Dresden Nuclear Power Station

Technical Requirements Manual

(TRM)

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Dresden Nuclear Power Station, Unit 2 and 3
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4.0 Not Used

5.0 Not Used

1.0 USE AND APPLICATION

1.1 Definitions

----------NOTE----------
The defined terms of this section appear in capitalized type and are applicable throughout these Technical Requirements Manual and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Requirement that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

(continued)

1.1 Definitions (continued)

CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS: a. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and b. Control rod movement, provided there are no fuel assemblies in the associated core cell. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Requirements.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify

(continued)

1.1 Definitions

LOGIC SYSTEM FUNCTIONAL TEST (continued)	OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.
MODE	A MODE shall correspond to any one inclusive combination of MODE switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Technical Specifications Table 1.1-1 with fuel in the reactor vessel.
OFFSITE DOSE CALCULATION MANUAL (ODCM)	The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Radioactive Effluent Release Reports.
OPERABLE - OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2957 MWt.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE

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

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

BACKGROUND

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

(continued)

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. TLCO not met	A.1 Verify . . . AND A.2 Restore . . .	

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

(continued)

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

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

1.0 USE AND APPLICATION

1.3 Completion Times

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

(continued)

1.3 Completion Times

DESCRIPTION (continued)

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.

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

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extension does not apply to those TLCOs 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 TLCOs.

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

EXAMPLES

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

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours
	AND	
	B.2 Be in MODE 4	36 hours

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

The Required Actions of Condition B are to be in MODE 3 within 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.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump inoperable.	A.1 Restore pump to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. 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 Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. TLCO 3.0.c is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after TLCO 3.0.c is entered, but continues to be tracked from the time Condition A was initially entered.

While in TLCO 3.0.c, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, TLCO 3.0.c may be exited and operation continued in accordance with Condition A.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

While in TLCO 3.0.c, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, TLCO 3.0.c may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

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

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X Subsystem Inoperable	A.1 Restore Function X Subsystem to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the TLCO
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 TLCO
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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

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).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected 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 TLCO 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 TLCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the TLCO" is designed to prevent indefinite continued operation while not meeting the TLCO. 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 TLCO was initially not met, instead of at the time the associated Condition was entered.

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One of more Valves Inoperable.	A.1 Restore valve(s) To OPERABLE Status.	4 hours
B. Required Action and Associated Completion Time not Met	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

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

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

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

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Valves Inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and Associated Completion Time not Met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

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

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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

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

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel Inoperable.	A.1 Perform TRS 3.x.x.x.	Once per 8 hours
	OR	
	A.2 Reduce THERMAL POWER TO ≤ 50% RTP.	8 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per TSR 3.0.b, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be completed within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by TSR 3.0.b), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

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

(continued)

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Subsystem Inoperable.	A.1 Verify affected Subsystem Isolated.	1 hour AND Once per 8 hours thereafter
	AND	
	A.2 Restore subsystem To OPERABLE Status.	72 hours
B. Required Action and Associated Completion Time not Met.	B.1 Be in MODE 3.	12 hours
	AND	
	B.2 Be in MODE 4.	36 hours

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

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by TSR 3.0.b), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1

(continued)

1.3 Completion Times

EXAMPLES	EXAMPLE 1.3-7 (continued) is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.
IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

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

DESCRIPTION

Each Technical Requirements Manual Surveillance Requirement (TSR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Technical Requirements Manual Limiting Condition for Operation (TLCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the TSR.

The "specified Frequency" is referred to throughout this section and each of the Requirements of Section 3.0, Technical Requirements Manual Surveillance Requirement (TSR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each TSR, 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 TSR 3.0.a. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both. Example 1.4-4 discusses these special situations.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential TSR 3.0.d conflicts. To avoid these conflicts, the TSR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With a TSR satisfied, TSR 3.0.d 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

(continued)

1.4 Frequency

DESCRIPTION (continued)

specifically determine the ability to meet the acceptance criteria. TSR 3.0.d restrictions would not apply if both the following conditions are satisfied:

a. The Surveillance is not required to be performed; and

b. The Surveillance is not required to be met or, even if required to be met, is not known to be failed.

EXAMPLES

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

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of TSR most often encountered in the Technical Requirements Manual (TRM). 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 TSR 3.0.b for operational flexibility. The measurement of this interval continues at all times, even when the TSR is not required to be met per TSR 3.0.a (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the TLCO). If the interval specified by TSR 3.0.b is exceeded while the unit is in a MODE or other specified condition in the

(continued)

1.4 Frequency

EXAMPLES

EXAMPLE 1.4-1 (continued)

Applicability of the TLCO, and the performance of the Surveillance is not otherwise modified (refer to Examples 1.4-3 and 1.4-4), then TSR 3.0.c becomes applicable.

If the interval as specified by TSR 3.0.b is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the TLCO for which performance of the TSR is required, the Surveillance must be performed within the Frequency requirements of TSR 3.0.b prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of TSR 3.0.d.

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

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

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

(continued)

1.4 Frequency

EXAMPLES

EXAMPLE 1.4-2 (continued)

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 TSR 3.0.b.

"Thereafter" indicates future performances must be established per TSR 3.0.b, 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.

EXAMPLE 1.4-3

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

(continued)

1.4 Frequency

EXAMPLES

EXAMPLE 1.4-3 (continued)

allowed by TSR 3.0.b), but operation was < 25% RTP, it would not constitute a failure of the TSR or failure to meet the TLCO. Also, no violation of TSR 3.0.d occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of TSR 3.0.c would apply.

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

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

Example 1.4-4 specifies that the requirements of this Surveillance do not have to be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by TSR 3.0.b), but the unit was not in MODE 1, there would be no failure of the TSR nor failure to meet the TLCO. Therefore, no violation of TSR 3.0.d 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), TSR 3.0.d would require satisfying the TSR.

1.0 USE AND APPLICATION

1.5 TLCO and TSR Implementation

The Technical Requirements Manual (TRM) provides those limitations upon plant operations which are part of the licensing basis for the station but do not meet the criteria for continued inclusion in the Technical Specifications.

It also provides information which supplements the Technical Specifications such as specific plant setpoints for Technical Specification equipment. Nothing in the TRM shall supersede any Technical Specification requirement.

TLCOs and TSRs are implemented the same as Technical Specifications (see TRM 3.0). However, TLCOs and TSRs are treated as plant procedures and are not part of the Technical Specifications. Therefore the following exceptions apply:

a. Violations of the Action or Surveillance requirements in a TLCO are not reportable as conditions prohibited by, or deviations from, the Technical Specifications per 10 CFR 50.72 or 10 CFR 50.73, unless specifically required by the TRM.

b. Power reduction or plant shutdowns required to comply with the Actions of a TLCO or as a result of the application of TLCO 3.0.c are not reportable per 10 CFR 50.72 or 10 CFR 50.73.

c. Violations of TLCO or TSR requirements, except as provided for in TLCO 3.0 of this manual, shall be treated the same as plant procedure violations.

1.0 USE AND APPLICATION

1.6 Technical Requirements Manual Revisions

Changes to this manual shall be made under the following provisions:

a. Changes to the TRM shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to TRM without prior NRC approval provided the change does not require NRC approval pursuant to 10 CFR 50.59.

c. The TRM revision process shall contain provisions to ensure that the TRM is maintained consistent with the UFSAR.

d. Proposed changes that require NRC approval prior to shall be reviewed and approved by the NRC prior to implementation. Changes to the TRM implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e) as modified by approved exemptions.

2.1.a MISCELLANEOUS TEST REQUIREMENTS

----------NOTE----------
Failure to meet the surveillance requirement requires immediate actions to determine OPERABILITY of the associated equipment.

APPLICABILITY: As defined in the TSR.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 2.1.a.1	----------NOTE---------- Only applicable in MODES 1 and 2. ---------- Verify recirculation pump motor generator set scoop tube mechanical and electrical stop overspeed setpoints are within the limits specified in the COLR.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 2.1.a.2	----------NOTE---------- TSR 2.1.a.2 provides the scram time limits for <800 psig steam dome pressure to satisfy Technical Specification SR 3.1.4.3 and is only applicable in MODES 1 and 2. ----------	
	Verify each affected control rod scram time is within limits of Technical Specification Table 3.1.4-1 with any reactor pressure. The control rod scram time acceptance criteria shall be ≤ 2.04 seconds from fully withdrawn position to 90 % insertion at 0 psig reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on the control rod or CRD System that could affect scram time
TSR 2.1.a.3	----------NOTE---------- Only applicable when associated diesel generator is required to be OPERABLE. ----------	
	Drain each diesel generator fuel oil storage tank, remove the accumulated sediment, and clean the tank.	10 years

3.0 TECHNICAL REQUIREMENTS MANUAL LIMITING CONDITION FOR OPERATION (TLCO) APPLICABILITY

TLCO 3.0.a	TLCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in TLCO 3.0.b.
TLCO 3.0.b	Upon discovery of a failure to meet a TLCO, the Required Actions of the associated Conditions shall be met, except as provided in TLCO 3.0.e. If the TLCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
TLCO 3.0.c	When a TLCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, action shall be initiated within 1 hour to: a. Implement appropriate compensatory actions as needed; b. Verify that the plant is not in an unanalyzed condition or that a required safety function is not compromised by the inoperabilities; and c. Within 12 hours, obtain Station Duty Officer approval of the compensatory actions and the plan for exiting TLCO 3.0.c. Exceptions to this TLCO are stated in the individual TLCOs. Where corrective measures are completed that permit operation in accordance with the TLCO or ACTIONS, completion of the actions required by TLCO 3.0.c is not required. TLCO 3.0.c is only applicable in MODES 1, 2, and 3.
TLCO 3.0.d	When a TLCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: 1. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

(continued)

3.0 TLCO APPLICABILITY

TLCO 3.0.d (continued)	2. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this TLCO are stated in the individual TLCOs, or 3. When an allowance is stated in the individual value, parameter, or other TLCO. This TLCO shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.
TLCO 3.0.e	Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to TLCO 3.0.b for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
TLCO 3.0.f	TLCOs, including associated ACTIONS, shall apply to each unit individually, unless otherwise indicated. Whenever the TLCO refers to a system or component that is shared by both units, the ACTIONS will apply to both units simultaneously.

3.0 TECHNICAL REQUIREMENTS MANUAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR 3.0.a	TSRs shall be met during the MODES or other specified conditions in the Applicability for individual TLCOs, unless otherwise stated in the TSR. Failure to meet a TSR, whether such failure is experienced during the performance of the TSR or between performances of the TSR, shall be failure to meet the TLCO. Failure to perform a TSR within the specified Frequency shall be failure to meet the TLCO except as provided in TSR 3.0.c. TSRs do not have to be performed on inoperable equipment or variables outside specified limits.
TSR 3.0.b	The specified Frequency for each TSR is met if the TSR 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 TSR are stated in the individual TSRs.
TSR 3.0.c	If it is discovered that a TSR was not performed within its specified Frequency, then compliance with the requirement to declare the TLCO 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 TSR. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed. If the TSR is not performed within the delay period, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the TSR is performed within the delay period and the TSR is not met, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

3.0 TSR APPLICABILITY (continued)

TSR 3.0.d	Entry into a MODE or other specified condition in the Applicability of a TLCO shall only be made when the TLCO's TSRs have been met within their specified Frequency, except as provided by TSR 3.0.c. When a TLCO is not met due to TSRs not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with TLCO 3.0.d. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.
TSR 3.0.e	TSRs shall apply to each unit individually, unless otherwise indicated.

3.0 TECHNICAL REQUIREMENTS MANUAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR 3.0.a	TSRs shall be met during the MODES or other specified conditions in the Applicability for individual TLCOs, unless otherwise stated in the TSR. Failure to meet a TSR, whether such failure is experienced during the performance of the TSR or between performances of the TSR, shall be failure to meet the TLCO. Failure to perform a TSR within the specified Frequency shall be failure to meet the TLCO except as provided in TSR 3.0.c. TSRs do not have to be performed on inoperable equipment or variables outside specified limits.
TSR 3.0.b	The specified Frequency for each TSR is met if the TSR 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 TSR are stated in the individual TSRs.
TSR 3.0.c	If it is discovered that a TSR was not performed within its specified Frequency, then compliance with the requirement to declare the TLCO 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 TSR. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed. If the TSR is not performed within the delay period, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the TSR is performed within the delay period and the TSR is not met, the TLCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

3.0 TSR APPLICABILITY (continued)

TSR 3.0.d	Entry into a MODE or other specified condition in the Applicability of a TLCO shall only be made when the TLCO's TSRs have been met within their specified Frequency, except as provided by TSR 3.0.c. When a TLCO is not met due to TSRs not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with TLCO 3.0.d. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.
TSR 3.0.e	TSRs shall apply to each unit individually, unless otherwise indicated.

THIS SECTION IS NOT CURRENTLY BEING USED.

3.3 INSTRUMENTATION

3.3.a Control Rod Block Instrumentation

TLCO 3.3.a The control rod block instrumentation for each Function in Table T3.3.a-1 shall be OPERABLE.

APPLICABILITY: According to Table T3.3.a-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. For Functions 1.a, 1.b, 1.c, 1.d, 2.a, 2.b, 2.c, 3.a, 3.b, 3.c, and 3.d, one required channel inoperable.	A.1 Restore inoperable channel to OPERABLE status.	7 days
B. For Functions 4.a and 4.b one or more required channels inoperable.	B.1 Place inoperable channel(s) in trip.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. For Functions 1.a, 1.b, 1.c, 1.d, 2.a, 2.b, 2.c, 3.a, 3.b, 3.c, and 3.d, two or more required channels inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A not met.	C.1 Place inoperable channel(s) in trip.	1 hour

SURVEILLANCE REQUIREMENTS

----------NOTES----------
1. Refer to Table T3.3.a-1 to determine which TSRs apply to 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 Actions may be delayed for up to 6 hours provided the associated Function maintains Control Rod Block capability.

SURVEILLANCE		FREQUENCY
TSR 3.3.a.1	----------NOTE---------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. ---------- Perform CHANNEL FUNCTIONAL TEST.	7 days
TSR 3.3.a.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
TSR 3.3.a.3	Calibrate the trip units.	92 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.a.4	----------NOTES---------- 1. For Function 1.d, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. Neutron detectors are excluded. ---------- Perform CHANNEL CALIBRATION.	184 days
TSR 3.3.a.5	Perform CHANNEL FUNCTIONAL TEST.	24 months
TSR 3.3.a.6	----------NOTE---------- 1. Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. Neutron detectors are excluded. ---------- Perform CHANNEL CALIBRATION.	24 months

Table T3.3.a-1 (page 1 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Average Power Range Monitors				
a. Flow Biased Neutron Flux —High	1	4	TSR 3.3.a.2 TSR 3.3.a.4	≤ 0.56W + 55.4%[a] RTP and ≤ 109.9% RTP
b. Inoperative	1, 2, 5[b]	4	TSR 3.3.a.2	N.A.
c. Downscale	1	4	TSR 3.3.a.2 TSR 3.3.a.4	≥ 3.4 % of RTP
d. Startup Neutron Flux—High	2,5[b]	4	TSR 3.3.a.2 TSR 3.3.a.4	≤ 14.1 % of RTP
2. Source Range Monitors				
a. Detector not full in	2[c][e]	3	TSR 3.3.a.1 TSR 3.3.a.6	N.A.
	5[e]	2	TSR 3.3.a.1	N.A.
b. Upscale	2[d]	3	TSR 3.3.a.1 TSR 3.3.a.6	≤ 3.0 x 10^5 cps
	5	2	TSR 3.3.a.1 TSR 3.3.a.6	≤ 3.0 x 10^5 cps
c. Inoperative	2[d]	3	TSR 3.3.a.1	N.A.
	5	2	TSR 3.3.a.1	N.A.

(continued)

(a) Allowable Value is ≤ 0.56W + 51.2% RTP and ≤ 109.9% RTP when reset for single loop operation per Technical Specification LCO 3.4.1, "Recirculation Loops Operating."

(b) Required to be OPERABLE only during SHUTDOWN MARGIN demonstrations performed per Technical Specification LCO 3.10.7.

(c) With the Intermediate Range Monitor (IRM) channels are on range 2 or below.

(d) With IRM channels on range 7 or below.

(e) With detector count rate ≤ 100 cps.

