

50-413/414

**IMPROVED
TECHNICAL
SPECIFICATIONS**

**Catawba Nuclear Station,
Units No. 1 and 2**

(Volume I)

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1.0 USE AND APPLICATION

1.1 Definitions

NOTE

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

| <u>Term</u> | <u>Definition</u> |
|-----------------------------|---|
| ACTIONS | ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times. |
| ACTUATION LOGIC TEST | An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and the verification of the required logic output. The ACTUATION LOGIC TEST, as a minimum, shall include a continuity check of output devices. |
| AXIAL FLUX DIFFERENCE (AFD) | AFD shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector. |
| CHANNEL CALIBRATION | A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known input. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, interlock, display, and trip functions. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an inplace cross calibration that compares the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping calibrations or total channel steps so that the entire channel is calibrated. |

(continued)

1.1 Definitions (continued)

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|---|--|
| CHANNEL CHECK | A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. |
| CHANNEL OPERATIONAL TEST (COT) | A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of required alarm, interlock, and trip functions. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints so that the setpoints are within the required range and accuracy. |
| CORE ALTERATION | CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position. |
| CORE OPERATING LIMITS REPORT (COLR) | The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Unit operation within these limits is addressed in individual Specifications. |
| DOSE EQUIVALENT I-131 | DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites." |
| \bar{E} — AVERAGE DISINTEGRATION ENERGY | \bar{E} shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV/d) for isotopes, other than iodines, with half lives > 10 minutes, making up at least 95% of the total noniodine activity in the coolant. |

(continued)

1.1 Definitions (continued)

**ENGINEERED SAFETY
FEATURE (ESF) RESPONSE
TIME**

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC.

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

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

b. Unidentified LEAKAGE

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

c. Pressure Boundary LEAKAGE

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

(continued)

1.1 Definitions (continued)

| | |
|----------------------------------|--|
| MASTER RELAY TEST | A MASTER RELAY TEST shall consist of energizing each master relay and verifying the OPERABILITY of each relay. The MASTER RELAY TEST shall include a continuity check of each associated slave relay. |
| MODE | A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel. |
| NOMINAL TRIP SETPOINT | The NOMINAL TRIP SETPOINT shall be the design value of a setpoint. The trip setpoint implemented in plant hardware may be less or more conservative than the NOMINAL TRIP SETPOINT by a calibration tolerance. If plant conditions warrant, the trip setpoint implemented in plant hardware may be set outside the NOMINAL TRIP SETPOINT calibration tolerance band as long as the trip setpoint is conservative with respect to the NOMINAL TRIP SETPOINT. |
| OPERABLE — OPERABILITY | A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s). |
| PHYSICS TESTS | <p>PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:</p> <ul style="list-style-type: none"> a. Described in Chapter 14 of the UFSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission. |
| QUADRANT POWER TILT RATIO (QPTR) | QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater. |

(continued)

1.1 Definitions (continued)

| | |
|--|---|
| RATED THERMAL POWER (RTP) | RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3411 MWt. |
| REACTOR TRIP SYSTEM (RTS) RESPONSE TIME | The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC. |
| SHUTDOWN MARGIN (SDM) | <p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"> All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level. |
| SLAVE RELAY TEST | A SLAVE RELAY TEST shall consist of energizing each slave relay and verifying the OPERABILITY of each slave relay. The SLAVE RELAY TEST shall include, as a minimum, a continuity check of associated testable actuation devices. |
| STAGGERED TEST BASIS | A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function. |
| THERMAL POWER | THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant. |

(continued)

1.1 Definitions (continued)

TRIP ACTUATING DEVICE
OPERATIONAL TEST
(TADOT)

A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of required alarm, interlock, and trip functions. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy.

Table 1.1-1 (page 1 of 1)
MODES

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

(a) Excluding decay heat.

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

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

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

EXAMPLES The following examples illustrate the use of logical connectors.

(continued)

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

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

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

(continued)

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-----------------|---|-----------------|
| A. LCO not met. | A.1 Trip ... <u>OR</u> A.2.1 Verify ... <u>AND</u> A.2.2.1 Reduce ... <u>OR</u> A.2.2.2 Perform ... <u>OR</u> A.3 Align ... | |

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

1.0 USE AND APPLICATION

1.3 Completion Times

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

(continued)

1.3 Completion Times

DESCRIPTION
(continued)

Completion Time extension, two criteria must first be met. The subsequent inoperability:

- a. Must exist concurrent with the first inoperability; and
- b. Must remain inoperable or not within limits after the first inoperability is resolved.

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

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

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

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

(continued)

1.3 Completion Times (continued)

EXAMPLES

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

EXAMPLE 1.3-1

ACTIONS

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

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

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

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

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-2

ACTIONS

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

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

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

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

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired,

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

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

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-3

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One Function X train inoperable. | A.1 Restore Function X train to OPERABLE status. | 7 days <u>AND</u> 10 days from discovery of failure to meet the LCO |
| B. One Function Y train inoperable. | B.1 Restore Function Y train to OPERABLE status. | 72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO |
| C. One Function X train inoperable. <u>AND</u> One Function Y train inoperable. | C.1 Restore Function X train to OPERABLE status. <u>OR</u> C.2 Restore Function Y train to OPERABLE status. | 72 hours 72 hours |

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

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

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

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

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-4

ACTIONS

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

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

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

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

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-5

ACTIONS

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

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

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

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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

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

EXAMPLE 1.3-6

ACTIONS

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

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

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

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-7

ACTIONS

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

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

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

IMMEDIATE

COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

| | |
|-------------|---|
| PURPOSE | The purpose of this section is to define the proper use and application of Frequency requirements. |
| DESCRIPTION | <p>Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.</p> <p>The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.</p> <p>Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.</p> |
| EXAMPLES | The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, and 3. |

(continued)

1.4 Frequency

EXAMPLES
(continued)EXAMPLE 1.4-1SURVEILLANCE REQUIREMENTS

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

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

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

(continued)

1.4 Frequency

EXAMPLES
(continued)EXAMPLE 1.4-2SURVEILLANCE REQUIREMENTS

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

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

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

(continued)

1.4 Frequency

EXAMPLES
(continued)EXAMPLE 1.4-3SURVEILLANCE REQUIREMENTS

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

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

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

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

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

In MODES 1 and 2, the combination of THERMAL POWER, Reactor Coolant System (RCS) highest loop average temperature, and pressurizer pressure shall not exceed the SLs specified in Figure 2.1.1-1 for four loop operation.

2.1.2 RCS Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained ≤ 2735 psig.

2.2 SL Violations

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

2.2.2 If SL 2.1.2 is violated:

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

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

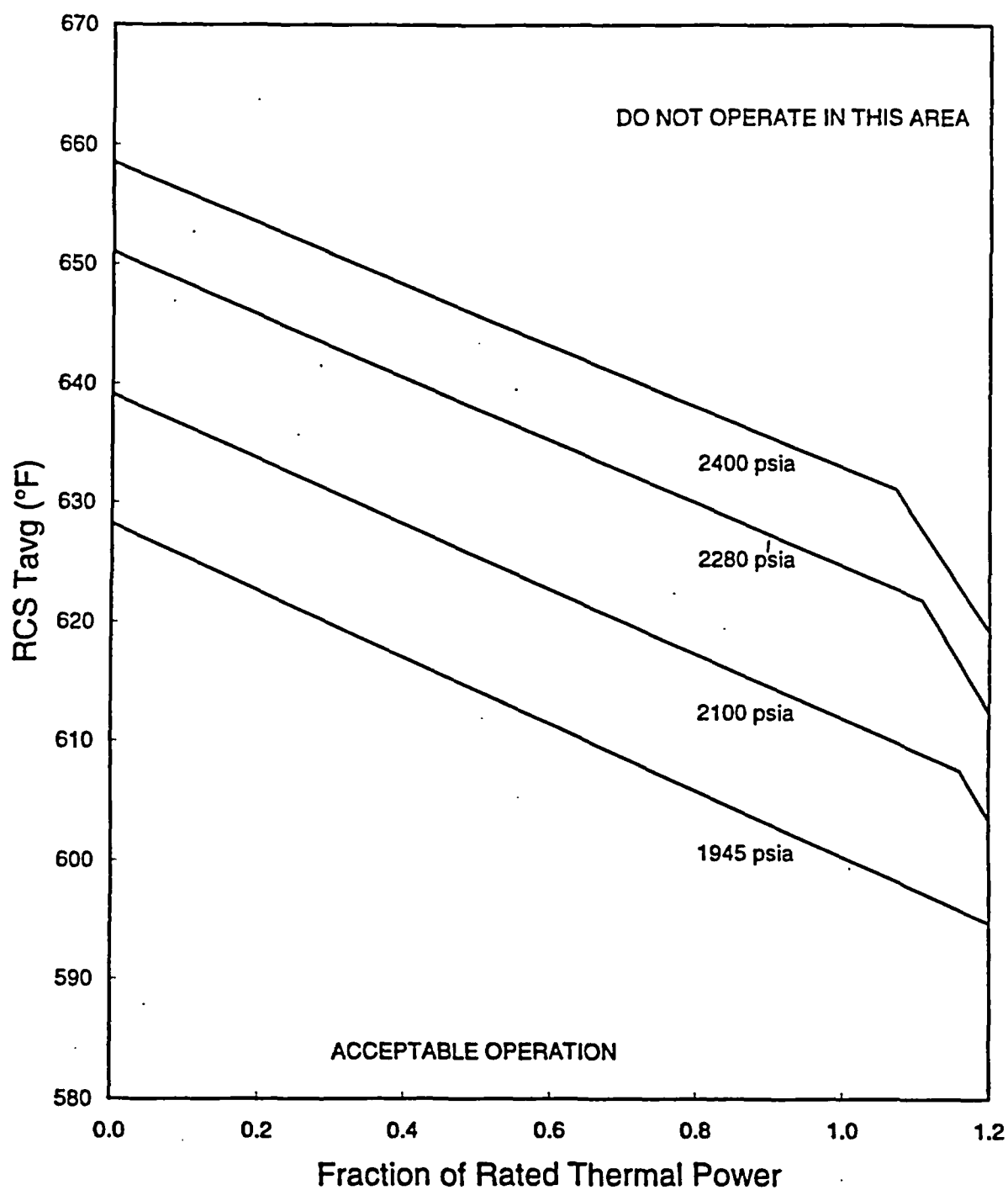


Figure 2.1.1-1
Reactor Core Safety Limits
Four Loops in Operation

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

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

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

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

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

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

Exceptions to this Specification are stated in the individual Specifications.

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

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

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

Exceptions to this Specification are stated in the individual Specifications.

(continued)

3.0 LCO APPLICABILITY (continued)

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

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

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

LCO 3.0.7 Test Exception LCOs 3.1.8 and 3.4.17 allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

(continued)

3.0 LCO APPLICABILITY (continued)

LCO 3.0.8

LCOs including the associated ACTIONS shall apply to each unit individually unless otherwise indicated as follows:

- a. Whenever the LCO refers to systems or components which are shared by both units, the ACTIONS will apply to both units simultaneously;
 - b. Whenever the LCO applies to only one unit, this will be identified in the Applicability section of the Specification; and
 - c. Whenever certain portions of a Specification contain operating parameters, setpoints etc., which are different for each unit, this will be identified in parentheses or footnotes. (For example, "...flow rate of 54,000 cfm (Unit 1) or 43,000 cfm (Unit 2)...").
-

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1 SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2 The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

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

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

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

(continued)

3.0 SR APPLICABILITY (continued)

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

SR 3.0.5 Surveillance Requirements shall apply to each unit individually unless otherwise indicated as stated in LCO 3.0.8 for individual Specifications or whenever certain portions of a Specification contain surveillance parameters different for each unit, which will be identified in parentheses or footnotes.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.1.1.1 Verify SDM is within the limit specified in the COLR. | 24 hours |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Core Reactivity

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. Measured core reactivity not within limit. | A.1 Re-evaluate core design and safety analysis, and determine that the reactor core is acceptable for continued operation. | 72 hours |
| | <u>AND</u> A.2 Establish appropriate operating restrictions and SRs. | 72 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.1.2.1 -----NOTE-----</p> <p>The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading.</p> <p>-----</p> <p>Verify measured core reactivity is within $\pm 1\% \Delta k/k$ of predicted values.</p> | <p>Once prior to entering MODE 1 after each refueling</p> <p><u>AND</u></p> <p>31 EFPD thereafter</p> |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Moderator Temperature Coefficient (MTC)

LCO 3.1.3 The MTC shall be maintained within the limits specified in the COLR. The maximum upper limit shall be that specified in Figure 3.1.3-1.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.1.3.1 Verify MTC is within upper limit. | Once prior to entering MODE 1 after each refueling |
| <div data-bbox="244 527 398 555">SR 3.1.3.2</div> <div data-bbox="439 527 1186 1064"> <p>-----NOTES-----</p> <ol style="list-style-type: none"> Not required to be performed until 7 effective full power days (EFPD) after reaching the equivalent of an equilibrium RTP all rods out (ARO) boron concentration of 300 ppm. If the MTC is more negative than the 300 ppm Surveillance limit (not LCO limit) specified in the COLR, SR 3.1.3.2 shall be repeated once per 14 EFPD during the remainder of the fuel cycle. SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of ≤ 60 ppm is less negative than the 60 ppm Surveillance limit specified in the COLR. <p>-----</p> <p>Verify MTC is within lower limit.</p> </div> | Once each cycle |

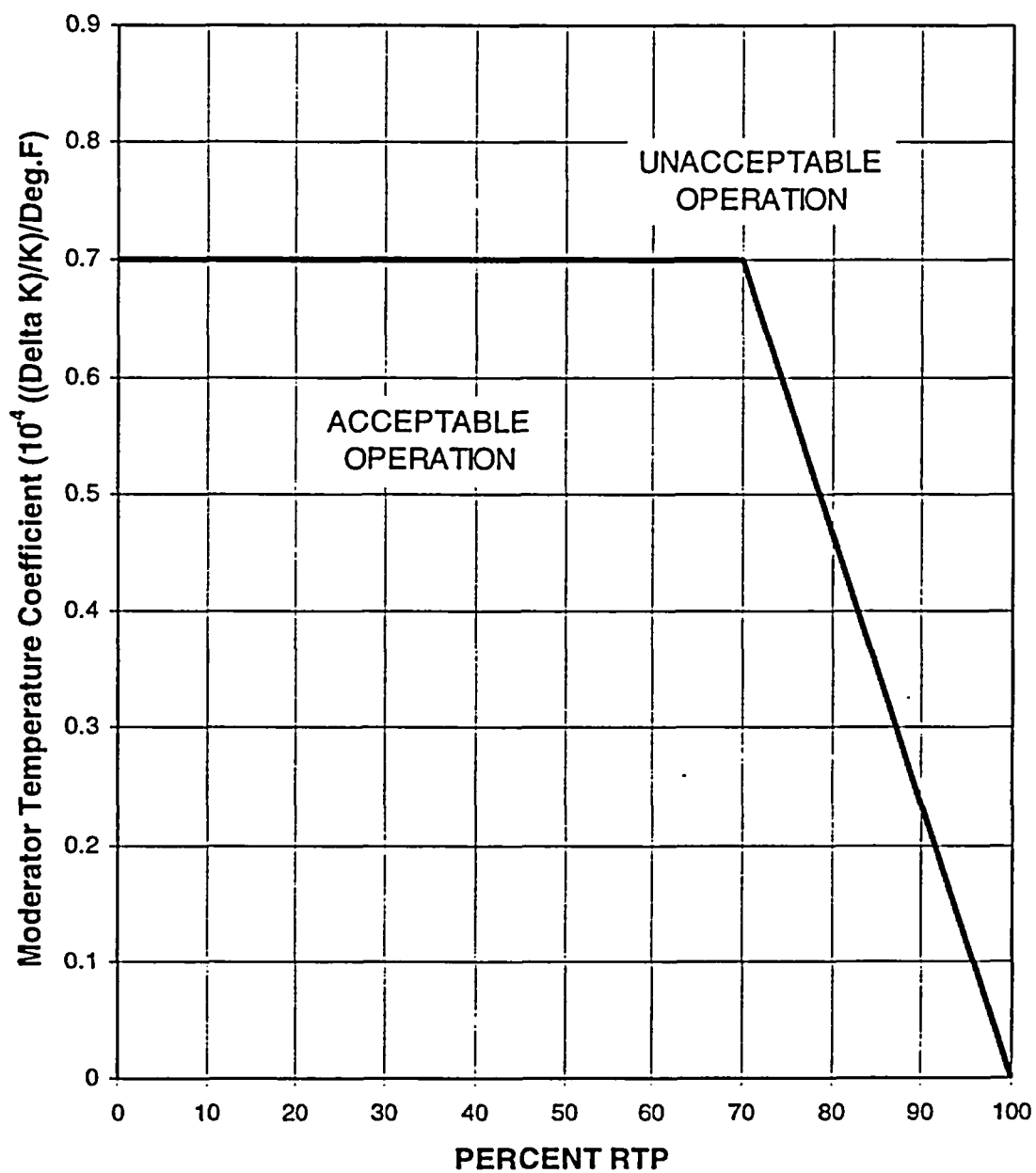


Figure 3.1.3-1 (page 1 of 1)
Moderator Temperature Coefficient vs. Power Level

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|------------------------------------|---|-----------------|
| A. One or more rod(s) untrippable. | A.1.1 Verify SDM is within the limit specified in the COLR. | 1 hour |
| | <u>OR</u> | |
| | A.1.2 Initiate boration to restore SDM to within limit. | 1 hour |
| | <u>AND</u> | |
| | A.2 Be in MODE 3. | 6 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-------------------|
| B. One rod not within alignment limits. | B.1 Restore rod to within alignment limits. | 1 hour |
| | <u>OR</u> | |
| | B.2.1.1 Verify SDM is within the limit specified in the COLR. | 1 hour |
| | <u>OR</u> | |
| | B.2.1.2 Initiate boration to restore SDM to within limit. | 1 hour |
| | <u>AND</u> | |
| | B.2.2 Reduce THERMAL POWER to \leq 75% RTP. | 2 hours |
| | <u>AND</u> | |
| | B.2.3 Verify SDM is within the limit specified in the COLR. | Once per 12 hours |
| | <u>AND</u> | |
| | B.2.4 Perform SR 3.2.1.1. | 72 hours |
| | <u>AND</u> | |
| | B.2.5 Perform SR 3.2.2.1. | 72 hours |
| | <u>AND</u> | |
| | B.2.6 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions. | 5 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Be in MODE 3. | 6 hours |
| D. More than one rod not within alignment limit. | D.1.1 Verify SDM is within the limit specified in the COLR. | 1 hour |
| | <u>OR</u> | |
| | D.1.2 Initiate boration to restore required SDM to within limit. | 1 hour |
| | <u>AND</u> | |
| | D.2 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.1.4.1 Verify individual rod positions within alignment limit. | 12 hours <u>AND</u> Once within 4 hours and every 4 hours thereafter when the rod position deviation monitor is inoperable |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.1.4.2 Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core ≥ 10 steps in either direction. | 92 days |
| SR 3.1.4.3 Verify rod drop time of each rod, from the fully withdrawn position, is ≤ 2.2 seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with: <ul style="list-style-type: none"> a. $T_{avg} \geq 551^{\circ}\text{F}$; and b. All reactor coolant pumps operating. | Prior to reactor criticality after each removal of the reactor head |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

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

APPLICABILITY: MODE 1,
 MODE 2 with any control bank not fully inserted.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.1.5.1 Verify each shutdown bank is within the limits specified in the COLR. | 12 hours |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

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

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

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

ACTIONS

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

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.1.6.1 Verify estimated critical control bank position is within the limits specified in the COLR. | Within 4 hours prior to achieving criticality |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.1.6.2 Verify each control bank insertion is within the limits specified in the COLR. | 12 hours <u>AND</u> Once within 4 hours and every 4 hours thereafter when the rod insertion limit monitor is inoperable |
| SR 3.1.6.3 Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core. | 12 hours |

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each inoperable rod position indicator per group and each demand position indicator per bank.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|------------------|
| A. One DRPI per group inoperable for one or more groups. | A.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors. | Once per 8 hours |
| | <u>OR</u> A.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours |
| B. One or more rods with inoperable position indicators have been moved in excess of 24 steps in one direction since the last determination of the rod's position. | B.1 Verify the position of the rods with inoperable position indicators by using movable incore detectors. | 4 hours |
| | <u>OR</u> B.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|------------------|
| C. One demand position indicator per bank inoperable for one or more banks. | C.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE. | Once per 8 hours |
| | <u>AND</u> | |
| | C.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are ≤ 12 steps apart. | Once per 8 hours |
| | <u>OR</u> | |
| | C.2 Reduce THERMAL POWER to $\leq 50\%$ RTP. | 8 hours |
| D. Required Action and associated Completion Time not met. | D.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

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

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 PHYSICS TESTS Exceptions

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

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

may be suspended, provided:

- a. RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$; and
- b. SDM is within the limit specified in the COLR.

APPLICABILITY: MODE 2 during PHYSICS TESTS.

ACTIONS

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

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--------------------------------------|
| SR 3.1.8.1 Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1. | Prior to initiation of PHYSICS TESTS |
| SR 3.1.8.2 Verify the RCS lowest loop average temperature is $\geq 541^{\circ}\text{F}$. | 30 minutes |
| SR 3.1.8.3 Verify THERMAL POWER is $\leq 5\%$ RTP. | 1 hour |
| SR 3.1.8.4 Verify SDM is within the limit specified in the COLR. | 24 hours |

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Heat Flux Hot Channel Factor ($F_o(X,Y,Z)$)

LCO 3.2.1 $F_o^M(X,Y,Z)$ shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|--|
| A. $F_o^M(X,Y,Z)$ not within steady state limit. | A.1 Reduce THERMAL POWER $\geq 1\%$ RTP for each 1% $F_o^M(X,Y,Z)$ exceeds limit. | 15 minutes |
| | <u>AND</u> | |
| | A.2 Reduce Power Range Neutron Flux—High trip setpoints $\geq 1\%$ for each 1% $F_o^M(X,Y,Z)$ exceeds limit. | 72 hours |
| | <u>AND</u> | |
| | A.3 Reduce Overpower ΔT trip setpoints $\geq 1\%$ for each 1% $F_o^M(X,Y,Z)$ exceeds limit. | 72 hours |
| | <u>AND</u> | |
| | A.4 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.1.3. | Prior to increasing THERMAL POWER above the limit of Required Action A.1 |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| B. $F_a^M(X,Y,Z) > F_a^L(X,Y,Z)^{OP}$. | B.1 Reduce AFD limits $\geq 1\%$ from COLR limits for each 1% $F_a^M(X,Y,Z)$ exceeds limit. | 4 hours |
| | <u>AND</u> B.2 Adjust $F_a^L(X,Y,Z)^{OP}$ by the percent reduction in AFD. | 4 hours |
| C. $F_a^M(X,Y,Z) > F_a^L(X,Y,Z)^{RPS}$. | C.1 Reduce the OTΔT Trip Setpoint from COLR limit by KSLOPE for each 1% $F_a^M(X,Y,Z)$ exceeds limit. | 72 hours |
| | <u>AND</u> C.2 Adjust $F_a^L(X,Y,Z)^{RPS}$ by the equivalent reduction in OTΔT trip setpoint. | 72 hours |
| D. Required Action and associated Completion Time not met. | D.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

-----NOTE-----

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

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.2.1.1 Verify $F_o^M(X,Y,Z)$ is within steady state limit. | <p>Once within 12 hours after achieving equilibrium conditions after exceeding, by $\geq 10\%$ RTP, the THERMAL POWER at which $F_o^M(X,Y,Z)$ was last verified</p> <p><u>AND</u></p> <p>31 EFPD thereafter</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.2.1.2 -----NOTE-----</p> <p>1. Extrapolate $F_o^M(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_o^M(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates:</p> $F_o^M(X,Y,Z)_{\text{EXTRAPOLATED}} \geq F_o^L(X,Y,Z)^{OP}_{\text{EXTRAPOLATED}},$ <p>and</p> $\frac{F_o^M(X,Y,Z)_{\text{EXTRAPOLATED}}}{F_o^L(X,Y,Z)^{OP}_{\text{EXTRAPOLATED}}} > \frac{F_o^M(X,Y,Z)}{F_o^L(X,Y,Z)^{OP}}$ <p>then:</p> <p>a. Increase $F_o^M(X,Y,Z)$ by the appropriate factor specified in the COLR and reverify $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{OP}$; or</p> <p>b. Repeat SR 3.2.1.2 prior to the time at which $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{OP}$ is extrapolated to not be met.</p> <p>2. Extrapolation of $F_o^M(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{OP}$.</p> | <p>Once within 12 hours after achieving equilibrium conditions after exceeding, by $\geq 10\%$ RTP, the THERMAL POWER at which $F_o^M(X,Y,Z)$ was last verified</p> <p><u>AND</u></p> <p>31 EFPD thereafter</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.2.1.3 -----NOTES-----</p> <p>1. Extrapolate $F_o^M(X,Y,Z)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_o^M(X,Y,Z)$ is within limits and the 31 EFPD extrapolation indicates:</p> $F_o^M(X,Y,Z)_{\text{EXTRAPOLATED}} \geq F_o^L(X,Y,Z)^{RPS}_{\text{EXTRAPOLATED}},$ <p>and</p> $\frac{F_o^M(X,Y,Z)_{\text{EXTRAPOLATED}}}{F_o^L(X,Y,Z)^{RPS}_{\text{EXTRAPOLATED}}} > \frac{F_o^M(X,Y,Z)}{F_o^L(X,Y,Z)^{RPS}}$ <p>then:</p> <p>a. Increase $F_o^M(X,Y,Z)$ by the appropriate factor specified in the COLR and reverify $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{RPS}$; or</p> <p>b. Repeat SR 3.2.1.3 prior to the time at which $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{RPS}$ is extrapolated to not be met.</p> <p>2. Extrapolation of $F_o^M(X,Y,Z)$ is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify $F_o^M(X,Y,Z) \leq F_o^L(X,Y,Z)^{RPS}$.</p> | <p>Once within 12 hours after achieving equilibrium conditions after exceeding, by $\geq 10\%$ RTP, the THERMAL POWER at which $F_o^M(X,Y,Z)$ was last verified</p> <p><u>AND</u></p> <p>31 EFPD thereafter</p> |

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F_{\Delta H}(X,Y)$)

LCO 3.2.2 $F_{\Delta H}(X,Y)$ shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| <p>A. -----NOTE----- Required Actions A.3.2.2 and A.4 must be completed whenever Condition A is entered. -----</p> <p>$F_{\Delta H}^M$ not within limit.</p> | <p>A.1 Reduce THERMAL POWER \geq RRH% from RTP for each 1% $F_{\Delta H}^M(X,Y)$ exceeds limit.</p> | 2 hours |
| | <p><u>AND</u></p> | |
| | <p>A.2.1 Restore $F_{\Delta H}^M(X,Y)$ to within limit for RTP.</p> | 8 hours |
| | <p><u>OR</u></p> | |
| | <p>A.2.2 Reduce Power Range Neutron Flux—High trip setpoints \geq RRH% for each 1% $F_{\Delta H}^M(X,Y)$ exceeds limit.</p> | 8 hours |
| | <p><u>AND</u></p> | |
| | <p>A.3.1 Restore $F_{\Delta H}^M(X,Y)$ to within limit for RTP.</p> | 72 hours |
| | <p><u>OR</u></p> | |
| | <p>A.3.2.1 Reduce OTΔT Trip Setpoint by \geq TRH for each 1% $F_{\Delta H}^M(X,Y)$ exceeds limit.</p> | 72 hours |
| | <p><u>AND</u></p> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|--|
| A. (continued) | <p>A.3.2.2 Perform SR 3.2.2.1.</p> <p><u>AND</u></p> <p>A.4 -----NOTE----- THERMAL POWER does not have to be reduced to comply with this Required Action. -----</p> <p>Perform SR 3.2.2.1.</p> | <p>72 hours</p> <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 75% RTP</p> <p><u>AND</u></p> <p>24 hours after THERMAL POWER reaching ≥ 95% RTP</p> |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

NOTE

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

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.2.2.1 Verify $F_{\Delta H}^M(X,Y)$ is within steady state limit. | Once within 12 hours after achieving equilibrium conditions after exceeding, by $\geq 10\%$ RTP, the THERMAL POWER at which $F_{\Delta H}^M(X,Y)$ was last verified <u>AND</u> 31 EFPD thereafter |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.2.2.2 -----NOTES-----</p> <p>1. Extrapolate $F_{3H}^M(X,Y)$ using at least two measurements to 31 EFPD beyond the most recent measurement. If $F_{3H}^M(X,Y)$ is within limits and the 31 EFPD extrapolation indicates:</p> $F_{3H}^M(X,Y)_{\text{EXTRAPOLATED}} \geq F_{3H}^L(X,Y)^{\text{SURV}}_{\text{EXTRAPOLATED}}$ <p>and</p> $\frac{F_{3H}^M(X,Y)_{\text{EXTRAPOLATED}}}{F_{3H}^L(X,Y)^{\text{SURV}}_{\text{EXTRAPOLATED}}} > \frac{F_{3H}^M(X,Y)}{F_{3H}^L(X,Y)^{\text{SURV}}}$ <p>then:</p> <p>a. Increase $F_{3H}^M(X,Y)$ by the appropriate factor specified in the COLR and reverify $F_{3H}^M(X,Y) \leq F_{3H}^L(X,Y)^{\text{SURV}}$; or</p> <p>b. Repeat SR 3.2.2.2 prior to the time at which $F_{3H}^M(X,Y) \leq F_{3H}^L(X,Y)^{\text{SURV}}$ is extrapolated to not be met.</p> <p>2. Extrapolation of $F_{3H}^M(X,Y)$ is not required for the initial flux map taken after reaching equilibrium conditions.</p> <p>-----</p> <p>Verify $F_{3H}^M(X,Y) \leq F_{3H}^L(X,Y)^{\text{SURV}}$.</p> | <p>Once within 12 hours after achieving equilibrium conditions after exceeding, by \geq 10% RTP, the THERMAL POWER at which $F_{3H}^M(X,Y)$ was last verified</p> <p><u>AND</u></p> <p>31 EFPD thereafter</p> |

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

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

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.2.3.1 Verify AFD within limits for each OPERABLE excore channel. | 7 days <u>AND</u> Once within 1 hour and every 1 hour thereafter with the AFD monitor alarm inoperable |

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 1.02 .

