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USE AND APPLICATION

Definitions

---NOTE---
Terms (words or phrases) denoted in capital letters in the Licensee Controlled Specifications are defined in the Technical Specifications. The Licensee Controlled Specifications do not redefine any Technical Specification definition.

Term	Definition
Compensatory Measures	The part of a Licensee Controlled Specification that prescribes required Compensatory Measures to be taken under designated conditions within specified Completion Times.
Technical Specifications	The NRC has redefined requirements which are derived from the plant's safety analyses report and focus on accident mitigation and public health and safety. Technical Specifications evolved from this bases to include additional NRC requirements governing the operation of nuclear power plants. The NRC has issued 10 CFR 50.36 on Technical Specification that provides the following criteria for inclusion as a Technical Specification: 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; 2. A process variable, design feature, or operating restriction that is an initial condition of a Design Basis Accident (DBA) or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; and 4. A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

Definitions

Licensee Controlled Specifications (LCS)

The LCS is an operator aid which defines and quantifies additional license bases and management requirements in a consistent format and central location. It includes regulatory commitments, operational guidance, and management requirements.

Licensee Controlled Specification Manual

Consolidation of individual Licensee Controlled Specifications.

Requirements for OPERABILITY (RFO)

Statement of system or component functional requirements.

Accessible

For performance of LCS 1.10 fire protection surveillances, Accessible means:

1. Any station location with radiation level of $\leq$100mR/hr as depicted on radiation zone survey maps during plant operation or outage. Work review may conclude inspections in some radiation areas pose an undesirable risk and HP may conclude the location is inaccessible in accordance with ALARA principles; and

2. Installed plant equipment does not cause a physical obstruction; and

3. Inspection can be performed within the safety guidance of ISPM-9; or

4. Item can be observed using binoculars or other remote viewing device from an area.

See FPF 1.1 Item 34 for additional detailed criteria.

Continuous Fire Tour

A person dedicated to observe specific area(s) affected by impaired fire protection features for emergent fire conditions (smoke, heat, light), and fire hazards. A person knowledgeable on the location of communication equipment and the control room phone number. Continuous Fire Tour can be stationary or roving. A roving Continuous Fire Tour covers more than one plant area provided: (1) the rooms are in the same general area such that the patrol of assigned rooms is made at least once every 15 minutes; and (2) the route does not cross radiation zone step-off pads or other radiologically hazardous areas. The Fire Marshal approves the use of a roving Continuous Fire Tour.

USE AND APPLICATION

Logical Connectors

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

<u>EXAMPLE 1</u>

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. RFO not met.	A.1 Verify . . . <u>AND</u> A.2 Restore . . .	

In this example, the logical connector <u>AND</u> is used to indicate that, when in Condition A, both Required Compensatory Measures A.1 and A.2 must be completed.

Logical Connectors

EXAMPLES (continued)

EXAMPLE 2

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. RFO not met.	A.1 Trip . . . OR A.2.1 Verify . . . AND A.2.2.1 Reduce . . . OR A.2.2.2 Perform . . . OR A.3 Align . . .	

This example represents a more complicated use of logical connectors. Required Compensatory Measures 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 Compensatory Measures 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 Compensatory Measure 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.

USE AND APPLICATION

Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Requirements for Operability (RFOs) specify minimum requirements. The Compensatory Measures associated with an RFO state Conditions that typically describe the ways in which the requirements of the RFO can fail to be met. Specified with each stated Condition are Required Compensatory Measure(s) and Completion Time(s).

DESCRIPTION

The Completion Time is the amount of time allowed for completing a Required Compensatory Measure. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering a Compensatory Measures Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the RFO. Required Compensatory Measures must be completed prior to the expiration of the specified Completion Time. A Compensatory Measures Condition remains in effect and the Required Compensatory Measures apply until the Condition no longer exists or the unit is not within the RFO Applicability.

If situations are discovered that require entry into more than one Condition at a time within a single RFO (multiple Conditions), the Required Compensatory Measures for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.

Once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition unless specifically stated. The Required Compensatory Measures of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. However, when a subsequent division, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

a. Must exist concurrent with the first inoperability; and

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

Completion Times

DESCRIPTION (continued)

The total Completion Time allowed for completing a Required Compensatory Measure 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 extension does not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

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

EXAMPLES

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

<u>EXAMPLE 1</u>

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

Completion Times

EXAMPLES (continued)

Condition B has two Required Compensatory Measures. Each Required Compensatory Measure has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered. The Required Compensatory Measures of Condition B are to be in MODE 3 within 12 hours AND in MODE 4 within 36 hours. A total of 12 hours is allowed for reaching MODE 3 and a total of 36 hours (not 48 hours) is allowed for reaching MODE 4 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 4 is the next 30 hours because the total time allowed for reaching MODE 4 is 36 hours.

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

EXAMPLE 2

COMPENSATORY MEASURES

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

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Compensatory Measures B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Conditions A and B are exited, and therefore, the Required Compensatory Measures 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. RFO 1.0.3 is entered, since the Compensatory Measures do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after RFO 1.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

Completion Times

EXAMPLES (continued)

While in RFO 1.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, RFO 1.0.3 may be exited and operation continued in accordance with Condition A.

While in RFO 1.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, RFO 1.0.3 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.

Completion Times

EXAMPLES (continued)

EXAMPLE 3

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the RFO
B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the RFO
C. One Function X subsystem inoperable. AND One Function Y subsystem inoperable.	C.1 Restore Function X subsystem to OPERABLE status. OR C.2 Restore Function Y subsystem to OPERABLE status.	72 hours 72 hours

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

Completion Times

EXAMPLES (continued)

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

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the RFO 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 RFO. The separate Completion Time modified by the phrase "from discovery of failure to meet the RFO" is designed to prevent indefinite continued operation while not meeting the RFO. 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 RFO was initially not met, instead of at the time the associated Condition was entered.

EXAMPLE 4

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve(s) to OPERABLE status.	4 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Completion Times

EXAMPLES (continued)

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times. Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

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

<u>EXAMPLE 5</u>

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each inoperable valve.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

The Note above Compensatory Measures 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 Compensatory Measures Table.

Completion Times

EXAMPLES (continued)

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

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

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

EXAMPLE 6

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 1.x.x.x. OR A.2 Reduce THERMAL POWER to ≤ 50% RTP.	Once per 8 hours 8 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

Completion Times

EXAMPLES (continued)

Entry into Condition A offers a choice between Required Compensatory Measure A.1 or A.2. Required Compensatory Measure A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 1.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Compensatory Measure A.1 begins when Condition A is entered and the initial performance of Required Compensatory Measure A.1 must be completed within the first 8 hour interval. If Required Compensatory Measure A.1 is followed and the Required Compensatory Measure is not met within the Completion Time (plus the extension allowed by SR 1.0.2), Condition B is entered. If Required Compensatory Measure 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 Compensatory Measure A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

EXAMPLE 7

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated. AND A.2 Restore subsystem to OPERABLE status.	1 hour AND Once per 8 hours thereafter 72 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Completion Times

EXAMPLES (continued)

Required Compensatory Measure 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 Compensatory Measure A.1.

If after Condition A is entered, Required Compensatory Measure 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 1.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Compensatory Measure 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 Compensatory Measure A.2 has not expired.

IMMEDIATE COMPLETION TIME

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

USE AND APPLICATION

Frequency

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

DESCRIPTION

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

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 1.0, "Surveillance Requirement (SR) Applicability." The "specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 1.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both.

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 RFO is within its Applicability, represent potential SR 1.0.4 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 1.0.4 imposes no restriction.

The use of "met" or "performed" in these instances conveys specified meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria. Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 1.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated RFO if any of the following three conditions are satisfied:

a. The Surveillance is not required to be met in the MODE or other specified condition to be entered; or

Frequency

DESCRIPTION (continued)

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

c. The Surveillance is required to be met, but not performed, in the MODE or other specified condition to be entered, and is known not to be failed.

Examples 3, 4, 5, and 6 discusses these special situations.

EXAMPLES

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

EXAMPLE 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1 contains the type of SR most often encountered in the Licensee Controlled Specifications (LCS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the Frequency is allowed by SR 1.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 1.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the RFO). If the interval specified by SR 1.0.2 is exceeded while the unit is in a MODE or other specified condition in the Applicability of the RFO, and the performance of the Surveillance is not otherwise modified (refer to Examples 3 and 4), then SR 1.0.3 becomes applicable.

Frequency

EXAMPLES (continued)

If the interval as specified by SR 1.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the RFO for which performance of the SR is required, then SR 1.0.4 becomes applicable. The Surveillance must be performed within the Frequency requirements of SR 1.0.2, as modified by SR 1.0.3, prior to entry into the MODE or other specified condition or the RFO is considered not met (in accordance with SR 1.0.1) and RFO 1.0.4 becomes applicable.

EXAMPLE 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours after $\geq$ 25% RTP AND 24 hours thereafter

Example 2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 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 extension allowed by SR 1.0.2.

"Thereafter" indicates future performances must be established per SR 1.0.2, 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.

Frequency

EXAMPLES (continued)

EXAMPLE 3

SURVEILLANCE REQUIREMENTS

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

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

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be within the "specified Frequency." Therefore, if the Surveillance were not performed within the 7 day interval (plus the extension allowed by SR 1.0.2), but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the RFO. Also, no violation of SR 1.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours (plus the extension allowed by SR 1.0.2) with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval (plus the extension allowed by SR 1.0.2), there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 1.0.3 would apply.

Frequency

EXAMPLES (continued)

EXAMPLE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
----------------------------NOTE---------------------------- Only required to be met in MODE 1. --	
Verify leakage rates are within limits.	24 hours

Example 4 specifies that the requirements of this Surveillance do not have to be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 1.0.2), but the unit was not in MODE 1, there would be no failure of the SR nor failure to meet the RFO. Therefore, no violation of SR 1.0.4 occurs when changing MODES, even with the 24 hour Frequency exceeded, provided the MODE change was not made into MODE 1. Prior to entering MODE 1 (assuming again that the 24 hour Frequency were not met), SR 1.0.4 would require satisfying the SR.

Frequency

EXAMPLES (continued)

EXAMPLE 5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
-------------------------NOTE------------------------------- Only required to be performed in MODE 1. --	
Perform complete cycle of the valve.	7 days

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

As the Note modifies the required performance of the Surveillance, the Note is construed to be part of the “specified Frequency.” Should the 7 day interval be exceeded while operation is not in MODE 1, this Note allows entry into and operation in MODES 2 and 3 to perform the Surveillance. The Surveillance is still considered to be performed within the “specified Frequency” if completed prior to entering MODE 1.

Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 1.0.2) interval, but operation was not in MODE 1, it would not constitute a failure of the SR or failure to meet the RFO. Also no violation of SR 1.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not result in entry into MODE 1.

Once the unit reaches MODE 1, the requirement for the Surveillance to be performed within its specified Frequency applies and would require that the Surveillance had been performed. If the Surveillance were not performed prior to entering MODE 1, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 1.0.3 would apply.

Frequency

EXAMPLES (continued)

EXAMPLE 6

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
-------------------------NOTE------------------------------ Not required to be met in MODE 3. ---	
Verify parameter is within limits.	24 hours

Example 6 specifies that the requirements of this Surveillance do not have to be met while the unit is in MODE 3 (the assumed Applicability of the associated RFO is MODES 1, 2, and 3). The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 1.0.2), and the unit was in MODE 3, there would be no failure of the SR nor failure to meet the RFO. Therefore, no violation of SR 1.0.4 occurs when changing MODES to enter MODE 3, even with the 24 hour Frequency exceeded, provided the MODE change does not result in entry into MODE 2. Prior to entering MODE 2 (assuming again that the 24 hour Frequency were not met), SR 1.0.4 would require satisfying the SR.

1.0 REQUIREMENTS FOR OPERABILITY (RFO) APPLICABILITY

RFO 1.0.1	RFOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in RFO 1.0.2.
RFO 1.0.2	Upon discovery of a failure to meet an RFO, the Required Compensatory Measures of the associated Conditions shall be met, except as provided in RFO 1.0.5 and RFO 1.0.6. If the RFO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Compensatory Measure(s) is not required, unless otherwise stated.
RFO 1.0.3	When an RFO is not met and the associated Compensatory Measures are not met, an associated Compensatory Measure is not provided, or if directed by the associated Compensatory Measures, the unit shall be placed in a MODE or other specified condition in which the RFO is not applicable or any supported equipment shall be declared inoperable. A Condition Report shall be initiated to identify the failure to meet the RFO and any further corrective actions. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the RFO or Compensatory Measures, completion of the actions required by RFO 1.0.3 is not required. RFO 1.0.3 is only applicable in MODES 1, 2, and 3.
RFO 1.0.4	When an RFO is not met, entry into the MODE or other specified condition in the applicability shall not be made except when the associated Compensatory Measures 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 or that are a part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated Compensatory Measures to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time. RFO 1.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

1.0 RFO Applicability

RFO 1.0.5	Equipment removed from service or declared inoperable to comply with Compensatory Measures 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 RFO 1.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
RFO 1.0.6	When a supported system RFO is not met solely due to a support system RFO not being met, the Conditions and Required Compensatory Measures associated with this supported system are not required to be entered. Only the support system RFO Compensatory Measures are required to be entered. This is an exception to RFO 1.0.2 for the supported system. When a support system's Required Compensatory Measure directs a supported system to be declared inoperable or directs entry into Conditions and Required Compensatory Measures for a supported system, the applicable Conditions and Required Compensatory Measures shall be entered in accordance with RFO 1.0.2.

1.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 1.0.1	SRs shall be met during the MODES or other specified conditions in the Applicability for individual RFOs, 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 RFO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the RFO except as provided in SR 1.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.
SR 1.0.2	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 1.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the RFO 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 RFO 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 RFO must immediately be declared not met, and the applicable Condition(s) must be entered.
SR 1.0.4	Entry into a MODE or other specified condition in the Applicability of an RFO shall not be made unless the RFO'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 Compensatory Measures, Actions, or that are part of a shutdown of the unit. SR 1.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

Figure 1.1.4-1 (page 1 of 2)
Correction of Scram Time Data to 800 psig Reactor Pressure

---NOTE---
Figure 1.1.4-1 provides information to be used in conjunction with SR 3.1.4.3. See Technical Specification 3.1.4 and applicable Bases for further application details.

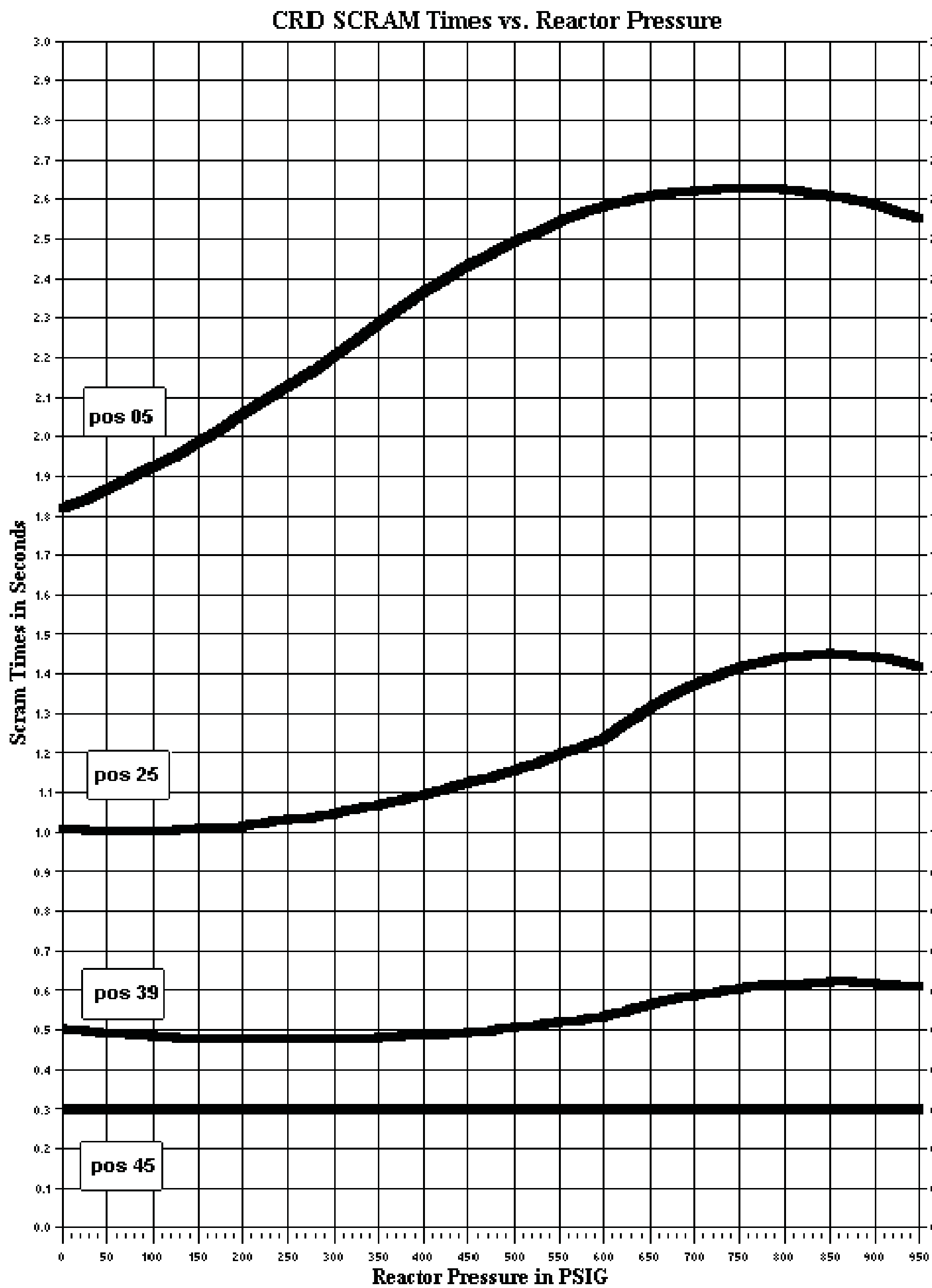

Figure 1.1.4-1 (page 2 of 2)
Correction of Scram Time Data to 800 psig Reactor Pressure

NOTE

Corrected scram times shall be less than the normal scram times (NSS) specified in the COLR. The correction factor is obtained from Figure 1.1.4-1 and the following calculation:

$C_f = T_p/T_{800}$ where

C_f = correction factor

T_P = Scram Time at the test pressure, from Figure 1.1.4-1

T_{800} = Scram Time at 800 psig, from Figure 1.1.4-1

The measured scram time is divided by a correction factor C_f to obtain the corrected scram time.

$T_c = T_m \div C_f$ where

T_c = Corrected scram time

T_m = Scram time measured at test pressure

1.1 REACTIVITY CONTROL SYSTEMS

1.1.6 Feedwater Temperature

RFO 1.1.6 For cycle extension, feedwater temperature entering the reactor vessel shall not be < 355°F.

APPLICABILITY: MODE 1, after the end of rated (EOR) cycle exposure has been achieved with steady state THERMAL POWER ≥ 47% of RTP.

COMPENSTORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Feedwater temperature < 355°.	A.1 Initiate corrective action.	15 minutes
	AND	
	A.2 Restore feedwater temperature to within limits.	2 hours
	OR	
	A.3 Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.1.6.1	Verify feedwater temperature entering reactor vessel is ≥ 355°F.	At least once per 24 hours <u>AND</u> Initially after establishing reduced feedwater temperature lineup

Table 1.3.1.1-1 (page 1 of 1)
Reactor Protection System (RPS) Response Time

---NOTE---
Table 1.3.1.1-1 lists required instrument channel logic response time administrative limit to support OPERABILITY for LCO 3.3.1.1. See Technical Specification Bases SR 3.3.1.1.15 for further application details.

FUNCTION		RESPONSE TIME (Seconds)
2.	Average Power Range Monitor[a]:	
	e. 2-Out-of-4 Voter	≤ 0.05[a]
3.	Reactor Vessel Steam Dome Pressure - High	≤ 0.05[b]
4.	Reactor Vessel Water Level - Low, Level 3	≤ 0.05[b]
5.	Main Steam Isolation Valve - Closure	≤ 0.06
8.	Turbine Throttle Valve - Closure	≤ 0.06
9.	Turbine Governor Valve Fast Closure, Trip Oil Pressure - Low	≤ 0.08[c]

(a) Neutron detectors, APRM channel and 2-Out-of-4 Voter channel digital electronics are exempt from response time testing. Response time shall be measured from an initiation signal sent to the 2-Out-of-4 Voter output relay.

(b) Response time administrative limits apply to the relay logic only.

Response time of process sensors for these functions is evaluated qualitatively during performance of CHANNEL CALIBRATION SR 3.3.1.1.10. A quantitative response time test is required to determine the initial sensor specific response time value when a sensor for either of these functions is replaced or refurbished.

(c) Measured from start of turbine control valve fast closure.

Table 1.3.1.1-2 (page 1 of 2)
Reactor Protection System (RPS) Instrumentation Setpoints

---NOTE---
Table 1.3.1.1-2 lists required instrument setpoints to support OPERABILITY for LCO 3.3.1.1. See Technical Specification 3.3.1.1 and the applicable Bases for further application details.

FUNCTION		TRIP SETPOINT
1.	Intermediate Range Monitors	
	a. Neutron Flux - High	≤ 120/125 divisions of full scale
	b. Inop	NA
2.	Average Power Range Monitors	
	a. Neutron Flux – High (Setdown)	≤ 15% RTP
	b. Simulated Thermal Power - High	TLO ≤ 0.63W + 62% RTP and ≤ 112.9% RTP SLO ≤ 0.63W + 57.1% RTP[(a)]
	c. Neutron Flux - High	≤ 118% RTP
	d. Inop	NA
	e. 2-Out-of-4 Voter	NA
	f. OPRM Upscale	Specified in COLR
3.	Reactor Vessel Steam Dome Pressure - High	≤ 1060 psig
4.	Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches
5.	Main Steam Isolation Valve - Closure	≤ 10.0% closed
6.	Primary Containment Pressure - High	≤ 1.68 psig

(a) TLO is Two Loop Operation
SLO is Single Loop Operation

Table 1.3.1.1-2 (page 2 of 2)
Reactor Protection System (RPS) Instrumentation Setpoints

FUNCTION		TRIP SETPOINT
7.	Scram Discharge Volume Water Level - High	
	a. Transmitter/Trip Unit	≤ 529 ft 7 inches elevation
	b. Float Switch	≤ 529 ft 7 inches elevation
8.	Turbine Throttle Valve - Closure	≤ 5% closed
9.	Turbine Governor Valve Fast Closure, Trip Oil Pressure - Low	≥ 1250 psig
10.	Reactor Mode Switch - Shutdown Position	NA
11.	Manual Scram	NA

1.3 INSTRUMENTATION

1.3.2.1 Control Rod Block Instrumentation

RFO 1.3.2.1 The Control Rod Block instrumentation for each Function in Table 1.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 1.3.2.1-1.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Place channel in trip.	7 days
B. One or more Functions with two or more required channels inoperable.	B.1 Place one channel in trip.	1 hour

SURVEILLANCE REQUIREMENTS

---NOTES---

1. Refer to Table 1.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 1.3.2.1.1	------------------------------NOTES------------------------------ 1. For Functions 3.a, 3.b, 3.c, and 3.d not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.a, 2.b, 2.c, and 2.d, not required to be performed until 12 hours after IRMs on Range 2 or below. 3. For Functions 2.a and 3.a, this SR may be satisfied while in MODE 5 by administratively controlling the detector in the full in position, provided the CHANNEL FUNCTIONAL TEST has been performed within the past 92 days. --- Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 1.3.2.1.2	------------------------------NOTE------------------------------ For Functions 1.d and 4.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	92 days for Function 4 <u>AND</u> 184 days for Function 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.2.1.3	-----------------------------NOTES------------------------------ 1. Neutron detectors are excluded. 2. For Function 1.d, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. -- Perform CHANNEL CALIBRATION.	24 months
SR 1.3.2.1.4	-----------------------------NOTES------------------------------ 1. Neutron detectors are excluded. 2. For Functions 2.b and 2.d, not required to be performed when entering Range 2 from Range 3 or above until 12 hours after IRMs on Range 2 or below. 3. For Functions 3.b, 3.d, and 4.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. -- Perform CHANNEL CALIBRATION.	18 months
SR 1.3.2.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 1.3.2.1-1 (page 1 of 3)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Average Power Range Monitor (APRM)				
a. Simulated Thermal Power - Upscale	1	3	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	TLO ≤ 0.63W + 60.1% RTP and ≤ 111% RTP SLO ≤ 0.63W + 56.9% RTP[(a)]
b. Inop	1, 2	3	1.3.2.1.2 1.3.2.1.5	NA
c. Downscale	1	3	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≥ 3% RTP
d. Neutron Flux - Upscale, Startup	2	3	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≤ 14% RTP
2. Source Range Monitors (SRMs)				
a. Detector not full in	2[(c)]	3	1.3.2.1.1 1.3.2.1.5	NA
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.5	NA
b. Upscale	2[(d)]	3	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 1.6E5 cps
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 1.6E5 cps
c. Inop	2[(d)]	3	1.3.2.1.1 1.3.2.1.5	NA
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.5	NA

(a) TLO is Two Loop Operation; SLO is Single Loop Operation
(c) With the detector count rate ≤ 100 cps or with associated IRM channels on range 1 or 2.
(d) With the associated IRM channels on range 1 or 2.
(e) Only one SRM channel is required to be OPERABLE during special offload or reload when the fueled region includes only that SRM detector.
(f) Special moveable detectors may be used in place of SRMs if connected to normal SRM circuits.

Table 1.3.2.1-1 (page 2 of 3)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. SRMs (continued)				
d. Downscale	2[(d)]	3	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 0.5 cps
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 0.5 cps
3. Intermediate Range Monitors (IRMs)				
a. Detector not full in	2, 5[(b)]	6	1.3.2.1.1 1.3.2.1.5	NA
b. Upscale	2, 5[(b)]	6	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 110/125 divisions of full scale
c. Inop	2, 5[(b)]	6	1.3.2.1.1 1.3.2.1.5	NA
d. Downscale	2[(g)], 5[(b)]	6	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 3/125 divisions of full scale
4. Scram Discharge Volume				
a. Water Level - High	1, 2	2	1.3.2.1.2 1.3.2.1.4 1.3.2.1.5	≤ 527 ft 5 inches elevation

(b) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(d) With the associated IRM channels on range 1 or 2.
(e) Only one SRM channel is required to be OPERABLE during special offload or reload when the fueled region includes only that SRM detector.
(f) Special moveable detectors may be used in place of SRMs if connected to normal SRM circuits.
(g) With the associated IRM channels on range 2 or higher.

Table 1.3.2.1-2 (page 1 of 1)
Rod Block Monitoring Instrumentation Trip Setpoints

--NOTE--
Table 1.3.2.1-2 lists required instrument setpoints to support OPERABILITY for LCO 3.3.2.1. See Technical Specification 3.3.2.1 and the applicable Bases for further application details.

FUNCTION	APPLICABLE SPECIFIED CONDITION SETPOINT	TRIP SETPOINT
1. Rod Block Monitor		
a. Low Power Range - Upscale	(a)	Values specified in COLR
b. Intermediate Power Range – Upscale	(b)	Values specified in COLR
c. High Power Range - Upscale	(c)	Values specified in COLR
d. Inop	≥ 26.0% RTP	NA

(a) Thermal Power ≥ 26.0% and ≤ 61.0% RTP
(b) Thermal Power > 61.0% and ≤ 81.0% RTP
(c) Thermal Power > 81.0% RTP

Table 1.3.2.2-1 (page 1 of 1)
Feedwater and Main Turbine High Water Level Instrumentation Trip Setpoint

--NOTE--
Table 1.3.2.2-1 lists required instrument setpoints to support OPERABILITY for LCO 3.3.2.2. See Technical Specification 3.3.2.2 and the applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level - High, Level 8	≤ 54.5 inches

1.3 INSTRUMENTATION

1.3.3.1 Post Accident Monitoring (PAM) Instrumentation

RFO 1.3.3.1 The PAM instrumentation for each Function in Table 1.3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 1.3.3.1-1.

COMPENSATORY MEASURES

---NOTES---

1. Separate Condition entry is allowed for each channel.

2. RFO 1.0.4 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more functions with one or more required channels inoperable.	A.1 Enter the Condition referenced in Table 1.3.3.1-1 for the channel.	Immediately
B. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1.	B.1 Verify OPERABILITY of tailpipe temperature monitoring instrument for affected safety relief valve (SRV).	48 hours
	<u>AND</u>	
	B.2 Perform CHANNEL CHECK of tailpipe temperature monitoring instrument for affected SRV.	72 hours <u>AND</u> Once per 24 hours thereafter
	<u>AND</u>	
	B.3 Restore channel to OPERABLE status.	30 days

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
C. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1.	C.1	Restore channel to OPERABLE status.	7 days
D. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1.	D.1	Restore channel to OPERABLE status.	30 days
E. Required Compensatory Measures and associated Completion Times not met.	E.1	Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTES---

1. The following SRs apply for each PAM Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
SR 1.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 1.3.3.1.2	------------------------------NOTE------------------------------ Neutron detectors are excluded. --- Perform CHANNEL CALIBRATION for Functions 2 through 5 and 7b through 21.	18 months
SR 1.3.3.1.3	Perform CHANNEL CALIBRATION for Functions 1, 7a, and 22.	24 months

Table 1.3.3.1-1 (page 1 of 2)
PAM Instrumentation

FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED COMPENSATORY MEASURE A.1
1. SRV Position Indication	1, 2	1/valve	B
2. Suppression Chamber Water Temperature	1, 2	2/Sector	D
3. Suppression Chamber Air Temperature	1, 2	2	D
4. Drywell Air Temperature	1, 2	2	D
5. Condensate Storage Tank Level	1, 2	2	D
6. Deleted			
7. Neutron Flux			
a. Average Power Range Monitor	1, 2	2	D
b. Intermediate Range Monitor	1, 2	2	D
c. Source Range Monitor	1, 2	2	D
8. Reactor Core Isolation Cooling Flow	1, 2	1	D
9. High Pressure Core Spray Flow	1, 2	1	D
10. Low Pressure Core Spray Flow	1, 2	1	D
11. Standby Liquid Control System Flow	1, 2, 3	1	D
12. Standby Liquid Control System Tank Level	1, 2, 3	1	D
13. Residual Heat Removal Flow	1, 2	1/loop	D
14. RHR Heat Exchanger Outlet Temperature	1, 2	1/heat exchanger	D
15. Standby Service Water Flow	1, 2	1/loop	D
16. Standby Service Water Spray Pond Temperature	1, 2	2	D
17. Emergency Ventilation Damper Position	1, 2	2/duct	D

Table 1.3.3.1-1 (page 2 of 2)
PAM Instrumentation

FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED COMPENSATORY MEASURE A.1
18. Standby Power and Other Energy Sources, except DG	1, 2	2/source	D
19. Reactor Building Effluent Monitoring System	1, 2, 3	1	C
20. Turbine Building Ventilation Exhaust Noble Gas Monitor	1, 2, 3	1	C
21. Radwaste Building Ventilation Exhaust Noble Gas Monitor	1, 2, 3	1	C
22. DG Standby Power	1, 2	2/source	D

Table 1.3.3.2-1 (page 1 of 2)
Remote Shutdown System Instrumentation

---NOTE---
SR 3.3.3.2.1, 3.3.3.2.2, and 3.3.3.2.3 apply to the instruments listed in this Table to support OPERABILITY for LCO 3.3.3.2. See Technical Specification 3.3.3.2 and applicable Bases for further application details.

FUNCTION	EPN	TRANSFER SWITCH	LOCATION	MINIMUM CHANNELS REQUIRED
1. Reactor Pressure Vessel (RPV) Pressure	MS-PI-2 MS-PI-11AR	RHR-RMS-RSTS8 E-RMS-ARST17 E-RMS-ARST23	E-CP-RS E-CP-ARS E-CP-ARS	1
2. RPV Level	MS-LI-10 MS-LI-10AR	RHR-RMS-RSTS8 E-RMS-ARST17 E-RMS-ARST23	E-CP-RS E-CP-ARS E-CP-ARS	1
3. Suppression Pool Air Temperature	CMS-TI-42R CMS-TI-44AR	N/A E-RMS-ARST17	E-CP-RS E-CP-ARS	1
4. Suppression Pool Level	CMS-LI-2R CMS-LI-1AR	N/A E-RMS-ARST17 E-RMS-ARST23	E-CP-RS E-CP-ARS E-CP-ARS	1
5. Suppression Pool Water Temperature	CMS-TI-43R CMS-TI-41AR	N/A E-RMS-ARST17	E-CP-RS E-CP-ARS	1
6. Service Water (SW) Pump 1B Discharge Pressure	SW-PI-32BR	N/A	E-CP-RS	1
7. Containment Pressure, Low Range	CMS-PI-2R	N/A	E-CP-RS	1
8. Containment Pressure, High Range	CMS-PI-6R	N/A	E-CP-RS	1
9. Containment Temperature	CMS-TI-19R CMS-TI-37R CMS-TI-39R	N/A N/A N/A	E-CP-RS E-CP-RS E-CP-RS	1
10. Residual Heat Removal (RHR) Loop B Flow	RHR-FI-5	RHR-RMS-RSTS8	E-CP-RS	1
11. Spray Pond B Level	SW-LI-1BR	N/A	E-CP-RS	1
12. Spray Pond B Temperature	SW-TI-1BR	N/A	E-CP-RS	1
13. Reactor Core Isolation Cooling (RCIC) Flow	RCIC-FI-1R	RCIC-RMS-RSTS7	E-CP-RS	1

Table 1.3.3.2-1 (page 2 of 2)
Remote Shutdown System Instrumentation

	FUNCTION	EPN	TRANSFER SWITCH	LOCATION	MINIMUM CHANNELS REQUIRED
14.	RCIC Turbine Speed	RCIC-SI-1	RCIC-RMS-RSTS7	E-CP-RS	1
15.	SW Pump 1A Discharge Pressure	SW-PI-32AR	E-RMS-ARST23	E-CP-ARS	1
16.	RHR Loop A Flow	RHR-FI-4AR	E-RMS-ARST17 E-RMS-ARST23	E-CP-ARS E-CP-ARS	1
17.	Division 1 Battery Voltage	E-VM-C1/1A/V301 E-VM-C1/1B/V301	N/A	E-C1-1A E-C1-1B	1

Table 1.3.3.2-2 (page 1 of 6)
Remote Shutdown System Functions

---NOTE---
SR 3.3.3.2.4 applies to the controls listed in this Table to support OPERABILITY for LCO 3.3.3.2. See Technical Specification 3.3.3.2 and applicable Bases for further application details.

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
1. RPV Pressure Control	a. MS-RV-4A	MS-RMS-RSCS61	MS-RMS-RSTS15
	b. MS-RV-4B	MS-RMS-RSCS48	MS-RMS-RSTS15
	c. MS-RV-4C	MS-RMS-RSCS49	MS-RMS-RSTS15
	d. MS-RV-3D	MS-RMS-ARS/V3D	E-RMS-ARST1
	e. MS-RV-5B	MS-RMS-ARS/V5B	E-RMS-ARST1
	f. MS-RV-5C	MS-RMS-ARS/V5C	E-RMS-ARST1
2. RCIC Injection	a. RCIC-V-8 Steam Supply Line Outboard Isolation	RCIC-RMS-RSCS20	RCIC-RMS-RSTS4
	b. RCIC-V-10 Pump Suction from CST	RCIC-RMS-RSCS21	RCIC-RMS-RSTS2
	c. RCIC-V-31 Pump Suction from Suppression Pool	RCIC-RMS-RSCS22	RCIC-RMS-RSTS2
	d. RCIC-V-46 Lube Oil Cooler Supply	RCIC-RMS-RSCS26	RCIC-RMS-RSTS2
	e. RCIC-V-13 RPV Injection	RCIC-RMS-RSCS53	RCIC-RMS-RSTS52
	f. RCIC-V-19 Min Flow Bypass	RCIC-RMS-RSCS55	RCIC-RMS-RSTS52
	g. RCIC-V-22 Test Bypass to CST	RCIC-RMS-RSCS23	RCIC-RMS-RSTS52
	h. RCIC-V-45 Steam Supply to Turbine	RCIC-RMS-RSCS25	RCIC-RMS-RSTS5
	i. RCIC-V-1 Turbine Trip	RCIC-RMS-RSCS28	RCIC-RMS-RSTS5
	j. RCIC-V-68 Turbine Exhaust to Suppression Pool	RCIC-RMS-RSCS27	RCIC-RMS-RSTS5

Table 1.3.3.2-2 (page 2 of 6)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
2. RCIC Injection (continued)	k. RCIC-V-69 Vacuum Pump Discharge to Suppression Pool	RCIC-RMS-RSCS60	RCIC-RMS-RSTS6
	l. RCIC-P-2 Barometric Condensor Vacuum Pump	RCIC-RMS-RSCS30	RCIC-RMS-RSTS6
	m. RCIC-P-4 Barometric Condensor Condensate Pump	RCIC-RMS-RSCS29	RCIC-RMS-RSTS6
	n. RCIC-V-63 Steam Supply Line Inboard Isolation	RCIC-RMS-RSCS19	RHR-RMS-RSTS1
	o. RCIC-FIC-1R Flow Indicating Controller	N/A	RCIC-RMS-RSTS7
3. RHR Loop B Injection, Shutdown Cooling, and Suppression Pool Cooling	a. RRC-V-23A Recirc Pump A Suction	RRC-RMS-RSCS50	RRC-RMS-RSTS16
	b. RHR-V-9 RHR Shutdown Cooling Inboard Isolation	RHR-RMS-RSCS51	RHR-RMS-RSTS17
	c. RHR-V-6B RHR Shutdown Cooling Suction	RHR-RMS-RSCS34	RHR-RMS-RSTS1
	d. RHR-P-2B RHR B Loop Pump	RHR-RMS-RSCS31	RHR-RMS-RSTS9
	e. RHR-RLY-86/P2B Manual Reset	N/A	RHR-RMS-RSTS9
	f. RHR-V-4B Pump Suction from Suppression Pool	RHR-RMS-RSCS32	RHR-RMS-RSTS9
	g. Deleted		
	h. RHR-V-48B Heat Exchanger Shell Side Bypass	RHR-RMS-RSCS45	RHR-RMS-RSTS14
	i. RHR-V-42B LPCI Injection	RHR-RMS-RSCS42	RHR-RMS-RSTS12
	j. RHR-V-3B Heat Exchanger Shell Side Outlet	RHR-RMS-RS/V3B	RHR-RMS-RSTS12
	k. RHR-FCV-64B Minimum Flow Bypass	RHR-RMS-RSCS62	RHR-RMS-RSTS13

Table 1.3.3.2-2 (page 3 of 6)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
3. RHR Loop B Injection, Shutdown Cooling, and Suppression Pool Cooling (continued)	l. RHR-V-49 RHR Discharge to Radwaste	RHR-RMS-RSCS44	RHR-RMS-RSTS13
	m. RHR-V-16B Lower Drywell Spray Outboard Isolation	RHR-RMS-RSCS56	RHR-RMS-RSTS57
	n. RHR-V-27B Suppression Pool Spray	RHR-RMS-RSCS58	RHR-RMS-RSTS57
	o. Deleted		
	p. RHR-V-24B Suppression Pool Cooling Return	RHR-RMS-RSCS37	RHR-RMS-RSTS11
	q. RHR-V-23 RHR Head Spray	RHR-RMS-RSCS43	RHR-RMS-RSTS3
	r. RHR-V-53B RHR Shutdown Cooling	RHR-RMS-RSCS39	RHR-RMS-RSTS3
	s. RHR-V-68B RHR Hx SW Discharge	RHR-RMS-RSCS59	SW-RMS-RSTS4
4. Service Water Loop B	a. SW-P-1B Service Water Pump 1B	SW-RMS-RS/P1B	SW-RMS-RSTS2
	b. SW-RLY-86/P1B Manual Reset	N/A	SW-RMS-RSTS2
	c. SW-V-2B Loop B Pump Discharge Valve	SW-RMS-RS/V2B	SW-RMS-RSTS2
	d. SW-V-12B Loop B Return to Spray Pond A	SW-RMS-RS/V12B	SW-RMS-RSTS3
5. Diesel Generator, Div. 2	a. DG2 Diesel Engine Control Selector, Local/Remote	DG-RMS-DG2/S20	DG-RMS-FTS56B
	b. DG2 Local Start Pushbutton	DG-RMS-DG2/S14	DG-RMS-FTS56B
	c. DG-RLY-86\DG2 Manual Reset	N/A	DG-RMS-FTS56B

Table 1.3.3.2-2 (page 4 of 6)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
6. Electrical Distribution	a. E-CB-8/DG2 Close Breaker	E RMS-FRTS2	E RMS-FRTS2
	b. E-CB-8/81 Local Breaker Control	E-RMS-CB8/81/TS	E-RMS-FRTS/8/81
	c. E-CB-8/83 Local Breaker Control	E-RMS-CB8/83/TS	E-RMS-FRTS/8/83
	d. E-RLY-86/8/DG2 Manual Reset	N/A	E RMS-FRTS2
7. HVAC Support, Div. 2	a. WMA-FN-52B Start	E-RMS-FRTS5	E-RMS-FRTS5
	b. WMA-FN-53B Start	E-RMS-FRTS5	E-RMS-FRTS5
	c. RRA-FN-10 Start	E-RMS-FRTS6	E-RMS-FRTS6
	d. RRA-FN-14 Start	E-RMS-FRTS6	E-RMS-FRTS6
8. Control Room Isolation	a. E-CB-DG2/8 Controls Isolation	N/A	E-RMS-FRTS1
	b. E-CB-8/DG2 Controls Isolation	N/A	E-RMS-FRTS2
	c. WMA-FN-52B Controls Isolation	N/A	E-RMS-FRTS5
	d. WMA-FN-53B Controls Isolation	N/A	E-RMS-FRTS5
	e. RRA-FN-10, 14 Controls Isolation	N/A	E-RMS-FRTS6
	f. DG2 Start/Stop Control Isolation	N/A	E-RMS-FRTS7
	g. E-CB-8/81 Controls Isolation	N/A	E-RMS-FRTS/8/81
	h. E-SM-8/SL-81 Load Trips	N/A	E-RMS-FRTS/8/81
	i. E-CB-B/8 Close Inhibit	N/A	E-RMS-FRTS/8/81
	j. E-CB-8/83 Controls Isolation	N/A	E-RMS-FRTS/8/83
	k. E-CB-8/3 Trip	N/A	E-RMS-FRTS/8/83
	l. E-CB-8/85/1 Trip	N/A	E-RMS-FRTS/8/83

Table 1.3.3.2-2 (page 5 of 6)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
8. Control Room Isolation (continued)	m. E-SM-8/SL-83 Load Trips	N/A	E-RMS-FRTS/8/83
	n. E-SM-8 Undervoltage Scheme Isolation	N/A	E-RMS-FRTS/8/83
	o. Metering Isolation	N/A	E-RMS-8/81/CT
	p. Metering Isolation	N/A	E-RMS-8/83/CT
9. RHR Loop A Injection, Shutdown Cooling, and Suppression Pool Cooling	a. RHR-V-8 RHR Shutdown Cooling Outboard Isolation	RHR-RMS-ARS/V8	E-RMS-ARST24
	b. Deleted		
	c. RHR-V-6A RHR Shutdown Cooling Suction	RHR-RMS-ARS/V6A	E-RMS-ARST18
	d. RHR-P-2A RHR A Loop Pump	RHR-RMS-ARS/P2A	E-RMS-ARST12
	e. RHR-V-4A Pump Suction from Suppression Pool	RHR-RMS-ARS/V4A	E-RMS-ARST2
	f. Deleted		
	g. RHR-V-48A Heat Exchanger Shell Side Bypass	RHR-RMS-ARS/V48A	E-RMS-ARST4
	h. RHR-V-42A LPCI Injection	RHR-RMS-ARS/V42A	E-RMS-ARST8
	i. RHR-V-3A Heat Exchanger Shell Side Outlet	RHR-RMS-ARS/V3A	E-RMS-ARST6
	j. RHR-FCV-64A Minimum Flow Bypass	RHR-RMS-ARS/V64A	E-RMS-ARST3
	k. RHR-V-16A Upper Drywell Spray Outboard Isolation	RHR-RMS-ARS/V16A	E-RMS-ARST11

Table 1.3.3.2-2 (page 6 of 6)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
9. RHR Loop A Injection, Shutdown Cooling, and Suppression Pool Cooling (continued)	l. RHR-V-27A Suppression Pool Spray	RHR-RMS-ARS/V27A	E-RMS-ARST7
	m. RHR-V-24A Suppression Pool Cooling Return	RHR-RMS-ARS/V24A	E-RMS-ARST10
	n. RHR-V-53A RHR Shutdown Cooling	RHR-RMS-ARS/V53A	E-RMS-ARST9
10. Service Water Loop A	a. SW-P-1A Service Water Pump 1A	SW-RMS-ARS/P1A	E-RMS-ARST20
	b. SW-V-2A Pump 1A Discharge	SW-RMS-ARS/V2A	E-RMS-ARST15
	c. RHR-V-68A RHR Hx SW Discharge	RHR-RMS-ARS/V68A	E-RMS-ARST22
	d. SW-V-12A Loop A Return to Pond B	SW-RMS-ARS/V12A	E-RMS-ARST21
11. HVAC, Div 1	a. WMA-FN-53A Critical Switchgear Rooms Recirc Fan	WMA-RMS-ARS/FN53A	E-RMS-ARST16

1.3 INSTRUMENTATION

1.3.3.3 Remote Shutdown System Equipment Status Monitoring

RFO 1.3.3.3 The Remote Shutdown Equipment Status Monitoring instrumentation shown in Table 1.3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each function.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required monitoring functions inoperable.	A.1 Restore required monitoring function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Issue a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 1.3.3.3.2	Perform CHANNEL CALIBRATION on Functions 1 through 19.	In accordance with the M&TE Calibration Program
SR 1.3.3.3.3	Perform CHANNEL CALIBRATION on Functions 20, 21, and 22.	18 months

Table 1.3.3.3-1 (page 1 of 1)
Remote Shutdown System Equipment Status Monitoring

	FUNCTION	LOCATION	MINIMUM CHANNELS REQUIRED
1.	Residual Heat Removal (RHR) Pump Room 2 Temperature	R7	1
2.	MCC 8B Room Temperature	R410	1
3.	MCC 8BB Room Temperature	R612	1
4.	Remote Shutdown Room Temperature	C207	1
5.	SM-8 Room Temperature	C206	1
6.	Battery Room 2 Temperature	C215	1
7.	Battery Charger Room 2 Temperature	C224	1
8.	DG2 Switchgear Room Temperature	D116	1
9.	SM-7 Room Temperature	C208	1
10.	Battery Room 1 Temperature	C210	1
11.	Battery Charger Room 1 Temperature	C216	1
12.	Reactor Core Isolation Cooling (RCIC) Pump Room Temperature	R15	1
13.	Service Water (SW) Pumphouse 1B Room Temperature	G200	1
14.	MCC S2/1A Room Temperature	R212	1
15.	RHR Pump Room 1 Temperature	R6	1
16.	MCC 7B Room Temperature	R411	1
17.	MCC 7BB Room Temperature	R611	1
18.	DG1 Switchgear Room Temperature	D115	1
19.	SW Pumphouse 1A Room Temperature	G100	1
20.	Division 2 Battery Voltage Meter	C224	1
21.	DG2 Local Voltage Meter	D116	1
22.	DG2 Local Frequency Meter	D116	1

Table 1.3.4.1-1 (page 1 of 1)
EOC-RPT System Instrumentation Response Time

-----NOTE-----
Table 1.3.4.1-1 lists required instrument response times applicable to LCO 3.3.4.1. See Technical Specification 3.3.4.1 and applicable Bases for further application details.

FUNCTION		RESPONSE TIME (Milliseconds)
1.	Breaker Arc Suppression	≤ 83
2.	Turbine Throttle Valve - Closure	≤ 97
3.	Turbine Governor Valve - Fast Closure	≤ 97

Table 1.3.4.1-2 (page 1 of 1)
EOC-RPT System Instrumentation Trip Setpoint

---NOTE---
Table 1.3.4.1-2 lists required instrument trip setpoints applicable to LCO 3.3.4.1. See Technical Specification 3.3.4.1 and applicable Bases for further application details.

	FUNCTION	TRIP SETPOINT
1.	Breaker Arc Suppression	NA
2.	Turbine Throttle Valve - Closure	≤ 5% Closed
3.	Turbine Governor Valve - Fast Closure, Trip Oil Pressure - Low	≥ 1250 psig

Table 1.3.4.2-1 (page 1 of 1)
ATWS-RPT System Instrumentation Trip Setpoint

---NOTE---
Table 1.3.4.2-1 lists required instrument trip setpoints applicable to LCO 3.3.4.2. See Technical Specification 3.3.4.2 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
2. Reactor Vessel Steam Dome Pressure - High	≤ 1128 psig

1.3 INSTRUMENTATION

1.3.4.6 Reactor Coolant System (RCS) Interface Valves Leakage Pressure Monitors

RFO 1.3.4.6 The RCS Interface Valves Leakage Pressure Monitor for each Function shown on Table 1.3.4.6-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

--NOTE--

Separate Condition entry is allowed for each function.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more monitors inoperable.	A.1.1 Restore inoperable monitor to OPERABLE status.	7 days
	<u>OR</u>	
	A.2.1 Verify pressure less than alarm setpoint.	7 days <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>	
	A.2.2 Restore inoperable monitors to OPERABLE status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

These SRs apply to each Function in Table 1.3.4.6-1.

SURVEILLANCE		FREQUENCY
SR 1.3.4.6.1	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.4.6.2	Perform CHANNEL CALIBRATION.	18 months

Table 1.3.4.6-1 (page 1 of 1)
Reactor Coolant System Interface Valves Leakage Pressure Monitors

FUNCTION	INSTRUMENT NUMBER	ALARM SETPOINT (psig)
1. HPCS Pump Suction Pressure High	HPCS-PIS-3	≤ 80
2. LPCS Pump Discharge Pressure High	LPCS-PIS-5	≤ 442
3. RCIC Pump Suction Pressure High	RCIC-PS-21	≤ 91
4. RHR Pump Discharge Pressure to RPV High	RHR-PIS-22A, B, C	≤ 475
5. RHR Pump Shutdown Cooling Suction Pressure High	RHR-PS-18	≤ 168

Table 1.3.5.1-1 (page 1 of 3)
Emergency Core Cooling System Instrumentation Trip Setpoints

---NOTE---
Table 1.3.5.1-1 lists required instrument trip setpoint times to support OPERABILITY of LCO 3.3.5.1. See Technical Specification 3.3.5.1 and applicable Bases for further application details.

FUNCTION			TRIP SETPOINT
1.	Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems		
	a.	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches
	b.	Drywell Pressure - High	≤ 1.68 psig
	c.	LPCS Pump Start - LOCA Time Delay Relay	≥ 9.33 seconds and ≤ 9.84 seconds
	d.	LPCI Pump A Start - LOCA Time Delay Relay	≥ 18.74 seconds and ≤ 20.03 seconds
	e.	LPCI Pump A Start - LOCA/LOOP Time Delay Relay	≥ 3.34 seconds and ≤ 5.79 seconds
	f.	Reactor Vessel Pressure - Low (Injection Permissive)	≥ 466 psig and ≤ 488 psig
	g.	LPCS Pump Discharge Flow - Low (Minimum Flow)	≥ 698 gpm and ≤ 1047 gpm
	h.	LPCI Pump A Discharge Flow - Low (Minimum Flow)	≥ 650 gpm and ≤ 956 gpm
	i.	Manual Initiation	NA
2.	LPCI B and LPCI C Subsystems		
	a.	Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches

Table 1.3.5.1-1 (page 2 of 3)
Emergency Core Cooling System Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINT
2. LPCI B and LPCI C Subsystems (continued)	
b. Drywell Pressure - High	≤ 1.68 psig
c. LPCI Pump B Start - LOCA Time Delay Relay	≥ 18.74 seconds and ≤ 20.03 seconds
d. LPCI Pump C Start - LOCA Time Delay Relay	≥ 9.33 seconds and ≤ 9.84 seconds
e. LPCI Pump B Start - LOCA/LOOP Time Delay Relay	≥ 3.34 seconds and ≤ 5.79 seconds
f. Reactor Vessel Pressure - Low (Injection Permissive)	≥ 466 psig and ≤ 488 psig
g. LPCI Pumps B & C Discharge Flow - Low (Minimum Flow)	≥ 650 gpm and ≤ 956 gpm
h. Manual Initiation	NA
3. High Pressure Core Spray (HPCS) System	
a. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
b. Drywell Pressure - High	≤ 1.68 psig
c. Reactor Vessel Water Level - High, Level 8	≤ 54.5 inches
d. Condensate Storage Tank Level - Low	≥ 448 ft 3 inches elevation
e. Suppression Pool Water Level - High	≤ 466 ft 8 inches elevation
f. HPCS System Flow Rate - Low (Minimum Flow)	≥ 1223 gpm and ≤ 1494 gpm
g. Manual Initiation	NA

Table 1.3.5.1-1 (page 3 of 3)
Emergency Core Cooling System Instrumentation Trip Setpoints

FUNCTION		TRIP SETPOINT
4.	Automatic Depressurization System (ADS) Trip System A	
	a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches
	b. ADS Initiation Timer	≤ 105.0 seconds
	c. Reactor Vessel Water Level - Low, Level 3 (Permissive)	≥ 13.0 inches
	d. LPCS Pump Discharge Pressure - High	≥ 124 psig and ≤ 166 psig
	e. LPCI Pump A Discharge Pressure - High	≥ 122 psig and ≤ 128 psig
	f. Accumulator Backup Compressed Gas System Pressure - Low	≥ 154 psig
	g. Manual Initiation	NA
5.	ADS Trip System B	
	a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches
	b. ADS Initiation Timer	≤ 105.0 seconds
	c. Reactor Vessel Water Level - Low, Level 3 (Permissive)	≥ 13.0 inches
	d. LPCI Pumps B & C Discharge Pressure - High	≥ 122 psig and ≤ 128 psig
	e. Accumulator Backup Compressed Gas System Pressure - Low	≥ 154 psig
	f. Manual Initiation	NA

1.3 INSTRUMENTATION

1.3.5.2 Automatic Depressurization System (ADS) Inhibit

RFO 1.3.5.2 Two ADS Inhibit switches shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 when RPV pressure is > 150 psig.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more ADS Inhibit switches inoperable.	A.1 Verify associated ADS division is not inhibited by the inoperable ADS Inhibit switch.	96 hours from discovery of inoperable channel concurrent with HPCS or RCIC inoperable <u>AND</u> 8 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Declare associated ADS division inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.5.2.1	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 1.3.5.3-1 (page 1 of 1)
RCIC System Instrumentation Trip Setpoints

--NOTE--
Table 1.3.5.3-1 lists required instrument trip setpoints to support OPERABILITY of LCO 3.3.5.2. See Technical Specification 3.3.5.2 and applicable Bases for further application details.

	FUNCTION	TRIP SETPOINTS
1.	Reactor Vessel Water Level - Low Low, Level 2	$\geq$ -50 inches
2.	Reactor Vessel Water Level - High, Level 8	$\leq$ 54.5 inches
3.	Condensate Storage Tank Level - Low	$\geq$ 448 ft 3 inches elevation
4.	Manual Initiation	NA

1.3 INSTRUMENTATION

1.3.5.3 Reactor Core Isolation Cooling (RCIC) Instrumentation

RFO 1.3.5.3 The RCIC isolation instrumentation for Drywell Pressure - High shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	24 hours
B. With automatic isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Compensatory Measure and associated Completion Time of Condition A not met.	C.1 Close the affected system isolation valve(s) and declare the affected system inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

---NOTE---

When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours provided the associated Function maintains isolation capability.

SURVEILLANCE		FREQUENCY
SR 1.3.5.3.1	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 1.3.5.3.2	Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 1.88 psig.	18 months
SR 1.3.5.3.3	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

1.3 INSTRUMENTATION

1.3.5.4 HPCS Condensate Supply Line Instrumentation

RFO 1.3.5.4 HPCS condensate supply line instrumentation for Function 1, or Function 2, in Table 1.3.5.4-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Required Function inoperable.	A.1 Align HPCS pump suction to the suppression pool.	1 hour
B. Required Compensatory Measure and Completion Time of Condition A not met.	B.1 Declare HPCS System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---

When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours provided the associated Function maintains HPCS pump suction transfer capability.