Table T3.3.a-1 (page 2 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Intermediate Range Monitors				
a. Detector not full in	2, 5	6	TSR 3.3.a.1 TSR 3.3.a.6	N.A.
b. Upscale	2, 5	6	TSR 3.3.a.1 TSR 3.3.a.6	≤ 112/125 of full scale
c. Inoperative	2, 5	6	TSR 3.3.a.1	N.A.
d. Downscale	2(f), 5	6	TSR 3.3.a.1 TSR 3.3.a.6	≥ 5/125 of full scale
4. Scram Discharge Volume				
a. Water Level—High (Unit 2)	1, 2, 5(g)	1 per bank	TSR 3.3.a.2 TSR 3.3.a.6	≤ 28.1 gal
Water Level—High (Unit 3)	1, 2, 5(g)	1 per bank	TSR 3.3.a.2 TSR 3.3.a.3 TSR 3.3.a.6	≤ 23.4 gal
b. Scram Discharge Volume Switch in Bypass	5(g)	1	TSR 3.3.a.5	N.A.

(f) With IRM channels on range 2 or higher.

(g) With two or more control rods withdrawn. Not applicable to control rods removed per Technical Specification LCO 3.10.4, "Single Control Rod Drive Removed—Refueling," or LCO 3.10.5, "Multiple Control Rod Withdrawal—Refueling."

3.3 INSTRUMENTATION

3.3.b Post Accident Monitoring (PAM) Instrumentation

TLCO 3.3.b The PAM instrumentation for each Function in Table T3.3.b-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	--------NOTE---------- Not applicable to Functions 4 and 5 A.1 Restore required channel to OPERABLE status.	30 day
	--------NOTE---------- Only applicable to Functions 4 and 5 A.2 Restore required channel to OPERABLE status.	7 days
B. One or more Functions with two required channels inoperable.	B.1 Restore one required channel to OPERABLE status.	7 days

C.	Required Action and associated Completion Time of Condition A or B not met.	C.1	Initiate alternate method of monitoring the appropriate parameters.	Immediately
		AND		
		C.2	Prepare a corrective action program report.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
1. These TSRs apply to each Function in Table T3.3.b-1, except where identified in the TSR.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
TSR 3.3.b.1	Perform CHANNEL CHECK.	31 days
TSR 3.3.b.2	----------NOTE---------- Neutron detectors are excluded. ---------- Perform CHANNEL CALIBRATION for Functions 3, 4, and 5.	92 days
TSR 3.3.b.3	Perform CHANNEL CALIBRATION for Functions other than Functions 3, 4, and 5.	24 months

Table T3.3.b-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS
1.	Drywell Air Temperature	2
2.	Safety/Relief Valve Position Indicators— Acoustic and Temperature	2/valve (1 each)
3.	Source Range Neutron Monitors	2
4.	Drywell O_2 Concentration Analyzer	1
5.	Drywell H_2 Concentration Analyzer	1

3.3 INSTRUMENTATION

3.3.c Explosive Gas Monitoring Instrumentation

TLCO 3.3.c The explosive gas monitoring instrumentation channels in Table T3.3.c-1 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of the Explosive Gas and Storage Tank Radioactivity Monitoring Program are not exceeded.

APPLICABILITY: During operation of the Offgas Holdup System.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1.1 ----------NOTE--------- Not applicable if recombiner(s) temperature remains constant and THERMAL POWER has not changed. ---------- Take grab samples.	Once per 4 hours
	AND	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.1.2 -------NOTE---------- Only applicable if recombiner(s) temperature remains constant and THERMAL POWER has not changed. ----------	
	Take grab samples.	Once per 8 hours
	AND	
	A.2 Analyze grab samples.	Within 4 hours following each grab sample
	AND	
	A.3.1 Restore channel to OPERABLE status.	30 days
	OR	
	A.3.2 Prepare a corrective action program report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.c.1	Perform CHANNEL CHECK.	24 hours
TSR 3.3.c.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
TSR 3.3.c.3	Perform CHANNEL CALIBRATION.	92 days

Table T3.3.c-1 (page 1 of 1)
Explosive Gas Monitoring Instrumentation

INSTRUMENT	REQUIRED CHANNELS
Main Condenser Off Gas Treatment System Explosive Gas Monitoring System—Hydrogen Monitor	1

3.3 INSTRUMENTATION

3.3.d Suppression Chamber and Drywell Spray Actuation Instrumentation

TLCO 3.3.d The suppression chamber and drywell spray actuation instrumentation shown in Table T3.3.d-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable in one trip system.	A.1 Place one inoperable channel in trip such that it will not prevent containment spray.	24 hours
B. One or more channels inoperable in both trip systems. <u>OR</u> Required Action and Associated Completion time of Condition A not met.	B.1 Declare suppression chamber and drywell spray subsystems inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table T3.3.d-1 to determine which TSRs apply to each Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains suppression chamber and drywell spray actuation capability.

SURVEILLANCE			FREQUENCY
TSR	3.3.d.1	Perform CHANNEL CHECK.	24 hours
TSR	3.3.d.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
TSR	3.3.d.3	Calibrate the trip units.	92 days
TSR	3.3.d.4	Perform CHANNEL CALIBRATION.	92 days
TSR	3.3.d.5	Perform CHANNEL CALIBRATION.	24 months
TSR	3.3.d.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table T3.3.d-1 (page 1 of 1)
Suppression Chamber and Drywell Spray Actuation Instrumentation

FUNCTION	REQUIRED NUMBER OF CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALVE
1. Drywell Pressure—High (permissive)	2	TSR 3.3.d.2 TSR 3.3.d.4 TSR 3.3.d.6	≥ 0.5 psig and ≤ 1.5 psig
2. Reactor Vessel Water Level—Low (permissive)	1	TSR 3.3.d.1 TSR 3.3.d.2 TSR 3.3.d.3 TSR 3.3.d.5 TSR 3.3.d.6	≥ -187.3 inches

3.3 INSTRUMENTATION

3.3.e Fire Detection Instrumentation

TLCO 3.3.e The fire detection instrumentation shown in Table T3.3.e-1 (Unit 2), T3.3.e-2 (Unit 3) and T3.3.e-3 (Unit 2/3) shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the fire detection instrumentation is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each fire detection instrument.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required detection instruments inoperable.	A.1 Establish a fire watch patrol.	1 hour
	AND	
	A.2 Perform a fire watch inspection of the affected area(s).	Once per hour for accessible areas AND Once per 8 hours for inaccessible areas
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Restore the fire detection instrumentation to OPERABLE status.	14 days
	OR	
	A.3.2 Prepare a corrective action program report.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.e.1	Demonstrate supervised circuits associated with detector alarms for each of the required detection instruments are OPERABLE.	184 days
TSR 3.3.e.2	Perform a CHANNEL FUNCTIONAL TEST of each required detection instrument	12 months

Table T3.3.e-1 (page 1 of 1)
Fire Detection Instrumentation (Unit 2)

LOCATION	XL3 DETECTION ZONE	XL3 DEVICE NUMBERS	TOTAL NUMBER OF INSTRUMENTS	REQUIRED NUMBER OF INSTRUMENTS	ACTUATES SUPPRESSION
HPCI Pump Room	34	01, 02, 03	3	2	X
LPCI Rooms/Torus (Protectowire)	34	27	1	1	
Reactor Building El. 517	12	01-08, 11-20, 23-29	25	17	
Shutdown Cooling Pump Room	12	09, 10	2(*)	1	
TIP Room	12	21, 22	2(*)	1	
Reactor Building El. 545	14	01-07, 10-13, 16-23	19	14	
Shutdown Cooling Hx Room	14	08, 09	2(*)	1	
RWCU Pump Room	14	14, 15	2(*)	1	
Reactor Building El. 570	32	01-09	9	7	
	33	02-13, 28	13	10	
Isolation Condenser Floor El. 589	32	10-21	12	9	
Standby Liquid Control El. 589	33	01	1	1	
Hatchway and Stairs Heat Detection El. 570/589 (Protectowire)	32	29	1	1	X
Turbine Building Ground Floor El. 517	21	02-05	4	3	
	22	04-11, 18(***), 19(***)	10	7	
	23	01-09	9	7	
Instrument Air Compressor	22	01-03, 12-17	9	7	X
Unit 2 Diesel Generator, Room(**)	23	23	3	2	X
Turbine Building Mezzanine El. 534	44	01-10	10	7	
Cable Concentration Area El. 583	43	01-16	16	12	X
	54	01-15	15	11	X
Hydrogen Seal Oil Deluge (**)	54	30	2	1	X
Turbine Building El. 549	42	01-18	18	13	
Battery Room	42	19-26	8	6	
HVAC Fan Area	44	11-23	13	10	

(*) Inaccessible Area.

(**) Multiple detectors provide single alarm on XL3 Fire Computer.

(***) Cable Risers outside AEER.

Table T3.3.e-2 (page 1 of 1)
Fire Detection Instrumentation (Unit 3)

LOCATION	XL3 DETECTION ZONE	XL3 DEVICE NUMBERS	TOTAL NUMBER OF INSTRUMENTS	REQUIRED NUMBER OF INSTRUMENTS	ACTUATES SUPPRESSION
HPCI Pump Room	34	04, 05, 06	3	2	X
LPCI Rooms/Torus (Protectowire)	34	29	1	1	
Reactor Building El. 517	11	01-10, 13-19, 22-28	24	17	
Shutdown Cooling Pump Room	11	11-12	2(*)	1	
TIP Room	11	20-21	2(*)	1	
Reactor Building El. 545	13	01-08, 11-16, 19-23	19	14	
Shutdown Cooling Hx Room	13	09-10	2(*)	1	
RWCU Pump Room	13	17-18	2(*)	1	
Reactor Building El. 570	31	01-09	9	7	
	33	15-27	13	10	
Isolation Condenser Floor El. 589	31	10-22	13	10	
Standby Liquid Control El. 589	33	14	1	1	
Hatchway and Stairs Heat Detection El. 570/589 (Protectowire)	31	29	1	1	X
Turbine Building Ground Floor El. 517	23	11, 12	2	1	
	71	01-11	11	8	
	72	01-22	22	16	
Unit 3 Diesel Generator, Room(**)	23	24	3	2	X
Turbine Building Mezzanine El. 538	61	01-21	21	15	
	62	01-16	16	12	
	63	01-14	14	10	
Hydrogen Seal Oil Deluge (**)	63	29	2	1	X
Battery Room	62	17-20	4	3	
Cable Tunnel	73	01-22	22	16	
	74	01-17	17	12	

(*) Inaccessible Area.

(**) Multiple detectors provide single alarm on XL3 Fire Computer.

Table T3.3.e-3 (page 1 of 1)
Fire Detection Instrumentation (Unit 2/3)

LOCATION	XL3 DETECTION ZONE	XL3 DEVICE NUMBERS	TOTAL NUMBER OF INSTRUMENTS	REQUIRED NUMBER OF INSTRUMENTS	ACTUATES SUPPRESSION
Unit 2/3 Diesel Generator Room	23	25	5	4	X
Turbine Building Ground Floor El. 517	21	01	1	1	
	23	10, 13-22	11	8	
	24	01-26	26	19	
	41	01-06, 10	7	5	
Turbine Building Mezzanine El. 534	41	07-09, 11	4	3	
Turbine Oil Reservoir(**)	21	19	6	4	X
	41	27	6	4	X
Auxiliary Electric Equipment Room	81	01-26	26	18	X
Control Room					
Above Ceiling	52	01-16	16	12	
	53	01-18	18	13	
Below Ceiling	52	17-24	8	6	
	53	19-25	7	4	
Unit 2/3 Cribhouse	51	01-12	12	9	
Cable Tray Deluge (Protectowire)	51	22	1	1	X
Fire Pump Deluge(**)	51	25	9	9	X
2/3 Diesel Generator Cooling Water Pump Deluge	51	18	1	1	X

(**) Multiple detectors provide single alarm on XL3 Fire Computer.

3.3 INSTRUMENTATION

3.3.f Anticipated Transient Without Scram (ATWS)—Alternate Rod Insertion (ARI) System

TLCO 3.3.f Two ATWS—ARI Subsystems shall be OPERABLE.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ATWS—ARI Subsystem inoperable.	A.1 Restore ATWS - ARI subsystem to OPERABLE status.	7 days
B. Both ATWS—ARI Subsystems inoperable.	B.1 Restore one ATWS - ARI subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Enter 3.0.c.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.f.1	Manually actuate the ATWS—ARI System from the control room.	24 months
TSR 3.3.f.2	Perform a logic test of ATWS—ARI System. The ATWS—ARI solenoid valves shall remain energized after the actuation signal for ≥ 44.2 seconds and ≤ 54.2 seconds.	24 months

3.3 INSTRUMENTATION

3.3.g Not used

3.3 INSTRUMENTATION

3.3.h Reactor Vessel Water Level Instrumentation System (RVWLIS) Backfill System

TLCO 3.3.h The RVWLIS Backfill System shall be OPERABLE with 4 instrument reference legs continuously backfilled.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more RVWLIS Backfill System lines inoperable.	A.1 Restore inoperable RVWLIS Backfill System lines to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Establish compensatory measures in accordance with the bases and required procedures for the associated instrument reference leg(s).	Prior to RPV reaching 450 psig

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.3.h.1 Verify flow to the reference legs.	24 hours

3.3 INSTRUMENTATION

3.3.i Reactor Water Cleanup (RWCU) Area Temperature Monitoring

TLCO 3.3.i Temperature monitors listed in Columns A and B of Table T3.3.i-1 (Unit 2) and T3.3.i-2 (Unit 3) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 with the RWCU system unisolated.

ACTIONS

----------NOTE----------
Separate Conditions entry is allowed for each temperature monitor.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. With one temperature monitor inoperable.	A.1 Restore inoperable temperature monitor to OPERABLE status.	30 days
	OR	
	A.2.1 Isolate the RWCU system.	30 days

(continued)

ACTIONS CONDITION	REQUIRED ACTION	COMPLETION TIME
B. With two temperature monitors inoperable for a given area.	B.1 Verify no visible signs of a leak in the affected area.	1 hour AND Once per 24 hours thereafter
	AND	
	B.2.1 Restore one inoperable temperature monitor to OPERABLE status. OR	7 days
	B.2.2 Isolate the RWCU system.	7 days

SURVEILLANCE REQUIREMENTS

----------NOTE----------
TSRs apply to each monitor in Column A and B of Table T3.3.i-1 and T3.3.i-2.