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

-----NOTE-----
Not applicable until calibration of the excore detectors is completed
subsequent to refueling.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|------------------------------|--|-------------------------------|
| A. QPTR not within limit. | A.1 Reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.02. | 2 hours |
| | <u>AND</u> | |
| | A.2 Perform SR 3.2.4.1 and reduce THERMAL POWER $\geq 3\%$ from RTP for each 1% of QPTR > 1.02. | Once per 12 hours |
| | <u>AND</u> | |
| | A.3 Perform SR 3.2.1.1 and SR 3.2.2.1. | 24 hours |
| | <u>AND</u> | <u>AND</u> |
| | | Once per 7 days thereafter |
| | <u>AND</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|--|
| A. (continued) | A.4 Reduce Power Range Neutron Flux - High Trip Setpoint $\geq 3\%$ for each 1% of QPTR > 1.02. | 72 hours |
| | <u>AND</u> | |
| | A.5 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition. | Prior to increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2 |
| | <u>AND</u> | |
| | A.6 -----NOTE----- Perform Required Action A.6 only after Required Action A.5 is completed. ----- | |
| | Calibrate excore detectors to show zero QPT. | Prior to increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2 |
| | <u>AND</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|---|
| A. (continued) | <p>A.7 -----NOTE----- Required Action A.7 must be completed when Required Action A.6 is completed. -----</p> <p>Perform SR 3.2.1.1 and SR 3.2.2.1.</p> | <p>Within 24 hours after reaching RTP</p> <p><u>OR</u></p> <p>Within 48 hours after increasing THERMAL POWER above the more restrictive limit of Required Action A.1 or A.2</p> |
| B. Required Action and associated Completion Time not met. | B.1 Reduce THERMAL POWER to \leq 50% RTP. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.2.4.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. With input from one Power Range Neutron Flux channel inoperable and THERMAL POWER <75% RTP, the remaining three power range channels can be used for calculating QPTR. 2. SR 3.2.4.2 may be performed in lieu of this Surveillance. 3. This SR is not required to be performed until 12 hours after exceeding 50% RTP. <p>-----</p> <p>Verify QPTR is within limit by calculation.</p> | <p>7 days</p> <p><u>AND</u></p> <p>Once within 12 hours and every 12 hours thereafter with the QPTR alarm inoperable</p> |
| <p>SR 3.2.4.2 -----NOTES-----</p> <p>Only required to be performed if input from one or more Power Range Neutron Flux channels are inoperable with THERMAL POWER \geq 75% RTP.</p> <p>-----</p> <p>Verify QPTR is within limit using the movable incore detectors.</p> | <p>12 hours</p> |

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System (RTS) Instrumentation

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

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One or more Functions with one or more required channels inoperable. | A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s). | Immediately |
| B. One Manual Reactor Trip channel inoperable. | B.1 Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> B.2 Be in MODE 3. | 54 hours |
| C. One channel or train inoperable. | C.1 Restore channel or train to OPERABLE status. | 48 hours |
| | <u>OR</u> C.2 Open reactor trip breakers (RTBs). | 49 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------------|---|-------------------|
| D. One channel inoperable. | -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment of other channels. ----- | |
| | D.1.1 Place channel in trip. | 6 hours |
| | <u>AND</u> | |
| | D.1.2 Reduce THERMAL POWER to $\leq 75\%$ RTP. | 12 hours |
| | <u>OR</u> | |
| | D.2.1 Place channel in trip. | 6 hours |
| | <u>AND</u> | |
| | D.2.2 -----NOTE----- Only required to be performed when the Power Range Neutron Flux input to QPTR is inoperable. ----- | |
| | Perform SR 3.2.4.2. | Once per 12 hours |
| | <u>OR</u> | |
| | D.3 Be in MODE 3. | 12 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------------------------|
| E. One channel inoperable. | <p>-----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. -----</p> <p>E.1 Place channel in trip. <u>OR</u> E.2 Be in MODE 3.</p> | <p>6 hours</p> <p>12 hours</p> |
| F. THERMAL POWER > P-6 and < P-10, one Intermediate Range Neutron Flux channel inoperable. | <p>F.1 Reduce THERMAL POWER to < P-6. <u>OR</u> F.2 Increase THERMAL POWER to > P-10.</p> | <p>2 hours</p> <p>2 hours</p> |
| G. THERMAL POWER > P-6 and < P-10, two Intermediate Range Neutron Flux channels inoperable. | <p>G.1 -----NOTE----- Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed. -----</p> <p>Suspend operations involving positive reactivity additions. <u>AND</u> G.2 Reduce THERMAL POWER to < P-6.</p> | <p>Immediately</p> <p>2 hours</p> |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--|
| H. THERMAL POWER < P-6, one or two Intermediate Range Neutron Flux channels inoperable. | H.1 Restore channel(s) to OPERABLE status. | Prior to increasing THERMAL POWER to > P-6 |
| 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 RTBs. | Immediately |
| K. One Source Range Neutron Flux channel inoperable. | K.1 Restore channel to OPERABLE status. <u>OR</u> K.2 Open RTBs. | 48 hours 49 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| L. One channel inoperable. | -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- | |
| | L.1 Place channel in trip. | 6 hours |
| | <u>OR</u> L.2 Reduce THERMAL POWER to < P-7. | 12 hours |
| M. One Reactor Coolant Flow - Low (Single Loop) channel inoperable. | -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- | |
| | M.1 Place channel in trip. | 6 hours |
| | <u>OR</u> M.2 Reduce THERMAL POWER to < P-8. | 10 hours |
| N. One Turbine Trip - Stop Valve EH Pressure Low channel inoperable. | -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- | |
| | N.1 Place channel in trip. | 6 hours |
| | <u>OR</u> N.2 Reduce THERMAL POWER to < P-9. | 10 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-------------------------|
| O. One or more Turbine Trip - Turbine Stop Valve Closure channels inoperable. | O.1 Place channel(s) in trip. | 6 hours |
| | <u>OR</u> O.2 Reduce THERMAL POWER to < P-9. | 10 hours |
| P. One train inoperable. | -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----- | |
| | P.1 Restore train to OPERABLE status. <u>OR</u> P.2 Be in MODE 3. | 6 hours 12 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---------------------------------------|--|-----------------|
| Q. One RTB train inoperable. | -----NOTES----- 1. One train may be bypassed for up to 2 hours for surveillance testing, provided the other train is OPERABLE. 2. One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE. ----- | |
| | Q.1 Restore train to OPERABLE status. | 1 hour |
| | <u>OR</u> | |
| | Q.2 Be in MODE 3. | 7 hours |
| R. One or more channel(s) inoperable. | R.1 Verify interlock is in required state for existing unit conditions. | 1 hour |
| | <u>OR</u> R.2 Be in MODE 3. | 7 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| S. One or more channel(s) inoperable. | S.1 Verify interlock is in required state for existing unit conditions. | 1 hour |
| | <u>OR</u> S.2 Be in MODE 2. | 7 hours |
| T. One trip mechanism inoperable for one RTB. | T.1 Restore inoperable trip mechanism to OPERABLE status. | 48 hours |
| | <u>OR</u> T.2 Be in MODE 3. | 54 hours |
| U. Two RTS trains inoperable. | U.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-------------------------------------|
| SR 3.3.1.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.1.2 | -----NOTES----- 1. Adjust NIS channel if absolute difference is > 2%. 2. Not required to be performed until 12 hours after THERMAL POWER is \geq 15% RTP. ----- Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output. | 24 hours |
| SR 3.3.1.3 | -----NOTES----- 1. Adjust NIS channel if absolute difference is \geq 3%. 2. Not required to be performed until 24 hours after THERMAL POWER is \geq 15% RTP. ----- Compare results of the incore detector measurements to NIS AFD. | 31 effective full power days (EFPD) |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.3.1.4 -----NOTE----- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. ----- Perform TADOT.</p> | <p>31 days on a STAGGERED TEST BASIS</p> |
| <p>SR 3.3.1.5 Perform ACTUATION LOGIC TEST.</p> | <p>31 days on a STAGGERED TEST BASIS</p> |
| <p>SR 3.3.1.6 -----NOTE----- Not required to be performed until 24 hours after THERMAL POWER is \geq 75% RTP. ----- Calibrate excore channels to agree with incore detector measurements.</p> | <p>92 EFPD</p> |
| <p>SR 3.3.1.7 -----NOTE----- Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. ----- Perform COT.</p> | <p>92 days</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.3.1.8 -----NOTE----- This Surveillance shall include verification that interlocks P-6 (for the Intermediate Range channels) and P-10 (for the Power Range channels) are in their required state for existing unit conditions. ----- Perform COT.</p> | <p>-----NOTE----- Only required when not performed within previous 92 days ----- Prior to reactor startup <u>AND</u> Four hours after reducing power below P-10 for power and intermediate range instrumentation <u>AND</u> Four hours after reducing power below P-6 for source range instrumentation <u>AND</u> Every 92 days thereafter</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| <p>SR 3.3.1.9 -----NOTE----- Verification of setpoint is not required. ----- Perform TADOT.</p> | 92 days |
| <p>SR 3.3.1.10 -----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ----- Perform CHANNEL CALIBRATION.</p> | 18 months |
| <p>SR 3.3.1.11 -----NOTE----- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. Power and Intermediate Range Neutron Flux detector plateau voltage verification is not required to be performed prior to entry into MODE 1 or 2. ----- Perform CHANNEL CALIBRATION.</p> | 18 months |
| <p>SR 3.3.1.12 Perform CHANNEL CALIBRATION.</p> | 18 months |
| <p>SR 3.3.1.13 Perform COT.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.3.1.14 -----NOTE----- Verification of setpoint is not required. -----</p> <p>Perform TADOT.</p> | <p>18 months</p> |
| <p>SR 3.3.1.15 -----NOTE----- Verification of setpoint is not required. -----</p> <p>Perform TADOT.</p> | <p>-----NOTE----- Only required when not performed within previous 31 days -----</p> <p>Prior to reactor startup</p> |
| <p>SR 3.3.1.16 -----NOTE----- Neutron detectors are excluded from response time testing. -----</p> <p>Verify RTS RESPONSE TIME is within limits.</p> | <p>18 months on a STAGGERED TEST BASIS</p> |
| <p>SR 3.3.1.17 Verify RTS RESPONSE TIME for RTDs is within limits.</p> | <p>18 months</p> |

RTS Instrumentation
3.3.1

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SUP-VEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|------------------------------------|--|----------------------|------------|---|--|--|
| 1. Manual Reactor Trip | 1,2 | 2 | B | SR 3.3.1.14 | NA | NA |
| | 3(a), 4(a), 5(a) | 2 | C | SR 3.3.1.14 | NA | NA |
| 2. Power Range Neutron Flux | | | | | | |
| a. High | 1,2 | 4 | D | SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7 SR 3.3.1.11 SR 3.3.1.16 | ≤ 110.9% RTP | 109% RTP |
| b. Low | 1(b), 2 | 4 | E | SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.16 | ≤ 27.1% RTP | 25% RTP |
| 3. Power Range Neutron Flux | | | | | | |
| High Positive Rate | 1,2 | 4 | D | SR 3.3.1.7 SR 3.3.1.11 | ≤ 6.3% RTP with time constant ≥ 2 sec | 5% RTP with time constant ≥ 2 sec |
| Intermediate Range Neutron Flux | 1(b), 2(c) | 2 | F,G | SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 | ≤ 31% RTP | 25% RTP |
| | 2(d) | 2 | H | SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 | ≤ 31% RTP | 25% RTP |
| 5. Source Range Neutron Flux | 2(d) | 2 | I,J | SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 | ≤ 1.4 E5 cps | 1.0 E5 cps |
| | 3(a), 4(a), 5(a) | 2 | J,K | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.11 | ≤ 1.4 E5 cps | 1.0 E5 cps |
| 6. Overtemperature ΔT | 1,2 | 4 | E | SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 SR 3.3.1.17 | Refer to Note 1 (Page 3.3.1-18) | Refer to Note 1 (Page 3.3.1-18) |

(continued)

(a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.

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

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

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

Table 3.3.1-1 (page 2 of 7)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT | |
|--------------------------------------|--|----------------------|------------|---|---------------------------------------|--|--|
| 7. Overpower ΔT | 1,2 | 4 | E | SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 SR 3.3.1.17 | Refer to Note 2 (Page 3.3.1-19) | Refer to Note 2 (Page 3.3.1-19) | |
| 8. Pressurizer Pressure | | | | | | | |
| a. Low | 1(e) | 4 | L | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 | $\geq 1938^{(f)}$ psig | 1945 ^(f) psig | |
| b. High | 1,2 | 4 | E | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 | ≤ 2399 psig | 2385 psig | |
| 9. Pressurizer Water Level - High | 1(e) | 3 | L | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 | $\leq 93.8\%$ | 92% | |
| 10. Reactor Coolant Flow - Low | | | | | | | |
| a. Single Loop | 1(g) | 3 per loop | M | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 | $\geq 89.7\%$ | 91% | |
| b. Two Loops | 1(h) | 3 per loop | L | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 | $\geq 89.7\%$ | 91% | |

(continued)

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

(f) Time constants utilized in the lead-lag controller for Pressurizer Pressure - Low are 2 seconds for lead and 1 second for lag.

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

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

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPPOINT |
|---|--|----------------------|------------|--|--|---|
| 11. Undervoltage RCPs | 1(e) | 1 per bus | L | SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16 | ≥ 5016 V | 5082 V |
| 12. Underfrequency RCPs | 1(e) | 1 per bus | L | SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16 | ≥ 55.9 Hz | 56.4 Hz |
| 13. Steam Generator (SG) Water Level - Low Low | 1,2 | 4 per SG | E | SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16 | ≥ 9% (Unit 1) ≥ 35.1% (Unit 2) of narrow range span | 10.7% (Unit 1) 36.8% (Unit 2) of narrow range span |
| 14. Turbine Trip | | | | | | |
| a. Stop Valve EH Pressure Low | 1(i) | 4 | N | SR 3.3.1.10 SR 3.3.1.15 | ≥ 500 psig | 550 psig |
| b. Turbine Stop Valve Closure | 1(i) | 4 | O | SR 3.3.1.10 SR 3.3.1.15 | ≥ 1% open | NA |
| 15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) | 1,2 | 2 trains | P | SR 3.3.1.5 SR 3.3.1.14 | NA | NA |

(continued)

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

(i) Not used.

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

Table 3.3.1-1 (page 4 of 7)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|---|--|----------------------|------------|------------------------------|--|--|
| 16. Reactor Trip System Interlocks | | | | | | |
| a. Intermediate Range Neutron Flux, P-6 | 2(d) | 2 | R | SR 3.3.1.11 SR 3.3.1.13 | ≥ 6E-11 amp | 1E-10 amp |
| b. Low Power Reactor Trips Block, P-7 | 1 | 1 per train | S | SR 3.3.1.5 | NA | NA |
| c. Power Range Neutron Flux, P-8 | 1 | 4 | S | SR 3.3.1.11 SR 3.3.1.13 | ≤ 50.2% RTP | 48% RTP |
| d. Power Range Neutron Flux, P-9 | 1 | 4 | S | SR 3.3.1.11 SR 3.3.1.13 | ≤ 70% RTP | 69% RTP |
| e. Power Range Neutron Flux, P-10 | 1,2 | 4 | R | SR 3.3.1.11 SR 3.3.1.13 | ≥ 7.8% RTP and ≤ 12.2% RTP | 10% RTP |
| f. Turbine Impulse Pressure, P-13 | 1 | 2 | S | SR 3.3.1.12 SR 3.3.1.13 | ≤ 12.2% RTP turbine impulse pressure equivalent | 10% RTP turbine impulse pressure equivalent |
| 17. Reactor Trip Breakers ^(k) | 1,2 | 2 trains | Q,U | SR 3.3.1.4 | NA | NA |
| | 3(a), 4(a), 5(a) | 2 trains | C | SR 3.3.1.4 | NA | NA |
| 18. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms | 1,2 | 1 each per RTB | T | SR 3.3.1.4 | NA | NA |
| | 3(a), 4(a), 5(a) | 1 each per RTB | C | SR 3.3.1.4 | NA | NA |
| 19. Automatic Trip Logic | 1,2 | 2 trains | P,U | SR 3.3.1.5 | NA | NA |
| | 3(a), 4(a), 5(a) | 2 trains | C | SR 3.3.1.5 | NA | NA |

(continued)

(a) With RTBs closed and Rod Control System capable of rod withdrawal.

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

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

Table 3.3.1-1 (page 5 of 7)
Reactor Trip System Instrumentation

Note 1: Overtemperature ΔT

The Overtemperature ΔT Function Allowable Value shall not exceed the following NOMINAL TRIP SETPOINT by more than 4.3% (Unit 1) and 4.5% (Unit 2) of RTP.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left(\frac{1}{1 + \tau_3 s} \right) \leq \Delta T_0 \left\{ K_1 - K_2 \frac{(1 + \tau_4 s)}{(1 + \tau_5 s)} \left[T \frac{1}{(1 + \tau_6 s)} - T' \right] + K_3 (P - P') - f_1(\Delta I) \right\}$$

Where: ΔT is the measured RCS ΔT by loop narrow range RTDs, °F.

ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T' is the nominal T_{avg} at RTP (allowed by Safety Analysis), $\leq 585.1^\circ\text{F}$ (Unit 1)
 $\leq 590.8^\circ\text{F}$ (Unit 2).

P is the measured pressurizer pressure, psig

P' is the nominal RCS operating pressure, = 2235 psig

K_1 = Overtemperature ΔT reactor NOMINAL TRIP SETPOINT, as presented in the COLR,

K_2 = Overtemperature ΔT reactor trip heatup setpoint penalty coefficient, as presented in the COLR,

K_3 = Overtemperature ΔT reactor trip depressurization setpoint penalty coefficient, as presented in the COLR,

τ_1, τ_2 = Time constants utilized in the lead-lag compensator for ΔT , as presented in the COLR,

τ_3 = Time constant utilized in the lag compensator for ΔT , as presented in the COLR,

τ_4, τ_5 = Time constants utilized in the lead-lag compensator for T_{avg} , as presented in the COLR,

τ_6 = Time constant utilized in the measured T_{avg} lag compensator, as presented in the COLR, and

$f_1(\Delta I)$ = a function of the indicated difference between top and bottom detectors of the power-range neutron ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (i) for $q_t - q_b$ between the "positive" and "negative" $f_1(\Delta I)$ breakpoints as presented in the COLR; $f_1(\Delta I) = 0$, where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER;
- (ii) for each percent ΔI that the magnitude of $q_t - q_b$ is more negative than the $f_1(\Delta I)$ "negative" breakpoint presented in the COLR, the ΔT Trip Setpoint shall be automatically reduced by the $f_1(\Delta I)$ "negative" slope presented in the COLR; and

(continued)

Table 3.3.1-1 (page 6 of 7)
Reactor Trip System Instrumentation

- (iii) for each percent ΔI that the magnitude of $q_t - q_b$ is more positive than the $f_1(\Delta I)$ "positive" breakpoint presented in the COLR, the ΔT Trip Setpoint shall be automatically reduced by the $f_1(\Delta I)$ "positive" slope presented in the COLR.

Note 2: Overpower ΔT

The Overpower ΔT Function Allowable Value shall not exceed the following NOMINAL TRIP SETPOINT by more than 2.6% (Unit 1) and 3.1% (Unit 2) of RTP.

$$\Delta T \frac{(1 + \tau_1 s)}{(1 + \tau_2 s)} \left(\frac{1}{1 + \tau_3 s} \right) \leq \Delta T_0 \left\{ K_4 - K_5 \frac{\tau_7 s}{1 + \tau_7 s} \left(\frac{1}{1 + \tau_6 s} \right) T - K_6 \left[T \frac{1}{1 + \tau_6 s} - T^* \right] - f_2(\Delta I) \right\}$$

Where: ΔT is the measured RCS ΔT by loop narrow range RTDs, °F.

ΔT_0 is the indicated ΔT at RTP, °F.

s is the Laplace transform operator, sec^{-1} .

T is the measured RCS average temperature, °F.

T^* is the nominal T_{avg} at RTP (calibration temperature for ΔT instrumentation), $\leq 585.1^\circ\text{F}$ (Unit 1) $\leq 590.8^\circ\text{F}$ (Unit 2).

K_4 = Overpower ΔT reactor NOMINAL TRIP SETPOINT as presented in the COLR,

K_5 = $0.02/^\circ\text{F}$ for increasing average temperature and 0 for decreasing average temperature,

K_6 = Overpower ΔT reactor trip heatup setpoint penalty coefficient as presented in the COLR for $T > T^*$ and $K_6 = 0$ for $T \leq T^*$,

τ_1, τ_2 = Time constants utilized in the lead-lag compensator for ΔT , as presented in the COLR,

τ_3 = Time constant utilized in the lag compensator for ΔT , as presented in the COLR,

τ_6 = Time constant utilized in the measured T_{avg} lag compensator, as presented in the COLR,

τ_7 = Time constant utilized in the rate-lag controller for T_{avg} , as presented in the COLR, and

$f_2(\Delta I)$ = a function of the indicated difference between top and bottom detectors of the power-range neutron ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (i) for $q_t - q_b$ between the "positive" and "negative" $f_2(\Delta I)$ breakpoints as presented in the COLR; $f_2(\Delta I) = 0$, where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER;

(continued)

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

- (ii) for each percent ΔI that the magnitude of $q_t - q_b$ is more negative than the $f_2(\Delta I)$ "negative" breakpoint presented in the COLR, the ΔT Trip Setpoint shall be automatically reduced by the $f_2(\Delta I)$ "negative" slope presented in the COLR; and
 - (iii) for each percent ΔI that the magnitude of $q_t - q_b$ is more positive than the $f_2(\Delta I)$ "positive" breakpoint presented in the COLR, the ΔT Trip Setpoint shall be automatically reduced by the $f_2(\Delta I)$ "positive" slope presented in the COLR.
-

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation

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

APPLICABILITY: According to Table 3.3.2-1.

ACTIONS

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

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

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------------|--|-----------------|
| C. One train inoperable. | C.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----- Restore train to OPERABLE status. | 6 hours |
| | <u>OR</u> | |
| | C.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | C.2.2 Be in MODE 5. | 42 hours |
| D. One channel inoperable. | D.1 -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- Place channel in trip. | 6 hours |
| | <u>OR</u> | |
| | D.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | D.2.2 Be in MODE 4: | 18 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| E. One Containment Pressure channel inoperable. | E.1 -----NOTE----- One additional channel may be bypassed for up to 4 hours for surveillance testing. ----- Place channel in bypass. | 6 hours |
| | <u>OR</u> | |
| | E.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> E.2.2 Be in MODE 4. | 18 hours |
| F. One channel or train inoperable. | F.1 Restore channel or train to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | F.2.1 Be in MODE 3. | 54 hours |
| | <u>AND</u> F.2.2 Be in MODE 4. | 60 hours |
| G. One Steam Line Isolation Manual Initiation - individual channel inoperable. | G.1 Restore channel to OPERABLE status. | 48 hours |
| | <u>OR</u> G.2 Declare associated steam line isolation valve inoperable. | 48 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--------------------------|--|-----------------|
| H. One train inoperable. | H.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----- Restore train to OPERABLE status. | 6 hours |
| | <u>OR</u> | |
| | H.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> H.2.2 Be in MODE 4. | 18 hours |
| I. One train inoperable. | I.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE. ----- Restore train to OPERABLE status. | 6 hours |
| | <u>OR</u> | |
| | I.2 Be in MODE 3. | 12 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| J. One channel inoperable. | J.1 -----NOTE----- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- | |
| | Place channel in trip. | 6 hours |
| | <u>OR</u> J.2 Be in MODE 3. | 12 hours |
| K. One Main Feedwater Pumps trip channel inoperable. | K.1 Place channel in trip. | 1 hour |
| | <u>OR</u> K.2 Be in MODE 3. | 7 hours |
| L. One channel inoperable. | L.1 -----NOTE----- One channel may be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE. ----- | |
| | Be in MODE 3. | 6 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------------|--|-----------------|
| M. One channel inoperable. | M.1 Place channel in trip. | 1 hour |
| | <u>OR</u> | |
| | M.2.1 Be in MODE 3. | 7 hours |
| | <u>AND</u> | |
| | M.2.2 Be in MODE 4. | 13 hours |
| N. One channel inoperable. | N.1 -----NOTE----- One additional channel may be bypassed for up to 2 hours for surveillance testing. ----- | |
| | Place channel in bypass. | 6 hours |
| | <u>OR</u> | |
| | N.2.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | N.2.2 Be in MODE 5. | 42 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| O. One channel inoperable. | O.1 Verify interlock is in required state for existing unit condition. | 1 hour |
| | <u>OR</u> | |
| | O.2.1 Be in MODE 3. | 7 hours |
| | <u>AND</u> | |
| | O.2.2 Be in MODE 4. | 13 hours |
| P. One or more Containment Pressure Control System channel(s) inoperable. | P.1 Declare affected supported system inoperable. | Immediately |
| Q. One Nuclear Service Water Suction Transfer-Low Pit Level channel in one or more pits inoperable. | Q.1 -----NOTE----- The inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels. ----- Place channel in trip. | 4 hours |
| | <u>OR</u> | |
| | Q.2 Align the Nuclear Service Water System for Standby Nuclear Service Water Pond recirculation. | 4 hours |
| | <u>OR</u> | |
| | Q.3.1 Be in MODE 3. | 10 hours |
| | <u>AND</u> | |
| | Q.3.2 Be in MODE 5. | 40 hours |

(continued)

Table 3.3.2-1 (page 4 of 5)
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|--|--|----------------------|------------|---|--|--|
| (2) SG Water Level- High High (P-14) | 1,2(e),3(e) | 4 per SG | D | SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5 SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10 | ≤ 85.6% (Unit 1) ≤ 78.9% (Unit 2) | 83.9% (Unit 1) 77.1% (Unit 2) |
| (3) Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. See Item 5.b.(1) for Applicable MODES. | | | | | |
| (4) Tavg-Low | 1,2(e) | 4 | J | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 | ≥ 561°F | 564°F |
| coincident with Reactor Trip, P-4 | Refer to Function 8.a (Reactor Trip, P-4) for all initiation functions and requirements. | | | | | |
| (5) Doghouse WaterLevel - High High | 1,2(e) | 2 per doghouse | L | SR 3.3.2.8 | ≤ 12 inches above 577 ft floor level | 11 inches above 577 ft floor level |
| 6. Auxiliary Feedwater | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 1,2,3 | 2 trains | H | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| b. SG Water Level - Low Low | 1,2,3 | 4 per SG | D | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≥ 9% (Unit 1) ≥ 35.1% (Unit 2) | 10.7% (Unit 1) 36.8% (Unit 2) |
| c. Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| d. Loss of Offsite Power | 1,2,3 | 3 per bus | D | SR 3.3.2.3 SR 3.3.2.9 SR 3.3.2.10 | ≥ 3242 V | 3500 V |
| e. Trip of all Main Feedwater Pumps | 1,2 | 3 per pump | K | SR 3.3.2.8 SR 3.3.2.10 | NA | NA |
| f. Auxiliary Feedwater Pump Train A and Train B Suction Transfer on Suction Pressure - Low | 1,2,3 | 3 per train | M | SR 3.3.2.8 SR 3.3.2.10 | A) ≥ 9.5 psig B) ≥ 5.2 psig (Unit 1) ≥ 5.0 psig (Unit 2) | A) 10.5 psig B) 6.2 psig (Unit 1) 6.0 psig (Unit 2) |

(continued)

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

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|---|---|--------------------------|------------|--|---------------------------|-----------------------------|
| 7. Automatic Switchover to Containment Sump | | | | | | |
| a. Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| b. Refueling Water Storage Tank (RWST) Level – Low | 1,2,3,4 | 4 | N | SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9 SR 3.3.2.10 | ≥ 162.4 Inches | 177.15 Inches |
| Coincident with Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |
| 8. ESFAS Interlocks | | | | | | |
| a. Reactor Trip, P-4 | 1,2,3 | 1 per train, 2 trains | F | SR 3.3.2.8 | NA | NA |
| b. Pressurizer Pressure, P-11 | 1,2,3 | 3 | O | SR 3.3.2.5 SR 3.3.2.9 | ≥ 1944 and ≤ 1966 psig | 1955 psig |
| c. T _{avg} - Low Low, P-12 | 1,2,3 | 1 per loop | O | SR 3.3.2.5 SR 3.3.2.9 | ≥ 550°F | 553°F |
| 9. Containment Pressure Control System | | | | | | |
| a. Start Permissive | 1,2,3,4 | 4 per train | P | SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9 | ≤ 0.45 psid | 0.4 psid |
| b. Termination | 1,2,3,4 | 4 per train | P | SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9 | ≥ 0.25 psid | 0.3 psid |
| 10. Nuclear Service Water Suction Transfer - Low Pit Level | 1,2,3,4 | 3 per pit | Q,R | SR 3.3.2.1 SR 3.3.2.9 SR 3.3.2.11 SR 3.3.2.12 | ≥ El. 555.4 ft | El. 557.5 ft |

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

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

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
The Hydrogen Monitors are not required in MODE 3.