SURVEILLANCE	FREQUENCY
SR 1.3.5.4.1 Perform CHANNEL CALIBRATION.	18 months

Table 1.3.5.4-1 (page 1 of 1)
HPCS Condensate Supply Line Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. HPCS Condensate Supply Line Instrumentation - Channel A				
a. Condensate Supply line pressure low	1, 2, 3	1	1.3.5.4.1	≤ 204 in. wc. and ≥ 104 in. wc.
b. Condensate Supply line pressure low - time delay relay	1, 2, 3	1	1.3.5.4.1	≤ 4.62 sec. and ≥ 0.35 sec.
2. HPCS Condensate Supply line Instrumentation - Channel B				
a. Condensate Supply line pressure - low	1, 2, 3	1	1.3.5.4.1	≤ 204 in. wc. and ≥ 104 in. wc.
b. Condensate Supply line pressure low - time delay relay	1, 2, 3	1	1.3.5.4.1	≤ 4.62 sec. and ≥ 0.35 sec.

Table 1.3.6.1-1 (page 1 of 1)
Primary Containment Isolation Instrumentation Response Time

-----NOTE-----
Table 1.3.6.1-1 lists required instrument channel logic response time administrative limits to support OPERABILITY for LCO 3.3.6.1. See Technical Specification Bases SR 3.3.6.1.7 for further application details.

FUNCTION		RESPONSE TIME (seconds)[(a)]
1.	Main Steam Line Isolation	
	a. Reactor Vessel Water Level - Low Low Low, Level 1	≤ 0.144[(b)]
	b. Main Steam Line Pressure - Low	≤ 0.05[(c)]
	c. Main Steam Line Flow - High	≤ 0.05[(c)]
4.	Reactor Water Clean Up System Isolation	
	c. Blowdown Flow - High	≤ 2.4

(a) Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

(b) Isolation system instrumentation response time administrative limits for MSIV trip unit and relay logic portions of the instrument channel only. No diesel generator delays assumed.

Response time of process sensors for this function is evaluated qualitatively during performance of CHANNEL CALIBRATION SR 3.3.6.1.4. A quantitative response time test is required to determine the initial sensor specific response time value when a sensor is replaced or refurbished.

(c) Isolation system instrumentation response time administrative limits for MSIV relay logic only. No diesel generator delays assumed.

Response time of process sensors for these functions is evaluated qualitatively during performance of CHANNEL CALIBRATION SR 3.3.6.1.4. A quantitative response time test is required to determine the initial sensor specific response time value when a sensor for any of these functions is replaced or refurbished.

Table 1.3.6.1-2 (page 1 of 3)
Primary Containment Isolation Instrumentation Trip Setpoints

--NOTE--
Table 1.3.6.1-2 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.6.1. See Technical Specification 3.3.6.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINTS
1. Main Steam Line Isolation	
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches
b. Main Steam Line Pressure - Low	≥ 831 psig
c. Main Steam Line Flow - High	≤ 115.6 psid
d. Condenser Vacuum - Low	≥ 7.6 inches Hg vacuum
e. Main Steam Tunnel Temperature - High	≤ 164°F
f. Main Steam Tunnel Differential Temperature - High	≤ 80°F
g. Manual Initiation	NA
2. Primary Containment Isolation	
a. Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches
b. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
c. Drywell Pressure - High	≤ 1.68 psig
d. Reactor Building Vent Exhaust Plenum Radiation - High	≤ 13.0 mR/hr
e. Manual Initiation	NA
3. Reactor Core Isolation Cooling (RCIC) System Isolation	
a. RCIC Steam Line Flow - High	≤ 236 inches wg
b. RCIC Steam Line Flow - Time Delay	≤ 2.8 seconds

Table 1.3.6.1-2 (page 2 of 3)
Primary Containment Isolation Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINTS
3. RCIC System Isolation (continued)	
c. RCIC Steam Supply Pressure - Low	≥ 62 psig
d. RCIC Turbine Exhaust Diaphragm Pressure - High	≤ 10 psig
e. RCIC Equipment Room Area Temperature - High	≤ 160°F
f. RCIC Equipment Room Area Differential Temperature - High	≤ 50°F
g. RWCU/RCIC Steam Line Routing Area Temperature - High	≤ 160°F
h. Manual Initiation	NA
4. Reactor Water Clean Up System Isolation	
a. Differential Flow - High	≤ 58.4 gpm
b. Differential Flow - Time Delay	≤ 45.0 seconds
c. Blowdown Flow - High	≤ 264.5 gpm
d. Heat Exchanger Room Area Temperature - High	≤ 150°F
e. Heat Exchanger Room Area Ventilation Differential Temperature – High	≤ 60°F
f. Pump Room Area Temperature – High	≤ 160°F
g. Pump Room Area Ventilation Differential Temperature - High	≤ 70°F
h. RWCU/RCIC Line Routing Area Temperature - High	≤ 160°F
i. RWCU Line Routing Area Temperature - High	
Room 409, 509 Areas	≤ 160°F
Room 408, 511 Areas	≤ 160°F

Table 1.3.6.1-2 (page 3 of 3)
Primary Containment Isolation Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINTS
4. Reactor Water Clean Up System Isolation (continued)	
j. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
k. SLC System Initiation	NA
l. Manual Initiation	NA
5. Residual Heat Removal Shutdown Cooling System Isolation	
a. Pump Room Area Temperature - High	≤ 140°F
b. Pump Room Area Ventilation Differential Temperature - High	≤ 55°F
c. Heat Exchanger Area Temperature - High	
Room 505 Area	≤ 130°F
Room 507 Area	≤ 150°F
Room 605 Area	≤ 140°F
Room 606 Area	≤ 130°F
d. Reactor Vessel Water Level - Low, Level 3	≥ 13.0 inches
e. Reactor Vessel Pressure - High	≤ 125 psig
f. Manual Initiation	NA

Table 1.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation Trip Setpoints

---NOTE---
Table 1.3.6.2-1 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.6.2. See Technical Specification 3.3.6.2 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINTS
1. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
2. Drywell Pressure - High	≤ 1.68 psig
3. Reactor Building Vent Exhaust Plenum Radiation - High	≤ 13.0 mR/hr
4. Manual Initiation	NA

Table 1.3.7.1-1 (page 1 of 1)
Control Room Emergency Filtration System Instrumentation Trip Setpoint

---NOTE---
Table 1.3.7.1-1 lists required instrument trip setpoint to support OPERABILITY for LCO 3.3.7.1.
See Technical Specification 3.3.7.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level - Low Low, Level 2	≥ -50 inches
2. Drywell Pressure - High	≤ 1.68 psig
3. Reactor Building Vent Exhaust Plenum Radiation - High	≤ 13.0 mR/hr

1.3 INSTRUMENTATION

1.3.7.2 Seismic Monitoring Instrumentation

RFO 1.3.7.2 The seismic monitoring instrumentation shown in Table 1.3.7.2-1 shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more channels inoperable.	A.1 Restore channel to OPERABLE status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Issue a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---
Refer to Table 1.3.7.2-1 to determine which SRs apply for each Seismic Monitoring Function.

SURVEILLANCE		FREQUENCY
SR 1.3.7.2.1	Perform CHANNEL CHECK.	31 days
SR 1.3.7.2.2	Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 1.3.7.2.3	Perform CHANNEL CALIBRATION.	18 months

Table 1.3.7.2-1 (page 1 of 1)
Seismic Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS
1. Triaxial Time-History Accelerographs		
a. Reactor Building Foundation Triaxial Seismic Trigger	1	1.3.7.2.2 1.3.7.2.3
b. Reactor Building Foundation Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
c. Reactor Building Mid Level (522' floor) Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
d. Free Field Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
2. Triaxial Peak Accelerographs		
a. Valve Support (530') Reactor Building	1	1.3.7.2.3
b. HPCS Injection Piping	1	1.3.7.2.3
c. Standby Service Water Pump House	1	1.3.7.2.3
3. Triaxial Seismic Switch		
a. Reactor Building Foundation	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
4. Triaxial Response-Spectrum Recorders		
a. Reactor Building Foundation	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
b. HPCS Injection Line Piping Support	1	1.3.7.2.3
c. Reactor Building Refueling Floor	1	1.3.7.2.3
d. Radwaste Building Foundation	1	1.3.7.2.3

1.3 INSTRUMENTATION

1.3.7.3 Explosive Gas Monitoring Instrumentation

RFO 1.3.7.3 One Main Condenser Offgas Treatment System Hydrogen Monitor shall be OPERABLE.

APPLICABILITY: During Main Condenser Offgas Treatment System operation.

COMPENSATORY MEASURES

---NOTE---

RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One required Hydrogen Monitor inoperable.	A.1 Monitor Main Condenser Offgas Treatment System hydrogen concentration.	8 hours <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>	
	A.2 Restore inoperable monitor to operable status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.7.3.1	Perform CHANNEL CHECK.	24 hours
SR 1.3.7.3.2	Perform CHANNEL CALIBRATION.	12 months

1.3 INSTRUMENTATION

1.3.7.4 New Fuel Storage Vault Radiation Monitoring Instrumentation

RFO 1.3.7.4 The New Fuel Storage Vault Criticality Monitor shall be OPERABLE.

APPLICABILITY: When fuel is stored in the New Fuel Storage Vault.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. New Fuel Storage Vault Monitor inoperable during fuel movement.	A.1 Provide portable continuous monitor in the vicinity.	Immediately
B. New Fuel Storage Vault Monitor inoperable and no fuel movement in process.	B.1 Perform area survey.	Once per 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.7.4.1	Perform CHANNEL CHECK.	12 hours
SR 1.3.7.4.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.7.4.3	Perform CHANNEL CALIBRATION. The alarm setpoint shall be ≤ 5 R/h.	18 months

1.3 INSTRUMENTATION

1.3.7.5 Spent Fuel Storage Pool Radiation Monitoring Instrumentation

RFO 1.3.7.5 The Spent Fuel Storage Pool Radiation Monitoring Instrumentation shall be OPERABLE.

APPLICABILITY: When fuel is stored in the Spent Fuel Storage Pool.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Spent Fuel Storage Pool Monitor inoperable during fuel movement.	A.1 Provide portable continuous monitor in same vicinity.	Immediately
B. Spent Fuel Storage Pool Monitor inoperable and no fuel movement in process.	B.1 Perform area survey.	Once per 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.7.5.1	Perform CHANNEL CHECK.	12 hours
SR 1.3.7.5.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.7.5.3	Perform CHANNEL CALIBRATION. The alarm setpoint shall be $\leq$ 20 mR/h.	18 months

1.3 INSTRUMENTATION

1.3.7.6 Turbine Overspeed Protection System

RFO 1.3.7.6 One Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

COMPENSATORY MEASURES

--NOTE--
RFO 1.0.4 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One high pressure turbine valve inoperable.	A.1 Restore high pressure turbine valve to OPERABLE status.	72 hours
B. One low pressure turbine valve inoperable.	B.1 Restore low pressure turbine valve to OPERABLE status.	72 hours
C. One quadvoter trip channel inoperable in a non-failsafe mode.	C.1 Restore channel to OPERABLE status.	14 days
D. Required Compensatory Measure and associated Completion Time of Condition C not met.	D.1 Initiate a Condition Report.	Immediately
E. One method of turbine overspeed protection inoperable.	E.1 Restore method of turbine overspeed protection to OPERABLE status.	72 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
F. Both quadvoter trip channels inoperable in a non-failsafe mode <u>OR</u> Two overspeed protection methods inoperable.	F.1	Restore one quadvoter channel ore one overspeed protection method to OPERABLE status.	24 hours
G. Required Compensatory Measure and associated Completion Time of Condition A or B not met.	G.1	Isolate the affected steam line from the steam supply.	6 hours
H. Required Compensatory Measure and associated Completion Time of Condition E or F not met.	H.1	Isolate the main turbine from the steam supply	6 hours
I. Required Compensatory Measure and associated completion Time of condition G of H not met.	I.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

--NOTE--
SR 1.0.4 is not applicable.

SURVEILLANCE		FREQUENCY
SR 1.3.7.6.1	Perform independent cycle of each of the solenoid valves in the quadvoter hydraulic trip block from the DEH system. Verify proper operation of each individual solenoid valve.	7 days
SR 1.3.7.6.2	-----------------------------NOTE---------------------------- Not required to be performed until 24 hours after valve has been opened with adequate steam flow available. --- Cycle each of the following valves through at least one complete cycle from the running position for the overspeed protection control system and the digital overspeed trip system: a. Four high pressure turbine throttle valves; b. Six low pressure turbine reheat stop valves; c. Four high pressure turbine governor valves; and d. Six low pressure turbine interceptor valves.	92 days
SR 1.3.7.6.3	Perform CHANNEL CALIBRATION.	24 months
SR 1.3.7.6.4	------------------------------NOTE------------------------------ Not required to be performed until 24 hours after conditions are adequate for tripping the turbine. --- Perform functional test of the OPC, digital control overspeed trip, and digital trip overspeed trip methods.	24 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.7.6.5	Disassemble at least one of each of the above valves, perform a visual and surface inspection of all valve seats, disks and stems and verify no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion are found, all other valves of that type shall be inspected.	40 months

1.3 INSTRUMENTATION

1.3.7.7 Traversing In-Core Probe (TIP) System

RFO 1.3.7.7 The TIP System shall be OPERABLE.

APPLICABILITY: When the TIP System is used for calibration of the local power range monitors (LPRM).

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more TIP machines with a machine normalization value out of compliance.	A.1 Suspend use of TIP data from the affected TIP machine for LPRM calibration.	Immediately
B. More than 14 TIP data strings not scanned or rejected by 3D MONICORE.	B.1 Suspend use of the system for LPRM calibration.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Normalize each of the required detector outputs.	Once within 72 hours prior to use <u>AND</u> 72 ours thereafter
SR 1.3.7.7.2	Verify no more than 14 TIP data strings are not scanned or rejected by 3D MONICORE.	Prior to use ot the 3D MONICORE calculated LPRM gain adjustment factors for LPRM adjustment

1.3 INSTRUMENTATION

1.3.7.8 Meteorological Monitoring Instrumentation

RFO 1.3.7.8 The meteorological monitoring instrumentation specified in Table 1.3.7.8-1 shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

---NOTE---

RFO 1.0.3 and RFO 1.0.4 are not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more meteorological tower instrument channel(s) inoperable.	A.1 Notify Emergency Preparedness personnel.	12 hours
	<u>AND</u>	
	A.2 Return the inoperable channel(s) to OPERABLE status.	30 days
B. One or more meteorological tower function(s) inoperable.	B.1 Return the inoperable function to OPERABLE status.	7 days
C. Required Compensatory Measures and associated Completion Times not met.	C.1 Initiate a corrective action document (AR-CR).	24 hours

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. These SRs are applicable to all instruments in Table 1.3.7.8-1.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
SR 1.3.7.8.1	Perform a Channel Check.	24 hours
SR 1.3.7.8.2	Perform a Channel Calibration.	6 months

Table 1.3.7.8-1 (page 1 of 1)
Meteorological Tower Monitoring Instrumentation

INSTRUMENT FUNCTION	MET TOWER CHANNEL ELEVATION	MINIMUM REQUIRED CHANNELS
Wind speed	33 feet 245 feet	2 2
Wind direction	33 feet 245 feet	2 2
Differential air temperature	33/245 feet	2

Table 1.3.8.1-1 (page 1 of 2)
Loss of Power Instrumentation Trip Setpoints

---NOTE---
Table 1.3.8.1-1 lists required instrument trip setpoint to support OPERABILITY for LCO 3.3.8.1. See Technical Specification 3.3.8.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage	
a. TR-S Loss of Voltage - 4.16 kV Basis	≥ 2782.5 V and ≤ 2957.5 V
b. TR-S Loss of Voltage - Time Delay	
First Timer	≥ 3.25 seconds and ≤ 3.75 seconds
Second Timer	≥ 1.86 seconds and ≤ 2.14 seconds
c. TR-B Loss of Voltage - 4.16 V Basis	≥ 2782.5 V and ≤ 2957.5 V
d. TR-B Loss of Voltage - Time Delay	≥ 3.43 seconds and ≤ 3.57 seconds
e. Degraded Voltage - 4.16 kV Basis	≥ 3711.8 V and ≤ 3729.2 V
f. Degraded Voltage - Primary Time Delay	≥ 5.05 seconds and ≤ 5.25 seconds
g. Degraded Voltage - Secondary Time Delay	≥ 2.8 seconds and ≤ 3.2 seconds
2. Division 3 - 4.16 kV Emergency Bus Undervoltage	
a. Loss of Voltage - 4.16 V Basis	≥ 2782.5 and ≤ 2957.5
b. Loss of Voltage - Time Delay	
First Timer	≥ 1.96 seconds ad ≤ 2.04 seconds
Second Timer	≥ 1.27 seconds and ≤ 1.33 seconds

Table 1.3.8.1-1 (page 2 of 2)
Loss of Power Instrumentation Trip Setpoints

---NOTE---
Table 1.3.8.1-1 lists required instrument trip setpoint to support OPERABILITY for LCO 3.3.8.1. See Technical Specification 3.3.8.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
2. Division 3 - 4.16 kV Emergency Bus Undervoltage (continued)	
c. Degraded Voltage - 4.16 kV Basis	$\geq$ 3711.8 V and $\leq$ 3729.2 V
d. Degraded Voltage - Time Delay	$\geq$ 7.69 seconds and $\leq$ 8.01 seconds

Table 1.3.8.2-1 (page 1 of 1)
RPS Electric Power Monitoring, Trip Setpoints

---NOTE---
Table 1.3.8.2-1 lists required instrument trip setpoint to support OPERABILITY for LCO 3.3.8.2. See Technical Specification 3.3.8.2 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Over Voltage	≤ 131.6 V
2. Over Voltage Time Delay	≤ 2.92 sec
3. Under Voltage	≥ 112.6 V
4. Under Voltage Time Delay	≤ 2.92 sec
5. Under Frequency	≥ 57.6 Hz
6. Under Frequency Time Delay	≤ 2.92 sec

1.4 REACTOR COOLANT SYSTEM

1.4.1 Reactor Coolant System (RCS) Chemistry

RFO 1.4.1 The RCS chemistry shall be maintained within the limits of Table 1.4.1-1.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

--NOTE--
RFO 1.0.3 and RFO 1.0.4 are not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Conductivity greater than the limit of Table 1.4.1-1 but ≤ 10 µmho/cm in MODE 1, 2, or 3. <u>OR</u> Chloride concentration greater than the limit of Table 1.4.1-1 but ≤ 0.5 ppm in MODE 1, 2, or 3. <u>OR</u> pH not within the limits of Table 1.4.1-1 in MODE 1, 2, or 3.	A.1 Restore RCS Chemistry to within limits.	72 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. Required Compensatory Measure and associated Completion Time of Condition A not met. <u>OR</u> Conductivity > 10 µmho/cm in MODE 1, 2, or 3. <u>OR</u> Chloride concentration > 0.5 ppm in MODE 1, 2, or 3.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours
C. Chemistry of the RCS not within limits in other than MODES1, 2, and 3.	C.1 Restore RCS Chemistry to within limits.	72 hours
D. Deleted	D.1 Deleted	
E. Required Compensatory Measure and associated Completion Time of Condition C not met.	E.1 Determine RCS is acceptable for operation.	Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.4.1.1	-------------------------------NOTE------------------------------ Not required to be met if SR 1.4.1.3 is satisfied. --- Verify conductivity is within the limits of Table 1.4.1-1.	24 hours
SR 1.4.1.2	Verify conductivity, chlorides and pH are within the limits of Table 1.4.1-1.	7 days
SR 1.4.1.3	Perform CHANNEL CHECK of continuous recording conductivity monitor.	7 days

Table 1.4.1-1 (page 1 of 1)
RCS Chemistry Limits

MODE OR OTHER SPECIFIED CONDITION	CHLORIDE (ppm)	CONDUCTIVITY (μmho/cm at 25°C)	pH
1	$\leq$ 0.2	$\leq$ 1.0	$\geq$ 5.6 and $\leq$ 8.6
2, 3	$\leq$ 0.1	$\leq$ 2.0	$\geq$ 5.6 and $\leq$ 8.6
At all other times	$\leq$ 0.5	$\leq$ 10.0	$\geq$ 5.3 and $\leq$ 8.6

Table 1.4.6-1 (page 1 of 1)
Reactor Coolant System Pressure Isolation Valves

---NOTE---
Table 1.4.6-1 lists valves required to support OPERABILITY for LCO 3.4.6. See Technical Specification LCO 3.4.6 and applicable Bases for further application details.

VALVE NUMBER	SYSTEM
HPCS-V-4	HPCS
HPCS-V-5	HPCS
LPCS-V-5	LPCS
LPCS-V-6	LPCS
RCIC-V-66	RCIC
RCIC-V-13	RCIC
RCIC-V-742	RCIC
RHR-V-8	RHR
RHR-V-9/209	RHR
RHR-V-23	RHR
RHR-V-41A, B, C	RHR
RHR-V-42A, B, C	RHR
RHR-V-50A/123A, 50B/123B	RHR
RHR-V-53A, B	RHR

Table 1.5.1-1 (page 1 of 1)
Emergency Core Cooling System (ECCS) Response Time

---NOTE---
Table 1.5.1-1 lists system response time required to support OPERABILITY of LCO 3.5.1. See Technical Specification Bases SR 3.5.1.8 for further application details.

ECCS	RESPONSE TIME[a] (Seconds)
1. Low Pressure Core Spray System	≤ 42
2. Low Pressure Coolant Injection Mode of RHR System	≤ 46
3. High Pressure Core Spray System	≤ 37

(a) Response time of process sensors for ECCS actuation instrumentation is evaluated qualitatively during performance of CHANNEL CALIBRATION SR 3.3.5.1.4. A quantitative response time test is required to determine the initial sensor specific response time value when any ECCS actuation process sensor is replaced or refurbished. The specified response time values assume 15 seconds for diesel start time and 5 seconds for instrumentation response time.

1.5 ECCS and RCIC

1.5.2 ECCS Pump Discharge Piping Pressure Retention

RFO 1.5.2 ECCS pump discharge piping minimum pressure retention times shall be maintained within limits as shown in Table 1.5.2-1.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

--NOTE--

A separate Condition entry is allowed for each ECCS discharge pipe.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Pressure retention time of one or more ECCS pump discharge pipe(s) is less than the Accident Limits of Table 1.5.2-1.	A.1 Declare the affected ECCS system or subsystem inoperable.	Immediately
B. Pressure retention time of one or more ECCS pump discharge pipe(s) is less than the Alert Limits (Accident) of Table 1.5.2-1.	B.1 Initiate a Condition Report to document this degraded condition.	24 hours
	<u>AND</u>	
	B.2 Initiate Compensatory Measures to provide reasonable assurance the affected ECCS pump discharge piping pressure retention time will remain above the Accident Limits of Table 1.5.2-1.	72 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
C. Pressure retention time of one or more ECCS pump discharge pipe(s) is less than the Appendix R Limits of Table 1.5.2-1.	C.1 Initiate a Condition Report to document this degraded condition.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.5.2.1	Verify the discharge piping pressure retention times for each ECCS system or subsystem listed are greater than the limits in Table 1.5.2-1.	12 months

Table 1.5.2-1 (page 1 of 1)
ECCS Discharge Piping Pressure Retention Times

--NOTE--
Table 1.5.2-1 lists the ECCS discharge piping minimum pressure retention times that will ensure, during accident conditions, the ECCS discharge piping will remain full of water. In addition, for the RHR A and B subsystems, the table lists the minimum pressure retention times that ensure the discharge piping of these subsystems will remain full of water following an Appendix R fire.

	FUNCTION	ACCIDENT LIMIT	ALERT LIMIT (ACCIDENT)	APPENDIX R LIMIT
1.	LPCS pump discharge piping pressure retention time	20 sec	5 min	N/A
2.	RHR A pump discharge piping pressure retention time	30 sec	5 min	30 min
3.	RHR B pump discharge piping pressure retention time	30 sec	5 min	30 min
4.	RHR C pump discharge piping pressure retention time	20 sec	5 min	N/A
5.	HPCS pump discharge piping pressure retention time	20 sec	5 min	N/A

Table 1.6.1.3-1 (page 1 of 19)
Primary Containment Isolation Valves

---NOTE---
Table 1.6.1.3-1 lists valves required to support OPERABILITY for LCO 3.6.1.3. See Technical Specification LCO 3.6.1.3 and applicable Bases for further application details.

AIV = Automatic Isolation Valves
EFCV = Excess Flow Check Valves
MCIV = Manual Containment Isolation Valves
OCIV = Other Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
82e	CAS-V-730	N/A	N/A	MCIV	
82e	CAS-VX-82E	N/A	N/A	MCIV	
3	CEP-V-1A	4	3	AIV	(d)
3	CEP-V-1B	4	3	AIV	(d)
3	CEP-V-2A	4	3	AIV	(d)
3	CEP-V-2B	4	3	AIV	(d)
67	CEP-V-3A	4	3	AIV	(d)
67	CEP-V-3B	4	3	AIV	(d)
67	CEP-V-4A	4	3	AIV	(d)
67	CEP-V-4B	4	3	AIV	(d)
67	CSP-V-6	N/A	N/A	OCIV	
67	CSP-V-8	N/A	N/A	OCIV	
56	CIA-V-20	N/A	N/A	OCIV	
56	CIA-V-21	N/A	N/A	OCIV	

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(d) Provisions of Technical Specification SR 3.0.4 are not applicable.

Table 1.6.1.3-1 (page 2 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
89B	CIA-V-30A	N/A	N/A	OCIV	
89B	CIA-V-31A	N/A	N/A	OCIV	
91	CIA-V-30B	N/A	N/A	OCIV	
91	CIA-V-31B	N/A	N/A	OCIV	
53	CSP-V-1	4	3	AIV	(d)
53	CSP-V-2	4	3	AIV	(d)
53	CSP-V-96	4	3	AIV	(d)
53	CSP-V-97	4	3	AIV	(d)
66	CSP-V-3	4	3	AIV	(d)
66	CSP-V-4	4	3	AIV	(d)
66	CSP-V-5	N/A	N/A	OCIV	
66	CSP-V-7	N/A	N/A	OCIV	
66	CSP-V-93	4	3	AIV	(d)
66	CSP-V-98	4	3	AIV	(d)
119	CSP-V-9	N/A	N/A	OCIV	
119	CSP-V-10	N/A	N/A	OCIV	
92	DW-V-156	N/A	N/A	MCIV	
92	DW-V-157	N/A	N/A	MCIV	
23	EDR-V-19	15	4	AIV	
23	EDR-V-20	15	4	AIV	

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(d) Provisions of Technical Specification SR 3.0.4 are not applicable.

Table 1.6.1.3-1 (page 3 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
24	FDR-V-3	15	4	AIV	
24	FDR-V-4	15	4	AIV	
101	FPC-V-149	35	4	AIV	
101	FPC-V-156	35	4	AIV	
100	FPC-V-153	35	4	AIV	(h)
100	FPC-V-154	35	4	AIV	(h)
49	HPCS-RV-14	N/A	N/A	OCIV	(g)(j)
49	HPCS-RV-35	N/A	N/A	OCIV	(g)(j)
49	HPCS-V-12	N/A	N/A	OCIV	(p)
49	HPCS-V-23	180	11	AIV	(p)
6	HPCS-V-4	N/A	N/A	OCIV	(i)(c)
6	HPCS-V-5	N/A	N/A	OCIV	(i)(c)
31	HPCS-V-15	N/A	N/A	OCIV	(c)(p)
78e	HPCS-V-65	N/A	N/A	MCIV	
78e	HPCS-V-68	N/A	N/A	MCIV	
63	LPCS-FCV-11	N/A	N/A	OCIV	(p)
63	LPCS-V-12	180	10	AIV	(p)
63	LPCS-RV-18	N/A	N/A	OCIV	(g)(j)
63	LPCS-RV-31	N/A	N/A	OCIV	(g)(j)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(g) Not subject to Type C Leak Rate Test.
(h) Hydraulic leak test at 1.10 Pa.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(j) Tested as part of Type A test.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 4 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
34	LPCS-V-1	N/A	N/A	OCIV	(c)(p)
8	LPCS-V-5	N/A	N/A	OCIV	(i)(c)
8	LPCS-V-6	N/A	N/A	OCIV	(i)(c)
78d	LPCS-V-66	N/A	N/A	MCIV	
78d	LPCS-V-67	N/A	N/A	MCIV	
22	MS-V-16	25	1	AIV	
22	MS-V-19	25	1	AIV	
18A	MS-V-22A	5[(b)]	1	AIV	(c)
18A	MS-V-28A	5[(b)]	1	AIV	(c)
18A	MS-V-67A	15	1	AIV	(c)
18A	MSLC-V-3A	N/A	N/A	MCIV	(c)
18B	MS-V-22B	5[(b)]	1	AIV	(c)
18B	MS-V-28B	5[(b)]	1	AIV	(c)
18B	MS-V-67B	15	1	AIV	(c)
18B	MSLC-V-3B	N/A	N/A	MCIV	(c)
18C	MS-V-22C	5[(b)]	1	AIV	(c)
18C	MS-V-28C	5[(b)]	1	AIV	(c)
18C	MS-V-67C	15	1	AIV	(c)
18C	MSLC-V-3C	N/A	N/A	MCIV	(c)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(b) But greater than 3 seconds.
(c) Valve leakage not included in sum of Type B and C tests.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 5 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
18D	MS-V-22D	5[b]	1	AIV	(c)
18D	MS-V-28D	5[b]	1	AIV	(c)
18D	MS-V-67D	15	1	AIV	(c)
18D	MSLC-V-3D	N/A	N/A	MCIV	(c)
94	MWR-V-124	N/A	N/A	MCIV	
95	MWR-V-125	N/A	N/A	MCIV	
37e	PI-EFC-X37e	N/A	N/A	EFCV	(g)(n)
37f	PI-EFC-X37f	N/A	N/A	EFCV	(g)(n)
38a	PI-EFC-X38a	N/A	N/A	EFCV	(g)(n)
38b	PI-EFC-X38b	N/A	N/A	EFCV	(g)(n)
38c	PI-EFC-X38c	N/A	N/A	EFCV	(g)(n)
38d	PI-EFC-X38d	N/A	N/A	EFCV	(g)(n)
38e	PI-EFC-X38e	N/A	N/A	EFCV	(g)(n)
38f	PI-EFC-X38f	N/A	N/A	EFCV	(g)(n)
39a	PI-EFC-X39a	N/A	N/A	EFCV	(g)(n)
39b	PI-EFC-X39b	N/A	N/A	EFCV	(g)(n)
39d	PI-EFC-X39d	N/A	N/A	EFCV	(g)(n)
39e	PE-EFC-X39e	N/A	N/A	EFCV	(g)(n)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(b) But greater than 3 seconds.
(c) Valve leakage not included in sum of Type B and C tests.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design bases accidents.

Table 1.6.1.3-1 (page 6 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
40c	PI-EFC-X40c	N/A	N/A	EFCV	(g)(n)
40d	PI-EFC-X40d	N/A	N/A	EFCV	(g)(n)
41c	PI-EFC-X41c	N/A	N/A	EFCV	(g)(n)
41d	PI-EFC-X41d	N/A	N/A	EFCV	(g)(n)
41e	PI-EFC-X41e	N/A	N/A	EFCV	(g)(n)
41f	PI-EFC-X41f	N/A	N/A	EFCV	(g)(n)
40e	PI-EFC-X40e	N/A	N/A	EFCV	(g)(n)
40f	PI-EFC-X40f	N/A	N/A	EFCV	(g)(n)
42a	PI-EFC-X42a	N/A	N/A	EFCV	(g)(n)
42b	PI-EFC-X42b	N/A	N/A	EFCV	(g)(n)
44Aa	PI-EFC-X44Aa	N/A	N/A	EFCV	(g)(n)
44Ab	PI-EFC-X44Ab	N/A	N/A	EFCV	(g)(n)
44Ac	PI-EFC-X44Ac	N/A	N/A	EFCV	(g)(n)
44Ad	PI-EFC-X44Ad	N/A	N/A	EFCV	(g)(n)
44Ae	PI-EFC-X44Ae	N/A	N/A	EFCV	(g)(n)
44Af	PI-EFC-X44Af	N/A	N/A	EFCV	(g)(n)
44Ag	PI-EFC-X44Ag	N/A	N/A	EFCV	(g)(n)
44Ah	PI-EFC-X44Ah	N/A	N/A	EFCV	(g)(n)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

Table 1.6.1.3-1 (page 7 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
44Aj	PI-EFC-X44Aj	N/A	N/A	EFCV	(g)(n
44Ak	PI-EFC-X44Ak	N/A	N/A	EFCV	(g)(n)
44Al	PI-EFC-X44Al	N/A	N/A	EFCV	(g)(n)
44Am	PI-EFC-X44Am	N/A	N/A	EFCV	(g)(n)
44Ba	PI-EFC-X44Ba	N/A	N/A	EFCV	(g)(n)
44Bb	PI-EFC-X44Bb	N/A	N/A	EFCV	(g)(n)
44Bc	PI-EFC-X44Bc	N/A	N/A	EFCV	(g)(n)
44Bd	PI-EFC-X44Bd	N/A	N/A	EFCV	(g)(n)
44Be	PI-EFC-X44Be	N/A	N/A	EFCV	(g)(n)
44Bf	PI-EFC-X44Bf	N/A	N/A	EFCV	(g)(n)
44Bg	PI-EFC-X44Bg	N/A	N/A	EFCV	(g)(n)
44Bh	PI-EFC-X44Bh	N/A	N/A	EFCV	(g)(n)
44Bj	PI-EFC-X44Bj	N/A	N/A	EFCV	(g)(n)
44Bk	PI-EFC-X44Bk	N/A	N/A	EFCV	(g)(n)
44Bl	PI-EFC-X44Bl	N/A	N/A	EFCV	(g)(n)
44Bm	PI-EFC-X44Bm	N/A	N/A	EFCV	(g)(n)
61a	PI-EFC-X61a	N/A	N/A	EFCV	(g)(n)
61b	PI-EFC-X61B	N/A	N/A	EFCV	(g)(n)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

Table 1.6.1.3-1 (page 8 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
62c	PI-EFC-X62c	N/A	N/A	EFCV	(g)(n)
62d	PI-EFC-X62d	N/A	N/A	EFCV	(g)(n)
69a	PI-EFC-X69a	N/A	N/A	EFCV	(g)(n)
69b	PI-EFC-X69b	N/A	N/A	EFCV	(g)(n)
69e	PI-EFC-X69e	N/A	N/A	EFCV	(g)(n)
70a	PI-EFC-X70a	N/A	N/A	EFCV	(g)(n)
70b	PI-EFC-X70b	N/A	N/A	EFCV	(g)(n)
70c	PI-EFC-X70c	N/A	N/A	EFCV	(g)(n)
70d	PI-EFC-X70d	N/A	N/A	EFCV	(g)(n)
70e	PI-EFC-X70e	N/A	N/A	EFCV	(g)(n)
70f	PI-EFC-X70f	N/A	N/A	EFCV	(g)(n)
71a	PI-EFC-X71a	N/A	N/A	EFCV	(g)(n)
71b	PI-EFC-X71b	N/A	N/A	EFCV	(g)(n)
71c	PI-EFC-X71c	N/A	N/A	EFCV	(g)(n)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

Table 1.6.1.3-1 (page 9 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
71d	PI-EFC-X71d	N/A	N/A	EFCV	(g)(n)
71e	PI-EFC-X71e	N/A	N/A	EFCV	(g)(n)
71f	PI-EFC-X71f	N/A	N/A	EFCV	(g)(n)
72a	PI-EFC-X72a	N/A	N/A	EFCV	(g)(n)
73a	PI-EFC-X73a	N/A	N/A	EFCV	(g)(n)
74a	PI-EFC-X74a	N/A	N/A	EFCV	(g)(n)
74b	PI-EFC-X74b	N/A	N/A	EFCV	(g)(n)
74e	PI-EFC-X74e	N/A	N/A	EFCV	(g)(n)
74f	PI-EFC-X74f	N/A	N/A	EFCV	(g)(n)
75a	PI-EFC-X75a	N/A	N/A	EFCV	(g)(n)
75b	PI-EFC-X75b	N/A	N/A	EFCV	(g)(n)
75c	PI-EFC-X75c	N/A	N/A	EFCV	(g)(n)
75d	PI-EFC-X75d	N/A	N/A	EFCV	(g)(n)
75e	PI-EFC-X75e	N/A	N/A	EFCV	(g)(n)
75f	PI-EFC-X75f	N/A	N/A	EFCV	(g)(n)
78b	PI-EFC-X78b	N/A	N/A	EFCV	(g)(n)
78c	PI-EFC-X78c	N/A	N/A	EFCV	(g)(n)
78f	PI-EFC-X78f	N/A	N/A	EFCV	(g)(n)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

Table 1.6.1.3-1 (page 10 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
79a	PI-EFC-79a	N/A	N/A	EFCV	(g)(n)
79b	PI-EFC-79b	N/A	N/A	EFCV	(g)(n)
106	PI-EFC-X106	N/A	N/A	EFCV	(g)(n)
107	PI-EFC-X107	N/A	N/A	EFCV	(g)(n)
108	PI-EFC-X108	N/A	N/A	EFCV	(g)(n)
109	PI-EFC-X109	N/A	N/A	EFCV	(g)(n)
110	PI-EFC-X110	N/A	N/A	EFCV	(g)(n)
111	PI-EFC-X111	N/A	N/A	EFCV	(g)(n)
112	PI-EFC-X112	N/A	N/A	EFCV	(g)(n)
113	PI-EFC-X113	N/A	N/A	EFCV	(g)(n)
114	PI-EFC-X114	N/A	N/A	EFCV	(g)(n)
115	PI-EFC-X115	N/A	N/A	EFCV	(g)(n)
42c	PI-V-X42c	N/A	N/A	MCIV	(g)
42d	PI-V-X42d	N/A	N/A	MCIV	
42d	PI-VX-216	N/A	N/A	MCIV	
54Bf	PI-V-X54Bf	N/A	N/A	MCIV	
54Bf	PI-VX-218	N/A	N/A	MCIV	
61f	PI-V-X61f	N/A	N/A	MCIV	

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.
(n) These valves do not function as Primary Containment Isolation Valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

Table 1.6.1.3-1 (page 11 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
61f	PI-VX-219	N/A	N/A	MCIV	
62f	PI-V-X62f	N/A	N/A	MCIV	
62f	PI-VX-220	N/A	N/A	MCIV	
69c	PI-V-X69c	N/A	N/A	MCIV	
69c	PI-VX-221	N/A	N/A	MCIV	
72c	PI-V-X72C	N/A	N/A	MCIV	(g)
72c	PI-VX-262	N/A	N/A	OCIV	(g)
72d	PI-V-X72D	N/A	N/A	MCIV	(g)
72d	PI-VX-263	N/A	N/A	OCIV	(g)
72e	PI-V-X72E	N/A	N/A	MCIV	(g)
72e	PI-VX-264	N/A	N/A	OCIV	(g)
73c	PI-V-X73C	N/A	N/A	MCIV	(g)
73c	PI-VX-266	N/A	N/A	OCIV	(g)
73d	PI-V-X73D	N/A	N/A	MCIV	(g)
73d	PI-VX-268	N/A	N/A	OCIV	(g)
78a	PI-V-X78A	N/A	N/A	MCIV	(g)
82c	PI-V-X82C	N/A	N/A	MCIV	(g)
82c	PI-VX-265	N/A	N/A	OCIV	(g)
84b	PI-V-X84B	N/A	N/A	MCIV	(g)
84b	PI-VX-269	N/A	N/A	OCIV	(g)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.

Table 1.6.1.3-1 (page 12 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
72f	PI-V-X72f/1	N/A	N/A	OCIV	
72f	PI-VX-253	5	4	AIV	
73e	PI-V-X73e/1	N/A	N/A	OCIV	
73e	PI-VX-259	5	4	AIV	
85a/c	PI-VX-250	5	4	AIV	
85a/c	PI-VX-251	5	4	AIV	
29a/c	PI-VX-256	5	4	AIV	
29a/c	PI-VX-257	5	4	AIV	
73f	PSR-V-X73/1	N/A	N/A	OCIV	(e)
73f	PSR-V-X73/2	N/A	N/A	OCIV	(e)
77Ac	PSR-V-X77A/1	N/A	N/A	OCIV	(e)
77Ac	PSR-V-X77A/2	N/A	N/A	OCIV	(e)
77Ad	PSR-V-X77A/3	N/A	N/A	OCIV	(e)
77Ad	PSR-V-X77A/4	N/A	N/A	OCIV	(e)
80b	PSR-V-X80/1	N/A	N/A	OCIV	(e)
80b	PSR-V-X80/2	N/A	N/A	OCIV	(e)
82d	PSR-V-X82/1	N/A	N/A	OCIV	(e)
82d	PSR-V-X82/2	N/A	N/A	OCIV	(e)
82f	PSR-V-X82/7	N/A	N/A	OCIV	(e)
82f	PSR-V-X82/8	N/A	N/A	OCIV	(e)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(e) May be opened at intermittent basis under administrative control.

Table 1.6.1.3-1 (page 13 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[a]	VALVE TYPE CODE	NOTES
83a	PSR-V-X83/1	N/A	N/A	OCIV	(e)
83a	PSR-V-X83/2	N/A	N/A	OCIV	(e)
84f	PSR-V-X84/1	N/A	N/A	OCIV	(e)
84f	PSR-V-X84/2	N/A	N/A	OCIV	(e)
88	PSR-V-X88/1	N/A	N/A	OCIV	(e)
88	PSR-V-X88/2	N/A	N/A	OCIV	(e)
5	RCC-V-104	60	4	AIV	
5	RCC-V-5	60	4	AIV	
46	RCC-V-21	60	4	AIV	
46	RCC-V-40	60	4	AIV	
46	RCC-V-219	N/A	N/A	OCIV	
45	RCIC-V-8	26	8	AIV	
2	RCIC-V-13	N/A	N/A	OCIV	(i)(c)
2	RCIC-V-66	N/A	N/A	OCIV	(i)(c)
2	RCIC-V-742	N/A	N/A	MCIV	(i)(c)
65	RCIC-V-19	N/A	N/A	OCIV	(p)
33	RCIC-V-31	N/A	N/A	OCIV	(c)(p)
64	RCIC-V-28	N/A	N/A	OCIV	(p)
64	RCIC-V-69	N/A	N/A	OCIV	(p)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(e) May be opened at intermittent basis under administrative control.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 14 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
4/116	RCIC-V-40	N/A	N/A	OCIV	
4/116	RCIC-V-68	N/A	N/A	OCIV	
21/45	RCIC-V-63	16	8	AIV	
21/45	RCIC-V-76	22	8	AIV	
21	RCIC-V-64	N/A	N/A	MCIV	
54Aa	RCIC-V-184	N/A	N/A	MCIV	
54Aa	RCIC-V-740	N/A	N/A	MCIV	
17A	RFW-V-10A	N/A	N/A	OCIV	
17A	RFW-V-32A	N/A	N/A	OCIV	
17A	RFW-V-65A	N/A	N/A	OCIV	
17B	RFW-V-10B	N/A	N/A	OCIV	
17B	RFW-V-32B	N/A	N/A	OCIV	
17B	RFW-V-65B	N/A	N/A	OCIV	
117	RHR-V-134A	N/A	N/A	MCIV	(p)
117	RHR-RV-1A	N/A	N/A	OCIV	(g)(j)
117	RHR-V-73A	N/A	N/A	OCIV	(p)
117	RHR-V-124A	N/A	N/A	MCIV	(p)
117	RHR-V-124B	N/A	N/A	MCIV	(p)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C leak Rate Test.
(j) Tested as part of Type A test.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 15 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
118	RHR-V-73B	N/A	N/A	OCIV	(p)
118	RHR-V-125A	N/A	N/A	MCIV	(p)
118	RHR-V-125B	N/A	N/A	MCIV	(p)
118	RHR-V-134B	N/A	N/A	MCIV	(p)
118	RHR-RV-1B	N/A	N/A	OCIV	(g)(j)
2	RHR-V-23	90	6	AIV	(i)
118	RHR-RV-30	N/A	N/A	OCIV	(g)(j)
20	RHR-V-209	N/A	N/A	OCIV	(i)(c)
20	RHR-V-8	40	6	AIV	(i)
20	RHR-V-9	40	6	AIV	(i)
47	RHR-FCV-64A	N/A	N/A	OCIV	(p)
47	RHR-RV-25A	N/A	N/A	OCIV	(g)(j)
47	RHR-RV-88A	N/A	N/A	OCIV	(g)(j)
47	RHR-V-11A	N/A	N/A	MCIV	(p)
47	RHR-V-24A	270	10	AIV	(e)(p)
47	RHR-V-120	N/A	N/A	MCIV	(p)
47	RHR-V-121	N/A	N/A	MCIV	(p)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(e) May be opened at intermittent basis under administrative control.
(g) Not subject to Type C Leak Rate Test.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(j) Tested as part of Type A test.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 16 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
48	RHR-FCV-64B	N/A	N/A	OCIV	(p)
48	RHR-RV-5	N/A	N/A	OCIV	(g)(j)
48	RHR-RV-25B	N/A	N/A	OCIV	(g)(j)
48	RHR-RV-88B	N/A	N/A	OCIV	(g)(j)
48	RHR-V-11B	N/A	N/A	MCIV	(p)
48	RHR-V-24B	270	10	AIV	(e)(p)
26	RHR-FCV-64C	N/A	N/A	OCIV	(p)
26	RHR-RV-88C	N/A	N/A	OCIV	(g)(j)
26	RHR-RV-25C	N/A	N/A	OCIV	(g)(j)
26	RHR-V-21	270	10	AIV	(p)
35	RHR-V-4A	N/A	N/A	OCIV	(c)(p)
32	RHR-V-4B	N/A	N/A	OCIV	(c)(p)
36	RHR-V-4C	N/A	N/A	OCIV	(c)(p)
11A	RHR-V-16A	N/A	N/A	OCIV	
11A	RHR-V-17A	N/A	N/A	OCIV	
11B	RHR-V-16B	N/A	N/A	OCIV	
11B	RHR-V-17B	N/A	N/A	OCIV	

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(e) May be opened at intermittent basis under administrative control.
(g) Not subject to Type C Leak Rate Test.
(j) Tested as part of Type A test.
(p) Not subject to leak rate testing (SR 3.6.1.1.1 and SR 3.6.1.3.12).

Table 1.6.1.3-1 (page 17 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
25A	RHR-V-27A	36	10	AIV	(e)
25B	RHR-V-27B	36	10	AIV	(e)
12A	RHR-V-41A	N/A	N/A	OCIV	(i)(c)
12A	RHR-V-42A	N/A	N/A	OCIV	(i)(c)
12B	RHR-V-41B	N/A	N/A	OCIV	(i)(c)
12B	RHR-V-42B	N/A	N/A	OCIV	(i)(c)
12C	RHR-V-41C	N/A	N/A	OCIV	(i)(c)
12C	RHR-V-42C	N/A	N/A	OCIV	(i)(c)
19A	RHR-V-50A	N/A	N/A	OCIV	(i)(c)
19B	RHR-V-50B	N/A	N/A	OCIV	(i)(c)
19A	RHR-V-53A	40	6	AIV	(i)
19A	RHR-V-123A	15	5	AIV	(i)
19B	RHR-V-53B	40	6	AIV	(i)
19B	RHR-V-123B	15	5	AIV	(i)
43A	RRC-V-13A	N/A	N/A	OCIV	
43A	RRC-V-16A	N/A	N/A	OCIV	
43B	RRC-V-13B	N/A	N/A	OCIV	
43B	RRC-V-16B	N/A	N/A	OCIV	

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(e) May be opened at intermittent basis under administrative control.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.

Table 1.6.1.3-1 (page 18 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
77Aa	RRC-V-19	5	2	AIV	
77Aa	RRC-V-20	5	2	AIV	
14	RWCU-V-1	30	7	AIV	(f)(l)
14	RWCU-V-4	21	7	AIV	(l)
17A/17B	RWCU-V-40	N/A	N/A	OCIV	
93	SA-V-109	N/A	N/A	MCIV	
13	SLC-V-4A	N/A	N/A	OCIV	
13	SLC-V-4B	N/A	N/A	OCIV	
13	SLC-V-7	N/A	N/A	OCIV	
27A	TIP-V-1	5	4	AIV	
27A	TIP-V-7	N/A	N/A	OCIV	(g)
27B	TIP-V-2	5	4	AIV	
27B	TIP-V-8	N/A	N/A	OCIV	(g)
27C	TIP-V-3	5	4	AIV	
27C	TIP-V-9	N/A	N/A	OCIV	(g)
27D	TIP-V-4	5	4	AIV	
27D	TIP-V-10	N/A	N/A	OCIV	(g)
27E	TIP-V-5	5	4	AIV	
27E	TIP-V-11	N/A	N/A	OCIV	(g)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(f) Not closed by SLC actuation signal.
(g) Not subject to Type C Leak Rate Test.
(l) Reflects closure times for containment isolation only.

Table 1.6.1.3-1 (page 19 of 19)
Primary Containment Isolation Valves

PEN NUMBER	VALVE NUMBER	MAXIMUM ISOLATION TIME (Seconds)	VALVE GROUP[(a)]	VALVE TYPE CODE	NOTES
27F	TIP-V-6	N/A	N/A	OCIV	
27F	TIP-V-15	5	4	AIV	
Same as EFCVs (e.g. 75b)	Corresponds to EFCV Number (e.g. PI-V-X75b)	N/A	N/A	MCIV	(n)(o)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.

(n) These are manual globe valves that are on instrument lines from the reactor pressure vessel and from primary containment.

(o) These valves do not function as primary containment isolation valves, as defined in Technical Specification Bases 3.6.1.3, to limit fission product release during and following design basis accidents.

1.6 CONTAINMENT SYSTEMS

1.6.1.5 Suppression Pool Spray

RFO 1.6.1.5 Two residual heat removal (RHR) suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One RHR suppression pool spray subsystem inoperable.	A.1 Restore RHR suppression pool spray subsystem to OPERABLE status.	7 days
B. Two RHR suppression pool spray subsystems inoperable.	B.1 Restore one RHR suppression pool spray subsystem to OPERABLE status.	8 hours
C. Required Compensatory Measure and associated Completion Time not met.	C.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.6.1.5.1	Verify each RHR suppression pool spray subsystem manual valve and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	31 days
SR 1.6.1.5.2	Verify each RHR suppression pool spray subsystem pump develops a flow of at least 450 gpm on recirculation flow through the RHR heat exchanger and suppression pool spray sparger.	In accordance with the Inservice Test Program

Table 1.6.4.2-1 (page 1 of 1)
Secondary Containment Ventilation System Automatic Isolation Valves

---NOTE---
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

VALVE FUNCTION		MAXIMUM ISOLATION TIME (Seconds)
1.	Reactor Building Ventilation Supply Valve ROA-V-1	15
2.	Reactor Building Ventilation Supply Valve ROA-V-2	15
3.	Reactor Building Ventilation Exhaust Valve REA-V-1	8
4.	Reactor Building Ventilation Exhaust Valve REA-V-2	8

Table 1.6.4.2-2 (page 1 of 1)
Secondary Containment System Automatic Isolation

--NOTE--
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

FUNCTION		VALVE NUMBER
1.	ECCS room sump discharge to Radwaste	FDR-V-219
2.	ECCS room sump discharge to Radwaste	FDR-V-220
3.	ECCS room sump discharge to Radwaste	FDR-V-221
4.	ECCS room sump discharge to Radwaste	FDR-V-222
5.	Reactor Building sump discharge to Radwaste	EDR-V-394
6.	Reactor Building sump discharge to Radwaste	EDR-V-395

Table 1.6.4.2-3 (page 1 of 2)
Secondary Containment System Manual Isolation

--NOTE--
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

FUNCTION		LOCATION
1.	NE Airlock Door R-109	RB 441
2.	NE Airlock Door R-108	RB 441
3.	NW Airlock Door R-110	RB 441
4.	NW Airlock Door R-111	RB 441
5.	SW Airlock Door R-105	RB 441
6.	SW Airlock Door R-104	RB 441
7.	RR Bay Airlock Outer Door R-106	RB 441
8.	RR Bay Airlock Access Door R-103	RB 441
9.	Sand Filled Cavity Drains FD-V-37	RB 441
10.	Sand Filled Cavity Drains FD-V-36	RB 441
11.	Floor Hatch to RB 422 MT-DOOR-A2	RB 441
12.	Floor Hatch to RR Bay Airlock MT-DOOR-A1	RB 471
13.	NW Airlock Door R-204	RB 471
14.	NW Airlock Door R-205	RB 471
15.	NW Airlock Door R-211	RB 471
16.	NW Airlock to RW Building Door R-207	RB 471

Table 1.6.4.2-3 (page 2 of 2)
Secondary Containment System Manual Isolation

FUNCTION		LOCATION
17.	NW Airlock to RW Building Door R-206	RB 471
18.	MWR-V-120	RB 478
19.	MWR-V-121	RB 478
20.	Reactor Building Elevator Access Lock Door R-210	RB 487
21.	Reactor Building Elevator Access Lock Door R-209	RB 487
22.	Steam Tunnel Blowout Panel North Wall	TB 501
23.	Steam Tunnel Blowout Panel East Wall	TB 501
24.	Steam Tunnel Blowout Panel Ceiling	TB 501
25.	Steam Tunnel Blowout Panel East Wall - Manway cover	TB 501
26.	NW Airlock Door R-304	RB 501
27.	NW Airlock Door R-305	RB 501
28.	Steam Tunnel Door R-313[a]	RB 501
29.	Miscellaneous Drain Isolation MD-V-102	RB 572
30.	Reactor Building Metal Siding	RB 606
31.	Reactor Building Metal Roofing	RB 606
32.	Reactor Building Roof Access Hatch	RB 606

(a) This door is not required for secondary containment operability. It is required to mitigate the effects of a high energy line break.

1.7 PLANT SYSTEMS

1.7.1 Area Temperature Monitoring

RFO 1.7.1 Area temperatures shall be maintained within limits as shown in Table 1.7.1-1.

APPLICABILITY: When equipment in a room or area listed in Table 1.7.1-1 is required to be OPERABLE.

COMPENSATORY MEASURES

--NOTE--

Separate condition entry is allowed for each area.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. ------------NOTE------------ Required Compensatory Measure A.2 shall be completed if this Condition is entered. --------------------------------- With one or more areas not within limits of Table 1.7.1-1.	A.1 Enter the condition referenced in Table 1.7.1-1.	Immediately
	<u>AND</u>	
	A.2 Initiate a Condition Report (CR).	24 hours
B. As required by Compensatory Measure A.1 and referenced in Table 1.7.1-1.	B.1 Initiate action to restore area or room temperature to be within the Condition B limits of Table 1.7.1-1.	Immediately
	<u>AND</u>	
	B.2 Perform SR 1.7.1.1 for affected areas.	Once per 4 hours
C. As required by Compensatory Measure A.1 and referenced in Table 1.7.1-1.	C.1 Restore area or room temperature to be within the limits of Table 1.7.1-1.	1 hour

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Declare affected equipment as listed in Table 1.7.1-2 inoperable or associated LCO not met and enter the required action.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.1.1	Verify temperatures in rooms/areas listed in Table 1.7.1-1 are within limits.	As noted in Table 1.7.1-1

Table 1.7.1-1 (page 1 of 7)
Area/Room Temperature Limits

---NOTE---
When the area/room temperature is above the Condition B limit solely due to performance of required surveillances, when swapping units, or changing modes on area/room HVAC equipment, entry into the associated Conditions and Required Compensatory Measures may be delayed for up to 4 hours provided the associated function remains OPERABLE.