SURVEILLANCE		FREQUENCY
TSR 3.3.i.1	----------NOTE---------- X-area temperature monitors are excluded. ---------- Perform a resistance check of the temperature monitor.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.i.2	Perform a functional test of the temperature monitor.	24 months
TSR 3.3.i.3	Perform a logic test of the temperature monitor.	24 months

Table T3.3.i-1 (page 1 of 1)
RWCU Temperature Monitoring (Unit 2)

Area	Column A	Column B
A RWCU HX Room	2-1291-60K	2-1291-60R
B RWCU HX Room	2-1291-60J	2-1291-60P
PCV Room	2-1291-60L	2-1291-60S
RWCU Pipeway	2-1291-60M	2-1291-60T
RWCU Pump Room	2-1291-60N	2-1291-60U
Unit 2 Main Steam Line (X-Area)	2-0261-15A 2-0261-16A 2-0261-17A 2-0261-18A	2-0261-15B 2-0261-16B 2-0261-17B 2-0261-18B

Table T3.3.i-2 (page 1 of 1)
RWCU Temperature Monitoring (Unit 3)

Area	Column A	Column B
A RWCU HX Room	3-1291-60J	3-1291-60P
B RWCU HX Room	3-1291-60K	3-1291-60R
PCV Room	3-1291-60L	3-1291-60S
RWCU Pipeway	3-1291-60M	3-1291-60T
RWCU Pump Room	3-1291-60N	3-1291-60U
Unit 3 Main Steam Line (X-Area)	3-0261-15A 3-0261-16A 3-0261-17A 3-0261-18A	3-0261-15B 3-0261-16B 3-0261-17B 3-0261-18B

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.a Structural Integrity

TLCO 3.4.a The structural integrity of ASME Code Class 1, 2, and 3 components shall be maintained in accordance with the Inservice Inspection and Testing Programs.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. --------NOTE---------- Only applicable to ASME Code Class 1 components. ---------- Structural integrity of one or more ASME component(s) not in conformance.	A.1 Restore the structural integrity of the affected component to within its limits.	Immediately
	OR	
	A.2 Isolate the affected component.	Immediately
	OR	12 hours
	A.3 Be in Mode 3	
	AND	36 hours
	A.4 Be in Mode 4	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. --------NOTE---------- Only applicable to ASME Code Class 2 components. ---------- Structural integrity of one or more ASME component(s) not in conformance.	B.1 Restore the structural integrity of the affected components to within its limits. <u>OR</u> B.2 Isolate the affected component.	Immediately Immediately
C. --------NOTE---------- Only applicable to ASME Code Class 3 components. ---------- Structural integrity of one or more ASME component(s) not in conformance.	C.1 Restore the structural integrity of the affected components to within its limits. <u>OR</u> C.2 Isolate the affected component.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.a.1	Verify the structural integrity of ASME Code Class 1, 2, and 3 components.	In accordance with the Inservice Inspection and Testing Programs

3.4 REACTOR COOLANT SYSTEM

3.4.b Reactor Coolant System (RCS) Chemistry

TLCO 3.4.b The chemistry of the RCS shall be maintained within the limits specified in Table T3.4.b-1.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
TLCO 3.0.d is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS chemistry not within limits in MODE 1.	A.1 Determine chlorides and pH.	Once per 8 hours when conductivity is not within limit
	<u>AND</u>	
	A.2 Perform TSR 3.4.b.3.	Once per 24 hours when conductivity is not within limit
	<u>AND</u>	
	A.3 Restore RCS chemistry to within limits.	72 hours <u>AND</u> 336 hours cumulative in the past 365 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	8 hours
C. Conductivity > 10 µmho/cm at 25° C in MODE 1. <u>OR</u> Chloride concentration > 0.5 ppm in MODE 1.	C.1 Be in MODE 2.	12 hours
D. -------NOTE---------- Not applicable during Noble Metal Chemical Applications (injection and cleanup periods). ---------- RCS chemistry not within required limits in MODE 2 or 3.	D.1 Determine chlorides and pH. <u>AND</u> D.2 Perform TSR 3.4.b.3. <u>AND</u> D.3 Restore RCS chemistry to within limits.	Once per 8 hours when conductivity is not within limit Once per 24 hours when conductivity is not within limit 48 hours
E. Required Action and associated Completion Time of Condition D not met.	E.1 Be in MODE 3. <u>AND</u> E.2 Be in MODE 4.	12 hours 36 hours

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. RCS chemistry not within required limits in MODE 3 during Noble Metal Chemical Application (injection and cleanup).	F.1 Initiate action to be in MODE 4.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.b.1	----------NOTE---------- Only applicable when the continuous recording conductivity monitor is inoperable. ---------- Obtain an in-line conductivity measurement of the reactor coolant.	4 hours
TSR 3.4.b.2	Analyze a sample of the reactor coolant for chlorides and conductivity.	72 hours
TSR 3.4.b.3	Perform a CHANNEL CHECK of the continuous conductivity monitor with an in-line flow cell.	7 days

Table T3.4.b-1 (page 1 of 1)
Reactor Coolant System Chemistry Limits

MODE	CHLORIDES (ppm)	CONDUCTIVITY (μmhos/cm at 25°C)	pH
1	≤ 0.2	≤ 1.0	5.6 ≤ pH ≤ 8.6
2, 3[a]	≤ 0.1	≤ 2.0	5.6 ≤ pH ≤ 8.6
3[b]	≤ 0.1	≤ 20.0	4.3 ≤ pH ≤ 9.9

(a) Except during Noble Metal Chemical Applications.

(b) During Noble Metal Chemical Applications.

3.4 REACTOR COOLANT SYSTEM

3.4.c Not Used

3.4 REACTOR COOLANT SYSTEM

3.4.d Drywell Continuous Air Monitor (CAM)

TLCO 3.4.d The Drywell CAM shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A . Drywell CAM is inoperable.	A .1 Restore the Drywell CAM to OPERABLE status.	30 days
B . Required Action and associate Completion Time of Condition A not met.	B .1 Enter TLCO 3.0.c.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.d.1	Perform a visual inspection of the stripchart and flow indicator.	8 hours
TSR 3.4.d.2	Perform a response check of the radiation detector.	24 hours
TSR 3.4.d.3	Perform a calibration of the radiation detector.	184 days
TSR 3.4.d.4	Perform a calibration of the electronics.	184 days

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.a Core Spray/Low Pressure Coolant Injection (LPCI) Corner Room Submarine Doors

TLCO 3.5.a The submarine doors of the Core Spray/LPCI pump corner rooms shall be closed and dogged, except during passage.

APPLICABILITY: Whenever LPCI, Core Spray, or High Pressure Coolant Injection (HPCI) is required to be OPERABLE.

ACTIONS

----------NOTES----------
Separate Condition entry is allowed for each door.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Core Spray/LPCI pump corner room doors open or undogged.	A.1 Close and dog the affected door.	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 ----------NOTE--------- If either the Unit 2 West Core Spray/LPCI pump corner room door or the Unit 3 East Core Spray/LPCI pump corner room door is open or undogged, then the components in both corner rooms and both Unit's HPCI pumps must be considered inoperable. ---------- Declare affected LPCI, Core Spray, or HPCI pumps inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.5.a.1	Verify the submarine doors of each Core Spray/LPCI corner room are closed and dogged.	7 days

3.6 CONTAINMENT SYSTEMS

3.6.a Drywell Spray

TLCO 3.6.a Two drywell spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One drywell spray subsystem inoperable.	A.1 Restore drywell spray subsystem to OPERABLE status.	7 days
B. Two drywell spray subsystems inoperable.	B.1 Restore one drywell spray subsystem to OPERABLE status.	8 hours
C. Required Action and associated Completion Time not met.	C.1 Enter TLCO 3.0.c.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.a.1	Verify each drywell 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.	31 days
TSR 3.6.a.2	Verify each drywell spray nozzle is unobstructed by performance of an air or smoke flow test of the drywell spray nozzles.	10 years

3.6 CONTAINMENT SYSTEMS

3.6.b Nitrogen Containment Atmospheric Dilution (NCAD) System

TLCO 3.6.b The NCAD System shall be OPERABLE.

APPLICABILITY: MODES 1 during the time period:

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

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. NCAD System inoperable.	A.1 Restore NCAD System to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Enter TLCO 3.0.c	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.b.1	Verify level in liquid storage tank level is ≥ 61 inches of water column at Level Indicator LI 2/3-8541-16	7 days AND After reinerting primary containment
TSR 3.6.b.2	Verify the rated nitrogen flow to primary containment.	24 months

3.6 CONTAINMENT SYSTEMS

3.6.c Drywell-to-Suppression Chamber Differential Pressure

TLCO 3.6.c The drywell pressure shall be maintained ≥ 1.0 psid above the pressure of the suppression chamber.

----------NOTES----------

1. Not required to be met for up to 4 hours during performance of required Surveillances.

2. This TRM does not supersede the requirements of Technical Specification 3.6.2.5

APPLICABILITY: Reactor vessel coolant temperature > 212 °F.

ACTIONS

----------NOTE----------

TLCO 3.0.d is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-suppression chamber differential pressure not within limits.	A.1 Restore differential pressure to within limits.	67 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.c.1	Verify drywell-to-suppression chamber differential pressure is within limits.	12 hours

3.7 PLANT SYSTEMS

3.7.a Containment Cooling Service Water (CCSW) System—Shutdown

TLCO 3.7.a One Unit 2 CCSW pump and flow path shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel assemblies in secondary containment,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required CCSW pump or flow path inoperable.	A.1 Declare supported safety-related equipment inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.a.1	Verify each CCSW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	31 days

3.7 PLANT SYSTEMS

3.7.b Diesel Generator Cooling Water (DGCW) System—Shutdown

TLCO 3.7.b The DGCW System shall be OPERABLE with:

1. One OPERABLE DGCW pump per required subsystem, and
2. An OPERABLE flow path capable of taking suction from the Ultimate heat Sink and transferring water to the associated required diesel generator.

APPLICABILITY: MODES 4 and 5 when the associated diesel generator is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each DGCW subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DGCW subsystems inoperable.	A.1 Declare associated required diesel generators inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.b.1	Verify each required DGCW subsystem valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
TSR 3.7.b.2	Verify each required DGCW pump starts automatically on an actual or simulated initiation signal.	24 months

3.7 PLANT SYSTEMS

3.7.c Ultimate Heat Sink (UHS)—Shutdown

TLCO 3.7.c The UHS shall be OPERABLE.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel in secondary containment,
During CORE ALTERATIONS,
During operations with the potential for draining the reactor vessel.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. UHS inoperable in MODES 4 and 5.	A.1 Declare the required Diesel Generator Cooling Water subsystems inoperable.	Immediately
B. UHS inoperable during movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.	B.1 Declare the required Containment Cooling Service Water subsystems and Diesel Generator Cooling Water subsystems inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.c.1	Verify average water temperature is ≤ 95°F.	24 hours
TSR 3.7.c.2	Verify water level in the CCSW and DGCW pump suction bays is ≥ 501.5 ft mean sea level.	24 hours

3.7 PLANT SYSTEMS

3.7.d Liquid Holdup Tanks

TLCO 3.7.d The quantity of radioactive material contained in each of the following tanks shall be ≤ 0.7 curies and the total quantity of radioactive material shall be ≤ 3.0 curies.

a. Waste Sample tanks;

b. Floor drain sample tanks;

c. Waste Surge tank; and

d. Any outside temporary tank used for storage of radioactive liquids.

e. Rinse Water and Condensate Hold Tanks (Unit 1)

APPLICABILITY: At all times.

ACTIONS

----------NOTE----------
Separate Conditions entry is allowed for each tank.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Quantity of radioactive material in one or more of the tank(s) not within limits.	A.1 Suspend all additions of radioactive material to the affected tank(s)	Immediately
	AND	
	A.2 Reduce affected tank contents to within limits.	48 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.d.1	----------NOTE---------- Not required to be performed for 7 days when tank(s) is empty at the start of addition. ---------- Determine the quantity of radioactive material of each tank is within limits by analyzing a representative sample of the tank's contents.	7 days when radioactive materials are being added to the tank(s) <u>AND</u> Once within 7 days after each completion of addition of radioactive material

3.7 PLANT SYSTEMS

3.7.e Explosive Gas Mixture

TLCO 3.7.e The concentration of hydrogen in the Offgas Holdup System shall be ≤ 4% by volume.

APPLICABILITY: During Offgas Holdup System operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Hydrogen concentration in the Offgas Holdup System > 4% by volume.	A.1 Restore concentration to within limit.	48 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.e.1	Verify hydrogen concentration in the Offgas Holdup System is ≤ 4% by volume.	24 hours

3.7 PLANT SYSTEMS

3.7.f Flood Protection

TLCO 3.7.f Flood protection shall be available for all required safe shutdown systems, components, and structures.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Water level > 506.5 ft mean sea level USGS datum.	A.1 Initiate applicable flood protection measures.	Immediately
B. Water level > 509.0 ft mean sea level USGS datum. OR Water level predicted to be > 509.0 ft mean sea level USGS datum in ≤ 72 hours.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.f.1	----------NOTE---------- Not required to be performed if water level is < 506.0 ft mean sea level USGS datum. ---------- Determine water level at the Unit 2/3 crib house.	2 hours
TSR 3.7.f.2	Determine water level at the Unit 2/3 crib house.	24 hours

3.7 PLANT SYSTEMS

3.7.g Sealed Source Contamination

TLCO 3.7.g Each sealed source containing radioactive material either in excess of 100 μCi of beta and/or gamma emitting material or 5 μCi of alpha emitting material shall be free of ≥ 0.005 μCi of removable contamination.

APPLICABILITY: At all times.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. --------NOTE---------- Required Actions A.2 and A.3 shall be completed whenever Condition A is entered. ---------- One or more sealed sources with removable contamination not within limits.	A.1 Withdraw the sealed source from use.	Immediately
	AND	
	A.2.1 Initiate action to decontaminate and repair the sealed source.	Immediately
	OR	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Initiate action to dispose of the sealed source in accordance with NRC Regulations.	Immediately
	AND	
	A.3 Initiate a Corrective Action Program report.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Each sealed source shall be tested for leakage and/or contamination by the licensee, or other persons specifically authorized by the Commission or Agreement State.

2. The test method shall have a detection sensitivity of at least 0.005 μCi per test sample.

3. Startup sources and fission detectors previously subjected to core flux are exempted from the TSRs.

4. Sealed sources which are continuously enclosed within a shielded mechanism (i.e., sealed sources within radiation monitoring or boron measuring devices) are considered to be stored and need not be tested unless they are removed from the shielded mechanism.

SURVEILLANCE		FREQUENCY
TSR 3.7.g.1	----------NOTE---------- Only required to be performed on sources in use. ---------- Perform leakage testing for all sealed sources containing radioactive materials with a half-life > 30 days (excluding Hydrogen 3) and in any form other than gas.	184 days
TSR 3.7.g.2	----------NOTES---------- 1. Only required to be performed on stored sources not in use. 2. Only required to be performed if not tested within the previous 6 months. ---------- Perform leakage testing for each sealed source and fission detector.	Prior to use or transfer to another licensee

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.g.3	----------NOTE---------- Only required to be performed on stored sources not in use. ---------- Perform leakage testing on sealed sources and fission detectors transferred without a certificate indicating the last test date.	Prior to use
TSR 3.7.g.4	----------NOTE---------- Only required to be performed on sealed startup sources and fission detectors not previously subjected to core flux. ---------- Perform leakage testing for each sealed startup source and fission detector.	Once within 31 days prior to being subjected to core flux or installed in the core or following repair or maintenance to sources

3.7.h Snubbers

TLCO 3.7.h All required snubbers shall be OPERABLE.

----------NOTE----------
Not applicable to snubbers installed on nonsafety related systems unless their failure, or failure of the associated system(s), would adversely affect any safety related system.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Required Action A.2 shall be completed whenever this Condition is entered. ---------- One or more required snubber(s) inoperable.	A.1 Replace or restore the snubber to OPERABLE status.	72 hours
	AND	
	A.2 Perform an engineering evaluation on the attached component to determine if the component is acceptable for continued operation.	72 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Actions and associated Completion Time not met.	B.1 Declare the attached system inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
The provisions of TSR 3.0.b are applicable for all inspection intervals up to and including 48 months.

SURVEILLANCE	FREQUENCY
TSR 3.7.h.1 Perform augmented inservice inspection.	Examination and testing of all safety related snubbers shall be performed in accordance with the 10 CFR 50.55a approved edition of the ASME OMa code, subsection ISTD.

3.7 PLANT SYSTEMS

3.7.i Fire Water Supply System

TLCO 3.7.i The Fire Water Supply System shall be OPERABLE with:

1. A flow path for the Unit 2/3 fire pump capable of taking suction from the Unit 2/3 intake canal and aligned to discharge to the fire water supply header;

2. A flow path to the Unit 1 fire pump capable of taking suction from the Unit 1 intake canal and aligned to discharge to the fire water supply header;

3. Automatic initiation logic for each fire pump;

4. Fire water supply header piping with sectional control valves to the yard loop, the front valve ahead of the water flow alarm device on each sprinkler or water spray system, and the standpipe system.