ACTIONS

- NOTES-----
1. LCO 3.0.4 is not applicable.
 2. Separate Condition entry is allowed for each Function.
-

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One or more Functions with one or more required channels inoperable. | A.1 Enter the Condition referenced in Table 3.3.3-1 for the channel. | Immediately |
| B. One or more Functions with one required channel inoperable. | B.1 Restore required channel to OPERABLE status. | 30 days |
| C. One or more Functions with one required channel inoperable. <u>AND</u> Diverse channel OPERABLE. | C.1 Restore required channel to OPERABLE status. | 30 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------------------|
| D. Required Action and associated Completion Time of Condition B or C not met. | D.1 Initiate action in accordance with Specification 5.6.7. | Immediately |
| E. One or more Functions with one required channel inoperable. <u>AND</u> Diverse channel inoperable. | E.1 Restore required channel to OPERABLE status. <u>OR</u> E.2 Restore diverse channel to OPERABLE status. | 7 days 7 days |
| F. -----NOTE----- Not applicable to hydrogen monitor channels. ----- One or more Functions with two required channels inoperable. | F.1 Restore one channel to OPERABLE status. | 7 days |
| G. Two hydrogen monitor channels inoperable. | G.1 Restore one hydrogen monitor channel to OPERABLE status. | 72 hours |
| H. Required Action and associated Completion Time of Condition E, F, or G not met. | H.1 Be in MODE 3. <u>AND</u> H.2 Be in MODE 4. | 6 hours 12 hours |

SURVEILLANCE REQUIREMENTS

-----NOTE-----
SR 3.3.3.1 and SR 3.3.3.3 apply to each PAM instrumentation Function in Table 3.3.3-1.

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-----------|
| SR 3.3.3.1 | Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | 31 days |
| SR 3.3.3.2 | -----NOTE----- This SR is only applicable to Hydrogen Monitors. ----- Perform CHANNEL CALIBRATION. | 92 days |
| SR 3.3.3.3 | -----NOTES----- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. CHANNEL CALIBRATION may consist of an electronic calibration of the Containment Area - High Range Radiation Monitor, not including the detector, for range decades above 10 R/h and a one point calibration check of the detector below 10 R/h with an installed or portable gamma source. ----- Perform CHANNEL CALIBRATION. | 18 months |

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

| | FUNCTION | REQUIRED CHANNELS | CONDITIONS |
|-----|---|-----------------------|------------|
| 1. | Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range) | 2 | B,D,F,H |
| 2. | RCS Cold Leg Temperature (Wide Range) | 2 | B,D,F,H |
| 3. | RCS Pressure (Wide Range) | 2 | B,D,F,H |
| 4. | Reactor Vessel Water Level | 2 | B,D,F,H |
| 5. | Containment Sump Water Level (Wide Range) | 2 | B,D,F,H |
| 6. | Containment Pressure (Wide Range) | 2 | B,D,F,H |
| 7. | Containment Area Radiation (High Range) | 1 | B,D |
| 8. | Hydrogen Monitors | 2 | B,D,G,H |
| 9. | Pressurizer Level | 2 | B,D,F,H |
| 10. | Steam Generator Water Level (Narrow Range) | 2 per steam generator | B,D,F,H |
| 11. | Core Exit Temperature - Quadrant 1 | 2(a) | B,D,F,H |
| 12. | Core Exit Temperature - Quadrant 2 | 2(a) | B,D,F,H |
| 13. | Core Exit Temperature - Quadrant 3 | 2(a) | B,D,F,H |
| 14. | Core Exit Temperature - Quadrant 4 | 2(a) | B,D,F,H |
| 15. | Auxiliary Feedwater Flow | 1 per steam generator | C,D,E,H |
| 16. | RCS Radiation Level | 1 | B,D |
| 17. | RCS Subcooling Margin Monitor | 2 | B,D,F,H |
| 18. | Steam Line Pressure | 2 per steam generator | B,D,F,H |
| 19. | Refueling Water Storage Tank Level | 2 | B,D,F,H |
| 20. | Neutron Flux (Wide Range) | 2 | B,D,F,H |
| 21. | Steam Generator Water Level (Wide Range) | 1 per steam generator | C,D,E,H |

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

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES-----
1. LCO 3.0.4 is not applicable.
 2. Separate Condition entry is allowed for each Function.
-

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-----------|
| SR 3.3.4.1 | Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | 31 days |
| SR 3.3.4.2 | <p>-----NOTE----- Not applicable to Reactor Trip Breaker Position. -----</p> <p>Perform CHANNEL CALIBRATION for each required instrumentation channel.</p> | 18 months |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| R. Two or more Nuclear Service Water Suction Transfer-Low Pit Level channels in one or more pits inoperable. | R.1 Align the Nuclear Service Water System for Standby Nuclear Service Water Pond recirculation. | 4 hours |
| | <u>OR</u> | |
| | R.2.1 Be in MODE 3. | 10 hours |
| | <u>AND</u> R.2.2 Be in MODE 5. | 40 hours |

SURVEILLANCE REQUIREMENTS

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

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.3.2.1 Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.2.2 Perform ACTUATION LOGIC TEST. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.2.3 -----NOTE----- Final actuation of pumps or valves not required. ----- Perform TADOT. | 31 days |
| SR 3.3.2.4 Perform MASTER RELAY TEST. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.2.5 Perform COT. | 92 days |
| SR 3.3.2.6 Perform SLAVE RELAY TEST. | 92 days |
| SR 3.3.2.7 Perform COT. | 31 days |

(continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.3.2.8 -----NOTE----- Verification of setpoint not required for manual initiation functions. ----- Perform TADOT.</p> | 18 months |
| <p>SR 3.3.2.9 -----NOTE----- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ----- Perform CHANNEL CALIBRATION.</p> | 18 months |
| <p>SR 3.3.2.10 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after SG pressure is \geq 600 psig. ----- Verify ESFAS RESPONSE TIMES are within limit.</p> | 18 months on a STAGGERED TEST BASIS |
| <p>SR 3.3.2.11 Perform COT.</p> | 18 months |
| <p>SR 3.3.2.12 Perform ACTUATION LOGIC TEST.</p> | 18 months |

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

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|--|---|--------------------------|------------|---|--------------------|-----------------------------|
| 1. Safety Injection ^(b) | | | | | | |
| a. Manual Initiation | 1,2,3,4 | 2 | B | SR 3.3.2.8 | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| c. Containment Pressure - High | 1,2,3 | 3 | D | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≤ 1.4 psig | 1.2 psig |
| d. Pressurizer Pressure - Low | 1,2,3(a) | 4 | D | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≥ 1839 psig | 1845 psig |
| 2. Containment Spray | | | | | | |
| a. Manual Initiation | 1,2,3,4 | 1 per train, 2 trains | B | SR 3.3.2.8 | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| c. Containment Pressure - High High | 1,2,3 | 4 | E | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≤ 3.2 psig | 3.0 psig |
| 3. Containment Isolation ^(b) | | | | | | |
| a. Phase A Isolation | | | | | | |
| (1) Manual Initiation | 1,2,3,4 | 2 | B | SR 3.3.2.8 | NA | NA |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| (3) Safety Injection | Refer to Function 1 (Safety Injection) for all initiation functions and requirements. | | | | | |

(continued)

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

(b) The requirements of this Function are not applicable to Containment Purge Ventilation System and Hydrogen Purge System components, since the system containment isolation valves are sealed closed in MODES 1, 2, 3, and 4.

Table 3.3.2-1 (page 2 of 5)
Engineered Safety Feature Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | NOMINAL TRIP SETPOINT |
|--|--|--------------------------|------------|---|--------------------|-----------------------------|
| 3. Containment Isolation (continued) | | | | | | |
| b. Phase B Isolation | | | | | | |
| (1) Manual Initiation | 1,2,3,4 | 1 per train, 2 trains | B | SR 3.3.2.8 | NA | NA |
| (2) Automatic Actuation Logic and Actuation Relays | 1,2,3,4 | 2 trains | C | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| (3) Containment Pressure - High High | 1,2,3 | 4 | E | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≤ 3.2 psig | 3.0 psig |
| 4. Steam Line Isolation | | | | | | |
| a. Manual Initiation | | | | | | |
| (1) System | 1,2(b),3(b) | 2 trains | F | SR 3.3.2.8 | NA | NA |
| (2) Individual | 1,2(b),3(b) | 1 per line | G | SR 3.3.2.8 | NA | NA |
| b. Automatic Actuation Logic and Actuation Relays | 1,2(b),3(b) | 2 trains | H | SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 | NA | NA |
| c. Containment Pressure - High High | 1,2(b),3(b) | 4 | E | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≤ 3.2 psig | 3.0 psig |
| d. Steam Line Pressure | | | | | | |
| (1) Low | 1,2(b),3(a)(b) | 3 per steam line | D | SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10 | ≥ 744 psig | 775 psig |
| (continued) | | | | | | |

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

(b) Except when all MSIVs are closed and de-activated.

Table 3.3.4-1 (page 1 of 1)
Remote Shutdown System Instrumentation and Controls

| FUNCTION/INSTRUMENT OR CONTROL PARAMETER | REQUIRED NUMBER OF FUNCTIONS |
|--|---------------------------------|
| 1. Reactivity Control | |
| a. Reactor Trip Breaker Position | 1 per trip breaker |
| 2. Reactor Coolant System (RCS) Pressure Control | |
| a. Pressurizer Pressure | 1 |
| 3. Decay Heat Removal via Steam Generators (SGs) | |
| a. RCS Hot Leg Temperature - Loop A and B | 1 per loop |
| b. RCS Cold Leg Temperature - Loop A and B | 1 per loop |
| c. SG Pressure | 1 per SG |
| d. SG Level or AFW Flow | 1 per SG |
| 4. RCS Inventory Control | |
| a. Pressurizer Level | 1 |

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation

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

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

ACTIONS

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

| CONDITION | | REQUIRED ACTION | COMPLETION TIME |
|-----------|---|---|-----------------|
| A. | One or more Functions with one channel per bus inoperable. | A.1 Place channel in trip. | 6 hours |
| B. | One or more Functions with two or more channels per bus inoperable. | B.1 Restore all but one channel to OPERABLE status. | 1 hour |
| C. | Required Action and associated Completion Time not met. | C.1 Enter applicable Condition(s) and Required Action(s) for the associated DG made inoperable by LOP DG start instrumentation. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|------------------|
| <p>SR 3.3.5.1 -----NOTE----- Testing shall consist of voltage sensor relay testing excluding actuation of load shedding diesel start, and time delay times. ----- Perform TADOT.</p> | <p>31 days</p> |
| <p>SR 3.3.5.2 Perform CHANNEL CALIBRATION with NOMINAL TRIP SETPOINT and Allowable Value as follows:</p> <p>a. Loss of voltage Allowable Value \geq 3242 V. Loss of voltage NOMINAL TRIP SETPOINT = 3500 V.</p> <p>b. Degraded voltage Allowable Value \geq 3738 V. Degraded voltage NOMINAL TRIP SETPOINT = 3766 V.</p> | <p>18 months</p> |

Containment Air Release and Addition Isolation Instrumentation
3.3.6

3.3 INSTRUMENTATION

3.3.6 Containment Air Release and Addition Isolation Instrumentation

LCO 3.3.6 The Containment Air Release and Addition Isolation instrumentation for each Function in Table 3.3.6-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. One or more Functions with one or more manual or automatic actuation trains inoperable. | A.1 Enter applicable Conditions and Required Actions of LCO 3.6.3, "Containment Isolation Valves," for containment air release and addition isolation valves made inoperable by isolation instrumentation. | Immediately |

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.6-1 to determine which SRs apply for each Containment Air Release and Addition Isolation Function.

| SURVEILLANCE | FREQUENCY |
|---|-----------------------------------|
| SR 3.3.6.1 Perform ACTUATION LOGIC TEST. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.6.2 Perform MASTER RELAY TEST. | 31 days on a STAGGERED TEST BASIS |
| SR 3.3.6.3 Perform SLAVE RELAY TEST. | 92 days |
| SR 3.3.6.4 -----NOTE----- Verification of setpoint is not required. ----- Perform TADOT. | 18 months |

Containment Air Release and Addition Isolation Instrumentation
3.3.6

Table 3.3.6-1 (page 1 of 1)
Containment Air Release and Addition Isolation Instrumentation

| FUNCTION | | REQUIRED TRAINS | SURVEILLANCE REQUIREMENTS | NOMINAL TRIP SETPOINT |
|----------|---|---|--|--------------------------|
| 1. | Manual Initiation | 2 | SR 3.3.6.4 | NA |
| 2. | Automatic Actuation Logic and Actuation Relays | 2 | SR 3.3.6.1 SR 3.3.6.2 SR 3.3.6.3 | NA |
| 3. | Safety Injection | Refer to LCO 3.3.2, "ESFAS Instrumentation," Table 3.3.2-1, Function 1, for all initiation functions and requirements. | | |

**Section 3.3.7
and
Section 3.3.8
has been
deleted
per
Amendment Nos. 177/169
dated
April 8, 1999**

3.3 INSTRUMENTATION

3.3.9 Boron Dilution Mitigation System (BDMS)

LCO 3.3.9 Two trains of the BDMS shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--------------------------|--|-----------------|
| A. One train inoperable. | A.1 Restore train to OPERABLE status. | 48 hours |
| | <u>OR</u> | |
| | A.2.1 -----NOTE----- Plant temperature changes are allowed provided that SDM is maintained and k_{eff} remains < 0.99. ----- | |
| | Suspend operations involving positive reactivity additions. | 48 hours |
| | <u>AND</u> | |
| | A.2.2 Verify unborated water source isolation valve(s) are closed and secured. | 49 hours |
| | <u>OR</u> | |
| | A.3.1 Verify two Source Range Neutron Flux Monitors are OPERABLE. | 48 hours |
| | <u>AND</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---------------------------|--|-----------------|
| A. (continued) | A.3.2 Verify Reactor Makeup Water Pumps combined flow rates are within the limits specified in the COLR. | 49 hours |
| B. Two trains inoperable. | B.1 Restore trains to OPERABLE status. | 12 hours |
| | <u>OR</u> | |
| | B.2.1 -----NOTE----- Plant temperature changes are allowed provided that SDM is maintained and k_{eff} remains < 0.99. ----- | |
| | Suspend operations involving positive reactivity additions. | 12 hours |
| | <u>AND</u> | |
| | B.2.2 Verify unborated water source isolation valve(s) are closed and secured. | 13 hours |
| | <u>OR</u> | |
| | B.3.1 Verify two Source Range Neutron Flux Monitors are OPERABLE. | 12 hours |
| | <u>AND</u> | |
| | B.3.2 Verify Reactor Makeup Water Pumps combined flow rates are within the limits specified in the COLR. | 13 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|-----------|
| SR 3.3.9.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.9.2 | Perform COT. | 31 days |
| SR 3.3.9.3 | Verify each automatic valve moves to the correct position and Reactor Makeup Water pumps stop upon receipt of an actual or simulated actuation signal. | 18 months |
| SR 3.3.9.4 | <p>-----NOTE----- Only required to be performed when used to satisfy Required Action A.3 or B.3. -----</p> <p>Perform CHANNEL CHECK on the Source Range Neutron Flux Monitors.</p> | 12 hours |
| SR 3.3.9.5 | <p>-----NOTE----- Only required to be performed when used to satisfy Required Action A.3 or B.3. -----</p> <p>Verify combined flowrates from both Reactor Makeup Water Pumps are \leq the value in the COLR.</p> | 31 days |
| SR 3.3.9.6 | <p>-----NOTE----- Only required to be performed when used to satisfy Required Action A.3 or B.3. -----</p> <p>Perform COT on the Source Range Neutron Flux Monitors.</p> | 92 days |

3.4 REACTOR COOLANT SYSTEM.(RCS)

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

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified in Table 3.4.1-1.

APPLICABILITY: MODE 1.

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

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. Pressurizer pressure or RCS average temperature DNB parameters not within limits. | A.1 Restore DNB parameter(s) to within limit. | 2 hours |
| B. RCS total flow rate < 390,000 gpm but ≥ 386,100 gpm. | B.1 Reduce THERMAL POWER to ≤ 98% RTP. | 2 hours |
| | <u>AND</u> B.2 Reduce the Power Range Neutron Flux – High Trip Setpoint below the nominal setpoint by 2% RTP. | 6 hours |

(continued)

RCS Pressure, Temperature, and Flow DNB Limits
3.4.1

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| C. RCS total flow rate < 386,100 gpm. | C.1 Restore RCS total flow rate to $\geq 386,100$ gpm. | 2 hours |
| | <u>OR</u> | |
| | C.2.1 Reduce THERMAL POWER to < 50% RTP. | 2 hours |
| | <u>AND</u> | |
| | C.2.2 Reduce the Power Range Neutron Flux - High Trip Setpoint to $\leq 55\%$ RTP. | 6 hours |
| | <u>AND</u> | |
| | C.2.3 Restore RCS total flow rate to $\geq 386,100$ gpm. | 24 hours |
| D. Required Action and associated Completion Time not met. | D.1 Be in MODE 2. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.4.1.1 Verify pressurizer pressure is within limits. | 12 hours |
| SR 3.4.1.2 Verify RCS average temperature is within limits. | 12 hours |
| SR 3.4.1.3 Verify RCS total flow rate is within limits. | 12 hours |
| SR 3.4.1.4 Perform CHANNEL CALIBRATION for each RCS total flow indicator. | 18 months |

Table 3.4.1-1 (page 1 of 1)
RCS DNB Parameters

| PARAMETER | INDICATION | No. OPERABLE CHANNELS | LIMITS |
|---|--|-----------------------|--------------------------------------|
| 1. Indicated RCS Average Temperature – Unit 1 | meter | 4 | $\leq 587.2\text{ }^{\circ}\text{F}$ |
| | meter | 3 | $\leq 586.9\text{ }^{\circ}\text{F}$ |
| | computer | 4 | $\leq 587.7\text{ }^{\circ}\text{F}$ |
| | computer | 3 | $\leq 587.5\text{ }^{\circ}\text{F}$ |
| | Indicated RCS Average Temperature – Unit 2 | meter | $\leq 592.9\text{ }^{\circ}\text{F}$ |
| | | meter | $\leq 592.6\text{ }^{\circ}\text{F}$ |
| 2. Indicated Pressurizer Pressure | computer | 4 | $\leq 593.4\text{ }^{\circ}\text{F}$ |
| | computer | 3 | $\leq 593.2\text{ }^{\circ}\text{F}$ |
| | meter | 4 | $\geq 2219.8\text{ psig}$ |
| | | 3 | $\geq 2222.1\text{ psig}$ |
| | computer | 4 | $\geq 2215.8\text{ psig}$ |
| | computer | 3 | $\geq 2217.5\text{ psig}$ |
| 3. RCS Total Flow Rate | | | $\geq 390,000\text{ gpm}$ |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be $\geq 551^{\circ}\text{F}$.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.4.2.1 Verify RCS T_{avg} in each loop $\geq 551^{\circ}\text{F}$. | <p>-----NOTE----- Only required if $T_{avg} - T_{ref}$ deviation alarm not reset and any RCS loop $T_{avg} < 561^{\circ}\text{F}$ -----</p> <p>30 minutes</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure and RCS temperature shall be limited during RCS heatup and cooldown, criticality, and inservice leak and hydrostatic testing in accordance with:

- a. A maximum heatup rate as specified in Figure 3.4.3-1;
- b. A maximum cooldown rate as specified in Figure 3.4.3-2; and
- c. A maximum temperature change of $\leq 10^{\circ}\text{F}$ in any 1 hour period during inservice leak and hydrostatic testing operations above the heatup and cooldown limit curves.

APPLICABILITY: At all times.

ACTIONS

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

(continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|------------|
| SR 3.4.3.1 | <p>-----NOTE-----</p> <p>Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing.</p> <p>-----</p> <p>Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within limits.</p> | 30 minutes |