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
Main Control Room(1)	C414	≤ 78°F	≤ 104°F	12 hours
DG Engine/Electrical Rooms				
HPCS DG3 Engine Room(1)	D100	≤ 112°F	≤ 122°F	12 hours
DG1 Engine Room(1)	D107	≤ 120°F	≤ 130°F	12 hours
DG2 Engine Room(1)	D110	≤ 120°F	≤ 130°F	12 hours
HPCS DG3 Elec Equip Room(1)(9)(18)	D114	≤ 104°F	≤ 111°F/ ≤ 120°F/ ≤ 129°F	12 hours
DG1 Elec Equip Room(1)	D115	≤ 104°F	≤ 122°F/ ≤ 129°F	12 hours
DG2 Elec Equip Room(1)	D116	≤ 104°F	≤ 122°F/ ≤ 129°F	12 hours
DG Support Areas/Rooms				
DG1 Storage Tank/Transfer Room	D101	≤ 104°F	≤ 142°F	none
DG2 Storage Tank/Transfer Room	D102	≤ 104°F	≤ 142°F	none
HPCS DG3 Storage Tank/Transfer Room	D103	≤ 104°F	≤ 142°F	none

(1) Monitor local temperature in room.
(9) See Table 1.7.1-2 for applicability to equipment vs. temperature limit.
(18) See also HPCS DG Battery Room D114 on page 1.7.1-6.

Table 1.7.1-1 (page 2 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
DG Support Areas/Rooms (continued)				
Reactor Bldg/DG Bldg Corridor	D104	≤ 104°F	≤ 137°F	31 days(8)
HPCS Day Tank Room	D105	≤ 104°F	≤ 162°F	none
DG1 Day Tank Room	D108	≤ 104°F	≤ 162°F	none
DG2 Day Tank Room	D111	≤ 104°F	≤ 162°F	none
DG Bldg HVAC Room	D113	≤ 104°F	≤ 126°F	31 days (8)
HPCS DG3 Air Filter Room	D200	≤ 150°F	N/A	none
HPCS DG3 Air Handling Room	D201	≤ 104°F	≤ 122°F	none
DG1 Air Filter Room	D202	≤ 150°F	N/A	none
DG1 Air Handling Room	D203	≤ 104°F	≤ 130°F	none
DG2 Air Filter Room	D204	≤ 104°F	≤ 132°F	none
DG2 Air Handling Room	D205	≤ 104°F	≤ 130°F	none
RW Bldg Support Areas/ Rooms				
RW/Reactor Bldg Corridor(1)	C121	≤ 104°F	N/A	31 days(8)
Cable Chase	C212	≤ 130°F	N/A	none
Cable Chase	C230	≤ 104°F	≤ 136°F	none
Cable Spread Room	C304	≤ 120°F	N/A	none
Equip Access Area	C502	≤ 104°F	≤ 140°F	none

(1) Monitor local temperature in room.
(8) Increase surveillance frequency to once per 12 hours if HVAC for this area/room is secured/inoperable.

Table 1.7.1-1 (page 3 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
RW Bldg Support Areas/ Rooms (continued)				
Elec. Access Area	C503	≤ 125°F	N/A	none
HVAC Equip Room 1(9)	C507	≤ 104°F	≤ 120°F/ ≤ 129°F	12 hours
HVAC Equip Room 2(9)	C508	≤ 104°F	≤ 120°F/ ≤ 129°F	12 hours
Critical Switchgear Rooms/ Equip				
Elec Switchgear Room 2(1)	C206	≤ 104°F	≤ 120°F	12 hours
Remote Shutdown(1)	C207	≤ 104°F	≤ 124°F/ ≤ 126°F	12 hours
Elec Switchgear Room 1(1)(9)	C208	≤ 104°F	≤ 120°F/ ≤ 129°F	12 hours
RPS Room 1(1)(9)	C211	≤ 104°F	≤ 120°F/ ≤ 129°F/ ≤ 131°F	12 hours
RPS Room 2(1)(9)	C213	≤ 104°F	≤ 120°F/ ≤ 129°F/ ≤ 131°F	12 hours
Battery Charger Room 1(1)(9)	C216	≤ 104°F	≤ 122°F/ ≤ 129°F/ ≤ 131°F	12 hours
Battery Charger Room 2(1)	C224	≤ 104°F	≤ 122°F/ ≤ 131°F	12 hours

(1) Monitor local temperature in room.
(9) See Table 1.7.1-2 for applicability to equipment vs. temperature limit.

Table 1.7.1-1 (page 4 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
Battery Rooms				
Div I Battery Room(1)	C210	≤ 100°F ≥ 74°F	≤ 110°F > 60°F(16)	12 hours 12 hours
Div II Battery Room(1)	C215	≤ 100°F ≥ 74°F	≤ 110°F > 60°F(16)	12 hours 12 hours
HPCS DG Battery Room(1)(11)	D114	≤ 112°F	≤ 122°F/ ≤ 148°F	12 hours
		≥ 65°F	> 60°F(16)	12 hours
Reactor Bldg Critical Elec Equip Areas/Rooms				
DC MCC Room(1)	R212	≤ 104°F	≤ 129°F	12 hours
MCC Room Div II(1)	R410	≤ 104°F	≤ 129°F	12 hours
MCC Room Div I(1)	R411	≤ 104°F	≤ 129°F	12 hours
Hydrogen Recombiner Room Div I(1)(9)	R611	≤ 94°F	≤ 104°F/ ≤ 129°F	12 hours
Hydrogen Recombiner Room Div II(1)(9)	R612	≤ 94°F	≤ 104°F/ ≤ 129°F	12 hours
Reactor Bldg Essential Pump Rooms				
RHR A Pump Room(1) or (3)	R6	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours

(1) Monitor local temperature in room.
(3) Monitor temperature remotely.
(9) See Table 1.7.1-2 for applicability to equipment vs temperature limit.
(11) Also see HPCS Electrical Room D114 on page 1.7.1-3.
(12) Pump not running.
(13) Pump running.
(16) Battery OPERABILITY is governed by cell electrolyte temperature pursuant to LCO 3.8.6. Monitor representative cell electrolyte temperature once every 4 hours if room temperature is less than 60°F or declare batteries inoperable when room temperature reaches the Condition C limit.

Table 1.7.1-1 (page 5 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
Reactor Bldg Essential Pump Rooms (continued)				
RHR B Pump Room(1) or (3)	R7	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours
HPCS Pump Room(1)	R11	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours
LPCS Pump Room(1)	R12	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours
RHR C Pump Room(1)	R14	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours
RCIC Pump Room(1) or (3)	R15	≤ 104°F(12) ≤ 140°F(13)	≤ 150°F	12 hours(17)
Reactor Bldg Support Areas/Rooms				
CRD/Cond Pump Room	R9/R10	≤ 104°F	N/A	none
422' NE Stairwell	R13	≤ 104°F	N/A	none
471' Open Areas (not elsewhere listed)(9)(10)	N/A	≤ 94°F	≤ 104°F	12 hours
441' Railway Bay(1)	R105	≤ 104°F	≤ 137°F	12 hours(17)
501' Open Areas/Rooms (not elsewhere listed)	N/A	≤ 94°F	≤ 104°F	none
522' Open Areas/Rooms (not elsewhere listed)(4)	N/A	≤ 100°F	≤ 104°F	31 days(8)

(1) Monitor local temperature in room.
(3) Monitor temperature remotely.
(4) Monitor temperature for this area at a local point at 522' NW side.
(8) Increase surveillance frequency to once per 12 hours if HVAC for this area/room is secured/inoperable.
(9) See Table 1.7.1-2 for applicability to equipment vs temperature limit.
(10) Monitor temperature for this area at a local point at 471' W near E-SH-9 or 10.
(12) Pump not running.
(13) Pump running.
(17) Surveillance not required in MODE 4 or 5.

Table 1.7.1-1 (page 6 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
Reactor Bldg Support Areas/Rooms (continued)				
Fuel Pool Heat Exchanger Room	R506	≤ 104°F	N/A	none
548' Open Areas/Rooms (not elsewhere listed)(5)	N/A	≤ 94°F	≤ 104°F	31 days(8)
572' Open Areas/Rooms (not elsewhere listed)(6)	N/A	≤ 94°F	≤ 104°F	31 days(8)
606' Open Areas(7)	N/A	≤ 94°F	≤ 104°F	31 days(8)

(5) Monitor temperature for this area at two local points - 548' NW side and 548' S near SLC.
(6) Monitor temperature for this area at a local point at 572' N near SGT.
(7) Monitor temperature for this area at a local point at 606' N near stack monitor equipment.
(8) Increase surveillance frequency to once per 12 hours if HVAC for this area/room is secured/inoperable.

Table 1.7.1-1 (page 7 of 7)
Area/Room Temperature Limits

Description	Room/Area	Condition B Temp Limits	Condition C Temp Limits	Surveillance Frequency
Containment				
Containment Drywell(3)	N/A	≤ 150°F(14)	≤ 200°F(14)	12 hours
Suppression Pool Air Space(3)	N/A	≤ 117°F(14)	≤ 150°F(14)	12 hours
Drywell Under RPV(3)	N/A	≤ 165°F(14)	≤ 200°F(14)	12 hours
Sacrificial Shield Wall Lower/Mid Annulus (18)	N/A	≤ 185°F(19)	≤ 185°F(14)	12 hours
Main Steam Tunnel				
Main Steam Tunnel(3)	R310	≤ 140°F(15)	≤ 200°F(14)	12 hours(17)
Essential Pump Houses				
SW Pump House A(1)(9)	N/A	≤ 114°F	≤ 122°F/ ≤ 140°F	12 hours
SW Pump House B(1)	N/A	≤ 114°F	≤ 122°F	12 hours

(1) Monitor local temperature in room.
(3) Monitor temperature remotely.
(9) See Table 1.7.1-2 for applicability to equipment vs temperature limit.
(14) Drywell bulk average temperature limit pursuant to LCO 3.6.1.4 is also applicable. Elevated temperatures in these locations could impact the measured Drywell average temperature. Operation above Condition B limits impacts affected equipment's qualified life if not mitigated. Obtain life projection calculation from Engineering in a timely manner to assure qualification life limits (peak temperature and duration) are not exceeded. If area temperature indication exceeds Condition C limits prior to obtaining revised life limit and/or new peak temperature limit, declare affected equipment (as determined by Engineering) inoperable.
(15) The upper limit for the main steam tunnel is also limited by main steam tunnel leak detection isolation of MSIVs pursuant to LCO 3.3.6.1. Operation above 140°F impacts affected equipment's qualified life if not mitigated. Obtain life projection calculation from Engineering in a timely manner to assure qualification life limits (peak temperature and duration) are not exceeded. If area temperature indication exceeds 200°F prior to obtaining revised life limit and/or new peak temperature limit, declare affected equipment (as determined by Engineering) inoperable.
(17) Surveillance not required in MODE 4 or 5.
(18) The space between the RPV and Sacrificial Shield Wall monitored by CMS-TE-15 through 20.
(19) Average temperature for CMS-TE-15 through 20 must me ≤ 150°F.

Table 1.7.1-2 (page 1 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
C206	Div II Critical Switchgear	120°F	E-SM-8 E-SL-81,83	1	3.8.7/3.8.8
C207	Remote Shutdown	124°F	MSRV-VPI	1	1.3.3.1
		126°F	E-CP-C61/P001 E-CP-RS	1	3.3.3.2
C208	Div I Critical Switchgear	120°F	E-SM-7 E-SL-71,73	1	3.8.7/3.8.8
		129°F	E-DP-S1/1F	1,3	3.8.7/3.8.8
C210	Div I Batteries	110°F	E-B2-1,E-B1-1 E-B0-1A,E-B0-1B	1	3.8.4/3.8.5 1.8.4
	(Minimum Electrolyte Temp)	> 60°F min.	E-B2-1,E-B1-1 E-B0-1A,E-B0-1B	7	3.8.6 1.8.6
C211	RPS Room #1	120°F	SW-V-2A(See note 1)	1	3.7.1/3.8.1
		129°F	E-MC-7A E-MC-S1/1D	1,3	3.8.7/3.8.8
		131°F	E-IN-3A,3B	13	3.8.7/3.8.8
C213	RPS Room #2	120°F	SW-V-2B(See note 1)	1	3.7.1/3.8.1
		129°F	E-MC-S1/2D E-MC-8A RPS-EPA-3A,3C,3E,3F	1,3	3.8.7/3.8.8
		131°F	E-IN-2A,2B	13	3.8.7/3.8.8
C215	Div II Batteries	110°F	E-B1-2 E-B0-2A,E-B0-2B	1	3.8.7/3.8.8 1.8.4
	(Minimum Electrolyte Temp)	> 60°F min.	E-B1-2 E-B0-2A,E-B0-2B	7	3.8.6 1.8.6

Note 1: Temperatures above 120°F in Rooms C211 and C213 affect the time delay setpoints for relays that affect operation of the SW valves listed.

Table 1.7.1-2 (page 2 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
C216	Div I Battery Chargers	122°F	E-C2-1 E-CO-1A,1B	1 1	3.8.4/3.8.5 1.8.4
		129°F	E-MC-S2/1A,1B	1	3.8.7/3.8.8
		131°F	E-C1-1A,1B	14	3.8.4/3.8.5
C224	Div II Battery Chargers	122°F	E-C0-2A,2B	1	1.8.4
		131°F	E-C1-2A,2B	14	3.8.4/3.8.5
C230	Cable Chase	136°F	DEA-M-FN/52	3	3.7.1
C414	Main Control Room	104°F	All Safety-Related	4	3.7.4/3.8.7/ 3.8.8
C502	525' Gen. Equip Area	140°F	CCH-CR-1A CCH-CR-1B CCH-CP-1A CCH-CP-1B	1	3.7.4/1.7.2
C507	HVAC Room 1	120°F	WMA-AH-51A WMA-AH-52A WMA-AH-53A	1	3.7.1
		129°F	E-MC-7F	1,3	3.8.7/3.8.8
C508	HVAC Room 2	120°F	WMA-AH-51B WMA-AH-52B WMA-AH-53B	1	3.7.1
		129°F	E-MC-8F	1,3	3.8.7/3.8.8
D100	HPCS DG3 Engine Room	122°F	HPCS-GEN-DG3	3	3.8.1/3.8.2
D101	DG1 Storage Tank/Transfer	142°F	DO-LITS-10A	3	3.8.3
D102	DG2 Storage Tank/Transfer	142°F	DO-LITS-10B	3	3.8.3

Table 1.7.1-2 (page 3 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
D103	DG3 Storage Tank/Transfer	142°F	DO-LITS-15 DO-RMS-P/2	3	3.8.3
D104	RB/DG Corridor	137°F	CIA backup supply	5	3.5.1
D105	HPCS Day Tank Room	162°F	DO-LS-21	3	3.8.3
D107	DG1 Engine Room	130°F	DG-EHO-1A1 DG-EHO-1A2 DG-GEN-DG1	3	3.8.1/3.8.2
D108	DG1 Day Tank Room	162°F	DO-LS-10A	3	3.8.3
D110	DG2 Engine Room	130°F	DG-EHO-1B1 DG-EHO-1B2 DG-GEN-DG2	3	3.8.1/3.8.2
D111	DG2 Day Tank Room	162°F	DO-LS-10B	3	3.8.3
D113	DG HVAC Room	126°F	DMA-M-AD53 DOA-M-AD/52/A DOA-M-AD/52/B DMA-M-AD51	3	3.8.1/3.82
D114	DG3 Elec Equip Room	111°F	DSA Instruments	3	3.8.3
		120°F	E-SM-4 E-MC-4A	3	3.8.7/3.8.8
		129°F	E-MC-4A/1 HPCS-DP-DG3/AUX E-DP-S1/HPCS	3	3.8.7/3.8.8
D114	Div III Battery	122°F	HPCS-C1-1	3	3.8.1/3.8.2
		148°F	HPCS-B1-DG3	3	3.5.1/3.8.1/ 3.8.2
	(Minimum Electrolyte Temp)	> 60°F min.	HPCS-B1-DG3	7	3.8.6

Table 1.7.1-2 (page 4 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
D115	DG1 Elec Equip Room	122°F	DMA-TIS-11/1,12/1 DMA-TIC-11/2,12/2	3	3.8.1/3.8.2
		129°F	DG-EXC-DG1 E-MC-7AA E-SM-DG1/7	3	3.8.1/3.8.2 3.8.7/3.8.8
D116	DG2 Elec Equip Room	122°F	DMA-TIS-21/1,22/1 DMA-TIC-21/2,22/2	3	3.8.1/3.8.2
		129°F	DG-EXC-DG2 E-MC-8AA E-SM-DG2/8	3	3.8.1/3.8.2 3.8.7/3.8.8
D201	HPCS DG3 Air Handling Unit	122°F	DMA-TIC-31/2 DMA-TIC-32/2	3	3.7.1
D203	DG1 Air Handling Unit	130°F	DMA-M-AD/11/1A,1B,2A,2B DMA-M-AD/12/1,12/2	3	3.7.1
D204	DG2 Air Filter Room	132°F	SW-CB-H1,H2,H3	3	3.7.1
D205	DG2 Air Handling Unit	130°F	DMA-M-AD21/1A DMA-M-AD21/1B DMA-M-AD22/1	3	3.7.1
R6	RHR A Pump Room	150°F	RHR-P-2A RHR-M-P/2A	6	3.5.1/3.5.2
R7	RHR B Pump Room	150°F	RHR-P-2B RHR-M-P/2B	6	3.5.1/3.5.2
R11	HPCS Pump Room	150°F	HPCS-P-1 HPCS-M-P/1	6	3.5.1/3.5.2
R12	LPCS Pump Room	150°F	LPCS-P-1 LPCS-M-P/1	6	3.5.1/3.5.2
R14	RHR C Pump Room	150°F	RHR-P-2C RHR-M-P/2C	6	3.5.1/3.5.2

Table 1.7.1-2 (page 5 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
R15	RCIC Pump Room	150°F	RCIC-P-1 RCIC-DT-1	6	3.5.3
R105	441' RR Bay	137°F	CIA N2 Supply	5	3.5.1
R212	471' DC MCC Room	129°F	E-MC-S2/1A	3	3.8.7/3.8.8
R410	522' MCC Room Div II	129°F	E-MC-8B E-MC-8BA	3	3.8.7/3.8.8
R411	522' MCC Room Div I	129°F	E-MC-7B E-MC-7BA	3	3.8.7/3.8.8
R611	Hydrogen Recombiner Room Div I	104°F	SGT DIV I	7	3.6.4.3
		129°F	E-MC-7BB	3	3.8.7/3.8.8
R612	Hydrogen Recombiner Room Div II	104°F	SGT DIV II	7	3.6.4.3
		129°F	E-MC-8BB	3	3.8.7/3.8.8
	RB 471' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
	RB 501' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
	RB 522' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
	RB 548' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
	RB 572' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
	RB 606' Open areas	104°F	SGT DIV I SGT DIV II	11	3.6.4.3
PH A	SW Pump House A	122°F	SW-M-P/1A E-TR-7AF/1	1	3.7.1
		140°F	HPCS-M-P/2	1	3.5.1/3.5.2

Table 1.7.1-2 (page 6 of 6)
Equipment Operability List

Area/ Room	Function	Limiting Temp	Affected EPN's	Ref	LCO/RFO
PH B	SW Pump House B	122°F	SW-M-P/1B E-TR-8AF/1	1	3.7.1
N/A	Drywell	200°F	see Table 1.7.1-1 note 14	8	Operations to determine
N/A	Suppression Pool Air Space	200°F	see Table 1.7.1-1 note 14	12	Operations to determine
N/A	Area Under RPV	200°F	see Table 1.7.1-1 note 14	9	Operations to determine
N/A	Main Steam Tunnel	200°F	see Table 1.7.1-1 note 15	10	Operations to determine

References for Table 1.7.1-2

1. QID 829213
2. Deleted
3. Calculation EQ-02-92-10
4. FSAR 3.11-1
5. PER 200-0060
6. QID 213032
7. Engineering Technical Memorandum TM-2123
8. QID 297009
9. QID 067005
10. QID 315025
11. Calculation NE-02-94-71
12. QID 195013
13. QID 184003
14. QID 063002

1.7 PLANT SYSTEMS

1.7.2 Control Room Emergency Chilled Water System

RFO 1.7.2 Two control room emergency chilled water subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During operations with a potential for draining the reactor vessel (OPDRVs)

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more control room emergency chilled water subsystems inoperable.	A.1 Enter applicable Conditions and Required Actions of LCO 3.7.4, “Control Room Air Conditioning (AC) System,” for inoperable control room AC subsystem(s).	Immediately
	<u>OR</u>	
	A.2 Verify Standby Service Water (SW) System capable of maintaining control room temperature ≤ 85°F dry blub.	Immediately <u>AND</u> Once per 24 hours thereafter

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.2.1	Verify each control room emergency chilled water subsystem has the capability to remove control room heat load.	31 days

1.7 PLANT SYSTEMS

1.7.3 Snubbers

RFO 1.7.3 Each required hydraulic and mechanical snubber shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 for snubbers located on systems required to be OPERABLE in those MODES.

COMPENSATORY MEASURES

--NOTE--

Separate Condition entry is allowed for each system.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more systems with one or more required snubbers inoperable.	A.1 Enter Technical Specifications LCO 3.0.8.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.3.1	Each snubber shall be demonstrated OPERABLE in accordance with the Augmented Inservice Testing Inspection Program.	In accordance with the program

Table 1.7.6-1 (page 1 of 1)
Main Turbine Bypass System Response Time

---NOTE---
Table 1.7.6-1 lists required response time to support OPERABILITY for LCO 3.7.6. See Technical Specification 3.7.6 and applicable Bases for further application details.

FUNCTION	RESPONSE TIME (Milliseconds)
1. 80% of Turbine Bypass Capacity established	$\leq$ 300

1.7 PLANT SYSTEMS

1.7.8 Sealed Source Contamination

RFO 1.7.8 Each sealed source containing > 100 microcuries of beta and/or gamma emitting material or > 5 microcuries of alpha emitting material shall be free of removable contamination ≥ 0.005 microcuries.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

---NOTE---

RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Requirements of the RFO not met.	A.1 Remove sealed source from use.	Immediately
	<u>AND</u>	
	A.2 Repair or dispose of sealed source.	Prior to use
	<u>AND</u>	
	A.3 Submit report to NRC.	12 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.8.1	Verify each sealed startup source and fission detector is within limit.	Once within 31 days prior to being subjected to core flux or installed in the core <u>AND</u> Once within 31 days following repair or maintenance
SR 1.7.8.2	------------------------------NOTES--------------------------- 1. Hydrogen 3 and gases are excluded. 2. Sealed startup sources and fission detectors previously subjected to core flux are excluded. --- Verify each sealed source in use with a half-life > 30 days is within limit.	 6 months
SR 1.7.8.3	------------------------------NOTE----------------------------- Startup sources and fission detectors previously subjected to core flux are excluded. --- Verify each sealed source and fission detector not in use are within limit.	 Once within 6 months prior to use or transfer to another licensee

1.8 ELECTRICAL POWER SYSTEMS

1.8.4 24 VDC Sources

RFO 1.8.4 The Division 1 and Division 2 24 VDC electrical power subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: When supported equipment is required to be OPERABLE.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each subsystem.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One required Division 1 or 2 24 VDC battery charger inoperable.	A.1 Restore battery terminal voltage to ≥ 26.0 V.	2 hours
	<u>AND</u>	
	A.2 Verify battery float current is ≤ 0.2 amps.	Once per 12 hours
	<u>AND</u>	
	A.3 Restore required battery charger to OPERABLE status.	72 hours
B. One required Division 1 or 2 24 VDC battery inoperable.	B.1 Restore battery to OPRABLE status.	2 hours
C. Division 1 or 2 24 VDC electrical power subsystem inoperable for reasons other than Condition A or B.	C.1 Restore Division 1 and 2 24 VDC electrical power subsystem to OPERABLE status.	2 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
D. Required Compensatory Measure and associated Completion Time of Condition A, B, or C not met.	D.1 Declare required supported equipment inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.4.1	Verify battery terminal voltage on float charge $\geq$ 26.0 V.	7 days
SR 1.8.4.2	Verify each required battery charger supplies required loads at ≥ 26 V for ≥ 1.5 hours.	24 months
SR 1.8.4.3	------------------------------NOTE------------------------------ The modified performance discharge test in SR 1.8.6.1.22 may be performed in lieu of the service test in SR 1.8.4.3. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required load when subjected to a battery service test.	24 months

1.8 ELECTRICAL POWER SYSTEMS

1.8.6.1 24 VDC Battery Parameters

RFO 1.8.6.1 Battery cell parameters for the Division 1 and 2 24V batteries shall be within the limits.

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

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more batteries with one or more battery cells float voltage < 2.07 V.	A.1 Perform SR 1.8.4.1.	2 hours
	<u>AND</u>	
	A.2 Perform SR 1.8.6.1.1.	2 hours
	<u>AND</u>	
	A.3 Restore affected cell float voltage $\geq$ 2.07 V.	24 hours
B. One or more batteries with float current > 0.2 amps.	B.1 Perform SR 1.8.4.1.	2 hours
	<u>AND</u>	
	B.2 Restore battery float current to ≤ 0.2 amps.	12 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
C. One or more batteries with one or more cells electrolyte level less than the minimum established design limit (low level mark).	--------------------NOTE------------------- Required Compensatory Measures C.1, C.2, and C.3 are only applicable if electrolyte level was below the top of plates. --	
	C.1 Restore electrolyte level to above top of plates.	8 hours
	<u>AND</u>	
	C.2 Verify no evidence of leakage.	12 hours
	C.3 Equalize and perform a service test.	48 hours
	<u>AND</u>	
	C.4 Restore electrolyte level to greater than or equal to the minimum established design limits.	31 days
D. One or more batteries with pilot cell electrolyte temperature less than the minimum established design limit (60°F).	D.1 Restore battery pilot cell temperature to greater than or equal to minimum established design limit.	12 hours
E. Two or more redundant division batteries with battery parameters not within limits.	E.1 Restore battery parameters for affected battery in one division to within limits.	2 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
F. One or more batteries with float voltage not in range (26.5 to 27.5 V).	F.1 Verify float voltage ≥ 26.0 V.	2 hours
	<u>AND</u>	
	F.2 Return float voltage to be within range.	24 hours
G. One or more batteries with electrolyte level not in range (> low level mark and ≤ 1/4" above high level mark).	G.1 Verify electrolyte level greater than or equal to the low level mark.	2 hours
	<u>AND</u>	
	G.2 Return level to be within range.	24 hours
H. One or more batteries with corrosion identified.	H.1 Verify affected connection resistance is less than allowed.	24 hours
	<u>AND</u>	
	H.2 Remove corrosion.	7 days
I. One or more battery rooms with ventilation not operating.	I.1 Verify room temperature ≥ 74°F.	2 hours
	<u>AND</u>	
	I.2 Verify affected battery(s) are not on equalize.	24 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
J. One or more batteries with battery cell electrolyte temperature < 74°F.	J.1 Verify room temperature ≥ 74°F.	2 hours
	AND	
	J.2 Restore battery cell temperature to ≥ 74°F.	24 hours
K. One or more batteries with one or more cells with individual cell float voltage < 2.13 V.	K.1 Verify remaining cell float voltage ≥ 2.07 V.	2 hours
	AND	
	K.2 Monitor subject cell voltage.	every 31 days
L. One or more batteries with float current > 0.1 amp.	L.1 Verify float current ≤ 0.2 amps.	2 hours
	AND	
	L.2 Restore current to ≤ 0.1 amps.	24 hours
M. One or more batteries with individual cell specific gravity < 1.195 or battery average specific gravity ≤ 1.205.	M.1 Verify float voltage ≥ 26.0V.	24 hours
	AND	
	M.2 Verify float current ≤ 0.2 amps.	24 hours
	AND	
	M.3 Verify all cell voltages ≥ 2.07 V.	24 hours
	AND	
	M.4 Restore specific gravity to within limits.	92 days

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
N. One or more batteries with a required Battery Parameter not met for reasons other than Condition A, B, C, D, E, F, G, H, I, J, K, L, or M. <u>OR</u> Required Compensatory Measures and associated Completion Time of Condition A, B, C, D, or E not met. <u>OR</u> One or more batteries with one or more battery cell(s) float voltage < 2.07 V and float current > 0.2 amps.	N.1 Declare associated battery inoperable.	Immediately
O. One or more batteries with connection resistance greater than allowed. <u>OR</u> Cell crack or leakage, appearance or rack issues identified. <u>OR</u> Required Compensatory Measures and associated Completion Time of Condition F, G, H, I, J, K, L, or M not met.	O.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.6.1.1	---------------------------NOTE---------------------------- Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 1.8.4.1. -- Verify float current of each battery is ≤ 0.2 amps.	7 days
SR 1.8.6.1.2	Verify float voltage of each battery pilot cell is ≥ 2.07 V.	31 days
SR 1.8.6.1.3	Verify electrolyte level of each battery connected cell is ≥ minimum established design limit (low level mark).	31 days
SR 1.8.6.1.4	Verify electrolyte temperature of each battery pilot is ≥ the minimum established design limits (60°F).	31 days
SR 1.8.6.1.5	Verify float voltage of each battery is in range (26.5 to 27.5 V).	31 days
SR 1.8.6.1.6	Verify appearance of battery, rack, and area is acceptable.	31 days
SR 1.8.6.1.7	Verify electrolyte level of each battery connected cell is in range (> low level mark and ≤ 1/4" above high level mark).	31 days
SR 1.8.6.1.8	Verify no cracks in cells or evidence of electrolyte leakage.	31 days
SR 1.8.6.1.9	Verify no visible corrosion and cell to cell and terminal connections are coated with anti-corrosion material.	31 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.6.1.10	Verify float voltage of each battery pilot cell is ≥ 2.13 V.	31 days
SR 1.8.6.1.11	Verify electrolyte temperature of each battery pilot cell is ≥ 74°F.	31 days
SR 1.8.6.1.12	Verify float charging current of each battery is ≤ 0.1 amp.	31 days
SR 1.8.6.1.13	Verify float voltage of each battery connected cell is ≥ 2.07 V.	92 days
SR 1.8.6.1.14	Verify float voltage of each battery connected cell is ≥ 2.13 V.	92 days
SR 1.8.6.1.15	Verify electrolyte temperature of each battery's selected cells (10% or more) is ≥ 74°F.	92 days
SR 1.8.6.1.16	Verify specific gravity of each battery connected cell is ≥ 1.195.	12 months
SR 1.8.6.1.17	Verify the average specific gravity of each battery's connected cells is > 1.205.	12 months
SR 1.8.6.1.18	Verify electrolyte temperatures of each battery connected cell is ≥ 74°F.	12 months
SR 1.8.6.1.19	Perform detailed visual inspection of each battery connected cells.	12 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.6.1.20	Verify cell to cell connection resistance, terminal connection resistance, and inter-tier resistance is within allowed values: Cell to cell ≤ 137 E-6 ohms Inter-tier ≤ 716 E-6 ohms	12 months
SR 1.8.6.1.21	Perform rack inspection.	12 months
SR 1.8.6.1.22	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 18 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating. <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating.

1.8 ELECTRICAL POWER SYSTEMS

1.8.6.2 125 and 250 VDC Battery Parameters

RFO 1.8.6.2 Battery parameters for the Division 1, 2, and 3, 125 and Division 1 250 VDC batteries shall be within the limits.

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

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more batteries with float voltage not in range (129 to 132 / 258 to 264 V).	A.1 Verify float voltage ≥ 126/252 V.	2 hours
	<u>AND</u>	
	A.2 Return float voltage to be within range.	24 hours
B. One or more batteries with electrolyte level not in range (> low level mark and ≤ 1/4" above high level mark).	B.1 Verify electrolyte level greater than or equal to the low level mark.	2 hours
	<u>AND</u>	
	---------------NOTE--------------- Required Compensatory Measure B.2 is only applicable if electrolyte level was below the top of plates. -------------------------------------	
	B.2 Equalize and perform a service test.	48 hours
	<u>AND</u>	

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. (continued).	B.3 Return level to be within range.	31 days
C. One or more batteries with corrosion identified.	C.1 Verify affected connection resistance is less than allowed.	24 hours
	AND	
	C.2 Remove corrosion.	7 days
D. One or more battery rooms with ventilation not operating.	D.1 Verify room temperature is:	
	a. ≥ 74°F for Division 1 and 2 batteries; and	2 hours
	b. ≥ 65°F for Division 3 battery.	24 hours
	AND	
	D.2 Verify affected battery(s) are not on equalize.	
E. One or more batteries with battery cell electrolyte temperature:	E.1 Initiate Condition Report.	Immediately
	AND	
a. For Division 1 and 2 batteries, < 74EF; and	E.2 Verify room temperature is:	2 hours
	a. ≥ 74°F for Division 1 and 2 batteries; and	
b. For Division 3 battery < 65EF.	b. ≥ 65°F for Division 3 battery.	24 hours
	AND	
	E.3 Restore battery cell temperature within limit.	

COMPENSATORY MEASURES (continued)

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
F. One or more batteries with one or more cells with individual cell float voltage < 2.13 V.	F.1 Verify remaining cell float voltages ≥ 2.07 V. AND F.2 Monitor subject cell voltage.	24 hours Every 31 days
G. One or more batteries with float current > 1 amp.	G.1 Verify float current ≤ 2 amps. AND G.2 Restore current to ≤ 1 amp.	2 hours 24 hours
H. One or more batteries with individual cell specific gravity < 1.195 or battery average specific gravity ≤ 1.205.	H.1 Verify float voltage ≥ 126/252 V. AND H.2 Verify float current ≤ 2 amps. AND H.3 Verify all cell voltage ≥ 2.07 V. AND H.4 Restore specific gravity to be within limits.	24 hours 24 hours 24 hours 92 days

COMPENSATORY MEASURES (continued)

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
I. One or more batteries with connection resistance greater than allowed. <u>OR</u> Cell crack or leakage, appearance or rack issues identified. <u>OR</u> Required Compensatory Measure and associated Completion Time of Condition A, B, C, D, E, F, G, or H not met.	I.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.6.2.1	Verify float voltage of each battery is in range (129 to 132 / 258 to 264 V).	31 days
SR 1.8.6.2.2	Verify appearance of battery, rack, and area is acceptable.	31 days
SR 1.8.6.2.3	Verify electrolyte level of each connected cell is in range (> low level mark and ≤ 1/4" above high level mark).	31 days
SR 1.8.6.2.4	Verify no cracks in cells or evidence of electrolyte leakage.	31 days
SR 1.8.6.2.5	Verify no visible corrosion and cell to cell and terminal connections are coated with anti-corrosion material.	31 days
SR 1.8.6.2.6	Verify float voltage of each battery pilot cell is ≥ 2.13 V.	31 days
SR 1.8.6.2.7	Verify pilot cell electrolyte temperature is: a. ≥ 74°F for Division 1 and 2 batteries; and b. ≥ 65°F for Division 3 battery.	31 days
SR 1.8.6.2.8	Verify float charging current of each battery is ≤ 1 amp.	31 days
SR 1.8.6.2.9	Verify float voltage of each battery connected cell is ≥ 2.13 V.	92 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 1.8.6.2.10	Verify electrolyte temperature of battery's selected battery cells (10% or more) is: a. ≥ 74°F for Division 1 and 2 batteries; and b. ≥ 65°F for Division 3 battery.	92 days
SR 1.8.6.2.11	Verify specific gravity of each battery connected cell is ≥ 1.195.	12 months
SR 1.8.6.2.12	Verify the average specific gravity of each battery's connected cells > 1.205.	12 months
SR 1.8.6.2.13	Verify electrolyte temperatures of each battery connected cell is: a. ≥ 74°F for Division 1 and 2 batteries; and b. ≥ 65°F for Division 3 battery.	12 months
SR 1.8.6.2.14	Perform detailed visual inspection of each battery connected cell.	12 months
SR 1.8.6.2.15	Verify cell to cell connection resistance, terminal connection resistance, and inter-tier resistance is within allowed values. Div. 1 and 2 batteries Cell to Cell ≤ 24.4 E-6 ohms Inter-tier ≤ 20% above installed Div. 3 Cell to Cell ≤ 169 E-6 ohms Inter-tier ≤ 20% above installed	12 months
SR 1.8.6.2.16	Perform rack inspection.	12 months

1.8 ELECTRICAL POWER SYSTEMS

1.8.7 24 VDC Distribution System

RFO 1.8.7 The Division 1 and Division 2 24 VDC electrical distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: When supported equipment is required to be OPERABLE.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each subsystem.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more 24 VDC electrical power distribution subsystems inoperable.	A.1 Declare required supported equipment inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.7.1	Verify correct breaker alignments and indicated power availability to required 24 VDC electrical power distribution subsystems.	7 days

1.8 ELECTRICAL POWER SYSTEMS

1.8.9 Circuits Inside Primary Containment

RFO 1.8.9 The following AC circuits shall be deenergized:

a. Circuits off of breakers 2AR and 8AR of E-MC-8C.
b. Circuits off of panel E-LP-6BAG.
c. Circuits off of panel E-LP-3DAG.
d. Circuits off of breakers 2BL, 1D and 2CR of E-MC-3DA.
e. Circuits off of panel E-LP-3DAC circuit no. 19 and 21.
f. Circuits off of panel E-LP-6BAC circuit no. 16 and 17.
g. Circuits off of panel E-LP-6BAB circuit no. 19.

APPLICABILITY: MODES 1, 2, and 3, except during entries into the drywell.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required circuits energized.	A.1 Deenergize the required circuit.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.9.1	Verify each required circuit is locked, sealed or otherwise secured in the deenergized condition.	31 days

1.8 ELECTRICAL POWER SYSTEMS

1.8.10 Primary Containment Penetration Conductor Overcurrent Protection

RFO 1.8.10 Each primary containment penetration conductor overcurrent protective device shown in Table 1.8.10-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

--NOTE--
Separate Condition entry is allowed for each overcurrent protective device.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required primary containment penetration overcurrent protective devices inoperable.	A.1 Declare the affected component inoperable.	Immediately
	<u>AND</u>	
	A.2 Deenergize the associated circuit.	72 hours
	<u>AND</u>	
	A.3 Verify the associated circuit is deenergized.	Once per 7 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 1.8.10.1	-----------------------------NOTE------------------------------ For each overcurrent protective device that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all overcurrent protective devices have been tested. --- Perform CHANNEL CALIBRATION of the associated protective relays for a representative sample, on a rotating basis, of the required 6.9 kV reactor recirculation pump circuits.	24 months
SR 1.8.10.2	-----------------------------NOTE------------------------------ For each overcurrent protective device that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all overcurrent protective devices have been tested. --- Perform system functional test for a representative sample, on a rotating basis, of the required 6.9 kV reactor recirculation pump circuits, including breaker actuation.	24 months
SR 1.8.10.3	Inspect and perform preventative maintenance on each associated circuit breaker.	60 months

TABLE 1.8.10-1 (page 1 of 1)

Primary Containment Penetration Conductor
Overcurrent Protective Devices

EQUIPMENT	PRIMARY PROTECTION	BACKUP PROTECTION
6900 V Circuit Breakers		
RRC-P-1A	RRC-CB-RRA (Relay)	E-CB-S/5 (Relay) E-CB-N2/5 (Relay)
RRC-P-1B	RRC-CB-RRB (Relay)	E-CB-S/6 (Relay) E-CB-N2/6 (Relay)

1.8 ELECTRICAL POWER SYSTEMS

1.8.11 Motor Operated Valve (MOV) Thermal Overload Protection

RFO 1.8.11 The thermal overload protection for each MOV shown in Table 1.8.11-1 shall be OPERABLE.

APPLICABILITY: Whenever the MOV is required to be OPERABLE.

COMPENSATORY MEASURES

---NOTE---

Separate Condition entry is allowed for each MOV thermal overload.

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One or more MOV thermal overloads inoperable.	A.1	Continuously bypass the inoperable MOV thermal overload.	8 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1	Declare the MOV inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.11.1	Perform a CHANNEL CALIBRATION of a representative sample, on a rotating basis, on the MOV thermal overloads.	24 months

TABLE 1.8.11-1 (page 1 of 2)
Motor Operated Valves Thermal Overload Protection

	VALVE NUMBER	SYSTEM(S) AFFECTED
a.		Deleted
b.	CIA-V-20 CIA-V-30A CIA-V-30B	Containment Instrument Air System
c.	FPC-V-149 FPC-V-153 FPC-V-154 FPC-V-156 FPC-V-172 FPC-V-173 FPC-V-175 FPC-V-181A FPC-V-181B FPC-V-184	Fuel Pool Cooling System
d.	HPCS-V-1 HPCS-V-4 HPCS-V-10 HPCS-V-11 HPCS-V-12 HPCS-V-15 HPCS-V-23	High Pressure Core Spray System
e.	LPCS-V-1 LPCS-V-5 LPCS-FCV-11 LPCS-V-12	Low Pressure Core Spray System
f.	MS-V-16 MS-V-19 MS-V-67A MS-V-67B MS-V-67C MS-V-67D MS-V-146	Main Steam System
g.		Deleted
h.	RCC-V-5 RCC-V-21 RCC-V-40 RCC-V-104 RCC-V-129 RCC-V-130 RCC-V-131	Reactor Closed Cooling Water System
i.	RCIC-V-1 RCIC-V-8 RCIC-V-10 RCIC-V-13 RCIC-V-19 RCIC-V-22 RCIC-V-31 RCIC-V-45 RCIC-V-46 RCIC-V-50 RCIC-V-59 RCIC-V-63 RCIC-V-68 RCIC-V-69 RCIC-V-76 RCIC-V-110 RCIC-V-113	Reactor Core Isolation Cooling System

TABLE 1.8.11-1 (page 2 of 2)
Motor Operated Valve Thermal Overload Protection

VALVE NUMBER		SYSTEM(S) AFFECTED
j.	RFW-V-65A RFW-V-65B	Reactor Feedwater System
k.	RHR-V-3A RHR-V-3B RHR-V-4A RHR-V-4B RHR-V-4C RHR-V-6A RHR-V-6B RHR-V-8 RHR-V-9 RHR-V-16A RHR-V-16B RHR-V-17A RHR-V-17B RHR-V-21 RHR-V-23 RHR-V-24A RHR-V-24B RHR-V-27A RHR-V-27B RHR-V-40 RHR-V-42A RHR-V-42B RHR-V-42C RHR-V-48A RHR-V-48B RHR-V-49 RHR-V-53A RHR-V-53B RHR-V-64A RHR-V-64B RHR-V-64C RHR-V-68A RHR-V-68B RHR-V-73A RHR-V-73B RHR-V-115 RHR-V-116	Residual Heat Removal System
l.	RRC-V-16A RRC-V-16B	Reactor Recirculation System
m.	RWCU-V-1 RWCU-V-4 RWCU-V-40	Reactor Water Cleanup System
n.	SGT-V-1A SGT-V-1B SGT-V-3A1 SGT-V-3A2 SGT-V-3B1 SGT-V-3B2 SGT-V-4A1 SGT-V-4A2 SGT-V-4B1 SGT-V-4B2 SGT-V-5A1 SGT-V-5A2 SGT-V-5B1 SGT-V-5B2	Standby Gas Treatment System
o.	AS-V-68A AS-V-68B	Auxiliary Steam System
p.	SW-V-2A SW-V-2B SW-V-12A SW-V-12B SW-V-29 SW-V-75A SW-V-75B SW-V-187A SW-V-187B SW-V-188A SW-V-188B	Standby Service Water System

1.9 REFUELING OPERATIONS

1.9.1 Refueling Platform

RFO 1.9.1 The refueling platform shall be OPERABLE.

APPLICABILITY: During movement of fuel assemblies or control rods within the reactor pressure vessel.

COMPENSATORY MEASURES

--NOTE--

Fuel handling shall not be performed using the frame mounted auxiliary hoist or the monorail auxiliary hoist.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Refueling platform inoperable.	A.1 Suspend movement of fuel assemblies and control rods within the reactor pressure vessel with the refueling platform.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.1.1	Demonstrate operation of the overload cutoff on the main hoist when the load exceeds 1700 pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.2	Demonstrate operation of the loaded interlock on the frame mounted and monorail hoists when the load exceeds 535 pounds.	Once within 7 days prior to start of operations with hoist

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.1.3	Demonstrate operation of the uptravel electrical stop on the frame mounted and monorail hoists when uptravel brings the top of active fuel assembly to 7 feet 6 inches below the minimum fuel storage pool water level.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.4	Demonstrate operation of the down travel electrical cutoff on the main hoist when grapple hook down travel reaches 54 feet 2 inches below track.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.5	Demonstrate operation of the slack cable cutoff on the main hoist when the load is less than 50 pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.6	Demonstrate operation of the loaded interlock on the main hoist when the load exceeds 750 pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.7	Demonstrate operation of the redundant loaded interlock on the main hoist when the load exceeds 750 pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.8	Demonstrate operation of the overload cutoff on the frame mounted and monorail hoists when the load exceeds 975 pounds.	Once within 7 days prior to start of operations with hoist

1.9 REFUELING OPERATIONS

1.9.2 Crane Travel

RFO 1.9.2

a. Crane travel with loads, other than the cavity in-vessel service platform (CISP), over the spent fuel storage pool racks shall be within the limits of Figure 1.9.2-1.

b. Crane travel with the CISP over the spent fuel storage pool racks shall be within the limits of SR 1.9.2.2 and SR 1.9.2.3.

APPLICABILITY: With irradiated fuel stored in the spent fuel storage pool (SFP) racks.

COMPENSATORY MEASURES

--NOTE--
RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Requirements of RFO not met.	A.1 Initiate actions to move the crane load from over the spent fuel storage pool racks.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.2.1	------------------------------NOTE------------------------------ Only required when crane is in use. --- Perform system functional test.	7 days
SR 1.9.2.2	Verify the CISP extension over the spent fuel pool is less than 7 feet.	At all times during CISP lift

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.2.3	Verify the CISP height is less than 6 feet above the refuel floor.	At all times during CISP lift

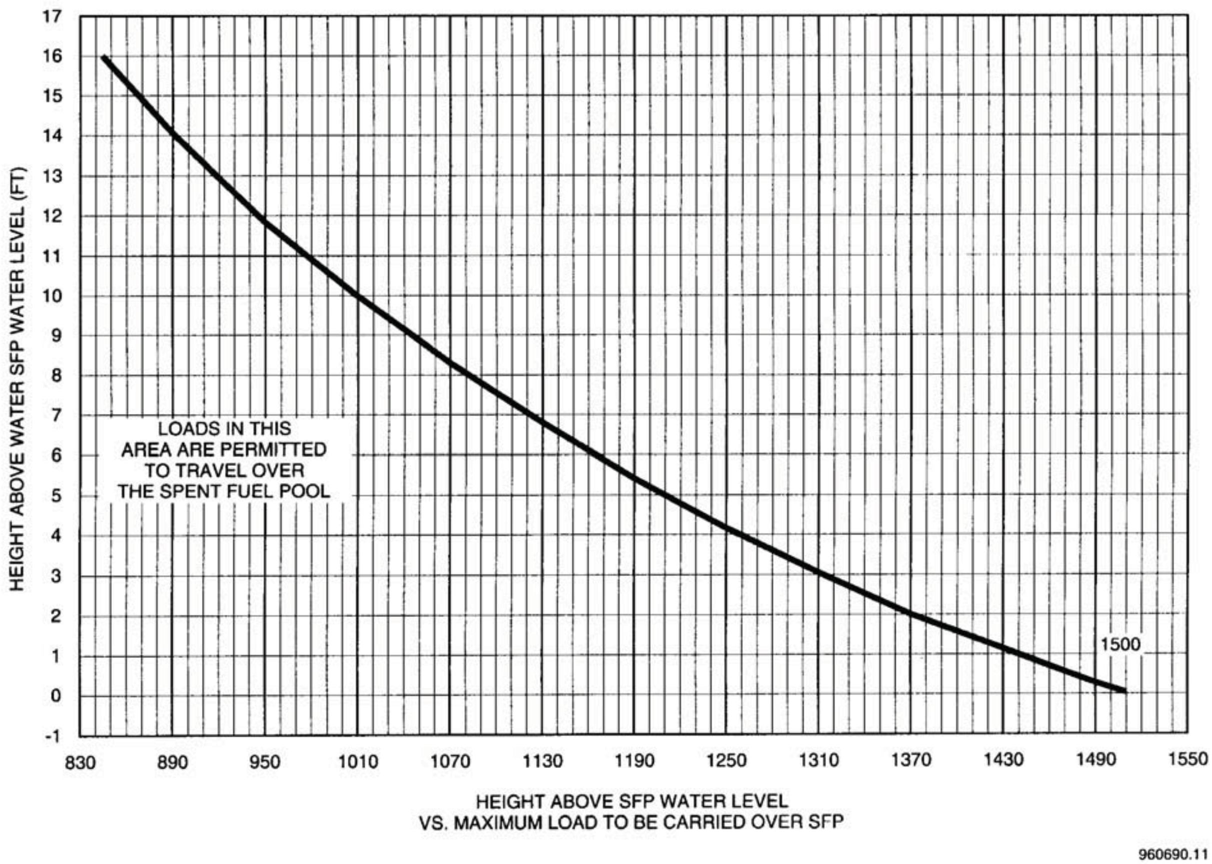

Figure 1.9.2-1 (page 1 of 1)
Crane Travel

1.10 FIRE PROTECTION

1.10.1 Essential Fire Suppression Water Supply

RFO 1.10.1 Two Fire Suppression Water Supply systems shall be OPERABLE. (One Primary and One Secondary)

APPLICABILITY: At all times.

COMPENSATORY MEASURES

---NOTE---
When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One required Fire Suppression Water Supply System (one Primary or one Secondary) inoperable.	A.1 Process a Fire Protection System Impairment Permit. <u>AND</u> A.2 Restore the inoperable water supply system to OPERABLE status.	Immediately 7 days
B. Required Compensatory Measure and associated Completion Times of Condition A not met.	B.1 Limit ignition source work activities in Diesel Generator Building 441’ Corridor and Cable Chase 467’ to 525'. <u>AND</u> B.2 Brief the offsite fire department on the inoperable Fire Suppression Water Supply System and the possible need for providing a Backup Water Supply.	24 hours 24 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
C. Two required Fire Suppression Water Supply Systems (one Primary and one Secondary) inoperable.	C.1 Process a Fire Protection System Impairment Permit. <u>AND</u> C.2 Establish a Backup Water Supply.	Immediately 24 hours
D. Required Compensatory Measure and associated Completion Times of Condition C not met.	D.1.1 Initiate plant shutdown. <u>AND</u> D.1.2 Be in Mode 2 <u>AND</u> D.1.3 Be in Mode 3 <u>AND</u> D.1.4 Be in Mode 4	1 hour 7 hours 13 hours 37 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.1.1	Verify the minimum water volumes are maintained: a. Circulating Water Basin ≥ 300,000 gallons, and b. Bladder tank FP-TK-110 ≥ 284,640 gallons.	24 hours
SR 1.10.1.2	Verify each fuel tank for each diesel-driven fire pump contains at least 150 gallons of fuel.	24 hours
SR 1.10.1.3	Start each diesel-driven fire pump from ambient conditions and operate for greater than or equal to 30 minutes.	30 days
SR 1.10.1.4	Verify each diesel-driven fire pump starting battery bank and charger properties are within limits: a. Electrolyte level of each cell is above the plates; b. Specific gravity, corrected to 77°F and full electrolyte level, is ≥ 1.2; and c. Float voltage > 12 VDC (FP-BO-110A/B) and > 24 VDC (FP-BO-1A/B).	30 days
SR 1.10.1.5	Operate each electric motor-driven fire suppression pump for at least 10 minutes at ambient conditions.	30 days
SR 1.10.1.6	Verify each manual, automatic, and power-operated valve in the Fire Suppression Water Supply System flow path is in the correct position.	92 days
SR 1.10.1.7	Flush the fire suppression (yard main) header.	12 months
SR 1.10.1.8	Exercise each testable valve in the Fire Suppression Water Supply System flow path through at least one complete cycle of full travel.	12 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.1.9	Verify that the diesel-driven fire pump starting batteries and battery racks show no visual indication of physical damage or abnormal deterioration, and that battery-to-battery terminal connections are clean, tight, free of corrosion, and coated with anti-corrosion material.	18 months
SR 1.10.1.10	Perform a system functional test of the fire pump capacity and valve positioning. This test shall simulate automatic actuation of the system throughout the operating sequence, and shall: a. Verify each automatic valve in the flow paths actuates to the correct position, b. Verify fire pumps FP-P-1, FP-P-2A, and FP-P-2B develop ≥ 108 psi while delivering ≥ 2000 gpm, c. Verify fire pump FP-P-110 develops ≥ 140 psi while delivering ≥ 2500 gpm, and d. For each water supply system, verify each fire protection pump starts sequentially to maintain the fire main pressure ≥ 95 psig.	18 months
SR 1.10.1.11	Verify each valve that is not accessible for testing during plant operation will operate correctly through at least one cycle of travel.	24 months
SR 1.10.1.12	Perform a functional test of each standpipe vacuum-breaker valve or replace with a tested vacuum breaker.	5 years
SR 1.10.1.13	Perform a loss of normal power auto-start test and ensure each diesel fire pump starts within the preset time delay period.	5 years

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.1.14	Perform a flow test to validate condition of yard piping.	5 years

1.10 FIRE PROTECTION

1.10.2 Essential Sprinkler Suppression

RFO 1.10.2 The Essential Sprinkler Suppression systems protecting areas and equipment listed in Table 1.10.2-1 shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

--NOTE--
When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Inoperable sprinkler system P66.	A.1 Process a Fire Protection System Impairment Permit.	Immediately
	<u>AND</u>	
	A.2 Establish a Continuous Fire Tour with backup fire suppression equipment.	1 hour
	<u>OR</u>	
	A.3.1 Manually flood the Preaction Sprinkler System piping.	1 hour
	<u>AND</u>	
	A.3.2 Establish an hourly fire tour.	1 hour

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. Inoperable sprinkler system P79 or P81.	B.1 Process a Fire Protection System Impairment Permit. <u>AND</u> B.2 Establish an hourly fire tour.	Immediately 1 hour
C. Required Compensatory Measure and associated Completion Times of Condition A or B not met.	C.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.2.1	Verify each required manual, automatic, and power-operated valve in the sprinkler systems flow path is in the correct position.	92 days
SR 1.10.2.2	Exercise each testable sprinkler system valve in the system flow path through at least one complete cycle of full travel.	12 months
SR 1.10.2.3	Perform a system functional test of the sprinkler systems. This test shall simulate automatic actuation of the systems and verify each automatic valve in the sprinkler systems flow path actuates to the correct position upon initiation of a fire detection signal.	18 months
SR 1.10.2.4	Visually inspect the sprinkler system headers to verify piping integrity.	24 months

Table 1.10.2-1

Areas and Equipment Protected by Essential Preaction Sprinkler Systems

BUILDING	COVERAGE DESCRIPTION	PREACTION SPRINKLER SYSTEM NUMBER
Radwaste and Diesel Generator Building	Radwaste Building Cable Chase 467' - 525' (rooms C212, C416, C509); Radwaste Building 441' N-S Corridor Room C121; Diesel Generator Building 441' E-W Corridor (west half of Room C121); Diesel Generator Building 441' Room D113	P66
Diesel Generator Building	Diesel Generator 1A and Day Tank Rooms D107 and D108	P79
Diesel Generator Building	Diesel Generator 1B and Day Tank Rooms D110 and D111	P81

1.10 FIRE PROTECTION

1.10.3 Essential Fire Hose Stations

RFO 1.10.3 The fire hose stations listed in Table 1.10.3-1 shall be OPERABLE.

APPLICABILITY: At all times when at least one Essential Fire Suppression Water Supply System (primary, secondary, or backup) is OPERABLE.