APPLICABILITY: At all times.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each fire pump.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fire pump or water supply inoperable.	A.1 Restore equipment to OPERABLE status.	7 days
	OR	
	A.2 Prepare a corrective action program report.	7 days

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two fire pumps or water supplies inoperable.	B.1 Establish a backup water supply.	24 hours
C. Required Action B.1 and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.i.1	Verify the electrolyte level of each battery for each diesel driven fire pump is above the plates.	31 days
TSR 3.7.i.2	Verify the overall battery voltage for each diesel driven fire pump is ≥ 24 volts.	31 days
TSR 3.7.i.3	Verify the unit 1 diesel driven fire pump fuel storage day tank contains ≥ 150 gallons of fuel and the unit 2/3 diesel driven fire pump fuel storage day tank contains ≥ 208 gallons of fuel.	31 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.i.4	Start each fire pump from ambient conditions and operate each fire pump on recirculation flow for ≥ 30 minutes.	31 days
TSR 3.7.i.5	Verify a sample of fuel from the diesel driven fire pump fuel storage tank, obtained in accordance with ASTM-D4057-95, is within the acceptable limits specified in Table 1 of ASTM-D975-98b with respect to viscosity, water content, and sediment.	92 days
TSR 3.7.i.6	----------NOTE---------- Not applicable for nickel cadmium batteries. ---------- Verify the specific gravity of each battery for the diesel driven fire pump is appropriate for continued service of the battery.	92 days
TSR 3.7.i.7	Verify that each valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	184 days
TSR 3.7.i.8	Perform a system flush.	12 months
TSR 3.7.i.9	Verify the battery and battery racks for each diesel driven fire pump show no visual indication of physical damage or abnormal deterioration.	18 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.i.10	Verify the battery-to-battery and terminal connections for each diesel driven fire pump are clean, tight, free of corrosion and coated with anti-corrosion material.	18 months
TSR 3.7.i.11	Perform a system functional test, which includes simulated automatic actuation of the system throughout its operating sequence and: a. Verify that each automatic valve in the flow path actuates to its correct position; b. Verify that the Unit 2/3 fire pump develops ≥ 3000 gpm at a system pressure ≥ 127 psig; and c. Verify that the Unit 1 fire pump develops ≥ 2500 gpm at a system pressure ≥ 136 psig.	18 months
TSR 3.7.i.12	Perform a system functional test in accordance with NFPA 20-1976.	18 months
TSR 3.7.i.13	Cycle each testable valve in the flow path through one complete cycle.	18 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.i.14	Perform a flow test of the system in accordance with the "Tests of Water Supplies" chapter of the Fire Protection Handbook published by the National Fire Protection Association.	36 months
TSR 3.7.i.15	Inspect the diesel of each diesel driven fire pump in accordance with procedures prepared in conjunction with the manufacturer recommendations for the class of service.	72 months

3.7 PLANT SYSTEMS

3.7.j Water Suppression Systems

TLCO 3.7.j The Water Suppression Systems shown in Table T3.7.j-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the suppression systems is required to be OPERABLE.

ACTIONS

-------NOTE-------
Separate Condition entry is allowed for each Water Suppression System.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Water Suppression Systems inoperable.	A.1 -------NOTE--------- 1. Not applicable for Unit 2/3 mezzanine 534 ft elevation area and hydrogen seal oil areas. 2. Not applicable for inaccessible areas. 3. Not applicable for areas with OPERABLE detection. ---------- Establish an hourly fire watch patrol with backup fire suppression equipment.	1 hour
	AND	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 -------NOTE---------- 1. Not applicable for Unit 2/3 mezzanine 534 ft elevation area and hydrogen seal oil areas. 2. Not applicable for accessible areas. 3. Not applicable for areas with OPERABLE detection. ---------- Establish a once per 8 hour fire watch patrol with backup fire suppression equipment.	1 hour
	<u>AND</u>	
	A.3 -------NOTE---------- Applicable for Unit 2/3 mezzanine 534 ft elevation area and hydrogen seal oil areas. ---------- Establish a continuous fire watch with backup fire suppression equipment.	1 hour
	<u>AND</u>	
		(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4.1 Restore the system to OPERABLE status.	14 days
	OR	
	A.4.2 Prepare a corrective action program report.	14 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.j.1	Verify each manual, power operated, or automatic valve in the flow path is in the correct position.	184 days
TSR 3.7.j.2	Cycle each testable valve in the flow path through one complete cycle of full travel.	12 months
TSR 3.7.j.3	Perform a system functional test, which includes simulated automatic actuation of the system, and verify that automatic valves in the flow path actuate to their correct positions.	18 months

(continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.j.4	----------NOTES---------- Not required to be performed for sprinkler piping inaccessible during plant operations. ---------- Perform visual inspection of the sprinkler piping to verify its integrity.	18 months
TSR 3.7.j.5	----------NOTES---------- Not required to be performed for nozzles inaccessible during plant operations. ---------- Perform visual inspection of each nozzle's spray area to verify that the spray pattern is not obstructed.	18 months
TSR 3.7.j.6	----------NOTES---------- Only required to be performed for sprinkler piping inaccessible during plant operations. ---------- Perform visual inspection of the sprinkler piping to verify its integrity.	24 months
TSR 3.7.j.7	----------NOTES---------- Only required to be performed for nozzles inaccessible during plant operations. ---------- Perform visual inspection of each nozzle's spray area to verify that the spray pattern is not obstructed.	24 months

(continued)

SURVEILLANCE		FREQUENCY
TSR 3.7.j.8	Perform a flow test through each open head spray nozzle and verify each open head spray nozzle is properly aimed and unobstructed.	36 months

Table T3.7.j-1 (page 1 of 2)
Water Suppression Systems

I. Preaction sprinkler system

1. Unit 2 HPCI Room Preaction System.
2. Unit 3 HPCI Room Preaction System.
3. Instrument Air Compressor 2-4706 Preaction System.
4. Unit 2 Hatchways and Stairways El. 570' - 0" and 589' - 0" Col's 43, 44 42 N to M Preaction System.
5. Unit 3 Around Hatchways el. 613' - 0" and 589' - 0" Col's 45, 46 - N M Preaction System.
6. Mezz. Floor Cable Concentration Area Col. Row 33 to 38 G to H Preaction In-Tray Sprinkler System.

II. Wet pipe sprinkler systems

1. Unit 2/3 Diesel Generator Day Tank Wet Pipe Sprinkler System
2. Unit 2 ACAD Air Compressor Wet Pipe Sprinkler System
3. Unit 3 ACAD Air Compressor Wet Pipe Sprinkler System
4. Unit 2 Condensate Pump Room Wet Pipe Sprinkler System *
5. Unit 3 Condensate Pump Room Wet Pipe Sprinkler System *
6. Unit 2 CRD and CCSW Pumps Wet Pipe Sprinkler System *
7. Unit 3 CRD and CCSW Pumps Wet Pipe Sprinkler System *
8. Clean and Dirty Oil Tank Room Wet Pipe Sprinkler System *
9. Unit 2 Below Turbine South Side Wet Pipe Sprinkler System *
10. Unit 3 Below Turbine South Side Wet Pipe Sprinkler System *
11. Unit 2 Reactor Feed Pump and Speed Increaser Wet Pipe Sprinkler System *
12. Unit 3 Reactor Feed Pump and Speed Increaser Wet Pipe Sprinkler System *
13. Unit 2 Below Turbine North Side Wet Pipe Sprinkler System *
14. Unit 3 Below Turbine North Side Wet Pipe Sprinkler System *
15. Unit 2 Trackway and area between Column 33 and 35 F and G Wet Pipe Sprinkler System *
16. Unit 3 Trackway Wet Pipe Sprinkler System *
17. Unit 2 Diesel Generator Day Tank Wet Pipe Sprinkler System *
18. Unit 3 Diesel Generator Day Tank Wet Pipe Sprinkler System *
19. Unit 2 and 3 Cable Tunnel Wet Pipe Sprinkler System
20. Unit 2 and 3 Turbine Building Common Mezzanine Area Wet Pipe Sprinkler System *
21. Unit 2 Wet Pipe Sprinkler System at Ceiling above Stator Cooling and H2 Seal Oil *
22. Unit 3 Wet Pipe Sprinkler System at Ceiling above Stator Cooling and H2 Seal Oil *
23. Unit 2 MG Set 2A-251 and 2B-251 Fluid Drive Wet Pipe Sprinkler System *
24. Unit 3 MG Set 3A-251 and 3B-251 Fluid Drive Wet Pipe Sprinkler System *
25. Unit 2 Turbine Bearing Lift Pump (Col-36) Wet Pipe Sprinkler System *
26. Unit 2 Turbine Bearing Lift Pump (Col-41) Wet Pipe Sprinkler System *
27. Unit 3 Turbine Bearing Lift Pump (Col-47) Wet Pipe Sprinkler System *
28. Unit 3 Turbine Bearing Lift Pump (Col-53) Wet Pipe Sprinkler System *
29. Unit 2 and 3 Turbine Building Common Area Corridor Elev. 517'-6" Wet Pipe Sprinkler System
30. Unit 2/3 Cribhouse Lower Level Wet Pipe Sprinkler System
31. Unit 2/3 Cribhouse Upper East Wet Pipe Sprinkler System *
32. Unit 2/3 Cribhouse Upper West Wet Pipe Sprinkler System *
33. Unit 2 Mechanical Opening Outside of Safe Shutdown Heat Exchanger Room Wet Pipe Sprinkler System
34. Unit 3 Mechanical Opening Outside of Safe Shutdown Heat Exchanger Room Wet Pipe Sprinkler System
35. Unit 2 Ladderway 587'-0", Col. 38 M, Wet Pipe Sprinkler System
36. Unit 3 Ladderway 587'-0", Col. 50 M, Wet Pipe Sprinkler System
37. Unit 1 Diesel Fire Pump Wet Pipe Sprinkler System *
38. Unit 2 Oil Storage Area Wet Pipe Sprinkler System *
39. Unit 1 West Aux Bay South Wet Pipe Sprinkler System *
40. Unit 1 West Aux Bay North Wet Pipe Sprinkler System *
41. E.H.C. Units 2-5614 and 3-5614 Wet Pipe Sprinkler System

(continued)

* These Wet Pipe Sprinkler Systems do not have fire detection systems in the same area.

Table T3.7.j-1 (page 2 of 2)
Water Suppression Systems

III. Water spray (open head) systems

1. Unit 2 Turbine Oil Reservoir Deluge System.
2. Unit 2 Turbine Oil Reservoir Deluge System.
3. Unit 2 Hydrogen Seal Unit Deluge System.
4. Unit 3 Hydrogen Seal Unit Deluge System.
5. Diesel Fire Pump and Day Tank Deluge System.
6. Main Power Transformer #2 Deluge System.
7. Main Power Transformer #3 Deluge System.
8. Auxiliary Transformer #21 Deluge System.
9. Auxiliary Transformer #31 Deluge System.
10. Reserve Auxiliary Transformer #22 Deluge System.
11. Reserve Auxiliary Transformer #32 Deluge System.
12. Unit 2 Bus Duct Penetration Deluge System.
13. Unit 3 Bus Duct Penetration Deluge System.
14. Cribhouse Cable Tray Open Head Water Spray System.
15. 2/3 D.G. Cooling Water Pump Deluge System.

3.7 PLANT SYSTEMS

3.7.k Gaseous Suppression System

TLCO 3.7.k The Gaseous Suppression System shown in Table T3.7.k-1 shall be OPERABLE with:

1. CO_2 subsystems;

2. Auxiliary Electric Equipment Room (AEER) Halon subsystem with 8 OPERABLE initial discharge cylinders and 5 OPERABLE extended discharge cylinders; and

3. OPERABLE Prime Computer room halon subsystem with each halon cylinder OPERABLE.

APPLICABILITY: Whenever the equipment protected by the Gaseous Suppression System is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more CO_2 inoperable.	A.1 Establish an hourly fire watch patrol with backup fire suppression equipment in the unprotected area(s). <u>AND</u>	1 hour (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Restore inoperable CO_2 subsystem(s) to OPERABLE status	14 days
	OR	
	A.2.2 Prepare a corrective action program report.	14 days
B. One or more halon subsystems inoperable.	B.1 ---------NOTE---------- Only applicable for inoperable AEER halon subsystem. ---------- Establish a dedicated continuous fire watch with backup fire suppression equipment for the unprotected area(s).	1 hour
	AND	
	B.2 ---------NOTE---------- Only applicable for inoperable prime computer room halon subsystem. ---------- Establish a dedicated roving fire watch.	1 hour
	AND	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.3.1 Restore inoperable halon subsystem(s) to OPERABLE status.	14 days
	OR	
	B.3.2 Prepare a corrective action program report.	14 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.k.1	Verify CO_2 storage tank level is $\geq$ 50% full.	7 days
TSR 3.7.k.2	Verify CO_2 storage tank pressure is $\geq$ 250 psig.	7 days
TSR 3.7.k.3	Verify each manual, power-operated, and automatic valve in the flow path is in its correct position.	184 days
TSR 3.7.k.4	Verify each halon cylinder (initial and extended discharge) weight is $\geq$ 95% of full charge weight.	184 days
TSR 3.7.k.5	Verify each halon cylinder (initial and extended discharge) pressure is $\geq$ 90% of full charge pressure.	184 days
TSR 3.7.k.6	Verify the required system valves and associated motor operated ventilation dampers actuate, manually and automatically, upon receipt of a simulated actuation signal.	18 months
TSR 3.7.k.7	Verify flow from each nozzle during a "Puff Test."	18 months

Table T3.7.k-1 (page 1 of 1)
Gaseous Suppression Systems

I. Carbon dioxide total flooding subsystems

1. Unit 2/3 Diesel Generator and day tank rooms.
2. Unit 2 Diesel Generator and day tank rooms.
3. Unit 3 Diesel Generator and day tank rooms.
4. Auxiliary Electrical Equipment Room (manual backup).

II. Halon suppression subsystems

1. Auxiliary Electrical Equipment Room
2. Prime Computer room.

3.7 PLANT SYSTEMS

3.7.1 Fire Hose Stations

TLCO 3.7.1 The fire hose stations shown in Table T3.7.1-1 (Unit 2), Table T3.7.1-2 (Unit 3), Table T3.7.1-3 (Unit 2/3 and Unit 1) shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE.

ACTIONS

----------NOTES----------
1. Separate Condition entry is allowed for each fire hose station.

2. Where it can be demonstrated that the physical routing of the fire hose would result in a recognizable hazard to operating personnel, plant equipment, or the hose itself, the fire hose shall be marked and stored near the gated wye(s) to identify hose use.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required fire hose stations inoperable.	A.1 -------NOTE---------- Only applicable if inoperable fire hose is the primary means of fire suppression. ---------- Route an additional fire hose of equal or greater diameter to the unprotected area(s)/zone(s) from an OPERABLE hose station.	1 hour
	<u>AND</u>	(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2	--------NOTE--------- Not applicable if inoperable fire hose is a primary means of fire suppression. ----------	
		Route an additional fire hose of equal or greater diameter to the unprotected area(s)/zone(s) from an OPERABLE hose station.	24 hours
	AND		
	A.3.1	Restore the inoperable fire hose station(s) to OPERABLE status.	14 days
	OR		
	A.3.2	Prepare a corrective action program report.	14 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.1.1	Perform visual inspection of the required fire hose stations to assure all required equipment is at the station.	92 days
TSR 3.7.1.2	Remove each required fire hose for inspection and repacked.	18 months
TSR 3.7.1.3	Perform a gasket inspection and replace any degraded gaskets in the couplings.	18 months
TSR 3.7.1.4	Partially open each required hose station valve to verify OPERABILITY and no flow blockage.	36 months
TSR 3.7.1.5	Perform a hydrostatic test of each required hose at a pressure ≥ 50 psig above the maximum line pressure at that station.	5 years after installation AND Once per 3 years thereafter

Table T3.7.l-1 (page 1 of 2)
Fire Hose Stations (Unit 2)

HOSE REEL NUMBER	ELEVATION	LOCATION	FIRE ZONE
		Reactor Building	
F50	613'	N.E. Wall at elevator	1.1.2.6
F51	613'	N. Wall Center	1.1.2.6
F52	613'	S.E. Corner	1.1.2.6
F53	613'	S. Wall at Stairs	1.1.2.6
F54	589'	N.E. Wall at elevator	1.1.2.5.D
F55	589'	S. of Standby Liquid Tank	1.1.2.5.D
F56	589'	S.E. of Isolation Condenser	1.1.2.5.A
F57	589'	S.W. Stairs	1.1.2.5.A
F58	570'	N. Wall at elevator	1.1.2.4
F59	570'	Across from Clean-Up Demin.	1.1.2.4
F60	570'	CRD Repair Room	1.1.2.4
F61	570'	W. Wall by RBCCW Tank	1.1.2.4
F61A	570'	By S. Stairs	1.1.2.4
F62	545'	N. Wall near elevator	1.1.2.3
F63	545'	S. Wall near RBCCW Heat Exchanger	1.1.2.3
F64	545'	S.W. Stairs	1.1.2.3
F65	545'	N. of Bus 23-1	1.1.2.3
F66	517'	Near elevator	1.1.2.2
F67	517'	S.E. Wall	1.1.2.2
F68	517'	S.W. Stairs	1.1.2.2
F71	476'	Torus Basement E. Side	1.1.2.1
F72	476'	Torus Basement W. Side	1.1.2.1
F73	476'	S.E. Corner Room	11.2.2
F74	476'	S.W. Corner Room	11.2.1

(continued)

Table T3.7.l-1 (page 2 of 2)
Fire Hose Stations (Unit 2)