MATERIAL PROPERTY BASIS

LIMITING MATERIAL: LOWER SHELL FORGING 04

LIMITING ART AT 15 EFPY: 1/4-T, 43°F

3/4-T, 26°F

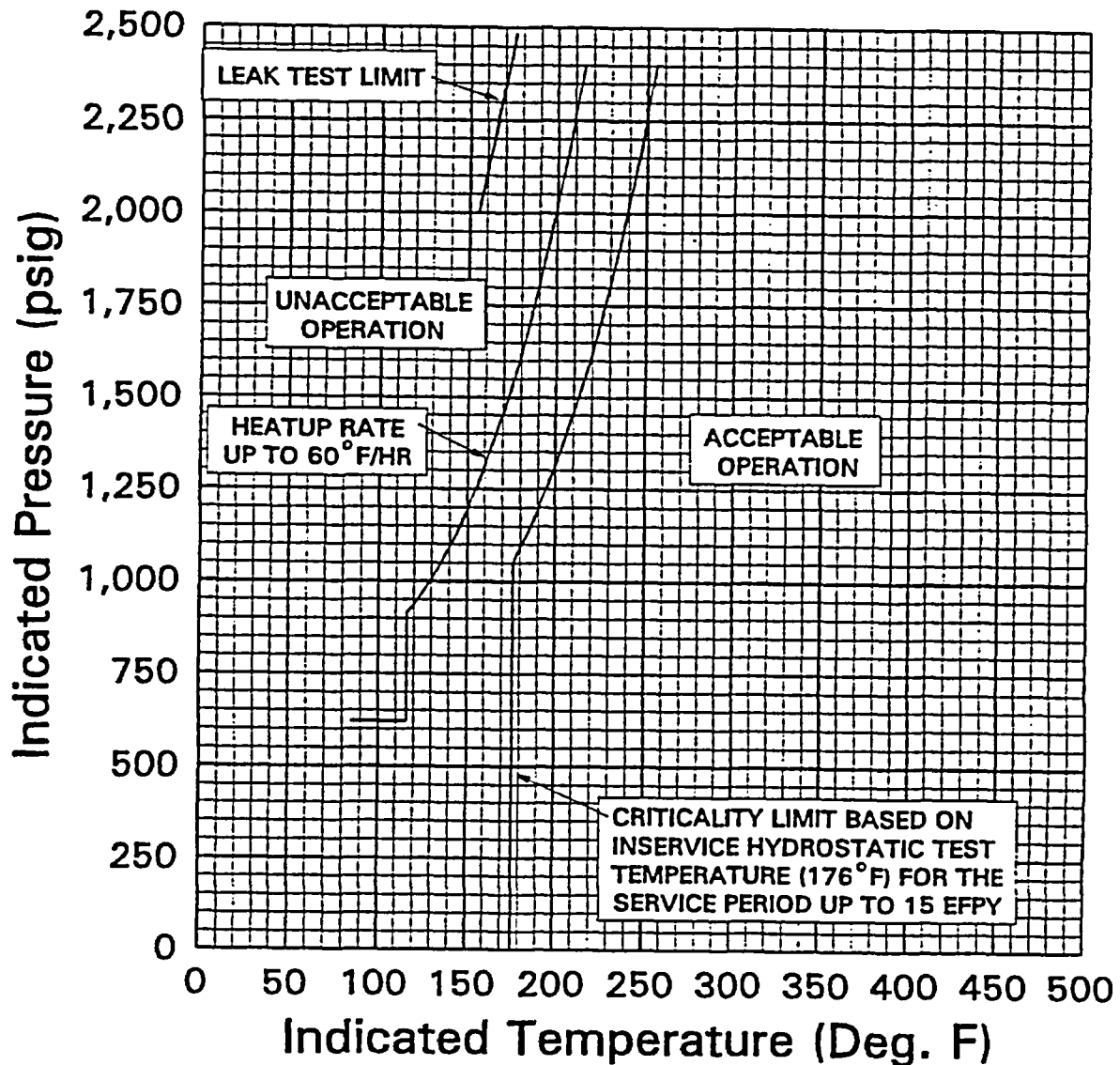


Figure 3.4.3-1
(UNIT 1 ONLY)
RCS Heatup Limitations

MATERIAL PROPERTY BASIS

LIMITING MATERIALS: INTERMEDIATE SHELL, B8605-2

LIMITING ART AT 15 EFPY: 1/4-L, 112.6 °F

3/4-L, 96.0 °F

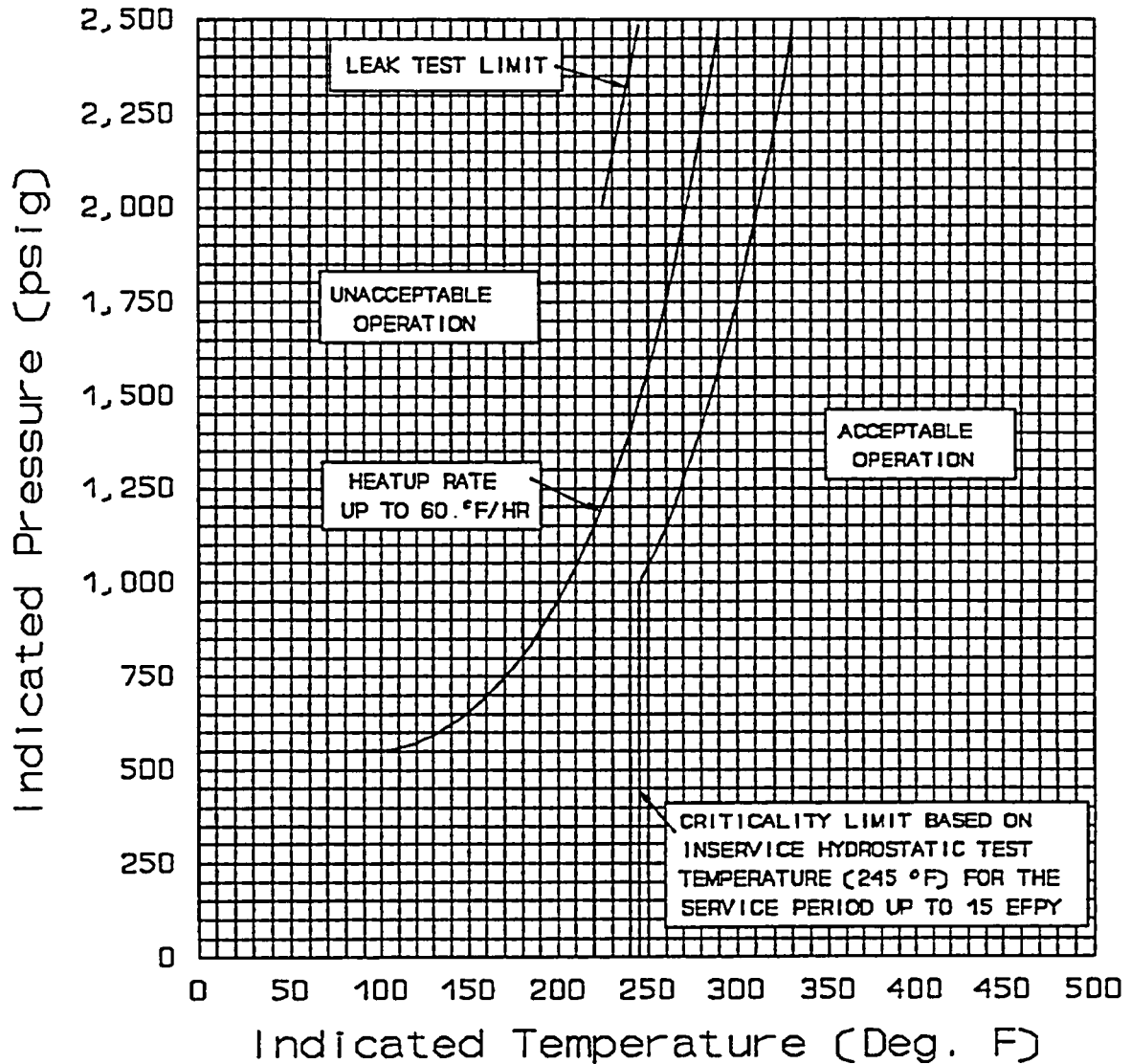


Figure 3.4.3-1
(UNIT 2 ONLY)
RCS Heatup Limitations

MATERIAL PROPERTY BASIS

LIMITING MATERIAL: LOWER SHELL FORGING 04

LIMITING ART AT 15 EPFY: 1/4-T, 43°F

3/4-T, 26°F

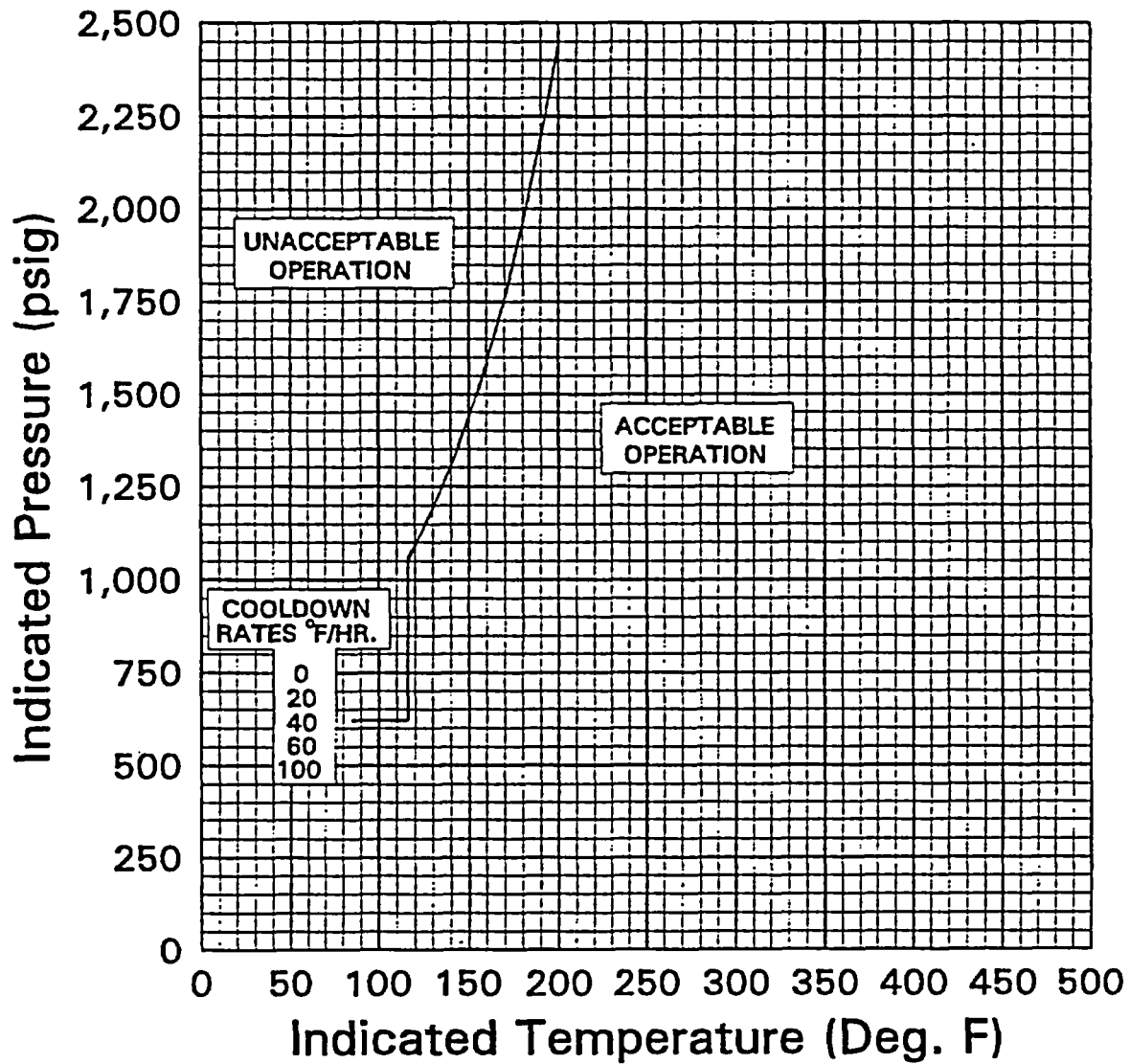


Figure 3.4.3-2
(UNIT 1 ONLY)
RCS Cooldown Limitations

MATERIAL PROPERTY BASIS

LIMITING MATERIALS: INTERMEDIATE SHELL, B8605-2

LIMITING ART AT 15 EPFY: 1/4-t, 112.6 °F
3/4-t, 96.0 °F

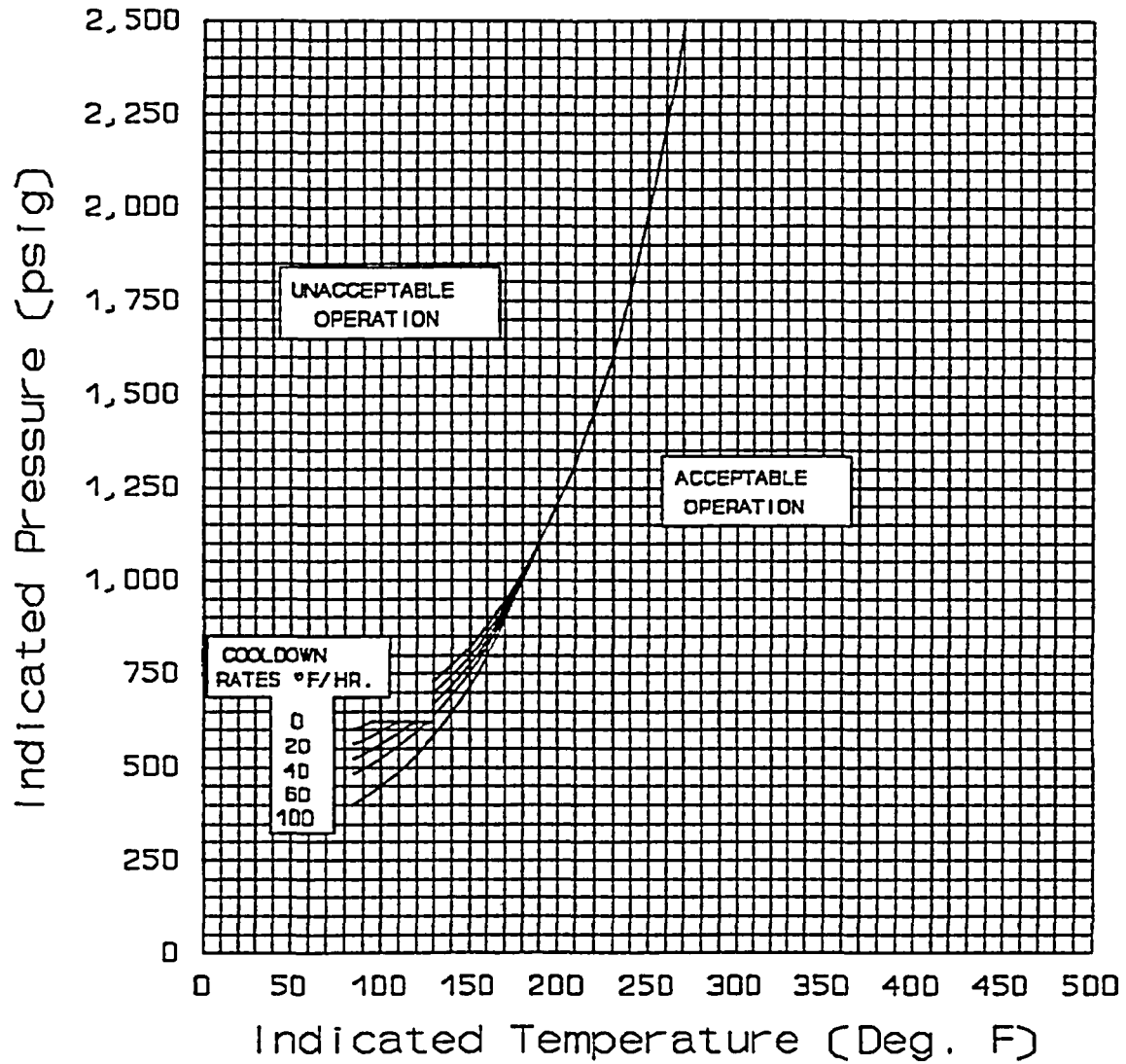


Figure 3.4.3-2
(UNIT 2 ONLY)
RCS Cooldown Limitations

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops — MODES 1 and 2

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.4.4.1 Verify each RCS loop is in operation. | 12 hours |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops — MODE 3

LCO 3.4.5

Three RCS loops shall be OPERABLE, and either:

- a. Three 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 de-energized 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 SDM of LCO 3.1.1 and maintain $k_{eff} < 0.99$; 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 or two required RCS loop(s) inoperable. | A.1 Restore required RCS loop(s) to OPERABLE status. | 72 hours |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 4. | 12 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| C. One or two required RCS loop(s) not in operation and Rod Control System capable of rod withdrawal. | C.1 Restore required RCS loop(s) to operation. | 1 hour |
| | <u>OR</u> C.2 De-energize all control rod drive mechanisms (CRDMs). | 1 hour |
| D. Three required RCS loops inoperable. <u>OR</u> No RCS loop in operation. | D.1 De-energize all CRDMs. | Immediately |
| | <u>AND</u> 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 |
| | <u>AND</u> D.3 Initiate action to restore one RCS loop to OPERABLE status and operation. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.4.5.1 Verify required RCS loops are in operation. | 12 hours |
| SR 3.4.5.2 Verify steam generator secondary side water levels are ≥ 12% narrow range for required RCS loops. | 12 hours |
| SR 3.4.5.3 Verify correct breaker alignment and indicated power are available to the required pumps that are not in operation. | 7 days |

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 de-energized 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 maintain $k_{eff} < 0.99$; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature $\leq 285^\circ\text{F}$ unless the secondary side water temperature of each steam generator (SG) is $\leq 50^\circ\text{F}$ above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

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

(continued)

ACTIONS (continued)

[illegible]

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|-----------|
| SR 3.4.6.1 | Verify one RHR or RCS loop is in operation. | 12 hours |
| SR 3.4.6.2 | Verify SG secondary side water levels are \geq 12% narrow range for required RCS loops. | 12 hours |
| SR 3.4.6.3 | Verify correct breaker alignment and indicated power are available to the required pump that is not in operation. | 7 days |

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 $\geq 12\%$ narrow range.

-----NOTES-----

1. The RHR pump of the loop in operation may be de-energized 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. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures $\leq 285^\circ\text{F}$ unless the secondary side water temperature of each SG is $\leq 50^\circ\text{F}$ above each of the RCS cold leg temperatures.
4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.4.7.1 Verify one RHR loop is in operation. | 12 hours |
| SR 3.4.7.2 Verify SG secondary side water level is \geq 12% narrow range in required SGs. | 12 hours |
| SR 3.4.7.3 Verify correct breaker alignment and indicated power are available to the required RHR pump that is not in operation. | 7 days |

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 de-energized for ≤ 15 minutes when switching from one loop to another 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.

ACTIONS

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

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| B. Required RHR loops inoperable. <u>OR</u> 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 |
| | <u>AND</u> 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 |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

- a. Pressurizer water level $\leq 92\%$ (1656 ft³); and
- b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 150 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. Pressurizer water level not within limit. | A.1 Be in MODE 3 with reactor trip breakers open. | 6 hours |
| | <u>AND</u> A.2 Be in MODE 4. | 12 hours |
| B. One required group of pressurizer heaters inoperable. | B.1 Restore required group of pressurizer heaters to OPERABLE status. | 72 hours |
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> C.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-----------|
| SR 3.4.9.1 | Verify pressurizer water level is $\leq 92\%$ (1656 ft ³). | 12 hours |
| SR 3.4.9.2 | Verify capacity of each required group of pressurizer heaters is ≥ 150 kW. | 92 days |
| SR 3.4.9.3 | Verify required pressurizer heaters are capable of being powered from an emergency power supply. | 18 months |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LCO 3.4.10 Three pressurizer safety valves shall be OPERABLE with lift settings ≥ 2435 psig and ≤ 2559 psig.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures $> 285^{\circ}\text{F}$.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------------------|
| A. One pressurizer safety valve inoperable. | A.1 Restore valve to OPERABLE status. | 15 minutes |
| B. Required Action and associated Completion Time not met. <u>OR</u> Two or more pressurizer safety valves inoperable. | B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4 with any RCS cold leg temperatures $\leq 285^{\circ}\text{F}$. | 6 hours 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.4.10.1 | Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be ≥ 2460 psig and ≤ 2510 psig. | In accordance with the Inservice Testing Program |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

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

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTES

1. Separate Condition entry is allowed for each PORV.
2. LCO 3.0.4 is not applicable.

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

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| C. One block valve inoperable. | C.1 Place associated PORV in manual control. | 1 hour |
| | <u>AND</u> C.2 Restore block valve to OPERABLE status. | 72 hours |
| D. Required Action and associated Completion Time of Condition A, B, or C not met. | D.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> D.2 Be in MODE 4. | 12 hours |
| E. Three PORVs inoperable and not capable of being manually cycled. | E.1 Close associated block valves. | 1 hour |
| | <u>AND</u> E.2 Remove power from associated block valves. | 1 hour |
| | <u>AND</u> E.3 Be in MODE 3. | 6 hours |
| | <u>AND</u> E.4 Be in MODE 4. | 12 hours |
| F. More than one block valve inoperable. | F.1 Place associated PORVs in manual control. | 1 hour |
| | <u>AND</u> | |
| (continued) | | |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| F. (continued) | F.2 Restore one block valve to OPERABLE status if three block valves are inoperable. | 2 hours |
| | <u>AND</u> F.3 Restore remaining block valve(s) to OPERABLE status. | 72 hours |
| G. Required Action and associated Completion Time of Condition F not met. | G.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> G.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.4.11.1 -----NOTE----- Not required to be met with block valve closed in accordance with the Required Action of Condition B or E. ----- Perform a complete cycle of each block valve. | 92 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|------------------|
| <p>SR 3.4.11.2 -----NOTE----- Required to be performed in MODE 3 or MODE 4 when the temperature of all RCS cold legs is > 200°F. ----- Perform a complete cycle of each PORV.</p> | <p>18 months</p> |
| <p>SR 3.4.11.3 -----NOTE----- This SR is not applicable to valve NC-36B. ----- Verify the nitrogen supply for each PORV is OPERABLE by:</p> <ul style="list-style-type: none"> a. Manually transferring motive power from the air supply to the nitrogen supply, b. Isolating and venting the air supply, and c. Operating the PORV through one complete cycle. | <p>18 months</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of one charging pump or one safety injection pump capable of injecting into the RCS, the accumulators isolated, reactor coolant pump operation limited as specified in Table 3.4.12-1 and either a or b below:

- a. Two power operated relief valves (PORVs) with nominal lift setting = 400 psig (as left calibrated), allowable value ≤ 425 psig (as found), with RCS cold leg temperature $\geq 65^{\circ}\text{F}$; or
- b. The RCS depressurized and an RCS vent of ≥ 4.5 square inches.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is $\leq 285^{\circ}\text{F}$,
MODE 5,
MODE 6 when the reactor vessel head is on.

-----NOTE-----

Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in Specification 3.4.3.

ACTIONS

-----NOTE-----
LCO 3.0.4 is not applicable.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| <p>A. Two or more charging pumps capable of injecting into the RCS.</p> <p><u>OR</u></p> <p>One charging pump and one safety injection pump capable of injecting into the RCS.</p> <p><u>OR</u></p> <p>Two or more safety injection pumps capable of injecting into the RCS.</p> | <p>-----NOTE----- Two charging pumps may be capable of injecting into the RCS during pump swap operation for \leq 15 minutes. -----</p> <p>A.1 Initiate action to verify a maximum of one charging pump or one safety injection pump is capable of injecting into the RCS.</p> | Immediately |
| <p>B. Reactor coolant pump operation not limited as specified in Table 3.4.12-1.</p> | <p>B.1 Initiate action to limit pump operation as specified in Table 3.4.12-1.</p> | Immediately |
| <p>C. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in Specification 3.4.3.</p> | <p>C.1 Isolate affected accumulator.</p> | 1 hour |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---------------------------------|
| <p>D. Required Action and associated Completion Time of Condition C not met.</p> | <p>D.1 Increase RCS cold leg temperature to > 285°F.</p> <p><u>OR</u></p> <p>D.2 Depressurize affected accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed by Specification 3.4.3.</p> | <p>12 hours</p> <p>12 hours</p> |
| <p>E. One PORV inoperable in MODE 4.</p> | <p>E.1 Restore PORV to OPERABLE status.</p> | <p>7 days</p> |
| <p>F. One PORV inoperable in MODE 5 or 6.</p> | <p>F.1 Restore PORV to OPERABLE status.</p> | <p>24 hours</p> |
| <p>G. Two PORVs inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A, D, E, or F, not met.</p> <p><u>OR</u></p> <p>LTOP System inoperable for any reason other than Condition A, C, D, E, or F.</p> | <p>G.1 Depressurize RCS and establish RCS vent of ≥ 4.5 square inches.</p> | <p>8 hours</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.4.12.1 Verify a maximum of one charging pump or safety injection pump is capable of injecting into the RCS. | 12 hours |
| SR 3.4.12.2 Verify each accumulator is isolated. | 12 hours |
| SR 3.4.12.3 -----NOTE----- Only required to be performed when complying with LCO 3.4.12.b. ----- Verify RCS vent \geq 4.5 square inches open. | 12 hours for unlocked open vent valve(s) <u>AND</u> 31 days for locked open vent valve(s) |
| SR 3.4.12.4 Verify PORV block valve is open for each required PORV. | 72 hours |
| SR 3.4.12.5 -----NOTE----- Not required to be met until 12 hours after decreasing RCS cold leg temperature to \leq 285°F. ----- Perform a COT on each required PORV, excluding actuation. | 31 days |
| SR 3.4.12.6 Perform CHANNEL CALIBRATION for each required PORV actuation channel. | 18 months |

Table 3.4.12-1 (Page 1 of 1)

(UNIT 1 ONLY)

Reactor Coolant Pump Operating Restrictions for Low
Temperature Overpressure Protection

| Reactor Coolant System Cold Leg Temperature | Maximum Number of Pumps Allowed in Operation |
|--|---|
| $\geq 67^{\circ}\text{F}$ | 1 |
| $\geq 68^{\circ}\text{F}$ | 2 |
| $\geq 73^{\circ}\text{F}$ | 4 |

Table 3.4.12-1 (Page 1 of 1)

(UNIT 2 ONLY)

Reactor Coolant Pump Operating Restrictions for Low
Temperature Overpressure Protection

| Reactor Coolant System Cold Leg Temperature | Maximum Number of Pumps Allowed in Operation |
|--|---|
| $\geq 67^{\circ}\text{F}$ | 1 |
| $\geq 73^{\circ}\text{F}$ | 2 |
| $\geq 95^{\circ}\text{F}$ | 4 |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

- a. No pressure boundary LEAKAGE;
- b. 1 gpm unidentified LEAKAGE;
- c. 10 gpm identified LEAKAGE;
- d. 576 gallons per day total primary to secondary LEAKAGE through all steam generators (SGs); and
- e. 150 gallons per day primary to secondary LEAKAGE through any one SG.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.4.13.1 -----NOTE----- Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. -----</p> <p>Verify RCS Operational LEAKAGE within limits by performance of RCS water inventory balance.</p> | <p>-----NOTE----- Only required to be performed during steady state operation -----</p> <p>72 hours</p> |
| <p>SR 3.4.13.2 Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.</p> | <p>In accordance with the Steam Generator Tube Surveillance Program</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

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

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

ACTIONS

NOTES

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.4.14.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. <p>-----</p> <p>Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.</p> | <p>In accordance with the Inservice Testing Program, and 18 months</p> <p><u>AND</u></p> <p>Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months</p> <p><u>AND</u></p> <p>Within 24 hours following valve actuation due to automatic or manual action or flow through the valve</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.4.14.2 Verify RHR system interlock prevents the valves from being opened with a simulated or actual RCS pressure signal \geq 425 psig. | 18 months |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

- LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:
- a. One containment floor and equipment sump level monitor;
 - b. One containment atmosphere radioactivity monitor (gaseous or particulate); and
 - c. One containment ventilation unit condensate drain tank level monitor.

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

ACTIONS

-----NOTE-----
LCO 3.0.4 is not applicable.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-------------------|
| A. Required containment floor and equipment sump level monitor inoperable. | A.1 Perform SR 3.4.13.1. | Once per 24 hours |
| | <u>AND</u> A.2 Restore required containment floor and equipment sump level monitor to OPERABLE status. | 30 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-------------------|
| B. Required containment atmosphere radioactivity monitor inoperable. | B.1 Analyze grab samples of the containment atmosphere. | Once per 24 hours |
| | <u>OR</u> B.2 Perform SR 3.4.13.1. | Once per 24 hours |
| C. Required containment ventilation unit condensate drain tank level monitor inoperable. | C.1 Perform SR 3.4.15.1. | Once per 8 hours |
| | <u>OR</u> C.2 Perform SR 3.4.13.1. | Once per 24 hours |
| D. Required containment atmosphere radioactivity monitor inoperable. <u>AND</u> Required containment ventilation unit condensate drain tank level monitor inoperable. | D.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. | 30 days |
| | <u>OR</u> D.2 Restore required containment ventilation unit condensate drain tank level monitor to OPERABLE status. | 30 days |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> E.2 Be in MODE 5. | 36 hours |
| F. All required monitors inoperable. | F.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.4.15.1 Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor. | 12 hours |
| SR 3.4.15.2 Perform COT of the required containment atmosphere radioactivity monitor. | 92 days |
| SR 3.4.15.3 Perform CHANNEL CALIBRATION of the required containment floor and equipment sump level monitor. | 18 months |
| SR 3.4.15.4 Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor. | 18 months |
| SR 3.4.15.5 Perform CHANNEL CALIBRATION of the required containment ventilation unit condensate drain tank level monitor. | 18 months |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

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

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|------------------|
| A. DOSE EQUIVALENT I-131 $> 1.0 \mu\text{Ci/gm}$. | -----Note----- LCO 3.0.4 is not applicable. ----- | |
| | A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1. | Once per 4 hours |
| | <u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit. | 48 hours |
| B. Gross specific activity of the reactor coolant not within limit. | B.1 Be in MODE 3 with $T_{avg} < 500^{\circ}\text{F}$. | 6 hours |

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| <p>SR 3.4.16.1 Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ $\mu\text{Ci/gm}$.</p> | <p>7 days</p> |
| <p>SR 3.4.16.2 -----NOTE----- Only required to be performed in MODE 1. -----</p> <p>Verify reactor coolant DOSE EQUIVALENT I-131 specific activity $\leq 1.0 \mu\text{Ci/gm}$.</p> | <p>14 days</p> <p><u>AND</u></p> <p>Between 2 and 6 hours after a THERMAL POWER change of $\geq 15\%$ RTP within a 1 hour period</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------------|
| <p>SR 3.4.16.3 -----NOTE-----</p> <p>Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.</p> <p>-----</p> <p>Determine \bar{E} from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.</p> | <p>184 days</p> |

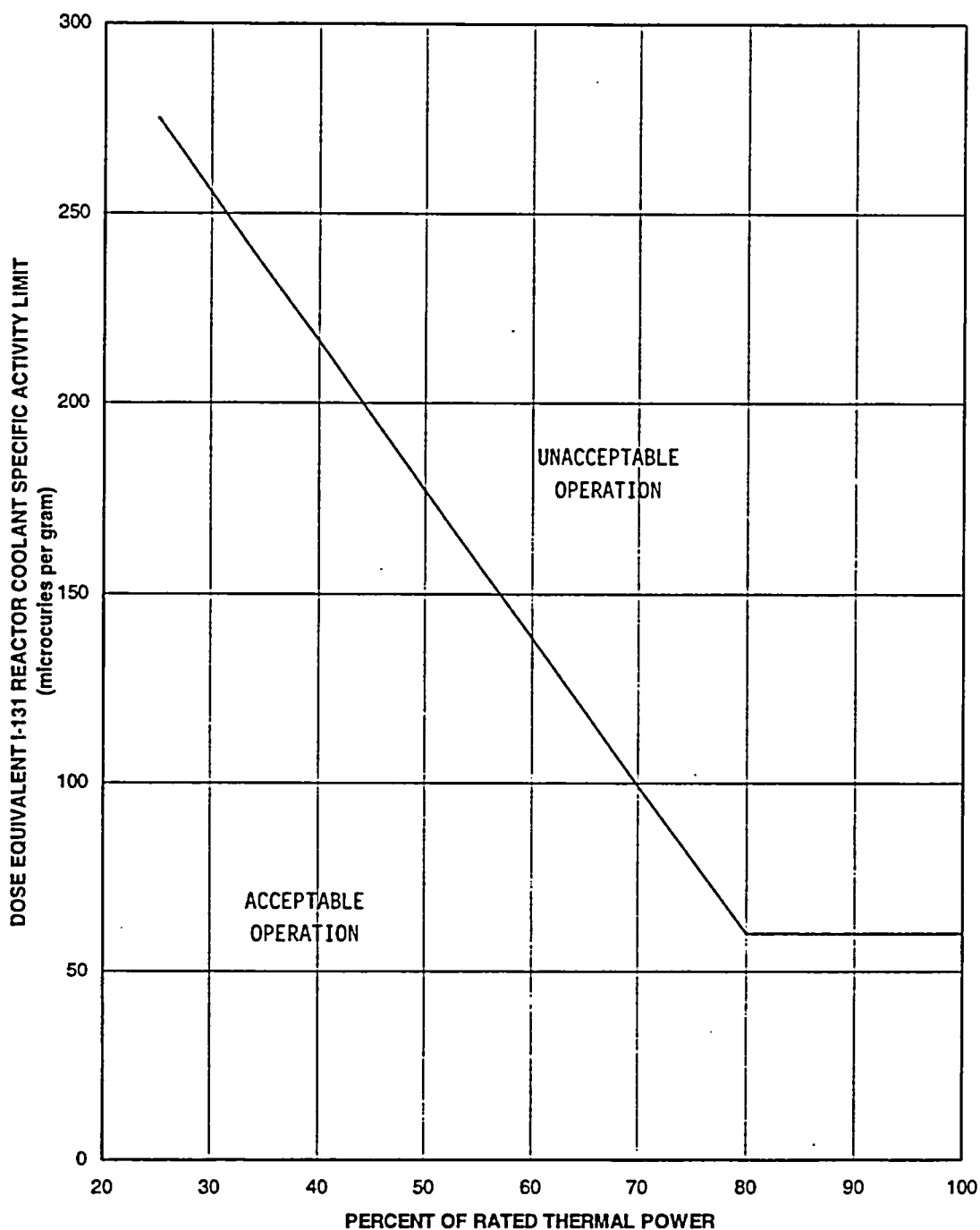


Figure 3.4.16-1 (page 1 of 1)
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity
Limit Versus Percent of RATED THERMAL POWER

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Loops — Test Exceptions

LCO 3.4.17 The requirements of LCO 3.4.4, "RCS Loops — MODES 1 and 2," may be suspended, with THERMAL POWER < P-7.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.4.17.1 Verify THERMAL POWER is < P-7. | 1 hour |
| SR 3.4.17.2 Perform a COT for each power range neutron flux-low and intermediate range neutron flux channel, P-10, and P-13. | Prior to initiation of startup and PHYSICS TESTS |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| SR 3.5.1.1 Verify each accumulator isolation valve is fully open. | 12 hours |
| SR 3.5.1.2 Verify borated water volume in each accumulator is ≥ 7630 gallons and ≤ 8079 gallons. | 12 hours |
| SR 3.5.1.3 Verify nitrogen cover pressure in each accumulator is ≥ 585 psig and ≤ 678 psig. | 12 hours |
| SR 3.5.1.4 Verify boron concentration in each accumulator is within the limits specified in the COLR. | <p>31 days</p> <p><u>AND</u></p> <p>-----NOTE----- Only required to be performed for affected accumulators -----</p> <p>Once within 6 hours after each solution volume increase of ≥ 75 gallons that is not the result of addition from the refueling water storage tank</p> |
| SR 3.5.1.5 Verify power is removed from each accumulator isolation valve operator when RCS pressure is > 1000 psig. | 31 days |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS — Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE*.

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

ACTIONS

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

*For each Unit, the Completion Time that ECCS train 'A' can be inoperable, as specified by Required Action A.1 may be extended beyond the 72 hours up to 168 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSWS piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | | FREQUENCY |
|--------------|--|-----------------|--|
| SR 3.5.2.1 | Verify the following valves are in the listed position with power to the valve operator removed. | | 12 hours |
| | <u>Number</u> | <u>Position</u> | <u>Function</u> |
| | NI162A | Open | SI Cold Leg Injection |
| | NI121A | Closed | SI Hot Leg Injection |
| | NI152B | Closed | SI Hot Leg Injection |
| | NI183B | Closed | RHR Hot Leg Injection |
| | NI173A | Open | RHR Cold Leg Injection |
| | NI178B | Open | RHR Cold Leg Injection |
| | NI100B | Open | SI Pump Suction from RWST |
| | NI147B | Open | SI Pump Mini-Flow |
| SR 3.5.2.2 | Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position. | | 31 days |
| SR 3.5.2.3 | Verify ECCS piping is full of water. | | 31 days |
| SR 3.5.2.4 | Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head. | | In accordance with the Inservice Testing Program |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY | | | | | | | | | | |
|--|---|--|--|------|-------|------|-------|------|-------|------|-------|-----------|
| SR 3.5.2.5 | Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | 18 months | | | | | | | | | | |
| SR 3.5.2.6 | Verify each ECCS pump starts automatically on an actual or simulated actuation signal. | 18 months | | | | | | | | | | |
| SR 3.5.2.7 | <div>Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.</div> <table><tr><td>Centrifugal Charging Pump Injection Throttle <u>Valve Number</u></td><td>Safety Injection Pump Throttle <u>Valve Number</u></td></tr><tr><td>NI14</td><td>NI164</td></tr><tr><td>NI16</td><td>NI166</td></tr><tr><td>NI18</td><td>NI168</td></tr><tr><td>NI20</td><td>NI170</td></tr></table> | Centrifugal Charging Pump Injection Throttle <u>Valve Number</u> | Safety Injection Pump Throttle <u>Valve Number</u> | NI14 | NI164 | NI16 | NI166 | NI18 | NI168 | NI20 | NI170 | 18 months |
| Centrifugal Charging Pump Injection Throttle <u>Valve Number</u> | Safety Injection Pump Throttle <u>Valve Number</u> | | | | | | | | | | | |
| NI14 | NI164 | | | | | | | | | | | |
| NI16 | NI166 | | | | | | | | | | | |
| NI18 | NI168 | | | | | | | | | | | |
| NI20 | NI170 | | | | | | | | | | | |
| SR 3.5.2.8 | Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion. | 18 months | | | | | | | | | | |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS — Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|-----------------------------------|
| SR 3.5.3.1 | <p>-----NOTE-----</p> <p>An RHR train may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned to the ECCS mode of operation.</p> <p>-----</p> <p>The following SRs are applicable for all equipment required to be OPERABLE:</p> <p>SR 3.5.2.1 SR 3.5.2.7 SR 3.5.2.3 SR 3.5.2.8 SR 3.5.2.4</p> | In accordance with applicable SRs |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|-----------|
| SR 3.5.4.1 | Verify RWST borated water temperature is $\geq 70^{\circ}\text{F}$ and $\leq 100^{\circ}\text{F}$. | 24 hours |
| SR 3.5.4.2 | Verify RWST borated water volume is $\geq 363,513$ gallons. | 7 days |
| SR 3.5.4.3 | Verify RWST boron concentration is within the limits specified in the COLR. | 7 days |

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Seal Injection Flow

LCO 3.5.5 Reactor coolant pump seal injection flow shall be \leq 40 gpm with centrifugal charging pump operating and the charging flow control valve full open.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. Seal injection flow not within limit. | A.1 Adjust manual seal injection throttle valves to give a flow within limit with centrifugal charging pump operating and the charging flow control valve full open. | 4 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> B.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|----------------|
| <p>SR 3.5.5.1 -----NOTE----- Not required to be performed until 4 hours after the Reactor Coolant System pressure stabilizes at ≥ 2215 psig and ≤ 2255 psig. -----</p> <p>Verify manual seal injection throttle valves are adjusted to give a flow within limit with centrifugal charging pump operating and the charging flow control valve full open.</p> | <p>31 days</p> |

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.6.1.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. The space between each dual-ply bellows assembly on penetrations between the Containment building and annulus shall be vented to the annulus during Type A tests. 2. The space between each dual-ply bellows assembly shall be subjected to a low pressure test at 3 to 5 psig to verify no detectable leakage, or the assembly shall be subjected to a leak test with the pressure on the containment side of the assembly at P_a. <p>-----</p> <p>Perform required visual examinations and leakage rate testing except for containment air lock testing and valves with resilient seals, in accordance with the Containment Leakage Rate Testing Program.</p> | <p>In accordance with the Containment Leakage Rate Testing Program</p> |

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks

LCO 3.6.2 Two containment air locks shall be OPERABLE.