COMPENSATORY MEASURES

---NOTES---

1. The Table 1.10.3-1 suggested backup hose length and hose station is based on a single inoperable hose station. When more than one hose station is inoperable, alternative hose stations and hose lengths may be required to satisfy Required Compensatory Measure A.2.
2. For inoperable FP-HS-RB30, Required Compensatory Measure A.2 is not required when both FP-HS-RB11 and FP-HS-RB21 are operable.
3. When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more fire hose station(s) listed on Table 1.10.3-1 inoperable.	A.1 Process a Fire Protection System Impairment Permit. <u>AND</u>	Immediately
	A.2 Establish fire hose coverage for the affected area by staging adequate fire hose and nozzle at adjacent OPERABLE fire hose station. <u>AND</u>	2 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. (continued).	A.3 Post a sign at the backup OPERABLE hose station to identify the inoperable hose station number; and a description of the plant area for which the staged hose is providing coverage.	2 hours
	<u>AND</u>	
	A.4 Post a sign on each inoperable hose station to identify it as being inoperable, and to identify the OPERABLE hose station providing the backup coverage.	2 hours
B. Required Compensatory Measure and associated Completion Times of Condition A not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.3.1	Verify that all required equipment is located at each essential fire hose station listed in Table 1.10.3-1.	92 days
SR 1.10.3.2	Verify acceptable configuration and material condition of each essential fire hose station listed in Table 1.10.3-1. This includes: a. Hose inspection; and b. Hose coupling gasket inspection.	18 months
SR 1.10.3.3	Verify hose station valve operability for essential fire hose station listed in Table 1.10.3-1. This includes: a. Ensure no standpipe water blockage; and b. Replace hose with recently hydraulically tested hose.	36 months

Table 1.10.3-1
Essential Fire Hose Stations (Page 1 of 2)

STAND-PIPE RISER	LOCATION	HOSE STATION	SUGGESTED ADJACENT BACKUP HOSE LENGTH AND STATION WHEN ESSENTIAL HOSE STATION IS INOPERABLE
RB-1	Reactor Building 422'	FP-HS-RB11	250’ @ FP-HS-RB30
RB-1	Reactor Building 441'	FP-HS-RB12	250’ @ FP-HS-TGB41
RB-1	Reactor Building 471'	FP-HS-RB13	250’ @ FP-HS-RB23
RB-1	Reactor Building 501'	FP-HS-RB14	300’ @ FP-HS-RB24
RB-1	Reactor Building 522'	FP-HS-RB15	250’ @ FP-HS-RB25
RB-1	Reactor Building 548'	FP-HS-RB16	250’ @ FP-HS-RB26
RB-1	Reactor Building 572'	FP-HS-RB17	300’ @ FP-HS-RB27
RB-2	Reactor Building 422'	FP-HS-RB21	250’ @ FP-HS-RB11
RB-2	Reactor Building 441'	FP-HS-RB22	200’ @ FP-HS-RWB25
RB-2	Reactor Building 471'	FP-HS-RB23	250’ @ FP-HS-RB13
RB-2	Reactor Building 501'	FP-HS-RB24	350’ @ FP-HS-RB14
RB-2	Reactor Building 522'	FP-HS-RB25	250’ @ FP-HS-RB15
RB-2	Reactor Building 548'	FP-HS-RB26	300’ @ FP-HS-RB16
RB-2	Reactor Building 572'	FP-HS-RB27	250’ @ FP-HS-RB17
RB-2	Reactor Building 441'	FP-HS-RB29	200’ @ FP-HS-RWB25
TGB-4	Reactor Building 422’	FP-HS-RB30	0’ @ FP-HS-RB11 and 0’ @ FP-HS-RB21
TGB-4	Turbine Building 441'	FP-HS-TGB41	200' @ FP-HS-TGB37

Table 1.10.3-1
Essential Fire Hose Stations (Page 2 of 2)

STAND-PIPE RISER	LOCATION	HOSE STATION	SUGGESTED ADJACENT BACKUP HOSE LENGTH AND STATION WHEN ESSENTIAL HOSE STATION IS INOPERABLE
RWB-1	Radwaste Building 437'	FP-HS-RWB11	250' @ FP-HS-TGB34
RWB-1	Radwaste Building 467'	FP-HS-RWB13	250’ @ FP-HS-RWB29
RWB-1	Radwaste Building 487'	FP-HS-RWB14	250’ @ FP-HS-TGB36
RWB-1	Radwaste Building 507'	FP-HS-RWB15	250’ @ FP-HS-TGB36
RWB-1	Radwaste Building 525'	FP-HS-RWB16	250’ @ FP-HS-TGB36
DG-1	Diesel Building 441'	FP-HS-RWB25	350’ @ FP-HS-TGB41
RWB-1	Radwaste Building 467'	FP-HS-RWB26	250’ @ FP-HS-RWB29 or 250’ @ FP-HS-RWB13
RWB-2	Radwaste Building 487'	FP-HS-RWB28	250’ @ FP-HS-RWB23 or 250’ @ FP-HS-RWB14
RWB-2	Radwaste Building 467'	FP-HS-RWB29	250’ @ FP-HS-RWB26 or 250’ @ FP-HS-RWB13
RWB-1	Radwaste Building 501'	FP-HS-RWB31	250’ @ FP-HS-TGB36
RWB-1	Radwaste Building 525'	FP-HS-RWB33	250’ @ FP-HS-TGB36
DG-1	Diesel Building 441'	FP-HS-DG40	350’ @ FP-HS-TGB41
DG-1	Diesel Building 441'	FP-HS-DG41	350’ @ FP-HS-TGB41

1.10 FIRE PROTECTION

1.10.4 Essential Yard Fire Hydrants and Hydrant Hose Equipment

RFO 1.10.4 The Yard Hydrants and Hydrant Hose Equipment listed in Table 1.10.4-1 shall be OPERABLE.

APPLICABILITY: At all times when at least one Essential Fire Suppression Water Supply System (primary, secondary, or backup) is OPERABLE.

COMPENSATORY MEASURES

---NOTES---

1. Where condition A is not met, Compensatory Measure D.2 is only required if hydrants FP-HT-1M or FP-HT-1N are inoperable.
2. When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more Yard Hydrant listed on Table 1.10.4-1 inoperable.	A.1 Process a Fire Protection System Impairment Permit. AND A.2 Stage adequate lengths of 2.5 inch fire hose from an adjacent OPERABLE hose house to reach inoperable hydrant.	Immediately 24 hours
B. Mobile fire response vehicle inoperable or outside the protected area.	B.1 Process a Fire Protection System Impairment Permit. AND B.2 Stage an OPERABLE backup fire response vehicle with hydrant hose equipment loaded.	Immediately 8 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
C. The credited hose equipment inventory in the mobile fire response vehicle inoperable or less than the required inventory.	C.1	Process a Fire Protection System Impairment Permit.	Immediately
	<u>AND</u>		
	C.2	Restore minimum OPERABLE hydrant hose equipment inventory.	8 hours
D. Required Compensatory Measure and associated Completion Times of Condition A, B or C not met.	D.1	Initiate a Condition Report.	Immediately
	<u>AND</u>		
	D.2	Establish an hourly fire tour of Standby Service Water Pump House 1A and 1B. See Note.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.4.1	Verify all required hydrant hose equipment is staged with no visual signs of degradation.	6 months
SR 1.10.4.2	Perform visual inspection to verify that yard hydrants listed in Table 1.10.4-1 are not damaged, and that the hydrant barrels are drained.	12 months
SR 1.10.4.3	Inspect fire hose and hose coupling gaskets for degradation. Replace existing hose with hose that has been recently hydrostatically tested	12 months
SR 1.10.4.4	Perform a flow check of each yard hydrant listed in Table 1.10.4-1.	12 months

Table 1.10.4-1
Essential Yard Hydrants (page 1 of 1)

NO.	LOCATION	EQUIPMENT PART NUMBER
1	South side of Diesel-Generator Building	FP-HT-1A
2	Southeast Corner of Diesel-Generator Building	FP-HT-1B
3	West side of Radwaste Building	FP-HT-1G
4	South side of Radwaste Building	FP-HT-1H
5	West of Standby Service Water Pump House 1A	FP-HT-1N
6	Northwest of Standby Service Water Pump House 1B	FP-HT-1M
7	West side of Radwaste and Turbine-Generator Building	FP-HT-1R

1.10 FIRE PROTECTION

1.10.5 Essential Fire Rated Assemblies

RFO 1.10.5 Essential Fire Rated Assemblies shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

-----NOTES-----

1. Where fire area boundary of the main control room is impaired, an hourly fire tour outside the main control room is still required (i.e., can not credit the control room staff).

2. The 1 hour completion time of Required Compensatory Measure A.2, B.2, C.2, and D.2, for performance of fire tours, may be delayed for up to 8 hours to establish video or portable detection for high radiation or contaminated areas. Where radiation levels allow, perform an area inspection within 2 hours of discovery of the impairment to ensure no unnecessary hazards exist.

3. Post fire safe shutdown systems/structures/components (SSC's) separated or enclosed by the impaired fire barrier feature remain OPERABLE provided that the required Compensatory Measure for the impaired feature has been implemented.

4. Where a new fire rated assembly is determined to be required but not previously installed, apply the same Compensatory Measure that would be required for the inoperable fire barrier.

5. When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more inoperable essential fire area boundaries and OPERABLE fire detection or OPERABLE automatic fire suppression on at least one side of the boundary.	A.1 Process a Barrier Impairment Permit. AND A.2 Establish an hourly fire tour.	Immediately 1 hour
B. One or more inoperable essential fire area boundaries and no OPERABLE fire detection or no OPERABLE automatic fire suppression on either side of the boundary.	B.1 Process a Barrier Impairment Permit. AND B.2 Establish a Continuous Fire Tour.	Immediately 1 hour
C. One or more inoperable essential raceway fire barrier assemblies or one or more inoperable fireproof coatings and OPERABLE fire detection or OPERABLE automatic fire suppression in the room containing the raceway fire barrier or fireproof coating.	C.1 Process a Barrier Impairment Permit. AND C.2 Establish an hourly fire tour. AND C.3 If raceway fire barrier is breached, contact Fire Protection to determine appropriate Special Compensatory Measures.	Immediately 1 hour 24 hours

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
D. One or more inoperable essential raceway fire barrier assemblies or one or more inoperable fireproof coatings and no OPERABLE automatic fire suppression in the room containing the raceway fire barrier or fireproof coating.	D.1 Process a Barrier Impairment Permit. <u>AND</u> D.2 Establish a Continuous Fire Tour.	Immediately 1 hour
E. Required Compensatory Measure and associated Completion Times of Condition A, B, C, or D not met.	E.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.5.1	Inspect each Accessible personnel access and equipment hatch fire door listed in Table 1.10.5-1 to verify that: A. Door is closed, and -----------------------------NOTE-------------------------------- Inspection of physical damage to elevated equipment hatch doors is not required. --- B. Door is free from gross physical damage that could impair its function.	7 days
SR 1.10.5.2	Inspect each Accessible personnel access fire door listed in Table 1.10.5-1 to verify: A. Door and frame are free from any physical damage or wear that could impair its function. -----------------------------NOTE-------------------------------- Inspection of door latches not required for non-standard fire doors that do not have moving latches. --- B. Latch is OPERABLE, and -----------------------------NOTE-------------------------------- Inspection of door closing mechanisms not required for non-standard fire doors that do not have closing mechanisms. --- C. Closing mechanism is OPERABLE.	6 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.5.3	Inspect each Accessible equipment hatch fire door listed in Table 1.10.5-1 to verify: A. Door and frame are free from any physical damage or wear that could impair its function. -----------------------------NOTE-------------------------------- Inspection of door latches not required for non-standard fire doors that do not have moving latches. --- B. Latch is OPERABLE, and -----------------------------NOTE-------------------------------- Inspection of door closing mechanisms not required for non-standard fire doors that do not have closing mechanisms and Doors R413 and R610. --- C. Closing mechanism is OPERABLE.	12 months
SR 1.10.5.4	Visually inspect a minimum 10% sample, on a rotating basis, of each type of Accessible essential penetration seal listed in the PSTS database.	18 months
SR 1.10.5.5	Verify operability of fire rated assemblies by visually inspecting the exposed surface of Accessible essential fire area boundary structural barriers listed in the PSTS database, raceway fire barriers (except MI cable) and fireproof coatings listed in the PFSS fire wrap database.	18 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.5.6	Verify operability of each Accessible essential fire damper listed in Table 1.10.5-1 by visually inspecting the damper hardware and performing a functional drop test.	8 years
SR 1.10.5.7	Verify operability of penetration seals and fire area boundary structural barriers listed in PSTS that become Accessible during outage by visually inspecting at least one exposed surface.	15 years

Table 1.10.5-1
Essential Fire Doors and Fire Dampers

Essential Fire Doors
W-DOOR-C216
W-DOOR-C218
W-DOOR-C220
W-DOOR-C221
W-DOOR-C223
W-DOOR-C228
W-DOOR-C239
W-DOOR-C314
W-DOOR-C322
W-DOOR-C408
W-DOOR-C422
W-DOOR-C506
W-DOOR-C507
D-DOOR-D105
D-DOOR-D107
D-DOOR-D110
R-DOOR-R005
R-DOOR-R006
R-DOOR-R007
R-DOOR-R009
R-DOOR-R105
R-DOOR-R110
R-DOOR-R204
R-DOOR-R216
R-DOOR-R217
R-DOOR-R304
R-DOOR-R313
R-DOOR-R316
R-DOOR-R407
R-DOOR-R408
R-DOOR-R415
R-DOOR-R504
R-DOOR-R508
R-DOOR-R607
R-DOOR-R613

Essential Equipment Hatch Fire Doors
W-DOOR-C409
W-DOOR-C413
R-DOOR-SD2
R-DOOR-R413
R-DOOR-R610

Essential Fire Dampers
DEA-FD-52
DMA-FD-51
REA-FD-1
REA-FD-10
REA-FD-12
REA-FD-13
REA-FD-14
REA-FD-16
REA-FD-17
REA-FD-18
REA-FD-19
REA-FD-3
REA-FD-4
ROA-FD-1
ROA-FD-10
ROA-FD-12
ROA-FD-13
ROA-FD-16
ROA-FD-17
ROA-FD-18
ROA-FD-19
ROA-FD-20
ROA-FD-21
ROA-FD-3
ROA-FD-4
WEA-FD-1

Essential Fire Dampers
WEA-FD-13
WEA-FD-6
WEA-FD-7
WEA-FD-8
WEA-FD-9
WMA-FD-1
WMA-FD-17
WMA-FD-22
WMA-FD-29
WMA-FD-3
WMA-FD-37
WMA-FD-4
WMA-FD-5
WMA-FD-55
WMA-FD-56
WMA-FD-57
WMA-FD-58
WMA-FD-6
WMA-FD-7

1.10 FIRE PROTECTION

1.10.6 Essential Fire Detection

RFO 1.10.6 Essential fire detection protecting the areas and equipment listed in Table 1.10.6-1 shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

---NOTES---

1. No Compensatory Measures are required for inoperable essential fire detection in the continuously manned main control room.

2. The 1 hour completion time of Required Compensatory Measure A.2 for performance of fire tours, may be delayed for up to 8 hours to establish video or portable detection for high radiation or contaminated areas. Where radiation levels allow, perform an area inspection within 2 hours of discovery of impairment to ensure no unnecessary hazards exist.

3. Inoperable essential fire detection for Zone 66 requires entry into essential preaction sprinkler system RFO 1.10.2 Condition A.

4. When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Essential fire detection for any area listed in Table 1.10.6-1 inoperable.	A.1 Process a Fire Protection System Impairment Permit.	Immediately
	<u>AND</u>	
	A.2 Establish an hourly fire tour in the affected area.	1 hour
B. Required Compensatory Measure and associated Completion Times of Condition A not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.6.1	------------------------------NOTE-------------------------------- For inaccessible areas, perform below testing during each cold shutdown exceeding 24 hours duration, unless performed in the previous 12 months. --- Perform a channel functional test of each smoke (photoelectric and ionization) detector listed in Table 1.10.6-1.	12 months (and outage if Note is applicable)
SR 1.10.6.2	------------------------------NOTE-------------------------------- For inaccessible areas, perform below testing during each cold shutdown exceeding 24 hours duration, unless performed in the previous 24 months. --- Perform a channel functional test of each thermal detector listed in Table 1.10.6-1.	24 months (and outage if Note is applicable)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.6.3	---------------------------NOTES------------------------------ 1. For inaccessible areas, perform below testing during each cold shutdown exceeding 24 hours, unless performed in the previous 24 months. 2. For inaccessible areas, sensitivity testing may be extended to once per 4 years for detectors not accessible that have met the acceptance criteria for the previous two 24 month tests. 3. Sensitivity testing may be extended to once per 5 years for Accessible detectors that have met the acceptance criteria for the previous two 24 month tests. --- Verify sensitivity of each smoke (photoelectric and ionization) detector located in the zones listed in Table 1.10.6-1.	24 months (or 5 years if Note 3 is applicable)

Table 1.10.6-1 (page 1 of 3)
Area and Equipment Protected by Essential Fire Detection

AREA	DESCRIPTION	DETECTION ZONE
Reactor Building, 422' Elevation	CRD Pump Room R10	13
	Auxiliary Condensate Pump Room R9	13
Reactor Building, 422' & 444' Elevation	RHR 2A Pump Room R6/R116	13
	RHR 2B Pump Room R7/R115	13
	RHR 2C Pump Room R14/R113	13
	RCIC Pump Room R15/R112	13
	LPCS Pump Room R12/R114	13
Reactor Building, 441' Elevation	Vehicle Airlock (Railroad Bay) Room R105	13
Reactor Building, 471' Elevation	MCC Room R212	14
	General Area, Room R206	14
Reactor Building, 501' Elevation	General Area Rooms R305/R309/R320	15
Reactor Building, 522' Elevation	Division 2 MCC Room R408	16
	General Area Rooms R404/R411	16
	RHR Valve Room R405	16
Reactor Building, 548' Elevation	Fuel Pool HX room A and Pump Room R506	17
	General Area Rooms R504/R508/R513	17
	RHR Heat Exchanger Rooms 1A and 1B R505/R507	17
Reactor Building, 572' Elevation	Division 2 H_2 Recombiner Control Rm R612	18
	RHR HX-1A Room R606	18
	RHR HX-1B Room R605	18
	General Floor Area Rooms 604/R607/R608	18

Table 1.10.6-1 (page 2 of 3)
Area and Equipment Protected by Essential Fire Detection

AREA	DESCRIPTION	DETECTION ZONE
Radwaste and Control Building, 437' Elevation	Room C106 (Northwest portion only)	20[(a)]
Radwaste and Control Building, 467' Elevation	Electrical Equipment Room No. 1 C211/C216 Battery Room No. 1 C209/C229/C239 Switchgear Room No. 1 C208 Remote Shutdown Room C207 Electrical Equipment Room No. 2 C213/C224 Battery Room No. 2 C215 Switchgear Room No. 2 C206 Corridor Room C205	22[(b)] 22[(b)] 22[(b)] 22[(b)], 25[(d)] 23[(c)] 23[(c)] 23[(c)] 23[(c)]
Radwaste and Control Building, 484' Elevation	Cable Spreading Room C304	65, 25[(d)]
Radwaste and Control Building, 487' Elevation	Cable Chase, Room C212 PASS Room C344	66A[(f)], 25[(d)], 24[(e)]
Radwaste and Control Building, 501' Elevation	Main Control Room C414 and Adjoining Rooms C409, C413 PGCC areas U679, U680, U681, U682, U683, U684, U685, U686, U687, U688, U689, U690, U800, U840, U891, U892, U893, U894	26[(g)], 51[(i)] Zone number is same as PGCC number[(h)]
Radwaste and Control Building, 525' Elevation	Cable Chase Rooms C416, C509 Rooms C502, C503, C507, C508, C510	66B[(f)], 25[(d)], 28, 51[(i)]

(a) Essential portion of detection zone 20 includes detectors 20-1 through 20-11.
(b) Includes duct detector WMA-SMD-53A. Excludes duct detector WEA-SMD-53A.
(c) Includes duct detector WMA-SMD-53B. Excludes duct detector WEA-SMD-53B.
(d) Includes duct detectors WMA-SMD-52A or WMA-SMD-52B, depending on what WMA-52 fan is in operation.
(e) Essential portion of detection zone 24 includes detectors 24-4 and 24-5 only. These detectors also protect adjoining lower 467' Room C230.
(f) Detection for zone 66 is divided into four sub-zones (66A, 66B, 66C, 66D). Based on FSP 10 arrangement, a single alarm disconnect switch disables all four sub-zones simultaneously.
(g) Includes duct detector WEA-SMD-51.
(h) Includes only pre-alarm ionization detectors that annunciate at FCP-1.
(i) Includes duct detectors WOA-SMD-1A and 1B. Does not include deluge 51 detection.

Table 1.10.6-1 (page 3 of 3)
Area and Equipment Protected by Essential Fire Detection

AREA	DESCRIPTION	DETECTION ZONE
Diesel Generator Building, 441' Elevation	DG-1A Generator Room D107	38, 79
	DG-1A Day Tank Room D108	38, 79
	DG-1B Generator Room D110	39, 81
	DG-1B Day Tank Room D111	39, 81
	DG-1A Fuel Transfer Pump Room D101	40, 82
	DG-1B Fuel Transfer Pump Room D102	40, 80
	HPCS Generator Room D100	40
Diesel Generator Building, 455' Elevation	DG-1A Exhaust Room D207B	38
	Sprinkler Valve Room D206	40
	HPCS Muffler Room D207A	40
DG/Reactor Building & Radwaste/Reactor Building Corridors, 441' Elevation	N-S Corridor, Room C121	66D(j)
	Room D113	66C(j), 38
	E-W Corridor, Room D104	66C(j), 38
Standby Service Water Pumphouse 1A	General Area, Room G100	35
	Electrical Equipment Room G101	35
Standby Service Water Pumphouse 1B	General Area G200	36
	Electrical Equipment Room G201	36

(j) Detection for zone 66 is divided into four sub-zones (66A, 66B, 66C, 66D). Based on FSP 10 arrangement, a single alarm disconnect switch disables all four sub-zones simultaneously.

1.10 FIRE PROTECTION

1.10.7 Essential Lighting

RFO 1.10.7 Essential lighting systems listed in Tables 1.10.7-1, 1.10.7-2, 1.10.7-3, and 1.10.7-4 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

-----NOTE-----
When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more Post Fire Safe Shutdown (PFSS) essential lighting systems inoperable.	A.1 Process a Fire Protection System Impairment Permit.	Immediately
	<u>AND</u>	
	A.2 Provide emergency portable lanterns stationed in, or adjacent to, the affected areas which require lighting.	8 hours
B. Required Compensatory Measure and associated Completion Times of Condition A not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.7.1	Verify operability of the fixed emergency battery light units by performing a surveillance inspection to ensure that the self-test annunciator lights indicate normal operation.	31 days
SR 1.10.7.2	Verify operability of the emergency fluorescent lighting by performing an inspection to ensure that at least one (1) lamp is lit.	31 days
SR 1.10.7.3	Replace the emergency portable lantern unit batteries and then test the units for operability.	12 months
SR 1.10.7.4	For the emergency battery light units perform the following: a. A full 8 hour functional discharge test. b. Verify the aiming angles of the lamps are set to illuminate the correct plant area or components.	12 months
SR 1.10.7.5	Perform a functional test of the Main Control Room normal-emergency AC lighting transfer circuits.	24 months

Table 1.10.7-1 (page 1 of 1)
Emergency Battery Lighting (EBL) Unit EPN's in Radwaste Building
Credited For Post Fire Safe Shutdown

ITEM	EPN #	ITEM	EPN #
1	E-BU-SWA7/7	18	E-BU-W501/1
2	E-BU-SWA7/5A	19	E-BU-W501/5
3	E-BU-SWA7/6A	20	E-BU-W501/6
4	E-BU-SWA7/5	21	E-BU-W467/4X
5	E-BU-SWA7/6	22	E-BU-W467/4XA
6	E-BU-SWA7/4	23	E-BU-W467/5X
7	E-BU-SWA7/3	24	E-BU-W467/18A
8	E-BU-SWA7/3XA	25	E-BU-W467/18B
9	E-BU-SWA7/3A	26	E-BU-W467/1X
10	E-BU-SWA7/3X	27	E-BU-W467/16A
11	E-BU-SWA7/2X	28	E-BU-W467/16B
12	E-BU-SWA7/1X	29	E-BU-W467/17A
13	E-BU-SWA7/1XA	30	E-BU-W467/17B
14	E-BU-SWA7/2XA	31	E-BU-W467/2
15	E-BU-SWA7/8	32	E-BU-W467/16
16	E-BU-W501/2	33	E-BU-W467/17
17	E-BU-W501/3	34	E-BU-W467/18

Table 1.10.7-2 (page 1 of 1)
Emergency Battery Lighting (EBL) Unit EPNs (various locations)
Credited For Post Fire Safe Shutdown

ITEM	EPN #	LOCATION
1	E-BU-C120/441/1X	441’ Corridors
2	E-BU-C120/441/2X	441’ Corridors
3	E-BU-C120/441/3X	441’ Corridors
4	E-BU-C121/441/1X1	441’ Corridors
5	E-BU-C121/441/2X	441’ Corridors
6	E-BU-C121/441/3X	441’ Corridors
7	E-BU-C121/441/1X	441’ Corridors
8	E-BU-DG441/1X	Diesel Generator Building
9	E-BU-DG441/1XA	Diesel Generator Building
10	E-BU-DG441/10A	Diesel Generator Building
11	E-BU-DG441/10B	Diesel Generator Building
12	E-BU-DG441/10	Diesel Generator Building

Table 1.10.7-3 (page 1 of 1)
Emergency Fluorescent Lighting Unit EPNs in Main Control Room
Credited For Post Fire Safe Shutdown

ITEM	EPN #	ITEM	EPN #
1	E-LF-7FDA/1E	19	E-LF-8FDA/1E
2	E-LF-7FDA/1D	20	E-LF-8FDA/1D
3	E-LF-7FDA/1C	21	E-LF-8FDA/1C
4	E-LF-7FDA/1B	22	E-LF-8FDA/1B
5	E-LF-7FDA/1A	23	E-LF-8FDA/1A
6	E-LF-7FDA/2H	24	E-LF-8FDA/2G
7	E-LF-7FDA/2G	25	E-LF-8FDA/2F
8	E-LF-7FDA/2F	26	E-LF-8FDA/2E
9	E-LF-7FDA/2E	27	E-LF-8FDA/2D
10	E-LF-7FDA/2D	28	E-LF-8FDA/2C
11	E-LF-7FDA/2C	29	E-LF-8FDA/2B
12	E-LF-7FDA/2B	30	E-LF-8FDA/2A
13	E-LF-7FDA/2A	31	E-LF-8FDA/3D
14	E-LF-7FDA/3D	32	E-LF-8FDA/3C
15	E-LF-7FDA/3C	33	E-LF-8FDA/3B
16	E-LF-7FDA/3B	34	E-LF-8FDA/3A
17	E-LF-7FDA/3A	35	E-RMS-7FDA*
18	E-LF-8FDA/1F	36	DELETED
		37	E-LF-8FB/3A**

* Transfer switches in the main control room.

** Located in Division Switchgear Room SM-8.

Table 1.10.7-4 (page 1 of 1)
Emergency Portable Hand-Held Lantern EPNs
Credited For Post Fire Safe Shutdown

ITEM	EPN #	Location
1	E-BU-STA/1A	Main Control Room
2	E-BU-STA/1B	Main Control Room
3	E-BU-STA/1C	Main Control Room
4	E-BU-STA/1D	Main Control Room
5	E-BU-STA/1E	Main Control Room
6	E-BU-STA/2A	Remote Shutdown Room
7	E-BU-STA/2B	Remote Shutdown Room
8	E-BU-STA/2C	Remote Shutdown Room
9	E-BU-STA/2D	Remote Shutdown Room
10	E-BU-STA/2E	Remote Shutdown Room
11	E-BU-STA/3A	RW Control Room
12	E-BU-STA/3B	RW Control Room
13	E-BU-STA/3C	RW Control Room
14	E-BU-STA/3D	RW Control Room
15	E-BU-STA/3E	RW Control Room
16	E-BU-STA/4A	DG-2 Electrical Room
17	E-BU-STA/4B	DG-2 Electrical Room
18	E-BU-STA/4C	DG-2 Electrical Room
19	E-BU-STA/4D	DG-2 Electrical Room
20	E-BU-STA/4E	DG-2 Electrical Room

1.10 FIRE PROTECTION

1.10.8 Essential Communication

RFO 1.10.8 Essential Communication system shown on Table 1.10.8-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

--NOTE--

When planned maintenance/surveillance activities create short-term inoperability, entry into associated Conditions and Required Compensatory Measures is not required provided the criteria specified in Bases are met.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more Essential Communication PBX phone inoperable for greater than 10 minutes.	A.1 Process a Fire Protection System Impairment Permit. <u>AND</u> A.2 Post sign(s) at the inoperable phone(s), identifying it as being inoperable and identify the backup local sound powered phone(s) to use in case of fire emergency.	Immediately 2 hours
B. Required Compensatory Measure and associated Completion Times of Condition A not met.	B.1 Initiate a Condition Report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.10.8.1	For the PBX battery, verify the following: a. Battery terminal voltage is greater than or equal to 53.46 V; b. Battery float current is less than or equal to 2 amps for each string; c. Battery pilot cell voltage is greater than or equal to 2.15 V; d. Battery pilot cell temperature is greater than or equal to 55°F.	31 days
SR 1.10.8.2	Functionally test PBX phones.	92 days
SR 1.10.8.3	Verify each PBX battery connected cell voltage is greater than or equal to 2.15 V.	92 days
SR 1.10.8.4	Verify PBX battery capacity to be greater than or equal to 80% of the manufacturer's ratings when subject to a performance discharge test.	12 months <u>AND</u> 6 months when testing shows a capacity drop of greater than 10% from the previous test <u>AND</u> 6 months when testing shows a capacity less than 90% of the manufacturer's published ratings.

Table 1.10.8-1 (page 1 of 1)
Essential Communication System EPNs Credited For Post Fire Safe Shutdown

ITEM	EQUIPMENT PIECE NUMBERS (EPN)	LOCATION
1	PHONE-CB-5000*	DG-2 Switchgear Room
2	PHONE-CB-4221*	Remote Shutdown Room
3	PHONE-CB-4223*	Remote Shutdown Room
4	PHONE-CB-4202*	Div. 2 Switchgear Room
5	PHONE-CB-4400*	Main Control Room, Shift Manager's Office
6	E-BO-PBX	PAAP, Bldg 25
7	E-DP-PBX/COM	PAAP, Bldg 25
8	COMM-GW-PBX/4	PAAP, Bldg 25
9	E-IN-PBX/3	PAAP, Bldg 25

* Number designator. No Passport EPN.

Section 1 - Limiting Trip Setpoints for Selected Functions

Technical Specification Table and Function Number	**Limiting Trip Setpoint (LTSP)**
Table 3.3.1.1-1 – Reactor Protection System	
Function 2.a – Neutron Flux – High (Setdown)	≤ 15% RTP
Function 2.b – Simulated Thermal Power High	TLO ≤ 0.63W + 62% RTP and ≤ 112.9% RTP SLO ≤ 0.63W + 57.1% RTP
Function 2.c – APRM Neutron Flux – High	≤ 118% RTP
Function 2.f – OPRM Upscale	As specified in COLR
Table 3.3.2.1-1 – Control Rod Block Instrumentation	
Function 1.a – Rod Block Monitor – Low Power Range - Upscale	as specified in COLR
Function 1.b – Rod Block Monitor – Intermediate Power Range - Upscale	as specified in COLR
Function 1.c – Rod Block Monitor – High Power Range - Upscale	as specified in COLR

Section 2 - Limiting Trip Setpoint Methodology for Selected Functions

The Nominal Trip Setpoints (NTSP) are set conservative or equal to the LTSP. The NTSP for the functions identified in Section 1 were established in accordance with the guidance provided in Standard EES-4, “Setpoint Methodology.” Calculation E/I-02-93-1256 discusses determination of the NTSP for Reactor Protection System and Control Rod Block Instrumentation using GE-Hitachi methods analogous to those described below:

$NTSP_1$ = AL ± (1.654/2) (SRSS of random terms) ± biased terms for the process variables which decrease (+) or increase (-) to trip.

$NTSP_2$ = AV ± (desired margin) (Sigma(LER))

Where: AL – Analytical Limit
AV – Allowable Value
SRSS – Square Root Sum of the Squares
Sigma(LER) – Licensee Event Report Avoidance Test

The more conservative of $NTSP_1$ or $NTSP_2$ is the governing value.

Digital system setpoints are stored as numerical values within the digital system database and are not subject to drift. The stored setpoints are the NTSP. There is no As-Left-Tolerance / As-Found-Tolerance associated with re-setting digital instrument setpoints during surveillances.

B 1.0 REQUIREMENTS FOR OPERABILITY (RFO) APPLICABILITY

BASES

RFOs	RFO 1.0.1 through RFO 1.0.6 establish the general requirements applicable to all Specifications in Sections 1.1 through 1.9 and apply at all times, unless otherwise stated.
RFO 1.0.1	RFO 1.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the RFO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).

RFO 1.0.2

RFO 1.0.2 establishes that upon discovery of a failure to meet an RFO, the associated Compensatory Measures shall be met. The Completion Time of each Required Compensatory Measure for a Condition is applicable from the point in time that a Condition is entered. The Required Compensatory Measure establishes those remedial measures that must be taken within specified Completion Times when the requirements of an RFO are not met. This Specification establishes that:

a. Completion of the Required Compensatory Measure within the specified Completion Time constitutes compliance with a Specification; and

b. Completion of the Required Compensatory Measure is not required when an RFO is met within the specified Completion Time, unless otherwise specified.

There are two basic types of Required Compensatory Measures. The first type of Required Compensatory Measure specifies a time limit in which the RFO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Compensatory Measure is not completed within the specified Completion Time, an action may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Compensatory Measure or not, correction of the entered Condition is an action that may always be considered upon entering a Condition.) The second type of Required Compensatory Measure specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Compensatory Measure provides an acceptable level of safety for continued operation.

BASES

RFO 1.0.2 (continued)

Completing the Required Compensatory Measure is not required when an RFO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The nature of some Required Compensatory Measures of some Conditions necessitates that, once the Condition is entered, the Required Compensatory Measure must be completed even though the associated Condition no longer exists. The individual RFO's Compensatory Measures specifies the Required Compensatory Measure where this is the case.

The Completion Time of the Required Compensatory Measure is also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the Compensatory Measures include, but are not limited to, performance of surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering Compensatory Measures for these reasons must be done in a manner that does not compromise safety. Intentional entry into Compensatory Measures should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead. Doing so limits the time both subsystems/divisions of a safety function are inoperable and limits the time other conditions exist which result in RFO 1.0.3 being entered. Individual specifications may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the Completion Time of the Required Compensatory Measure is applicable when this time limit expires, if the equipment remains removed from service or bypassed.

When a change in MODE or other specified condition is required to comply with a Required Compensatory Measure, the unit may enter a MODE or other specified condition in which another specification becomes applicable. In this case, the Completion Time of the associated Required Compensatory Measure would apply from the point in time that the new specification becomes applicable and the Condition is entered.

RFO 1.0.3

RFO 1.0.3 establishes the actions that must be implemented when an RFO is not met and:

a. An associated Required Compensatory Measure and Completion Time is not met and no other Condition applies; or

BASES

RFO 1.0.3 (continued)

b. The condition of the unit is not specifically addressed by the associated Compensatory Measures. This means that no combination of Conditions stated in the Compensatory Measures can be made that exactly corresponds to the actual condition of the unit. Sometimes, possible combinations of Conditions are such that entering RFO 1.0.3 is warranted; in such cases, the Compensatory Measures specifically state a Condition corresponding to such combinations and also that RFO 1.0.3 be entered immediately.

This Specification delineates the time limits for placing the unit in a safe MODE or other specified condition when operation cannot be maintained within the limits for safe operation as defined by the RFO and its Compensatory Measures. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or components from service in lieu of other alternatives that would not result in redundant systems or components being inoperable.

Upon entering RFO 1.0.3, 1 hour is allowed to prepare a change in unit operation or initiate a Condition Report.

Compensatory Measures required in accordance with RFO 1.0.3 may be terminated and RFO 1.0.3 exited if any of the following occurs:

a. The RFO is now met.

b. A Condition exists for which the Required Compensatory Measure have now been performed.

c. Compensatory Measures exists that do not have expired Completion Times. These Completion Times are applicable from the point in time that the Condition is initially entered and not from the time RFO 1.0.3 is exited.

In MODES 1, 2, and 3, RFO 1.0.3 provides actions for Conditions not covered in other Specifications. The requirements of RFO 1.0.3 do not apply in MODES 4 and 5 because the unit is already in the most restrictive Condition required by RFO 1.0.3. The requirements of RFO 1.0.3 do not apply in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the Compensatory Measures of individual specifications sufficiently define the remedial measures to be taken.

BASES

RFO 1.0.4

RFO 1.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an RFO is not met. It precludes placing the unit in a MODE or other specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Unit conditions are such that the requirements of the RFO would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the RFO requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Compensatory Measure.

Compliance with a Required Compensatory Measure that permits continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Compensatory Measure. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of RFO 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with Compensatory Measures. In addition, the provisions of RFO 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

Exceptions to RFO 1.0.4 are stated in the individual Specifications. Exceptions may apply to all the Compensatory Measures or to a specific Required Compensatory Measure of a specification.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 1.0.1. Therefore, changing MODES or other specified conditions while in a Condition, either in compliance with RFO 1.0.4, or where an exception to RFO 1.0.4 is stated, is not a violation of SR 1.0.1 or SR 1.0.4 for those surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected RFO.

BASES

RFO 1.0.4 (continued)

RFO 1.0.4 is only applicable when entering MODE 3 from MODE 4, MODE 2 from MODE 3 or 4, or MODE 1 from MODE 2. Furthermore, RFO 1.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, or 3. The requirements of RFO 1.0.4 do not apply in MODES 4 and 5, or in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the Compensatory Measures of individual specifications sufficiently define the remedial measures to be taken.

RFO 1.0.5

RFO 1.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with Compensatory Measures. The sole purpose of this Specification is to provide an exception to RFO 1.0.2 (e.g., to not comply with the applicable Required Compensatory Measure(s)) to allow the performance of SRs to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the Compensatory Measures is limited to the time absolutely necessary to perform the allowed SRs. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Compensatory Measure(s), and must be reopened to perform the SRs.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of an SR on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of an SR on another channel in the same trip system.

BASES

RFO 1.0.6

RFO 1.0.6 establishes an exception to RFO 1.0.2 for support systems that have an RFO specified in the Licensee Controlled Specifications (LCS). This exception is provided because RFO 1.0.2 would require that the Condition(s) and Required Compensatory Measure(s) of the associated inoperable supported system's RFO be entered solely due to the inoperability of the support system. This exception is justified because the actions that are required to ensure the plant is maintained in a safe condition are specified in the support system's RFO's Required Compensatory Measures. These Required Compensatory Measures may include entering the supported system's Conditions and Required Compensatory Measures or may specify other Required Compensatory Measures.

When a support system is inoperable and there is an RFO specified for it in the LCS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Compensatory Measures unless directed to do so by the support system's Required Compensatory Measures. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' RFO's Conditions and Required Compensatory Measures are eliminated by providing all the actions that are necessary to ensure the plant is maintained in a safe condition in the support system's Required Compensatory Measures.

However, there are instances where a support system's Required Compensatory Measure(s) may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Compensatory Measures for the supported system. This may occur immediately or after some specified delay to perform some other Required Compensatory Measures. Regardless of whether it is immediate or after some delay, when a support system's Required Compensatory Measures directs a supported system to be declared inoperable or directs entry into Conditions and Required Compensatory Measures for a supported system, the applicable Conditions and Required Compensatory Measures shall be entered in accordance with RFO 1.0.2.

B 1.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

BASES

SRs	SR 1.0.1 through SR 1.0.4, establish the general requirements applicable to all specifications in Sections 1.1 through 1.9 and apply at all times, unless otherwise stated.

SR 1.0.1

SR 1.0.1 establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the RFO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a surveillance within the specified frequency, in accordance with SR 1.0.2, constitutes a failure to meet an RFO.

Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the SRs; or

b. The requirements of the surveillance(s) are known to be not met between required surveillance performances.

Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated RFO are not applicable, unless otherwise specified.

Surveillances, including surveillances invoked by a Required Compensatory Measure, do not have to be performed on inoperable equipment because the Compensatory Measures define the remedial measures that apply. Surveillances have to be met and performed in accordance with SR 1.0.2, prior to returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable surveillances are not failed and their most recent performance is in accordance with SR 1.0.2. Post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the

BASES

SR 1.0.1 (continued)

extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed.

SR 1.0.2

SR 1.0.2 establishes the requirements for meeting the specified frequency for surveillances and any Required Compensatory Measure with a Completion Time that requires the periodic performance of the Required Compensatory Measure on a "once per..." interval.

SR 1.0.2 permits a 25% extension of the interval specified in the frequency. This extension facilitates surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the surveillance at its specified frequency. This is based on the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the SRs. The exceptions to SR 1.0.2 are those surveillances for which the 25% extension of the interval specified in the frequency does not apply. These exceptions are stated in the individual specifications. The requirements of regulations take precedence over the LCS.

As stated in SR 1.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Compensatory Measure, whether it is a particular surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR 1.0.2 are not intended to be used repeatedly merely as an operational convenience to extend surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

BASES

SR 1.0.3

SR 1.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a surveillance has not been completed within the specified frequency. A delay period of up to 24 hours or up to the limits of the specified frequency, whichever is greater, applies from the point in time it is discovered that the surveillance has not been performed in accordance with SR 1.0.2, and not at the time that the specified frequency was not met. This delay period provides adequate time to complete surveillances that have been missed. This delay period permits the completion of a surveillance before complying with Required Compensatory Measure or other remedial measures that might preclude completion of the surveillance.

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the surveillance, the safety significance of the delay in completing the required surveillance, and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the requirements.

When a surveillance with a frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to entering MODE 1 after each fuel loading, or in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, etc.) is discovered not to have been performed when specified, SR 1.0.3 allows for the full delay period of up to the specified frequency to perform the surveillance. However, since there is not a time interval specified, the missed surveillance should be performed at the first reasonable opportunity.

SR 1.0.3 provides a time limit for, and allowances for the performance of, surveillances that become applicable as a consequence of MODE changes imposed by Required Compensatory Measures.

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 1.0.3 is a flexibility which is not intended to be used as an operational convenience to extend surveillance intervals. While up to 24 hours or the limit of the specified frequency is provided to perform the missed surveillance, it is expected that the missed surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the surveillance as well as any plant configuration changes required or shutting the plant down to perform the surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the surveillance. This risk impact should be managed through the program in place to implement 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants.” This Regulatory Guide addresses

BASES

SR 1.0.3 (continued)

consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management action up to and including plant shutdown. The missed surveillance should be treated as an emergent condition as discussed in the Regulatory Guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. Missed surveillances for important components should be analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed Surveillances will be placed in Columbia's Corrective Action Program.

If a surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable then is considered outside the specified limits and the Completion Time of the Required Compensatory Measure for the applicable RFO Condition begins immediately upon expiration of the delay period. If a surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Time of the Required Compensatory Measure for the applicable RFO Condition begins immediately upon the failure of the surveillance.

Completion of the surveillance within the delay period allowed by this Specification, or within the Completion Time of the Required Compensatory Measure, restores compliance with SR 1.0.1.

BASES

SR 1.0.4

SR 1.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

However, in certain circumstances, failing to meet an SR will not result in SR 1.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed per SR 1.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 1.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the surveillance(s) within the specified frequency, on equipment that is inoperable, does not result in an SR 1.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the RFO is not met in this instance, RFO 1.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of SR 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with Compensatory Measures. In addition, the provisions of SR 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of SRs are specified such that exceptions to SR 1.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the frequency, in the surveillance, or both. This allows performance of surveillances when the prerequisite condition(s) specified in a surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated RFO prior to the performance or completion of a surveillance. A surveillance that could not be performed until after entering the RFO Applicability would have its frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached.

BASES

SR 1.0.4 (continued)

SR 1.0.4 is only applicable when entering MODE 3 from MODE 4, MODE 2 from MODE 3 or 4, or MODE 1 from MODE 2. Furthermore, SR 1.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, or 3. The requirements of SR 1.0.4 do not apply in MODES 4 and 5, or in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the Compensatory Measures of individual specifications sufficiently define the remedial measures to be taken.

B 1.1 REACTIVITY CONTROL SYSTEMS

B 1.1.6 Feedwater Temperature

BASES

BACKGROUND

Final feedwater temperature reduction is used at the end of rated (EOR) cycle exposure for the purpose of increasing net core reactivity. The EOR is the core exposure at which RATED THERMAL POWER (RTP), rated core flow and rated feedwater temperature would be achieved if all control rods were fully withdrawn.

Final feedwater temperature reduction is the operation at or beyond EOR for the purpose of extending the normal fuel cycle by plant operation with a final feedwater temperature reduced from the normal rated power temperature condition. The process involves feedwater heater manipulations, core reactivity changes, plant maneuvering, and an awareness of special licensing restrictions. The general philosophy is to trade subcooling reactivity for rod and flow reactivity during the latter portion of the operating cycle.

As part of the original Columbia Generating Station SER (Ref. 1), Energy Northwest was asked to justify that operation with partial feedwater heating to extend the cycle beyond the normal EOR condition would not result in a more limiting change in MINIMUM CRITICAL POWER RATIO (MCPR) than that obtained using the assumption of normal feedwater heating. Energy Northwest responded that analyses would be provided prior to operation in that mode, if a decision is made to implement final feedwater temperature reduction. As a result, Condition 2.C.(17) was incorporated into the Columbia Generating Station Operating License to prohibit operation with partial feedwater heating for the purpose of extending the normal fuel cycle unless acceptable justification was provided to and approved by the NRC staff.

Operation with partial feedwater heating for the purpose of extending the normal fuel cycle was approved by Amendment No. 77 to the Columbia Generating Station Operating License (Ref. 9). Issuance of Amendment No. 77 satisfied Columbia Generating Station Operating License Condition 2.C.(17).

APPLICABLE SAFETY ANALYSES

For the purpose of extending cycle, feedwater temperature may be used for reactivity addition to compensate for the reactivity loss due to fuel depletion. The analysis performed is applicable to core flow values up to the maximum attainable (106 percent of rated core flow) and to feedwater temperature reductions as low as 355°F. It is anticipated that a thermal coastdown from rated power with feedwater temperature reduction of this order is desirable. The analysis also covers a reduction in power by thermal coastdown to 47% of RTP with feedwater temperature held at or above 355°F.

BASES

APPLICABLE SAFETY ANALYSES (continued)

During a normal feedwater lineup, a feedwater temperature at 355°F entering the reactor vessel is achieved at approximately 47% of RTP. The Requirement for Operability clearly does not apply during reactor startups and shutdowns when reactor power is below the point at which a feedwater temperature of 355°F is attainable with a normal feedwater system lineup.

Prior to reaching the EOR exposure, operation with an abnormal feedwater lineup is permissible. The axial exposure shape monitoring during the cycle ensures that power shapes at or near EOR are within the analyzed envelope. MCPR operating limits for operation with reduced Feedwater temperature are provided in the Core Operating Limits Report.

REQUIREMENTS FOR OPERABILITY

For the purposes of cycle extension, the feedwater temperature entering the reactor vessel shall not be reduced to < 355°F.

APPLICABILITY

MODE 1, after the EOR exposure has been achieved with steady state THERMAL POWER ≥ 47% of RTP.

COMPENSATORY MEASURES

A.1, A.2, and A.3

With feedwater temperature entering the reactor vessel at a value < 355°F, initiate corrective action within 15 minutes and restore feedwater temperature to within the limit within 2 hours or reduce THERMAL POWER to < 25% of RTP within the next 4 hours.

SURVEILLANCE REQUIREMENTS

SR 1.1.6.1

During cycle operation beyond EOR exposure, the feedwater temperature entering the reactor vessel shall be determined to be ≥ 355°F at least once per 24 hours, and initially after establishing a reduced feedwater temperature lineup.

REFERENCES

1. NUREG-0892, "Safety Evaluation Report Related to the Operation of WPPSS Nuclear Project No. 2, Docket No. 50-397," March 1982.

2. Columbia Generating Station Operating License, Condition 2.C.(17), "Operation with Partial Feedwater Heating (Section 15.1, SER)."

3. General Electric Topical Report NEDC-31107, "Safety Review of WPPSS Nuclear Project No. 2 at Core Flow Conditions Above Rated Flow Throughout Cycle 1 and Final Feedwater Temperature Reduction," March 1986.

BASES

REFERENCES (continued)

4. Advanced Nuclear Fuels Report XN-NF-87-92, "WNP-2 Plant Transient with Final Feedwater Temperature Reduction," June 1987.

5. Letter GO2-87-286, dated December 15, 1987.

6. Letter GO2-88-198, dated September 14, 1988.

7. Letter GO2-89-102, dated June 1, 1989.

8. Letter GO2-90-024, dated February 14, 1990.

9. Columbia Generating Station Operating License, Amendment No. 77, dated March 1, 1990.

10. Letter GO2-90-069, dated April 5, 1990.

B 1.3 INSTRUMENTATION

B 1.3.2.1 Control Rod Block Instrumentation

BASES

BACKGROUND

The purpose of the control rod block instrumentation is to mitigate rod withdrawal errors. Control rods provide the primary means for control of reactivity changes. The most significant source of reactivity changes during power increase is due to control rod withdrawal. Control rod block instrumentation includes channel sensors, logic circuitry, switches, and relays arranged so that a trip in any channel will result in a control rod block (Ref. 1).

The Average Power Range Monitoring (APRM) instrumentation will initiate a rod block to prevent control rod withdrawal if the average core flux exceeds mode switch dependent upscale setpoints. INOP generated rod blocks prevent rod withdrawal if the channel is not operating as expected. The overlap between IRMs and APRMs is of concern when reducing power into the IRM range. On power increases, the system design will prevent further increases (initiate a rod block) if adequate overlap is not maintained. Overlap between IRMs and APRMs exists when sufficient IRMs and APRMs concurrently have onscale readings such that the transition between MODE 1 and MODE 2 can be made without either APRM downscale rod block, or IRM upscale rod block.

The Source Range Monitor (SRM) instrumentation provides a rod block to prevent control rod withdrawal if the SRM is not fully inserted into the core when the count level is below the retract permissive setpoint. This is to assure that the SRM is correctly inserted when it must be relied upon to provide neutron flux level information. The SRM instrumentation also provides a rod block if the localized neutron flux exceeds a predetermined setpoint. This is to assure that the SRM is correctly retracted during a reactor startup. The SRM also provides a rod block if the localized neutron flux falls below a predetermined setpoint, or is inoperative during control rod manipulations. This is to ensure that the SRM is correctly inserted and responding to the neutron flux signal.

The Intermediate Range Monitors (IRM) instrumentation provides a rod block to prevent control rod withdrawal if the IRM is not fully inserted into the core when in MODE 2 or 5. This is to assure that no control rod is withdrawn during low neutron flux level operations unless proper neutron monitoring capability is available. The IRM instrumentation provides a rod block if the localized neutron flux exceeds a predetermined setpoint. This is to assure that no control rod is withdrawn unless the IRM instrumentation is correctly upranged during a reactor startup. This rod block also provides a means to stop rod withdrawal in time to avoid conditions requiring Reactor Protection System (RPS) action (scram) in the event that a rod withdrawal error is made during low neutron flux level

BASES

BACKGROUND (continued)

operations. The IRM instrumentation provides a rod block to prevent control rod withdrawal if the IRM count level is downscale except when the IRM range switch is on the lowest range, or is inoperable. This assures that no control rod is withdrawn unless the neutron flux is being correctly monitored.

The scram discharge volume (SDV) high level instrumentation will initiate a rod block when the level is above the setpoint, or the SDV high water trip is bypassed. This assures that no control rod is withdrawn unless the high discharge level trip is in service, and enough capacity is available in the SDV to accommodate a scram.

The reactor coolant recirculation flow instrumentation provides loop flow signals to the APRM for generation of flow biased settings for RPS and rod block trips. The APRM has adequate protection against loss of flow signals, so the recirculation flow based control rod block function is used as a direct check of the flow signal.

APPLICABLE SAFETY ANALYSES

The control rod block instrumentation supports the initiation of a rod block when initiating conditions exceed preset limits.

REQUIREMENTS FOR OPERABILITY

Trip Setpoint Allowances

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor power), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The actual setpoints are calibrated consistent with applicable setpoint methodology. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Values between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The Allowable Values are derived from the analytic limits, corrected for process and all instrument uncertainties, except drift and calibration. The trip setpoints are derived from the analytic limits, corrected for process and all instrument uncertainties, including drift and calibration. The trip setpoints derived in this manner provide adequate protection because all instrumentation uncertainties and process effects are taken into account.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

1. APRM Rod Block

Three channels of the APRM are required to be OPERABLE, with their setpoints within the appropriate Allowable Values to ensure that no single instrument failure can preclude a rod block from this Function. W is defined as the percentage of the loop recirculation flow compared to 100% rated core flow. The difference between Two Loop Operation (TLO) and Single Loop Operation (SLO) setpoints is based on the reverse flow through the idle loop rather than the core. Therefore in SLO, indicated drive flow will be greater than actual core flow and this discrepancy is accounted for by shifting the offset of the setpoint equation. The shift is initialized when SLO is enabled in the APRM.

2. SRM Rod Block

Three channels of the SRM are required to be OPERABLE in MODE 2 with the associated IRM channels on range 1 or 2, with their setpoints within the appropriate Allowable Values. The detector not full in function is required to be OPERABLE in MODE 2 with the detector count rate ≤ 100 cps or with the associated IRM channels on range 1 or 2.

Two channels of the SRM are required to be OPERABLE in MODE 5, with their setpoints within the appropriate Allowable Values. If the reactor core is offloaded such that there is only one SRM in the area of the remaining fuel, then only the one SRM in the fueled region must be OPERABLE. Special movable detectors may be used in the place of the SRM if the detector is connected to the SRM circuits.

3. IRM Rod Block

Six channels of the IRM are required to be OPERABLE in MODE 2, or in MODE 5 with any control rod withdrawn from any core cell containing one or more fuel assemblies, with their setpoints within the appropriate Allowable Values. The downscale function is not necessary with the range switch on 1.

4. SDV Rod Block

Two channels are required to be OPERABLE in MODES 1 and 2 with the setpoints within the appropriate Allowable Values to ensure that no single channel failure will preclude a rod block when required.

BASES

APPLICABILITY

During power operation, the APRM, SDV and the RBM instrumentation generate rod block inputs. Applicability of the RBM is described in the ITS.

During MODES 2 and 5, the SRM and IRM rod blocks are also provided so that in the event of an initial equipment failure followed by any other single equipment failure or operator error, one or both of the SRM/IRM rod block functions actuate to provide a rod movement block signal (Refs. 2 and 3).

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the RBM instrumentation channels. The Required Compensatory Measures provide appropriate measures for separate inoperable RBM instrumentation channels. As such, a Note has been provided to allow separate Condition entry for each inoperable RBM instrumentation channel instead of requiring that the Completion Time begin on initial entry into the Condition.

Compensatory Measures require an inoperable channel to be placed in the trip condition in 7 days for one required channel of any Function inoperable, and in 1 hour with more than one channel of any Function inoperable.

A limited number of manual bypasses can be inserted to permit continued power operation during repair or calibration of equipment for selected rod block instrumentation as follows:

1 SRM channel

2 IRM channels (1 on either RPS Bus A or RPS Bus B)

1 APRM channel

The permissible IRM bypass is arranged in the same way as the RPS. The IRM's are arranged as two groups of equal number of channels. One manual bypass is allowed in each group. The groups are chosen so that adequate monitoring of the core is maintained with one channel bypassed in each group. The arrangement allows for the bypassing of one IRM in each RPS logic circuit. The operator can only bypass one ARPM channel at a given time.

SURVEILLANCE REQUIREMENTS

As Noted at the beginning of the SRs, the SRs for each RBM instrumentation Function are located in the SRs column of Table 1.3.2.1-1.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillances are modified by a second Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Compensatory Measures taken. The 6 hour testing allowance is acceptable because Surveillance testing is not normally performed coincident with rod motion and this does not significantly reduce the probability of proper rod block action, when necessary.

SR 1.3.2.1.1

Performance of a CHANNEL FUNCTIONAL TEST every 7 days ensures that the instrumentation required to monitor low power neutron flux will perform the intended function.

SR 1.3.2.1.2

Performance of a CHANNEL FUNCTIONAL TEST for Function 4 every 92 days ensures that the instrumentation required to monitor power operation will perform the intended function. Performance of a CHANNEL FUNCTIONAL TEST is required every 184 days for Function 1. The 184 day Frequency is based on reliability analyses (Reference 4).

SR 1.3.2.1.3

A CHANNEL CALIBRATION is performed every 24 months on the rod block instrumentation that is used for power operation. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with typical industry refueling cycles.