HOSE REEL NUMBER	ELEVATION	LOCATION	FIRE ZONE
		Turbine Building	
F75	561'	N.E. Corner	8.2.8.A
F76	561'	N. Inside Shield Wall	8.2.8.A
F77	561'	N. Center by Bearing Lift Pump	8.2.8.A
F78	561'	SE Corner at elevator Entrance	8.2.8.A
F79	561'	S. by Turbine	8.2.8.A
F80	561'	S. Center by M-G Sets	8.2.8.A
F80A	549'	N. Wall U-2 Battery Room	7.0.A.1
F80B	549'	Outside U-2 Passenger elevator	8.2.7
F81	571'	Outside Offgas Recombiner Room	8.2.8.D
F81B	590'	Outside Offgas Condenser Room	8.2.8.D
F82	538'	S. of Stator Cooling Pumps	8.2.6.A
F82A	534'	E. of Trackway Equipment Hatch	8.2.6.A
F82B	534'	Across from Switchgear 23 and 24	8.2.6.A
F85	517'	Near TR2 Valve	8.2.5.A
F85A	517'	Behind MCC 29-2	8.2.5.A
F86	517'	By Door to U-2 Emergency Diesel	8.2.5.A
F86A	517'	U-2 Trackway by A.E.E.R.	8.2.5.A
F87	517'	Across from 2C RFP (W.)	8.2.5.A
F88**	495'	At CRD Pumps	8.2.2.A
F89**	469'	Across from 2D Condensate Pump	8.2.1.A

** Secondary Hose Station

Table T3.7.l-2 (page 1 of 2)
Fire Hose Stations (Unit 3)

HOSE REEL NUMBER	ELEVATION	LOCATION	FIRE ZONE
		Reactor Building	
F100	613'	South West Corner	1.1.1.6
F101	613'	NW by elevator	1.1.1.6
F102	613'	N. Central	1.1.1.6
F103	613'	S. by Stairs	1.1.1.6
F104	589'	S.E. Wall	1.1.1.5.A
F105	589'	S.W. near Isolation Condenser	1.1.1.5.A
F106	589'	N.W. near elevator	1.1.1.5.D
F107	589'	N. by Standby Liquid Tank	1.1.1.5.D
F108	570'	Across from Clean-up Demin.	1.1.1.4
F109	570'	NW by elevator	1.1.1.4
F110	570'	S.W. near RBCCW Tank	1.1.1.4
F111	570'	S.E. Wall at Equipment Hatch	1.1.1.4
F112	545'	S.W. Wall at Equipment Hatch	1.1.1.3
F113	545'	S.W. Wall near Bus 34-1	1.1.1.3
F114	545'	N.W. Wall at elevator	1.1.1.3
F115	545'	NE by Filter Sludge Tank	1.1.1.3
F116	517'	S.E. Wall at Stairs	1.1.1.2
F117	517'	S.W. Wall at Stairs	1.1.1.2
F118	517'	W. Accumulator Area	1.1.1.2
F119	476'	S.E. Corner Room	11.1.2
F120	476'	Torus Basement - East	1.1.1.1
F121	476'	Torus Basement - West	1.1.1.1
F122	476'	S.W. Corner Room	11.1.1

(continued)

Table T3.7.l-2 (page 2 of 2)
Fire Hose Stations (Unit 3)

HOSE REEL NUMBER	ELEVATION	LOCATION	FIRE ZONE
		Turbine Building	
F123	561'	N. Central - East of Brg. Lift Pump	8.2.8.A
F124	561'	North Center inside Shield Wall	8.2.8.A
F125	561'	N.W. Corner	8.2.8.A
F126	561'	S. Center - By MG Sets	8.2.8.A
F127	561'	S. of Turbine	8.2.8.A
F128	561'	S.W. by Hatchway	8.2.8.A
F129	538'	Feedwater Regulating Valves	8.2.6.E
F130	538'	S.W. Wall near DC Switch Room	8.2.6.E
F130A	538'	W. Wall of U-3 Trackway Equip Hatch	8.2.6.E
F131	517'	U-3 Trackway	8.2.5.E
F132	517'	Near 3C RFP	8.2.5.E
F133	517'	Near 3A RFP	8.2.5.E
F139**	495'	Near 3A CRD Pump	8.2.2.B
F140**	469'	Near 3A Condensate Booster Pump	8.2.1.B
F141	590'	Outside Offgas Condenser Room	8.2.8.D
F142	571'	Outside Offgas Recombiner Room	8.2.8.D

** Secondary Hose Station

Table T3.7.l-3 (page 1 of 1)
Fire Hose Stations (Unit 2/3 and Unit 1)

HOSE REEL NUMBER	ELEVATION	LOCATION	FIRE ZONE
		2/3 Cribhouse	
F2/3-21**	517'	By Bus 20	11.3
F2/3-22**	517'	By Bus 30	11.3
		2/3 Diesel Generator	
F67A	517'	Interlock Hallway	9.0.C
		Turbine Building	
F83	534'	N. Wall at TBCCW Pump	8.2.6.C
F84**	534'	E. of Standby Gas Treatment	8.2.6.C
F134**	517'	Near CO_2 Storage Tank	8.2.5.C
F135	517'	Near Freight elevator	8.2.5.C
F136**	534'	Near Freight elevator	8.2.6.C
F137**	534'	Behind MCC 39-2	8.2.6.C
F138	534'	At TBCCW Pumps	8.2.6.C
		Unit 1 Structure	
F11	517'	Crib House - Ground Level South	
F29	529'	Turbine Building - South Stairway to Control Room	
F47	534'	Outside Control Room (North East)	
		Unit 1 West Aux. Bay	
F23	517'	PRI Feed Pump Room	
F22	517'	Outside Prime Computer Room	
F27	517'	North Corridor	
F21	517'	Emergency Diesel Area	

** Secondary Hose Station

3.7 PLANT SYSTEMS

3.7.m Safe Shutdown Lighting

TLCO 3.7.m The emergency lights shown in Table T3.7.m-1 and Table T3.7.m-2 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each emergency light.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required emergency lights inoperable.	A.1 ---------NOTE---------- Backup lighting may be provided by placing a backup OPERABLE emergency lighting unit in the field or by crediting the existence of portable lighting. The backup lighting must have a > 8 hour battery supply. ---------- Establish backup lighting for the affected area.	7 days
	OR	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Restore inoperable emergency lights to OPERABLE status.	7 days
	OR	
	A.2.2 Prepare a corrective action program report.	7 Days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.m.1	Verify each required battery voltage is > 6.0 volts for 6 volt units and is > 12 volts for 12 volt units.	92 days
TSR 3.7.m.2	Verify electrolyte level in required refillable lead acid batteries is within required limit.	92 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.m.3	Verify each required emergency light illuminates.	92 days
TSR 3.7.m.4	Verify, for each required battery, that all hydrometer discs are floating at the top of the channel.	92 days
TSR 3.7.m.5	Perform an 8 hour discharge test or battery conductance test.	18 months

Table T3.7.m-1 (page 1 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2/3	Radwaste	EL. 517'-6"	C-48	-2244	48	F-213-6
2/3	Air Conditioning Room	EL. 529'-6"	H-29	-127B 127F	100	F-205-6
2/3	Air Conditioning Room	EL 529'-6"	H-29	-127B -127F	101	F-205-6
2/3	Control Room	EL. 529'-6"	H-29	-127	102	F-205-6
2/3	Stairwell #1	EL. 529'-6"	L-29	-127	103	F-205-6
2/3	Control Room	EL. 517"-6"	D-28	-127	104	F-205-6
2/3	Ground Floor	EL. 517'-6"	L_1-30	-128	105	F-205-6
2/3	Shift Mgr Off	EL. 531'-6"	A-2	-127	106	F-205-6
2/3	Control Room	EL. 534'-0"	F-30	-127B	110	F-205-6
2/3	Pedway	EL. 534'-0"	H.1-0.5	-6868-E13	111	F-205-6
2/3	Stairway No. 4	EL. 525'-3"	A.5-0.5	-6868-E13	112	F-205-6
2	Reactor	EL. 517'-6"	M-44	-2236	200	F-201-6
2	Reactor	EL. 517'-6"	L-38	-2236	201	F-201-6
2	Reactor	EL. 545'-6"	M-44	-2234	203	F-202-6
2	Reactor	EL. 570'-0"	H-40	-2231	204	F-203-6
2	Reactor	EL. 570'-0"	M-42	-2232	205	F-203-6
2	Turbine	EL. 517'-6"	G-35	-2212	208	F-207-6
2	Turbine	EL. 517'-6"	H-34	-2212	208B	F-207-6
2	Turbine	EL. 517'-6"	H-35	-2212	209	F-207-6
2	Turbine	EL. 517'-6"	G-44	-2213	212	F-207-6
3	Turbine	EL. 517-6"	D-44	-3210	213	F-208-6
2	Turbine	EL. 538'-0"	D-44	-3206 -2207	214	F-210-6
2	Turbine	EL. 534'-0"	G-31	-2217	216	F-205-6
2/3	Control Room	EL. 534'-0"	G-31	-2217	216A	F-205-6
2/3	Diesel	EL. 504'-6"	N-44	-2220	217	F-206-6
2	Turbine	EL. 517'-6"	E-31	-2219	220	F-205-6
2	Crib House	EL 517'-6"	A-2	-2241	221	F-214-6

(continued)

Table T3.7.m-1 (page 2 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2	Reactor	EL. 517'-6"	M-41	-2236	232	F-201-6
2	Reactor	EL. 589'-0"	M-39	-2230	237	F-204-6
2	Turbine	EL. 517'-6"	D-40	-2211	241	F-207-6
2	Turbine	EL. 517'-6"	D-42	-2211	242	F-207-6
2	Turbine	EL. 517'-6"	D-43	-2211	242A	F-207-6
2	Turbine	EL. 517'-6"	F-33	-2212	243	F-207-6
2	Turbine	EL. 517'-6"	F-36	-2212	244	F-207-6
2	Turbine	EL. 517'-6"	H-32	-2219	246	F-205-6
2	Turbine	EL. 517'-6"	G-33	-2219	246A	F-205-6
2	Turbine	EL. 534'-0"	D-31	-2226	247	F-205-6
2	Turbine	EL. 534'-0"	G-33	-2208 -2217	251	F-205-6
2/3	Turbine	El. 534'-0"	G-33	-2217	251A	F-205-6
2	Turbine	EL. 534'-0"	G-43	-2209	252	F-209-6
2	Turbine	EL. 534'-0"	G-43	-2209	253	F211-6
2	Turbine	EL. 561'-0"	D-44	-2204	254	F-211-6
2	Turbine	EL. 561-0"	E-31	-2202	255	F-211-6
2	Turbine	EL. 561'-0"	G-36	-2203	256	F-211-6
2	Turbine	EL. 561'-0"	G-41	-2204	257	F-211-6
2	Reactor	EL. 517'-6"	H-38	-2235	258	F-201-6
2	Reactor	EL. 517'-6"	H-38	-2235	259	F-201-6
2	Reactor	EL. 517'-6"	M-43	-2236	260	F-201-6
2	Reactor	EL. 517'-6"	N-39	-2236	261	F-201-6
2	Reactor	EL. 517'-6"	N-43	-2236	262	F-201-6
2	Reactor	EL. 545'-6"	H-38	-2235	263	F-202-6
2	Reactor	EL. 545'-6"	N-44	-2236	264	F-201-6
2	Reactor	EL. 545'-6"	N-44	-2234	265	F-202-6
2	Reactor	EL. 570'-0"	H-38	-2233	266	F-203-6

(continued)

Table T3.7.m-1 (page 3 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2	Turbine	EL. 561'-0"	H-40	-2205	267	F-211-6
2	Reactor	EL. 570'-0"	J-42	-2231	268	F-203-6
2	Reactor	EL. 570'-0"	N-44	-2232	270	F-203-6
2	Crib House	EL. 490'-8"	B-1	-2243	271	F-214-6
2	Crib House	EL. 517'-6"	B-1	-2241	273	F-214-6
2/3	Crib House	EL. 490'-8"	B-3	-2243	274	F-214-6
2/3	Crib House	EL. 490'-8'	B-5	-2243	275	F-214-6
2/3	T.S.C. Rm.	EL. 518'-0"	H_1-32	7834B	282	F-205-6
2/3	T.S.C. Rm.	EL. 518'-0"	H_1-32	7834B	283	F-205-6
2/3	T.S.C. Rm.	EL. 518'-0"	H_1-32	7834B	284	F-205-6
2/3	T.S.C. Rm.	EL. 518'-0"	H_1-32	7834B	285	F-205-6
2/3	T.S.C. Rm.	EL. 518'-0"	H_1-32	7834B	286	F-205-6
2/3	HPCI Pump & Diesel Bldg.	EL. 504'-6"	N-45	-2220	288	F-201-6
3	Reactor	EL. 475'-0"	N-44	-3238	289	F-201-6
3	Reactor	EL. 589'-0"	M-46	-3230	303	F-204-6
3	Reactor	EL. 570'-0"	H-48	-3231	304	F-203-6
3	Reactor	EL. 570'-0"	M-46	-3232	305	F-203-6
3	Reactor	EL. 545'-6"	M-44	-3234	307	F-202-6
3	Reactor	EL. 517'-6"	K-50	-3236	308	F-201-6
2/3	Radwaste	EL. 517'-6"	C-46	-2244	310	F-213-6
2	Turbine	EL. 534'-0"	F-32	-2217	311	F-205-6
2/3	Control Room	EL. 534'-0"	E-31	-2217	311A	F-205-6
3	Turbine	EL. 517'-6"	G-55	-3213	314	F-208-6
2	Turbine	EL. 517'-6"	G-31	-2219	321	F-205-6
3	Crib House	EL. 517'-6"	A-6	-3241	322	F-214-6
3	Reactor	EL. 517'-6"	M-47	-3236	330	F-201-6
3	Crib House	EL. 490'-8"	B-7	-2243	336	F-214-6
3	Crib House	EL. 517'-6"	B-7	-3241	338	F-214-6

(continued)

Table T3.7.m-1 (page 4 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
3	Turbine	EL. 517'-6"	C-45	-3210 -2244	339	F-208-6
3	Turbine	EL. 517'-6"	D-48	-3210	340	F-208-6
3	Turbine	EL. 538'-0"	G-56	-3209	343	F-210-6
3	Turbine	EL. 561'-0"	G-47	-3202	344	F-212-6
3	Turbine	EL. 561'-0"	G-53	-3204	345	F-212-6
3	Reactor	EL. 517'-6"	H-50	-3235	346	F-201-6
3	Reactor	EL. 517'-6"	H-50	-3235	347	F-201-6
3	Reactor	EL. 545'-6"	H-50	-3235	349	F-202-6
3	Reactor	EL. 570'-0"	H-50	-3233	351	F-203-6
3	Reactor	EL. 570'-0"	J-46	-3231	352	F-203-6
3	Reactor	EL. 545'-6"	M-47	-3234	354	F-202-6
3	Turbine	EL. 517'-6"	D-56	-3211	364	F-208-6
3	Turbine	EL. 517'-6"	D-53	-3211	365	F-208-6

Table T3.7.m-2 (page 1 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2	Reactor	EL. 545'-6'	K-38	-2234	202	F-202-6
2	Turbine	EL. 495'-0"	H-34	-2212	208A	F-207-6
2	Turbine	EL. 517'-6"	G-35	-2212	208C	F-207-6
2	Reactor	EL. 589'-0"	M-42	-2230	210	F-204-6
3	Turbine	EL. 549'-0"	D-44	-3217	214A	F-210-6
3	Turbine	EL. 538'-0"	G-44	-3208	215	F-210-6
2	Turbine	EL. 517'-6"	E-32	-2219	220A	F-205-6
2	Reactor	EL. 570'-0"	M-40	-2232	229	F-203-6
2	Reactor	EL. 545'-6"	M-41	-2234	230	F-202-6
2	Turbine	EL. 549'-0"	F-31	-2236	231	F-205-6
2	Turbine	EL. 549'-0"	E-32	-2226	231A	F-205-6
2	Turbine	EL. 495'-0"	D-39	-2216	233	F-206-6
2	Turbine	EL. 495'-0"	D-40	-2216	233A	F-206-6
2	Turbine	EL. 495'-0'	D-37	-2215	234	F-206-6
2	Reactor	EL. 476'-6"	N-44	-2236	235	F-201-6
2	Reactor	EL. 476'-6"	N-43	-2238	235A	F-201-6
2	Reactor	EL. 589'-0"	N-40	-2230	237A	F-204-6
2	Turbine	EL. 517'-6"	F-39	-2212 -2213	238	F-205-6
2	Turbine	EL. 517'-6"	D-33	-2219	239	F-205-6
2	Turbine	EL. 538'-0"	G-35	-2208	240	F-209-6
2	Turbine	EL. 517'-6"	G-41	-2213	245	F-205-6
2	Turbine	EL. 495'-0"	G-39	-2213	245A	F-207-6
2	Turbine	EL. 534'-0"	D-32	-2217	248	F-205-6
2	Turbine	El. 534'-0"	D-33	-2217	249	F-205-6
2	Reactor	EL. 570'-0"	N-42	-2232	269	F-203-6
2	Crib House	EL. 509'-6"	C-3	-2241	272	F-214-6
2/3	HPCI Pump & Diesel Bldg.	EL. 504'-6"	N-45	-2220	276	F-201-6
2/3	Diesel	EL. 504'-6"	N-46	-2220	277	F-201-6
2	Reactor	EL. 517"-0"	J-39	-2235	278	F-201-6

