperable.<br>OR<br>No RCS loop in operation. | D.1 | Place the Rod Control System in a condition incapable of rod withdrawal. | Immediately |
| | AND | | |
| | D.2 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1. | Immediately |
| | AND | | |
| | D.3 | Initiate action to restore one RCS loop to OPERABLE status and operation. | Immediately |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.6 RCS Loops — MODE 4

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

---NOTES---

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 350°F unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

---

APPLICABILITY: MODE 4

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One required loop inoperable. | A.1 | Initiate action to restore a second loop to OPERABLE status. | Immediately |
| | AND | | |
| | A.2 | ----------NOTE----------<br>Only required if one RHR loop is OPERABLE<br>---------- | |
| | | Be in MODE 5. | 24 hours |
| B. Two required loops inoperable.<br><br>OR<br><br>No RCS or RHR loop in operation. | B.1 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1. | Immediately |
| | AND | | |
| | B.2 | Initiate action to restore one loop to OPERABLE status and operation. | Immediately |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

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

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

a. One additional RHR loop shall be OPERABLE; or

b. The secondary side water level of at least two steam generators (SGs) shall be $\geq$ 10% .

---NOTES---

1. The RHR pump of the loop in operation may be removed from operation for $\leq$ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with any RCS cold leg temperature $\leq$ 350°F unless the secondary side water temperature of each SG is $\leq$ 50°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

---

APPLICABILITY: MODE 5 with RCS loops filled

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.4.7.1 Verify one RHR loop is in operation. | 12 hours |

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops—MODE 5, Loops Not Filled

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

---NOTES---

1. All RHR pumps may be removed from operation for ≤ 1 hour provided:
   a. The core outlet temperature is maintained at least 10°F below saturation temperature.
   b. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1; and
   c. No draining operations to further reduce the RCS water volume are permitted.
2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

---

APPLICABILITY: MODE 5 with RCS loops not filled

---NOTE---

While this LCO is not met, entry into MODE 5, Loops Not Filled from MODE 5, Loops filled is not permitted.

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ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One RHR loop inoperable. | A.1 | Initiate action to restore RHR loop to OPERABLE status. | Immediately |
| B. Required RHR loops inoperable.<br><br>OR<br><br>No RHR loop in operation. | B.1 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1. | Immediately |
| | AND | | |
| | B.2 | Initiate action to restore one RHR loop to OPERABLE status and operation. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.8.1 | Verify one RHR loop is in operation. | 12 hours |
| SR 3.4.8.2 | Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation. | 7 days |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One required offsite circuit inoperable. | ----------NOTE----------<br>Enter applicable Conditions and Required Actions of LCO 3.8.10, with the required train de-energized as a result of Condition A.<br>---------- | |
| | A.1 Declare affected required feature(s) with no offsite power available inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | AND | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | AND | |
| | A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status. | Immediately |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| B. One required DG inoperable. | B.1 | Suspend CORE ALTERATIONS. | Immediately |
| | AND | | |
| | B.2 | Suspend movement of irradiated fuel assemblies. | Immediately |
| | AND | | |
| | B.3 | Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | AND | | |
| | B.4 | Initiate action to restore required DG to OPERABLE status. | Immediately |

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.5 DC Sources □ Shutdown

LCO 3.8.5 The Train A or Train B DC electrical power subsystem shall be OPERABLE to support one train of the DC electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems □ Shutdown."

APPLICABILITY: MODES 5 and 6

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Required DC electrical power subsystems inoperable. | A.1 Declare affected required feature(s) inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | AND | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | AND | |

(continued)

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.8 Inverters - Shutdown

LCO 3.8.8 The train A or Train B inverters shall be OPERABLE to support one train of the onsite Class 1E AC vital bus electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems □ Shutdown."

APPLICABILITY: MODES 5 and 6

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required inverters inoperable. | A.1 Declare affected required feature(s) inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | AND | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | AND | |

(continued)

## 3.8 ELECTRICAL POWER SYSTEMS

### 3.8.10 Distribution Systems - Shutdown

LCO 3.8.10 The necessary portion of the Train A or Train B AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support one train of equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable. | A.1 Declare associated supported required feature(s) inoperable. | Immediately |
| | OR | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | AND | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. | Immediately |
| | AND | |

(continued)

## 3.9 REFUELING OPERATIONS

### 3.9.3 Nuclear Instrumentation

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. One required source range neutron flux monitor inoperable. | A.1 | Suspend CORE ALTERATIONS. | Immediately |
| | AND | | |
| | A.2 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately |
| B. Two required source range neutron flux monitors inoperable. | B.1 | Initiate action to restore one source range neutron flux monitor to OPERABLE status. | Immediately |
| | AND | | |
| | B.2 | Perform SR 3.9.1.1. | Once per 12 hours |

## 3.9 REFUELING OPERATIONS

### 3.9.5 Residual Heat Removal (RHR) and Coolant Circulation High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

---NOTE---

The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

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

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. RHR loop requirements not met. | A.1 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately |
| | AND | | |
| | A.2 | Suspend loading irradiated fuel assemblies in the core. | Immediately |
| | AND | | |
| | | | (continued) |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| B. No RHR loop in operation. | B.1 | Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately |
| | AND | | |
| | B.2 | Initiate action to restore one RHR loop to operation. | 4 hours |
| | AND | | |
| | B.3 | Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere. | |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.9.6.1 | Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 1000 gpm. | 12 hours |
| SR 3.9.6.2 | Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation. | 7 days |