The frequency of SR 1.3.2.1.3 for APRM control rod block functions is based upon the assumption of a 24-month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.2.1.4

A CHANNEL CALIBRATION is performed every 18 months or approximately at every refueling, on the rod block instrumentation used for low power operation. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with typical industry refueling cycles.

Performance of a CHANNEL CALIBRATION every 18 months ensures that the instrumentation used for low power operation is calibrated to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

SR 1.3.2.1.5

Performance of a LOGIC SYSTEM FUNCTIONAL TEST every 24 months demonstrates the OPERABILITY of the required rod block trip logic through each activity control path of the Reactor Manual Control System (RMCS) for a specific RMCS input and reactor mode switch position. The functional testing of APRM, SRM, IRM, and SDV, in SR 1.3.2.1.1 through SR 1.3.2.1.4, overlap this Surveillance to provide complete testing of each Function. Each CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION verifies the channel through the common point where the channels lose their identity to the RMCS inputs (Npd, Nu, Npu, Hw). Several channels are combined into the RMCS mode dependent logic to develop the rod block output signal. The LOGIC SYSTEM FUNCTIONAL TEST is summarized as a verification of each RMCS activity control path resulting in rod blocks for Npd, Npu and Hw inputs in MODE 1; Nu, Npu and Hw inputs in MODE 2; and Nu for MODE 5. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage due to the reactor mode switch inputs.

REFERENCES

1. FSAR, Section 7.7.1.2.2.2.
2. FSAR, Section 15.4.1.
3. FSAR, Section 15.4.2.
4. NEDC-32410P, “Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function,” October 1995, and Supplement 1.

B 1.3 INSTRUMENTATION

B 1.3.3.1 Post Accident Monitoring (PAM) Instrumentation

BASES

BACKGROUND

The primary purpose of the PAM instrumentation is to display plant variables that provide information required by the control room operators during accident situations. Instruments monitoring variables designated as Category 1 in accordance with Regulatory Guide 1.97 (Ref. 1) are contained in the Columbia Generating Station Technical Specifications. Instruments monitoring variables designated as Category 2 or 3 have been removed from the Standard Technical Specifications in accordance with Reference 2. Selected instruments monitoring Category 2 variables have been relocated to the Licensee Controlled Specifications to assure compliance with other regulatory requirements.

Instruments monitoring Category 2 variables indicate system operating status. Instruments monitoring Category 3 variables are used as a backup to the Category 1 and Category 2 variables to aid in diagnosing the type of transient or accident, and determining the extent of damage, if any. Definitions of the variable type and category are contained in Reference 1.

APPLICABLE SAFETY ANALYSES

The PAM instrumentation RFO ensures the OPERABILITY of selected Regulatory Guide 1.97, non-Type A, Category 2 and 3 variables so that the control room operating staff can:

- Determine whether systems important to safety are performing their safety functions;
- Determine the potential for causing a gross breach of the barriers to radioactivity release;
- Determine whether a gross breach of a barrier has occurred; and
- Initiate action necessary to protect the public and to obtain an estimate of the magnitude of any impending threat.

The plant specific Regulatory Guide 1.97 analysis (Ref. 3) documents the process that identified the variable Types and Categories.

Reference 4 states that reactor coolant system relief and safety valves shall be provided with a positive indication in the control room from a reliable valve-position detection device or a reliable indication of flow in the discharge pipe. Columbia Generating Station satisfies this requirement using two separate systems which are monitored in the main control room.

BASES

APPLICABLE SAFETY ANALYSES (continued)

1. Direct Indication - utilizes linear variable differential transformers (LVDTs) mounted directly on the safety relief valves (SRVs). These sensors generate a voltage signal proportional to valve lift that is processed to provide closed/not closed indication and annunciation in the control room.

2. Tailpipe Thermocouple - utilizes thermocouples attached to the SRV tailpipes that monitor the temperature rise in the piping resulting from open or leaking relief valves. The tailpipe temperatures are recorded and annunciated in the control room. Although not safety grade, this backup indication system is seismically mounted and is powered from a reliable source.

Seismic qualification requirements for the SRV position indication do not relate to the position indication being available during or after a seismic event, but only that the device does not interfere with the operation of the equipment to which it is attached, if that equipment must function during the seismic event (Ref. 4).

The SRV position indication instrumentation can be used to detect an open or stuck open SRV. However, in the Reference 5 transient analysis for a stuck open SRV, no credit is taken for the SRV stem position or tailpipe thermocouple indication and alarm functions. Operator actions to attempt to close the valve and establish suppression pool cooling are assumed to be initiated based on a suppression pool high temperature alarm.

The transient resulting from a stuck open SRV does not represent the same magnitude of challenge to a Boiling Water Reactor (BWR) as does a stuck open pressurizer relief or safety valve on a Pressurized Water Reactor (PWR). As discussed in the Final Safety Analysis Report (FSAR) transient analysis for a stuck open SRV, the event causes only a slight decrease in thermal margins and does not result in fuel damage. The Minimum Critical Power Ratio (MCPR) is essentially unchanged, and as a result, the safety limit margin is unaffected. The depressurization transient is termed as "mild," with no significant effect on the reactor coolant pressure boundary (RCPB) or containment design pressure limits. Furthermore, a stuck open SRV event does not result in an uncontrolled radioactivity release to the environment or exposure to plant personnel or the public.

REQUIREMENTS FOR OPERABILITY

OPERABILITY of the PAM instrumentation ensures that there is sufficient information available on selected plant parameters to monitor and assess plant status and behavior following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

Listed below is a discussion of the specified instrument Functions listed in Table 1.3.3.1-1 that monitor non-type A Category 2 and Category 3 variables.

1. SRV Position Indication

SRV position indication is a Category 2 Type D variable provided to indicate a breach of the RCPB through an open or leaking SRV. RFO 1.3.3.1 requires that one valve position indication channel be OPERABLE for each SRV. This is sufficient to ensure proper operator response for an open or leaking SRV since other parameters such as SRV tailpipe temperature, suppression pool temperature and level, main turbine governor valve position, generator output, main turbine steam flow, steam/feedwater flow mismatch, and reactor pressure can also be used to indicate or confirm the condition. The RFO pertains only to the SRV valve stem position indication channel. Although the SRV tailpipe temperature channel is also designed to indicate an open or leaking SRV, it is approved only as a diverse backup method of SRV position indication.

2. Suppression Chamber Water Temperature Indication

Suppression chamber water temperature indication is a Category 2 Type D variable provided to monitor suppression pool water temperature and alert the plant operator to the condition of elevated suppression chamber water temperature. Elevated suppression chamber water temperature affects the ability of the steam quenching function and the requirements for net positive suction head (NPSH) on the Emergency Core Cooling System (ECCS) pumps. Suppression chamber water temperature is used in monitoring post accident performance for primary containment control in the emergency procedures.

3. Suppression Chamber Air Temperature Indication

Suppression chamber air temperature indication is a Category 2 Type D variable provided to indicate the temperature of the air volume of the suppression chamber. Elevated temperature in the suppression chamber are an indication of the loss of steam condensing of the suppression pool.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

4. Drywell Air Temperature Indication

Drywell air temperature indication is a Category 2 Type D variable provided to indicate the temperature of the drywell. Elevated temperatures in the drywell are an indication of heat energy being added to the drywell, or the loss of heat removal capability. Loss of cooling to the drywell severely challenges safety related equipment OPERABILITY from an equipment qualification standpoint. Prolonged operation at or above the environmental conditions for qualification would pose a significant risk for damage and would certainly necessitate wholesale equipment replacement upon recovery. Drywell air temperature indication is used in monitoring post accident performance for primary containment control in the emergency procedures. Drywell air temperature is also used post accident to confirm that the reactor pressure vessel (RPV) level instruments are not affected by elevated temperatures.

5. Condensate Storage Tank Level Indication

Condensate storage tank level indication is a Category 3 Type D variable provided to indicate the level of water in the condensate storage tank. The condensate storage tank is the source of water for ECCS injection. Level indication is used as confirmation that ECCS injection is being accomplished, and that injection switchover to the suppression pool source is imminent.

6. Deleted

7. Neutron Flux Indication

Neutron Flux indications for average power range monitor (APRM), intermediate range monitor (IRM) and source range monitor (SRM) are a Category 2 Type D variable provided to indicate that the reactor shutdown has been successful. The neutron flux level is an indication of reactor core power. An insertion of negative reactivity and the subsequent decrease in neutron flux are indications used in the emergency operating procedures to confirm protective system actions and make decisions regarding the direction of subsequent emergency action.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

8. Reactor Core Isolation Cooling (RCIC) Flow Indication

RCIC flow indication is a Category 2 Type D variable provided to indicate the operation of the RCIC System.

9. High Pressure Core Spray (HPCS) Flow Indication

HPCS flow is a Category 2 Type D variable provided to indicate the operation of the HPCS System. HPCS flow indication is monitored post accident to fulfill the RPV Level and RPV flooding functions of the emergency procedures.

10. Low Pressure Core Spray (LPCS) Flow Indication

LPCS flow is a Category 2 Type D variable provided to indicate the operation of the LPCS System. LPCS flow indication is monitored post accident to fulfill the RPV Level and RPV flooding functions of the emergency procedures.

11. Standby Liquid Control (SLC) System Flow Indication

SLC System flow is a Category 2 Type D variable provided to indicate flow in the SLC System. SLC flow is an indication that SLC is injecting and used as verification of function in the RPV control reactor power ATWS portion of the emergency procedures. SLC injection is also used to control pH in the suppression pool post-LOCA.

12. SLC System Tank Level Indication

SLC System tank level is a Category 3 Type D variable provided to indicate the availability of SLC inventory for injection. Decreasing SLC tank level is an indication that SLC is injecting, and is used in the RPV control reactor power ATWS portion of the emergency procedures to secure the SLC function. SLC injection is also used to control pH in the suppression pool post-LOCA.

13. Residual Heat Removal (RHR) Flow Indication

RHR flow is a Category 2 Type D variable provided to indicate flow for low pressure cooling injection (LPCI) and shutdown cooling. RHR flow indication is monitored post accident to fulfill the RPV level and RPV flooding functions of the emergency procedures.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

14. RHR Heat Exchanger Outlet Temperature Indication

RHR heat exchanger outlet temperature is a Category 3 Type D variable provided to indicate temperature of the water leaving the RHR heat exchanger. This instrumentation is backup to RHR/Service Water flow indications used for post accident monitoring.

15. Standby Service Water Flow Indication

Standby service water flow is a Category 2 Type D variable provided to indicate standby service water as cooling flow for equipment needed to support post accident operation. Standby service water is supplied to equipment that functions in response to accident conditions. Indication of standby service water flow provides assurance that the cooling water to support the equipment operation is functioning.

16. Standby Service Water Spray Pond Temperature Indication

Standby service water spray pond temperature is a Category 2 Type D variable provided to indicate the availability of the water cooling medium in support of equipment that must operate post accident. Standby service water is supplied to equipment that functions in response to accident conditions. Indication of standby service water spray pond temperature provides assurance that the cooling water to support the equipment operation is available.

17. Emergency Ventilation Damper Position Indication

Emergency ventilation damper position is a Category 2 Type D variable. Emergency damper position indication is provided in the control room for all dampers necessary to prevent the release of radioactive gases to the environment or for the protection of operating personnel during post accident conditions.

The specific dampers that are credited (reference 7 through 10) are as follows:

REA-V-1	REA-V-2	ROA-V-1	ROA-V-2
SGT-V-1A	SGT-V-1B	SGT-V-2A	SGT-V-2B
SGT-V-3A1	SGT-V-3B1	SGT-V-3A2	SGT-V-3B2
SGT-V-4A1	SGT-V-4A2	SGT-V-4B1	SGT-V-4B2
SGT-V-5A1	SGT-V-5A2	SGT-V-5B1	SGT-V-5B2
WOA-V-51A	WOA-V-51B	WOA-V-51C	
WOA-V-52A	WOA-V-52B	WOA-V-52C	
WMA-AD-51A1	WMA-AD-51B1		

BASES

REQUIREMENTS FOR OPERABILITY (continued)

18. Standby Power and Other Sources Indication

Standby power and other sources indication is a Category 2 Type D variable provided to indicate the availability and characteristics of emergency electrical power. Emergency electric power is provided by diesel electric generators, and supplied through a safety related power distribution system. In addition, other sources of power from the transmission grid are monitored to indicate the availability of the source. Monitoring of voltage and current for the power source and distribution system provides assurance that post accident mitigating functions are available.

The specific voltmeters and ammeters that are credited for Post Accident Monitoring of power sources and distribution systems (Ref. 6) are as follows:

E-VM-SM/7	E-VM-SM/8	E-VM-SL71
E-VM-SL73	E-VM-SL81	E-VM-SL83
E-VM-PP7AA	E-VM-PP8AA	E-VM-DPS2/1
HPCS-VM-R618	E-VM-DPS1/1	E-VM-DPS1/2
E-VM-DP/S0/A	E-VM-DP/S0/B	HPCS-AM-B1
HPCS-AM-C1	E-AM-C0/1A/1B	E-AM-C0/2A/2B
E-AM-B0/1A/1B	E-AM-B0/2A/2B	E-AM-C1/1
E-AM-C1/2	E-AM-C2/1	E-AM-B1/1
E-AM-B1/2	E-AM-B2/1	E-AM-IN2/A
E-AM-IN2/B	E-AM-IN3/A	E-AM-IN3/B
E-AM-7/71	E-AM-7/73	E-AM-8/81
E-AM-8/83		

19. Reactor Building Effluent Monitoring System Indication

Reactor Building Effluent Monitoring System indication is provided to indicate the rate of release of gaseous effluent from the reactor building. The Reactor Building Effluent Monitoring System flow rate monitors the reactor building ventilation exhaust used by the normal Reactor Building Ventilation System and the Standby Gas Treatment System. These systems assure that the reactor building (secondary containment) contains all system leakage and all effluents are discharged through this monitoring system.

Noble gases monitoring (RG 1.97, Type C, Category 2 and Type E, Category 2) include the detector, log rate meter, and control room strip chart recorder for the Intermediate and High Range Stack Monitors.

20. Turbine Building Ventilation Exhaust Noble Gas Monitor

The Turbine Building Ventilation Exhaust monitor is provided to indicate the release of gaseous effluent from the Turbine Building during accident

BASES

REQUIREMENTS FOR OPERABILITY (continued)

conditions. This monitor would provide an indication of the radiation in the Turbine Building Exhaust in the event of a steam line break. This Noble Gas Monitoring System is a RG 1.97 Category 2, Type E variable. Alarm and recorder functions are provided for this instrument in the main control room.

21. Radwaste Building Ventilation Exhaust Noble Gas Monitor

The Radwaste Building Ventilation Exhaust Monitor is provided to indicate the release of gaseous effluent from the Radwaste Building during accident conditions. This monitor would provide an indication of the radiation in the Radwaste Building Exhaust from malfunctions of process equipment located in the building. This Noble Gas Monitoring System is a RG 1.97 Category 2, Type E variable. Alarm and recorder functions are provided for this instrument in the main control room.

22. DG Standby Power

Emergency electric power is provided by diesel generators (DG) and supplied through a safety related power distribution system. Monitoring the voltage and current of the DG power provides information about available post accident mitigating functions.

The specific voltmeters and ammeters that are credited for Post Accident Monitoring of power sources and distribution systems (Ref. 6) are as follows:

HPCS-VM-R610	DG-VM-DG1/A	DG-VM-DG1/B
DG-VM-DG1/C	DG-VM-DG2/A	DG-VM-DG2/B
DG-VM-DG2/C	DG-AM-DG1	DG-AM-DG2
HPCS-AM-R607		

APPLICABILITY	The PAM instrumentation is required to be OPERABLE in MODES 1 and 2 with the Building Effluent Monitoring System also having to be OPERABLE in MODE 3. The variables being monitored are related to the diagnosis and preplanned actions required to mitigate design basis accidents (DBAs). The applicable DBAs are assumed to occur in MODES 1 and 2. In MODES 3, 4, and 5, plant conditions are such that the likelihood of an event that would require PAM instrumentation is extremely low; therefore, PAM instrumentation is not required to be OPERABLE in these MODES, except as described above.

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the PAM instrumentation channels. The Required Compensatory Measures provide appropriate measures for separate inoperable PAM instrumentation channels. As such, a Note has been provided to allow separate Condition entry for each inoperable PAM instrumentation channel instead of requiring that the Completion Time begin on initial entry into the Condition.

A.1

Required Compensatory Measure A.1 directs entry into the appropriate Condition referenced in Table 1.3.3.1-1. The applicable Condition referenced in the Table is Function dependent. Each time a PAM channel is discovered inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition.

B.1, B.2, and B.3

With one or more SRV position indication channel inoperable, the SRV tailpipe temperature monitoring instrument must be verified OPERABLE within 48 hours. OPERABILITY of the SRV tailpipe temperature monitoring instrument may be established by verification that the 31 day CHANNEL CHECK and 24 month CHANNEL CALIBRATION surveillances are current. Daily CHANNEL CHECKS (after the initial 48 hour checks) ensure that the nonsafety grade SRV tailpipe temperature monitoring instrumentation will detect an open or leaking SRV. The 48 hour Completion Time is reasonable based on the relatively low probability of an event requiring SRV position indication operation and the availability of alternate means to obtain the required information.

BASES

COMPENSATORY MEASURES (continued)

In conjunction with Required Compensatory Measures B.1 and B.2, inoperable SRV position indication channel must be restored to OPERABLE status within 30 days. This Compensatory Measure provides an allowable outage time to restore the affected instrumentation to OPERABLE status. The 30 day Completion Time is based on: (1) the diverse alternative safety grade instrumentation that can be used for indicating an open or leaking SRV; (2) the backup capability of the SRV tailpipe monitoring instrumentation; (3) the passive nature of the SRV position indication instrumentation (no control or accident mitigating design features); and (4) the likelihood that the SRV valve stem position indication channel can be restored to OPERABLE status within the allowed outage time.

C.1

The Required Compensatory Measure for the failure of the post accident monitoring function is to restore the channel to OPERABLE status within 7 days. The Completion Time of 7 days is based on the classification of these measurements as non-Category 1 variables and the relatively low probability of an event requiring PAM instrument operation. Variables identified as Category 1 are used as direct indications of conditions upon which post accident actions are based and as such, are subject to more stringent OPERABILITY requirements. Therefore, the allowed 7 days to restore the post accident monitoring function of the non-Category 1 variables is appropriate.

D.1

The Required Compensatory Measure for the failure of the post accident monitoring function is to restore the channel to OPERABLE status within 30 days. The Completion Time of 30 days is based on the classification of these measurements as non-Category 1 variables and the relatively low probability of an event requiring PAM instrument operation. Variables identified as Category 1 are used as direct indications of conditions upon which post accident actions are based and as such, are subject to more stringent OPERABILITY requirements. Therefore, the allowed 30 days to restore the post accident monitoring function of the non-Category 1 variables is appropriate.

BASES

COMPENSATORY MEASURES (continued)

E.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

As Noted at the beginning of the SRs, the SRs for each PAM instrumentation Function are located in the SRs column of Table 1.3.3.1-1.

The Surveillances are modified by a second Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Compensatory Measures taken. The 6 hour testing allowance is acceptable because it does not significantly reduce the probability of properly monitoring post accident parameters, when necessary.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.3.1.1

Performance of a CHANNEL CHECK once every 31 days is the qualitative assessment, by observation, of channel behavior during operation. This assessment is the comparison, where possible, of the channel status or indication to the status or indication of an independent instrument measuring the same parameter. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or instrument malfunction. A significant deviation could indicate channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency of 31 days is based on plant operating experience with regard to channel OPERABILITY and drift. Plant experience has demonstrated that there is a relatively low probability of a failure occurring on more than one channel of a given function in any 31 day interval. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel displays during normal operational use.

SR 1.3.3.1.2 and 1.3.3.1.3

A CHANNEL CALIBRATION is performed every 18 months or 24 months. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and increased equipment reliability. The note states that the neutron detectors are excluded from the CHANNEL CALIBRATION because of the difficulty of simulating a meaningful signal.

BASES

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.
2. Letter, dated May 9, 1988, TE Murley (NRC) to RF Janecek (BWROG), "NRC Staff Review of Nuclear Steam Supply Vendor Owners Groups' Application of the Commission Interim Policy Statement Criteria to Standard Technical Specifications."
3. FSAR, Section 7.5.2.
4. TMI Action Plan Item II.D.3, "Direct Indication of Relief and Safety Valve Position," (NUREG-0737).
5. FSAR, Section 15.1.4.
6. FSAR, Table 7.5-1
7. OPS-CONT/IST-Q702
8. OPS-SGT/IST-Q701
9. OPS-SGT/IST-Q702
10. OPS-INST-X301

B 1.3 INSTRUMENTATION

B 1.3.3.3 Remote Shutdown System Equipment Status Monitoring

BASES

BACKGROUND

The Remote Shutdown System provides the control room operator with sufficient instrumentation and controls to place and maintain the plant in a safe shutdown condition from a location other than the control room. This capability is necessary to protect against the possibility of the control room becoming inaccessible. At Columbia Generating Station, the Remote Shutdown System is comprised of the remote shutdown panel (preferred) and the alternate remote shutdown panel. The preferred panel uses the Residual Heat Removal (RHR) System loop B while the alternate panel uses RHR A. A safety shutdown condition is defined as MODE 3. With the plant in MODE 3, the Reactor Core isolation Cooling (RCIC) System, the safety/relief valves, and RHR System can be used to remove core decay heat and meet all safety requirements. The long term supply of water for the RCIC System and the ability to operate shutdown cooling from outside the control room allow extended operation in MODE 3.

In the event that the control room becomes inaccessible, the operators can establish control at the remote shutdown panel and place and maintain the plant in MODE 3. Not all equipment status monitoring instrumentation supporting the Remote Shutdown System is located at the remote shutdown panel. Most equipment status monitoring instrumentation will have to be monitored locally at the switchgear, motor control panels, or other local stations.

The OPERABILITY of the Remote Shutdown System equipment status monitoring instrumentation ensures that there is sufficient information available on selected plant parameters to support maintaining the plant in MODE 3 should the control room become inaccessible.

APPLICABLE SAFETY ANALYSES

The Remote Shutdown System is required to provide equipment at appropriate locations outside the control room with a design capability to promptly shutdown the reactor to MODE 3, including the necessary instrumentation and controls, to maintain the plant in a safe condition in MODE 3.

The Remote Shutdown System is considered an important contributor to reducing the risk of accidents; as such, it is included in the Technical Specifications.

The Remote Shutdown System equipment status monitoring instrumentation is provided at various locations in the Plant. This instrumentation provides the operator information to aid in the evaluation of Remote Shutdown System support equipment.

BASES

REQUIREMENTS FOR OPERABILITY	The Remote Shutdown System Equipment Status Monitoring RFO provides the requirements for the OPERABILITY of the equipment status monitoring instrumentation necessary to support maintaining the plant in MODE 3 from a location other than the control room. The equipment status monitoring instrumentation required is listed in Table 1.3.3.3-1. The Remote Shutdown System equipment status monitoring instruments covered by this RFO do not need to be energized to be considered OPERABLE. This RFO is intended to ensure that the equipment status monitoring instruments will be OPERABLE if plant conditions require that the Remote Shutdown System be placed in operation.
APPLICABILITY	The Remote Shutdown System Equipment Status Monitoring RFO is applicable in MODES 1 and 2. This is the same as required for the Remote Shutdown System. This RFO is not applicable in MODES 3, 4, and 5. In these MODES, the plant is already subcritical and in a condition of reduced Reactor Coolant System energy. Consequently, the RFO does not require OPERABILITY in MODES 3, 4, and 5.
COMPENSATORY MEASURES	The required actions for inoperable Remote Shutdown System equipment status monitoring provide appropriate Compensatory Measures for separate Functions. As such, a Note has been provided that allows separate Condition entry for each inoperable Function.

<u>A.1</u>

Condition A address the situation where one or more required Remote Shutdown System equipment status monitoring instruments is inoperable. This includes any status monitoring instrument listed in Table 1.3.3.3-1.

The Required Compensatory Measure is to restore the equipment status monitoring instrument to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

<u>B.1</u>

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to

BASES

COMPENSATORY MEASURES (continued)

functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.3.3.3.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameters indicated on one channel to a similar parameter on other channels where possible. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. As specified in the Surveillance, a CHANNEL CHECK is only required for those channels that are normally energized.

The Frequency is based upon plant operating experience that demonstrates channel failure is rare.

SR 1.3.3.3.2 and SR 1.3.3.3.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies the channel responds to measured parameter values with the necessary range and accuracy.

SR 1.3.3.3.2 CHANNEL CALIBRATION of the room temperature monitors will be performed in accordance with the Measuring and Test Equipment (M&TE) Calibration Program.

The 18 month Frequency of SR 1.3.3.3.3 is based upon operating experience.

REFERENCES None

B 1.3 INSTRUMENTATION

B 1.3.4.6 Reactor Coolant System (RCS) Interface Valves Leakage Pressure Monitors

BASES

BACKGROUND

There are several low pressure systems which have connections to the high pressure RCS. During normal plant operations, the RCS pressure boundary is provided by pressure isolation valves (PIV). To ensure that these valves do not allow leakage into the connecting low pressure systems they undergo testing and surveillances as required by Technical Specifications. The RCS interface valve leakage monitors, listed in Table 1.3.4.6-1 can be used to detect excessive leakage through the PIVs associated with Technical Specification 3.4.6.

PIVs are between the RCS and the following systems:

1. High Pressure Core Spray (HPCS)
2. Low Pressure Core Spray (LPCS)
3. Reactor Core Isolation Cooling (RCIC) System
4. Residual Heat Removal (RHR) System

APPLICABLE SAFETY ANALYSES

The high/low pressure interface valve leakage monitors do not necessarily relate directly to the leakage requirements of the RCS PIVs. The Boiling Water Reactor Standard Technical Specifications, NUREG-1434, does not specify indication-only or alarm-only equipment to be OPERABLE to support OPERABILITY of a system or component. The Component Classification Evaluation Record (CCER) for each monitor considers the alarm and indication functions to be non-safety related operator aids.

REQUIREMENTS FOR OPERABILITY

The RCS interface valves leakage pressure monitor functions shown in Table 1.3.4.6-1 shall be OPERABLE.

The required loop includes the following monitors, associated alarms, and power supply:

- RHR-PIS-22A, alarm on H13-P601.A4-3.1, RHR A PUMP DISCH PRESS HIGH/LOW.
- RHR-PIS-22B, alarm on H13-P601.A2-5.6, RHR B PUMP DISCH PRESS HIGH/LOW.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

- RHR-PIS-22C, alarm on H13-P601.A2-6.5, RHR C PUMP DISCH PRESS HIGH/LOW.
- RHR-PS-18, alarm on H13-P601.A4-1.1, RHR RPV SUCTION SHUTDOWN HDR PRESS HIGH.
- HPCS-PIS-3, alarm on H13-P601.A1-5.8, HPCS PUMP SUCTION PRESS HIGH/LOW.
- LPCS-PIS-5, alarm on H13-P601.A3-5.3, LPCS PUMP DISCH PRESS HIGH/LOW.
- RCIC-PS-21, alarm on H13-P601.A4-5.5, RCIC PUMP SUCTION PRESS HIGH.

APPLICABILITY MODES 1, 2, and 3.

COMPENSATORY MEASURES

A.1.1

With one or more monitors inoperable restore the inoperable monitor to OPERABLE status within 7 days.

A.1.2

For each inoperable monitor verify that the pressure is less than the alarm setpoint. This is to be completed within 7 days and then once every 12 hours thereafter.

A.2

Restore each inoperable monitor to OPERABLE status within 30 days.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize

BASES

COMPENSATORY MEASURES (continued)

the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.3.4.6.1

Perform a CHANNEL FUNCTIONAL TEST every 31 days for each monitor listed in Table 1.3.4.6-1.

SR 1.3.4.6.2

Perform a CHANNEL CALIBRATION every 18 months for each monitor listed in Table 1.3.4.6-1.

REFERENCES

1. CCER No. C91-0535.
2. CCER No. C92-0898.
3. CCER No. C93-0048.
4. CCER No. C93-0368.
5. CCER No. C93-0369.
6. CCER No. C93-0370.

B 1.3 INSTRUMENTATION

B 1.3.5.2 Automatic Depressurization System (ADS) Inhibit

BASES

BACKGROUND

The Automatic Depressurization System (ADS) is an emergency system designed to relieve steam pressure in the main steam lines and the reactor vessel to allow the low pressure emergency core cooling systems to inject. The ADS automatic initiation logic signal is completed when low reactor vessel water level is detected (level 3 and 1), a 105 second time delay times out, and either a low pressure core spray (LPCS) pump or residual heat removal (RHR) low pressure coolant injection (LPCI) pump is verified (by ADS circuitry) as running. The automatic depressurization signal can be generated by either ADS logic channel "A" or logic channel "B".

There are certain accident scenarios in which it is desirable to prevent ADS from initiating. This can be accomplished by having a control room operator manually reset the ADS timer or with the ADS manual inhibit switches. Using the ADS manual inhibit switches is a one time action; therefore, the operator no longer has to remember to continually reset the ADS timer. There are two inhibit switches provided, one for each ADS logic division, so both switches must be placed in INHIBIT to inhibit both logic divisions.

Taking the ADS manual inhibit switch to the inhibit position will bring in a BISI alarm, ADS DIV 1(2) INHIBITED, on P601. This BISI alarm will then actuate the associated annunciator panel alarm, ADS DIV 1(2) OUT OF SERVICE.

The ADS manual inhibit switches were added during the first refueling outage as a requirement of Licensing Condition 2.C.(18) of the Columbia Generating Station Operating License.

APPLICABLE SAFETY ANALYSES

The ADS manual inhibit switch allows the operator to defeat ADS actuation as directed by the emergency operating procedures under conditions for which ADS would not be desirable.

The ADS manual inhibit switch is not part of a primary success path in the mitigation of a design basis accident (DBA) or transient. The inhibit feature was added to mitigate the consequences of an ATWS event, which is not a DBA or transient.

REQUIREMENTS FOR OPERABILITY

Two ADS inhibit switches shall be OPERABLE.

Both ADS manual inhibit switches and their associated alarms are to be OPERABLE.

BASES

APPLICABILITY	MODES 1, 2, and 3 when reactor pressure vessel (RPV) pressure is > 150 psig. The ADS manual inhibit switches are required to be OPERABLE whenever the reactor coolant pressure is greater than the discharge pressure of the high volume, low pressure injection systems.
COMPENSATORY MEASURES	<u>A.1</u> With one or more ADS manual inhibit switches inoperable, verify that the associated ADS division is not inhibited by the inoperable switch(es). This must be completed within 8 days. If either high pressure core spray (HPCS) or reactor core isolation cooling (RCIC) is inoperable concurrent with discovery of an inoperable ADS manual inhibit switch(es), the verification that the associated ADS division is not inhibited must be completed within 96 hours. The shorter Completion Time with HPCS or RCIC inoperable reflects the increased need or potential for low pressure system injection. <u>B.1</u> If the Required Compensatory Measure and its associated Completion Time are not met, immediately declare the associated ADS division inoperable.
SURVEILLANCE REQUIREMENTS	<u>SR 1.3.5.2.1</u> Perform the LOGIC SYSTEM FUNCTIONAL TEST every 24 months. This test verifies that inhibit switches will interrupt the ADS initiation signal when in the inhibit position.
REFERENCES	1. Licensing Condition 2.C.(18), Columbia Generating Station Operating License. 2. Letter GO2-95-224, dated October 20, 1995.

B 1.3 INSTRUMENTATION

B 1.3.5.3 Reactor Core Isolation Cooling (RCIC) Instrumentation

BASES

BACKGROUND	Turbine exhaust leaving the RCIC turbine passes through a check valve (RCIC-V-40) and a motor operated isolation valve (RCIC-V-68) before penetrating the primary containment and discharging into the suppression pool below water level. Following turbine operation, a vacuum will form in the exhaust piping as the steam condenses. To prevent water from being drawn from the suppression pool back into the turbine exhaust, two vacuum breaker check valves (RCIC-V-111 and 112) will open at less than 0.8 psid to allow air into the exhaust piping. There are two vacuum breaker isolation valves (RCIC-V-110 and 113) on this vacuum breaker line. These isolation valves will auto close if both low RCIC steam supply (74.5 psig) and Drywell Pressure - High (1.65 psig) signals are received. There are two divisions for Drywell Pressure - High. Division 1 (MS-PS-48A and C) provides a signal to RCIC-V-110 and Division 2 (MS-PS-48B and D) provides a signal to RCIC-V-113. A high drywell pressure signal in conjunction with a RCIC low steam line pressure signal will isolate the valves.
APPLICABLE SAFETY ANALYSES	RCIC turbine exhaust vacuum line inboard and outboard isolation valves (RCIC-V-110 and 113) are normally open and are passive components that are part of primary containment. These valves are not primary containment isolation valves. Because these valves do not provide an active safety related close function, their isolation signal does not serve a safety related function. It should be noted that the instruments providing the Drywell Pressure - High signal also provide this signal to other functions which are safety related.
REQUIREMENTS FOR OPERABILITY	The instruments required are MS-PS-48A, B, C and D and the signal provided to the associated valve.
APPLICABILITY	Each trip system requires two channels to be OPERABLE in MODES 1, 2, and 3. Each isolation valve is considered to have its own trip system.
COMPENSATORY MEASURES	<u>A.1</u> With one or more required channels inoperable, place the channel in trip within 24 hours.

BASES

COMPENSATORY MEASURES (continued)

The Completion Time of 24 hours is allowed because the trip circuitry requires a 1 out of 2 logic, so the trip function will still work with one channel out of service. Placing the channel in the trip condition will not cause the valve to isolate because the Drywell Pressure - High trip signal must be coincident with a RCIC low steam supply pressure signal.

B.1

With one or more automatic functions with isolation capability not maintained restore the isolation capability within 1 hour.

The automatic function is the closure of either RCIC vacuum breaker isolation valve (RCIC-V-110 or 113). If the failure of both pressure switches and/or associated signals in one channel is such that the valve will not close automatically, then only 1 hour is allowed to recover this capability.

C.1

With the Required Compensatory Measure and associated Completion Time of Condition A or B not met, close the affected system isolation valve and declare the affected system inoperable.

SURVEILLANCE REQUIREMENTS

SR 1.3.5.3.1

Perform the CHANNEL FUNCTIONAL TEST every 92 days.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

SR 1.3.5.3.2

Perform the CHANNEL CALIBRATION every 18 months.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.5.3.3

Perform the LOGIC SYSTEM FUNCTIONAL TEST every 24 months.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

REFERENCES

1. FSAR, Section 7.4.1.1.
2. Letter GO2-88-098, dated April 28, 1988.
3. Technical Specifications 3.3.1.1 and 3.3.3.1.
4. CCER No. C91-0534.

B 1.3 INSTRUMENTATION

B 1.3.5.4 HPCS Condensate Supply Line Instrumentation

BASES

BACKGROUND

The Condensate Storage Tanks (CST) are the preferred source of water for the High Pressure Core Spray System. For this reason, the HPCS pump suction is normally aligned to the CSTs. The condensate water from the CSTs is supplied to the suction of the HPCS pump via non-seismically qualified piping. This design arrangement presents a condition in which air may be introduced into the HPCS pump during a seismic event in which a HPCS condensate supply line break occurs. The HPCS Condensate Supply Line Instrumentation is provided to protect the HPCS pump in such a condition.

The HPCS Condensate Supply Line Instrumentation functions to detect a HPCS Condensate Supply Line break (Ref. 1) and actuate relay logic that strokes valves to realign the suction of the HPCS pump to the suppression pool before the HPCS pump can be damaged from the line break. When the suction of the HPCS pump is aligned to the suppression pool, a continuous (Ref. 2) supply of water is available for the HPCS system in the event of a condensate supply line break.

The HPCS Condensate Supply Line Instrumentation is comprised of two pressure switch and time delay relay schemes that independently function to generate a suction transfer signal to the HPCS relay logic circuits upon sensing low water level in the piping. These instruments are installed on a seismic category I standpipe on the condensate supply piping in the reactor building basement. The pressure switch actuates the time delay relay upon loss of head between the CST and the instrument standpipe. The time delay relay feature of the design prevents spurious suction transfer signals during momentary pressure transients in the condensate supply piping.

APPLICABLE SAFETY ANALYSES

The design function of the HPCS Condensate Supply Line Instrumentation is to automatically transfer the HPCS pump suction from the CSTs to the suppression pool upon a break of the HPCS condensate supply line. This function is necessary to prevent failure of the HPCS pump during a safe shutdown Earthquake (SSE) when it is pumping water from the CSTs.

The Loss of Coolant Accident (resulting from a spectrum of postulated piping breaks within the reactor coolant pressure boundary) - inside containment described in FSAR section 15.6.5 is the only safety analysis

BASES

APPLICABLE SAFETY ANALYSES (continued)

that assumes a coincident SSE. This accident analysis does not specifically credit HPCS flow from the CSTs; however, it assumes that continuous HPCS flow is available or is automatically initiated. While the CSTs may be the preferred source because of water quality, they cannot provide continuous flow because they contain a limited amount of condensate and the integrity of the supply piping is not assured during an SSE. For this reason, the CSTs and their attendant instrumentation cannot be considered as part of the primary success path to mitigate a DBA or transient as stated in Reference 3.

REQUIREMENTS FOR OPERABILITY

The set of instruments that comprise the HPCS Condensate Supply Line Instrumentation are HPCS-PS-3A, HPCS-RLY-62/3A, HPCS-PS-3B, and HPCS-RLY-62/3B. This set of instrumentation consists of two pressure switch and time delay relay combinations that independently function to generate a suction transfer signal to the HPCS relay logic circuits upon sensing low water level in the piping. To meet the requirements of RFO 1.3.5.4, either HPCS-PS-3A and HPCS-RLY-62/3A, or HPCS-PS-3B and HPCS-RLY-62/3B shall be operable.

APPLICABILITY

The HPCS Condensate Supply Line Instrumentation is required to be OPERABLE in MODES 1, 2, and 3 as specified in Table 1.3.5.4-1.

COMPENSATORY MEASURES

When both pairs of pressure switch/time delay relays are inoperable, the suction source for the HPCS pump shall be transferred to the suppression pool to ensure the assumptions in the safety analysis (Ref. 2) are met. A completion time of 1 hour is based on operational considerations and the very low probability of a seismic event.

SURVEILLANCE REQUIREMENTS

SR 1.3.5.4.1

Perform a CHANNEL CALIBRATION every 18 months. The CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the sensor, alarm, and logic function and shall include a channel functional test. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total steps so that the entire channel is calibrated. The 18-month FREQUENCY is based on instrument drift assumptions in the associated setpoint calculation (Ref. 4) and equipment reliability.

BASES

REFERENCES	1.	FSAR, Section 7.3.1.1.1.1.
	2.	FSAR, Section 6.3.2.2.1.
	3.	10 CFR 50.36(c)(2)(ii)(c).
	4.	Setpoint Calculation, E/I-02-03-1001.

B 1.3 INSTRUMENTATION

B 1.3.7.2 Seismic Monitoring Instrumentation

BASES

BACKGROUND

The Seismic Monitoring System includes several parts:

(1) The Triaxial Time-History Accelerograph Function is an electronic system consisting of a triaxial seismic trigger and three triaxial time-history channels. Each channel has an input stage (accelerometer) and an output stage (magnetic tape recorder). Actuation of the seismic trigger (SEIS-ST-1) on a minimum detectable earthquake energizes the instrument loops from control panel SEIS-SC-1 and annunciates in the control room. The trigger and one accelerometer (SEIS-SMA-1) are located on the reactor building foundation (R422). Accelerometer SEIS-SMA-2 is located in the reactor building mid level (522' floor) and accelerometer SEIS-SMA-3 is located 1000' NE of the reactor building in a covered pit. The magnetic tape recorders (SEIS-TR-1, 2, and 3) are located in the control room. OPERABILITY of the magnetic tape recorders requires a minimum tape capacity of 25 minutes (Ref. 3). After the seismic data is stored on the magnetic tape, it can be displayed on a strip chart via the playback unit. The playback unit and strip chart recorder are not required for OPERABILITY of the Seismic Monitoring System.

(2) The Triaxial Peak Accelerograph Function consists of mechanical recorders. Each channel is a mechanical stand-alone instrument with no dependance on any other variable except its physical mounting. If these are subjected to an acceleration greater than an operating basis earthquake (OBE), they are considered inoperable until the recording plates can be replaced. Once the plates are scratched, accelerations smaller than those previously recorded cannot be read. SEIS-TPA-1 is located on a valve support (530') reactor building; SEIS-TPA-2 is located on High Pressure Core Spray (HPCS) System injection piping (R507) and SEIS-TPA-3 is located in Standby Service Water (SW) System pumphouse 1A.

(3) The Triaxial Seismic Switch Function is an electronic system consisting of a single accelerometer (SEIS-SS-1) mounted on the reactor building foundation (R422) with a chassis/power supply (SEIS-E/S-1) in the control room. Other than the power source and the building structure it has no connection with the other seismic components. This provides annunciation that the OBE has been exceeded.

BASES

BACKGROUND (continued)

(4) The Triaxial Response-Spectrum Recorder Function is met by one electromechanical channel and three mechanical channels. Each of these channels is actually a cluster of three instruments (one for each axis). The electromechanical channel (SEIS-RSRT-1/1, 1/2, and 1/3) is located on reactor building foundation (R422). It is a mechanical instrument with electrical contacts attached to the vibrating reeds. These electrical contacts drive red and amber lamps in the control room. The control room lamps provide remote indications but no annunciation. There are no annunciators associated with this instrument. Other than the power source (SEIS-RSA-1) and the building structure, it has no connection with the other seismic components. The other three triaxial response-spectrum recorders (clusters of three) are independent mechanical accelerometers. SEIS-RSR-1/1, 2, 3 is located on a HPCS injection line support (R471); SEIS-RSR-2/1, 2, 3 is located on the refuel floor (R606); SEIS-RSR-3/1, 2, 3 is located on the radwaste building foundation (W437). Other than the building structure, they have nothing in common with other seismic instrumentation.

APPLICABLE SAFETY ANALYSES

10 CFR 100, Appendix A (Ref. 1) requires that the structures, systems, or components of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public be designed to remain functional when subject to the OBE. Since the zero-period acceleration of the containment foundation design response spectra representing the OBE may not fully describe the seismic event, it is important to have a triaxial response-spectrum recorder installed at an appropriate location in the basement of the plant capable of providing immediate signals for remote indication in the control room if any significant portion of the foundation design response spectra has been exceeded. This can provide additional basis for immediate administrative procedures or decision making following an earthquake.

The effects of the seismic motion at a given elevation in a structure can be represented by calculated floor response spectra which are also used to design Seismic Category I systems and components. It is important to install triaxial response-spectrum recorders at the selected support (floor/foundation) locations to determine if the calculated floor response spectra have been exceeded. This information will be needed to verify the conservatism in the modeling and design assumptions made for the structure and design input motion to the supported systems and components. In addition, it will be used to determine the advisability of continuing the operation of the plant following an earthquake.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The magnitude of the response of the systems and components supported on the containment structure is required to verify that the actual response of these parts has not exceeded the design basis. This can be monitored by installing triaxial peak accelerographs over selected locations on these parts. In addition, peak response data for these parts will be necessary to verify the conservatism in the modeling and design assumptions made for these systems and components.

The Seismic Monitoring Instrumentation System is classified as Seismic Category 1, Quality Class 2. The system is not included in the instrument drift program.

REQUIREMENTS FOR OPERABILITY

OPERABILITY of the seismic monitoring instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and initiate evaluation of the seismic response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the plant. This comparison permits evaluation of seismic effects on structures and equipment and forms the basis for remodeling, detailed analyses, and physical inspection. This instrumentation is consistent with the recommendations of Regulatory Guide (RG) 1.12 (Ref. 2) as committed to in FSAR Section 3.7.4.1. RG 1.12 stipulates that the instrumentation, specified in Section 4.1 of ANSI N18.5-1974 (Ref. 3) and supplemented by RG 1.12, satisfies the seismic instrumentation requirements of Paragraph VI (a) (3) of Appendix A to 10 CFR 100 (Ref. 1).

APPLICABILITY

The Seismic Monitoring Instrumentation is required to be OPERABLE at all times to ensure sufficient instrumentation capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the plant.

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to seismic monitoring instrumentation channels. The Required Compensatory Measure for inoperable seismic monitoring instrumentation channels provides appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable seismic monitoring instrumentation channel rather than having the required Completion Time begin on initial entry into the Condition.

BASES

COMPENSATORY MEASUERS (continued)

A.1

With one or more channels inoperable, the channel must be restored to OPERABLE status within 30 days. The 30 day Completion Time is based on the passive nature of the instrumentation, i.e., no critical automatic action is assumed to occur from these instruments and the low probability of an event requiring seismic monitoring instrumentation. The Compensatory Measure provides an allowable outage time to restore the affected instrumentation to OPERABILITY after a seismic event and also provides adequate time to perform required Surveillances.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

As Noted at the beginning of the SRs, the SRs for each seismic monitoring instrumentation Function are located in the SRs column of Table 1.3.7.2-1.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.2.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. The CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST.

The Frequency of 31 days is based upon manufacturer recommendations (consistent with Ref. 3). The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.2.2

A CHANNEL FUNCTIONAL TEST is based on the injection of a simulated signal into the channel at the sensor to verify OPERABILITY, including required alarms. The CHANNEL FUNCTIONAL TEST is performed such that the entire channel is tested.

The Frequency of 184 days is based upon manufacturer recommendations and is consistent with industry standards (Ref. 3).

SR 1.3.7.2.3

A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy.

The Frequency of 18 months is based upon manufacturer recommendations and is consistent with industry standards (Ref. 3).

REFERENCES

1. 10 CFR 100, Appendix A.

2. Regulatory Guide 1.12, Revision 1, April 1974.

3. ANSI N18.5-1974, "Earthquake Instrumentation Criteria for Nuclear Power Plants," 1974.

4. FSAR Section 3.7.4.1.

5. PPM 1.3.12, Problem Evaluation Request.

B 1.3 INSTRUMENTATION

B 1.3.7.3 Explosive Gas Monitoring Instrumentation

BASES

BACKGROUND

The Off-Gas Treatment System is the principle pathway for the release of gaseous radioactivity to the environment during normal plant operations. The Off-Gas Treatment System is designed to limit dose to offsite persons from routine station releases to significantly less than the limits specified in 10 CFR Part 20 and Part 50 and to operate within the emission rate limits established in the Technical Specifications.

Hydrogen and oxygen are produced in a boiling water reactor (BWR) by the radiolysis of water. The hydrogen and oxygen produced, along with fission products and other noncondensible gases, are removed from the main condenser by a steam jet air ejector and exhausted to the Off-Gas Treatment System. The potential exists for hydrogen and oxygen to exist in flammable or explosive concentrations. The BWR industry has experienced a number of fires in the Off-Gas Treatment System. A catalytic recombiner is provided in the Off-Gas Treatment System to recombine hydrogen and oxygen.

The Hydrogen Water Chemistry (HWC) System injects hydrogen into the Condensate System via a bypass line between the discharge and suction of the condensate booster pumps. The purpose of the HWC System is to mitigate propagation and initiation of intergranular stress corrosion cracking in the reactor internals and recirculation piping.

The injection of hydrogen suppresses the radiolytic formation of hydrogen and oxygen. This creates a non-stoichiometric ratio of hydrogen to oxygen in the non-condensable gases entering the Off-Gas Treatment System. The HWC System injects Service Air upstream of the recombiners to increase the oxygen content of the offgas to assure proper recombination in the Off-Gas Treatment System.

The Off-Gas Treatment System is designed to maintain the hydrogen concentration upstream of the recombiner to less than the flammable limit (4% by volume) by steam dilution. The hydrogen recombiner is designed to ensure that the hydrogen concentration at the outlet is less than 1% on a dry basis.

There are two hydrogen analyzers (explosive gas monitors) to monitor the hydrogen concentration downstream of the hydrogen recombiner. The hydrogen concentration is measured in volume percent and is indicated and recorded in the control room. There is also an independent alarm annunciator for high hydrogen concentration (> 1%). Calibration checks are accomplished automatically at periodic intervals by isolating the off-gas process line and admitting a calibration gas.

BASES

BACKGROUND (continued)

The Off-Gas Treatment System design eliminates ignition sources, so that a hydrogen detonation is highly unlikely in the event of a recombiner failure. Also the system is designed to be detonation resistant.

APPLICABLE SAFETY ANALYSES

The explosive gas monitoring instrumentation is not used for, nor is capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary.

The explosive gas monitoring instrumentation is not used to monitor any process variable that is an initial condition of a design basis accident (DBA) or transient. Excessive system hydrogen is not an indication of a DBA or transient.

The explosive gas monitoring instrumentation is not part of a primary success path in the mitigation of a DBA or transient.

REQUIREMENTS FOR OPERABILITY

One Main Condenser Off-Gas Treatment System hydrogen monitor shall be OPERABLE.

An OPERABLE hydrogen monitor consists of a hydrogen analyzer skid (A or B), the recorder channel in the main control room (MCR) on OG-H2R-605 (A or B), the high hydrogen alarm in the MCR for the corresponding channel and the common support equipment.

APPLICABILITY

During Main Condenser Off-Gas Treatment System operation (steam jet-air ejectors are in operation).

COMPENSATORY MEASURES

A.1

If there are no OPERABLE explosive gas monitor instruments and the Main Condenser Off-gas Treatment System is in operation, then monitor (Chemistry will take grab sample and analyze) the Main Condenser Off-gas Treatment System hydrogen concentration within 8 hours, and once per 8 hours thereafter, and within 8 hours from discovery of each change in recombiner temperature or THERMAL POWER.

A Note has been provided that states RFO 1.0.3 is not applicable because adequate Compensatory Measures are provided in the RFO.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the

BASES

COMPENSATORY MEASURES (continued)

Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.3.1

Performance of the CHANNEL CHECK once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on the other channel. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels, or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

SR 1.3.7.3.2

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of a 12 month calibration interval based on industry experience, vendor recommendation, and the nitrogen purging which functions as an auto calibration.

BASES

REFERENCES	1.	Technical Specification 5.5.8.
	2.	Technical Specification 3.7.5.
	3.	FSAR, Section 11.3.

B 1.3 INSTRUMENTATION

B 1.3.7.4 New Fuel Storage Vault Radiation Monitoring Instrumentation

BASES

BACKGROUND	The area radiation monitors (ARM-RIS-3 and ARM-RIS-3A) are located in the reactor building new fuel area. The monitors meet the requirements of 10 CFR 50.68(b)(6) which requires radiation monitors in storage and associated handling areas when fuel is present to detect excessive radiation levels and to alert personnel to initiate appropriate safety actions.
APPLICABLE SAFETY ANALYSES	The New Fuel Vault Radiation Monitoring Instruments are used to indicate when the radiation levels in the area have exceeded their allowable setpoint. There are no automatic functions that are performed by these instruments. The instruments are not used to mitigate a design basis accident or transient. Information provided by these instruments on the radiation levels within secondary containment would have limited or no use in identifying or assessing core damage.
REQUIREMENTS FOR OPERABILITY	The new fuel vault criticality monitor shall be OPERABLE. The OPERABILITY of the new fuel storage vault requires that both radiation instruments (ARM-RIS-3 and ARM-RIS-3A) be OPERABLE. Each average range monitor consists of a sensor and converter unit, a combined indicator and trip unit, a shared power supply, a shared multipoint recorder, and a local meter and visual alarm auxiliary unit.
APPLICABILITY	When fuel is stored in the new fuel storage vault.

BASES

COMPENSATORY MEASURES

A.1

With the new fuel storage vault monitor inoperable, radiation protection is to provide a portable continuous monitor in the vicinity prior to moving fuel in the new fuel storage vault. The setpoint for the portable monitor is to be the same as for the installed monitor. The portable monitor is only required while fuel movements are occurring.

B.1

With the new fuel storage vault monitor inoperable and no fuel being moved, an area survey is to be performed once per 24 hours.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.4.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

SR 1.3.7.4.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 31 days is based on reliability analysis.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.4.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. 10 CFR 50.68.

2. FSAR, Section 12.3.4.

B 1.3 INSTRUMENTATION

B 1.3.7.5 Spent Fuel Storage Pool Radiation Monitoring Instrumentation

BASES

BACKGROUND	The area radiation monitor (ARM-RIS-2) is located in the reactor building 606 elevation near the spent fuel storage pool. This average range monitor meets 10 CFR 50.68(b)(6) requirements to warn of excessive radiation levels in areas where nuclear fuel is stored and handled.
APPLICABLE SAFETY ANALYSES	The Spent Fuel Storage Pool Radiation Monitoring Instrument is used to indicate when the radiation levels in the area have exceeded its allowable setpoint. There are no automatic functions that are performed by this instrument. The instrument is not used to mitigate a design basis accident or transient. Information provided by this instrument on the radiation levels within secondary containment would have limited or no use in identifying or assessing core damage.
REQUIREMENTS FOR OPERABILITY	The Spent Fuel Storage Pool Radiation Monitoring Instrumentation shall be OPERABLE. This monitor consists of a sensor and converter unit, a combined indicator and trip unit, a shared power supply, a shared multipoint recorder, and a local meter and visual alarm auxiliary unit.
APPLICABILITY	When fuel is stored in the spent fuel storage pool.
COMPENSATORY MEASURES	<u>A.1</u> With the spent fuel storage pool monitor inoperable, radiation protection is to provide a portable continuous monitor in the vicinity prior to moving fuel in the spent fuel storage pool. The setpoint for the portable monitor is to be the same as for the installed monitor. The portable monitor is only required while fuel movements are occurring. <u>B.1</u> With the spent fuel storage pool monitor inoperable and no fuel being moved, an area survey is to be performed once per 24 hours.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.3.7.5.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

SR 1.3.7.5.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 31 days is based on reliability analysis.

SR 1.3.7.5.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

BASES

REFERENCES	1.	10 CFR 50.68.
	2.	FSAR, Section 12.3.4.

B 1.3 INSTRUMENTATION

B 1.3.7.6 Turbine Overspeed Protection System

BASES

BACKGROUND

The main turbine is a tandem-compound unit consisting of one double-flow high pressure turbine and three double-flow low pressure turbines, running at 1800 rpm with 47 inch last-stage blades. The concern is that an overspeed condition could lead to the destruction of turbine components and generation of high speed missiles which could impact and damage safety related components, equipment, or structures.

The four methods of turbine overspeed protection are:

a. Digital electrohydraulic (DEH) speed control system

b. Overspeed protection controller (OPC)

c. Digital control overspeed trip

d. Digital trip overspeed trip

The Digital Electrohydraulic (DEH) Speed Control

The DEH speed control system is designed to maintain turbine speed within 2-3 rpm; although after the turbine has been synchronized to the grid, the grid controls turbine speed. The DEH speed control system monitors turbine speed via three speed sensors. Upon detecting a turbine overspeed condition, the DEH speed control system will rapidly close the throttle valves or the governor valves (depending on the valves controlling thrubine speed) via their servo-valves preventing an excessive overspeed condition from occurring.

The Overspeed Protection Controller (OPC)

The OPC primary function is to avoid excessive turbine overspeed such that a turbine trip is avoided. At 103% of rated speed, the OPC solenoids open, rapidly closing the governor and intercept valves to arrest the overspeed before it reaches the trip setting. Turbine speed control is returned to the DEH speed control system when turbine speed falls below 101%.

Digital Control Overspeed Trip, Digital Trip Overspeed Trip, and Quadvoter Hydraulic Trip Block

If the turbine accelerates further, the digital control overspeed trip logic in the DEH speed control system will provide a trip signal to the digital trip system to cause the quadvoter hydraulic trip block to de-energize and trip

BASES

BACKGROUND (continued)

the turbine. Additionally, the digital trip overspeed trip system has three redundant speed sensors and will initiate an independent trip of the quadvoter hydraulic trip block. Both of these trip systems use 2 out of 3 logic to initiate the overspeed trip signal prior to reaching 111% of rated speed. These signals cause the output module for the quadvoter to trip all of the quadvoter valves simultaneously. Redundant power supplies are auctioneered to assure loss of one power supply does not cause the quadvoter to trip. The quadvoter provides two channels, each with two valves in series, to depressurize the trip header and trip all the throttle, governor, intercept and reheat valves. The quadvoter design assures that a single failure of a quadvoter valve will not cause the tribune to trip or prevent the turbine from tripping, if required. These overspeed trip systems are designed to maintain the turbine speed below 120% of rated speed.