(continued)

Table T3.7.m-2 (page 2 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2	Reactor	EL. 517'-6"	J-39	-2235	278A	F-201-6
2	Reactor	EL. 545'-6"	M-41	-2234	279	F-202-6
2	Reactor	EL. 570'-0"	M-41	-2232	280	F-203-6
2/3	HPCI Pump & Diesel Bldg.	EL. 517'-6"	N-44	-2220	287	F-201-6
2	HPCI Pump & Diesel Bldg.	EL. 476'-6"	N-44	-2220	290	F-201-6
3	HPCI Pump & Diesel Bldg.	EL. 476'-6"	N-45	-2220	291	F-201-6
2	Reactor	EL. 517'-6"	L-44	-2236	292	F-201-6
2	Reactor	EL. 517'-6"	K-43	-2236	293	F-201-6
2	Reactor	EL. 476'-0"	N-44	-2236 -2238	294	F-201-6
2	Reactor	EL. 517'-6"	M-39	-2236	295	F-201-6
2	Reactor	EL. 545'-0"	M-42	-2234	297	F202-6
2	Reactor	EL. 545'-0"	M-40	-2234	298	F-202-6
2	Reactor	EL. 570'-0"	J-43	-2231	299	F-203-6
3	Reactor	EL. 545'-6"	K-50	-3234	306	F-202-6
3	Reactor	EL. 517'-6"	M-44	-3236	309	F-201-6
3	Turbine	EL. 517'-6"	H-54	-3213	313	F-208-6
3	Turbine	EL. 538'-0"	E-55	-3207	315	F-210-6
3	Turbine	EL. 538'-0"	G-53	-3209	316	F-210-6
3	Reactor	EL. 570'-0"	M-47	-3232	327	F-203-6
3	Reactor	EL. 545'-6"	M-47	-3234	328	F-202-6
3	Turbine	El. 538'-0"	H-55	-3209	329	F-210-6
3	Turbine	EL. 495'-0"	D-51	-3216	331	F-206-6
3	Turbine	EL. 495'-0"	D-49	-3215	332A	F-206-6
3	Turbine	EL. 495'-0"	D-49	-3215	332	F-206-6
3	Reactor	EL. 476'-6"	N-49	-3233	333	F-201-6
3	Reactor	EL. 503'-0"	N-50	-3238	333A	F-201-6
3	Turbine	EL. 517'-6"	F-49	-3212	335	F-208-6
3	Crib House	EL. 509'-6"	C-5	-3241	337	F-214-6

(continued)

Table T3.7.m-2 (page 3 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
3	Turbine	EL. 517'-6"	G-46	-3212	341	F-208-6
3	Turbine	EL. 538'-0"	D-55	-3207	342	F-210-6
3	Reactor	EL. 517'-6'	M-49	-3236	348	F-201-6
3	Reactor	EL. 545'-6"	M-48	-3234	350	F-202-6
3	Reactor	EL. 517'-6"	H-45	-3235	353	F-201-6
3	Reactor	EL. 570'-0"	M-47	-3232	355	F-203-6
3	Reactor	EL. 517'-6"	K-49	-3236	356	F-201-6
3	Reactor	EL. 545'-0"	J-49	-3233 3234	357	F-202-6
3	Reactor	EL. 545'-0"	M-46	-3234	358	F-202-6
3	Reactor	EL. 570'-0"	J-46	-3231 -3232	359	F-203-6
3	Reactor	EL. 570'-0"	M-48	-3232	360	F-203-6
3	Reactor	EL. 589'-0"	M-48	-3230	361	F-204-6
3	Reactor	EL. 589'-0"	N-48	-3230	362	F-204-6
3	Turbine	EL. 517'-6"	G-54	-3213	363	F-208-6
3	Turbine	EL. 517'-6"	G-48	-3212	368	F-208-6
3	Reactor	EL. 517'-6"	L-45	-3286 -3236	369	F-201-6
3	Turbine	EL. 538'-0"	H-55	-3209	370	F-210-6
2/3	ISCO Makeup Pump A Room	EL. 517'-6"	L-38	-6021	400A	F-205-6
2/3	ISCO Makeup Pump B Room	EL. 517'-6"	M-38	-6021	400B	F-205-6
2/3	ISCO Makeup Pump A Room	EL. 509'-0"	M-38	-6021	400C	F-205-6
2/3	Turbine	EL. 517'-6"	C-43	-2211	450	F-207-6
2	Turbine	EL. 549'-0"	F-32	-2226	451	F-205-6
2	Reactor	EL. 589'-0"	N-40	-2230	452	F-204-6
2	Turbine	EL. 534'-0"	F-43	-2209	453	F-209-6
3	Turbine	EL. 534'-0"	F-45	-3208	454	F-210-6
3	Turbine	EL. 517'-6"	F-45	-3212	455	F-208-6
2	Turbine	EL. 517'-6"	F-43	-2213	456	F-207-6

(continued)

Table T3.7.m-2 (page 4 of 4)
Safe Shutdown Emergency Lighting

UNIT	BUILDING	ELEVATION	COL/ROW	E-I DWG. 12E	BATT. #	CORRESPONDING ACCESS ROUTE DWG.
2	Reactor	EL. 545'-6"	K-40	-2234	457	F-202-6
2	Turbine	EL. 517'-6"	D-34	-2210	458	F-207-6
2	Turbine	EL. 534'-0"	D-43	-2223	459	F-210-6
3	Reactor	EL. 517'-6"	M-45	-3236	460	F-201-6
3	Reactor	EL. 497'-0"	M-50	-3238	461	F-201-6

3.7 PLANT SYSTEMS

3.7.n Fire Rated Assemblies

TLCO 3.7.n All fire rated assemblies, including walls, floor/ceilings, fire breaks, electrical raceway fire wraps, structural steel fire resistive coating and other fire barriers separating safety-related fire areas or separating portions of redundant/alternate systems important to safe shutdown within a fire area, and all sealing devices in fire rated assembly penetrations (fire doors, fire dampers, cable and piping penetration seals and ventilation duct penetration seals) shall be OPERABLE.

APPLICABILITY: At all times when equipment on either side of the barrier is required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each fire rated assembly.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more fire rated assemblies or sealing devices inoperable.	A.1.1 Establish a continuous fire watch on at least one side of the affected fire rated assembly(s) or device(s). <u>OR</u>	1 hour (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.1.2.1 Verify the OPERABILITY of fire detectors on at least one side of the affected fire rated assembly(s) or device(s).	1 hour
	AND	
	A.1.2.2 Establish a dedicated roving fire watch patrol.	1 hour
	AND	7 days
	A.2.1 Restore inoperable fire rated assembly(s) or device(s) to OPERABLE status.	
	OR	Immediately
	A.2.2.1 Establish a dedicated continuous fire watch on at least one side of the affected fire rated assembly.	
	AND	Immediately
	A.2.2.2 Prepare a corrective action program report.	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.n.1	----------NOTE---------- Only required to be performed for fire doors accessible during power operation. ---------- Perform a functional test of each fire door.	18 months
TSR 3.7.n.2	----------NOTE---------- Only required to be performed for fire doors accessible during power operation. ---------- Inspect the fire door releases, closing mechanism and latches.	18 months
TSR 3.7.n.3	----------NOTE---------- Only required to be performed for fire rated assemblies, fire damper, and sealed penetration accessible during power operation. ---------- Perform a visual inspection of: 1. Exposed surfaces of each fire rated assembly; 2. Each fire damper and associated hardware; and 3. 10% of each type of sealed penetration. Samples shall be selected such that each penetration seal will be inspected every 15 years.	18 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.n.4	----------NOTE---------- 1. Only required to be performed if apparent changes in appearance or abnormal degradations are found. 2. Only required to be performed for sealed penetration accessible during power operation. 3. Sample shall be selected such that each penetration seal will be inspected every 15 years. ---------- Perform visual inspections of an additional 10% of each type of sealed penetration until a 10% sample with no apparent changes in appearance or abnormal degradation is found.	18 months
TSR 3.7.n.5	----------NOTE---------- Only required to be performed for fire doors inaccessible during power operation. ---------- Perform a functional test of each fire door.	24 months
TSR 3.7.n.6	----------NOTE---------- Only required to be performed for fire doors inaccessible during power operation. ---------- Inspect the fire door releases, closing mechanism and latches.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.n.7	----------NOTE---------- Only required to be performed for fire rated assemblies, fire damper, and sealed penetration inaccessible during power operation. ---------- Perform a visual inspection of: 1. Exposed surfaces of each fire rated assembly; 2. Each fire damper and associated hardware; and 3. 10% of each type of sealed penetration. Samples shall be selected such that each penetration seal will be inspected every 15 years.	24 months
TSR 3.7.n.8	----------NOTE---------- 1. Only required to be performed if apparent changes in appearance or abnormal degradations are found. 2. Only required to be performed for fire rated assemblies, fire damper, and sealed penetration inaccessible during power operation. 3. Sample shall be selected such that each penetration seal will be inspected every 15 years. ---------- Perform visual inspections of an additional 10% of each type of sealed penetration until a 10% sample with no apparent changes in appearance or abnormal degradation is found.	24 months

3.7 PLANT SYSTEMS

3.7.o Condensate Pump Room Flood Protection

TLCO 3.7.o Condensate pump room flood protection shall be OPERABLE with:

1. Condenser pit level that trips the condenser circulating water pumps and alarms in the control room on condenser pit 5 foot water level; and

2. OPERABLE Containment Cooling Service Water (CCSW) System vault and vault door.

APPLICABILITY: Whenever the CCSW System is required to be OPERABLE and the Circulating Water System is in operation.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each condenser pit high water level switch.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One condenser pit 5 foot water level switch inoperable.	A.1 Place the inoperable switch in trip.	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two condenser pit 5 foot water level switches inoperable.	B.1 Restore one inoperable switch to OPERABLE status.	7 days
	OR	
	B.2 Declare CCSW System pumps A and D inoperable.	7 days
C. CCSW System vault inoperable.	C.1 Declare CCSW System pumps B and C inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.o.1	Perform CHANNEL CALIBRATION of the condenser pit 5 foot water level switches. The Trip Settings shall be ≤ 5'0" above the condenser pit floor.	12 months
TSR 3.7.o.2	Verify the combined leakage for all CCSW Pump Vault flood protection barriers is ≤ 1.5 gpm when tested as follows: a. Hydrostatically test the bulkhead door at 15 ± 2 psig; b. Hydrostatically test the floor drain check valve at 10 ± 2 psig; and c. Pneumatically test the testable penetrations at 15 ± 2 psig.	18 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.o.3	Perform a LOGIC SYSTEM FUNCTIONAL TEST of the condenser pit water level trip and alarm instruments.	24 months
TSR 3.7.o.4	Check the CCSW System vault floor drain by functionally testing the air operated valves on loss of air and on high level (5'-0") in the condensate pump room.	24 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.a 24/48 Volt DC System

TLCO 3.8.a Each Unit 2(3) 24/48 volt DC electrical power source shall be OPERABLE with battery cell parameters within limits specified in Table T3.8.a-1.

APPLICABILITY: Whenever equipment powered by the batteries is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Table T3.8.a-1 Category A or B limits.	A.1 Verify pilot cell(s) electrolyte level and float voltage meet Table T3.8.a-1 Category C limits.	1 hour
	AND	
	A.2 Verify battery cell parameters meet Table T3.8.a-1 Category C limits.	24 hours AND Once per 7 days thereafter
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 Restore battery cell parameters to Table T3.8.a-1 Category A and B limits.	31 days
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more batteries with average electrolyte temperature of the representative cells not within limits. <u>OR</u> One or more batteries with one or more battery cell parameters not within Table 3.8.a-1 Category C limits.	B.1 Declare associated battery inoperable.	Immediately
C. One or more 24/48 volt DC electrical power sources inoperable.	C.1 Declare all associated loads supplied by the inoperable 24/48 volt DC electrical power source inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.a.1	Verify battery cell parameters meet Table 3.8.a-1 Category A limits.	7 days
TSR 3.8.a.2	Verify correct breaker alignment to battery chargers and total battery terminal voltage is ≥ 24.2 volts, as applicable on float charge.	7 days
TSR 3.8.a.3	Verify battery cell parameters meet Table 3.8.a-1 Category B limits.	92 days AND Once within 7 days after battery discharge < 20.9 V AND Once within 7 days after battery overcharge > 30 V

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.a.4	Verify average electrolyte temperature of all connected cells is ≥ 65°F.	92 days AND Once within 7 days after battery discharge < 20.9 V AND Once within 7 days after battery overcharge > 30 V
TSR 3.8.a.5	----------NOTE---------- Connection resistance limits are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables or conductors located between cells, racks, or tiers). ---------- Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections and ≤ 1.5E-4 ohm for terminal connections.	92 days AND Once within 7 days after battery discharge < 20.9 V AND Once within 7 days after battery overcharge > 30 V

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.a.6	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that would degrade battery performance.	24 months
TSR 3.8.a.7	Verify battery cell to cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.	24 months
TSR 3.8.a.8	----------NOTE---------- Connection resistance limits are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables or conductors located between cells, racks, or tiers). ---------- Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections and ≤ 1.5E-4 ohm for terminal connections.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.a.9	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 AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

Table T3.8.a-1 (page 1 of 1)
Battery Cell Parameter Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[b][c]	≥ 1.200	≥ 1.195 AND Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during and following equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature and level.

(c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

3.8 ELECTRICAL POWER SYSTEMS

3.8.b Battery Monitoring and Maintenance

TLCO 3.8.b Battery cell parameters for the 125 V and 250 V station batteries shall be within limits.

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

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Table T3.8.b-1 Category A or B limits.	A.1 Verify pilot cell(s) electrolyte level and float voltage meet Table T3.8.b-1 Category C limits.	1 hour
	AND	
	A.2 Verify battery cell parameters meet Table T3.8.b-1 Category C limits.	24 hours AND Once per 7 days thereafter
	AND	
	A.3 Restore battery cell parameters to Table T3.8.b-1 Category A and B limits.	31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ---------NOTE------- Required Actions B.1 and B.2 must be completed after LCO 3.8.6 “Battery Parameters,” Required Action D.3 is completed. ----------	B.1 Conduct an equalizing charge of the affected battery cell(s).	31 days
	AND	
	B.2 Verify successful completion of appropriate testing for the affected cell(s).	31 days
One Battery with one or more cells with electrolyte level less than minimum established design limit.		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.b.1	Verify battery cell parameters meet Table T3.8.b-1 Category A limits.	7 days
TSR 3.8.b.2	Verify battery cell parameters meet Table T3.8.b-1 Category B limits.	92 days AND Once within 7 days after battery discharge < 105 V for 125 V batteries and < 210 V for 250 V batteries AND Once within 7 days after battery overcharge > 150 V for 125 V batteries and > 300 V for 250 V batteries
TSR 3.8.b.3	Verify average electrolyte temperature of representative cells is > 65°F.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
TSR 3.8.b.4 Verify no visible corrosion at battery terminals and connectors. OR Verify total battery string connection resistance is less than or equal to the following values: Unit 2 125 Vdc Main Battery 3660 Micro- ohm Unit 2 125 Vdc Alternate Battery 3890 Micro-ohm Unit 2 250 Vdc Main Battery 4765 Micro-ohm Unit 3 125 Vdc Main Battery 2915 Micro-ohm Unit 3 125 Vdc Alternate Battery 3300 Micro-ohm Unit 3 250 Vdc Main Battery 4499 Micro-ohm	92 days
TSR 3.8.b.5 Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	12 months
TSR 3.8.b.6 Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	12 months
TSR 3.8.b.7 Verify battery connection total resistance is less than or equal to the following values: Unit 2 125 Vdc Main Battery 3660 Micro- ohm Unit 2 125 Vdc Alternate Battery 3890 Micro-ohm Unit 2 250 Vdc Main Battery 4765 Micro-ohm Unit 3 125 Vdc Main Battery 2915 Micro-ohm Unit 3 125 Vdc Alternate Battery 3300 Micro-ohm Unit 3 250 Vdc Main Battery 4499 Micro-ohm	12 months

Table T3.8.b-1 (page 1 of 1)
Battery Cell Parameter Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[b][c][d]	≥ 1.200	≥ 1.195 AND Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during and, for a limited time, following equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature and level.