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

ACTIONS

NOTES

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One or more containment air locks with one containment air lock door inoperable. | <h4>NOTES</h4> <ol style="list-style-type: none"> 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable. | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|------------------|
| A. (continued) | A.1 Verify the OPERABLE door is closed in the affected air lock. | 1 hour |
| | <u>AND</u> | |
| | A.2 Lock the OPERABLE door closed in the affected air lock. | 24 hours |
| | <u>AND</u> | |
| | A.3 -----NOTE----- Air lock doors in high radiation areas may be verified locked closed by administrative means. ----- Verify the OPERABLE door is locked closed in the affected air lock. | Once per 31 days |

(continued)

ACTIONS (continued)

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

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| C. One or more containment air locks inoperable for reasons other than Condition A or B. | C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1. | Immediately |
| | <u>AND</u> | |
| | C.2 Verify a door is closed in the affected air lock. | 1 hour |
| D. Required Action and associated Completion Time not met. | <u>AND</u> | |
| | 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. | 6 hours |
| | <u>AND</u> | |
| | D.2 Be in MODE 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| <p>SR 3.6.2.1 -----NOTES-----</p> <ol style="list-style-type: none"> 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. <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p> | <p>In accordance with the Containment Leakage Rate Testing Program</p> |
| <p>SR 3.6.2.2 Perform a pressure test on each inflatable air lock door seal and verify door seal leakage is < 15 sccm.</p> | <p>6 months</p> |
| <p>SR 3.6.2.3 Verify only one door in the air lock can be opened at a time.</p> | <p>18 months</p> |

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

NOTES

1. Penetration flow path(s) except for containment purge supply and exhaust isolation valves for the lower compartment, upper compartment, instrument room, and the Hydrogen Purge System flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each penetration flow path.
3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.
4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------------------------|
| <p>A. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. -----</p> <p>One or more penetration flow paths with one containment isolation valve inoperable except for purge valve or reactor building bypass leakage not within limit.</p> | <p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve inside containment with flow through the valve secured.</p> <p><u>AND</u></p> | <p>4 hours</p> <p>(continued)</p> |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---|
| <p>A. (continued)</p> | <p>A.2 -----NOTE----- Isolation devices in high radiation areas may be verified by use of administrative means. ----- Verify the affected penetration flow path is isolated.</p> | <p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p> |
| <p>B. -----NOTE----- Only applicable to penetration flow paths with two containment isolation valves. ----- One or more penetration flow paths with two containment isolation valves inoperable except for purge valve or reactor building bypass leakage not within limit.</p> | <p>B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.</p> | <p>1 hour</p> |

(continued)

ACTIONS (continued)

[illegible]

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---|
| E. (continued) | <p>E.2 -----NOTE----- Isolation devices in high radiation areas may be verified by use of administrative means. -----</p> <p>Verify the affected penetration flow path is isolated.</p> | <p>Once per 31 days for isolation devices outside containment</p> <p><u>AND</u></p> <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment</p> |
| | <p><u>AND</u></p> <p>E.3 Perform SR 3.6.3.6 for the resilient seal purge valves closed to comply with Required Action E.1.</p> | <p>Once per 92 days</p> |
| F. Required Action and associated Completion Time not met. | F.1 Be in MODE 3. | 6 hours |
| | <p><u>AND</u></p> <p>F.2 Be in MODE 5.</p> | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|----------------|
| <p>SR 3.6.3.1 Verify each containment purge supply and exhaust isolation valves for the lower compartment and the upper compartment, instrument room, and the Hydrogen Purge System is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.</p> | <p>31 days</p> |
| <p>SR 3.6.3.2 Verify each Containment Air Release and Addition System isolation valve is closed, except when the valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.</p> | <p>31 days</p> |
| <p>SR 3.6.3.3 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ----- Verify each containment isolation manual valve and blind flange that is located outside containment or annulus and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p> | <p>31 days</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.6.3.4 -----NOTE----- Valves and blind flanges in high radiation areas may be verified by use of administrative means. -----</p> <p>Verify each containment isolation manual valve and blind flange that is located inside containment or annulus and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.</p> | <p>Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days</p> |
| <p>SR 3.6.3.5 Verify the isolation time of automatic power operated containment isolation valve is within limits.</p> | <p>In accordance with the Inservice Testing Program</p> |
| <p>SR 3.6.3.6 Perform leakage rate testing for Containment Purge System, Hydrogen Purge System, and Containment Air Release and Addition System valves with resilient seals.</p> | <p>184 days <u>AND</u> within 92 days after opening the valve</p> |
| <p>SR 3.6.3.7 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.</p> | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| SR 3.6.3.8 Verify the combined leakage rate for all reactor building bypass leakage paths is $\leq 0.07 L_a$ when pressurized to ≥ 14.68 psig. | In accordance with the Containment Leakage Rate Testing Program |

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.1 psig and $\leq +0.3$ psig.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.4.1 Verify containment pressure is within limits. | 12 hours |

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature

LCO 3.6.5 Containment average air temperature shall be:

- a. $\geq 75^{\circ}\text{F}$ and $\leq 100^{\circ}\text{F}$ for the containment upper compartment, and
- b. $\geq 100^{\circ}\text{F}$ and $\leq 120^{\circ}\text{F}$ for the containment lower compartment.

-----NOTE-----

The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to 60°F.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.5.1 Verify containment upper compartment average air temperature is within limits. | 24 hours |
| SR 3.6.5.2 Verify containment lower compartment average air temperature is within limits. | 24 hours |

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System

LCO 3.6.6 Two containment spray trains shall be OPERABLE*.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.6.1 Verify each containment spray manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position. | 31 days |

(continued)

*For each Unit, the Completion Time that Containment Spray System train 'A' can be inoperable, as specified by Required Action A.1 may be extended beyond the 72 hours up to 168 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSWS piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.6.6.2 Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head. | In accordance with the Inservice Testing Program |
| SR 3.6.6.3 Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | 18 months |
| SR 3.6.6.4 Verify each containment spray pump starts automatically on an actual or simulated actuation signal. | 18 months |
| SR 3.6.6.5 Verify that each spray pump is de-energized and prevented from starting upon receipt of a terminate signal and is allowed to start upon receipt of a start permissive from the Containment Pressure Control System (CPCS). | 18 months |
| SR 3.6.6.6 Verify that each spray pump discharge valve closes or is prevented from opening upon receipt of a terminate signal and is allowed to open upon receipt of a start permissive from the Containment Pressure Control System (CPCS). | 18 months |
| SR 3.6.6.7 Verify each spray nozzle is unobstructed. | 10 years |

3.6 CONTAINMENT SYSTEMS

3.6.7 Hydrogen Recombiners

LCO 3.6.7 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One hydrogen recombinder inoperable. | <p>A.1 -----NOTE----- LCO 3.0.4 is not applicable. -----</p> <p>Restore hydrogen recombinder to OPERABLE status.</p> | 30 days |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-----------|
| SR 3.6.7.1 | Perform a system functional test for each hydrogen recombinder. | 18 months |
| SR 3.6.7.2 | Visually examine each hydrogen recombinder enclosure and verify there is no evidence of abnormal conditions. | 18 months |
| SR 3.6.7.3 | Perform a resistance to ground test for each heater phase. | 18 months |

3.6 CONTAINMENT SYSTEMS

3.6.8 Hydrogen Skimmer System (HSS)

LCO 3.6.8 Two HSS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One HSS train inoperable. | A.1 -----NOTE----- LCO 3.0.4 is not applicable. ----- Restore HSS train to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.8.1 Operate each HSS train for ≥ 15 minutes. | 92 days |
| SR 3.6.8.2 Verify the fan motor current is ≤ 69 amps when the fan speed is ≥ 3560 rpm and ≤ 3600 rpm with the hydrogen skimmer fan operating and the motor operated suction valve closed. | 92 days |
| SR 3.6.8.3 Verify the motor operated suction valve opens automatically and the fans receive a start permissive signal. | 92 days |
| SR 3.6.8.4 Verify each HSS train starts on an actual or simulated actuation signal after a delay of ≥ 8 minutes and ≤ 10 minutes. | 92 days |

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Ignition System (HIS)

LCO 3.6.9 Two HIS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. One HIS train inoperable.* | A.1 Restore HIS train to OPERABLE status. | 7 days |
| | <u>OR</u> A.2 Perform SR 3.6.9.1 on the OPERABLE train. | Once per 7 days |
| B. One containment region with no OPERABLE hydrogen ignitor.* | B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status. | 7 days |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. | 6 hours |

* For Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, each train's ignitor located beneath the reactor vessel missile shield may be inoperable without requiring entry into this Condition.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.9.1 Energize each HIS train power supply breaker and verify ≥ 34 (Unit 1) or 33* (Unit 2) ignitors are energized in each train. | 92 days |
| SR 3.6.9.2 Verify at least one hydrogen ignitor is OPERABLE in each containment region.* | 92 days |
| SR 3.6.9.3 Energize each hydrogen ignitor and verify temperature is $\geq 1700^{\circ}\text{F.}$ * | 18 months |

* For Unit 2 Cycle 11 operation only, or until the next Unit 2 entry into MODE 5 which allows affected ignitor replacement, this SR is not applicable to each train's ignitor located beneath the reactor vessel missile shield.

3.6 CONTAINMENT SYSTEMS

3.6.10 Annulus Ventilation System (AVS)

LCO 3.6.10 Two AVS trains shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One AVS train inoperable. | A.1 Restore AVS train to OPERABLE status. | 7 days |
| B. One or more Annulus Ventilation System (AVS) train(s) heater inoperable. | B.1 Restore AVS train(s) heater to OPERABLE status. | 7 days |
| | <u>OR</u> B.2 Initiate action in accordance with Specification 5.6.6. | 7 days |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> C.2 Be in MODE 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------------------------|
| SR 3.6.10.1 Operate each AVS train for ≥ 10 continuous hours with heaters operating. | 31 days |
| SR 3.6.10.2 Perform required AVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.6.10.3 Verify each AVS train actuates on an actual or simulated actuation signal. | 18 months |
| SR 3.6.10.4 Verify each AVS filter cooling bypass valve can be opened. | 18 months |
| SR 3.6.10.5 Verify each AVS train flow rate is ≥ 8100 cfm and ≤ 9900 cfm. | 18 months |

3.6 CONTAINMENT SYSTEMS

3.6.11 Air Return System (ARS)

LCO 3.6.11 Two ARS trains shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.11.1 Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of ≥ 8.0 minutes and ≤ 10.0 minutes, and operates for ≥ 15 minutes. | 92 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.11.2 Verify, with the ARS air return fan damper closed and with the bypass dampers open, each ARS fan motor current is ≤ 59.0 amps when the fan speed is ≥ 1174 rpm and ≤ 1200 rpm. | 92 days |
| SR 3.6.11.3 Verify, with the ARS fan not operating, each ARS motor operated damper opens automatically on an actual or simulated actuation signal after a delay of ≥ 9 seconds and ≤ 11 seconds. | 92 days |
| SR 3.6.11.4 Verify the check damper is open with the ARS fan operating. | 92 days |
| SR 3.6.11.5 Verify the check damper is closed with the ARS fan not operating. | 92 days |
| SR 3.6.11.6 Verify that each ARS fan is de-energized or is prevented from starting upon receipt of a terminate signal from the Containment Pressure Control System (CPCS) and is allowed to start upon receipt of a start permissive from the CPCS. | 18 months |
| SR 3.6.11.7 Verify that each ARS fan motor-operated damper is prevented from opening in the absence of a start permissive from the Containment Pressure Control System (CPCS) and is allowed to open upon receipt of a start permissive from the CPCS. | 18 months |

3.6 CONTAINMENT SYSTEMS

3.6.12 Ice Bed

LCO 3.6.12 The ice bed shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.12.1 Verify maximum ice bed temperature is $\leq 27^{\circ}\text{F}$. | 12 hours |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-------------------|
| <p>SR 3.6.12.2 -----NOTE----- The chemical analysis may be performed on either the liquid solution or on the resulting ice. -----</p> <p>Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.12.7.</p> | Each ice addition |
| <p>SR 3.6.12.3 Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is \leq 15 percent blockage of the total flow area for each safety analysis section.</p> | 18 months |
| <p>SR 3.6.12.4 Verify total mass of stored ice is \geq 2,132,000 lbs by calculating the mass of stored ice, at a 95 percent confidence, in each of three Radial Zones as defined below, by selecting a random sample of \geq 30 ice baskets in each Radial Zone, and</p> <p>Verify:</p> <ol style="list-style-type: none"> 1. Zone A (radial rows 8, 9), has a total mass of \geq 324,000 lbs 2. Zone B (radial rows 4, 5, 6, 7), has a total mass of \geq 1,033,100 lbs 3. Zone C (radial rows 1, 2, 3), has a total mass of \geq 774,900 lbs | 18 months |
| <p>SR 3.6.12.5 Verify that the ice mass of each basket sampled in SR 3.6.12.4 is \geq 600 lbs.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| <p>SR 3.6.12.6 Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below:</p> <ul style="list-style-type: none"> a. Group 1 – bays 1 through 8; b. Group 2 – bays 9 through 16; and c. Group 3 – bays 17 through 24. | 40 months |
| <p>SR 3.6.12.7 ----- NOTE ----- The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below. -----</p> <p>Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed:</p> <ul style="list-style-type: none"> a. Boron concentration is ≥ 1800 ppm and ≤ 2330 ppm; and b. pH is ≥ 9.0 and ≤ 9.5. | 54 months |

3.6 CONTAINMENT SYSTEMS

3.6.13 Ice Condenser Doors

LCO 3.6.13 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be OPERABLE and closed.

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

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each ice condenser door.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|------------------|
| A. One or more ice condenser doors inoperable due to being physically restrained from opening. | A.1 Restore door to OPERABLE status. | 1 hour |
| B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed. | B.1 Verify maximum ice bed temperature is $\leq 27^{\circ}\text{F}$. | Once per 4 hours |
| | <u>AND</u> B.2 Restore ice condenser door to OPERABLE status and closed position. | 14 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-------------------------|
| C. Required Action and associated Completion Time of Condition B not met. | C.1 Restore ice condenser door to OPERABLE status and closed positions. | 48 hours |
| D. Required Action and associated Completion Time of Condition A or C not met. | D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 5. | 6 hours 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.13.1 Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System. | 12 hours |
| SR 3.6.13.2 Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris. | 7 days |
| SR 3.6.13.3 Verify, by visual inspection, each top deck door: a. Is in place; and b. Has no condensation, frost, or ice formed on the door that would restrict its opening. | 92 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.13.4 Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris. | 18 months |
| SR 3.6.13.5 Verify torque required to cause each inlet door to begin to open is ≤ 675 in-lb. | 18 months |
| SR 3.6.13.6 Perform a torque test on inlet doors. | 18 months |
| SR 3.6.13.7 Verify for each intermediate deck door: <ul style="list-style-type: none"> a. No visual evidence of structural deterioration; b. Free movement of the vent assemblies; and c. Free movement of the door. | 18 months |

3.6 CONTAINMENT SYSTEMS

3.6.14 Divider Barrier Integrity

LCO 3.6.14 Divider barrier integrity shall be maintained.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| <p>A. -----NOTE----- For this action, separate Condition entry is allowed for each personnel access door or equipment hatch. -----</p> <p>One or more personnel access doors or equipment hatches other than the pressurizer enclosure hatch open or inoperable, other than for personnel transit entry.</p> | <p>A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.</p> | 1 hour |
| <p>B. Pressurizer enclosure hatch open or inoperable.</p> | <p>B.1 Restore pressurizer enclosure hatch to OPERABLE status and closed position.</p> | 6 hours |
| <p>C. Divider barrier seal inoperable.</p> | <p>C.1 Restore seal to OPERABLE status.</p> | 1 hour |

(continued)

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.6.14.1 Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed. | Prior to entering MODE 4 from MODE 5 |
| SR 3.6.14.2 Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: a. No detrimental misalignments; b. No cracks or defects in the sealing surfaces; and c. No apparent deterioration of the seal material. | Prior to final closure after each opening <u>AND</u> -----NOTE----- Only required for seals made of resilient materials ----- 10 years |
| SR 3.6.14.3 Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed. | After each opening |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.14.4 Remove two divider barrier seal test coupons and verify both test coupons' tensile strength is ≥ 39.7 psi. | 18 months |
| SR 3.6.14.5 Visually inspect $\geq 95\%$ of the divider barrier seal length, and verify: a. Seal and seal mounting bolts are properly installed; and b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance. | 18 months |

3.6 CONTAINMENT SYSTEMS

3.6.15 Containment Recirculation Drains

LCO 3.6.15 The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE REQUIREMENTS | FREQUENCY |
|---|--|
| <p>SR 3.6.15.1 Verify, by visual inspection, that:</p> <ul style="list-style-type: none"> a. Each refueling canal drain valve is locked open; and b. Each refueling canal drain is not obstructed by debris. | <p>Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal</p> |
| <p>SR 3.6.15.2 Verify, by visual inspection that no debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.</p> | <p>92 days</p> |
| <p>SR 3.6.15.3 Verify for each ice condenser floor drain that the:</p> <ul style="list-style-type: none"> a. Valve opening is not impaired by ice, frost, or debris; b. Valve seat shows no evidence of damage; c. Valve opening force is ≤ 66 lb; and d. Drain line from the ice condenser floor to the lower compartment is unrestricted. | <p>18 months</p> |

3.6 CONTAINMENT SYSTEMS

3.6.16 Reactor Building

LCO 3.6.16 The reactor building shall be OPERABLE.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.6.16.1 Verify the door in each access opening is closed, except when the access opening is being used for normal transit entry and exit. | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.6.16.2 Verify each Annulus Ventilation System train produces a pressure equal to or more negative than -0.5 inch water gauge in the annulus within 1 minute after a start signal. | 18 months on a STAGGERED TEST BASIS |
| SR 3.6.16.3 Verify reactor building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the reactor building. | 3 times every 10 years, coinciding with containment visual examinations required by SR 3.6.1.1 |

3.6 CONTAINMENT SYSTEMS

3.6.17 Containment Valve Injection Water System (CVIWS)

LCO 3.6.17 Two CVIWS trains shall be OPERABLE*.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.6.17.1 Verify system surge tanks pressure is ≥ 36.4 psig. | 31 days |
| SR 3.6.17.2 Verify valve injection flow rate is < 1.29 gpm (Unit 1) < 1.21 gpm (Unit 2) for Train A and < 1.16 gpm for Train B with a surge tank pressure ≥ 36.4 psig. | 18 months |
| SR 3.6.17.3 Verify each automatic valve actuates to its correct position on an actual or simulated actuation signal. | 18 months |

*For each CVIWS train on Unit 2, the Completion Time that one CVIWS train can be inoperable as specified by Required Action A.1 may be extended beyond the 168 hours up to 288 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with the NSWS piping, valves, and branch lines, necessary repairs and/or replacement, and replacement of portions of the NSWS piping to the AFW system. Upon completion of the cleaning, upgrades, and system restoration in refueling outage 1 EOC12, this footnote is no longer applicable.

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One or more required MSSVs inoperable. | A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1. | 4 hours |
| | <u>AND</u> A.2 Reduce the Power Range Neutron Flux High Trip Setpoints to the % RTP value listed in Table 3.7.1-1. | 4 hours |
| B. Required Action and associated Completion Time not met. <u>OR</u> One or more steam generators with less than two MSSVs OPERABLE. | B.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> B.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

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

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Maximum Allowable Power Range Neutron Flux High
Setpoints in Percent of RATED THERMAL POWER

| MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE | MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINTS (% RTP) |
|--|---|
| 4 | ≤ 58 |
| 3 | ≤ 41 |
| 2 | ≤ 24 |

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

| VALVE NUMBER | | | | LIFT SETTING (psig ± 3%) |
|------------------------|-------|-------|------|-----------------------------|
| <u>STEAM GENERATOR</u> | | | | |
| A | B | C | D | |
| SV-20 | SV-14 | SV-8 | SV-2 | 1175 |
| SV-21 | SV-15 | SV-9 | SV-3 | 1190 |
| SV-22 | SV-16 | SV-10 | SV-4 | 1205 |
| SV-23 | SV-17 | SV-11 | SV-5 | 1220 |
| SV-24 | SV-18 | SV-12 | SV-6 | 1230 |

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

LCO 3.7.2 Four MSIVs shall be OPERABLE.

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

ACTIONS

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

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---------------------------------|-----------------|
| D. Required Action and associated Completion Time of Condition C not met. | D.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> D.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| <p>SR 3.7.2.1 -----NOTE----- Only required to be performed prior to entry into MODE 2. ----- Verify closure time of each MSIV is ≤ 8.0 seconds on an actual or simulated actuation signal.</p> | In accordance with the Inservice Testing Program |

3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater Control Valves (MFCVs), Associated Bypass Valves and Tempering Valves

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

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------------------|--|-----------------|
| A. One or more MFIVs inoperable. | A.1 Close or isolate MFIV. | 72 hours |
| | <u>AND</u> A.2 Verify MFIV is closed or isolated. | Once per 7 days |
| B. One or more MFCVs inoperable. | B.1 Close or isolate MFCV. | 72 hours |
| | <u>AND</u> B.2 Verify MFCV is closed or isolated. | Once per 7 days |

(continued)

MFIVs, MFCVs, Associated Bypass Valves and Tempering Valves
3.7.3

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| C. One or more MFIV or MFCV bypass valves inoperable. | C.1 Close or isolate bypass valve. | 72 hours |
| | <u>AND</u> C.2 Verify bypass valve is closed or isolated. | Once per 7 days |
| D. Two valves in the same flow path or the tempering valve inoperable. | D.1 Isolate affected flow path. | 8 hours |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> E.2 Be in MODE 4. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.7.3.1 Verify the closure time of each MFIV, MFCV, their associated bypass valve, and the tempering valve is ≤ 12 seconds on an actual or simulated actuation signal. | In accordance with the Inservice Testing Program |

3.7 PLANT SYSTEMS

3.7.4 Steam Generator Power Operated Relief Valves (SG PORVs)

LCO 3.7.4 Four SG PORV lines shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------------------|
| A. One SG PORV line inoperable. | A.1 -----NOTE----- LCO 3.0.4 is not applicable. ----- Restore SG PORV line to OPERABLE status. | 7 days |
| B. Two or more SG PORV lines inoperable. | B.1 Restore all but one SG PORV line to OPERABLE status. | 24 hours |
| C. Required Action and associated Completion Time not met. | C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4 without reliance upon steam generator for heat removal. | 6 hours 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.7.4.1 Verify one of the nitrogen bottles on each SG PORV is pressurized \geq 2100 psig. | 24 hours |
| SR 3.7.4.2 Verify one complete cycle of each SG PORV. | 18 months |
| SR 3.7.4.3 Verify one complete cycle of each SG PORV block valve. | 18 months |

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE*.

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

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|---|
| A. One steam supply to turbine driven AFW pump inoperable. | A.1 Restore steam supply to OPERABLE status. | 7 days <u>AND</u> 10 days from discovery of failure to meet the LCO |
| B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A. | B.1 Restore AFW train to OPERABLE status. | 72 hours* <u>AND</u> 10 days* from discovery of failure to meet the LCO |

(continued)

*For each Unit, the Completion Time that AFW train 'A' can be inoperable as specified by Required Action B.1 may be extended beyond the "72 hours and 10 days from discovery of failure to meet the LCO" up to "168 hours and 10 days from discovery of failure to meet the LCO" as part of the NSW system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSW piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|--------------------------------|
| <p>C. Required Action and associated Completion Time for Condition A or B not met.</p> <p><u>OR</u></p> <p>Two AFW trains inoperable in MODE 1, 2, or 3.</p> | <p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 4.</p> | <p>6 hours</p> <p>12 hours</p> |
| <p>D. Three AFW trains inoperable in MODE 1, 2, or 3.</p> | <p>D.1 -----NOTE----- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. -----</p> <p>Initiate action to restore one AFW train to OPERABLE status.</p> | <p>Immediately</p> |
| <p>E. Required AFW train inoperable in MODE 4.</p> | <p>E.1 Initiate action to restore AFW train to OPERABLE status.</p> | <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.7.5.1 -----NOTE----- Not applicable to automatic valves when THERMAL POWER is \leq 10% RTP. -----</p> <p>Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | <p>31 days</p> |
| <p>SR 3.7.5.2 -----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after \geq 600 psig in the steam generator. -----</p> <p>Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.</p> | <p>In accordance with the Inservice Testing Program</p> |
| <p>SR 3.7.5.3 -----NOTE----- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -----</p> <p>Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p> | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|---|
| <p>SR 3.7.5.4 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Not required to be performed for the turbine driven AFW pump until 24 hours after \geq 600 psig in the steam generator. 2. Not applicable in MODE 4 when steam generator is relied upon for heat removal. <p>-----</p> <p>Verify each AFW pump starts automatically on an actual or simulated actuation signal.</p> | <p>18 months</p> |
| <p>SR 3.7.5.5 Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage system to each steam generator.</p> | <p>Prior to entering MODE 2, whenever unit has been in MODE 5 or 6 for > 30 days</p> |

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage System (CSS)

LCO 3.7.6 The CSS inventory shall be \geq 225,000 gal.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|---|
| A. CSS inventory not within limit. | A.1 Verify by administrative means OPERABILITY of assured water supply. | 4 hours <u>AND</u> Once per 12 hours thereafter |
| | <u>AND</u> A.2 Restore CSS inventory to within limit. | 7 days |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> B.2 Be in MODE 4, without reliance on steam generator for heat removal. | 12 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.7.6.1 Verify the CSS inventory is \geq 225,000 gal. | 12 hours |

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE*.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--------------------------------|
| A. One CCW train inoperable. | <p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by CCW. -----</p> <p>Restore CCW train to OPERABLE status.</p> | 72 hours* |
| B. Required Action and associated Completion Time of Condition A not met. | <p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 5.</p> | <p>6 hours</p> <p>36 hours</p> |

*For each Unit, the Completion Time that CCW train 'A' can be inoperable, as specified by Required Action A.1 may be extended beyond the 72 hours up to 168 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSWS piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| <p>SR 3.7.7.1 -----NOTE----- Isolation of CCW flow to individual components does not render the CCW System inoperable. -----</p> <p>Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | 31 days |
| <p>SR 3.7.7.2 Verify each CCW automatic valve in the flow path servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p> | 18 months |
| <p>SR 3.7.7.3 Verify each CCW pump starts automatically on an actual or simulated actuation signal.</p> | 18 months |

3.7 PLANT SYSTEMS

3.7.8 Nuclear Service Water System (NSWS)

LCO 3.7.8 Two NSWS trains shall be OPERABLE*.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-------------------------------|--|-----------------|
| A. One NSWS train inoperable. | <p>A.1 -----NOTES-----</p> <p>1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," for emergency diesel generator made inoperable by NSWS.</p> <p>2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by NSWS.</p> <p>-----</p> <p>Restore NSWS train to OPERABLE status.</p> | 72 hours* |
| | | |

(continued)

*For each Unit, the Completion Time that NSWS train 'A' can be inoperable, as specified by Required Action A.1 may be extended beyond the 72 hours up to 168 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSWS piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| <p>SR 3.7.8.1 -----NOTE----- Isolation of NSWS flow to individual components does not render the NSWS inoperable. -----</p> <p>Verify each NSWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p> | 31 days |
| SR 3.7.8.2 Verify each NSWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. | 18 months |
| SR 3.7.8.3 Verify each NSWS pump starts automatically on an actual or simulated actuation signal. | 18 months |

3.7 PLANT SYSTEMS

3.7.9 Standby Nuclear Service Water Pond (SNSWP)

LCO 3.7.9 The SNSWP shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------|-------------------|-----------------|
| A. SNSWP inoperable. | A.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> | |
| | A.2 Be in MODE 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|-----------|
| SR 3.7.9.1 | Verify water level of SNSWP is \geq 571 ft mean sea level. | 24 hours |
| SR 3.7.9.2 | <p>-----NOTE----- Only required to be performed during the months of July, August, and September. -----</p> <p>Verify average water temperature of SNSWP is \leq 91.5°F at an elevation of 568 ft. in SNSWP.</p> | 24 hours |
| SR 3.7.9.3 | Verify, by visual inspection, no abnormal degradation, erosion, or excessive seepage of the SNSWP dam. | 12 months |

3.7 PLANT SYSTEMS

3.7.10 Control Room Area Ventilation System (CRAVS)

LCO 3.7.10 Two CRAVS trains shall be OPERABLE.