The control, OPC, and redundant electrical trip functions are the protection layers for prevention of turbine missiles. Reference 4 provides the destructive overspeed missile probability analysis.

APPLICABLE SAFETY ANALYSES

There are three turbine overspeed cases of increasing severity which may occur as a result of equipment malfunction or failure. They are design overspeed, intermediate overspeed, and destructive overspeed. The events leading to each of the overspeed cases are described below:

The turbine may reach design overspeed (120% of rated speed) if:

a. During normal operation load is lost, the output breakers open and a turbine trip does not occur at event onset.

b. The speed control, the OPC, and the digital control overspeed trip protection systems fail to close one or more governor valves or one or more interceptor valves.

c. The digital trip overspeed trip functions properly and interrupts the steam flow into the turbine.

The conditions that lead to intermediate overspeed (130% of rated speed), given a full-load system separation are:

a. All throttle or governor valves are closed before design overspeed is reached.

b. One or more steam lines from the moisture separator/reheaters to the low pressure turbines remain open after the unit trips.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The turbine speed may reach destructive overspeed if the following events occur simultaneously:

a. System separation with sufficient steam supply into the turbines, e.g., this can happen if the load is lost and the breaker opens during normal operation, and

b. A combination of failures in the DEH speed control, the digital control overspeed trip, and the digital trip overspeed trip methods, causing a high pressure turbine inlet to be kept open.

Postulated turbine missile target areas have been evaluated for capability to protect safety related equipment, components, and systems. While Columbia Generating Station has an "unfavorable orientated" turbine, the reinforced shield wall acts as a barrier for protection of some safety related targets.

A probabilistic evaluation of significant damage to a safety related component, equipment or system due to a turbine missile has determined that the risk is acceptably low and is not considered to be a credible accident.

Given the fact that the probability of turbine missile damage is acceptably low, the transient due to the actuation of the turbine stop valves in response to the overspeed event (load rejection) should be considered. For this event the closure of the turbine stop valves initiates the design basis transient (load rejection) and not the turbine overspeed itself. The overspeed instruments do not perform a subsequent function to mitigate the effects of the transient.

REQUIREMENTS FOR OPERABILITY

One Turbine Overspeed Protection System shall be OPERABLE.

The Turbine Overspeed Protection System consists of the DEH speed control system, the overspeed protection control system, the digital control overspeed trip, the digital trip overspeed trip, the quadvoter hydraulic trip block, and all 20 associated valves necessary for isolating the turbine from the steam supply.

APPLICABILITY

MODES 1 and 2.

COMPENSATORY MEASURES

A Note has been added to the Compensatory Measures to exclude the MODE change restriction of RFO 1.0.4. This restriction allows entry into the applicable MODE while relying on the Compensatory Measures even though they may eventually require plant shutdown. This exception is acceptable because when returning the turbine to service,

BASES

COMPENSATORY MEASURES (continued)

Operations closely monitors the turbine response and will initiate a manual trip if the turbine does not respond as required during turbine startup testing and normal operation.

A.1

Having one high pressure turbine valve inoperable creates the potential of a turbine overspeed if a load rejection and turbine trip were to occur. The allowed Completion Time does not significantly increase the risk of damage due to a turbine missile.

B.1

Having one low pressure turbine valve inoperable creates the potential of a turbine overspeed if a load rejection and turbine trip were to occur. The allowed Completion Time does not significantly increase the risk of damage due to a turbine missile.

C.1

With one quadvoter trip channel inoperable in a non-failsafe mode, all methods for overspeed protection of the turbine are still maintained. Since the quadvoter and other parts of the DEH speed control trip and digital trip that provide trip signals to the quadvoter are designed for on line repair, an allowed Completion Time is provided. The allowed Completion Time of 14 days does not significantly increase risk.

D.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

COMPENSATORY MEASURES (continued)

E.1

If one of the 4 methods for control of overspeed protection are inoperable the ability to trip the turbine is still maintained. The Completion Time of 72 hours is sufficient to accomplish the repair and minimizes risk while allowing restoration time in order to avoid a plant shutdown transient. The allowed Completion Time maintains the risk of a turbine overspeed event well below the plant design bases probability limit of 1.0 x 10^{5} (Ref. 4).

F.1

With both quadvoter trip channels inoperable in a non-failsafe mode or two overspeed protection methods inoperable, two of the for methods of overspeed protection have been lost and action to restore at least one of the quadvoter trip channels to OPERABLE status is required. The 24 hours is sufficient to accomplish the repair. The risk is sufficiently low enough with the other two remaining overspeed protective subsystems OPERABLE to allow a short Completion Time for repair in order to avoid a plant shutdown transient. The allowed Completion Time maintains the risk of a destructive overspeed event well below the plant design bases probability limit of 1.0 x 10^{5}.

G.1

IF the inoperable valve cannot be brought to an OPERABLE status within the allowed Completion Time, the affected steam line must be isolated within 6 hours, if power operation is to continue.

H.1

If one channel of the quadvoter cannot be restored to OPERABLE status or if the one method of overspeed protection cannot be restored to OPERABLE status within the allowed Completion Time, the main turbine must be isolated from the steam supply within 6 hours.

I.1

If the Compensatory Measure and associated Completion Time of G or H cannot be met, the plant must be brought to a MODE in which the RFO does not apply. The achieve this status, the plant must be in MODE 3

BASES

COMPENSATORY MEASURES (continued)

within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.6.1

Performance of independently cycling each of the four valves in the quadvoter hydraulic trip block verifies proper operation and that a trip header drain path is OPERABLE should an overspeed trip signal occur. Cycling of the valves may be performed by the automatic or manual test means. Proper operation of the values is verified through the monitoring function of the DEH system as recommended by the manufacturer. The frequency of 7 days is recommended by the manufacturer. This frequency was also the basis for the failure rate and common cause failure factors used in the main turbine overspeed missile probability calculation (Ref. 4).

SR 1.3.7.6.2

The Surveillance is modified by a Note that allows a delay in the SR until after the valves have been placed in operation. The throttle, reheat, intercept, and the governor valves must be open and pass steam before they can be tested during plant operation. Each valve is to be tested within 24 hours after it is open and the generator is synchronized to assure turbine overspeed protection is provided. The 24 hours time period is a reasonable time for performance of the test for each valve. Cycling each valve from its running position ensure s that the valve will function as required to protect the turbine from an overspeed condition.

SR 1.3.7.6.3

Performance of the CHANNEL CALIBRATION ensures that the trip points are set properly for the OPC, digital control overspeed trip, and digital trip overspeed trip protection methods. The test shall be performed by the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verity trip setpoints. Functional test of the trip system is performed under SR 1.3.7.6.4.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.6.4

Functionally test the main turbine overspeed protection system using the digital control overspeed trip, OPC, and digital trip overspeed trip methods with the turbine synchronized to verify proper operation. The Surveillance is modified by a Note that allows a delay in the performance of the SR until the main turbine is brought to an operational condition suitable for performing the turbine trip testing. This delay is acceptable because the performance of SR 1.3.7.6.3 CHANNEL CALIBRATION and SR 1.3.7.6.1 functionally cycle the quadvoter solenoid valves and demonstrate the capability of the overspeed system instrumentation and trip block. Additionally, when returning the turbine to service, Operations closely monitors the turbine response and will initiate a manual trip if the turbine does not respond as required during turbine startup testing and normal operation.

SR 1.3.7.6.5

Disassembly and inspection of each type of valve ensures that no common degradation mechanism is occurring and that the valves will continue to function properly during the inspection interval.

REFERENCES

1. FSAR, Section 10.2.

2. FSAR, Section 3.5.1.3.

3. Licensing Condition 7, Columbia Generating Station Operating License.

4. Main Turbine Overspeed Missile Probability Calculation (ME-02-06-16).

B 1.3 INSTRUMENTATION

B 1.3.7.7 Traversing In-Core Probe (TIP) System

BASES

BACKGROUND	The purpose of the Traversing In-Core Probe System (TIP) is to provide a normalized flux measurement at each local power range monitor (LPRM) location that can be used to calibrate the LPRMs. The system allows calibration of the LPRM signals by correlating the TIP signals to LPRM signals as the TIP is positioned in various radial and axial locations in the core. The LPRM readings are used by the Core Monitoring System to determine the core power distribution. The Core Monitoring System uses the core power distribution to calculate the margins to the core thermal limits. The LPRMs also provide information to the Average Power Range Monitoring System (APRM) to permit the determination of core power as part of the scram protection system. The LPRMs also provide information to the Rod Block Monitor (RBM) to determine local power increases. The LPRMs also provide information to the Oscillation Power Range Monitor (OPRM) to permit the detection of stability related oscillations.
APPLICABLE SAFETY ANALYSES	The methodology used in the safety analysis considers local power (bundle and nodal) uncertainties for establishing applicable safety and operating thermal limits. This methodology supports up to a maximum of 14 TIP strings being out of service, either not scanned or rejected.
REQUIREMENTS FOR OPERABILITY	The TIP System consists of five machines each of which provides access to a number of LPRM detector assemblies and a common detector assembly location within the core. Each machine consists of one TIP detector, one drive mechanism, one indexing mechanism, a control system that provides for both manual and semi-automatic operation, and instrumentation and recorders to allow mapping of the core. Each machine allows access to 7 to 9 LPRM strings not normally accessed by another machine and a common string accessible by all machines. The data collected by the TIP detectors is provided to the core monitoring system 3D MONICORE. The software of the 3D MONICORE system will process the TIP data by performing an inter-machine calibration and normalization of the TIP data. The 3D MONICORE software will then determine the ratio of the current LPRM readings to the calculated normalized TIP detector readings. This ratio or LPRM Gain Adjustment Factor (GAF) can then be used to physically adjust the LPRM detectors output to within a satisfactory calibration tolerance.

BASES

REQUIREMENTS FOR OPERABIITY (continued)

When all five TIP machines are fully OPERABLE, every LPRM in the core can be directly calibrated with data obtained from the TIP detector readings. If a TIP machine becomes inoperable due to failure of a component or inability to access one or more assigned LPRM strings, the LPRMs at the location(s) cannot be directly calibrated using TIP data. Under these conditions the 3D MONICORE system can derive a calibration constant for the LPRM locations which have no TIP data based on the core power distribution and its relationship to the TIP data that was collected from the operable locations. The missing strings can be from one or more of the TIP machines. The TIP string data can be missing for various reasons, such as a failed TIP detector, TIP detector gas seal failure, failed TIP detector power supply, failed TIP drive, failed TIP indexer, inability to traverse one or more of the TIP tubes, containment isolation valve issues, etc. The TIP data strings can also be rejected by 3D MONICORE if the data fails to meet the core monitoring systems rejection criteria. The 3D MONICORE system will identify and reject TIP data which would cause power distribution corrections which are inconsistent with the rest of the valid TIP data. As the number of missing or rejected TIP data strings increases the uncertainty of the calibration constants would also increase. The licensing analysis includes an uncertainty that bounds a maximum of 14 TIP data strings not scanned or rejected. If more than 14 TIP data strings are not scanned or are rejected then the LPRM calibration constants can not be derived for the LPRMs. The minimum requirements for OPERABILITY when the TIP System is used for LPRM calibration during power operation or plant startup is no more than 14 of the 43 TIP data strings not scanned or rejected.

APPLICABILITY

This Specification is applicable whenever the TIP is required for LPRM calibration. OPERABILITY of the TIP System is not required during other plant conditions.

COMPENSATORY MEASURES

A.1

With a TIP detector failed due to a machine normalization value out of compliance, the TIP data strings for that detector are administratively placed in “not scanned” status. The LPRM calibration activities may continue using the TIP data from other operable TIP detectors. The 3D MONICORE system will calculate the LPRM calibration constants for the missing TIP strings using information from the power distribution calculation. With one TIP detector failed the number of strings not scanned would range from 7 to 9 depending on which TIP detector is failed.

BASES

B.1

With more than 14 TIP data strings not scanned, or rejected, the LPRM calibration can not continue. The licensing analysis does not support the use of the 3D MONICORE system to calculate the LPRM calibration constants for more than 14 failed TIP data strings.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.7.1

Prior to submitting the TIP System information to 3D MONICORE for LPRM calibrations, OPERABILITY of the TIP detectors is demonstrated by comparing the normalization value for each of the TIP machines in the common location. The machine normalization value for each individual TIP detector is compared to the average machine normalization value of all OPERABLE machines. If a machine normalization value is not within 10% of the average of the OPERABLE machines, the machine sensitivity may require adjustment. The comparison of the machine normalization value provides a reasonable assurance that the TIP detector is functioning correctly and will produce consistent results while scanning the other TIP string locations.

The check of the normalization is required within 72 hours of using the TIP machine data for LPRM calibration. The 72 hour interval is established to provide a reasonable time to collect a full set of TIP data, adjust the LPRM detector gains and perform a second TIP data collection if desired.

The probability of a failure of a TIP detectors power supply during this short time interval is very low based on the history of TIP detector power supply replacement. If the LPRM calibration is not completed within the 72 hour and additional TIP collection is required then the machine normalization value surveillance can be performed again. There are no specific requirements to collect the common channel TIP data for each machine prior to or after the scanning of the other locations. The normal time interval required to collect a full set of TIP data for the entire core is significantly less than 72 hours. The common channels may be scanned at the beginning or end of TIP data collection.

The Frequency of TIP normalization is based on the requirements of Technical Specification SR 3.3.1.1.7 and SR 3.3.1.3.2.

BASES

SUREILLANCE REQUIREMENTS (continued)

SR 1.3.7.7.2

After traversing all of the LPRM strings that can be scanned the TIP data is transferred to the core monitoring system 3D MONICORE. The 3D MONICORE software will evaluate the TIP data and may reject some of the TIP data. Even if all TIP data strings were physically scanned the 3D MONICORE system could reject one or more strings based on its own rejection criteria. The rejection criteria in 3D MONICORE ensure that TIP data that may be defective is not used in the calibration of the LPRM detectors. The 3D MONICORE system will indicate the total number of strings not scanned and rejected. Prior to using the calculated LPRM calibration constants to adjust the LPRMs the number of not scanned and rejected strings must be verified to be less than or equal to 14.

REFERENCES

1. Steady State Nuclear Methods, NEDE-30130-P-A, April 1985.

2. Power Distribution Uncertainties for Safety Limit MCPR Evaluations, NEDC-32694P-A, August 1999.

B 1.3 INSTRUMENTATION

B 1.3.7.8 Meteorological Monitoring Instrumentation

BASES

BACKGROUND	The onsite meteorological monitoring system consists of one meteorological tower and two independent subsystems that measure meteorological conditions and process the information into usable information. Both the primary (Channel A) and backup (Channel B) systems have wind speed, wind direction and temperature sensors at 33 and 245 feet elevations. The temperature sensors provide a differential temperature measurement. Both the primary and backup signals go to PDIS. The primary system information is sent to the main control room via the supervisory system and reads out on Board L.
APPLICABLE SAFETY ANALYSES	The meteorological monitoring instrumentation ensures that sufficient meteorological data are available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public. This instrumentation is consistent with the recommendations of Regulatory Guide 1.23, “Onsite Meteorological Programs,” February 1972. The meteorological data is also used in determination of the main control room habitability. (CTS-FTS-0168).
REQUIREMENTS FOR OPERABILITY	The meteorological instrumentation shall be OPERABLE to ensure that sufficient meteorological data is available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive material to the atmosphere.
APPLICABILITY	This requirement is applicable at all times because the potential for radioactive release exists for any plant mode or condition while fuel is on site.
COMPENSATORY MEASURES	<u>A.1</u> Notifying Emergency Preparedness personnel is required to make the determination if any compensatory actions are required for the inoperable meteorological monitoring instrumentation. The 12 hours provides a reasonable completion time for this action to occur.

BASES

COMPENSATORY MEASURES (continued)

A.2

With one or more meteorological monitoring channel(s) inoperable, actions shall be taken to return the inoperable channel(s) to OPERABLE status within 30 days. The 30 days provides a reasonable completion time for needed repairs since the alternate channel(s) can provide the required meteorological data.

B.1

With one or more meteorological monitoring function(s) with no channels operable, the minimum required channel(s) shall be returned to OPERABLE status within 7 days of entering the condition. The 7 days provides a reasonable completion time based on the time needed for repairs and the low probability of a malfunction or an accident that would result in a radioactive release requiring monitoring.

C.1

In the event that any Required Compensatory Measure and associated Completion Time are not met, Compensatory Measure C.1 requires initiation of a Condition Report (CR) within 24 hours to address why the meteorological channel/function was not restored to OPERABLE status within the Completion Time.

The CR should provide an accurate and concise description of the problem condition, an initial OPERABILITY assessment, the Required Compensatory Measure and Completion Time not complied with, the probable cause, corrective actions already taken and recommended further corrective actions, and a schedule for restoring the meteorological monitoring channel to OPERABLE status. The intent of this Required Compensatory Measure is to utilize the plant corrective action process to assure prompt attention and adequate management oversight to minimize the additional time the channel is inoperable.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.8.1

A CHANNEL CHECK of the meteorological monitoring channels is required every 24 hours. The 24 hour frequency allows for timely indication of channel malfunction.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.8.2

A CHANNEL CALIBRATION is required every 6 months. This surveillance can be done on line and does not require a refueling outage.

REFERENCES

1. License Amendment 149 dated March 4, 1997.

2. FSAR Section 2.3.3.

3. CGS Alternate Source Term, CGS-FTS-0168, Revision 1, December 2008.

B 1.4 REACTOR COOLANT SYSTEM

B 1.4.1 Reactor Coolant System (RCS) Chemistry

BASES

BACKGROUND

The origin of reactor coolant water chemistry limits was to mitigate stress corrosion cracking. Stress corrosion cracking requires 3 factors:

1. Susceptible Material,
2. Stress (Residual, Applied, and Internal), and
3. Aggressive chemical environment (oxygen and aggressive impurities such as chloride).

By removing any one of these factors, stress corrosion cracking can be minimized. By limiting the chemical impurities, stress corrosion cracking would be mitigated or slowed such that it could be detected prior to failure.

The chloride limit was primarily established to prevent transgranular stress corrosion cracking. Testing showed that this type of cracking mechanism was dependent on both oxygen and chloride concentrations. The boiling water reactor (BWR) reactor coolant will have an oxygen concentration of about 200 ppb during power operations from radiolytic decomposition of water. At this oxygen concentration and at normal operating temperatures, transgranular stress corrosion cracking will not occur when chloride concentrations are at or below 0.200 ppm.

When the chloride limit was established, the analytical capability for detecting low levels of chloride was very limited. To compensate for this, a relationship between chloride concentration and conductivity was established. If the only impurity in the coolant was chloride in the form of hydrochloric acid, then a concentration of 0.200 ppm chloride would yield a conductivity of about 1.0 micromhos/cm. By monitoring conductivity from an in-line meter, reasonable assurance was provided that the chloride concentration was within the required limits. It was also felt that by maintaining a conductivity of less than or equal to 1.0 micromhos, intergranular stress corrosion cracking could be prevented.

For a solution with a conductivity of 1.0, the maximum theoretical pH range is 5.6 to 8.6. This was used as a check on the conductivity range. Some BWRs have deleted the requirement for monitoring pH, since it serves no real purpose and is difficult to accurately measure in high purity water.

BASES

BACKGROUND (continued)

The high reactor coolant temperatures which exist during plant operation can accelerate stress corrosion cracking through two mechanisms. The higher the temperature, the faster the rate of reaction and at higher temperatures there is a greater temperature differential across the primary coolant boundary. When temperatures are lowered, both the reaction rate and the stress are lowered. Since the risk of stress corrosion cracking is reduced and higher levels of impurities may be allowed.

APPLICABLE SAFETY ANALYSES

By maintaining reactor coolant chemistry parameters within the specified limits, stress corrosion cracking is either prevented or its growth rate limited such that it would be detected prior to complete failure of the component. Methods of detection could include leak detection or inspection of reactor vessel components.

When a chemistry limit is exceeded, action should be taken to return the reactor coolant to within the required limit in order to minimize the stress corrosion cracking. If chemistry parameters cannot be brought within the required limit within a reasonable amount of time, then RCS temperature should be lowered to minimize the amount of stress corrosion cracking.

Stress corrosion cracking resulting in reactor coolant boundary leakage would be bounded by existing loss of coolant accident (LOCA) analyses.

BASES

REQUIREMENTS FOR OPERABILITY	Reactor coolant chemistry parameters (chloride, conductivity, and pH) are maintained within the limits specified by Table 1.4.1-1 to ensure that reactor vessel components do not experience rapid failure due to stress corrosion cracking.
APPLICABILITY	Chemistry limits are applicable at all times; however, the limit values will vary according to plant conditions as specified in Table 1.4.1-1.

COMPENSATORY MEASURES

A.1

If the chemistry limits specified in Table 1.4.1-1 have not been met while in MODE 1, 2 or 3; and chloride did not exceed 0.5 ppm; and conductivity did not exceed 10.0 micromho/cm, the limits must be restored within 72 hours.

The transitory limit is to allow operational flexibility since significant cracking should not occur within this time period.

B.1 and B.2

If in MODE 1, 2 or 3, with conductivity greater than 10 micromho/cm; chloride greater than 0.5 ppm; or the Required Compensatory Measure and associated Completion Time of Condition A not met, then be in MODE 3 within 12 hours and MODE 4 within 36 hours.

If the concentration of the aggressive impurities is too great, then in order to limit the extent of the stress corrosion cracking, the plant is placed in a condition of lower temperature and stress.

C.1

In MODE 4 or 5 restore the RCS chemistry to within the limits of Table 1.4.1-1 within 72 hours.

D.1

Deleted
.

BASES

COMPENSATORY MEASURES (continued)

E.1

If the Required Compensatory Measure and associated Completion Time of Condition C were not met, then prior to entering MODE 2 or 3, determine if the RCS is acceptable for operation.

SURVEILLANCE REQUIREMENTS

SR 1.4.1.1

This SR is performed to ensure that RCS conductivity is within the limits of Table 1.4.1-1. The requirement that this SR be performed once every 24 hours is sufficient to detect any changes in RCS chemistry.

This SR is modified by a Note that allows this not to be performed if SR 1.4.1.3 is met.

SR 1.4.1.2

This SR is performed to verify that each parameter (chloride, pH, and conductivity) is within the limits specified by Table 1.4.1-1. The Frequency of once every 7 days is sufficient because of the more frequent verifications of conductivity by SR 1.4.1.1 or 1.4.1.3.

SR 1.4.1.3

This SR is performed to verify the OPERABILITY of the continuously recording on-line conductivity monitor. This monitor will alarm in the control room prior to RCS conductivity exceeding any limit in Table 1.4.1-1. The Frequency of once every 7 days is sufficient to ensure reliable operation of the instrument.

REFERENCES

1. FSAR, Sections 5.2.3, 5.4.8, 9.3.2, 10.4.6.7 and 15.6.5.

2. Letter GO2-88-164, Response to GL 88-01, July 26, 1988.

B 1.5 ECCS and RCIC

B 1.5.2 ECCS Pump Discharge Piping Pressure Retention

BASES

BACKGROUND

The ECCS pump discharge piping downstream of the discharge check valves must remain full of water to ensure the time between the signal to start the pump and the initiation of flow into the reactor pressure vessel is minimized (Ref. 1). Keeping the ECCS pump discharge piping full of water will also prevent water-hammer and potential ECCS pump discharge piping damage upon pump start (Ref. 2). The intention of this Licensee Controlled Specification (LCS) is to ensure that the pressure at which voiding in the ECCS discharge piping will start to occur is not reached assuming a design basis accident. In addition, the LCS ensures that cases where ECCS piping pressure retention times do not meet worst-case Appendix R scenario assumptions are promptly documented in and resolved through the station corrective action program.

The ECCS discharge line fill pumps are not safety related active or protected from the effects of fire. Therefore to ensure that the ECCS discharge piping remains filled during an accident or Appendix R fire scenario assuming a loss of the associated discharge line fill pump, the ECCS pump discharge piping must be maintained full of water until the main ECCS pump is either automatically or manually started. Minimum ECCS pump discharge piping pressures have been established to ensure that this occurs. The actual pressure of concern is the pressure at which voiding starts to occur in the ECCS discharge piping. Annunciators are provided in the control room for ECCS discharge piping pressures. The annunciators alarm when pressure in the associated ECCS discharge piping falls below a pre-determined value. The pre-determined value is conservative with respect to the actual pressure at which voiding in the associated ECCS pump discharge piping will occur.

APPLICABLE SAFETY ANALYSES

During accident conditions, the ECCS discharge piping must be capable of maintaining sufficient ECCS pump discharge piping pressure long enough for the associated diesel generator to re-power the safety related power supply bus following a loss of power to the ECCS pump in conjunction with any load sequencing time delays and for the ECCS pump to start.

During Appendix R fire conditions, the RHR A and B discharge line-fill pumps are not protected from the effects of an Appendix R fire. The RHR A or B system may not be started for as long as 30 minutes during the most conservative fire scenario.

BASES

REQUIREMENTS FOR OPERABILITY

Each ECCS pump discharge pipe must be maintained full of water to ensure the time between the signal to start the pump and the initiation of flow into the reactor pressure vessel is minimized and to prevent water-hammer after the main ECCS pump starts.

The Accident Limits in Table 1.5.2-1 for HPCS, LPCS, and RHR C were selected to ensure the associated ECCS discharge piping will remain filled with water from the time power is lost to the associated discharge line fill pump due to a LOOP until the associated diesel generator re-powers the safety related supply bus and the ECCS pump starts. The Accident Limits in Table 1.5.2-1 were determined by adding 5 seconds for instrument response time to the maximum time for the associated diesel generator to re-power its bus. Five seconds was chosen because it conservatively bounds the logic response time and allows for the pump to develop pressure greater than the voiding pressure.

For RHR A and B, the time delay associated with automatic sequencing of the main RHR pump with the TR-S preferred power supply connected to the 4.16 kV safety bus is more limiting. The Accident Limits in Table 1.5.2-1 for RHR A and B were selected to ensure the associated ECCS discharge piping will remain filled with water from the time the accident signal is initiated to the time the RHR pumps automatically start and develop pressure greater than voiding pressure. These accident limits account for the uncertainty of the pump sequence timer and assume RHR A and B pumps automatically start at reduced voltage when the safety bus is supplied from the unregulated preferred power source, TR-S (the 230 KV offsite source).

The selected Accident Limits in Table 1.5.2-1 are considered acceptable since the ECCS maximum allowable response times are conservative and Compensatory Measure B.1 provides reasonable assurance that ECCS discharge piping degradation will be discovered and managed at the Alert Limits, before the Accident Limits in Table 1.5.2-1 are reached.

Five minutes was selected as a conservative Alert Limit for ECCS discharge piping pressure retention time because it provides a generous margin to the accident limit.

Thirty minutes was selected as the Appendix R Limit for RHR A and B discharge piping pressure retention time since the maximum time for operators to manually start these pumps during the most conservative Appendix R fire scenario is 30 minutes. These limits are not OPERABILITY limits, but are limits at which corrective action must be taken to restore compliance with Appendix R analysis assumptions (Ref. 4).

BASES

APPLICABILITY	This requirement is applicable during MODES 1, 2, and 3. The applicable accidents and fire scenarios are assumed to occur in MODES 1, 2, and 3.

COMPENSATORY MEASURES

The Compensatory Measures are modified by a Note indicating that a separate Condition entry is allowed for each ECCS pump discharge pipe. This is acceptable since the Required Compensatory Measure for each Condition provides appropriate compensatory actions for each affected ECCS pump discharge pipe.

A.1

Compensatory Measure A.1 addresses situations where one or more ECCS discharge pipes are not able to meet the associated Accident Limit pressure retention times listed in Table 1.5.2-1. The accident limit pressure retention times are the minimum pressure retention times that ensure continued ECCS pump OPERABILITY. Therefore, it is appropriate that the affected ECCS System or subsystem should be immediately declared inoperable if these pressure retention times cannot be met.

B.1 and B.2

Compensatory Measures B.1 and B.2 address situations where one or more ECCS discharge pipes do not meet the associated Alert Limit (Accident) pressure retention times listed in Table 1.5.2-1. The associated Completion Times are reasonable based on the low probability of the applicable accident scenarios and the conservatism of the Alert Limit (Accident) pressure retention times in Table 1.5.2-1.

Compensatory Measures B.1 and B.2 are intended to implement actions consistent with the guidance contained in NRC Regulatory Issue Summary 2005-20, Revision 1, (Ref. 3) which superseded the guidance previously provided in Generic Letter 91-18 and Generic Letter 91-18, Revision 1. In a practical sense, with ECCS discharge piping pressure retention time less than the Alert Limits listed in Table 1.5.2-1, a degraded condition (i.e. loss of quality or functional capability) exists and must be addressed in accordance with Reference 3.

Acceptable Compensatory Measures include but are not limited to:

Raising pressure in the affected ECCS System or subsystem discharge piping so that discharge line fill pump operation is not required to ensure pressure in the piping does not fall to less than the minimum acceptable values of the Accident Limits listed in Table 1.5.2-1.

BASES

COMPENSATORY MEASURES (continued)

Increasing the frequency of the affected ECCS discharge piping pressure retention time testing such that a reasonable assurance is provided that the pressure retention time will not fall to below the Accident Limits listed in Table 1 5.2-1 between tests.

Performance of analysis and/or implementation of Compensatory Measures that provides a reasonable assurance that the affected ECCS system or subsystem remains OPERABLE.

C.1

Compensatory Measure C.1 addresses situations where RHR A and/or RHR B discharge pipes do not meet the associated Appendix R Limit pressure retention times listed in Table 1.5.2-1. Since these limits are not OPERABILITY limits, but are limits at which corrective action must be taken to restore compliance with Appendix R analysis assumptions, the required Compensatory Measure to initiate a Condition Report is reasonable.

SURVEILLANCE REQUIREMENTS

SR 1.5.2.1

Verification of the discharge pressure retention time for each ECCS discharge pipe once every 12 months ensures that, assuming a loss of the associated discharge line fill pump, the discharge pipes will remain full of water during an accident or Appendix R fire until the main ECCS pump is either automatically or manually started (Ref. 4). The frequency of this surveillance is based upon operating experience.

REFERENCES

1. FSAR, Section 6.3.2.2.5.

2. TS Bases, Section SR 3.5.1.1.

3. NRC Regulatory Issue Summary 2005-20, Rev 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," April 18, 2008.

4. Appendix R Analysis, NE 02-85-19.

B 1.6 CONTAINMENT SYSTEMS

B 1.6.1.5 Suppression Pool Spray

BASES

BACKGROUND	Containment spray is designed to be used following a loss of coolant accident (LOCA) to aid in cooling and depressurizing the containment. Containment spray has two subsystems: drywell spray and suppression pool spray. Suppression pool spray can be operated from either residual heat removal (RHR) loop A or B or both loops simultaneously. Motor operated valves allow the use of different combinations of these spray headers. Suppression pool spray requires manual initiation by operations department personnel.
APPLICABLE SAFETY ANALYSES	There is no auto initiation of suppression pool spray. Suppression pool spray operation is controlled by procedural guidance. No credit was taken for suppression pool spray cooling in any design basis accident (DBA) or transient.
REQUIREMENTS FOR OPERABILITY	The suppression pool spray mode of the RHR System shall be OPERABLE with two independent loops, each loop consisting of: a. One OPERABLE RHR pump (A or B). b. An OPERABLE flow path capable of recirculating water from the suppression pool chamber through an RHR heat exchanger and the suppression pool spargers.
APPLICABILITY	MODES 1, 2, and 3.
COMPENSATORY MEASURES	<u>A.1</u> With one RHR suppression pool spray subsystem inoperable restore the RHR suppression pool spray subsystem to OPERABLE status within 7 days. <u>B.1</u> With two RHR suppression pool spray subsystems inoperable restore one RHR suppression pool spray subsystem to OPERABLE status within 8 hours.

BASES

COMPENSATORY MEASURES (continued)

C.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.6.1.5.1

Every 31 days verify that each suppression pool spray subsystem manual and power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is in the correct position or can be aligned to the correct position.

SR 1.6.1.5.2

Verify each RHR suppression pool spray subsystem pump develops a flow of at least 450 gpm on recirculation flow through the RHR heat exchanger and suppression pool spray sparger. This testing will be done in accordance with the Inservice Testing Program.

REFERENCES

1. FSAR, Section 6.5.2.

2. Letter GO2-96-172, dated August 30, 1996.

B 1.7 PLANT SYSTEMS

B 1.7.1 Area Temperature Monitoring

BASES

BACKGROUND

Area temperature monitoring provides for indication of temperatures in areas of the plant that contain safety related equipment having environmental qualification (EQ) requirements or other component imposed temperature limits. Limitations on area temperatures ensure that this safety related equipment will not be subjected to temperatures in excess of that used in the EQ evaluations, design or instrument setpoint calculations.

Environmental qualification of safety related equipment is performed using an expected value for the normal operating temperature (Ref. 1). When actual temperatures exceed this expected value, the EQ analysis is affected, and the resulting qualified life of the equipment may change.

Elevated temperatures affect the electrical life and therefore the performance of equipment. The electrical characteristics of equipment have been shown to exhibit age related degradation. The mechanical characteristics of equipment generally experience use related degradation not affected by external temperature. This electrical degradation is generally a function of the temperature and the time that the temperature was applied. The temperature can be applied by the heat generated in energized equipment along with the temperature from the external environment. In addition, certain time dependent aging is applicable regardless of the energized or OPERABLE state of the equipment.

Several of the areas listed in Table 1.7.1-1 include equipment that is environmentally qualified per the requirements of 10 CFR 50.49. Safety related equipment in these environmentally "harsh" areas must be qualified to perform their safety function through a design basis event after being aged at normal ambient conditions. The EQ analysis is documented in the qualification information documents (QIDs) and is based on normal operating temperatures given in Table 3.11-1 of the Final Safety Analysis Report (FSAR). The temperature limitations provided in Table 1.7.1-1 ensure that the conditions assumed in the EQ analysis will not be exceeded without appropriate compensatory actions.

This includes limits based on the starting temperature in the accident analysis to assure postulated accident temperature profile to which the equipment was qualified is not impacted.

BASES

BACKGROUND (continued)

The balance of areas listed (safety related, non-harsh) have equipment whose temperature capabilities have been established by the component's manufacturer or by a design evaluation. These assessments were done based on design calculations which provided the ambient temperatures for these areas. Area/room temperatures are limited by the equipment's thermal capability. Some areas have instruments and relays that have setpoints which are dependent upon ambient temperatures. Also some areas have limitations based on the initial starting temperature in the accident analysis. The temperature limitations provided in Table 1.7.1-1 ensure that applicable temperature limits are not exceeded without appropriate compensatory actions. Limits on the control room and reactor protection system rooms also include station blackout (SBO) requirements.

APPLICABLE SAFETY ANALYSES

The area temperature monitoring surveillance supports the operation of safety related equipment located in the areas listed in Table 1.7.1-1. The applicable safety analyses of the equipment is located in various QID files developed to support the EQ of the Class 1E equipment in harsh areas and is located in a QID/design calculations for the mild areas. Setpoint calculations address setpoints for various instruments and relays. Thermal hydraulic analyses are used to determine containment and reactor building conditions after an accident. Initial conditions such as area/room temperatures can affect the analysis results.

The QID files are developed in accordance with the qualification procedure listed in Reference 1 according to the specific plant location. Different plant locations are subject to different environmental conditions during normal operations and post accident. In addition, the requirements for operation to prevent or mitigate the consequences of a design basis accident are unique for the different plant equipment. Reference 4 addresses the design bases for area or room temperatures listed.

REQUIREMENTS FOR OPERABILITY

Area temperatures shall be maintained below the upper limit or above the lower temperature limit listed. Maintaining the temperature within the limit provides assurance that the EQ of the equipment in that area is maintained, OPERABILITY and reliability is maintained, setpoint tolerances remain valid and initial conditions for entry into SBO, HELB or LOCA are as analyzed.

Condition A is modified by a Note requiring Required Compensatory Measure A.2 be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Compensatory Measure A.1 is insufficient because a CR must be initiated

BASES

REQUIREMENTS FOR OPERABILITY (continued)

within 24 hours documenting the out of limit condition. The CR will cause an OPERABILITY assessment for all safety related equipment in areas/rooms that exceed the value that the temperature limit is based on. For causes where the temperature limit exceeds the Condition B limit but remains within the corresponding Condition C limit, the CR/PER process may result in additional actions not specified in the RFO.

Table 1.7.1-1 lists Condition B or C depending upon the applicable LCS Condition to be entered if the temperature limits are not met.
Condition B.1 requires immediate Compensatory Measures (actions) be initiated to remedy temperatures being out of limits to minimize aging effects on the equipment or to reduce the amount of time the conditions are beyond that assumed in the applicable design analysis. No immediate impact to the OPERABILITY of the equipment is expected although long term qualified life or equipment reliability may be affected. For equipment credited for SBO coping there could be some effect on SBO performance; however, SBO is not a design basis accident. Permanent cooling equipment should be checked for proper operation - e.g. service water is flowing in MCC room coolers. Alternate means of cooling or heating should be considered. Condition B.2 must also be entered and temperature monitoring begins at a 4 hour frequency in the affected area/room while temperature is exceeding the Condition B limit in Table 1.7.1-1.

A general note has been added to Table 1.7.1-1 which provides a 4 hour grace period before Condition B Compensatory Measures are required. When the area/room temperature is above the Condition B limit solely due to performance of required Surveillances, when swapping units, or changing modes on area/room HVAC equipment, entry into the associated Conditions and Required Compensatory Measures may be delayed for up to 4 hours provided the associated function remains OPERABLE. At no time should the Condition C limit be reached during the 4 hour grace period. It has been determined that the impact to plant risk for the grace period is minimal and that equipment will remain qualified since aging would be negligible from brief excursions outside the Condition B limits.

Condition C.1 requires remedial action to restore the area to the required temperature limit as shown in Table 1.7.1-1 within the LCS Completion Time or Condition D applies. For Condition D the equipment must be declared inoperable or the applicable LCO declared as not met and applicable action taken as dictated by the Technical Specification or LCS. This is because exceeding the temperature limitation (high or low as applicable) could affect the capability of the equipment or structure to

BASES

REQUIREMENTS FOR OPERABILITY (continued)

function or may cause instrument setpoint errors. Table 1.7.1-2 provides the EPN's listed by area or room to be considered in Condition D. In some cases Table 1.7.1-2 lists more than one temperature at which to declare certain equipment inoperable when equipment temperature capabilities are closely spaced.

APPLICABILITY

Area temperature limits are required to not be exceeded when the equipment in the affected area is required to be OPERABLE.

In practice, the area temperature limit is required at all times unless the EQ evaluation of the equipment in the area will be re-done prior to the need for the equipment to be OPERABLE. Should the temperature limits be exceeded even when the equipment is not required to be OPERABLE, the EQ of the safety related equipment may be affected, and would have to be re-evaluated to consider the reduction in qualified life attributable to the time the equipment was subjected to elevated temperatures.

1. Control Room - the control room must remain at or below 104°F to assure that panel mounted equipment remains within design specified temperature range. Operating above this temperature could affect setpoints and equipment OPERABILITY. Exceeding 104°F satisfies the necessary entry requirements for Condition C. In addition, the analysis on SBO has determined that with a starting temperature of 78°F and no cooling enhancements (open cabinet doors, removing ceiling tiles), the temperature in the control room will remain below the value established in regulatory guidance. It should be noted that with cooling enhancements such as opening cabinet doors, removing ceiling tiles, etc., at the start of the SBO event, the calculated starting limit is 85°F. Since SBO is not a design basis event, Condition B is provided when room temperature exceeds 78°F. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

2. Diesel Engine/Electrical Equipment Rooms - these rooms are listed in Table 1.7.1-1. The maximum temperature limit is set based on evaluations of safety related equipment's thermal operating capability. Operation above this temperature could affect equipment OPERABILITY so Condition C is provided. Condition B applies to a lower temperature set as an action limit where a Condition Report (CR) is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

BASES

APPLICABILITY (continued)

3. Safety Related Support Equipment Areas/Rooms - these are listed in Table 1.7.1-1 and subdivided into diesel support equipment and radwaste building support equipment. Condition C applies to the maximum limit listed since operation above this temperature could affect equipment OPERABILITY. The lower temperature limit for items listed is Condition B which applies to an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. In some cases no Condition C is listed since elevated temperatures would only affect component aging and is not expected to affect OPERABILITY in the short term (a few weeks). Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

4. Critical Switchgear Rooms and Equipment - these rooms are listed in Table 1.7.1-1. Per FSAR Section 9.4 the term “critical switchgear room” also includes the battery rooms and battery charger rooms. Battery rooms are addressed in item 5 (below).

   Maximum limits in Table 1.7.1-1 are based on evaluations of safety related equipment’s thermal operating capability. Operation above this temperature could affect equipment OPERABILITY so Condition C is provided. Generally, Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken. (See Bases for Surveillance Requirements in this section.)

5. Division I, II, and III Battery Rooms - these rooms are listed in Table 1.7.1-1 and contain plant batteries which are safety related. Note that room D114 also houses HPCS DG electrical equipment. Maximum temperatures listed in Table 1.7.1-1 are OPERABILITY limits and a Condition C is provided. Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken. Room minimum temperatures are controlled to assure battery capacity is not adversely affected. The 60°F room limit is based on the requirement from Technical Specification LCO 3.8.6 which requires battery electrolyte to be above 60°F. By surveillance of the room temperature it can be assured that the battery electrolyte is above Technical Specification limit. Condition C is provided for the

BASES

APPLICABILITY (continued)

60°F lower limit. A footnote for this Condition C action alternately allows electrolyte temperature to be monitored once per 4 hours to determine battery OPERABILITY if the room is ≤ 60°F pursuant to Technical Specification LCO 3.8.6. A 74°F minimum area temperature limit for Division I and Division II batteries is required to meet commitments to the NRC for SBO coping. Since SBO is not a design basis event, Condition B is provided for the 74°F limit. A Condition B limit of 65°F was applied to Division III batteries to provide an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected cool down rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

6. Reactor Building Critical Electrical Rooms - these rooms are listed in Table 1.7.1-1. The temperature limit is set based on evaluations of safety related equipment's thermal operating capability. Operation above this temperature could cause failure of safety related systems so Condition C is provided. Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

7. Reactor Building Essential Pump Rooms - for HPCS/LPCS/RHR/RCIC three limits are stated; two for pumps running (140°F/150°F) and one for pumps not running (104°F). Exceeding 150°F would place the equipment outside the GE design limit and may affect OPERABILITY, therefore Condition C is provided. Exceeding the 104°F limit (pumps not running) may affect equipment qualified life but is not expected to have an immediate impact on OPERABILITY. The 104°F limit (pumps not running) and the 140°F (pumps running) Condition B limits are provided as action limits. Generally, Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for typical rooms, ample time should be available to restore conditions before Condition C action has to be taken.

8. Reactor Building Support Equipment Areas/Rooms - these areas can contain safety related equipment which has been environmentally qualified for a maximum normal temperature of 104°F and less than 100% humidity. The Design Basis Accident (DBA) analysis assumes as an initial condition that the open areas are 104°F or less.

BASES

APPLICABILITY (continued)

Operation above this temperature could increase post accident temperature and humidity and affect the qualification of the equipment or put the plant into an unanalyzed condition. Condition C is provided since exceeding the initial temperature limit may affect equipment OPERABILITY. Condition B limits are provided as action limits. Generally, Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for the area, ample time should be available to restore conditions before Condition C action has to be taken.

9. Primary Containment (Drywell and Suppression Pool Air Space) - these areas contain safety related equipment that has been environmentally qualified to a maximum normal temperature of 117°F for Suppression Pool Air Space and 150°F for Drywell. Operation above this temperature could affect the qualified life of equipment due to thermal aging. Condition B is provided since no immediate impact to equipment OPERABILITY is expected above this limit for a short time (a few days). Condition C OPERABILITY limit of 150°F in Suppression Pool Air Space and 200°F in the Drywell is based on a value that is lower than the postulated accident EQ profile for any safety related class 1E devices in this area. It is a conservative peak temperature limit pending completion of a qualified life analysis per Note 14 of Table 1.7.1-1. A sub-zone called Sacrificial Shield Wall Lower/Mid Annulus has been created to address local hot spots in this area. There is no safety-related electrical equipment in this area. The temperature is monitored as part of the Containment Monitoring System. A local hot spot not exceeding 185°F can exist as long as the average temperature in the Sacrificial Shield Wall Lower/Mid annulus remains less than or equal to the Condition B Limits for average temperature of the temperature elements in the sub-zone. The average temperature can be determined by programming control room recorders to provide the value or by simple arithmetic averages based on the TE temperature values obtained during periodic shift surveillances. Local temperatures above Condition C Limits indicate potentially significant HVAC problems or a possible leak. Extreme temperatures may affect concrete integrity or impact temperature monitoring capability. Obtain an Engineering evaluation to determine if operability is impacted. This limit should prevent aging so rapidly

BASES

APPLICABILITY (continued)

that equipment's qualified life expires before corrective actions are taken. Note 14 requires Operations to request a calculation from Engineering on the expected aging life remaining for the specific equipment exposed to the abnormal temperature. This should be done in a timely manner (e.g. a few days) so that qualified life loss can be evaluated and/or a higher temperature limit established based on the affected equipment's thermal capabilities and remaining qualified life. The technical evaluation should identify the applicable safety related equipment affected. Technical Specification 3.6.1.4 requires action when average Drywell temperature exceeds 135°F to restore the temperature to less than or equal to 135°F within 8 hours. The 135°F limit on average temperature is established to prevent the containment from exceeding pressure limits during a LOCA. Greatly exceeding local area temperature limits (above 150°F) would possibly impact the average temperature and require actions specified in Technical Specification 3.6.1.4.

10. Primary Containment Air Space Beneath the RPV - this area contains safety related equipment that has been environmentally qualified to a normal temperature of 165°F. Condition B is provided since no immediate impact to equipment OPERABILITY is expected above this limit for a short time (a few days). Condition C OPERABILITY limit of 200°F is based on a value that is lower than the postulated accident EQ profile for any safety related class 1E devices in this area. It is a conservative peak temperature limit pending completion of a qualified life analysis per Note 14 of Table 1.7.1-1. This limit should prevent aging so rapidly that equipment's qualified life expires before corrective actions are taken. Note 14 requires Operations to request a calculation from Engineering on the expected aging life remaining for the specific equipment exposed to the abnormal temperature. This should be done in a timely manner (e.g. a few days) so that qualified life loss can be evaluated and/or a higher temperature limit established based on the affected equipment's thermal capabilities and remaining qualified life. The technical evaluation should identify the applicable safety related equipment affected. Technical Specification 3.6.1.4 requires action when average Drywell temperature exceeds 135°F to restore the temperature to less than or equal to 135°F within 8 hours. The 135°F limit on average temperature is established to prevent the containment from exceeding pressure limits during a LOCA. Greatly exceeding local area temperature limits (above 165°F) would possibly impact the average temperature and require actions specified in Technical Specification 3.6.1.4.

BASES

APPLICABILITY (continued)

11. Steam Tunnel - this area contains safety related equipment which has been environmentally qualified for a maximum normal temperature of 140°F. Operation above this temperature could affect the qualified life of equipment due to thermal aging. Condition B is provided since no immediate impact to equipment OPERABILITY is expected above this limit for a short time (a few days). Condition C is provided at 200°F and is based on a value that is lower than the postulated accident EQ profile for any safety related class 1E devices in this area. It is a conservative peak temperature limit pending completion of a qualified life analysis per Note 15 of Table 1.7.1-1. This limit should prevent aging so rapidly that equipment's qualified life expires before corrective actions are taken. Note 15 requires Operations to request a calculation from Engineering on the expected aging life remaining for the specific equipment exposed to the abnormal temperature. This should be done in a timely manner (e.g. a few days) so that qualified life loss can be evaluated and/or a higher temperature limit established based on the affected equipment's thermal capabilities and remaining qualified life. The technical evaluation should identify the applicable safety related equipment affected. Note that the leak detection system may cause the MSIVs to isolate at the setpoint required by Technical Specifications due to elevated temperatures in the steam tunnel.

12. Essential Pumphouses - these areas contain safety related equipment which has been evaluated for ambient thermal capability. Condition C is provided since equipment operation could be affected above the limit. Condition B applies to a lower temperature set as an action limit where a CR is generated and action to restore conditions to acceptable limits is initiated. Given expected heat up rates for the pump houses, ample time should be available to restore conditions before Condition C action has to be taken.

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the area temperature monitoring. The Required Compensatory Measures provide appropriate measures for separate inoperable areas. As such, a Note has been provided to allow separate Condition entry for each area instead of requiring that the Completion Time begin on initial entry into the Condition.

A.1

Required Compensatory Measure A.1 requires that the Condition be entered immediately when it is determined that the temperature for an area or room listed in Table 1.7.1-1 or Table 1.7.1-2 exceeds the limits in Table 1.7.1-1.

BASES

COMPENSATORY MEASURES (continued)

A.2

In addition to A.1, a CR must be initiated within 24 hours documenting the out of limits condition. This CR will cause an OPERABILITY assessment for all safety related equipment in areas/rooms that exceed the value that the temperature limit is based on. For cases where the temperature limit exceeds the Condition B limit but remains within the corresponding Condition C limit, the Corrective Action Program may result in additional actions not specified in this RFO.

B.1

Required Compensatory Measure B.1 requires action be initiated immediately to restore the area or room to be within temperature limits. This action continues until the area or room meets requirements.

B.2

Condition B.2 requires the surveillance frequency for monitoring temperatures in the area/room exceeding the Condition B limits to be increased to once per 4 hours. This will assure that the approach to a Condition C limit is detected in a timely manner.

C.1

Required Compensatory Measure C.1 requires that action be taken to restore the area or room temperature to be within the limits of Table 1.7.1-1 in 1 hour. If this cannot be accomplished within the time limit stated, then enter Compensatory Measure D.1. The one hour time limit provides adequate time to either restore the area/room to be within the required limit or determine what equipment is affected and initiate action to declare the equipment inoperable.

D.1

Required Compensatory Measure D.1 requires the equipment (as listed in Table 1.7.1-2) in the area or room exceeding the Condition C limits of Table 1.7.1-1 to be declared inoperable immediately or the associated LCO declared not met and to enter the applicable LCO/RFO as referenced in Table 1.7.1-2.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.1.1

The surveillance requires temperatures to be recorded at a frequency assigned in Table 1.7.1-1 to assure temperatures remain within limits. Only the areas/rooms designated in Table 1.7.1-1 require a temperature measurement to satisfy the SR. During normal rounds Operators will remain cognizant of all accessible area/room ambient temperatures and initiate action if an area/room is abnormally hot or cold.

Area temperatures are obtained from temperature indicating devices such as permanent plant temperature elements or non-permanent plant calibrated thermometers. For the Reactor Building areas (open areas) not listed as a specific room, six (6) monitoring locations are specified in the notes (4, 5, 6, 7, and 10) of Table 1.7.1-1. These locations were chosen based on trend data recorded for equipment qualifications over a two year time period and will provide representative information for all of the open floor areas where temperature sensitive equipment is installed. Since the Reactor Building is served by a common set of HVAC equipment, the sample points will provide a reasonable measure for the overall building open floor area maximum temperatures.

The more critical areas/rooms or those which house critical HVAC equipment have been selected for monitoring once per 12 hour shift. A frequency of once per 31 days was assigned to areas/rooms less impacted by ambient temperatures or where daily monitoring of rooms/areas supplied by common HVAC equipment provides adequate indication of satisfactory performance. If HVAC to one of the areas/rooms with a 31 day surveillance frequency is secured or found inoperable, then Note 8 in Table 1.7.1-1 requires the surveillance frequency to be increased to once per 12 hours. Where a significant margin exists between the design maximum temperature and the equipment's ambient thermal capability, no documented temperature surveillance was required since it is highly unlikely that the equipment's capability limit would be exceeded during normal or off normal conditions. Note 17 addresses some areas/rooms where surveillance is not required in MODE 4 or 5. This is based on the fact that equipment in the specified area/room is not required to be OPERABLE in MODE 4 or 5.

BASES

REFERENCES

1. EQES-2, Technical Requirements for Electrical Equipment Environmental Qualification.

2. FSAR, Section 3.11.

3. FSAR, Table 3.11-1.

4. Engineering Technical Memorandum TM-2123, Design Basis Evaluation of Temperature, Pressure and Humidity Limits in FSAR Table 3.11-1.

B 1.7 PLANT SYSTEMS

B 1.7.2 Control Room Emergency Chilled Water System

BASES

BACKGROUND

The Control Room Air Conditioning (AC) System consists of two independent, redundant subsystems that provide cooling of recirculated control room air. Each subsystem contains, in part, two cooling coils (one normal and one emergency).

The normal cooling coil is supplied by the Radwaste Building Chilled Water System. This system is normally in operation and maintains the control room ambient conditions at 75°F ± 3°F dry bulb temperature.

When the Radwaste Building Chilled Water System is inoperable (emergency condition), the emergency cooling coil is supplied by the Standby Service Water (SW) System or the Control Room Emergency Chilled Water System. The control room temperature will be maintained below 85°F dry bulb by the control room emergency chillers. The Control Room Emergency Chilled Water system consists of two control room emergency chillers and two pumps (one chiller and pump combination for each emergency cooling coil of the control room AC subsystem) (Ref. 1).

However, the chillers are not primarily designed to protect equipment; the SW System maintains the control room below 104°F for equipment OPERABILITY with some electrical load shedding (Ref. 2). The SW System is capable of maintaining the control room below 85°F dry bulb during colder weather.

APPLICABLE SAFETY ANALYSES

The design basis of the Control Room (AC) System is to maintain the control room temperature for a 30 day continuous occupancy (Ref. 3).

The Control Room Emergency Chilled Water System supports the Control Room AC System by providing chilled water to the emergency cooling coil of each control room AC subsystem. The Control Room Emergency Chilled Water System components are arranged in redundant subsystems. A single active failure of a component of the Control Room Emergency Chilled Water System, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. The Control Room Emergency Chilled Water System is designed in accordance with Seismic Category 1 requirements. Each control room emergency chilled water subsystem is capable of maintaining control room temperature within the FSAR limits for control room habitability (Ref. 2).

BASES

REQUIREMENTS FOR OPERABILITY	Two independent and redundant subsystems of the Control Room Emergency Chilled Water System are required to be OPERABLE to ensure that at least one is available, assuming a single active failure disables the other subsystem. The Control Room Emergency Chilled Water System is considered OPERABLE when the individual components necessary to maintain the control room temperature are OPERABLE in both subsystems. These components include the control room emergency chillers and pumps and associated instrumentation and controls.
APPLICABILITY	The Control Room Emergency Chilled Water System is required to be OPERABLE and capable of removing control room heat load whenever the Control Room AC System (Technical Specification 3.7.4) (Ref. 3) is required to be OPERABLE.
COMPENSATORY MEASURES	<u>A.1 and A.2</u> If one or more control room emergency chilled water subsystems are not functional, the applicable Conditions and Required Actions of LCO 3.7.4 must be entered. Alternately, the SW System may be verified to be capable of maintaining control room temperature ≤ 85°F dry bulb. This temperature is reasonable and ensures acceptable conditions are maintained in the control room for continued occupancy. Engineering should evaluate the ambient environmental conditions against the analysis in ME-02-14-01 (Ref. 4) to determine if the calculation is bounding. In general, this calculation will support the capability of SW to maintain control room temperatures ≤ 85°F from November 1st through January 31st. Otherwise, a specific evaluation may be prepared. However, if analysis indicates that SW is not capable of maintaining control room temperatures ≤ 85°F, the applicable Conditions and Required Actions of LCO 3.7.4 must be entered. A Completion Time of immediately is established since the Emergency Chilled Water System may be required to support the OPERABILITY of the Control Room AC System. However, if it is determined that SW is capable of maintaining control room temperature ≤ 85°F, the Emergency Chilled Water System is not required to support the OPERABILITY of the Control Room AC System. In this case, periodic monitoring of any applicable parameters is required to ensure the parameters are maintained within limits. A Completion Time of once per 24 hours is specified.