(c) A battery charging current of ≤ 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge or the addition of water, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

(d) A battery charging current of ≤ 2 amps when on float charge is acceptable for meeting specific gravity limits (TS 3.8.6, TSR 3.8.6.1).

3.9 REFUELING OPERATIONS

3.9.a Communications

TLCO 3.9.a Direct communications shall be maintained between the control room and refueling platform personnel.

APPLICABILITY: During CORE ALTERATIONS, except movement of control rods with their normal drive system.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Direct communications not maintained.	A.1 Suspend CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.a.1	Demonstrate direct communications between the control room and refueling platform personnel.	Once within 1 hour prior to the start of CORE ALTERATIONS AND Once per 12 hours thereafter

5.0 ADMINISTRATIVE CONTROLS

5.0.a Station Fire Brigade

The shift manning for the station Fire Brigade shall be as follows:

A site Fire Brigade of at least 5 members shall be maintained onsite at all times. However, the Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed two hours in order to accommodate unexpected absence provided immediate action is taken to fill the required positions. The Fire Brigade shall not include the shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency.

5.0 ADMINISTRATIVE CONTROLS

5.0.b Programs and Manuals

5.5.1 Offsite Dose Calculation Manual

Technical Specification 5.5.1, “Offsite Dose Calculation Manual,” is
implemented by the Dresden Offsite Dose Calculation Manual.

5.5.2 Primary Coolant Sources Outside Containment

Technical Specification 5.5.2, “Primary Coolant Sources Outside Containment,” requires controls be provided to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The program is implemented by the following procedures:

OP-AA-102-102, DOP 1000-01, DOS 1400-05, DOS 1500-10, DOS 2300-03, and DTP 09

5.5.3 Post Accident Sampling

Dresden license Amendment Number 197 for License No. DPR-19 and Amendment No. 190 for License No. DPR-25 approves the elimination of the requirement to have and maintain the Post Accident Sampling System (or HRSS). The following items were committed to as part of license amendment:

1. Dresden has developed contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, suppression pool, and containment atmosphere. The contingency plans will be contained in the Dresden chemistry procedures and implemented with the implementation of the license amendment. Establishment of contingency plans has been developed for the following samples and is a regulatory commitment:

   a. Reactor Water - Recirc. Undiluted and Shutdown Cooling (Undiluted)
   b. Suppression Pool or Torus - LPCI "A" and "B" Loops (Undiluted)
   c. Containment Atmosphere - Drywell and Torus Atmosphere

2. The capability for classifying fuel damage events at the Alert level threshold will be established at a level of core damage associated with radioactivity levels of 300 micro-curies/gm dose equivalent iodine. This capability will be described in emergency

plans and emergency plan implementing procedures and implemented with the implementation of the license amendment. The capability for classifying fuel damage events is considered a regulatory commitment.

3. Dresden has established the capability to monitor radioactive iodines that have been released offsite to the environs. This capability is described in emergency plans and emergency plan implementing procedures. The capability to monitor radioactive iodines is considered a regulatory commitment.

5.5.4 Radioactive Effluent Controls Program

Technical Specification 5.5.4, “Radioactive Effluent Controls Program,” requires controls be established to conform with 10 CFR 50.36a for control of radioactive effluents and for maintaining doses to members of the public from radioactive effluents as low as reasonably achievable. This program is implemented through Sections 12.2, 12.3, and 12.4 of the Dresden Offsite Dose Calculation Manual.

5.5.5 Component Cyclic or Transient Limit Program

Technical Specification 5.5.5, “Component Cyclic or Transient Limit Program,” requires controls be provided to track the UFSAR, Table 3.9-1, cyclic and transient occurrences to ensure that components are maintained within design limits. The program is implemented by DTP 07.

5.5.6 Inservice Testing Program

Technical Specification 5.5.6, “Inservice Testing Program,” requires controls be established for inservice testing of ASME Code Class 1, 2, and 3 pumps and valves. This program is implemented by the following:

ER-AA-321 and the applicable procedures that implement ASME Section XI requirements.

5.5.7 Ventilation Filter Testing Program (VFTP)

Technical Specification 5.5.7, “Ventilation Filter Testing Program (VFTP),” requires testing of the Engineered Safety Feature filter ventilation systems for the following Technical Specification systems:

Control Room Emergency Ventilation System and
Standby Gas Treatment System.

The program is implemented by the following procedures:

DOS 7500-02, DTS 5750-04, DTS 5750-05, DTS 5750-06, DTS 7500-07, and DTS 7500-11.

In addition, laboratory analysis required by Technical Specification 5.5.7.c must be completed within 31 days after removal of a representative sample.

5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program

Technical Specification 5.5.8, “Explosive Gas and Storage Tank Radioactivity Monitoring Program,” requires controls be provided for potentially explosive gas mixtures contained in the Offgas System and the quantity of radioactivity contained in the unprotected outdoor storage tanks. The program is implemented by TRM Specification 3.7.d, “Liquid Holdup Tanks”, TRM Specification 3.7.e, “Explosive Gas Mixtures”, and the following procedures:

Explosive Gas Monitoring Procedures

DAN 902(3)-54 C-2, DAN 902(3)-54 D-2, DAN 902(3)-54 C-3, DCP 2118-03, DCP 2215-02, DCS 6210-06, DIS 5400-01, DIS 5400-04, DOP 5400-01, DOP 5400-14, DOP 5400-18, DOP 5400-19, DOP 5400-23, DOP 5400-24, DOP 5400-25, DOP 5400-26, Appendix A, DOS 1300-01, and DOS 5400-05.

Storage Tank Radioactivity Monitoring Procedures

DCP 2118-01, DCP 2119-01, DCS 6210-06, DOP 2000 series, DOS 2000-01, and DOS 2000-03 Unit 2/3.

5.5.9 Diesel Fuel Oil Testing Program

Technical Specification 5.5.9, “Diesel Fuel Oil Testing Program,” requires testing requirements be provided for new fuel oil and stored fuel oil and includes sampling requirements and acceptance criteria. The program is implemented by the following procedures:

CY-AA-130-920, CY-AA-130-911, CY-AA-130-921, [Corporate Chemistry Flash Point analytical procedure], [Corporate Chemistry Kinematic Viscosity analytical procedure], DOS 0040-02, DOS 6600-01, and DWP 15.

5.5.10 Technical Specification Bases Control Program

Technical Specification 5.5.10, “Technical Specification Bases Control Program,” requires means be provided for processing changes to the Bases of the Technical Specifications. The program is implemented by Appendix D of the Technical Requirements Manual.

5.5.11 Safety Function Determination Program

Technical Specification 5.5.11, “Safety Function Determination Program,” requires means be provided to ensure a loss of function is detected and appropriate actions taken. The program is implemented by Appendix C of the Technical Requirements Manual.

5.5.12 Primary Containment Leakage Rate Testing Program

Technical Specification 5.5.12, “Primary Containment Leakage Rate Testing Program,” requires implementation of leakage rate testing of the primary containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B as modified by approved exemptions. The program is implemented by the following:

DTP 47, DTS 1600-07, and ER-AA-330-007.

APPENDIX A

PRIMARY CONTAINMENT ISOLATION VALVES

Table A-1 (page 1 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
203-1A	X-105A	M-12-1	20" AO GLOBE	AC/DC	O	3-5
203-1B	X-105B	M-12-1	20"AO GLOBE	AC/DC	O	3-5
203-1C	X-105C	M-12-1	20" AO GLOBE	AC/DC	O	3-5
203-1D	X-105D	M-12-1	20" AO GLOBE	AC/DC	O	3-5
203-2A	X-105A	M-12-2	20" AO GLOBE	AC/DC	O	3-5
203-2B	X-105B	M-12-2	20" AO GLOBE	AC/DC	O	3-5
203-2C	X-105C	M-12-2	20" AO GLOBE	AC/DC	O	3-5
203-2D	X-105D	M-12-2	20" AO GLOBE	AC/DC	O	3-5
205-24	X-147	M-26-1	2.5" MO GATE	AC	C	60
205-25	X-147	M-26-1	0.75" GLOBE	HAND	LC	N/A
205-27	X-147	M-26-1	2.5" CHECK	SELF	C	N/A
220-1	X-106	M-12-1	2" MO GLOBE	AC	C	35
220-2	X-106	M-12-2	2" MO GLOBE	DC	C	35
220-5	X-106	M-12-1	0.75" GLOBE	HAND	LC	N/A
220-10A	X-105A	M-12-2	0.75" GLOBE	HAND	LC	N/A
220-10B	X-105B	M-12-2	0.75" GLOBE	HAND	LC	N/A
220-10C	X-105C	M-12-2	0.75" GLOBE	HAND	LC	N/A
220-10D	X-105D	M-12-2	0.75" GLOBE	HAND	LC	N/A
220-42	X-122	M-26-2	0.75" GLOBE	HAND	LC	N/A
220-44	X-122	M-26-2	0.75" AO GLOBE	AC SOL	O	5
220-45	X-122	M-26-2	0.75" AO GLOBE	AC SOL	O	5
220-58A	X-107A	M-14	18" CHECK	SELF	O	N/A
220-58B	X-107B	M-14	18" CHECK	SELF	O	N/A
220-62A	X-107A	M-14	18" CHECK	SELF	O	N/A
220-62B	X-107B	M-14	18" CHECK	SELF	O	N/A
220-103A	X-107A	M-14	0.75" GLOBE	HAND	LC	N/A
220-103B	X-107B	M-14	0.75" GLOBE	HAND	LC	N/A
0299-57	X-147	M-26-1	0.75" GLOBE	HAND	LC	N/A
0299-97A	X-209	M-26-3	0.375" CHECK	SELF	O	N/A
0299-97B	X-108B	M-26-3	0.375" CHECK	SELF	O	N/A

(continued)

Table A-1 (page 2 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
0299-98A	X-209	M-26-3	0.375" CHECK	SELF	O	N/A
0299-98B	X-108B	M-26-3	0.375" CHECK	SELF	O	N/A
0299-99A	X-209	M-26-3	0.375" CHECK	SELF	O	N/A
0299-99B	X-108B	M-26-3	0.375" CHECK	SELF	O	N/A
0299-100A	X-209	M-26-3	0.375" CHECK	SELF	O	N/A
0299-100B	X-108B	M-26-3	0.375" CHECK	SELF	O	N/A
0299-108A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-108B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-110A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-110B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-112A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-112B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-113A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-113B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-114A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-114B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-115A	X-209	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-115B	X-108B	M-26-3	0.375" NEEDLE	HAND	LC	N/A
0299-116A	X-209	M-26-3	0.5" GLOBE	HAND	O	N/A
0299-116B	X-108B	M-26-3	0.5" GLOBE	HAND	O	N/A
0299-117A	X-209	M-26-3	0.5" GLOBE	HAND	O	N/A
0299-117B	X-108B	M-26-3	0.5" GLOBE	HAND	O	N/A
0399-506	X-139B	M-34-1	1" GATE	HAND	LC	N/A
0399-585	X-139B	M-34-1	0.75" GLOBE	HAND	LC	N/A
0399-586	X-139B	M-34-1	0.75" GLOBE	HAND	LC	N/A
0399-587	X-139B	M-34-1	1" GATE	HAND	LC	N/A
733A	X-136J	M-37-2	0.5" SOL BALL	AC	C	N/A
733B	X-136F	M-37-2	0.5" SOL BALL	AC	C	N/A
733C	X-136E	M-37-2	0.5" SOL BALL	AC	C	N/A
733D	X-136H	M-37-2	0.5" SOL BALL	AC	C	N/A
733E	X-136G	M-37-2	0.5" SOL BALL	AC	C	N/A
736-1	X-136J	M-37-2	0.5" SHEAR	DC	O	N/A

(continued)

Table A-1 (page 3 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
736-2	X-136F	M-37-2	0.5" SHEAR	DC	O	N/A
736-3	X-136E	M-37-2	0.5" SHEAR	DC	O	N/A
736-4	X-136H	M-37-2	0.5" SHEAR	DC	O	N/A
736-5	X-136G	M-37-2	0.5" SHEAR	DC	O	N/A
1001-1A	X-111A	M-32	16" MO GATE	AC	C	40
1001-1B	X-111B	M-32	16" MO GATE	AC	C	40
1001-2A	X-111A, B	M-32	14" MO GATE	DC	C	40
1001-2B	X-111A, B	M-32	14" MO GATE	DC	C	40
1001-2C	X-111A, B	M-32	14" MO GATE	DC	C	40
1001-5A	X-116A	M-32	14" MO GATE	AC	C	50
1001-5B	X-116B	M-32	14"MO GATE	AC	C	50
1001-14A	X-116A	M-32	0.75" GLOBE	HAND	LC	N/A
1001-14B	X-116B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-45A	X-111A	M-32	0.75" GLOBE	HAND	LC	N/A
1001-45B	X-111B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-47A	X-111A	M-32	0.75" GLOBE	HAND	LC	N/A
1001-47B	X-111B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-90A	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-90B	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-90C	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-91A	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-91B	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-91C	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1001-200	X-111A, B	M-32	0.75" GLOBE	HAND	LC	N/A
1101-15	X-130	M-33	1.5" CHECK	SELF	C	N/A
1101-16	X-130	M-33	1.5" CHECK	SELF	C	N/A
1199-107	X-130	M-33	0.5" GLOBE	HAND	LC	N/A
1201-1	X-113	M-30	8" MO GATE	AC	O	30
1201-1A	X-113	M-30	2" MO GLOBE	AC	C	30
1201-2	X-113	M-30	8" MO GATE	DC	O	30

(continued)

Table A-1 (page 4 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1201-3	X-113	M-30	8" MO GATE	DC	C	30
1201-31	X-113	M-30	1" GLOBE	HAND	LC	N/A
1299-004	X-113	M-30	0.5" GLOBE	HAND	LC	N/A
1299-11	X-113	M-30	1" GLOBE	HAND	LC	N/A
1301-1	X-108A	M-28	14" MO GATE	AC	O	40
1301-2	X-108A	M-28	14" MO GATE	DC	O	40
1301-3	X-109B	M-28	12" MO GATE	DC	C	40
1301-4	X-109B	M-28	12" MO GATE	AC	O	40
1301-17	X-108A	M-28	0.75" AO GLOBE	AC SOL	O	10
1301-20	X-108A	M-28	0.75" AO GLOBE	AC SOL	O	10
1301-32	X-109B	M-28	0.75" GLOBE	HAND	LC	N/A
1301-34	X-108A	M-28	0.75" GLOBE	HAND	LC	N/A
1301-505	X-108A	M-28	0.75" GLOBE	HAND	LC	N/A
1301-601	X-109B	M-28	0.75" GLOBE	HAND	LC	N/A
1301-604	X-109B	M-28	0.75" GLOBE	HAND	LC	N/A
1301-606	X-108A	M-28	0.5" GLOBE	HAND	LC	N/A
1402-3A	X-303A-D	M-27	16" MO GATE	AC	O	N/A
1402-3B	X-303A-D	M-27	16" MO GATE	AC	O	N/A
1402-4A	X-310A	M-27	8" MO GLOBE	AC	C	N/A
1402-4B	X-310B	M-27	8" MO GLOBE	AC	C	N/A
1402-5A	X-149A	M-27	0.75" GLOBE	HAND	LC	N/A
1402-5B	X-149B	M-27	0.75" GLOBE	HAND	LC	N/A
1402-10A	X-303A-D	M-27	4" GATE	HAND	LC	N/A
1402-10B	X-303A-D	M-27	4" GATE	HAND	LC	N/A
1402-24A	X-149A	M-27	10" MO GATE	AC	O	N/A
1402-24B	X-149B	M-27	10" MO GATE	AC	O	N/A
1402-25A	X-149A	M-27	10" MO GATE	AC	C	N/A
1402-25B	X-149B	M-27	10" MO GATE	AC	C	N/A
1402-29A	X-303A-D	M-27	16" GATE	HAND	LO	N/A
1402-29B	X-303A-D	M-27	16" GATE	HAND	LO	N/A