-----NOTE-----
The control room pressure boundary may be opened intermittently under administrative controls.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of irradiated fuel assemblies.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One CRAVS train inoperable in MODES 1,2,3,4,5, and 6. | A.1 Restore CRAVS train to OPERABLE status. | 7 days |
| B. Two CRAVS trains inoperable due to inoperable control room pressure boundary in MODES 1, 2, 3, or 4. | B.1 Restore control room pressure boundary to OPERABLE status. | 24 hours |
| C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. | C.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> C.2 Be in MODE 5. | 36 hours |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|--------------------------------|
| D. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6. | D.1 Place OPERABLE CRAVS train in operation. | Immediately |
| E. Two CRAVS trains inoperable in MODE 5 or 6, or one or more CRAVS trains inoperable during movement of irradiated fuel assemblies. | E.1 Suspend movement of irradiated fuel assemblies. | Immediately |
| F. Two CRAVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B. | F.1 Enter LCO 3.0.3. | Immediately (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| G. One or more CRAVS train(s) heater inoperable. | G.1 Restore CRAVS train(s) heater to OPERABLE status. | 7 days |
| | <u>OR</u> G.2 Initiate action in accordance with Specification 5.6.6. | 7 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-------------------------------------|
| SR 3.7.10.1 Operate each CRAVS train for ≥ 10 continuous hours with the heaters operating. | 31 days |
| SR 3.7.10.2 Perform required CRAVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with VFTP |
| SR 3.7.10.3 Verify each CRAVS train actuates on an actual or simulated actuation signal. | 18 months |
| SR 3.7.10.4 Verify one CRAVS train can maintain a positive pressure of ≥ 0.125 inches water gauge, relative to the adjacent areas during the pressurization mode of operation at a makeup flow rate of ≤ 4000 cfm. | 18 months on a STAGGERED TEST BASIS |

3.7 PLANT SYSTEMS

3.7.11 Control Room Area Chilled Water System (CRACWS)

LCO 3.7.11 Two CRACWS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, 5, and 6,
During movement of recently irradiated fuel assemblies.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. One CRACWS train inoperable. | A.1 Restore CRACWS train to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4. | B.1 Be in MODE 3. <u>AND</u> | 6 hours |
| | B.2 Be in MODE 5. | 36 hours |
| C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6, or during movement of recently irradiated fuel assemblies. | C.1 Place OPERABLE CRACWS train in operation. | Immediately |
| | <u>OR</u> C.2 Suspend movement of recently irradiated fuel assemblies. | Immediately |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| D. Two CRACWS trains inoperable in MODE 5 or 6, or during movement of recently irradiated fuel assemblies. | D.1 Suspend movement of recently irradiated fuel assemblies. | Immediately |
| E. Two CRACWS trains inoperable in MODE 1, 2, 3, or 4. | E.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.7.11.1 Verify the control room temperature is $\leq 90^{\circ}\text{F}$. | 12 hours |

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)

LCO 3.7.12 Two ABFVES trains shall be OPERABLE*.

-----NOTE-----
The ECCS pump rooms pressure boundary may be opened intermittently under administrative controls.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One ABFVES train inoperable. | A.1 Restore ABFVES train to OPERABLE status. | 7 days* |
| B. Two ABFVES trains inoperable due to inoperable ECCS pump rooms pressure boundary. | B.1 Restore ECCS pump rooms pressure boundary to OPERABLE status. | 24 hours |
| C. Required Action and associated Completion Time of Condition A or B not met. | C.1 Be in MODE 3. <u>AND</u> | 6 hours |
| | C.2 Be in MODE 5. | 36 hours |
| D. One or more ABFVES train(s) heater inoperable. | D.1 Restore ABFVES train(s) heater to OPERABLE status. | 7 days |
| | <u>OR</u> D.2 Initiate action in accordance with Specification 5.6.6. | 7 days |

*For each ABFVES train on Unit 2, the Completion Time that one ABFVES train can be inoperable as specified by Required Action A.1 may be extended beyond the 168 hours up to 288 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with the NSWS piping, valves, and branch lines, necessary repairs and/or replacement, and replacement of portions of the NSWS piping to the AFW system. Upon completion of the cleaning, upgrades, and system restoration in refueling outage 1 EOC12, this footnote is no longer applicable.

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-------------------------------------|
| SR 3.7.12.1 Operate each ABFVES train for ≥ 10 continuous hours with the heaters operating. | 31 days |
| SR 3.7.12.2 Perform required ABFVES filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.7.12.3 Verify each ABFVES train actuates on an actual or simulated actuation signal. | 18 months |
| SR 3.7.12.4 Verify one ABFVES train can maintain the ECCS pump rooms at negative pressure relative to adjacent areas. | 18 months on a STAGGERED TEST BASIS |

3.7 PLANT SYSTEMS

3.7.13 Fuel Handling Ventilation Exhaust System (FHVES)

LCO 3.7.13 Two FHVES trains shall be OPERABLE and one train in operation.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the fuel building.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One or more FHVES trains inoperable. | -----NOTE----- LCO 3.0.3 is not applicable. ----- | Immediately |
| | A.1 Suspend movement of recently irradiated fuel assemblies in the fuel building. | |
| B. Required FHVES train heater inoperable. | B.1 Restore FHVES train heater to OPERABLE status. | 7 days |
| | <u>OR</u> B.2 Initiate action in accordance with Specification 5.6.6. | 7 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-------------------------------------|
| SR 3.7.13.1 Verify required FHVES train in operation. | 12 hours |
| SR 3.7.13.2 Operate required FHVES train for ≥ 10 continuous hours with the heaters operating. | 31 days |
| SR 3.7.13.3 Perform required FHVES filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |
| SR 3.7.13.4 Verify one FHVES train can maintain a pressure ≤ -0.25 inches water gauge with respect to atmospheric pressure during operation at a flow rate $\leq 36,443$ cfm. | 18 months on a STAGGERED TEST BASIS |
| SR 3.7.13.5 Verify each FHVES filter bypass damper can be closed. | 18 months |

3.7 PLANT SYSTEMS

3.7.14 Spent Fuel Pool Water Level

LCO 3.7.14 The spent fuel pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.7.14.1 Verify the spent fuel pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks. | 7 days |

3.7 PLANT SYSTEMS

3.7.15 Spent Fuel Pool Boron Concentration

LCO 3.7.15 The spent fuel pool boron concentration shall be within the limit specified in the COLR.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. Spent fuel pool boron concentration not within limit. | -----NOTE----- LCO 3.0.3 is not applicable. ----- | |
| | A.1 Suspend movement of fuel assemblies in the spent fuel pool. | Immediately |
| | <u>AND</u> A.2 Initiate action to restore spent fuel pool boron concentration to within limit. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.7.15.1 Verify the spent fuel pool boron concentration is within limit. | 7 days |

3.7 PLANT SYSTEMS

3.7.16 Spent Fuel Assembly Storage

LCO 3.7.16 The combination of initial enrichment and burnup of each new or spent fuel assembly stored in the spent fuel pool storage racks shall be within the following configurations:

- a. Unrestricted storage of fuel meeting the criteria of Table 3.7.16-1; or
- b. Restricted storage in accordance with Figure 3.7.16-1, of fuel which does not meet the criteria of Table 3.7.16-1.

APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel pool.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-------------------------------------|---|-----------------|
| A. Requirements of the LCO not met. | <p>A.1 -----NOTE----- LCO 3.0.3 is not applicable. -----</p> <p>Initiate action to move the noncomplying fuel assembly to the correct location.</p> | Immediately |

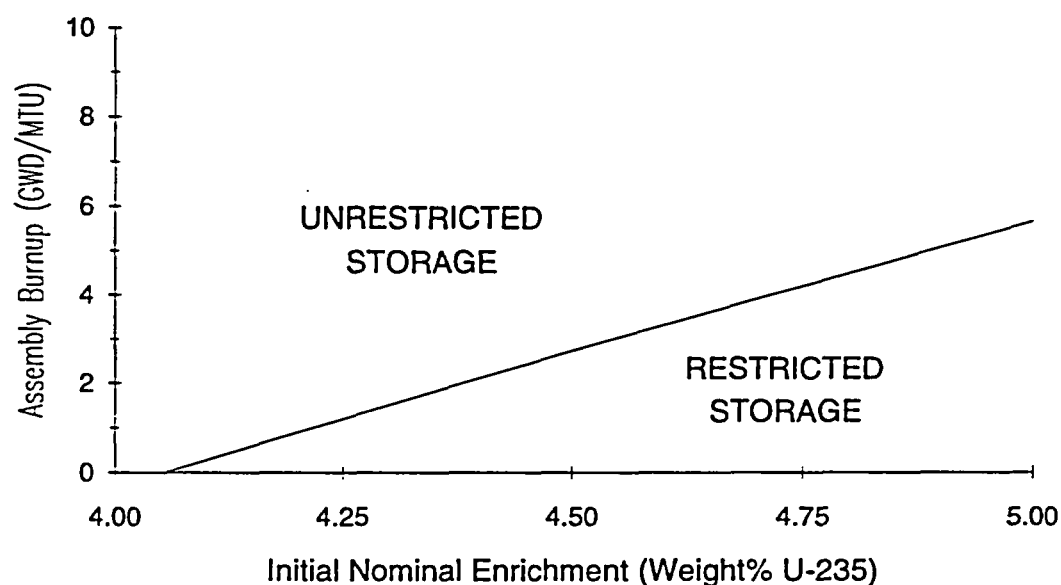
SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.7.16.1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with the specified configurations. | Prior to storing the fuel assembly in the spent fuel pool |

Table 3.7.16-1

Minimum Qualifying Burnup Versus Initial Enrichment for Unrestricted Storage

| Initial Nominal Enrichment (Weight% U-235) | Assembly Burnup (GWD/MTU) |
|---|------------------------------|
| 4.05 (or less) | 0 |
| 4.50 | 2.73 |
| 5.00 | 5.67 |



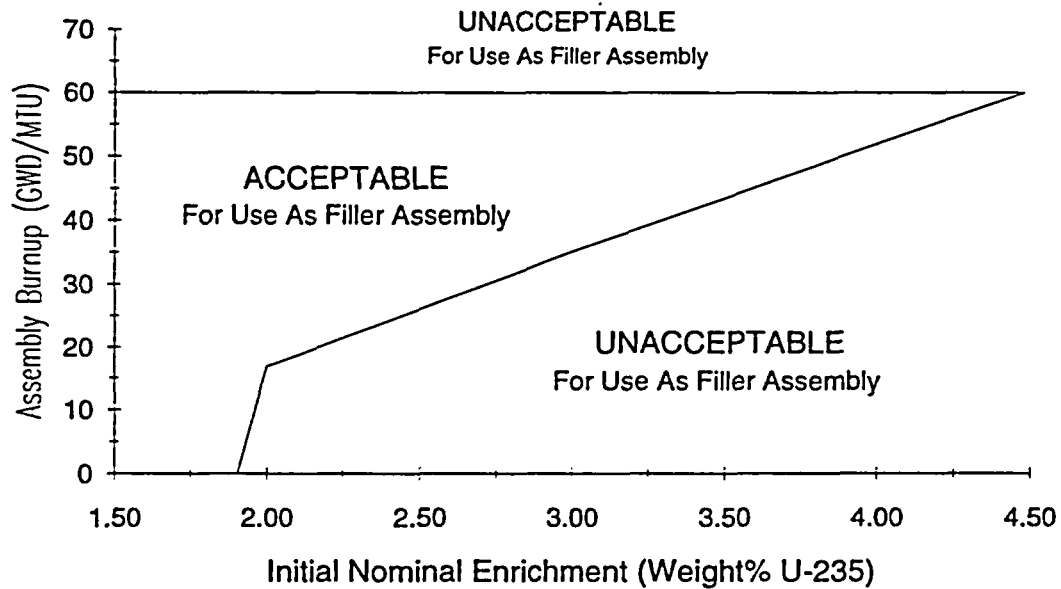
NOTES:

Fuel which differs from those designs used to determine the requirements of Table 3.7.16-1 may be qualified for Unrestricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95. Likewise, previously unanalyzed fuel up to a nominal 5.0 weight% U-235 may be qualified for Restricted storage by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.

Table 3.7.16-2

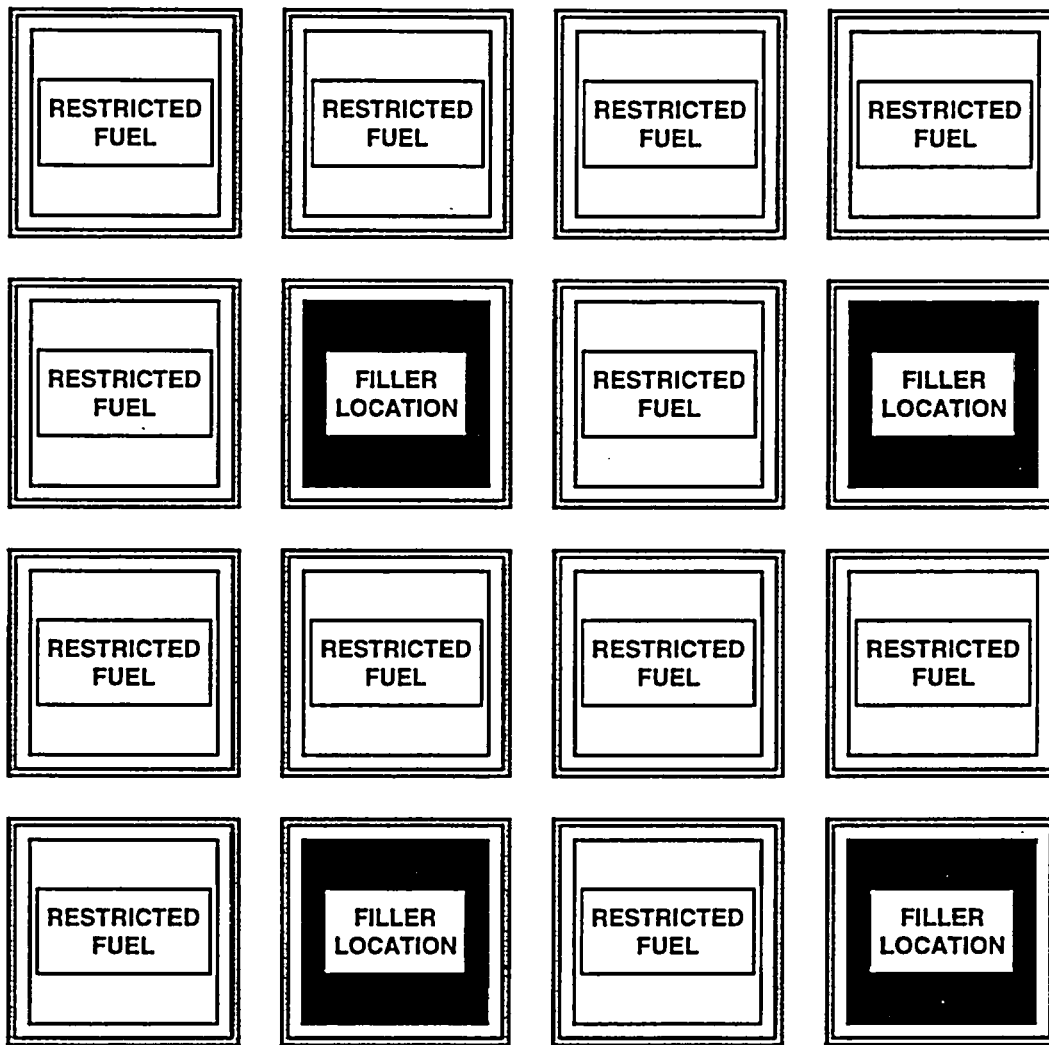
Minimum Qualifying Burnup Versus Initial Enrichment for Filler Assemblies

| Initial Nominal Enrichment (Weight% U-235) | Assembly Burnup (GWD/MTU) |
|---|------------------------------|
| 1.90 (or less) | 0 |
| 2.00 | 16.83 |
| 2.50 | 26.05 |
| 3.00 | 35.11 |
| 3.50 | 43.48 |
| 4.00 | 51.99 |
| 4.48 | 60.00 |



NOTES:

Fuel which differs from those designs used to determine the requirements of Table 3.7.16-2 may be qualified for use as a Filler Assembly by means of an analysis using NRC approved methodology to assure that k_{eff} is less than or equal to 0.95.



Restricted Fuel: Fuel defined for Restricted Storage in Table 3.7.16-1. (Fuel defined for Unrestricted Storage in Table 3.7.16-1, or non-fuel components, or an empty location may be placed in restricted fuel locations as needed)

Filler Location: Either fuel which meets the minimum burnup requirements of Table 3.7.16-2, or an empty cell.

Boundary Condition: Any row bounded by an Unrestricted Storage Area shall contain a combination of restricted fuel assemblies and filler locations arranged such that no restricted fuel assemblies are adjacent to each other.
Example: In the figure above, row 1 or column 1 can not be adjacent to an Unrestricted Storage Area, but row 4 or column 4 can be.

Figure 3.7.16-1
Required 3 out of 4 Loading Pattern for Restricted Storage

3.7 PLANT SYSTEMS

3.7.17 Secondary Specific Activity

LCO 3.7.17 The specific activity of the secondary coolant shall be $\leq 0.10 \mu\text{Ci/gm}$
DOSE EQUIVALENT I-131.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|------------------------------------|-----------------|
| A. Specific activity not within limit. | A.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> A.2 Be in MODE 5. | 36 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.7.17.1 Verify the specific activity of the secondary coolant is $\leq 0.10 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131. | 31 days |

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

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

- a. Two qualified circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System; and
- b. Two diesel generators (DGs) capable of supplying the Onsite Essential Auxiliary Power Systems;

AND

The automatic load sequencers for Train A and Train B shall be OPERABLE.

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

ACTIONS

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

*For each Unit, the Completion Time that the 'A' EDG can be inoperable as specified by Required Action B.4 may be extended beyond the "72 hours and 6 days from discovery of failure to meet the LCO" up to 168 hours as part of the NSW system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSW piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

ACTIONS

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-------------------------------------|---|---|
| B. (continued) | B.4 Restore DG to OPERABLE status. | 72 hours* <u>AND</u> 6 days* from discovery of failure to meet LCO |
| C. Two offsite circuits inoperable. | C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. <u>AND</u> C.2 Restore one offsite circuit to OPERABLE status. | 12 hours from discovery of Condition C concurrent with inoperability of redundant required features 24 hours |

(continued)

*For each Unit, the Completion Time that the 'A' EDG can be inoperable as specified by Required Action B.4 may be extended beyond the "72 hours and 6 days from discovery of failure to meet the LCO" up to 168 hours as part of the NSWS system upgrades. System upgrades include maintenance and modification activities associated with replacement of portions of the train 'A' NSWS piping via modification CE-71424. Upon completion of the pipe replacement and system restoration this footnote is no longer applicable.

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--|
| D. One offsite circuit inoperable. <u>AND</u> One DG 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 train. ----- D.1 Restore offsite circuit to OPERABLE status. <u>OR</u> D.2 Restore DG to OPERABLE status. | 12 hours 12 hours |
| E. Two DGs inoperable. | E.1 Restore one DG to OPERABLE status. | 2 hours |
| F. One automatic load sequencer inoperable. | F.1 Restore 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. <u>AND</u> G.2 Be in MODE 5. | 6 hours 36 hours |
| H. Three or more AC sources inoperable. | H.1 Enter LCO 3.0.3. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each offsite circuit. | 7 days |
| <div> <div> SR 3.8.1.2 -----NOTES----- <ol style="list-style-type: none"> Performance of SR 3.8.1.7 satisfies this SR. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 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. </div> <div> ----- <p>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.</p> </div> </div> | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| <p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> 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. <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 5600 kW and ≤ 5750 kW.</p> | 31 days |
| SR 3.8.1.4 Verify each day tank contains ≥ 470 gal of fuel oil. | 31 days |
| SR 3.8.1.5 Check for and remove accumulated water from each day tank. | 31 days |
| SR 3.8.1.6 Verify the fuel oil transfer system operates to transfer fuel oil from storage system to the day tank. | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| <p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves in ≤ 11 seconds voltage of ≥ 3740 V and frequency of ≥ 57 Hz and maintains steady-state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p> | 184 days |
| <p>SR 3.8.1.8 Verify automatic and manual transfer of AC power sources from the normal offsite circuit to each alternate offsite circuit.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| <p>SR 3.8.1.9 -----NOTE----- If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. -----</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ul style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 63 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V; and c. Within 3 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz. | 18 months |
| <p>SR 3.8.1.10 Verify each DG does not trip and generator speed is maintained ≤ 500 rpm during and following a load rejection of ≥ 5600 kW and ≤ 5750 kW.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|------------------|
| <p>SR 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes the emergency bus in ≤ 11 seconds, 2. energizes auto-connected shutdown loads through automatic load sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies auto-connected shutdown loads for ≥ 5 minutes. | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|------------------|
| <p>SR 3.8.1.12 -----NOTE----- All DG starts may be preceded by prelube period. -----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ul style="list-style-type: none"> a. In ≤ 11 seconds after auto-start and during tests, achieves voltage ≥ 3740 V and ≤ 4580 V; b. In ≤ 11 seconds after auto-start and during tests, achieves frequency ≥ 58.8 Hz and ≤ 61.2 Hz; c. Operates for ≥ 5 minutes; and d. The emergency bus remains energized from the offsite power system. | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|------------------|
| <p>SR 3.8.1.13 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 ESF actuation signal except:</p> <ul style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; c. Low - low lube oil pressure; and d. Voltage control overcurrent relay scheme. | <p>18 months</p> |
| <p>SR 3.8.1.14 -----NOTE----- Momentary transients outside the load and power factor ranges do not invalidate this test. -----</p> <p>Verify each DG operating at a power factor ≤ 0.9 operates for ≥ 24 hours loaded ≥ 5600 kW and ≤ 5750 kW.</p> | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|------------------|
| <p>SR 3.8.1.15 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 1 hour loaded ≥ 5600 kW and ≤ 5750 kW or until operating temperature is stabilized. <p style="margin-left: 40px;">Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves, in ≤ 11 seconds, voltage ≥ 3740 V, and frequency ≥ 57 Hz and maintains steady state voltage ≥ 3740 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p> | <p>18 months</p> |
| <p>SR 3.8.1.16 -----NOTE-----</p> <p>This Surveillance shall not be performed in MODE 1, 2, 3, or 4.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to standby operation. | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| <p>SR 3.8.1.17 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -----</p> <p>Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> a. Returning DG to standby operation; and b. Automatically energizing the emergency load from offsite power. | 18 months |
| <p>SR 3.8.1.18 Verify interval between each sequenced load block is within the design interval for each automatic load sequencer.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|------------------|
| <p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes the emergency bus in ≤ 11 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage ≥ 3740 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies auto-connected emergency loads for ≥ 5 minutes. | <p>18 months</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------------|
| <p>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 DG achieves, in ≤ 11 seconds, voltage of ≥ 3740 V and frequency of ≥ 57 Hz and maintains steady state voltage ≥ 3740 V and ≤ 4580 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.</p> | <p>10 years</p> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources—Shutdown

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

- a. One qualified circuit between the offsite transmission network and the Onsite Essential Auxiliary Power distribution system required by LCO 3.8.10, "Distribution Systems—Shutdown"; and
- b. One diesel generator (DG) capable of supplying one train of the Onsite Essential Auxiliary Power distribution system required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. One required offsite circuit inoperable. | -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required train de-energized as a result of Condition A. ----- | |
| | A.1 Declare affected required feature(s) with no offsite power available inoperable. | Immediately |
| | <u>OR</u> | |
| | A.2.1 Suspend CORE ALTERATIONS. <u>AND</u> | Immediately |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--------------------------------|---|-----------------|
| A. (continued) | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | <u>AND</u> | |
| | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration. | Immediately |
| | <u>AND</u> | |
| | 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 |
| | <u>AND</u> | |
| | B.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | <u>AND</u> | |
| | B.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration. | Immediately |
| | <u>AND</u> | |
| | B.4 Initiate action to restore required DG to OPERABLE status. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| <div>SR 3.8.2.1</div> <div>-----NOTE-----</div> <div>The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, SR 3.8.1.16, and SR 3.8.1.18.</div> <div>-----</div> <div>For AC sources required to be OPERABLE, the following SRs are applicable:</div> <div><div><div>SR 3.8.1.1</div><div>SR 3.8.1.2</div><div>SR 3.8.1.3</div><div>SR 3.8.1.4</div><div>SR 3.8.1.5</div></div><div><div>SR 3.8.1.6</div><div>SR 3.8.1.7</div><div>SR 3.8.1.9</div><div>SR 3.8.1.10</div><div>SR 3.8.1.11</div></div><div><div>SR 3.8.1.13</div><div>SR 3.8.1.14</div><div>SR 3.8.1.15</div><div>SR 3.8.1.16</div><div>SR 3.8.1.18</div></div></div> <div>In accordance with applicable SRs</div> | |

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 inventory < 77,100 gal and > 66,100 gal. | A.1 Restore fuel oil level to within limits. | 48 hours |
| B. | One or more DGs with lube oil inventory < 400 gal and > 375 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 within limit. | 7 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| 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 < 210 psig and ≥ 150 psig. | E.1 Restore starting air receiver pressure to ≥ 210 psig. | 48 hours |
| F. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs 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 the fuel oil storage system contains $\geq 77,100$ gal of fuel for each DG. | 31 days |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.8.3.2 Verify lubricating oil inventory is \geq 400 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 \geq 210 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 Four channels of DC electrical power subsystems and the Train A and Train B Diesel Generator (DG) DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One channel of DC electrical power subsystem inoperable. | A.1 Verify associated bus tie breakers are closed between DC channels. | 8 hours |
| | <u>AND</u> A.2 Restore channel of DC electrical power subsystem to OPERABLE status. | 10 days |
| B. Required Action and Associated Completion Time not met. | B.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> B.2 Be in MODE 5. | 36 hours |
| C. One or more DG DC electrical power subsystem(s) inoperable. | C.1 Enter applicable Condition(s) and Required Action(s) of LCO 3.8.1, "AC Sources - Operating", for the associated DG made inoperable. | Immediately |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--------------------|
| <p>D. A and/or D channel of DC electrical power subsystem inoperable.</p> <p><u>AND</u></p> <p>Associated train of DG DC electrical power subsystem inoperable.</p> | <p>D.1 Enter applicable Condition(s) and Required Action(s) of LCO 3.8.9, "Distribution Systems-Operating", for the associated train of DC electrical power distribution subsystem made inoperable.</p> | <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|----------------|
| <p>SR 3.8.4.1 Verify DC channel and DG battery terminal voltage is ≥ 125 V on float charge.</p> | <p>7 days</p> |
| <p>SR 3.8.4.2 Verify DG battery cell voltage ≥ 1.36 V on float charge.</p> | <p>7 days</p> |
| <p>SR 3.8.4.3 Verify no visible corrosion at the DC channel and DG battery terminals and connectors.</p> <p><u>OR</u></p> <p>(For the DC channel only) Verify battery connection resistance of these items is $\leq 1.5 \text{ E-4 ohm}$.</p> | <p>92 days</p> |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.8.4.4 Verify DC channel and DG battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance. | 18 months |
| SR 3.8.4.5 Remove visible terminal corrosion, verify DC channel and DG battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material. | 18 months |
| SR 3.8.4.6 Verify DC channel battery connection resistance is ≤ 1.5 E-4 ohm. | 18 months |
| SR 3.8.4.7 Verify each DC channel battery charger supplies ≥ 200 amps and the DG battery charger supplies ≥ 75 amps with each charger at ≥ 125 V for ≥ 8 hours. | 18 months |
| <p>SR 3.8.4.8 -----NOTES-----</p> <ol style="list-style-type: none"> 1. The modified performance discharge test in SR 3.8.4.9 may be performed in lieu of the service test in SR 3.8.4.8. 2. This Surveillance shall not be performed for the DG batteries in MODE 1, 2, 3, or 4. <p>-----</p> <p>Verify DC channel and DG battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p> | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|--|--|
| <p>SR 3.8.4.9 -----NOTE----- This Surveillance shall not be performed for the DG batteries in MODE 1, 2, 3, or 4. -----</p> <p>Verify DC channel and DG battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.</p> | <p>60 months</p> <p><u>AND</u></p> <p>18 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating</p> <p><u>AND</u></p> <p>-----NOTE----- Not applicable to DG batteries -----</p> <p>24 months when battery has reached 85% of the expected life with capacity $\geq 100\%$ of manufacturer's rating</p> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

LCO 3.8.5 The following shall be OPERABLE:

- a. Two channels of DC electrical power subsystems and a train of DG DC electrical power subsystem capable of supplying one train of the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems-Shutdown," and
- b. One source of DC electrical power, other than that required by LCO 3.8.5.a, capable of supplying the remaining train of the DC electrical power distribution subsystem(s) when required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One or more required channel(s) of DC electrical power subsystems or required DG DC electrical power subsystem inoperable. | A.1.1 Declare affected required feature(s) inoperable. | Immediately |
| | <u>OR</u> | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | <u>AND</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| A. (continued) | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration. | Immediately |
| | <p><u>AND</u></p> <p>A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.</p> | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| <div>SR 3.8.5.1</div> <div>-----NOTE-----</div> <div>The following SRs are not required to be performed: SR 3.8.4.7, SR 3.8.4.8, and SR 3.8.4.9.</div> <div>-----</div> <div>For DC sources required to be OPERABLE, the following SRs are applicable:</div> <div><div>SR 3.8.4.1SR 3.8.4.4SR 3.8.4.7</div><div>SR 3.8.4.2SR 3.8.4.5SR 3.8.4.8</div><div>SR 3.8.4.3SR 3.8.4.6SR 3.8.4.9</div></div> | <div>In accordance with applicable SRs</div> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the channels of DC batteries shall be within the limits of Table 3.8.6-1 and the Diesel Generator (DG) Train A and Train B batteries shall be within the limits of temperature and level.