BASES

SURVEILLANCE REQUIREMENTS	A conservative monthly Surveillance Requirement has been identified to establish a data base of equipment failure rates. Acquisition of sufficient data may be used at a future time to revise the surveillance interval based on equipment reliability and operability trends. This requirement is consistent with Reference 5. The monthly surveillance consists of operating each control room chiller with the control room heat load applied for 24 hours. The chillers are required to maintain the control room temperature at ≤ 85°F dry bulb. The monthly chiller OPERABILITY check is performed under the preventive maintenance process and scheduled and tracked in accordance with SWP-MAI-01 and PPM 1.5.13 (Refs. 6 and 7). In addition, the applicable Inservice Testing Program surveillance procedure provides assurance of control chilled water pump OPERABILITY.
REFERENCES	1. System Description No.SD000201, Control Room, Cable Room and Critical Switchgear Rooms - HVAC (CR-HVAC). 2. FSAR Section 9.4.1. 3. Technical Specifications 3.7.4. 4. Calculation ME-02-14-01, Main Control Room Cooling Analysis. 5. Letter GO2-94-126, Reply to Notice of Violation 94-12, dated May 27, 1994. 6. Columbia Generating Station, SWP-MAI-01, Work Management Process Overview. 7. Columbia Generating Station, PPM 1.5.13, Scheduled Maintenance System.

B 1.7 PLANT SYSTEMS

B 1.7.3 Snubbers

BASES

BACKGROUND

Each required snubber shall be OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety related systems and then only if their failure or failure of the system on which they are installed would have no adverse effect on any safety related system. During shutdown snubbers can be removed for maintenance or testing, if justified by engineering analysis, and are excluded from the OPERABILITY requirements.

Snubbers are classified and grouped by design and manufacturer but not by size. For example, mechanical snubbers utilizing the same design features of the 2-kip, 10-kip, and 100-kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured by Company "B" for the purposes of this Specification would be of a different type, as would hydraulic snubbers from either manufacturer.

A list of all safety related snubbers is included in the Columbia Generating Station Inservice Inspection Program Plan.

The visual inspection schedule is based on the number of unacceptable snubbers found during the previous inspection in proportion to the sizes of the various snubber populations or categories. A snubber is considered unacceptable if it fails the acceptance criteria of the visual inspection. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. The decision to examine these categories separately or jointly shall be made and documented before the examination begins, and can not be changed during the examination. The inspection interval is based on a fuel cycle of up to 24 months and may be as long as two fuel cycles, or 48 months for other fuel cycles, depending on the number of unacceptable snubbers found during the previous visual inspection. The examination interval may vary by ± 25 % to coincide with the actual outage.

To provide assurance of snubber functional reliability, one of two functional testing methods are used with the stated acceptance criteria:

1. Functionally test 10% of a type of snubber with an additional 5% tested for each functional testing failure, or

BASES

BACKGROUND (continued)

2. Functionally test a sample size and determine sample acceptance or continue testing using Figure B 1.7.3-1.

Figure B 1.7.3-1 was developed using "Wald's Sequential Probability Ratio Plan" as described in "Quality Control and Industrial Statistics" by Acheson J. Duncan.

Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubbers for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted shall be listed in the list of individual snubbers indicating the extent of the exemptions.

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubbers, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

APPLICABLE SAFETY ANALYSES

The snubbers are required to be OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads.

REQUIREMENTS FOR OPERABILITY

Each required hydraulic and mechanical snubbers shall be OPERABLE in MODES 1, 2, and 3. In MODES 4 and 5, all snubbers located on systems required OPERABLE are required to be OPERABLE unless the removal of snubber(s) for maintenance or testing is justified by engineering analysis.

APPLICABILITY

All snubbers are required in MODES 1, 2, and 3. During MODES 4 and 5, snubbers can be removed for maintenance or testing, if justified by engineering analysis, and are excluded from the OPERABILITY requirements.

BASES

COMPENSATORY MEASURES

A.1

The required actions for inoperable snubbers are specified in Technical Specifications LCO 3.0.8. Therefore, immediate entry into Technical Specifications LCO 3.0.8 is directed by this LCS. Action is required only for those snubbers needed to support the OPERABILITY of systems, structures or components required to be OPERABLE by Technical Specifications.

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection and test program:

a. Inspection Types

As used in this Specification, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

b. Visual Inspections

Snubbers are categorized as inaccessible or accessible during reactor operation. Each of these categories (inaccessible and accessible) may be inspected independently according to the schedule determined by Table B 1.7.3-1. The visual inspection interval for each type of snubber shall be determined based upon the criteria provided in Table B 1.7.3-1.

c. Visual Inspection Acceptance Criteria

Visual inspections shall verify that: (1) the snubber has no visible indications of damage or impaired OPERABILITY; (2) attachments to the foundation or supporting structure are functional; and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional. Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that: (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per Section f. All snubbers found connected to an inoperable common hydraulic fluid reservoir shall be counted as unacceptable for determining the next inspection

BASES

SURVEILLANCE REQUIREMENTS (continued)

interval. A review and evaluation shall be performed and documented to justify continued operation with an unacceptable snubber. If continued operation can not be justified, the snubber shall be declared inoperable and the Required Compensatory Measures shall be taken.

d. Transient Event Inspection

An inspection shall be performed of all hydraulic and mechanical snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems within 6 months following such an event. In addition to satisfying the visual inspection acceptance criteria, freedom of motion of mechanical snubbers shall be verified using at least one of the following: (1) manually induced snubber movement; (2) evaluation of in place snubber piston setting; or (3) stroking the mechanical snubber through its full range of travel.

e. Functional Tests

During the first refueling shutdown and at least once per 24 months thereafter during shutdown, a representative sample of snubbers shall be tested using one of the following sample plans. The sample plan shall be selected prior to the test period and can not be changed during the test period. The NRC Regional Administrator shall be notified in writing of the sample plan selected prior to the test period or the sample plan used in the prior test period shall be implemented:

1) At least 10% of the total of each type of snubber shall be functionally tested either in place or in a bench test. For each snubber of a type that does not meet the functional test acceptance criteria of Section F, an additional 5% of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested; or

BASES

SURVEILLANCE REQUIREMENTS (continued)

2) A representative sample of 37 snubbers shall be functionally tested in accordance with Figure B 1.7.3-1. "C" is the total number of snubbers found not meeting the acceptance requirements of Section F. The cumulative number of snubbers of a type tested is denoted by "N". If at any time the point plotted falls in the "Accept" region, testing of snubbers may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers shall be tested until the point falls in the "Accept" region or all the snubbers have been tested. Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time provided all snubbers tested with the failed equipment during the day of equipment failure are retested.

The representative sample selected for the functional test sample plans shall be randomly selected from the snubbers of each type and reviewed before beginning the testing. The review shall ensure, as far as practicable, that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers of each type. Snubbers placed in the same location as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the sample plan. If during the functional testing, additional testing is required due to failure of snubbers, the unacceptable snubbers may be categorized into test failure mode group(s). A test failure mode group shall include all unacceptable snubbers that have a given failure mode and all other snubbers subject to the same failure mode. Once a test failure mode group has been established, it can be separated for continued testing apart from the general population of snubbers. However, all the unacceptable snubbers in this failure mode group shall be counted as one unacceptable snubber for additional testing in the general population. Testing in the failure mode group shall be based on the number of unacceptable snubbers and shall continue until no more failures are found or all snubbers in the failure mode group have been tested. Any additional unacceptable snubbers found in the test failure mode group shall be counted for continued testing only for that test failure mode group.

BASES

SURVEILLANCE REQUIREMENTS (continued)

f. Functional Test Acceptance Criteria

The snubber functional test shall verify that:

1) Activation (restraining action) is achieved within the specified range in both tension and compression;

2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;

3) Where required, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel; and

4) For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

g. Functional Test Failure Analysis

An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of type which may be subject to the same failure mode.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

BASES

SURVEILLANCE REQUIREMENTS (continued)

If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause will be evaluated and, if caused by manufacturer or design deficiency or unexpected transient event, all snubbers of the same type subject to the same defect shall be evaluated in a manner (stroking, testing, replacement etc.) to ensure their OPERABILITY. This evaluation requirement shall be independent of the requirements stated in section e. for snubbers not meeting the functional test acceptance criteria.

h. Functional Testing of Repaired and Replaced Snubbers

Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test results shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom of motion test must have been performed within 12 months before being installed in the unit.

i. Snubber Service Life Program

The service life of hydraulic and mechanical snubbers shall be monitored to ensure that the service life is not exceeded between surveillance inspections. The maximum expected service life for various seals, springs, and other critical parts shall be determined and established based on engineering information and shall be extended or shortened based on monitored test results and failure history. Critical parts shall be replaced so that the maximum service life will not be exceeded during a period when the snubber is required to be OPERABLE. The parts replacement shall be documented and the documentation shall be retained in accordance with record retention requirements of the Operational Quality Assurance Program Description.

REFERENCES None.

Table B 1.7.3-1 (page 1 of 1)
Snubber Visual Inspection Interval

	NUMBER OF UNACCEPTABLE SNUBBERS		
Population or Category (Notes 1 and 2)	Column A Extended Interval (Notes 3 and 6)	Column B Repeat Interval (Notes 4 and 6)	Column C Reduce Interval (Notes 5 and 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1000 or greater	29	56	109

Note 1: The next visual inspection interval for a snubber population or category size shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. However, the licensee must make and document that decision before any inspection and shall use that decision as the basis upon which to determine the next inspection interval for that category.

Note 2: Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B, or C if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.

Note 3: If the number of unacceptable snubbers is equal to or less than the number in Column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

Note 4: If the number of unacceptable snubbers is equal to or less than the number in Column B but greater than the number in Column A, the next inspection interval shall be the same as the previous interval.

Note 5: If the number of unacceptable snubbers is equal to or greater than the number in Column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in Column C but greater than the number in Column B, the next interval shall be reduced proportionally by interpolation, that is, the previous interval shall be reduced by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in Column B to the difference in numbers in Columns B and C.

Note 6: The provisions of SR 1.0.2 are applicable for all inspection intervals up to and including 48 months.

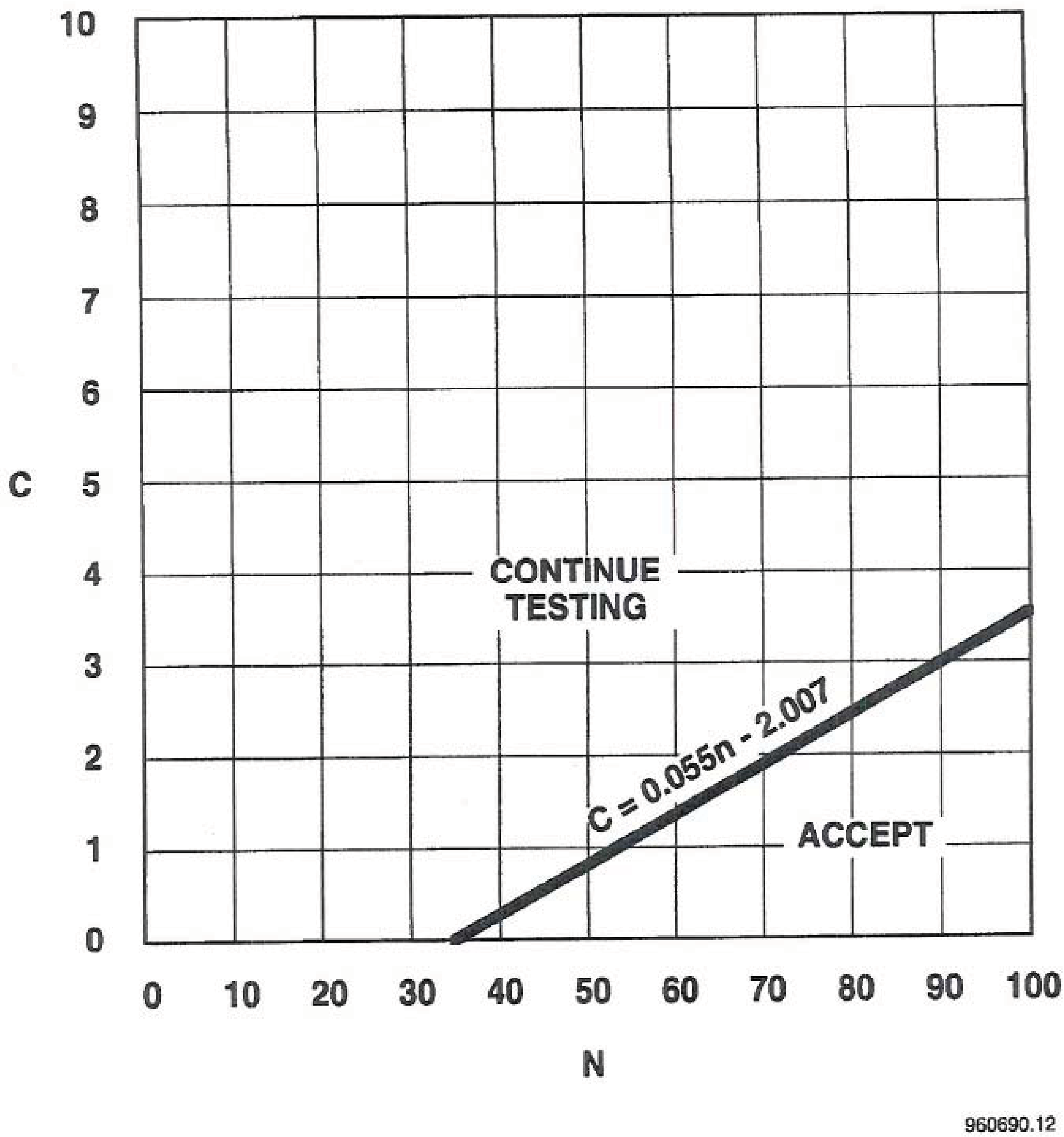

Figure B 1.7.3-1
Sample Plan 2 For Snubber Functional Test

B 1.7 PLANT SYSTEMS

B 1.7.8 Sealed Source Contamination

BASES

BACKGROUND	The requirement for testing sealed sources for contamination which has leaked out of the container originates in 10 CFR 70.39. This testing was for sealed sources which contain special nuclear material. The limit of 0.005 microcurie of removable activity was based on plutonium to ensure that allowable intake values would not be exceeded. The scope of the sealed source contamination surveys has been expanded beyond just containers with special nuclear material to also include sealed sources with byproduct or source material. If a radiography source is brought on site by a vendor, this source is, by definition, a sealed source; however, the requirements for testing are provided in 10 CFR 34. The responsibility for leak testing and reporting abnormal conditions rests with the holder of the license for the particular radiographic source.
APPLICABLE SAFETY ANALYSES	The limitation on sealed source contamination is intended to ensure that the total body or individual organ irradiation dose does not exceed allowable limits in the event of ingestion or inhalation.
REQUIREMENTS FOR OPERABILITY	Each sealed source containing greater than 100 microcuries of beta and/or gamma emitting material or greater than 5 microcuries of alpha emitting material shall be free of removable contamination.
APPLICABILITY	At all times.
COMPENSATORY MEASURES	<u>A.1, A.2, and A.3</u> If a sealed source is found to have removable contamination in excess of 0.005 microcuries, remove the sealed source from use immediately. The source must be repaired and decontaminated prior to return to service or it must be disposed of in accordance with regulatory requirements. A report shall be submitted on an annual basis if contamination in excess of the established limit is detected.
SURVEILLANCE REQUIREMENTS	NOTE: The test method shall have a detection sensitivity of at least 0.005 microcurie per test sample.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.7.8.1

Verify each sealed startup source and fission detector is within limits. This verification is to occur within 31 days of being installed in the core or being subjected to core flux.

This verification also needs to occur within 31 days following repair or maintenance.

SR 1.7.8.2

Every 6 months verify each sealed source which is in use and has a half-life greater than 30 days, is within the limit. This Frequency is sufficient to detect possible degradation of the sealed source through use.

This SR is modified by a Note excluding verification of sealed sources containing only tritium or gases and startup sources and fission detectors which have been subjected to core flux.

SR 1.7.8.3

Each sealed source and fission detector not in use must be verified to be within the limit within 6 months prior to use or transfer to another licensee.

This SR is modified by a Note excluding verification of startup sources and fission detectors which have been previously subjected to core flux.

REFERENCES

1. 10 CFR 30.

2. 10 CFR 70.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.4 24 VDC Sources

BASES

BACKGROUND

The 24 VDC Power System provides power to portions of the Nuclear Instrumentation System, portions of the Radiation Monitoring System, and the Bypass and Inoperable Status Indication (BISI) System.

A separate Division 1 and a Division 2 24 VDC power subsystem is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. Each subsystem consists of a battery, associated battery charger, and all the associated control equipment and interconnecting cabling.

Each 24 VDC battery has two 12-cell 24 volt banks connected in series with the common point grounded. Each bank is provided with a solid state battery charger which receives 120 VAC input power from its respective Division 1 or 2 120 VAC vital power panel. The 24 VDC power panel DP-SO-A supplies Source Range Monitor (SRM) Channels A and C and Intermediate Range Monitor (IRM) Channels A, C, E, G, Process Radiation Monitor (PRM) Bus A and BISI displays. The 24 VDC power panel DP-SO-B supplies SRM Channels B and D and IRM Channels B, D, F, H, PRM Bus B and BISI displays.

During normal operation, the 24 VDC loads are powered from the battery chargers with the batteries floating on the system. Each charger is capable of carrying the largest combined demand of the various steady state DC loads while simultaneously restoring the battery from 1.75 volts per cell to its fully charged state in 24 hours. In case of loss of normal power to the battery charger, the DC loads are powered from the batteries.

Each 24 VDC battery has adequate storage capacity to meet the duty cycle discussed in the FSAR, Chapter 8 (Ref. 1). The battery is designed with additional capacity above that required by the design duty cycle to allow for temperature variations, and other factors.

The battery cells are of flooded lead acid construction with a nominal specific gravity of 1.215. This specific gravity corresponds to an open circuit battery voltage of approximately 24.7 VDC for a 12 cell battery (i.e., cell voltage of 2.06 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is not charging or discharging. Once fully charged with its open circuit voltage > 2.06 Vpc, the battery cell will

BASES

BACKGROUND (continued)

maintain its capacity for 30 days without further charging, per manufacturer data. Optimal long term performance however, is obtained by maintaining a float voltage 2.17 to 2.26 Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self discharge. The nominal float voltage of 2.25 Vpc corresponds to a total float voltage output of 27.0 VDC for a 12 cell battery as discussed in the FSAR, Chapter 8 (Ref. 1).

The battery charge is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the battery. This assures the internal losses of a battery are overcome and the battery is maintained in a fully charged state.

When desired, the charger can be placed in the equalized mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have recharge efficiencies of > 95%. When at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery.

APPLICABLE SAFETY ANALYSES

The 24 VDC power systems supply power to the IRM and SRM (Ref. 3) instrumentation, as well as portions of the PRM System. The IRM provides inputs to the Reactor Protection System (RPS) to trip the reactor on high neutron flux or inoperable channel. The applicable accident analysis for the IRM trips is discussed in the Technical Specifications for the RPS System (Ref. 2).

The IRM inputs to the RPS System are designed to initiate a trip on failure of the channel. This design provides for safe operation of the system because loss or failure of the 24 VDC Power System will result in protective system action.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The indication portion of the IRM and the remaining systems are used for post accident monitoring and are described in the Post Accident Monitoring Licensee Controlled Specification.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not assumed to function during a design basis loss of offsite power accident.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used for or capable of detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used to monitor a process variable that is an initial condition of a DBA or a transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not part of a primary success path in the mitigation of a DBA or transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are a non-significant risk contributor to core damage and offsite releases.

REQUIREMENTS FOR OPERABILITY

The Division 1 and Division 2 24 VDC electrical power subsystems shall be OPERABLE to support equipment required to be OPERABLE. Each subsystem consists of a battery, associated battery charger, and all the associated control equipment and interconnecting cabling. The OPERABILITY requirements of the supported equipment is found in the appropriate equipment specification.

OPERABILITY of the IRM System is discussed in the RPS Technical Specification. OPERABILITY of the remaining supported systems is discussed in the Post Accident Monitoring Technical Specification.

APPLICABILITY

When supported equipment is required to be OPERABLE, the applicability requirements of the supported equipment is found in the appropriate equipment specification.

BASES

COMPENSATORY MEASURES

A.1, A.2, and A.3

Condition A represents one division with one required battery charger inoperable (e.g., the voltage limit of SR 1.8.4.1 is not maintained). The Required Compensatory Measures provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Compensatory Measure A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage (26 VDC). Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within 12 hours, the battery will be restored to its fully charged condition (Required Compensatory Measure A.2) from any discharge that might have occurred due to the charger inoperability. A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the batttery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus, there is good assurance of fully recharging the battery within 12 hours.

If the battery terminal foat voltage cannot be restored to greater than or equal to the minumum establihsed float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide adequate assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event for which the DC system is designed.

If the charger is operating in the current limit mode after 2 hours, it is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition, in this case, is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within 12 hours (Required Compensatory Measure A.2).

BASES

COMPENSATORY MEASURES (continued)

Required Compensatory Measure A.2 requires that the battery float current be verified as $\leq$ 0.2 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If, at the expiration of the initial 12-hour period, the battery float current is not $\leq$ 0.2 amps, this indicates there may be additional battery problems and the battery must be declared inoperable.

Required Compensatory Measure A.3 limits the restoration time for the inoperable battery charger to 72 hours. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 72 hour Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

B.1

Condition B represents one division with one battery inoperable. With one battery inoperable, the DC bus is being supplied by the OPERABLE battery charger(s). Any event that results in a loss of the AC bus supporting the battery charger(s) will also result in the loss of DC to that division. The 2 hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage < 2.07 VDC, etc.) are identified in LCS 1.8.4 and 1.8.6.1 together with additional specific completion times.

C.1

Condition C represents one division with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, important that the operator's attention focus on minimizing the potential for complete loss of 24 VDC to the affected division.

If one of the required Division 1 or 2 24 VDC electrical power subsystem is inoperable for reasons other than A or B (e.g., inoperable battery charger and associated inoperable battery), the remaining 24 VDC electrical power subsystems have the capacity to perform their required functions. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system.

BASES

COMPENSATORY MEASURES (continued)

D.1

If the Required Compensatory Measures and associated Completion Time of Conditions A, B, or C are not met, the 24 VDC system may be incapable of performing its intended function and those supported technical specification components, required to be OPERABLE, must be immediately declared inoperable. Other supported equipment should be evaluated for functionality.

SURVEILLANCE REQUIREMENTS

SR 1.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state, while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer, 2.17 Vpc, or 26.0 VDC at the battery terminals. This voltage maintains the battery terminals. This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years).

The 7 day Frequency is conservative when compared with the manufacturers recommendations and IEEE-450 (Ref. 5).

An alternate charger may be used to restore the battery terminal voltage to greater than or equal to the minimum established float voltage. This alternate charger will be of sufficient capacity such that it is fully capable of restoring the battery voltage to the minimum acceptable limit, carrying respective DC bus loads, and maintaining the battery in a fully charged condition.

SR 1.8.4.2

Battery charger capability requirements are based on the design capacity of the chargers. According to IEEE 308 (Ref. 6), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state. The minimum required amperes and duration ensure that these requirements can be satisfied. The charger shall be loaded, to a

BASES

SURVEILLANCE REQUIREMENTS (continued)

minimum, at three separate load ratings, 50%, 75%, and 100%, for ≥ 30 minutes at each load rating for a total of ≥ 1.5 hours, at or above the minimum established design voltage, 26 VDC. The 100% load rating is 25 amps.

The Surveillance Frequency is acceptable, given the administrative controls existing to ensure adequate charger performance during these 24 month intervals.

SR 1.8.4.3

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length correspond to the design duty cycle requirements as specified in Reference 1.

The Surveillance Frequency of 24 months is acceptable given the administrative controls existing to ensure adequate battery performance during these 24 month intervals.

This SR is modified by a Note. This Note allows the performance of a modified performance discharge test in lieu of a service test at any time. This substitution is acceptable because a modified performance discharge test represents a more severe test of battery capacity than SR 1.8.4.3.

REFERENCES

1. FSAR, Section 8.3.2.1.3.
2. Technical Specification 3.3.1.1.
3. Technical Specification 3.3.1.2
4. Columbia Generating Station Calculation 2.05.01, Rev. 8, February 1990.
5. IEEE Standard 450, 2002, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.”
6. IEEE Standard 308, 1974, “IEEE Standard Criteria for Class IE Power Systems for Nuclear Power Generating Stations.”

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.6.1 24 VDC Battery Parameters

BASES

BACKGROUND

This RFO delineates the limits on battery float current as well as electrolyte temperature, level and float voltage for the 24 VDC power source batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for RFO 1.8.4, “24 VDC Sources.” This RFO also requires monitoring of various battery parameters based on the recommendations of IEEE Standard 450-2002, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications” (Ref. 2), as required by the Battery Monitoring and Maintenance Program (Ref. 3).

The battery cells are flooded lead acid construction with a nominal specific gravity of 1.215. This specific gravity corresponds to an open circuit battery voltage of approximately 24.7 VDC for a 12 cell battery (i.e., cell voltage of 2.06 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage > 2.06 Vpc, the battery cell will maintain its capacity for 30 days without further charging, per manufacturer’s data. For optimal long-term performance the manufacturer recommends a float voltage of 2.25 Vpc. This corresponds to a total float voltage output of 27.0 VDC for the 12 cell battery as discussed in the FSAR, Chapter 8 (Ref. 1). The required float voltage range is 25.6 to 27.5 for the 24 VDC batteries to allow fro normal charger voltage variations.

A cell voltage of < 2.07 VDC under float conditions and not caused by elevated temperature of the cell indicates internal cell problems and may require cell replacement (Ref. 2).

APPLICABLE SAFETY ANALYSES

The 24 VDC battery supports the 24 VDC Power System. The 24 VDC Power System and the related safety analyses is described in the basis for RFO 1.8.4.

REQUIREMENTS FOR OPERABILITY

The battery parameters of the 24 volt batteries must remain within acceptable limits to ensure availability of the DC power required to support the function of the 24 VDC Power System.

APPLICABILITY

The battery parameters are required solely for the support of the associated DC electrical power subsystem. Therefore, battery parameter limits are required when the associated DC electrical power subsystem is required to be OPERABLE. Refer to the Applicability discussion in Bases for RFO 1.8.4.

BASES

COMPENSATORY MEASURES

A.1, A.2, and A.3

With one or more cells of a battery < 2.07 V, the battery cell is degraded. Within 2 hours, verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage (SR 1.8.4.1) and the overall battery state of charge by monitoring the battery float charge current (SR 1.8.6.1.1). This assures that there is still sufficient battery capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of one or more cells in one or more batteries < 2.07 V, and continued operation is permitted for a limited period up to 24 hours.

Since the Required Compensatory Measures only specify “perform,” a failure of SR 1.8.4.1 or SR 1.8.6.1 acceptance criteria does not result in this Compensatory Measure not met.

However, if SR 1.8.4.1 is failed, the Condition(s) in the appropriate RFOs, depending on the cause of the failure, is entered. If SR 1.8.6.1.1 is failed, then there is not assurance that there is still sufficient battery capacity to perform the intended function and the battery must be declared inoperable immediately as specified in Condition N.

B.1 and B.2

One or more batteries with float current > 0.2 amps indicates that a partial discharge of the battery capacity has occurred. This may be due to a temporary loss of battery charger or possibly due to one or more battery cells in a low voltage condition reflecting some loss of capacity. Within 2 hours, verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage. If the terminal voltage is found to be less than the minimum established float voltage, there are two possibilities; the battery charger is inoperable or is operating in the current limit mode. Condition A of RFO 1.8.4 addresses charger inoperability. If the charger is operating in the current limit mode after 2 hours, that is an indication the battery has been substantially discharged and likely cannot perform its required design functions. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristics of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within 12 hours (Required Compensatory Measure B.2). Therefore the battery must be declared inoperable as specified in Condition N.

BASES

COMPENSATORY MEASURES (continued)

If the float voltage is found to be satisfactory but there are one or more battery cells with float voltage < 2.07 V, the associated “OR” statement in Condition N is applicable and the battery must be declared inoperable immediately. If float voltage is satisfactory and there are no cells < 2.07 V, there is good assurance that, within 12 hours, the battery will be restored to its fully charged condition (Required Compensatory Measure B.2) from any discharge that might have occurred due to a temporary loss of the battery charger. A discharged battery with float voltage (the charger setpoint) across its terminals indicates the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus, there is good assurance of fully recharging the battery within 12 hours.

If the condition is due to one or more cells in a low voltage condition but still > 2.07 V and float voltage is found to be satisfactory, this is not indication of a substantially discharged battery and 12 hours is a reasonable time prior to declaring the battery inoperable.

Since Required Compensatory Measure B.1 only specifies “perform,” a failure of SR 1.8.4.1 acceptance criteria does not result in the Compensatory Measure not met. However, if SR 1.8.4.1 is failed, the appropriate Condition(s) RFO 1.8.4, depending on the cause of the failure is entered.

C.1, C.2, C.3, and C.4

With one or more batteries with one or more cells electrolyte level above the top of the plates but below the minimum established design limits (i.e., low level mark), the battery still retains sufficient capacity to perform its intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of electrolyte level not met. Within 31 days, the minimum established design limits for electrolyte level must be re-established.

With electrolyte level below the top of the plates, there is a potential for dryout and plate degradation. Required Compensatory Measures C.1, C.2, and C.3 address this potential. They are modified by a Note that indicates they are only applicable if electrolyte level is below the top of the plates. Within 8 hours, level is required to be restored to above the top of the plates. The Required Compensatory Measure C.2 requirement to

BASES

COMPENSATORY MEASURES (continued)

verify that there is no leakage by visual inspection is taken from Annex D of IEEE Standard 450-2002 (Ref. 2). The required Compensatory Measure C.3 to equalize and perform a service test is taken from Technical Specification Section 5.5.13b. This is performed following restoration of the electrolyte level to above the plates. Completion Time for required Compensatory Measure C.4 to restore electrolyte level to be in range in 31 days is reasonable because measures C.1, C.2, and C.3 demonstrate that the battery is fully capable of providing its design energy. It may be preferable to replace the cell, and exit the condition, when this condition is discovered.

D.1

With one or more batteries with cell temperature less than the minimum established design limits (i.e., 60°F), 12 hours is allowed to restore the temperature to within limits. A low electrolyte temperature limits the current and power available. Since the battery is sized with margin, while battery capacity is degraded, sufficient capacity exists to perform the intended function and the affected battery is not required to be considered inoperable solely as a result of the pilot cell temperature not met.

E.1

Given that redundant batteries are involved, the longer completion times specified for battery parameters not within limits are not appropriate, and the parameters must be restored to within limits on at least one train within 2 hours.

F.1 and F.2

If the float voltage is found outside required range, the voltage is verified to be greater than or equal to the minimum established design voltage (26.0 VDC), which maintains the battery in an operable condition, and the float voltage returned to be within range. Two hours is considered a reasonable amount of time to perform the required verification of minimum float voltage. A battery that is greater than or equal to minimum float voltage does not lose capacity over a short period of time, thus 24 hours is an acceptable amount of time to return the float voltage to the required range.

BASES

COMPENSATORY MEASURES (continued)

G.1 and G.2

The electrolyte level range of greater than low level mark and ≤ 1/4" above high level mark is specified to maintain level for optimum battery performance. If the level is found outside this range, level is verified to be greater than or equal to low level mark and level is returned to within normal range in a reasonable amount of time (2 hours and 24 hours, respectively).

H.1 and H.2

The identification of corrosion is a battery monitoring and maintenance value specified to maintain the battery in an optimum condition. If corrosion is identified, the connection resistance is verified to be less than the allowed limits, which maintains the battery in an OPERABLE condition, and the corrosion removed. Degradation due to corrosion is a slow process, thus the 24 hours to verify connection resistance is considered reasonable. With acceptable conductivity, 7 days is a reasonable amount of time to remove the corrosion.

I.1 and I.2

Ventilation is required to keep the battery rooms at an optimum temperature and prevent the accumulation of hydrogen gases as part of the battery monitoring and maintenance program. If the ventilation is found not to be operating, a verification that the room is ≥ 74°F is performed to ensure that the battery room temperature is in the optimum range. A verification that affected battery(s) are not on equalize is performed to prevent accumulation of hydrogen. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. More than 2 days is required to accumulate an explosive amount of hydrogen with all batteries on equalize (assuming no loss of hydrogen from the room). Thus the 24 hours is an acceptable amount of time to verify the batteries are not on equalize.

J.1 and J.2

The 74°F electrolyte temperature limit is an administrative limit to protect against reaching the 60°F design limit. A verification is made that the subject room temperature is ≥ 74°F and the battery cell temperatures is

BASES

COMPENSATORY MEASURES (continued)

restored to 74°F. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. Since the 74°F is an administrative limit, the 24 hours to restore the temperature to be ≥ 74°F is acceptable.

K.1 and K.2

The 2.13 VDC individual cell float voltage limit is a battery monitoring and maintenance value specified to maintain the battery in an optimum condition. If the float voltage is found below this value, the voltage is verified to be ≥ 2.07 VDC, which maintains the battery in an operable condition, and the subject cell's float voltage monitored until it is returned to be ≥ 2.13 VDC. Two hours is considered a reasonable amount of time to perform the required verification that the voltage ≥ 2.07 VDC. A battery cell ≥ 2.07 VDC does not lose capacity over a short period of time, thus the 31 day monitoring period is acceptable.

L.1 and L.2

The 0.1 amp float current limit is a battery monitoring and maintenance value specified to maintain the battery in an optimum condition. If the float current is found above this value, the float current is verified to be ≤ 0.2 amps, which maintains the battery in an operable condition, and the float current restored to ≤ 0.1 amps. Two hours is considered a reasonable amount of time to perform the required verification that the float current is ≤ 0.2 amps. With the float current ≤ 0.2 amps, the battery is considered fully charged and 24 hours is acceptable amount of time to return the float current to ≤ 0.1 amps.

M.1, M.2, M.3 and M.4

The specific gravity limits are battery monitoring and maintenance values specified to maintain the battery in an optimum condition. If the specific gravity is found below these values, the float voltage, float current, and individual cell voltage of all connected cells is verified to be within their limits, which maintains the battery in an OPERABLE condition, and the specific gravity restored to be within limits. Specific gravity is only one indicator of a battery's condition. Twenty-four hours is an acceptable time period to verify the other parameters.

BASES

COMPENSATORY MEASURES (continued)

N.1

When any battery parameter is outside the allowance of the Required Compensatory Measures for Conditions A, B, C, D, or E, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding battery must be declared inoperable.

When a RFO required battery parameter is not met for reasons other than Condition A, B, C, D, or E, such as the performance discharge test described in SR 1.8.6.1.22, sufficient capacity to supply the maximum expected load requirements is not assured and the corresponding battery must be declared inoperable. When any battery parameter is outside the allowance of the Required Compensatory Measures for Conditions A, B, C, D, or E, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding battery must be declared inoperable. Additionally, discovering a battery with one or more battery cells float voltage < 2.07 V and float current > 0.2 amps indicates that the battery capacity may not be sufficient to perform the intended functions. The battery must therefore be declared inoperable immediately.

O.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.8.6.1.1

Verifying battery float current while on float charge is used to determine the state of charge of the battery. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the initial losses of a battery and maintain the battery in a charged state. The float current requirements are based on the float current indicative of a charged battery. Use of the float current to determine the state of charge of the battery is consistent with IEEE 450 (Ref. 2). The 7 day Frequency is consistent with IEEE 450 (Ref. 2).

This SR is modified by a Note that states the float current requirement is not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 1.8.4.1. When this float voltage is not maintained, the Required Compensatory Measure of RFO 1.8.4 Action A are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limit of 0.2 amps is established based on the nominal float voltage value and is not directly applicable when this voltage is not maintained.

The equipment used to monitor battery charging current will have an accuracy of $\pm$ 10% of reading or better.

SR 1.8.6.1.2 and SR 1.8.6.1.13

Optimal long term battery performance is obtained by maintaining a float voltage greater than or equal to the minimum established design limits provided by the battery manufacturer, which corresponds to 26 V for the 24 V batteries at the battery terminals, or 2.17 Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge which could eventually render the battery inoperable. Float voltage < 2.13 but ≥ 2.07 VDC will have an equalization charge applied if appropriate. SRs 1.8.6.1.2 and 1.8.6.1.13 require verification that the cell float voltages are greater than or equal to the short term absolute minimum voltage of 2.07 VDC. The Frequency of cell voltage verification every 31 days for pilot cell and 92 days for each connected cell is consistent with IEEE 450 (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.1.3

The limit specified for electrolyte level ensures that the plates suffer no physical damage and maintains adequate electron transfer capability. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.4

This Surveillance verifies that the pilot cell electrolyte temperature is greater than or equal to the minimum established design limit (i.e., 60°F). Pilot cell electrolyte temperature is maintained above this temperature to assure the battery can provide the required current and voltage to meet the design requirements. Temperatures lower than assumed in battery sizing calculations may act to inhibit or reduce battery capacity. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.5

This Surveillance verifies that the float voltage is in a range that will provide optimum battery condition and life. The 31 day frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.6

This Surveillance verifies that the appearance of the battery, rack and battery area are acceptable. This provides a situation in which problems can more easily be identified and also provides increased industrial safety. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.6.6.1.7

This Surveillance verifies that the electrolyte level is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.1.8

This Surveillance verifies that there are no cracks or leakage that could affect optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.9

This Surveillance verifies that there is no corrosion and cell to cell and terminal connections are coated with anti-corrosion material. This will help maintain optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.10

This Surveillance verifies that the pilot cell's float voltage is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.11

This Surveillance verifies that the pilot cell's electrolyte temperature is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.12

This Surveillance verifies that the float charging current is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.14

This Surveillance verifies that all individual cells' float voltage is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.1.15

This Surveillance verifies that the cell electrolyte temperature of a sample of at least 10% of the battery's cells are in a range that will provide optimum battery condition and life. The 92 day Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.16

This Surveillance verifies that the specific gravity of all connected cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.17

This Surveillance verifies that the average specific gravity of a battery's cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.18

This Surveillance verifies that the electrolyte temperature of all connected cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.19

This Surveillance verifies that the condition of the battery, including its internals, is in a condition that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.20

This Surveillance verifies that the connection resistance of the cell to cell and terminal connections is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.1.21

This Surveillance verifies that the battery rack is in a condition that will provide the required seismic restraint for the battery. The 12 month Frequency is consistent with IEEE 450 (Ref. 2).

SR 1.8.6.1.22

This Surveillance verifies that the capacity of the battery is adequate and the optimum battery condition and life is being maintained. The 60 month Frequency is consistent with IEEE 450 (Ref. 2).

REFERENCES

1. FSAR, Section 8.3.2.1.3.

2. IEEE Standard 450, 2002, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.”

3. Technical Specifications 5.5.13 “Battery Monitoring and Maintenance Program.”

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.6.2 125 and 250 VDC Battery Parameters

BASES

BACKGROUND

Technical Specifications LCO 3.8.6 delineates the limits on battery float current as well as electrolyte temperature, level, and float voltage for the 125 and 250 VDC power source batteries. This RFO requires additional monitoring of various battery parameters based on the recommendations of IEEE Standard 450-2002, "IEEE Recommended Practice for Maintenance Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications" (Ref. 4), as required by the Battery Monitoring and Maintenance Program (Ref. 5). A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for Technical Specifications LCO 3.8.4, "DC Sources Operating."

The battery cells are flooded lead acid construction with a nominal specific gravity of 1.215. This specific gravity corresponds to an open circuit battery voltage of approximately 119.5/239 V for 58/116 cell battery (i.e., cell voltage of 2.06 volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage > 2.06 Vpc, the battery cell will maintain its capacity for 30 days without further charging, per manufacturer’s data. For optimal long-term performance, the manufacturer recommends a float voltage of 2.25 Vpc. This corresponds to a total float voltage output of 130.5 for a 58 cell battery and 261 V for a 116 cell battery as discussed in FSAR, Chapter 8 (Ref. 1, 2, and 3). The required float voltage range is 129 to 132 for the 125 VDC batteries and 258 to 264 for the 250 VDC battery to allow for normal charger voltage variations.

A cell voltage of < 2.07 V under float conditions and not caused by elevated temperature of the cell indicates internal cell problems and may require cell replacement (Ref. 4).

APPLICABLE SAFETY ANALYSES

The 125/250 VDC batteries support the 125 and 250VDC Power Systems. These Systems and the related safety analyses are described in the bases for Technical Specifications LCO 3.8.4.

REQUIREMENTS FOR OPERABILITY

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shutdown the reactor and maintain it in a safe condition after an anticipated operation occurrence or postulated DBA.

BASES

APPLICABILITY	The battery parameters are for the support of the associated DC electrical power subsystem. Therefore, battery parameters limits are required when the associated DC electrical power subsystem is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCS 3.8.4.

COMPENSATORY MEASURES

A.1 and A.2

If the float voltage is found outside this range, the voltage is verified to be greater than the minimum established design voltage (126/252 VDC), which maintains the battery in an operable condition, and the float voltage returned to be within range. Two hours is considered a reasonable amount of time to perform the required verification of the minimum float voltage. A battery greater than minimum float voltage does not lose capacity over a short period of time, thus 24 hours is an acceptable amount of time to return the float voltage to the required range.

B.1, B.2, and B.3

The electrolyte level range between greater than low level mark and ≤ 1/4" above the high level mark is specified to maintain level for optimum battery performance. If the level is found outside this range, level is verified to be greater than or equal to low level mark and level is returned to within normal range in a reasonable amount of time (2 hours and 24 hours, respectively).

With one or more batteries with one or more cells electrolyte level above the top of the plates but below the minimum established design limits (i.e., low level mark), the battery still retains sufficient capacity to perform its intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of electrolyte level not met. Within 31 days, the minimum established design limits for electrolyte level must be re-established.

With electrolyte level below the top of the plates, there is a potential for dryout and plate degradation. Required Compensatory Measure B.2, addresses this potential. It is modified by a Note that indicates it is only applicable if electrolyte level is below the top of the plates. Within 8 hours, level is required to be restored to above the top of the plates by Technical Specification 3.8.6 C.1 and verification of no evidence of leakage is required Technical Specification 3.8.6 C.2. The Required Compensatory Measure B.2 to equalize and perform a service test is taken from Technical Specification Section 5.5.13b. This is performed

BASES

COMPENSATORY MEASURES (continued)

following restoration of the electrolyte level to above the top of the plates. The Completion Time for required Compensatory Measure B.3 to restore electrolyte level to be in range in 31 days is reasonable because measures B.1 and B.2 demonstrate that the battery is fully capable of providing its design energy. It may be preferable to replace the cell, and exit the condition, when this condition is discovered.

C.1 and C.2

The identification of corrosion is a battery maintenance and monitoring value specified to maintain the battery in an optimum condition, If corrosion is identified, the connection resistance is verified to be less than the allowed limits, which maintains the battery in an operable condition, and the corrosion removed. Degradation due to corrosion is a slow process, thus the 24 hours to verify connection resistance is considered reasonable. With acceptable conductivity, 7 days is a reasonable amount of time to remove the corrosion.

D.1 and D.2

For Division 1 and 2 batteries:

Ventilation is required to keep the battery rooms at an optimum temperature and prevent the accumulation of hydrogen gases as part of the battery maintenance and monitoring program. If the ventilation is found not to be operating, a verification that the room is $\geq 74^{o}F$ is performed to ensure that requirements for station blackout are met. A verification that affected battery(s) are not on equalize is performed to prevent accumulation of hydrogen. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. More than 2 days is required to accumulate an explosive amount of hydrogen with all batteries on equalize (assuming no loss of hydrogen from the room). Thus the 24 hours is an acceptable amount of time to verify the batteries are not on equalize.

For Division 3 batteries:

Ventilation is required to keep the battery rooms at an optimum temperature and prevent the accumulation of hydrogen gases as part of the battery maintenance and monitoring program. If the ventilation is found not to be operating, a verification that the room is $\geq 65^{o}F$ is performed to provide assurance that OPERABILITY and reliability is maintained. The $65^{o}F$ electrolyte temperature limit is based on room temperature limits provided in Table 1.7.1-1. A verification that affected

BASES

COMPENSATORY MEASURES (continued)

battery(s) are not on equalize is performed to prevent accumulation of hydrogen. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. More than 2 days is required to accumulate an explosive amount of hydrogen with all batteries on equalize (assuming no loss of hydrogen from the room). Thus the 24 hours is an acceptable amount of time to verify the batteries are not on equalize.

E.1, E.2, and E.3

For Division 1 and 2 batteries:

The 74°F electrolyte temperature limit is based on battery capacity for station blackout (SBO). If this limit is not met, a Condition Report is written immediately to investigate the condition and evaluated functionality for SBO. A verification is made that the subject room temperature is $\geq$ 74°F and the battery cell temperatures are restored to 74°F. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. Since 74°F is an administrative limit, the 24 hours to restore the temperature to be $\geq$ 74°F is acceptable.

For Division 3 batteries:

The 65°F electrolyte temperature limit is based on room temperature limits provided in Table 1.7.1-1. If this limit is not met, a Condition Report is written immediately to investigate the condition. A verification is made that the subject room temperature is $\geq$ 65°F and the battery cell temperatures are restored to 65°F. Two hours is considered a reasonable amount of time to perform the required verification of room temperature. Since 65°F is an administrative limit, the 24 hours to restore the temperature to be $\geq$ 65°F is acceptable.

BASES

COMPENSATORY MEASURES (continued)

F.1 and F.2

The 2.13 VDC individual cell voltage limit is a battery maintenance and monitoring value specified to maintain the battery in an optimum condition. If the float voltage is found below this value, the voltage is verified to be ≥ 2.07 VDC, which maintains the battery in an operable condition, and the subject cell's float voltage monitored until it is returned to be ≥ 2.13 VDC. Two hours is considered a reasonable amount of time to perform the required verification that the voltage ≥ 2.07 VDC. A battery cell ≥ 2.07 VDC does not lose capacity over a short period of time, thus the 31 day monitoring period is acceptable.

G.1 and G.2

The 1 amp float current limit is a battery maintenance and monitoring value specified to maintain the battery in an optimum condition. If the float current is found above this value, the float current is verified to be ≤ 2 amps, which maintains the battery in an operable condition, and the float current restored to be ≤ 1 amp. Two hours is considered a reasonable amount of time to perform the required verification that the float current is ≤ 2 amps. With the float current ≤ 2 amps, the battery is considered fully charged and 24 hours is an acceptable amount of time to return the float current to ≤ 1 amp.

H.1, H.2, H.3, and H.4

The specific gravity limits are battery maintenance and monitoring values specified to maintain the battery in an optimum condition. If the specific gravity is found below these values, the float voltage, float current and individual cell voltage of all connected cells is verified to be within their limits which maintains the battery in an OPERABLE condition, and the specific gravity restored within limits. Specific gravity is only one indicator of a battery's condition. Twenty-four hours is an acceptable time period to verify the other parameters.

BASES

COMPENSATORY MEASURES (continued)

I.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.8.6.2.1

This Surveillance verifies that the float voltage is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.2

This surveillance verifies that the appearance of the battery, rack, and battery area are acceptable. This provides a situation in which problems can more easily be identified and also provides increased industrial safety. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.3

This Surveillance verifies that the electrolyte level is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.4

This Surveillance verifies that there are no cracks or leakage that could affect optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.2.5

This Surveillance verifies that there is no corrosion and cell to cell and terminal connections are coated with anti-corrosion material. This will help maintain optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.6

This Surveillance verifies that the pilot cell's float voltage is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.7

This Surveillance verifies that the pilot cell's electrolyte temperature is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.8

This Surveillance verifies that the float charging current is in a range that will provide optimum battery condition and life. The 31 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.9

This Surveillance verifies that all individual cells' float voltage is in a range that will provide optimum battery condition and life. The 92 day Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.10

This Surveillance verifies that the cell electrolyte temperature of a sample of at least 10% of the battery's cells are in a range that will provide optimum battery condition and life. The 92 day Frequency is consistent with IEEE 450 (Ref. 4).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.6.2.11

This Surveillance verifies that the specific gravity of all connected cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.12

This Surveillance verifies that the average specific gravity of a battery's cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.13

This Surveillance verifies that the electrolyte temperature of all connected cells is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.14

This Surveillance verifies that the condition of the battery and its internals is in a condition that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.15

This Surveillance verifies that the connection resistance of the cell to cell and terminal connections is in a range that will provide optimum battery condition and life. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

SR 1.8.6.2.16

This Surveillance verifies that the battery rack is in a condition that will provide the required seismic restraint for the battery. The 12 month Frequency is consistent with IEEE 450 (Ref. 4).

BASES

REFERENCES

1. FSAR, Section 8.3.2.1.1.

2. FSAR, Section 8.3.2.1.2.

3. FSAR, Section 8.3.2.1.4.

4. IEEE Standard 450, 2002, “IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.”

5. Technical Specifications 5.5.13 "Battery Monitoring and Maintenance Program."

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.7 24 VDC Distribution System

BASES

BACKGROUND

The 24 VDC Distribution System provides power to portions of the Nuclear Instrumentation System, portions of the Radiation Monitoring System, and the Bypass and Inoperable Status Indication (BISI) System.

Separate Division 1 and Division 2 24 VDC Distribution Systems are designed to have sufficient independence, redundancy, and testability to perform their safety functions, assuming a single failure.

The 24 VDC Distribution System supplies power to Source Range Monitors (SRMs), Intermediate Range Monitors (IRMs), Process Radiation Monitors (PRMs) buses and BISI displays. Specifically, 24 VDC Distribution Panel DP-SO-A supplies SRM Channels A and C, IRM Channels A, C, E, G, PRM Bus A, and BISI displays. 24 VDC Distribution Panel DP-SO-B supplies SRM Channels B and D, IRM Channels B, D, F, H, PRM Bus B, and BISI displays.

APPLICABLE SAFETY ANALYSES

The 24 VDC Distribution Systems supply power to the IRM and SRM (Ref. 3) instrumentation, as well as portions of the PRM. The IRM provides inputs to the Reactor Protection System (RPS) to trip the reactor on high neutron flux or inoperable channel. The applicable accident analysis for the IRM trips is discussed in the Technical Specifications for the RPS (Ref. 2).

The IRM inputs to the RPS are designed to initiate a trip on failure of the channel. This design provides for safe operation of the system because loss or failure of the 24 VDC Distribution System will result in protective system action.

The indication portion of the IRM and the remaining systems are used for post accident monitoring and are described in the Post Accident Monitoring, Licensee Controlled Specification 1.3.3.1.

The 24 VDC Distribution System and the systems it supports, with the exception of the IRM trips, are not assumed to function during a design basis loss of offsite power accident.

The 24 VDC Distribution System and the systems it supports, with the exception of the IRM trips, are not used for, or capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

BASES

APPLICABLE SAFETY ANALYSES (continued)

The 24 VDC Distribution System and the systems it supports, with the exception of the IRM trips, are not used to monitor a process variable that is an initial condition of a DBA or a transient.

The 24 VDC Distribution System and the systems it supports, with the exception of the IRM trips, are not part of a primary success path in the mitigation of a DBA or transient.

The 24 VDC Distribution System and the systems it supports, with the exception of the IRM trips, are a non-significant risk contributor to core damage and offsite releases.

REQUIREMENTS FOR OPERABILITY

The Division 1 and Division 2 24 VDC Distribution Subsystems shall be OPERABLE to support equipment required to be OPERABLE. The OPERABILITY requirements of the supported equipment is found in the appropriate equipment specification.

OPERABILITY of the IRM System is discussed in the RPS Technical Specification. OPERABILITY of the remaining supported systems is discussed in the Post Accident Monitoring Specification.

APPLICABILITY

When supported equipment is required to be OPERABLE. The applicability requirements of the supported equipment is found in the appropriate equipment specification.

COMPENSATORY MEASURES

A Note has been provided to modify the Required Compensatory Measures related to the 24 VDC Distribution Subsystem. The Required Compensatory Measures provide appropriate measures for separate inoperable subsystems. As such, a Note has been provided to allow separate Condition entry for each 24 VDC Distribution Subsystem instead of requiring that the Completion Time begin on initial entry into the Condition.

With one or more 24 VDC Distribution Subsystem inoperable, immediately declare those supported technical specification equipment, required to be OPERABLE, as inoperable. Other supported equipment should be evaluated for functionality. OPERABLE 24 VDC Distribution Subsystems require the associated buses to be energized to their proper voltage.

BASES

SURVEILLANCE REQUIREMENTS	<u>SR 1.8.7.1</u> This Surveillance verifies that the 24 VDC Distribution Systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained and power is available to each required bus. The verification of energization of the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. This may be performed by verification of absence of low voltage alarms or by verifying a load powered from the bus is operating. The 7 day Frequency takes into account the redundant capability of the 24 VDC Distribution Subsystems and other indications available in the control room that alert the operator to subsystem malfunctions.
REFERENCES	1. FSAR, Section 8.3.2.1.2. 2. Technical Specification 3.3.1.1. 3. Technical Specification 3.3.1.2.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.9 Circuits Inside Primary Containment

BASES

BACKGROUND	Primary containment electrical penetrations and penetration conductors are protected by either deenergizing power circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection devices by periodic surveillances. Those AC circuits inside primary containment, which are kept normally deenergized, do not participate in plant safety actions. These circuits are primarily for lighting, utility outlets, and convenience power to be used for plant walkdowns, maintenance, and in-situ tests and/or observations. These circuits are non Class 1E.
APPLICABLE SAFETY ANALYSES	The AC circuits inside primary containment are kept normally deenergized and do not participate in plant safety actions. Thus, these circuits have no impact on plant safety systems.
REQUIREMENTS FOR OPERABILITY	The following AC circuits shall be deenergized: a. Circuits off of breakers 2AR and 8AR of E-MC-8C. b. Circuits off of panel E-LP-6BAG. c. Circuits off of panel E-LP-3DAG. d. Circuits off of breakers 2BL, 1D, and 2CR of E-MC-3DA. e. Circuits off of panel E-LP-3DAC circuit no. 19 and 21. f. Circuits off of panel E-LP-6BAC circuit no. 16 and 17. g. Circuits off of panel E-LP-6BAB circuit no. 19.
APPLICABILITY	MODES 1, 2, and 3, except during entries into the drywell. This is consistent with the applicability of other primary containment requirements. Primary containment OPERABILITY is not required in MODES 4 and 5. Additionally, these circuits may be energized to support maintenance activities during outages.
COMPENSATORY MEASURES	<u>A.1</u> With one or more required circuits energized, deenergize the required circuit within 4 hours. This Completion Time is consistent with other primary containment requirements.

BASES

SURVEILLANCE REQUIREMENTS	SR 1.8.9.1 Every 31 days verify that each required circuit is locked, sealed, or otherwise secured in the deenergized position. The 31 day Frequency is acceptable considering the additional administrative controls to assure the required deenergized position is maintained.
REFERENCES	1. FSAR, Section 1.8. 2. FSAR, Section 3.8.2.2.4. 3. FSAR, Section 7.1.2.3. 4. FSAR, Section 8.3.1.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.10 Primary Containment Penetration Conductor Overcurrent Protection

BASES

BACKGROUND	Primary containment electrical penetrations and penetration conductors are protected by either deenergizing power circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overprotection devices by periodic surveillances. The primary feature of these protective devices is to open the control or power circuit whenever the load conditions exceed the present current demands. This is to protect the circuit conductors against damage or failure due to overcurrent heating effects. This ensures the integrity of the containment penetration.
APPLICABLE SAFETY ANALYSES	With failure of the overcurrent protection device it is postulated that the wire insulation will degrade resulting in a containment leak path during a loss of coolant accident (LOCA). Containment overcurrent protection is not a process variable and is not considered as part of the primary success path in the mitigation of a design basis accident (DBA) or transient. However, the failure of a penetration would impact the OPERABILITY of primary containment, which is addressed by Technical Specifications. The specific circuits containing the overcurrent protection devices are not used to monitor a process variable that is an initial condition of a DBA or transient. These specific circuits are not part of a primary success path in the mitigation of a DBA or transient.
REQUIREMENTS FOR OPERABILITY	Each primary containment penetration conductor device shown in Table 1.8.10-1 shall be OPERABLE.
APPLICABILITY	The applicability in MODES 1, 2, and 3 is consistent with requirement for primary containment OPERABILITY requirements.
COMPENSATORY MEASURES	A.1, A.2, and A.3 With one or more required primary containment penetration overcurrent protection devices inoperable, immediately declare the affected component inoperable and deenergize the associated circuit within 72 hours. The associated circuit is to be verified as deenergized every 7 days.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.8.10.1

Perform CHANNEL CALIBRATION of the associated protective relays for a representative sample of ≥ 10% on a rotating basis, of the required 6.9 kV circuit breakers every 24 months.