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

ACTIONS

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

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|----------------------------|
| A. One or more channel(s) of DC batteries with one or more battery cell parameters not within Category A or B limits. | A.1 Verify pilot cells electrolyte level and float voltage meet Table 3.8.6-1 Category C limits. | 1 hour |
| | <u>AND</u> | |
| | A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits. | 24 hours |
| | <u>AND</u> | Once per 7 days thereafter |
| | <u>AND</u> | |
| | A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1. | 31 days |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|--------------------|
| <p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>One or more channel(s) of DC batteries with average electrolyte temperature of the representative cells < 60°F.</p> <p><u>OR</u></p> <p>One or more channel(s) of DC batteries with one or more battery cell parameters not within Category C values.</p> | <p>B.1 Declare associated battery inoperable.</p> | <p>Immediately</p> |
| <p>C. One or more DG batteries with electrolyte level not at or above the low mark and not at or below the high mark.</p> <p><u>OR</u></p> <p>One or more DG batteries with average electrolyte temperature of the representative cells < 60°F.</p> | <p>C.1 Enter applicable Condition(s) and Required Action(s) of LCO 3.8.1, "AC Sources - Operating", or LCO 3.8.2, "AC Sources - Shutdown" for the associated DG made inoperable.</p> | <p>Immediately</p> |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|--|
| SR 3.8.6.1 Verify battery cell parameters of the channels of DC batteries meet Table 3.8.6-1 Category A limits. | 7 days |
| SR 3.8.6.2 Verify electrolyte level of DG batteries is at or above low mark and at or below high mark. | 7 days |
| SR 3.8.6.3 Verify battery cell parameters of the channels of DC batteries meet Table 3.8.6-1 Category B limits. | 92 days <u>AND</u> Once within 7 days after a battery discharge < 110 V <u>AND</u> Once within 7 days after a battery overcharge > 150 V |
| SR 3.8.6.4 Verify average electrolyte temperature for the channels of DC and DG batteries of representative cells is $\geq 60^{\circ}\text{F}$. | 92 days |

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

| PARAMETER | CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL | CATEGORY B: LIMITS FOR EACH CONNECTED CELL | CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL |
|------------------------------------|---|---|--|
| Electrolyte Level | > Minimum level indication mark, and $\leq \frac{1}{4}$ inch above maximum level indication mark ^(a) | > Minimum level indication mark, and $\leq \frac{1}{4}$ inch above maximum level indication mark ^(a) | Above top of plates, and not overflowing |
| Float Voltage | $\geq 2.13 \text{ V}$ | $\geq 2.13 \text{ V}$ | $> 2.07 \text{ V}$ |
| Specific Gravity ^{(b)(c)} | ≥ 1.200 | ≥ 1.195 <u>AND</u> Average of all connected cells ≥ 1.205 | Not more than 0.020 below average of all connected cells or ≥ 1.195 <u>AND</u> Average of all connected cells ≥ 1.195 |

- (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.
- (b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge.
- (c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters—Operating

LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--------------------------------|
| A. One required inverter inoperable. | <p>A.1 -----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital bus de-energized.</p> <p>Restore inverter to OPERABLE status.</p> | 24 hours |
| B. Required Action and associated Completion Time not met. | <p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 5.</p> | <p>6 hours</p> <p>36 hours</p> |

SURVEILLANCE REQUIREMENTS

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

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters—Shutdown

LCO 3.8.8 The following shall be OPERABLE:

- a. Two inverters capable of supplying one train of the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems-Shutdown," and
- b. One source of AC vital bus power, other than that required by LCO 3.8.8.a, capable of supplying the remaining onsite Class 1E AC vital bus electrical power distribution subsystem(s) when required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One or more required AC vital bus power sources inoperable. | A.1 Declare affected required feature(s) inoperable. | Immediately |
| | <u>OR</u> | |
| | A.2.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |
| | A.2.2 Suspend movement of irradiated fuel assemblies. | Immediately |
| | <u>AND</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| A. (continued) | A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or required boron concentration. | Immediately |
| | <p><u>AND</u></p> <p>A.2.4 Initiate action to restore required inverters to OPERABLE status.</p> | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.8.8.1 Verify correct voltage and alignment to required AC vital bus. | 7 days |

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

LCO 3.8.9 Train A and Train B AC, four channels of DC, DC Train A and Train B and four AC vital buses electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---|
| A. One or more AC electrical power distribution subsystem(s) inoperable. | A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status. | 8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO |
| B. One AC vital bus inoperable. | B.1 Restore AC vital bus subsystem to OPERABLE status. | 2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|---|
| C. One channel of DC electrical power distribution subsystems inoperable. | C.1 Restore channel of DC electrical power distribution subsystems to OPERABLE status. | 2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO |
| D. One train of DC electrical power distribution subsystems inoperable. | D.1 Restore DC electrical power distribution subsystem to OPERABLE status. | 2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO |
| E. Required Action and associated Completion Time not met. | E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 5. | 6 hours 36 hours |
| F. Two trains with inoperable distribution subsystems that result in a loss of safety 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 channel, DC train, 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 portion of AC, channels of DC, DC trains and AC vital buses electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| A. (continued) | A.2.4 Initiate actions to restore required AC, channels of DC, DC trains, and AC vital bus electrical power distribution subsystems to OPERABLE status. | Immediately |
| | <u>AND</u> | |
| | A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation. | Immediately |
| | <u>AND</u> | |
| | A.2.6 Declare affected Low Temperature Overpressure Protection feature(s) inoperable. | Immediately |

SURVEILLANCE REQUIREMENTS

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

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1 Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

APPLICABILITY: MODE 6.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. Boron concentration not within limit. | A.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |
| | A.2 Suspend positive reactivity additions. | Immediately |
| | <u>AND</u> | |
| | A.3 Initiate action to restore boron concentration to within limit. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.9.1.1 Verify boron concentration is within the limit specified in COLR. | 72 hours |

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2 Two Boron Dilution Mitigation System (BDMS) trains shall be OPERABLE.

-----NOTE-----
Automatic actuation of the BDMS may be blocked during core reloading until two assemblies are loaded into the core.

APPLICABILITY: MODE 6.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-------------------|
| A. One or both BDMS trains inoperable. | A.1.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> | |
| | A.1.2 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 |
| | <u>AND</u> | |
| | A.1.3 Verify unborated water source isolation valve(s) are closed and secured. | 1 hour |
| | <u>AND</u> | |
| | A.1.4 Perform SR 3.9.1.1. | Once per 12 hours |
| | <u>OR</u> | |
| | | (continued) |

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| A. (continued) | A.2.1 Verify two Source Range Neutron Flux Monitors are OPERABLE. | Immediately |
| | <p><u>AND</u></p> <p>A.2.2 Verify Reactor Makeup Water Pumps combined flow rates are within the limits specified in the COLR.</p> | 1 hour |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.9.2.1 Perform CHANNEL CHECK. | 12 hours |
| SR 3.9.2.2 Perform COT. | 31 days |
| SR 3.9.2.3 Verify each automatic valve moves to the correct position and Reactor Makeup Water pumps stop upon receipt of an actual or simulated actuation signal. | 18 months |
| <p>SR 3.9.2.4 -----NOTE-----</p> <p>Only required to be performed when used to satisfy Required Action A.2.1.</p> <p>-----</p> <p>Perform CHANNEL CHECK on the Source Range Neutron Flux Monitors.</p> | 12 hours |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| <p>SR 3.9.2.5 -----NOTE----- Only required to be performed when used to satisfy Required Action A.2.1. -----</p> <p>Perform COT on the Source Range Neutron Flux Monitors.</p> | 7 days |
| <p>SR 3.9.2.6 -----NOTE----- Only required to be performed when used to satisfy Required Action A.2.2. -----</p> <p>Verify combined flowrates from both Reactor Makeup Water Pumps are \leq the value in the COLR.</p> | 7 days |

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3

The containment penetrations shall be in the following status:

- a. The equipment hatch closed and held in place by a minimum of four bolts;
- b. A minimum of one door in each air lock closed; and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
 2. exhausting through an OPERABLE Containment Purge Exhaust System (CPES) HEPA filter and charcoal adsorber.

APPLICABILITY: During movement of recently irradiated fuel assemblies within containment.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--------------------------------|
| A. One or more containment penetrations not in required status. | A.1 Suspend movement of recently irradiated fuel assemblies within containment. | Immediately (continued) |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| B. One or more CPES train(s) heater inoperable. | B.1 Restore CPES train(s) heater to OPERABLE status. | 7 days |
| | <u>OR</u> B.2 Initiate action in accordance with Specification 5.6.6. | 7 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------------------------|
| SR 3.9.3.1 Verify each required containment penetration is in the required status. | 7 days |
| SR 3.9.3.2 Operate each CPES for ≥ 10 continuous hours with the heaters operating. | 31 days |
| SR 3.9.3.3 Perform required CPES filter testing in accordance with the Ventilation Filter Testing Program (VFTP). | In accordance with the VFTP |

3.9 REFUELING OPERATIONS

3.9.4 Residual Heat Removal (RHR) and Coolant Circulation — High Water Level

LCO 3.9.4 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 required to meet the minimum required boron concentration of LCO 3.9.1.

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 |
| | <u>AND</u> | |
| | A.2 Suspend loading irradiated fuel assemblies in the core. | Immediately |
| | <u>AND</u> | |
| | A.3 Initiate action to satisfy RHR loop requirements. | Immediately |
| | <u>AND</u> | |
| | | (continued) |

RHR and Coolant Circulation - High Water Level
3.9.4

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| A. (continued) | A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.9.4.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 1000 gpm and RCS temperature is $\leq 140^{\circ}\text{F}$. | 12 hours |

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation — Low Water Level

LCO 3.9.5 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

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

ACTIONS

| CONDITION | | REQUIRED ACTION | COMPLETION TIME |
|-----------|--|--|-----------------|
| A. | Less than the required number of RHR loops OPERABLE. | A.1 Initiate action to restore required RHR loops to OPERABLE status. | Immediately |
| | | <u>OR</u> | |
| | | A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange. | Immediately |
| 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 |
| | | <u>AND</u> | |

(continued)

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------|---|-----------------|
| B. (continued) | B.2 Initiate action to restore one RHR loop to operation. | Immediately |
| | <u>AND</u> B.3 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere. | 4 hours |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ 1000 gpm and RCS temperature is $\leq 140^{\circ}\text{F}$. | 12 hours |
| SR 3.9.5.2 Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation. | 7 days |

3.9 REFUELING OPERATIONS

3.9.6 Refueling Cavity Water Level

LCO 3.9.6 Refueling cavity water level shall be maintained \geq 23 ft above the top of reactor vessel flange.

APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts,
During movement of irradiated fuel assemblies within containment.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. Refueling cavity water level not within limit. | A.1 Suspend CORE ALTERATIONS. | Immediately |
| | <u>AND</u> A.2 Suspend movement of irradiated fuel assemblies within containment. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.9.6.1 Verify refueling cavity water level is \geq 23 ft above the top of reactor vessel flange. | 24 hours |

4.0 DESIGN FEATURES

4.1 Site Location

Catawba Nuclear Station is located in the north central portion of South Carolina approximately six miles north of Rock Hill and adjacent to Lake Wylie. The station center is located at latitude 35 degrees, 3 minutes, 5 seconds north and longitude 81 degrees, 4 minutes, 10 seconds west. The corresponding Universal Transverse Mercator Coordinates are E 493, 660 and N 3, 878, 558, zone 17.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of either ZIRLO™ or Zircalloy fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO₂) as fuel material. Limited substitutions of ZIRLO™, zirconium alloy, or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions.

4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver indium cadmium and boron carbide 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:

(continued)

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

- a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent;
- b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and
- c. A nominal 13.5 inch center to center distance between fuel assemblies placed in the fuel storage racks.

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

- a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent;
- b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR;
- c. $k_{\text{eff}} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the UFSAR; and
- d. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 596 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 1418 fuel assemblies.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

5.1.1 The Station Manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

5.1.2 The Shift Supervisor (SS) shall be responsible for the control room command function. During any absence of the SS from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Work Manager) with an active Senior Reactor Operator (SRO) license shall be designated to assume the control room command function. During any absence of the SS from the control room while the unit is in MODE 5 or 6, an individual with an active SRO license or Reactor Operator license shall be designated to assume the control room command function.

On occasion when there is a need for both the Shift Supervisor and the SRO to be absent from the control room in MODE 1, 2, 3, or 4, the Shift Work Manager shall be allowed to assume the control room command function and serve as the SRO in the control room provided that:

- a. the Shift Supervisor is available to return to the control room within 10 minutes,
 - b. the assumption of SRO duties by the Shift Work Manager is limited to periods not in excess of 15 minutes duration and a total time not to exceed 1 hour during any shift, and
 - c. the Shift Work Manager has a SRO license on the unit.
-

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

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

- a. Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements shall be documented in the UFSAR;
- b. The Station 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. The Vice President of Catawba Nuclear Site 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 Executive Vice President Nuclear Generation Department will be the Senior Nuclear Executive and have corporate responsibility for overall nuclear safety; and
- e. The individuals who train the operating staff, carry out radiation protection, or perform quality assurance functions may report to the appropriate onsite manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from operating pressures.

5.2.2 Unit Staff

The unit staff organization shall include the following:

- a. A non-licensed operator shall be assigned to each reactor containing fuel and an additional non-licensed operator shall be assigned for each control room from which a reactor is operating in MODES 1, 2, 3, or 4.

A total of three non-licensed operators are required for the two units.

(continued)

5.2 Organization

5.2.2 Unit Staff (continued)

- b. At least one licensed Reactor Operator (RO) shall be present in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, 3, or 4, at least one licensed Senior Reactor Operator (SRO) shall be present in the control room.
- c. 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.g 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.
- d. 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.
- e. Administrative procedures shall be developed and implemented to limit the working hours of station staff who perform safety related functions (e.g., licensed SROs, licensed ROs, radiation protection technicians, auxiliary operators, and key maintenance personnel).

Adequate shift coverage shall be maintained without routine heavy use of overtime. The objective shall be to have operating personnel work a 12 hour day with alternating 48 hour and 36 hour weeks while the unit is operating. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modification, on a temporary basis the following guidelines shall be followed:

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

(continued)

5.2 Organization

5.2.2 Unit Staff (continued)

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

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

- f. The Operations Superintendent shall hold or have held a SRO license. The Shift Operations Manager, Shift Supervisor, and Assistant Shift Supervisor shall hold an SRO license. The Reactor Operator shall hold a Reactor Operator License.
 - g. The Shift Work Manager, whose functions include those of a Shift Technical Advisor (STA), shall provide advisory technical support to the Shift Supervisor in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. In addition, the Shift Work Manager shall meet the qualifications for STA specified by the Commission Policy Statement on Engineering Expertise on Shift.
-

5.0 ADMINISTRATIVE CONTROLS

5.3 Unit Staff Qualifications

- 5.3.1 Each member of the unit staff shall meet or exceed the minimum qualifications of ANSI-N18.1-1971 for comparable positions, except the Radiation Protection Manager, who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975.
-

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. Commitments contained in UFSAR Chapter 16.0; 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)

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.

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) do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;
- b. Shall become effective after the approval of the Station 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.

5.5.2 Containment Leakage Rate Testing Program

A program shall be established to implement 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:

- a. The containment visual examinations required by Regulatory Position C.3 shall be conducted 3 times every 10 years, including during each shutdown for SR 3.6.1.1 Type A test, prior to initiating the Type A test; and

(continued)

5.5 Programs and Manuals

5.5.2 Containment Leakage Rate Testing Program (continued)

- b. NEI 94-01-1995, Section 9.2.3: The first Type A test performed after the November 14, 2000 (Unit 1) and February 7, 1993 (Unit 2) Type A test shall be performed no later than November 13, 2015 (Unit 1) and February 6, 2008 (Unit 2).

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a , is 14.68 psig. The containment design pressure is 15 psig. The maximum allowable containment leakage rate, L_a , at P_a , shall be 0.3% of containment air weight per day.

Leakage Rate acceptance criteria are:

- a. Containment leakage rate acceptance criterion is $\leq 1.0 L_a$. During the first plant startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq 0.75 L_a$ for Type A tests and $< 0.6 L_a$ for Type B and Type C tests.
- b. Air lock testing acceptance criteria for the overall air lock leakage rate is $\leq 0.05 L_a$ when tested at $\geq P_a$. For each door, the leakage rate is $\leq 0.01 L_a$ when tested at ≥ 14.68 psig.

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

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

5.5.3 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 Containment Spray, Safety Injection, Chemical and Volume Control, and Nuclear Sampling. The program shall include the following:

- a. Preventive maintenance and periodic visual inspection requirements; and
- b. Integrated leak test requirements for each system at refueling cycle intervals or less.

5.5.4 DELETED

(continued)

5.5 Programs and Manuals (continued)

5.5.5 Radioactive Effluent Controls Program

- a. 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 Chapter 16 of the UFSAR, 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:
1. 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;
 2. Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to ten times 10 CFR 20, Part 20.1001 - 20.2401, Appendix B, Table 2, Column 2;
 3. 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;
 4. Limitations on the annual and quarterly doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each unit to unrestricted areas, conforming to 10 CFR 50, Appendix I;
 5. Determination of cumulative and projected dose contributions from radioactive effluents for the current calendar quarter and current calendar year in accordance with the methodology and parameters in the ODCM at least every 31 days;
 6. 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;

(continued)

5.5 Programs and Manuals

5.5.5 Radioactive Effluent Controls Program (continued)

7. Limitations on the dose rate resulting from radioactive material released in gaseous effluents to areas beyond the site boundary shall be limited to the following:
 - i. For noble gases: Less than or equal to a dose rate of 500 mrem/yr to the total body and less than or equal to a dose rate of 3000 mrem/yr to the skin, and
 - ii. For iodine-131, iodine-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: Less than or equal to a dose rate of 1500 mrem/yr to any organ;
 8. 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;
 9. 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;
 10. Limitations on the annual dose or dose commitment to any member of the public due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190; and
 11. 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.
- b. Licensee initiated changes to the Radiological Effluent Controls of the UFSAR:

(continued)

5.5 Programs and Manuals

5.5.5 Radioactive Effluent Controls Program (continued)

1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:
 - i. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and
 - ii. A determination that the change(s) maintain the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations or a determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR Part 50 and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;
2. Shall become effective after approval of the station manager.
3. Shall be submitted to the Commission in the form of a complete, legible copy of the entire Section 16.11 of the UFSAR as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any changes to Section 16.11 of the UFSAR 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/year) the change was implemented.

5.5.6 Component Cyclic or Transient Limit

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

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975.

In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at approximately 10 year intervals coinciding with the Inservice Inspection schedule as required by ASME Section XI.

(continued)

5.5 Programs and Manuals (continued)

5.5.8 Inservice Testing Program

This program provides controls for inservice testing of ASME Code Class 1, 2, and 3 components including applicable supports. 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:

| <u>ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice testing activities</u> | <u>Required Frequencies for performing inservice testing activities</u> |
|---|---|
| Weekly | At least once per 7 days |
| Monthly | At least once per 31 days |
| Quarterly or every 3 months | At least once per 92 days |
| Semiannually or every 6 months | At least once per 184 days |
| Every 9 months | At least once per 276 days |
| Yearly or annually | At least once per 366 days |
| Biennially or every 2 years | At least once per 731 days |

- b. The provisions of SR 3.0.2 are applicable to the above required Frequencies 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.

5.5.9 Steam Generator (SG) Tube Surveillance Program

This program provides controls for the inservice inspection of steam generator tubes to ensure that the structural integrity of this portion of the RCS is maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. The program shall include:

(continued)

5.5 Programs and Manuals (continued)

5.5.9.1 Steam Generator Sample Selection and Inspection

Each steam generator shall be determined OPERABLE during shutdown by selecting and inspecting at least the minimum of steam generators specified in Table 5.5-1.

5.5.9.2 Steam Generator Tube Sample Selection and Inspection

The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 5.5-2. The inservice inspection of steam generator tubes shall be performed at the frequencies specified in Specification 5.5.9.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Specification 5.5.9.4. The tubes selected for each inservice inspection shall include at least 3% of the total number of tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except:

- a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 50% of the tubes inspected shall be from these critical areas;
- b. The first sample of tubes selected for each inservice inspection (subsequent to the preservice inspection) of each steam generator shall include:
 1. All nonplugged tubes that previously had detectable wall penetrations (greater than 20%),
 2. Tubes in those areas where experience has indicated potential problems, and
 3. A tube inspection (pursuant to Specification 5.5.9.4.a.8) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.
- c. The tubes selected as the second and third samples (if required by Table 5.5-2) during each inservice inspection may be subjected to a partial tube inspection provided:
 1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found, and

(continued)

5.5 Programs and Manuals

5.5.9.2 Steam Generator Tube Sample Selection and Inspection (continued)

2. The inspections include those portions of the tubes where imperfections were previously found.

The results of each sample inspection shall be classified into one of the following three categories:

| <u>Category</u> | <u>Inspection Results</u> |
|-----------------|--|
| C-1 | Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective. |
| C-2 | One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes. |
| C-3 | More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective. |

Note: In all inspections, previously degraded tubes must exhibit significant (greater than 10%) further wall penetrations to be included in the above percentage calculations.

5.5.9.3 Inspection Frequencies

The above required inservice inspections of steam generator tubes shall be performed at the following frequencies:

- a. The first inservice inspection after steam generator replacement shall be performed after at least 6 Effective Full Power Months but within 24 calendar months of initial criticality after steam generator replacement (Unit 1). The first inservice inspection shall be performed after 6 Effective Full Power Months but within 24 calendar months of initial criticality (Unit 2). Subsequent inservice inspections shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection. If two consecutive inspections, not including the preservice inspection, result in all inspection results falling into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval may be extended to a maximum of once per 40 months;

(continued)

5.5 Programs and Manuals

5.5.9.3 Inspection Frequencies (continued)

- b. If the results of the inservice inspection of a steam generator conducted in accordance with Table 5.5-2 at 40-month intervals fall in Category C-3, the inspection frequency shall be increased to at least once per 20 months. The increase in inspection frequency shall apply until the subsequent inspections satisfy the criteria of Specification 5.5.9.3.a; the interval may then be extended to a maximum of once per 40 months; and
- c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 5.5-2 during the shutdown subsequent to any of the following conditions:
 - 1. Reactor-to-secondary tubes leaks (not including leaks originating from tube-to-tube sheet welds) in excess of the limits of Specification 3.4.13,
 - 2. A seismic occurrence greater than the Operating Basis Earthquake,
 - 3. A loss-of-coolant accident requiring actuation of the Engineered Safety Features, or
 - 4. A main steam line or feedwater line break.

The provisions of SR 3.0.2 are applicable to the SG Tube Surveillance Program test frequencies.

5.5.9.4 Acceptance Criteria

- a. As used in this specification:
 - 1. Imperfection means an exception to the dimensions, finish or contour of a tube from that required by fabrication drawings or specifications. Eddy-current testing indications below 20% of the nominal tube wall thickness, if detectable, may be considered as imperfections;
 - 2. Degradation means a service-induced cracking, wastage, wear or general corrosion occurring on either inside or outside of a tube;

(continued)

5.5 Programs and Manuals

5.5.9.4 Acceptance Criteria (continued)

3. Degraded Tube means a tube containing imperfections greater than or equal to 20% of the nominal tube wall thickness caused by degradation;
 4. % degradation means the percentage of the tube wall thickness affected or removed by degradation;
 5. Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective;
 6. Plugging Limit means the imperfection depth at or beyond which the tube shall be removed from service by plugging. The plugging limit is equal to 40% of the nominal tube wall thickness.
 7. Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in 5.5.9.3.c, above;
 8. Tube Inspection means an inspection of the steam generator tube from the point of entry completely around the U-bend to the point of exit; and
 9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline condition of the tubing. This inspection shall be performed prior to initial POWER OPERATION using the equipment and techniques expected to be used during subsequent inservice inspections.
- b. The steam generator shall be determined OPERABLE after completing the corresponding actions required by Table 5.5-2.

(continued)

TABLE 5.5-1 (Page 1 of 1)
MINIMUM NUMBER OF STEAM GENERATORS TO BE
INSPECTED DURING INSERVICE INSPECTION

| | | |
|--|------------------|------------------|
| Preservice Inspection | No | Yes |
| No. of Steam Generators per Unit | Four | Four |
| First Inservice Inspection after the Steam Generator Replacement (Unit 1) First Inservice Inspection (Unit 2) | All | Two |
| Second & Subsequent Inservice Inspections | One ¹ | One ² |

Table Notation

1. The inservice inspection may be limited to one steam generator on a rotating schedule encompassing 3 N % of the tubes (where N is the number of steam generators in the unit) if the results of the first or previous inspections indicate that all steam generators are performing in a like manner. Note that under some circumstances, the operating conditions in one or more steam generators may be found to be more severe than those in other steam generators. Under such circumstances the sample sequence shall be modified to inspect the most severe conditions.
2. Each of the other two steam generators not inspected during the first inservice inspection after the steam generator replacement shall be inspected during the second and third inspections (Unit 1). Each of the other two steam generators not inspected during the first inservice inspection shall be inspected during the second and third inspections (Unit 2). The fourth and subsequent inspections shall follow the instructions described in 1 above.

TABLE 5.5-2
STEAM GENERATOR TUBE INSPECTION

| 1ST SAMPLE INSPECTION | | | 2ND SAMPLE INSPECTION | | 3RD SAMPLE INSPECTION | |
|-----------------------------|--------|--|--|--|-----------------------|---|
| Sample Size | Result | Action Required | Result | Action Required | Result | Action Required |
| A minimum of S tubes per SG | C-1 | None | N/A | N/A | N/A | N/A |
| | C-2 | Plug defective tubes and inspect additional 2S tubes in this SG | C-1 | None | N/A | N/A |
| | | | C-2 | Plug defective tubes and inspect additional 4S tubes in this SG | C-1 | None |
| | | | | | C-2 | Plug defective tubes |
| | | | | | C-3 | Perform action for C-3 result of first sample |
| | | | C-3 | Perform action for C-3 result of first sample | N/A | N/A |
| | C-3 | Inspect all tubes in this SG, plug defective tubes and inspect 2S tubes in each other SG. Prompt notification to NRC pursuant to 10CFR50.72 (b)(2) | All other SGs are C-1 | None | N/A | N/A |
| | | | Some SGs C-2 but no additional SGs are C-3 | Perform action for C-2 result of second sample | N/A | N/A |
| | | | Additional SG is C-3 | Inspect all tubes in each SG and plug defective tubes. Notification to NRC pursuant to 10CFR50.72 (b)(2) | N/A | N/A |

$S = 3N/n \%$ Where N is the number of steam generators in the unit, and n is the number of steam generators inspected during an inspection.

5.5 Programs and Manuals (continued)

5.5.10 Secondary Water Chemistry Program

This program provides controls for monitoring secondary water chemistry to inhibit SG tube degradation and low pressure turbine disc stress corrosion cracking. The program shall include:

- a. Identification of a sampling schedule for the critical variables and control points for these variables;
- b. Identification of the procedures used to measure the values of the critical variables;
- c. Identification of process sampling points, which shall include monitoring the discharge of the condensate pumps for evidence of condenser in leakage;
- d. Procedures for the recording and management of data;
- e. Procedures defining corrective actions for all off control point chemistry conditions; and
- f. A procedure identifying the authority responsible for the interpretation of the data and the sequence and timing of administrative events, which is required to initiate corrective action.

5.5.11 Ventilation Filter Testing Program (VFTP)

A program shall be established to implement the following required testing of Engineered Safety Feature (ESF) filter ventilation systems in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980, with exceptions as noted in the UFSAR.

- a. Demonstrate for each of the ESF systems that an inplace test of the high efficiency particulate air (HEPA) filters shows the following penetration and system bypass when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the flowrate specified below $\pm 10\%$.