The SR is modified by a Note that for each circuit breaker that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all circuit breakers have been tested.

SR 1.8.10.2

Perform LOGIC SYSTEM FUNCTIONAL TEST for a representative sample of ≥ 10% on a rotating basis, of the required 6.9 kV circuit breakers, including breaker actuation, every 24 months.

The SR is modified by a Note that for each circuit breakers that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all circuit breakers have been tested.

SR 1.8.10.3

Inspect and perform preventive maintenance on each associated circuit breaker every 60 months.

REFERENCES

1. FSAR, Sections 7.1.2.3 and 8.3.1.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.11 Motor Operated Valve (MOV) Thermal Overload Protection

BASES

BACKGROUND	For valves with thermal overload protection (i.e., trip on overload condition), the valve function should be accomplished prior to overload trip. The overload protection for these valves is meant to take precedence over the valve function. If the overload condition occurs during valve operation, the electric circuit will open to protect the equipment. In case of failure of the overload protection operation to disconnect the load, the equipment may suffer potential damage. Motor thermal overloads for Class 1E MOVs are selected two sizes larger than the normally selected thermal overload. (This approximates 140% of motor full load amperage.) Selection of overloads in this range permits Class 1E MOVs to operate for extended periods of time at moderate overloads; tripping occurs just prior to motor damage.
APPLICABLE SAFETY ANALYSES	The trip setpoints of the MOV thermal overload protection devices provide sufficient margin to ensure completion of the safety function. The thermal overload protection devices are tested periodically to ensure reliability and to verify the accuracy of the trip point in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.
REQUIREMENTS FOR OPERABILITY	The thermal overload protection for each MOV shown in Table 1.8.11-1 shall be OPERABLE.
APPLICABILITY	Whenever the MOV is required to be OPERABLE.
COMPENSATORY MEASURES	<u>A.1 and B.1</u> With one or more MOV thermal overloads inoperable, continuously bypass the inoperable MOV thermal overload within 8 hours. If the thermal overload is not bypassed, the MOV must be declared inoperable and any applicable Required Compensatory Measures (because the MOV is inoperable) must be taken.

BASES

SURVEILLANCE REQUIREMENTS	SR 1.8.11.1 Every 24 months perform a CHANNEL CALIBRATION of a representative sample of ≥ 25% on a rotating basis, on the MOV thermal overloads.
REFERENCES	1. FSAR, Section 8.3.1.1.9.

B 1.9 REFUELING OPERATIONS

B 1.9.1 Refueling Platform

BASES

BACKGROUND

The interlocks designed to restrict the operation of the refueling equipment to prevent the reactor from achieving criticality during refueling are described in the Technical Specifications. Other interlocks are provided on the refueling platform to prevent damage to the refueling equipment, fuel, and core internals. A detailed discussion of these interlocks and limits is contained in Reference 1.

To prevent damage to the refueling platform hoists (main, frame mounted auxiliary, and monorail hoists), the fuel and the vessel internals, the hoists have a load limit cutoff. These cutoffs will stop upward hoist movement when the load is greater than the limit setting. This prevents lifting a load that is in excess of the design of the hoist. This also prevents damage to vessel internals or fuel being lifted should it become stuck.

To prevent inadvertently lifting radioactive material out of the water, the frame mounted and monorail hoists have upward travel limits. These upward travel limits will stop the upward movement of the hoist while there is still adequate water shielding between the load and the refueling pool surface.

To prevent lowering the mast and damaging reactor internal components, the main hoist has a lower travel limit. The main hoist has a telescoping mast that could come in contact with reactor internals if allowed to extend too far. The limit on main hoist travel prevents the operator from extending the mast into reactor internal equipment.

To prevent inadvertently un-grappling a stuck fuel assembly and to prevent damage to the cable by unwinding it from the drum by continuing to lower it after the load is removed from the cable, a slack cable cutoff is provided on the main hoist. To provide the interlocks that prevent rod motion with fuel on the refueling hoist with the bridge over the core (described in Technical Specifications), there are load sensing switches on all of the hoists, with redundant switches on the main hoist. These interlocks are used to sense a load on the hoists which is indicative of moving fuel. These interlocks are used to provide a signal to the Reactor Manual Control System that will block rod movement with the refueling platform over the core or prevent moving the refueling platform over the core with a rod withdrawn.

The applicable refueling platform interlocks are checked prior to use for refueling as described in Reference 3.

BASES

APPLICABLE SAFETY ANALYSES	The refueling interlocks are explicitly assumed in the Final Safety Analysis Report (FSAR) analysis of the control rod removal error during refueling (Ref. 4). The Technical Specification Bases discuss the safety analyses for the refueling platform interlocks that prevent a rod removal error. This section will discuss the refueling platform interlocks that are provided to protect the equipment from damage due to an operational error. The refueling platform interlocks are not used for or capable of detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA). The refueling platform and associated instrumentation is not used to monitor a process variable that is an initial condition of a DBA or a transient. The refueling platform and associated instrumentation is not part of a primary success path in the mitigation of a DBA or transient. The refueling platform and associated instrumentation was found to be a non-significant risk contributor to core damage and offsite releases.
REQUIREMENTS FOR OPERABILITY	Any functions of the refueling platform being used to move fuel assemblies or control rods shall be OPERABLE.
APPLICABILITY	The refueling platform and associated interlocks are required to be OPERABLE for the hoist being used during movement of fuel assemblies or control rods within the reactor pressure vessel. Equipment that is not being used is not required to be OPERABLE.
COMPENSATORY MEASURES	With the refueling platform and associated interlocks inoperable, immediately suspend all movement of fuel assemblies and control rods within the reactor pressure vessel with the refueling platform. (NOTE: This measure does NOT prevent placing the load in a safe location prior to suspension). A Note has been added that specifies fuel handling shall not be performed using the frame mounted or monorail auxiliary hoists. The design function of the frame mounted and monorail auxiliary hoists do not include fuel handling. The Note ensures this limitation is preserved.

BASES

SURVEILLANCE REQUIREMENTS	<u>SR 1.9.1.1 through SR 1.9.1.8</u> Verifying that the refueling platform interlocks function once within 7 days of using the equipment ensures that the equipment will be protected against improper operation. This Frequency is based on engineering judgment and equipment history.
REFERENCES	1. Letter GO2-93-191, dated July 29, 1993, "Refueling Platform Load Limits". 2. FSAR, Section 9.1.4. 3. FSAR, Section 9.1.4.2.10.2.1.4. 4. FSAR, Section 15.4.1.1. 5. FSAR Section 15.7.4.

B 1.9 REFUELING OPERATIONS

B 1.9.2 Crane Travel

BASES

BACKGROUND	To prevent transporting loads over the spent fuel storage pool that are greater than the allowed load limit, the crane travel is restricted by interlocks (Ref. 1). These interlocks are established so that the crane will stop if an attempt is made to transport material over the spent fuel storage pool. The interlocks are bypassed only when it is necessary to operate the crane in the fuel pool area in conjunction with activities associated with fuel handling and storage. During the occasions when the interlocks are bypassed, administrative controls are used to prevent the crane from carrying loads that are not necessary for fuel handling or storage, and which are in excess of the rack design drop load (one fuel assembly at four feet above the top of the fuel rack) (Ref. 2). Load limits are applied to the loads carried over the spent fuel. Loads over a given weight are limited as to the height that they can be carried over the spent fuel storage pool. An exception to the load and height restrictions is made for the cavity in-vessel service platform (CISP). Portions of the CISP are allowed to temporarily extend over the spent fuel racks during the physical transport of the platform to and from its assembly and inspection areas. Movement of the CISP is subject to the limits that are established to prevent contacting the spent fuel storage racks described in the RFO.
APPLICABLE SAFETY ANALYSES	The restriction on movement of loads in excess of the nominal weight of a fuel assembly over other fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be limited to that assumed in the fuel handling accident (Ref. 3); and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses. The most severe fuel handling accident from a radiological viewpoint is dropping a fuel assembly onto the top of the core. This accident analysis bounds the accident for a dropped fuel assembly over the spent fuel pool (Ref. 3). The ability to withstand a dropped fuel bundle is included in the design of the spent fuel racks (Ref. 4).

BASES

APPLICABLE SAFETY ANALYSIS (continued)

An exception to the load and height restrictions is provided for the transport of the CISP. The size of the fully assembled CISP prohibits its transport past the spent fuel pool without a portion of the platform extending over the spent fuel racks.

However, with only a portion of the body of the CISP over the spent fuel pool, the inspection platform will not fall into the pool in the case of a load drop accident. Further, because of the single failure proof nature of the reactor building crane, and the use of NUREG-0612 compliant rigging, a load drop of the CISP into the spent fuel pool is not a credible accident (Ref. 5).

REQUIREMENTS FOR OPERABILITY

The load and height of a load, other than the CISP, over the spent fuel pool shall be within the limits of the graph (Figure 1.9.2-1). Crane travel with the CISP shall not extend more than 7 feet over the spent fuel pool and shall not exceed a height of 6 feet above the refueling floor.

APPLICABILITY

The load and load height limits are required whenever there is irradiated fuel in the spent fuel pool.

COMPENSATORY MEASURES

A note has been added to state that the requirements of RFO 1.0.3 are not applicable.

When the load, height or distance limitations are not met, immediately initiate actions to move the crane load from over the spent fuel storage pool racks.

SURVEILLANCE REQUIREMENTS

SR 1.9.2.1

The system functional test involves demonstrating that the crane interlocks and physical stops that prevent crane hook travel over fuel assemblies in the spent fuel pool rack are OPERABLE.

This Surveillance Requirement is only required when the crane is in use. Verifying crane travel limits function every 7 days when the crane is in use ensures that the equipment will be protected against improper operation.

SR 1.9.2.2

Verification is made to ensure the CISP does not extend over the spent fuel pool by 7 feet or more.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.9.2.3

Verification is made to ensure the CISP is not greater than 6 feet above the refueling floor.

REFERENCES

1. FSAR, Section 9.1.2.3.3.
2. FSAR, Section 9.1.2.3.2.
3. FSAR, Section 15.7.4.
4. FSAR, Section 9.1.2.1.1.1.
5. FSAR, Section 9.1.4.2.5.11.

B 1.10 FIRE PROTECTION

B 1.10.1 Essential Fire Suppression Water Supply

BASES

BACKGROUND

The normal fire suppression water supply systems consist of a primary and a secondary supply.

The primary fire suppression water supply consists of:

- the circulating water pump house inlet basin,
- a flow path from the circulating water basin to the yard fire main ring header, and
- two of the three fire pumps FP-P-2A, FP-P-2B and/or FP-P-1.

The secondary fire suppression water supply consists of:

- a bladder type water tank, FP-TK-110,
- flow path from FP-TK-110 to the yard fire main ring header, and
- one diesel driven pump (FP-P-110).

All electrically driven fire pumps are inoperable during loss of offsite power. Both diesel driven pumps will start automatically upon loss of offsite power, to maintain yard fire main water pressure.

APPLICABLE SAFETY ANALYSES

Availability of two separate water supplies is part of the defense-in-depth design of the fire suppression water supply systems and is consistent with guidance in References 1 and 3. Each supply provides sufficient water volume and flow rate for 2 hours of fire fighting at a design rate of 2372 gpm, i.e., one 500 gpm hose stream, plus the maximum sprinkler demand of 1872 gpm, as could be required by the plant area with largest suppression demand. The essential fire suppression water supply system is provided to protect equipment required to ensure post fire safe shutdown capability and provides the necessary defense-in-depth during shutdown.

REQUIREMENTS FOR OPERABILITY

Two fire suppression water supplies must be OPERABLE to ensure continuing system operability in the event of a worst case single active failure. Minimum requirements for operability are as follows:

Primary Water Supply System

- At least 300,000 gallons of water must be available from the circulating water basin.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

- Two of three fire pumps drawing from the circulating water basin (FP-P-1, FP-P-2A, and FP-P-2B) must be capable of developing ≥ 108 psi, while delivering ≥ 2000 gpm.

- The flow path from the circulating water basin through the yard fire main ring header and system branch lines must be OPERABLE.

Secondary Water Supply System

- At least 284,640 gallons of water must be available in bladder tank FP-TK-110.

- Fire pump FP-P-110 must be capable of developing ≥ 140 psi, while delivering ≥ 2500 gpm.

- The flow path from the bladder tank through the yard fire main ring header and system branch lines must be OPERABLE.

Backup Water Supply

The requirements for a backup water supply are as follows:

- The available water supply volume must be at least 284,640 gallons. The backup water supply volume need not be from redundant sources.

- The total backup water flow capability must be capable of developing at least 2372 gpm without exceeding 175 psi.

- If backup pump(s) are not part of the permanent plant equipment, the backup water supply pump(s) must be: 1) continuously manned, with the operator in radio contact with the control room and able to immediately start the pump(s); 2) pump run continuously; or 3) pump is capable to auto start on loss of system pressure below 120 psi.

- A water flow path must be established from the backup water supply to the yard fire main ring header by connecting fire hose to fire hydrants and/or Circulating Water Pump House (CWPH) fire water test manifold.

BASES

REQUIREMENTS FOR OPERABILITY (continued)

Scope of Flow Path

For surveillance purposes, an OPERABLE “flow path” is capable of taking suction from the credited water storage source and transferring the water to the yard fire main ring header, to the individual system branch lines and to the sprinkler isolation valves and/or the standpipe isolation valves. For operability purposes, the essential water supply system ends at the yard post-indicator valve that isolates each branch line feeding into the plant or to other buildings. Closure of a branch line post-indicator valve or other downstream isolation valves only impacts operability of essential preaction sprinkler systems (per LCS 1.10.2) and/or essential fire hose stations (per LCS 1.10.3). Closure of a single sectional post-indicator valve on the yard fire main (not water supply lines feeding the yard fire main) does not impair the essential fire suppression water supply system, since hydraulic system analysis is done via the most remote flow route. See References 4 and 5.

Closure of more than one sectional post-indicator valve on the yard fire main requires review to determine if the essential water supply system is impaired. Closure of a yard hydrant isolation valve impacts hydrant operability per LCS 1.10.4, but does not affect essential water supply system operability per LCS 1.10.1.

APPLICABILITY

The requirement to have two OPERABLE supply systems at all times ensures post-fire safe shutdown in MODES 1, 2, and 3 and provides the necessary defense-in-depth during shutdown.

COMPENSATORY MEASURES

The Compensatory Measures are modified by a note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met:

1. The SSE is impaired and restored during the performance of an approved surveillance, test or maintenance task which specifically directs the impairment restoration; and

2. The SSC is continually attended (at least within line of sight); and

3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and

4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

BASES

COMPENSATORY MEASURES (continued)

A.1

With a single water supply inoperable, there is sufficient water volume and flow available on-site to support worst case fire fighting efforts. However, overall reliability is reduced because a single failure in the remaining OPERABLE source would result in insufficient fire fighting capability.

The immediate processing of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

A.2

Compensatory Measures must be implemented to reduce challenges to the OPERABLE water supply system if the inoperable water supply system cannot be restored to OPERABLE status within the 7 day Completion Time. The 7 day Completion Time to restore the water supply system to OPERABLE status is appropriate based on one water supply still available and operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.1

The most critical plant areas that rely on the fire suppression water supply as part of the safe shutdown compliance strategy are those that contain redundant essential post-fire safe shutdown circuits with one division protected by 1-hour rated raceway fire barriers. Limiting ignition source work in these locations within 24 hours reduces the likelihood of postulated fires, thereby reducing the likelihood that the water supply system will be required to perform its intended function. This compensatory measure is documented on the Fire Protection System Impairment Permit from Compensatory Measures A.1.

B.2

The offsite fire department may be required to respond to provide backup water supply method if both water supply systems are out of service and should be made aware of deficiencies in one water supply system within 24 hours to increase the readiness of response to potential deficiencies in the OPERABLE system. This compensatory measure is documented on the Fire Protection System Impairment Permit from Compensatory Measures A.1.

BASES

COMPENSATORY MEASURES (continued)

C.1

With two required essential water supplies inoperable, action must be initiated to restore the system to OPERABLE status to ensure that the inoperable condition is addressed immediately. Immediate processing of a Fire Protection System Impairment Permit required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

C.2

Establishing a backup water supply system restores the equivalent of a single OPERABLE water supply subsystem and enters Compensatory Measure A.1. See REQUIREMENTS FOR OPERABILITY section for more details. The 24 hour Completion Time is based on the lack of onsite capability to fight fires while still having the response capability of the local offsite fire department, and operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

The most probable scenario where a backup water supply would be needed is with FP-P-110 inoperable and two of the three CWPH pumps inoperable. Based on this scenario, the following is the backup water supply:

- Credit the OPERABLE CWPH 2,000 gpm fire pump.
- Station a portable water pump (e.g., offsite fire department pumper truck, or other) to either:
    - Draft from the circulating water basin and connect two hoses to the CWPH fire water test manifold. Open FP-V-34, FP-V-3, and applicable manifold valves; OR
    - Draft from Cooling Tower (2B suggested) and connect two hoses to a fire hydrant (FP-HT-2B suggested), with hydrant valve open.

With FP-P-1, FP-P-110, FP-P-2A, and FP-P-2B inoperable, the following is the backup water supply:

- Draft from the circulating water basin using a portable water pump. Connect multiple hoses to the CWPH fire water test manifold. Open FP-V-34, FP-V-3, and applicable manifold valves; AND

BASES

COMPENSATORY MEASURES (continued)

- Draft from Cooling Tower (2B suggested) using a portable water pump. Connect multiple hoses to fire hydrant (FP-HT-2B suggested), with hydrant valve open.

D.1

If in Mode 1, 2 or 3 and the backup fire suppression water system of Compensatory Measures C.2 cannot be established within 24 hours, actions shall be taken within 1 hour to initiate plant shutdown.

The initial 1 hour period is similar to TS 3.0.3. Where corrective measures are completed that permit operation in accordance with RFF 1.10.1, completion of the actions required by RFF 1.10.1 is not required (similar to TS 3.0.3). The allowed Completion Times are based on the importance of having fire suppression water available for post-fire safe shutdown capability.

SURVEILLANCE REQUIREMENTS

SR 1.10.1.1

Verifying the quantity of water available in the circulating water basin (primary supply) is at least 300,000 gallons, and bladder tank (secondary supply) FP-TK-110 is at least 284,640 gallons ensures that fire fighting can be conducted for at least two hours at the design water flow rate. It also provides early warning of conditions that may lead to inoperability of either water source if no action is taken to address an impending deficiency. The available water volume is checked frequently to verify the continuing ability to fight worst-case fires. The 24 hour Frequency is consistent with routine checks performed on operator tours and is reasonable based on operating experience.

SR 1.10.1.2

Verifying that fuel tanks for diesel driven fire pumps FP-P-1 and FP-P-110 have at least 150 gallons of diesel fuel confirms that each tank contains enough fuel to support operation of their respective diesel engines for at least 8 hours. The available fuel oil quantity is to be checked frequently to verify the continuing ability to fight worst-case fires, in event of a loss of electrical power. The 24 hour Frequency is consistent with routine checks performed on operator tours and is reasonable based on operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.1.3

Periodic starting of the two diesel driven fire pumps from ambient conditions ensures that they are capable of pumping water from their respective water sources during seasonal variations in temperature and humidity. The 30 minute minimum run time is based on Reference 2. The 30 day Frequency is reasonable based on operating experience.

SR 1.10.1.4

Verifying the levels of electrolyte in the batteries used in starting the diesel driven fire pumps are above the plates, that specific gravity is ≥ 1.2 (corrected to 77°F and full electrolyte level), and float voltage is at least 12 VDC (FP-BO-110A/B) and 24 VDC (FP-BO-1A/B) ensures that the battery chargers are functioning correctly, and the batteries have adequate energy storage to start the diesel pumps if required. The 30 day Frequency is reasonable based on operating experience.

SR 1.10.1.5

Periodic operation of electrically driven fire suppression pumps FP-P-2A and FP-P-2B at ambient conditions ensures that they are capable of starting and pumping water from the circulating water basin. The 10 minute minimum run time is based on Reference 2. The 30 day Frequency is reasonable based on operating experience.

SR 1.10.1.6

Verifying the correct position of valves in the fire suppression water system flow paths ensures proper system lineup for fire fighting service. The 92 day Frequency is reasonable based on operating experience.

SR 1.10.1.7

Periodic flushing of the fire suppression (yard main) header ensures corrosion products will not accumulate to the degree that would jeopardize operation of sprinkler systems and fire hoses. The 12 month Frequency is reasonable based on operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.1.8

Periodic exercising of valves in the fire suppression water supply system flow path which are testable during current plant operational mode verifies the operability of the valves and indicates if routine repair or replacement is needed. The scope of valves tested is those valves that could significantly reduce the water supply to fire protection systems. The 12 month Frequency is reasonable based on operating experience.

SR 1.10.1.9

Periodic verification of the material condition of the batteries, battery racks and battery-to-battery terminal connections ensures that acid fumes have not corroded the electrical connections, and that no degradation has occurred during routine operations. The 18 month Frequency is reasonable based on operating experience.

SR 1.10.1.10

Periodic system functional testing ensures continuing overall operability of system automatic operation and fire pump performance. Automatic valves must move to the proper position to prevent flow diversion. Fire pumps must provide the minimum flow at rated pressure and start at the specified pressure and time delay to ensure staggered, sequential starting. Testing of sequential starting features is performed separately for the redundant primary and secondary water supply systems. The minimum pressure requirement (95 psig) is based on an unobstructed flow path and a supply pressure above the minimum required at maximum load that is adequate to supply the required maximum system demand. The 18 month Frequency is reasonable based on operating experience.

SR 1.10.1.11

Periodic exercising of system valves in the fire suppression water supply system flow path which are not Accessible for testing during normal plant operation, ensures the continuing operability of the valves and allows for routine repair or replacement if needed, under the maintenance program. The surveillance of valves in the flow path is those valves that could significantly reduce the water supply to fire protection systems. The 24 month Frequency is reasonable based on operating experience and coincides with the 24 month operating cycle where radiation levels drop to allow access.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.1.12

Periodic functional testing of standpipe vacuum-breaker valves or replacing with a tested vacuum breaker ensures that the Fire Protection System is adequately protected from void-collapse water hammer. The 5 year Frequency is reasonable, based on the design and reliability of these valves, and because only one of the two valves is credited with providing the required protection (second valve is redundant).

SR 1.10.1.13

Periodic verification of the loss-of-power auto-start capability ensures that each diesel driven fire pump starts within the preset time delay period. The 5 year Frequency is reasonable based on operating experience.

SR 1.10.1.14

Flow testing ensures the overall water supply system has not significantly degraded and that the yard fire main can be relied on to service the sprinklers and fire hoses as designed. Flow tests are made at flows, as practicable, that represent those flows expected during a fire for the purpose of comparing the friction loss characteristics of the pipe with those expected for the particular type of pipe involved, age of the pipe, and results of previous flow tests. Significant deterioration of available water flow and pressure require investigation and correction. The 5 year Frequency is prescribed by Reference 2.

REFERENCES

1. FSAR Appendix F.2.4.1.

2. NFPA 25, Section 7.3.1, 2008 Edition.

3. FSAR Appendix F, Table F.3-1.

4. M932-1, Fire Main Ring Header.

5. M515-1, Flow Diagram- Fire Protection System.

B 1.10 FIRE PROTECTION

B 1.10.2 Essential Sprinkler Suppression

BASES

BACKGROUND	The essential sprinkler suppression systems consist of three automatic preaction sprinkler systems, as summarized below. These systems are supplied with water by Fire Suppression Water Supply System branch piping extensions from the yard main ring header. The system designator for preaction sprinkler systems is (P). See References 1, 2, and 3. Essential sprinkler suppression systems protect (1) the radwaste building cable chase and corridors east of the radwaste building and north of the diesel generator building, (2) diesel generator DG-1A and day tank room, and (3) diesel generator DG-1B and day tank room. These systems are automatically actuated by fire detection, which opens the alarm valve to flood the piping. If area temperatures rise sufficiently, the sprinklers will then open to suppress the fire.
APPLICABLE SAFETY ANALYSES	Essential sprinkler suppression systems are provided to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The requirement to have essential sprinkler suppression systems OPERABLE at all times ensures post-fire safe shutdown in MODES 1, 2, and 3 and provides the necessary defense-in-depth during shutdown.
COMPENSATORY MEASURES	The Compensatory Measures are modified by a note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met: 1. The SSC is impaired and restored during the performance of an approved surveillance, test or maintenance task which specifically directs the impairment restoration; and 2. The SSC is continually attended (at least within line of sight); and 3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and 4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

BASES

COMPENSATORY MEASURES (continued)

A.1 and B.1

With one or more essential sprinkler suppression system inoperable, immediate action must be initiated to restore the system to OPERABLE status. The preparation of a Fire Protection System Impairment is required for administrative tracking of the impairment and identifies the appropriate work action initiated to restore operability.

A.2

Establishment of a Continuous Fire Tour with backup fire suppression equipment restores the capability to detect and suppress fires in the area affected by the inoperable system. The minimum acceptable backup suppression equipment is a single 20 lb dry-chemical extinguisher, in addition to the existing plant extinguishers. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

A.3.1

Alternatively, manually flooding the normally dry preaction sprinkler piping opens the alarm valve such that any fire would actuate sprinkler heads, releasing water to suppress the fire. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

A.3.2 and B.2

Initiation of an hourly fire tour establishes the ability to detect fires and take appropriate action if necessary. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

C.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional

BASES

COMPENSATORY MEASURES (continued)

status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.10.2.1

Verifying the position of valves in the system flow path ensures that the sprinkler suppression systems are configured for fire fighting service. The 92 day Frequency is reasonable based on operating experience.

SR 1.10.2.2

Periodic exercising of system valves ensures their continuing operability and indicates if repair or replacement is necessary. The 12 month Frequency is reasonable based on operational experience.

SR 1.10.2.3

Periodic system functional testing verifies operability of the sprinkler suppression systems and support fire detection. This test simulates automatic actuation of the systems and verifies each automatic valve in the sprinkler systems flow path actuates to the correct position upon initiation of a fire detection signal. The 18 month Frequency is reasonable based on the impact of the test on plant operations and operational experience.

SR 1.10.2.4

Visual inspection of sprinkler suppression system headers ensures that degradation of the piping is identified in a timely manner. The 24 month Frequency is reasonable based on operational experience.

REFERENCES

1. FSAR Appendix F.2.4.3.
2. FM892-7, -8, -9, -11, Sprinkler and Hose Station Plans.
3. M515-5, Flow Diagram - Fire Protection System.

B 1.10 FIRE PROTECTION

B 1.10.3 Essential Fire Hose Stations

BASES

BACKGROUND	Essential fire hose stations are those located in the reactor building stairwells, the radwaste building stairwells, the diesel generator building, and corridors between these buildings are listed in Table 1.10.3-1 of the LCS. Water is supplied to the fire hose stations from standpipes. See References 1, 2, and 3. Fire hose stations are provided for manual fire fighting activities.
APPLICABLE SAFETY ANALYSES	Fire hose stations are provided to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The requirement to have essential fire hose stations OPERABLE at all times when at least one of the three available essential fire suppression water supply systems (primary, secondary, or backup), is OPERABLE, ensures the capability to fight fires to ensure post-fire safe shutdown in MODES 1, 2, and 3 and provide the necessary defense-in-depth during shutdown. If the entire LCS 1.10.1 Essential Fire Suppression Water Supply System is inoperable, water will not be available to the fire hose stations and LCS 1.10.3 is not applicable.
COMPENSATORY MEASURES	The Compensatory Measures are modified by a Note clarifying the Table 1.10.3-1 suggested backup hose length and hose station is based on a single inoperable hose station. When more than one hose station is inoperable, alternative hose stations and hose lengths may be required to satisfy Required Compensatory Measure A.2. Any nearby operable hose station can be the backup. The Compensatory Measures are modified by a second Note identifying that Required Compensatory Measure A.2 is not required for inoperable FP-HS-RB30, when both FP-HS-RB-11 and FP-HS-RB21 are operable. FP-HS-RB11 and FP-HS-RB21 have adequate hose to reach the area of the reactor building covered by FP-HS-RB30. The Compensatory Measures are modified by a third note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met: 1. The SSC is impaired and restored during the performance of an approved surveillance, test, or maintenance task which specifically directs the impairment restoration; and 2. The SSC is continually attended (at least within line of sight); and

BASES

COMPENSATORY MEASURES (continued)

3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and

4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

A.1

With one or more essential fire hose station inoperable, immediate action must be initiated to restore the system to OPERABLE status. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

A.2

With one or more essential fire hose station inoperable, equivalent manual fire fighting capability must be provided to reach the plant areas unprotected by the inoperable hose station. Equivalent manual fire fighting capability is provided by staging fire hose and a nozzle at an adjacent OPERABLE hose station that reaches the areas protected by the inoperable hose station. Table 1.10.3-1 lists the suggested backup hose station and the required hose length. To minimize hose twisting during uncoiling, the staged hose need not be connected to the gated wye valve. The 2 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

A.3

A sign must be posted at the OPERABLE hose station to minimize potential confusion in the event that manual fire fighting becomes necessary. The sign must identify the inoperable hose station number and a description of the plant area the staged hose is providing coverage. The 2 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

BASES

COMPENSATORY MEASURES (continued)

A.4

Signs must be posted at the inoperable hose station to minimize potential confusion in the event that manual fire fighting becomes necessary. The sign should identify which OPERABLE hose station have been set up to provide the backup coverage. The 2 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.10.3.1

Periodically checking the inventory of each essential fire hose station ensures readiness for manual fire fighting service. The inventory includes:

- 150 feet of 1½ inch fire hose
- Hose nozzle with shutoff valve
- Single 2½ inch to two 1½ inch gated wye adaptor
- Hose station wrench
- Two spanner wrenches

An alternative method of inventory inspection is verifying the hose cabinet tamper seal is intact.

The 92 day Frequency is reasonable since these stations are normally sealed to prevent removal of items from the inventory and is consistent with operational experience.

SR 1.10.3.2

Verifying each hose station has the appropriate material condition of hoses and gaskets confirms readiness of the fire hose stations for service. This surveillance consists of:

- Remove all fire hose from rack and inspect for degradation.

- Inspect each fire hose coupling gasket for degradation.

The 18 month Frequency is consistent with operational experience.

SR 1.10.3.3

Verifying hose station operability further confirms readiness of the fire hose stations for service. This surveillance consists of:

- Partially open each essential hose station valve to verify the valve is OPERABLE and has no major flow blockage. Full flow is not required.

- Replace fire hoses with hoses hydraulically tested to a pressure of ≥ 225 psi which is based on a maximum system operating pressure of 175 psig plus 50 psig. The replacement hoses must have been hydraulically tested within 1 month of installation.

The 3 year Frequency is consistent with operational experience.

BASES

REFERENCES

1. FSAR Appendix F.2.5.3.
2. NFPA 14-1974.
3. M515-4 & -5, Flow Diagram – Fire Protection System.

B 1.10 FIRE PROTECTION

B 1.10.4 Essential Yard Fire Hydrants and Hydrant Hose Equipment

BASES

BACKGROUND	Essential yard fire hydrants are located outdoors throughout the yard area to support manual fire fighting activities in the event of a fire. Water is supplied to these hydrants and hose houses from the underground yard fire main. See References 1, 2, and 3. Hydrant hose equipment consists of a mobile fire response vehicle loaded with fire hoses, nozzles, and other equipment to properly operate a fire hydrant.
APPLICABLE SAFETY ANALYSES	Essential yard hydrants and hydrant hose equipment are provided to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The requirement to have essential yard hydrants and hydrant hose equipment OPERABLE at all times when at least one of the three available essential fire suppression water supply systems (Primary, secondary, or backup) is OPERABLE, ensures the capability to fight fires to ensure post-fire safe shutdown in MODES 1, 2, and 3 and provide the necessary defense-in-depth during shutdown. If the entire LCS 1.10.1 Essential Fire Suppression Water Supply System is inoperable, water will not be available to the fire hydrants and LCS section 1.10.4 is not applicable.

COMPENSATORY MEASURES

The Compensatory Measures are modified by a note that says where Condition A is not met, Compensatory Measure D.2 is only required if hydrants FP-HT-1M or FP-HT-1N are inoperable. Hourly fire tour of Standby Service Water Pump House 1A and 1B is only warranted if hydrants FP-HT-1M or FP-HT-1N are inoperable.

The Compensatory Measures are modified by a second note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met:

1. The SSC is impaired and restored during the performance of an approved surveillance, test, or maintenance task which specifically directs the impairment restoration; and

2. The SSC is continually attended (at least within line of sight); and

3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and

4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

BASES

COMPENSATORY MEASURES (continued)

A.1

With one or more essential yard fire hydrants inoperable, immediate action must be initiated to restore the system to OPERABLE status. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

A.2

With one or more essential yard hydrant inoperable, equivalent manual fire fighting capability must be provided by staging sufficient fire hoses at an adjacent OPERABLE yard fire hydrant to reach the inoperable hydrant. In the event of a fire, the Fire Brigade brings the hydrant hose equipment which includes additional hose and nozzle to reach all protected areas of the inoperable hydrant. The 24 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.1

With the mobile fire response vehicle inoperable, immediate action must be initiated to restore the system to OPERABLE status. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

B.2

With the mobile fire response vehicle inoperable, equivalent manual fire fighting capability must be provided to transport hydrant hose equipment to the fire scene. Equivalent manual fire fighting capability is provided by staging an OPERABLE backup fire response vehicle with the hydrant hose equipment loaded. The 8 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

BASES

COMPENSATORY MEASURES (continued)

C.1

With the credited hose equipment inventory in the mobile fire response vehicle inoperable or less than the required inventory, immediate action must be initiated to restore the system to OPERABLE status. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

C.2

With the minimum credited hose equipment inventory in the mobile fire response vehicle inoperable or less than the required inventory, manual fire fighting capability must be restored by obtaining or repairing the minimum OPERABLE hydrant hose equipment. The 8 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

D.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

COMPENSATORY MEASURES (continued)

D.2

Where the required Compensatory Measure and associated Completion Time of Condition A, B, or C is not met; establishing an hourly fire tour of Standby Service Water Pump House 1A and 1B is warranted since the Standby Service Water Pump House 1A and 1B is the only plant location with post-fire safe shutdown systems where yard fire hydrants are the primary means of fire suppression. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

SURVEILLANCE REQUIREMENTS

SR 1.10.4.1

Periodically verifying the inventory of the hydrant hose equipment ensures no equipment required for manual fire suppression is missing that could prevent effective fire fighting. Hydrant hose equipment includes a mobile fire response vehicle equipped with at least:

600 ft. - 2.5-in. hose
600 ft. - 1.5-in. hose
3 - 2.5-in. adjustable fog nozzles
6 - 1.5-in. adjustable fog nozzles
6 - hydrant wrenches
12 - coupling spanners
3 - 2.5-in. shut off valves
3 - 2.5-in. x 1.5-in. x 1.5-in. wye valves
6 - 2.5-in. hose washers (spares)
6 - 1.5-in. hose washers (spares)
3 - crowbars

This quantity is based on the equivalent of three hose houses (Ref. 4). Visually ensuring no signs of degradation exist (e.g., vehicle with flat tire, damaged hose, etc) ensures operational readiness. The 6 month frequency is reasonable since this equipment is in the Protected Area and is not expected to be tampered with and is reasonable based on operational experience.

SR 1.10.4.2

Periodically verify that the essential yard fire hydrants have not been damaged, and the hydrant barrels are drained confirms the operability of the hydrants, and that freezing weather will not render the hydrants inoperable. The 12 month Frequency is reasonable based on operational experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.4.3

Verifying the material condition of essential hose house equipment confirms readiness of the hose house equipment for service. This surveillance consists of:

- Inspect fire hose and hose coupling gasket for degradation.
- Replace fire hoses with hoses hydraulically tested to a pressure of ≥ 225 psi (maximum system operating pressure of 175 psig plus 50 psig). The replacement hoses must have been hydraulically tested within 1 month of installation.

The 12 month Frequency is reasonable based on operational experience and is consistent with Reference 5.

SR 1.10.4.4

Periodically flowing water through each essential yard fire hydrant flushes away accumulated foreign debris that could cause blockage of the hydrant and/or nozzle flow. The 12 month Frequency is reasonable based on operational experience.

REFERENCES

1. FSAR Appendix F.2.5.2.
2. M932-1, Fire Main Ring Header.
3. M515-1, Flow Diagram- Fire Protection System.
4. NUREG 0800 Rev. 2, 9.5.1 section C.6.b.7.
5. NFPA 24-1973.

B 1.10 FIRE PROTECTION

B 1.10.5 Essential Fire Rated Assemblies

BASES

BACKGROUND

Essential Fire Rated Assemblies are fire barriers that maintain divisional separation of systems, structures, and components that provide post-fire safe shutdown capability. See Reference 1. They are divided into three categories:

1. Fire Area Boundaries
   - Structural walls/floors/ceilings
   - Penetration seals
   - Fire doors
   - Fire dampers

2. Raceway Fire Barriers
   - Darmatt KM-1 wraps
   - 3M Interam wraps
   - Whittaker fire rated MI cable

3. Fireproof Coatings
   - Thermo-Lag 330-1 on instrument tube supports

See References 2 and 3 for scope of essential fire area boundaries. See References 4 and 5 for scope of essential raceway fire barriers and fireproof coatings.

APPLICABLE SAFETY ANALYSES

Essential Fire Rated Assemblies are provided to protect equipment required ensuring post-fire safe shutdown capability.

APPLICABILITY

Maintaining essential fire rated assemblies OPERABLE at all times protects redundant systems important to post-fire safe shutdown within a fire area and provide necessary defense-in-depth during shutdown.

COMPENSATORY MEASURES

The Compensatory Measures are modified by a Note that says even though the control room staff would be present on one side of the barrier, when a fire area boundary feature of the main control room is inoperable, an hourly fire tour is warranted outside the main control room.

The Compensatory Measures are modified by a second Note that allows no hourly fire tour for up to 8-hours while video monitors or portable fire detection equipment is installed in areas where high radiation levels or

BASES

COMPENSATORY MEASURES (continued)

where contamination exist. Where radiation levels allow, a fire tour should be performed within 2 hours of discovery of the impairment condition to ensure no unnecessary hazards exist.

The Compensatory Measures are modified by a third Note identifying that post-fire safe shutdown systems/structures/components (SSC's) separated or enclosed by the impaired fire barrier, remain OPERABLE due to the Compensatory Measure implemented for the impaired feature. Design bases accidents need not be assumed concurrent with design bases fire events.

The Compensatory Measures are modified by a fourth Note identifying where a new fire rated assembly is determined to be required but not previously installed, can be treated like a breached inoperable fire barrier for purposes of implementing the appropriate Compensatory Measure.

The Compensatory Measures are modified by a fifth note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met:

1. The SSC is impaired and restored during the performance of an approved surveillance, test or maintenance task which specifically directs the impairment restoration; and

2. The SSC is continually attended (at least within line of sight); and

3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and

4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

<u>A.1, B.1, C.1, and D.1</u>

With one or more Essential Fire Rated Assemblies inoperable immediate action must be initiated to restore the inoperable assembly(s) or equipment to OPERABLE status to ensure that the inoperable condition is addressed as soon as practicable. The preparation of a Barrier Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

BASES

COMPENSATORY MEASURES (continued)

A.2 and C.2

With one or more fire rated assemblies, raceway fire barriers or fire proof coatings inoperable, and where there is OPERABLE automatic suppression or detection on at least one side of the barrier (or in the room in the case of raceway fire barriers or fire proof coatings), the establishment of an hourly fire tour provides the capability to detect fires and take appropriate action to protect post-fire safe shutdown capability. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.2 and D.2

With one or more fire rated assemblies, raceway fire barriers or fire proof coatings inoperable, and where there is no OPERABLE automatic suppression or detection on either side of the barrier (or in the room in the case of raceway fire barriers or fire proof coatings), establishing a Continuous Fire Tour restores the capability to detect fires and initiate action to protect post-fire safe shutdown capability. Continuous Fire Tours can be transitioned to hourly fire tours by the installation of temporary fire detection as addressed in administrative impairment procedures. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

C.3

Where a Darmatt or 3M Interam raceway fire barrier is breached (i.e., can see exposed cables or raceway through the barrier opening), a Fire Protection Engineer determines whether any additional Special Compensatory Measures are warranted to supplement the hourly fire tour (Ref. 9). Examples include:

- Notify Operations of the system vulnerability.
- Plug or cover breach with fire resistive material.
- Install temporary fire detection.
- Staging of additional suppression, or
- Any other appropriate action.

BASES

COMPENSATORY MEASURES (continued)

The 24 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize post safe shutdown capability.

E.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.10.5.1

Routine operations require frequent opening and closing of many doors in the plant. Periodic verification that accessible fire doors are closed and undamaged ensures that fire barriers are OPERABLE. This inspection would identify gross physical damage, but a more detailed inspection is performed under SR 1.10.5.2 and SR 1.10.5.3. Equipment hatch fire doors that are elevated above the ground are inspected for physical damage under SR 1.10.5.3. The 7 day Frequency is reasonable based on Reference 6 and operating experience.

SR 1.10.5.2

Personnel access doors are subject to damage and wear during routine operational activities. Inspection of the door, frame, latch mechanism(s), and door closing mechanism will identify damage and excessive wear, allowing for replacement or refurbishment within the Maintenance Program. Some non-standard (not a hollow-metal steel type) fire doors have no moving latch or closing mechanism and these inspections are not required. The 6 month Frequency is reasonable based on Reference 6 and operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.5.3

Equipment hatch fire doors are not frequently operated, but still subject to wear or inadvertent damage during routine operational activities. Periodic verification that these fire doors are undamaged ensures that fire barriers are not inadvertently impaired. Inspection of the door, frame, latch mechanism(s), and door closing mechanism will identify damage and excessive wear, allowing for replacement or refurbishment within the Maintenance Program. Some non-standard (not a hollow-metal steel type) fire doors have no moving latch or closing mechanism and these inspections are not required. Doors R413 and R610 are obstructed by piping and inspection of door closing mechanism are not required. The 12 month Frequency is reasonable based on Reference 6 and operating experience.

SR 1.10.5.4

Penetration seals are typically composed of materials that may be degraded over a period of time. The 18 month Frequency for the 10% sampling assures that all accessible penetration seals are inspected in an overall interval of 15 years. Some inaccessible penetration seals are inspected under SR 1.10.5.7. An additional representative sample of that type shall be inspected if the initial sample contains inoperable seal(s). An additional 10% of the failed seal type shall be inspected, continuing this process until a 10% sample with no degradations is found. The 18 month Frequency is reasonable based on operating experience.

SR 1.10.5.5

Visual inspection of the surface of Accessible structural fire area boundaries, raceway fire barriers (excluding MI Cable), and fireproof coatings will detect inadvertent wear or damage that may occur during routine operations. There are no inaccessible raceway fire barriers or fireproof coatings. Inaccessible structural fire area boundaries are inspected under SR 1.10.5.7. Periodic surveillance of the essential fire rated assemblies is necessary to assure continuing operability, except MI cable, which is not prone to degradation and requires no periodic surveillance. The 18 month Frequency is reasonable based on operating experience.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.5.6

Visual inspection of fire dampers in fire area boundaries ensures that debris will not build up to impede fire damper operation and inadvertent damage has not occurred to impair the fire damper. Performing a functional drop test ensures the fire damper will close and latch. The 8 year Frequency is reasonable based on Reference 7 and operating experience.

SR 1.10.5.7

Structural walls/floors/ceilings and penetration seals where neither side is Accessible during plant operation, but where at least one side of the barrier/seal drops below “High Radiation” during outage, should be inspected from the more accessible side during an outage condition once every 15 years. Visual inspection of the surface of normally inaccessible structural fire area boundaries and penetration seals will detect inadvertent wear or damage that may occur during routine operations. The 15 year Frequency is reasonable based on Reference 8 and SR 1.10.5.4 requirements to inspect each penetration seal at least once per 15 years.

REFERENCES

1. FSAR F.2.2.
2. Drawing FM892 series.
3. Penetration Seal Tracking System (PSTS) Database.
4. Drawing E948 series.
5. Post-Fire Safe Shutdown (PFSS) Fire Wrap Database.
6. FPF 1.3 Item 2.
7. FPF 1.4 Item 6.
8. FPF 1.1 Item 34.
9. NRC Information Notice 97-48 and Regulatory Issues Summary 2005-07.

B 1.10 FIRE PROTECTION

B 1.10.6 Essential Fire Detection

BASES

BACKGROUND	Essential fire detection is designed to identify developing fire conditions in critical plant areas. Signals from these detectors are transmitted to fire alarm panel FP-FCP-1 or FP-FCP-2 in the main control room. The detector types are photoelectric, thermal, and ionization. Photoelectric and ionization detectors are installed in areas containing moderate amounts of combustibles, with limited oil hazards. Thermal detectors are installed in areas with combustible fluids and detect a rise of air temperature, indicating the presence of a fire. See References 1, 2, and 3.
APPLICABLE SAFETY ANALYSES	Essential fire detection is needed to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The requirement to have essential fire detection OPERABLE at all times ensures the capability to detect fires and take action to protect equipment needed for post-fire safe shutdown and provide necessary defense-in-depth during shutdown. Where an essential fire detection zone also covers non-vital areas and only the non-vital portion is inoperable, the essential fire detection zone may be considered OPERABLE.
COMPENSATORY MEASURES	The Compensatory Measures are modified by a Note that requires no Compensatory Measures for inoperable essential fire detection in the main control room. With the main control room continuously manned, hourly fire tour is not required. The Compensatory Measures are modified by a second Note that allows no hourly fire tour for up to 8 hours while installation of video monitors or portable fire detection equipment is installed in areas where high radiation levels or where contamination exist. Where radiation levels allow, a fire tour should be performed within 2 hours of discovery of the impairment condition to ensure no unnecessary hazards exist. The Compensatory Measures are modified by a third Note identifying that inoperable essential fire detection for Zone 66 also requires entry into essential preaction sprinkler system RFO 1.10.2 Condition A. The Compensatory Measures are modified by a fourth note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met:

BASES

COMPENSATORY MEASURES (continued)

1. The SSC is impaired and restored during the performance of an approved surveillance, test, or maintenance task which specifically directs the impairment restoration; and

2. The SSC is continually attended (at least within line of sight); and

3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required. and

4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

<u>A.1</u>

With one or more fire detectors inoperable, immediate action must be initiated to restore the system to OPERABLE status, to ensure that the inoperability is addressed as soon as practical. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

<u>A.2</u>

Establishing an hourly fire tour restores the capability to detect fires in the affected areas. The 1 hour Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

<u>B.1</u>

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.10.6.1

Performing a channel functional test of the smoke (photoelectric and ionization) detectors verifies the operability of the detectors and connected circuitry. During plant operation, these testing activities are limited to areas that are normally accessible, to avoid unnecessary radiation exposures. For areas not accessible during normal plant operations, channel functional testing is performed during each cold shutdown exceeding 24 hour duration, unless performed in the previous 12 months. The 12 month Frequency is reasonable based on operational experience.

SR 1.10.6.2

Performing channel functional testing of thermal detectors verifies the operability of the detectors and connected circuitry. During plant operation, these testing activities are limited to areas that are normally accessible, to avoid unnecessary radiation exposures. For areas not accessible during normal plant operations, channel functional testing is performed during each cold shutdown exceeding 24 hour duration, unless performed in the previous 24 months. The 24 month Frequency is reasonable based on operational experience and Reference 1.

SR 1.10.6.3

Periodic verification of the sensitivity of photoelectric and ionization detectors ensures that degradation has not occurred that would reduce the effectiveness of these detectors. For areas not accessible and tested during normal plant operations, sensitivity testing is performed during each cold shutdown exceeding 24 hour duration, unless performed in the previous 24 months. The testing is based on manufacturer's recommendations. The 24 month Frequency is reasonable based on operating experience. A 4 year extension Frequency for areas not accessible and tested during normal plant operations, and a 5 year extension Frequency for accessible detectors, is reasonable where past performance has demonstrated the stability and reliability of the particular detection equipment. This reliability is demonstrated by successful completion of the two previous 24 month tests. The 4 and 5 year Frequency is reasonable based on operating experience and Reference 4.

BASES

REFERENCES

1. FSAR Appendix F.2.3.
2. CVI 217-00,84 series drawings.
3. EWD-62E series drawings.
4. FPF 2.15 Item 1.

B 1.10 FIRE PROTECTION

B 1.10.7 Essential Lighting

BASES

BACKGROUND	Essential Lighting Systems are required to ensure operators are capable of performing manual operator actions that support post fire safe shutdown. See Reference 1. Essential Lighting Systems consist of (1) emergency battery lighting (EBL) units, (2) emergency fluorescent light fixtures, and (3) emergency portable hand-held lanterns. Five hand-held portable lanterns are credited for post fire safe shutdown. Since the five hand-held portable lanterns may be obtained at any combination of the four designated locations, five hand-held portable lanterns are required at each of the four designated locations (or 20 total). Requiring all 20 hand-held portable lanterns to be present and OPERABLE is based on the possibility that all of the Operators obtain the portable lanterns at one location. The scope of Essential Lighting System is identified by Reference 2. Essential Lighting Systems are required to provide illumination for a minimum of 8 hours, during a loss of offsite power.
APPLICABLE SAFETY ANALYSES	The Essential Lighting Systems are provided to facilitate performance of manual operator actions to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The Essential Lighting Systems are required to be OPERABLE in MODES 1, 2, and 3 to ensure post fire safe shutdown actions can be performed.
COMPENSATORY MEASURES	The Compensatory Measures are modified by a note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met: 1. The SSC is impaired and restored during the performance of an approved surveillance, test or maintenance task which specifically directs the impairment restoration; and 2. The SSC is continually attended (at least within line of sight); and 3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and 4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

BASES

COMPENSATORY MEASURES (continued)

A.1

With one or more of the Essential Lighting Systems inoperable, prompt action must be initiated to restore the system(s) to OPERABLE status to ensure that the inoperable condition is addressed as soon as is practicable. The immediate preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

A.2

With one or more Essential Lighting Systems inoperable, equivalent lighting capability must be provided for the plant area of the inoperable light(s). Equivalent lighting capability is provided by staging an OPERABLE hand-held portable light(s) with a minimum 8 hour rating in or adjacent to the affected area. The 8 hour time period is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

BASES

SURVEILLANCE REQUIREMENTS

SR 1.10.7.1

Periodic verification that the self-test annunciator light of each emergency battery light (EBL) indicates normal operation ensures operability of the EBL. When the charger status light is flashing red, potential concerns include: lamp malfunction, low battery capacity, transfer circuit malfunction, disconnected battery, or hi/lo battery voltage warning. The 31 day Frequency is reasonable based on operational experience.

SR 1.10.7.2

Periodic verification that one fluorescent bulb of each emergency fluorescent light fixture is lit ensures operability of the fixture. The 31 day inspection Frequency is reasonable based on operational experience.

SR 1.10.7.3

Periodic battery replacement and functional testing of each emergency portable hand-held lantern ensures operability of each lantern. The 12 month Frequency is reasonable based on operational experience.

SR 1.10.7.4

The discharge test of emergency battery lights ensures the battery capacity is capable of providing continuous illumination for a period of 8 hours. Verification of proper aiming angles of the lamps ensures the correct plant areas or components have illumination. The 12 month Frequency is reasonable based on operational experience and Reference 3.

SR 1.10.7.5

Surveillance of emergency fluorescent lighting transfer switch circuitry for the credited control room lights ensures the electrical devices credited for control room lighting are OPERABLE. The 24 month Frequency is reasonable based on operational experience.

REFERENCES

1. FSAR Appendix F.2.6.1.

2. Calculation NE-02-85-19.

3. FPF 2.11, Item 1.

B 1.10 FIRE PROTECTION

B 1.10.8 Essential Communication

BASES

BACKGROUND	Essential Communication System is required to ensure post fire safe shutdown operator manual actions can be communicated with the Control Room or remote shutdown room. See Reference 1. The scope of plant areas crediting Essential Communication System is discussed in Reference 2. The Essential Communication System consists of certain private branch exchange (PBX) phones, battery E-B0-PBX which is a 48 VDC, 1,100 Amp-hour, valve regulated acid (VRLA) battery consisting of two parallel strings of 24 individual cells, and other support equipment listed in Table 1.10.8-1. This battery is credited for eight hours following a concurrent loss of offsite power, consistent with the requirement for Appendix R 8-hour lighting. Sound powered phones are a back-up to the PBX phones.
APPLICABLE SAFETY ANALYSES	The Essential Communication System is provided to facilitate the informational exchanges required to protect equipment required to ensure post fire safe shutdown capability.
APPLICABILITY	The Essential Communication System is required to be OPERABLE in MODES 1, 2, and 3 to ensure post fire safe shutdown actions can be performed.

COMPENSATORY MEASURES

The Compensatory Measures are modified by a note identifying that entry into Conditions and Required Compensatory Measures is not required when the following criteria are met:

1. The SSC is impaired and restored during the performance of an approved surveillance, test, or maintenance task which specifically directs the impairment restoration; and
2. The SSC is continually attended (at least within line of sight); and
3. The SSC can be safely returned to an operable status prior to leaving the area in the event an evacuation is required; and
4. At least one person involved is continuous fire tour qualified (Qual Group FPAH).

<u>A.1</u>

With one or more of the Essential Communication System PBX phones inoperable for greater than 10 minutes, prompt action must be initiated to

BASES

COMPENSATORY MEASURES (continued)

restore the system(s) to OPERABLE status to ensure that the inoperable condition is promptly addressed. Being inoperable for up to than 10 minutes allows minor maintenance activities (e.g., phone set replacement, battery cell replacement) to be performed and is reasonable based on the low potential for fire. The preparation of a Fire Protection System Impairment Permit is required for administrative tracking of the impairment and helps ensure a Work Request is generated to restore operability.

A.2

With one or more Essential Communication System PBX phone inoperable, equivalent backup communications capability must be provided. Posting a sign at the inoperable phone will alert the operator during post fire manual actions that the phone is inoperable and identifies which backup sound powered phone to use. The backup sound powered phones (pre-fixed with SP) have the same number, for example (PBX phone CB-5000 has a backup sound powered phone SP-5000). The 2 hour allowed Completion Time is reasonable based on operating experience indicating there is a low potential of a fire that would jeopardize safe shutdown capability.

B.1

Initiate a Condition Report to address why the SSC was not restored to functional status within the Completion Time and provide a plan for restoring the SSC to functional status. If not previously documented the Condition Report should also provide an accurate and concise description of the initial cause(s) for the non-functionality, the Required Compensatory Measure not met, an initial functionality assessment, and corrective actions taken and planned for restoring the SSC to functional status. The intent of this Required Compensatory Measure is to utilize the plant Corrective Action Program to assure prompt attention and adequate management oversight to minimize the additional time the SSC is non-functional. Condition Report category level recommendations should follow plant Corrective Action Program guidelines.

SURVEILLANCE REQUIREMENTS

SR 1.10.8.1

PBX battery terminal voltage, float current, pilot cell voltage and pilot cell temperature will be surveillance tested every 31 days. The 31 day Frequency is reasonable based on operational experience and Reference 2.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.10.8.2

PBX phones are functionally tested every 92 days. The 92 day Frequency is reasonable based on operational experience.

SR 1.10.8.3

PBX battery connected cell voltage needs to be surveillance tested every 92 days. The 92 day Frequency is reasonable based on operational experience and Reference 3.

SR 1.10.8.4

PBX battery capacity is required to be discharge surveillance tested every 12 months, consistent with Reference 2. The Essential Communication System is inoperable with a battery capacity of less than 80% of the manufacturers published ratings. Battery capacity degradations greater than 10% from the previous test or less than 90% of the published ratings require more frequent testing to verify that the required capacity is available. The 6 month Frequency is reasonable based on operational experience and Reference 3.

REFERENCES

1. FSAR, Appendix F.2.6.2.

2. Calculation NE-02-85-19.

3. BDC 95-0029-0A which developed the VRLA battery surveillance guidance from: manufacturer recommendations, TSTF-360, IEEE 1188-1996, and EPRI TR-100248-R1.