(continued)

5.5 Programs and Manuals

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

| ESF Ventilation System | Penetration | Flowrate |
|--------------------------------------|-------------|------------|
| Annulus Ventilation (Unit 1) | < 1% | 9000 cfm |
| Annulus Ventilation (Unit 2) | < 0.05% | 9000 cfm |
| Control Room Area Ventilation | < 0.05% | 6000 cfm |
| Aux. Bldg. Filtered Exhaust (Unit 1) | < 1% | 30,000 cfm |
| Aux. Bldg. Filtered Exhaust (Unit 2) | < 0.05% | 30,000 cfm |
| Containment Purge (non-ESF) (2 fans) | < 1% | 25,000 cfm |
| Fuel Bldg. Ventilation (Unit 1) | < 1% | 16,565 cfm |
| Fuel Bldg. Ventilation (Unit 2) | < 0.05% | 16,565 cfm |

- b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows the following penetration and system bypass when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI N510-1980 at the flowrate specified below $\pm 10\%$.

| ESF Ventilation System | Penetration | Flowrate |
|--------------------------------------|-------------|------------|
| Annulus Ventilation (Unit 1) | < 1% | 9000 cfm |
| Annulus Ventilation (Unit 2) | < 0.05% | 9000 cfm |
| Control Room Area Ventilation | < 0.05% | 6000 cfm |
| Aux. Bldg. Filtered Exhaust (Unit 1) | < 1% | 30,000 cfm |
| Aux. Bldg. Filtered Exhaust (Unit 2) | < 0.05% | 30,000 cfm |
| Containment Purge (non-ESF) (2 fans) | < 1% | 25,000 cfm |
| Fuel Bldg. Ventilation (Unit 1) | < 1% | 16,565 cfm |
| Fuel Bldg. Ventilation (Unit 2) | < 0.05% | 16,565 cfm |

- 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 $\leq 30^{\circ}\text{C}$ and greater than or equal to the relative humidity specified below.

| ESF Ventilation System | Penetration | RH |
|-------------------------------|-------------|-----|
| Annulus Ventilation | < 4% | 95% |
| Control Room Area Ventilation | < 0.95% | 95% |
| Aux. Bldg. Filtered Exhaust | < 4% | 95% |
| Containment Purge (non-ESF) | < 6% | 95% |
| Fuel Bldg. Ventilation | < 4% | 95% |

(continued)

5.5 Programs and Manuals

5.5.11 Ventilation Filter Testing Program (VFTP) (continued)

- 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 ANSI N510-1980 at the flowrate specified below $\pm 10\%$.

| ESF Ventilation System | Delta P | Flowrate |
|--------------------------------------|-----------|------------|
| Annulus Ventilation | 8.0 in wg | 9000 cfm |
| Control Room Area Ventilation | 8.0 in wg | 6000 cfm |
| Aux. Bldg. Filtered Exhaust | 8.0 in wg | 30,000 cfm |
| Containment Purge (non-ESF) (2 fans) | 8.0 in wg | 25,000 cfm |
| Fuel Bldg. Ventilation | 8.0 in wg | 16,565 cfm |

- e. Demonstrate that the heaters for each of the ESF systems dissipate the value specified below when tested in accordance with ANSI N510-1980.

| ESF Ventilation System | Wattage @ 600 vac |
|-------------------------------|---------------------|
| Annulus Ventilation | 45 ± 6.7 kW |
| Control Room Area Ventilation | 25 ± 2.5 kW |
| Aux. Bldg. Filtered Exhaust | 40 ± 4.0 kW |
| Containment Purge (non-ESF) | 120 ± 12.0 kW |
| Fuel Bldg. Ventilation | $80 \pm 8/-17.3$ kW |

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

5.5.12 Explosive Gas and Storage Tank Radioactivity Monitoring Program

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

(continued)

5.5 Programs and Manuals

5.5.12 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 or connected gas storage tanks and fed into the offgas treatment system is less than the amount that would result in a Deep Dose Equivalent 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 exceeding 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.

5.5.13 Diesel Fuel Oil Testing Program

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

- a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:
 1. an API gravity or an absolute specific gravity within limits,
 2. a flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and

(continued)

5.5 Programs and Manuals

5.5.13 Diesel Fuel Oil Testing Program (continued)

3. a clear and bright appearance with proper color or a water and sediment content within limits;
- b. Other properties for ASTM 2D fuel oil are within limits within 31 days following sampling and addition to storage tanks; and
- c. Total particulate concentration of the fuel oil is ≤ 10 mg/l when tested every 31 days.

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

5.5.14 Technical Specifications (TS) Bases Control Program

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

- a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:
 1. a change in the TS incorporated in the license; or
 2. a change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.
- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.
- d. Proposed changes that meet the criteria of Specification 5.5.14.b.1 or 5.5.14.b.2 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), with approved exemptions.

(continued)

5.5 Programs and Manuals (continued)

5.5.15 Safety Function Determination Program (SFDP)

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

- a. Provisions for cross train checks to ensure a loss of the capability to perform the safety function assumed in the accident analysis does not go undetected;
- b. Provisions for ensuring the plant is maintained in a safe condition if a loss of function condition exists;
- c. Provisions to ensure that an inoperable supported system's Completion Time is not inappropriately extended as a result of multiple support system inoperabilities; and
- d. Other appropriate limitations and remedial or compensatory actions.

A loss of safety function exists when, assuming no concurrent single failure, a safety function assumed in the accident analysis cannot be performed. For the purpose of this program, a loss of safety function may exist when a support system is inoperable, and:

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

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 mrem 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, electronic dosimetry, thermoluminescent dosimeter (TLD), or film badge measurements. Small exposures totalling < 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total deep dose equivalent received from external sources should be assigned to specific major work functions. The report covering the previous calendar year shall be submitted by April 30 of each year.

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 Chapter 16 of the UFSAR and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

(continued)

5.6 Reporting Requirements

5.6.2 Annual Radiological Environmental Operating Report (continued)

The Annual Radiological Environmental Operating Report shall include summarized and tabulated results of the 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 Radioactive Effluent Release Report

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

The Radioactive Effluent Release Report covering the operation of the unit in the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in Chapter 16 of the UFSAR 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, including documentation of all challenges to the pressurizer power operated relief valves or pressurizer safety valves, 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:

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

1. Moderator Temperature Coefficient BOL and EOL limits and 60 ppm and 300 ppm surveillance limits for Specification 3.1.3,
 2. Shutdown Bank Insertion Limit for Specification 3.1.5,
 3. Control Bank Insertion Limits for Specification 3.1.6,
 4. Axial Flux Difference limits for Specification 3.2.3,
 5. Heat Flux Hot Channel Factor for Specification 3.2.1,
 6. Nuclear Enthalpy Rise Hot Channel Factor for Specification 3.2.2,
 7. Overtemperature and Overpower Delta T setpoint parameter values for Specification 3.3.1,
 8. Accumulator and Refueling Water Storage Tank boron concentration limits for Specification 3.5.1 and 3.5.4,
 9. Reactor Coolant System and refueling canal boron concentration limits for Specification 3.9.1,
 10. Spent fuel pool boron concentration limits for Specification 3.7.15,
 11. SHUTDOWN MARGIN for Specification 3.1.1,
 12. 31 EFPD Surveillance Penalty Factors for Specifications 3.2.1 and 3.2.2, and
 13. Reactor Makeup Water Pumps Combined Flow Rates limit for Specifications 3.3.9 and 3.9.2.
- 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:
1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY" (W Proprietary).
 2. WCAP-10266-P-A, "THE 1981 VERSION OF WESTINGHOUSE EVALUATION MODEL USING BASH CODE" (W Proprietary).

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

3. BAW-10168-P-A, "B&W Loss-of-Coolant Accident Evaluation Model for Recirculating Steam Generator Plants" (B&W Proprietary).
4. DPC-NE-2011-P-A, "Duke Power Company Nuclear Design Methodology for Core Operating Limits of Westinghouse Reactors" (DPC Proprietary).
5. DPC-NE-3001-P-A, "Multidimensional Reactor Transients and Safety Analysis Physics Parameter Methodology" (DPC Proprietary).
6. DPC-NF-2010-A, "Duke Power Company McGuire Nuclear Station Catawba Nuclear Station Nuclear Physics Methodology for Reload Design."
7. DPC-NE-3002-A, "FSAR Chapter 15 System Transient Analysis Methodology."
8. DPC-NE-3000-P-A, "Thermal-Hydraulic Transient Analysis Methodology" (DPC Proprietary).
9. DPC-NE-1004-A, "Design Methodology Using CASMO-3/SIMULATE-3P."
10. DPC-NE-2004-P-A, "Duke Power Company McGuire and Catawba Nuclear Stations Core Thermal-Hydraulic Methodology using VIPRE-01" (DPC Proprietary).
11. DPC-NE-2005-P-A, "Thermal Hydraulic Statistical Core Design Methodology" (DPC Proprietary).
12. DPC-NE-2008-P-A, "Fuel Mechanical Reload Analysis Methodology Using TACO3" (DPC Proprietary).
13. WCAP-10054-P-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code" (W Proprietary).

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

14. DPC-NE-2009-P-A, "Westinghouse Fuel Transition Report" (DPC Proprietary).
15. WCAP-12945-P-A, Volume 1 and Volumes 2-5, "Code Qualification Document for Best-Estimate Loss of Coolant Analysis" (W Proprietary).

The COLR will contain the complete identification for each of the Technical Specifications referenced topical reports used to prepare the COLR (i.e., report number, title, revision number, report date or NRC SER 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 Ventilation Systems Heater Report

When a report is required by LCO 3.6.10, "Annulus Ventilation System (AVS)," LCO 3.7.10, "Control Room Area Ventilation System (CRAVS)," LCO 3.7.12, Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)," LCO 3.7.13, "Fuel Handling Ventilation Exhaust System (FHVES)," or LCO 3.9.3, "Containment Penetrations," a report shall be submitted within the following 30 days. The report shall outline the reason for the inoperability and the planned actions to return the systems to OPERABLE status.

5.6.7 PAM Report

When a report is required by LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.8 Steam Generator Tube Inspection Report

- a. The number of tubes plugged in each steam generator shall be reported to the NRC within 15 days following completion of the program;

(continued)

5.6 Reporting Requirements

5.6.8 Steam Generator Tube Inspection Report (continued)

- b. The complete results of the Steam Generator Tube Surveillance Program shall be reported to the NRC within 12 months following the completion of the program and shall include:
 - 1. Number and extent of tubes inspected,
 - 2. Location and percent of wall-thickness penetration for each indication of an imperfection, and
 - 3. Identification of tubes plugged.
 - c. The results of inspections of steam generator tubes which fall into Category C-3 shall be reported to the NRC within 30 days prior to the restart of the unit following the inspection. This report shall provide a description of the tube degradation and corrective measures taken to prevent recurrence.
-

5.0 ADMINISTRATIVE CONTROLS

5.7 High Radiation Area

- 5.7.1 Pursuant to 10 CFR 20, paragraph 20.1601(c), in lieu of the requirements of 10 CFR 20.1601, each high radiation area, as defined in 10 CFR 20, in which the intensity of radiation is > 100 mrem/hr but ≤ 1000 mrem/hr at 30 cm (12 in.) from the radiation source or from any surface which the radiation penetrates, shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (RWP). Individuals qualified in radiation protection procedures (e.g., Radiation Protection Technicians) or personnel continuously escorted by such individuals may be exempt from the RWP issuance requirement during the performance of their assigned duties in high radiation areas with exposure rates ≤ 1000 mrem/hr, provided they are otherwise following plant radiation protection procedures for entry into such high radiation areas.

Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

- a. A radiation monitoring device that continuously indicates the radiation dose rate in the area.
- b. A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate levels in the area have been established and personnel are aware of them.
- c. An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the Radiation Protection Manager in the RWP.

- 5.7.2 In addition to the requirements of Specification 5.7.1, areas with radiation levels > 1000 mrem/hr at 30 cm (12 in.) from the radiation source or from any surface which the radiation penetrates shall be provided with locked or continuously guarded doors to prevent unauthorized entry and the keys shall be maintained under the administrative control of the Shift Supervisor on duty or radiation protection personnel. Doors shall remain locked except during periods of access by personnel under an approved RWP that shall specify the dose rate levels in the immediate work areas and the maximum allowable stay times for individuals in those areas. In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.

(continued)

5.7 High Radiation Area (continued)

- 5.7.3 For individual high radiation areas with radiation levels of > 1000 mrem/hr at 30 cm (12 in.), accessible to personnel, that are located within large areas such as reactor containment, where no enclosure exists for purposes of locking, or that cannot be continuously guarded, and where no enclosure can be reasonably constructed around the individual area, that individual area shall be barricaded and conspicuously posted, and a flashing light shall be activated as a warning device.
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APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-35

Duke Energy Corporation shall comply with the following conditions on the schedules noted below:

| <u>Amendment Number</u> | <u>Additional Condition</u> | <u>Implementation Date</u> |
|-----------------------------|---|---|
| 159 | <p>This amendment requires the licensee to use administrative controls, as described in the licensee's letter of March 7, 1997, and evaluated in the staff's safety</p> <p>evaluation dated April 29, 1997, to restrict the dose-equivalent iodine levels to 0.46 microCurie per gram (in lieu of the limit in TS Section 3.4.8.a), and to 26 microCurie per gram (in lieu of the limit of TS Figure 3.4-1), until this license condition is removed by a future amendment.</p> | Immediately upon issuance of the amendment |
| 173 | <p>The licensee is authorized to relocate certain requirements included in appendix A to licensee-controlled documents.</p> <p>Implementation of this amendment shall include the relocation of these requirements to the appropriate documents as described in the licensee's letters dated May 27, 1997, as amended by letters dated March 9, March 20, April 20, June 3, June 24, July 7, July 21, August 5, September 8, and September 15, 1998, and evaluated in the NRC staff's Safety Evaluation associated with this amendment.</p> | All relocation to be completed by January 31, 1999. |

| <u>Amendment Number</u> | <u>Additional Condition</u> | <u>Implementation Date</u> |
|-----------------------------|---|--------------------------------------|
| 173 | <p>The schedule for the performance of new and revised surveillance requirements shall be as follows:</p> <p>For surveillance requirements (SRs) that are new in Amendment No. 173 the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment No. 173. For SRs that existing prior to Amendment No. 173, including SRs with modified acceptance criteria and SRs who intervals of performance are being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of amendment No. 173. For SRs that existed prior to Amendment No. 173, whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 173</p> | By January 31, 1999 |
| 180 | The maximum rod average burnup for any rod shall be limited to 60 GWd/mtU until the completion of an NRC environmental assessment supporting an increased limit. | Within 30 days of date of amendment. |

APPENDIX C

ANTITRUST CONDITIONS

Pursuant to an Order by the Atomic Safety and Licensing Board, dated April 23, 1975, the Nuclear Regulatory Commission incorporates in Operating License NPR-35 the following antitrust conditions:

- a. The licensee makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, the licensee will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to the licensee. There are net benefits in a transaction if the licensee recovers the cost of the transaction, (as defined in subparagraph (1)(d) hereof) and there is no demonstrable net detriment to the licensee arising from the transaction.

(1) As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of the following criteria: (1) its existing or proposed facilities are economically and technically feasible of interconnection with those of the licensee and (2) with the exception of municipalities, cooperatives, governmental agencies or authorities, and associations, it is, or upon commencement of operations will be, a public utility and subject to regulation with respect to rates and service under the laws of North Carolina or South Carolina or under the Federal Power Act; provided, however, that as to associations, each member of such association is either a public utility as discussed in this clause (2) or a

municipality, a cooperative or a governmental agency or authority.

- (c) Where the phrase "neighboring entity" is intended to include entities engaging or proposing to engage only in the distribution of electricity, this is indicated by adding the phrase "including distribution systems."
 - (d) "Cost" means any appropriate operating and maintenance expenses, together with all other costs, including a reasonable return on the licensee's investment, which are reasonably allocable to a transaction. However, no value shall be included for loss of revenue due to the loss of any wholesale or retail customer as a result of any transaction hereafter described.
- (2)
- (a) The licensee will interconnect and coordinate reserves by means of the sale and exchange of emergency and scheduled maintenance bulk power with any neighboring entity(ies), when there are net benefits to each party, on terms that will provide for all of the licensee's properly assignable costs as may be determined by the Federal Energy Regulatory Commission and consistent with such cost assignment will allow the other party the fullest possible benefits of such coordination.
 - (b) Emergency service and/or scheduled maintenance service to be provided by each party will be furnished to the fullest extent available from the supplying party and desired by the party in need. The licensee and each party will provide to the other emergency service and/or scheduled maintenance service if and when available from its own generation and, in accordance with recognized industry practice, from generation of others to the extent it can do so without impairing service to its customers, including other electric systems to whom it has firm commitments.
 - (c) Each party to a reserve coordination arrangement will establish its own reserve criteria, but in no event shall the minimum installed reserve on each system be less than 15%, calculated as a percentage of estimated peak load responsibility. Either party, if it has, or has firmly planned, installed reserves in excess of the amount called for by its own reserve criterion, will offer any such excess as may in fact be available at the time for which it is sought and for such period as the selling party shall determine for purchase in accordance with reasonable industry practice by the other party to meet such other party's own reserve requirements. The parties will provide such amounts of spinning reserve as may be adequate to avoid the imposition of unreasonable

demands on the other part(ies) in meeting the normal contingencies of operating its (their) system(s). However, in no circumstances shall such spinning reserve requirement exceed the installed reserve requirement.

- (d) Interconnections will not be limited to low voltages when higher voltages are available from the licensee's installed facilities in the area where interconnection is desired and when the proposed arrangement is found to be technically and economically feasible.
 - (e) Interconnection and reserve coordination agreements will not embody provisions which impose limitations upon the use or resale of power and energy sold or exchanged pursuant to the agreement. Further, such arrangements will not prohibit the participants from entering into other interconnection and coordination arrangements, but may include appropriate provisions to assure that (i) the licensee receives adequate notice of such additional interconnection or coordination, (ii) the parties will jointly consider and agree upon such measures, if any, as are reasonably necessary to protect the reliability of the interconnected systems and to prevent undue burdens from being imposed on any system, and (iii) the licensee will be fully compensated for its costs. Reasonable industry practice as developed in the area from time to time will satisfy this provision.
- (3) The licensee currently has on file, and may hereafter file, with the Federal Energy Regulatory Commission contracts with neighboring entity(ies) providing for the sale and exchange of short-term power and energy, limited term power and energy, economy energy, non-displacement energy, and emergency capacity and energy. The Licensee will enter into contracts providing for the same or for like transactions with any neighboring entity on terms which enable the licensee to recover the full costs allocable to such transaction.
 - (4) The licensee currently sells capacity and energy in bulk on a full requirements basis to several entities engaging in the distribution of electric power at retail. In addition, the licensee supplies electricity directly to ultimate users in a number of municipalities. Should any such entity(ies) or municipality(ies) desire to become a neighboring entity as defined in subparagraph (1)(b) hereof (either alone or through combination with others), the licensee will assist in facilitating the necessary transition through the sale of partial requirements firm power and energy to the extent that, except for such transition, the licensee would otherwise be supplying firm power and energy. The provision of such firm partial requirements service shall be under such rates, terms and conditions as shall be found by the Federal Energy Regulatory Commission to

provide for the recovery of the licensee's cost. The licensee will sell capacity and energy in bulk on a full requirements basis to any municipality currently served by the licensee when such municipality lawfully engages in the distribution of electric power at retail.

- (5) (a) The licensee will facilitate the exchange of electric power in bulk in wholesale transactions over its transmission facilities (1) between or among two or more neighboring entities including distribution systems with which it is interconnected or may be interconnected in the future, and (2) between any such entity(ies) and any other electric system engaging in bulk power supply between whose facilities the licensee's transmission lines and other transmission lines would form a continuous electric path, provided that permission to utilize such other transmission lines has been obtained. Such transaction shall be undertaken provided that the particular transaction reasonably can be accommodated by the licensee's transmission system from a functional and technical standpoint and does not constitute the wheeling of power to a retail customer. Such transmission shall be on terms that fully compensate the licensee for its cost. Any entity(ies) requesting such transmission arrangements shall give reasonable notice of its (their) schedule and requirements.
 - (b) The licensee will include in its planning and construction program sufficient transmission capacity as required for the transactions referred to in subparagraph (a) of this paragraph, provided that (1) the neighboring entity(ies) gives the licensee sufficient advance notice as may be necessary reasonably to accommodate its (their) requirements from a functional and technical standpoint and (2) that such entity(ies) fully compensate the licensee for its cost. In carrying out this subparagraph (b), however, the licensee shall not be required to construct or add transmission facilities which (a) will be of no demonstrable present or future benefit to the licensee, or (b) which could be constructed by the requesting entity(ies) without duplicating any portion of the licensee's existing transmission lines, or (c) which would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements. Where regulatory or environmental approvals are required for the construction or addition of transmission facilities needed for the transactions referred to in subparagraph (a) of this paragraph it shall be the responsibility of the entity(ies) seeking the transaction to participate in obtaining such approvals, including sharing in the cost thereof.
- (6) To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, the licensee will discuss load projections and system development plans with any neighboring entity(ies).

- (7) When the licensee's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, the licensee will notify all neighboring entities including distribution systems with peak loads smaller than the licensee's that the licensee plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.
- (8) The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, state and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. The licensee will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but the licensee shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions.

In addition, the licensee shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing, any existing lawful contracts it has with a third party; (2) there is contemporaneously available to it a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers, or (4) if to do so would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.

APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-52

Duke Energy Corporation shall comply with the following conditions on the schedules noted below:

| <u>Amendment Number</u> | <u>Additional Condition</u> | <u>Implementation Date</u> |
|-----------------------------|--|---|
| 151 | This amendment requires the licensee to use administrative controls, as described in the licensee's letter of March 7, 1997, and evaluated in the staff's safety evaluation dated April 29, 1997, to restrict the dose-equivalent iodine levels to 0.46 microCurie per gram (in lieu of the limit in TS Section 3.4.8.a), and to 26 microCurie per gram (in lieu of the limit of TS Figure 3.4-1), until this license condition is removed by a future amendment. | Immediately upon issuance of the amendment |
| 165 | The licensee is authorized to relocate certain requirements included in appendix A to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's letters dated May 27, 1997, as amended by letters dated March 9, March 20, April 20, June 3, June 24, July 7, July 21, August 5, September 8, and September 15, 1998, and evaluated in the NRC staff's Safety Evaluation associated with this amendment. | All relocation to be completed by January 31, 1999. |

| <u>Amendment Number</u> | <u>Additional Condition</u> | <u>Implementation Date</u> |
|-----------------------------|---|--------------------------------------|
| 165 | <p>The schedule for the performance of new and revised surveillance requirements shall be as follows:</p> <p>For surveillance requirements (SRs) that are new in Amendment No. 165 the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment No. 165. For SRs that existing prior to Amendment No. 165, including SRs with modified acceptance criteria and SRs who intervals of performance are being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of amendment No. 165. For SRs that existed prior to Amendment No. 165, whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 165</p> | By January 31, 1999 |
| 172 | The maximum rod average burnup for any rod shall be limited to 60 GWd/mtU until the completion of an NRC environmental assessment supporting an increased limit. | Within 30 days of date of amendment. |

APPENDIX C

ANTITRUST CONDITIONS

Pursuant to an Order by the Atomic Safety and Licensing Board, dated April 23, 1975, the Nuclear Regulatory Commission incorporates in Operating License NPR-52 the following antitrust conditions:

- a. The licensee makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, the licensee will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to the licensee. There are net benefits in a transaction if the licensee recovers the cost of the transaction, (as defined in subparagraph (1)(d) hereof) and there is no demonstrable net detriment to the licensee arising from the transaction.

(1) As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of the following criteria: (1) its existing or proposed facilities are economically and technically feasible of interconnection with those of the licensee and (2) with the exception of municipalities, cooperatives, governmental agencies or authorities, and associations, it is, or upon commencement of operations will be, a public utility and subject to regulation with respect to rates and service under the laws of North Carolina or South Carolina or under the Federal Power Act; provided, however, that as to

associations, each member of such association is either a public utility as discussed in this clause (2) or a municipality, a cooperative or a governmental agency or authority.

- (c) Where the phrase "neighboring entity" is intended to include entities engaging or proposing to engage only in the distribution of electricity, this is indicated by adding the phrase "including distribution systems."
 - (d) "Cost" means any appropriate operating and maintenance expenses, together with all other costs, including a reasonable return on the licensee's investment, which are reasonably allocable to a transaction. However, no value shall be included for loss of revenue due to the loss of any wholesale or retail customer as a result of any transaction hereafter described.
- (2)
- (a) The licensee will interconnect and coordinate reserves by means of the sale and exchange of emergency and scheduled maintenance bulk power with any neighboring entity(ies), when there are net benefits to each party, on terms that will provide for all of the licensee's properly assignable costs as may be determined by the Federal Energy Regulatory Commission and consistent with such cost assignment will allow the other party the fullest possible benefits of such coordination.
 - (b) Emergency service and/or scheduled maintenance service to be provided by each party will be furnished to the fullest extent available from the supplying party and desired by the party in need. The licensee and each party will provide to the other emergency service and/or scheduled maintenance service if and when available from its own generation and, in accordance with recognized industry practice, from generation of others to the extent it can do so without impairing service to its customers, including other electric systems to whom it has firm commitments.
 - (c) Each party to a reserve coordination arrangement will establish its own reserve criteria, but in no event shall the minimum installed reserve on each system be less than 15%, calculated as a percentage of estimated peak load responsibility. Either party, if it has, or has firmly planned, installed reserves in excess of the amount called for by its own reserve criterion, will offer any such excess as may in fact be available at the time for which it is sought and for such period as the selling party shall determine for purchase in accordance with reasonable industry practice by the other party to meet such other party's own reserve requirements. The parties will provide such amounts of spinning reserve as may be adequate to avoid the imposition of unreasonable

demands on the other part(ies) in meeting the normal contingencies of operating its (their) system(s). However, in no circumstances shall such spinning reserve requirement exceed the installed reserve requirement.

- (d) Interconnections will not be limited to low voltages when higher voltages are available from the licensee's installed facilities in the area where interconnection is desired and when the proposed arrangement is found to be technically and economically feasible.
 - (e) Interconnection and reserve coordination agreements will not embody provisions which impose limitations upon the use or resale of power and energy sold or exchanged pursuant to the agreement. Further, such arrangements will not prohibit the participants from entering into other interconnection and coordination arrangements, but may include appropriate provisions to assure that (i) the licensee receives adequate notice of such additional interconnection or coordination, (ii) the parties will jointly consider and agree upon such measures, if any, as are reasonably necessary to protect the reliability of the interconnected systems and to prevent undue burdens from being imposed on any system, and (iii) the licensee will be fully compensated for its costs. Reasonable industry practice as developed in the area from time to time will satisfy this provision.
- (3) The licensee currently has on file, and may hereafter file, with the Federal Energy Regulatory Commission contracts with neighboring entity(ies) providing for the sale and exchange of short-term power and energy, limited term power and energy, economy energy, non-displacement energy, and emergency capacity and energy. The Licensee will enter into contracts providing for the same or for like transactions with any neighboring entity on terms which enable the Licensee to recover the full costs allocable to such transaction.
 - (4) The licensee currently sells capacity and energy in bulk on a full requirements basis to several entities engaging in the distribution of electric power at retail. In addition, the licensee supplies electricity directly to ultimate users in a number of municipalities. Should any such entity(ies) or municipality(ies) desire to become a neighboring entity as defined in subparagraph (1)(b) hereof (either alone or through combination with others), the licensee will assist in facilitating the necessary transition through the sale of partial requirements firm power and energy to the extent that, except for such transition, the licensee would otherwise be supplying firm power and energy. The provision of such firm partial requirements service shall be under such rates, terms and conditions as shall be found by the Federal Energy Regulatory Commission to

provide for the recovery of the licensee's cost. The licensee will sell capacity and energy in bulk on a full requirements basis to any municipality currently served by the licensee when such municipality lawfully engages in the distribution of electric power at retail.

- (5) (a) The licensee will facilitate the exchange of electric power in bulk in wholesale transactions over its transmission facilities (1) between or among two or more neighboring entities including distribution systems with which it is interconnected or may be interconnected in the future, and (2) between any such entity(ies) and any other electric system engaging in bulk power supply between whose facilities the licensee's transmission lines and other transmission lines would form a continuous electric path, provided that permission to utilize such other transmission lines has been obtained. Such transaction shall be undertaken provided that the particular transaction reasonably can be accommodated by the licensee's transmission system from a functional and technical standpoint and does not constitute the wheeling of power to a retail customer. Such transmission shall be on terms that fully compensate the licensee for its cost. Any entity(ies) requesting such transmission arrangements shall give reasonable notice of its (their) schedule and requirements.
 - (b) The licensee will include in its planning and construction program sufficient transmission capacity as required for the transactions referred to in subparagraph (a) of this paragraph, provided that (1) the neighboring entity(ies) gives the licensee sufficient advance notice as may be necessary reasonably to accommodate its (their) requirements from a functional and technical standpoint and (2) that such entity(ies) fully compensate the licensee for its cost. In carrying out this subparagraph (b), however, the licensee shall not be required to construct or add transmission facilities which (a) will be of no demonstrable present or future benefit to the licensee, or (b) which could be constructed by the requesting entity(ies) without duplicating any portion of the licensee's existing transmission lines, or (c) which would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements. Where regulatory or environmental approvals are required for the construction or addition of transmission facilities needed for the transactions referred to in subparagraph (a) of this paragraph it shall be the responsibility of the entity(ies) seeking the transaction to participate in obtaining such approvals, including sharing in the cost thereof.
- (6) To increase the possibility of achieving greater reliability and economy of electric generation and transmission facilities, the licensee will discuss load projections and system development plans with any neighboring entity(ies).

- (7) When the licensee's plans for future nuclear generating units (for which application will hereafter be made to the Nuclear Regulatory Commission) have reached the stage of serious planning, but before firm decisions have been made as to the size and desired completion date of the proposed nuclear units, the licensee will notify all neighboring entities including distribution systems with peak loads smaller than the licensee's that the licensee plans to construct such nuclear units. Neither the timing nor the information provided need be such as to jeopardize obtaining the required site at the lowest possible cost.
- (8) The foregoing commitments shall be implemented in a manner consistent with the provisions of the Federal Power Act and all other lawful local, state and Federal regulation and authority. Nothing in these commitments is intended to determine in advance the resolution of issues which are properly raised at the Federal Energy Regulatory Commission concerning such commitments, including allocation of costs or the rates to be charged. The licensee will negotiate (including the execution of a contingent statement of intent) with respect to the foregoing commitments with any neighboring entity including distribution systems where applicable engaging in or proposing to engage in bulk power supply transactions, but the licensee shall not be required to enter into any final arrangement prior to resolution of any substantial questions as to the lawful authority of an entity to engage in the transactions.

In addition, the licensee shall not be obligated to enter into a given bulk power supply transaction if: (1) to do so would violate, or incapacitate it from performing, any existing lawful contracts it has with a third party; (2) there is contemporaneously available to it a competing or alternative arrangement which affords it greater benefits which would be mutually exclusive of such arrangement; (3) to do so would adversely affect its system operations or the reliability of power supply to its customers, or (4) if to do so would jeopardize the licensee's ability to finance or construct on reasonable terms facilities needed to meet its own anticipated system requirements.