(continued)

Table A-1 (page 5 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1402-32A	X-149A	M-27	0.75" GLOBE	HAND	LC	N/A
1402-32B	X-149B	M-27	0.75" GLOBE	HAND	LC	N/A
1402-33A	X-149A	M-27	0.75" GLOBE	HAND	LC	N/A
1402-33B	X-149B	M-27	0.75" GLOBE	HAND	LC	N/A
1402-38A	X-310A	M-27	1.5" MO GATE	AC	O	N/A
1402-38B	X-310B	M-27	1.5" MO GATE	AC	O	N/A
1403-A-500	X-149A	M-27	0.75" GLOBE	HAND	LC	N/A
1403-B-500	X-149B	M-27	0.75" GLOBE	HAND	LC	N/A
1404-A-500	X-149A	M-27	0.75" GLOBE	HAND	LC	N/A
1404-B-500	X-149B	M-27	0.75" GLOBE	HAND	LC	N/A
1499-37A	X-303A-D	M-27	4" GATE	HAND	LC	N/A
1499-37B	X-303A-D	M-27	4" GATE	HAND	LC	N/A
1501-5A	X-303A-D	M-29-1	14" MO GATE	AC	O	N/A
1501-5B	X-303A-D	M-29-1	14" MO GATE	AC	O	N/A
1501-5C	X-303A-D	M-29-1	14" MO GATE	AC	O	N/A
1501-5D	X-303A-D	M-29-1	14" MO GATE	AC	O	N/A
1501-13A	X-310A	M-29-1	3" MO GATE	AC	O	N/A
1501-13B	X-310B	M-29-1	3" MO GATE	AC	O	N/A
1501-18A	X-311A	M-29-1	6" MO GLOBE	AC	C	N/A
1501-18B	X-311B	M-29-1	6" MO GLOBE	AC	C	N/A
1501-19A	X-311A	M-29-1	6" MO GATE	AC	C	N/A
1501-19B	X-311B	M-29-1	6" MO GATE	AC	C	N/A
1501-20A	X-310A	M-29-1	14" MO GATE	AC	C	N/A
1501-20B	X-310B	M-29-1	14" MO GATE	AC	C	N/A
1501-22A	X-116A	M-29-1	16" MO GATE	AC	C	N/A
1501-22B	X-116B	M-29-1	16" MO GATE	AC	C	N/A
1501-23A	X-116A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-23B	X-116B	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-25A	X-116A	M-29-1	16" AO CHECK	AC, SELF	C	N/A
1501-25B	X-116B	M-29-1	16" AO CHECK	AC, SELF	C	N/A
1501-27A	X-150A	M-29-1	10" MO GATE	AC	C	N/A

(continued)

Table A-1 (page 6 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1501-27B	X-145	M-29-1	10" MO GATE	AC	C	N/A
1501-28A	X-150A	M-29-1	10" MO GATE	AC	C	N/A
1501-28B	X-145	M-29-1	10" MO GATE	AC	C	N/A
1501-30A	X-150A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-30B	X-145	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-33A	X-303A-D	M-29-1	24" GATE	HAND	LO	N/A
1501-33B	X-303A-D	M-29-1	24" GATE	HAND	LO	N/A
1501-38A	X-310A	M-29-1	14" MO GLOBE	AC	C	N/A
1501-38B	X-310B	M-29-1	14" MO GLOBE	AC	C	N/A
1501-40A	X-311A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-40B	X-311B	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-57A	X-303A-D	M-29-1	1.5" GLOBE	HAND	LC	N/A
1501-57B	X-303A-D	M-29-1	1.5" GLOBE	HAND	LC	N/A
1501-70A	X-303A-D	M-29-1	1.5" GLOBE	HAND	LC	N/A
1501-70B	X-303A-D	M-29-1	1.5" GLOBE	HAND	LC	N/A
1501-72A	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-72B	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-73A	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-73B	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-87A	X-310A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-87B	X-310B	M-29-1	0.75" GLOBE	HAND	LC	N/A
1501-92A	X-116A	M-29- 1&2	0.75" GLOBE	HAND	LC	N/A
1501-92B	X-116B	M-29- 1&2	0.75" GLOBE	HAND	LC	N/A
1599-2A	X-116A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-2B	X-116B	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-13A	X-303A-D	M-29-1	2" RELIEF	SELF	C	N/A
1599-13B	X-303A-D	M-29-1	2" RELIEF	SELF	C	N/A
1599-13C	X-303A-D	M-29-1	2" RELIEF	SELF	C	N/A
1599-13D	X-303A-D	M-29-1	2" RELIEF	SELF	C	N/A
1599-27A	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-27B	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A

(continued)

Table A-1 (page 7 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1599-31A	X-311A	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-31B	X-311B	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-61	X-303A-D	M-29-1	3" AO GATE	AC SOL	C	10
1599-62	X-303A-D	M-29-1	3" AO GATE	AC SOL	C	10
1599-68	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-75A	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-75B	X-303A-D	M-29-1	0.75" GLOBE	HAND	LC	N/A
1599-124A	X-150A	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-124B	X-145	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-125A	X-150A	M-29-1	0.5"GLOBE	HAND	LC	N/A
1599-125B	X-145	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-126A	X-311A	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-127A	X-311A	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-126B	X-311B	M-29-1	0.5" GLOBE	HAND	LC	N/A
1599-127B	X-311B	M-29-1	0.5" GLOBE	HAND	LC	N/A
1601-20A	X-304	M-25	20" AO BTTRFL	AC SOL	C	N/A
1601-20B	X-304	M-25	20" AO BTTRFL	AC SOL	C	N/A
1601-21	X-126	M-25	18" AO BTTRFL	AC SOL	C	10
1601-22	X-126, 304	M-25	18" AO BTTRFL	AC SOL	C	10
1601-23	X-125	M-25	18" AO BTTRFL	AC SOL	C	10
1601-24	X-125, 318A	M-25	18" AO BTTRFL	AC SOL	C	10
1601-31A	X-304	M-25	20" CHECK	SELF	C	N/A
1601-31B	X-304	M-25	20" CHECK	SELF	C	N/A
1601-48	X-121	M-37-2	1" GATE	HAND	O	N/A
1601-55	X-126, 304	M-25	4" AO BTTRFL	AC SOL	O	15
1601-56	X-304	M-25	18" AO BTTRFL	AC SOL	O	10
1601-57	X-304, 126	M-25	1" MO GLOBE	AC	O	15
1601-58	X-304	M-25	1" AO GLOBE	AC SOL	O/C	15
1601-59	X-126	M-25	1" AO GLOBE	AC SOL	O	15
1601-60	X-318A	M-25	18" AO BTTRFL	AC SOL	C	10
1601-61	X-318A	M-25	2" AO GLOBE	AC SOL	C	15

(continued)

Table A-1 (page 8 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1601-62	X-125	M-25	2" AO GLOBE	AC SOL	C	15
1601-63	X-125, 318A	M-25	6" AO BTTRFL	AC SOL	C	10
1605-500	X-125	M-25	0.75" GLOBE	HAND	LC	N/A
1623-DV	X-304	M-25	0.75" GLOBE	HAND	LC	N/A
1699-002A	X-318A	M-25	0.75" GLOBE	HAND	LC	N/A
1699-58A	X-313A	M-25	2" GLOBE	HAND	LC	N/A
1699-58B	X-313B	M-25	2" GLOBE	HAND	LC	N/A
1699-61A	X-313A	M-25	0.5" GLOBE	HAND	LC	N/A
1699-61B	X-313B	M-25	0.5" GLOBE	HAND	LC	N/A
1699-63A	X-316B	M-25	0.5" GLOBE	HAND	LC	N/A
1699-63B	X-304	M-25	0.5" GLOBE	HAND	LC	N/A
1699-65	X-305D	M-51	0.75" GLOBE	HAND	LC	N/A
1699-66	X-305D	M-51	0.75" GLOBE	HAND	LC	N/A
1699-72	X-126	M-25	0.75" GLOBE	HAND	LC	N/A
1699-75	X-305D	M-25	0.75" GLOBE	HAND	LC	N/A
1699-77	X-305D	M-25	0.75" GLOBE	HAND	LC	N/A
1699-81	X-125	M-25	0.75" GLOBE	HAND	LC	N/A
1699-83	X-313A	M-25	0.75" GLOBE	HAND	LC	N/A
1699-99	X-305A	M-25	1" GLOBE	HAND	LC	N/A
1699-100	X-305B	M-25	1" GLOBE	HAND	LC	N/A
1699-103	X-313A	M-25	0.25" GATE	HAND	LC	N/A
1699-500A	X-304	M-25	0.75" GLOBE	HAND	LC	N/A
1699-500B	X-304	M-25	0.75" GLOBE	HAND	LC	N/A
1916-500	X-119	M-31	2" GLOBE	HAND	LC	N/A
2001-5	X-118	M-39	3" AO DIAPHRAGM	AC SOL	C	20
2001-6	X-118	M-39	3" AO DIAPHRAGM	AC SOL	C	20
2001-105	X-117	M-39	3" AO DIAPHRAGM	AC SOL	C	20
2001-106	X-117	M-39	3" AO DIAPHRAGM	AC SOL	C	20
2099-552	X-118	M-39	0.75" GLOBE	HAND	LC	N/A
2099-871	X-117	M-39	0.75" GLOBE	HAND	LC	N/A
2301-4	X-115A	M-51	10" MO GATE	AC	O	50

(continued)

Table A-1 (page 9 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
2301-5	X-115A	M-51	10" MO GATE	DC	O	50
2301-14	X-310B	M-51	4" MO GLOBE	DC	C	N/A
2301-16	X-115A	M-51	0.75" GLOBE	HAND	LC	N/A
2301-34	X-312	M-51	2" CHECK	SELF	C	N/A
2301-35	X-303A-D	M-51	16" MO GATE	DC	C	80
2301-36	X-303A-D	M-51	16" MO GATE	DC	C	80
2301-37	X-303A-D	M-51	0.75" GLOBE	HAND	LC	N/A
2301-39	X-303A-D	M-51	16" CHECK	SELF	C	N/A
2301-40	X-310B	M-51	4" CHECK	SELF	C	N/A
2301-41A	X-317A	M-51	0.75" GLOBE	HAND	LC	N/A
2301-41B	X-312	M-51	0.75" GLOBE	HAND	LC	N/A
2301-45	X-317A	M-51	24" CHECK	SELF	C	N/A
2301-53	X-310B	M-51	4" RELIEF	SELF	C	N/A
2301-56	X-303A-D	M-51	16" GATE	HAND	LO	N/A
2301-71	X-312	M-51	2" STOP CHECK	SELF	C	N/A
2301-74	X-317A	M-51	12" STOP CHECK	SELF	C	N/A
2301-93	X-303A-D	M-51	0.75" GATE	HAND	LC	N/A
2301-94	X-303A-D	M-51	0.75" GATE	HAND	LC	N/A
2306-500	X-317A	M-51	0.75" GLOBE	HAND	LC	N/A
2399-15	X-303A-D	M-51	0.75" GLOBE	HAND	LC	N/A
2499-1A	X-202V	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-1B	X-204B	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-2A	X-202V	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-2B	X-204B	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-3A	X-316A	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-3B	X-316B	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-4A	X-316A	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-4B	X-316B	M-706-1	0.5" SOL GLOBE	AC	C	N/A
2499-7A	X-202V	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-7B	X-204B	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-9A	X-316A	M-706-1	0.5" GLOBE	HAND	LC	N/A

(continued)

Table A-1 (page 10 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
2499-9B	X-316B	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-27A	X-202V	M-706-1	0.5" GLOBE	HAND	O	N/A
2499-27B	X-204B	M-706-1	0.5" GLOBE	HAND	O	N/A
2499-28A	X-202V	M-706-1	0.5" CHECK	SELF	C	N/A
2499-28B	X-204B	M-706-1	0.5" CHECK	SELF	C	N/A
2499-29A	X-202V	M-706-1	0.5" GLOBE	HAND	O	N/A
2499-29B	X-204B	M-706-1	0.5" GLOBE	HAND	O	N/A
2499-31A	X-202V	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-31B	X-204B	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-32A	X-202V	M-706-1	0.5" GLOBE	HAND	LC	N/A
2499-32B	X-204B	M-706-1	0.5" GLOBE	HAND	LC	N/A
3099-87	X-105D	M-12-2	0.75" GLOBE	HAND	LC	N/A
3099-88	X-105C	M-12-2	0.75" GLOBE	HAND	LC	N/A
3099-89	X-105B	M-12-2	0.75" GLOBE	HAND	LC	N/A
3099-90	X-105A	M-12-2	0.75" GLOBE	HAND	LC	N/A
3299-50	X-107B	M-14	0.75" GLOBE	HAND	LC	N/A
3299-52	X-107A	M-14	0.75" GLOBE	HAND	LC	N/A
3702	X-123	M-20	6" MO GATE	AC	O	N/A
3703	X-124	M-20	6" MO GATE	AC	O	N/A
3706	X-124	M-20	6" MO GATE	AC	O	N/A
3769-500	X-123	M-20	6" CHECK	SELF	O	N/A
3799-29	X-124	M-20	0.75" GLOBE	HAND	LC	N/A
3799-30	X-123	M-20	0.75" GLOBE	HAND	LC	N/A
3788-127	X-124	M-20	6" GATE	HAND	O	N/A
3799-128	X-123	M-20	6" GATE	HAND	O	N/A
3799-132	X-123	M-20	0.75" GLOBE	HAND	LC	N/A
3799-277	X-124	M-20	1" RELIEF	SELF	C	N/A
4327-500	X-119	M-35-1	3" GATE	HAND	LC	N/A
4327-501	X-119	M-35-1	3" GLOBE	HAND	C	N/A
4327-502	X-119	M-35-1	3" GLOBE	HAND	LC	N/A
4399-915	X-119	M-35-1	1" RELIEF	SELF	C	N/A

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Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
4640-500	X-120	M-38	1" GLOBE	HAND	LC	N/A
4722	X-121	M-37-2	2" AO GLOBE	AC SOL	O	N/A
4799-514	X-136E	M-37-2	0.5" PRG CHECK (TIP)	SELF	C	N/A
4799-530	X-121	M-37-2	2" CHECK	SELF	C	N/A
4799-533	X-121	M-37-2	0.25" GLOBE	HAND	LC	N/A
4799-565	X-139D	M-37-2	0.5" GATE	HAND	LC	N/A
4799-1775	X-121	M-37-2	0.5" GLOBE	HAND	LC	N/A
4799-1776	X-121	M-37-2	0.5" GLOBE	HAND	LC	N/A
8501-1A	X-309A	M-25	0.5" AO GLOBE	AC SOL	O	5
8501-1B	X-309A	M-25	0.5" AO GLOBE	AC SOL	O	5
8501-3A	X-204A	M-25	1" AO GLOBE	AC SOL	O	5
8501-3B	X-204A	M-25	1" AO GLOBE	AC SOL	O	5
8501-5A	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
8501-5B	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
8501-500	X-309A	M-25	0.5" GLOBE	HAND	O	N/A
8505A-501	X-143	M-25	0.5" GLOBE	HAND	O	N/A
8507-500	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-502	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-503	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-504	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-505	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-506	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-507	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-508	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-509	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-510	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-511	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-512	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-513	X-143	M-178	0.5" GLOBE	HAND	LC	N/A

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Table A-1 (page 12 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
8507-514	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-515	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-516	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-517	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-518	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-519	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-520	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8507-521	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-526	X-126	M-25	0.25" GLOBE	HAND	LC	N/A
8526	X-126, 304	M-24	0.75" RELIEF	SELF	C	N/A
8599-617	X-204A	M-25	1" GLOBE	HAND	LC	N/A
8599-629	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-631	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-632	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-633	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-634	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-635	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-636	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-637	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-638	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-639	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-640	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-641	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-642	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-643	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-644	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-645	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-646	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-647	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-648	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-649	X-143	M-178	0.5" GLOBE	HAND	LC	N/A

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Table A-1 (page 13 of 13)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
8599-650	X-143	M-178	0.5" GLOBE	HAND	LC	N/A
8599-669	X-143	M-25	0.5" GLOBE	HAND	O	N/A
9201-500	X-204A	M-25	1" GLOBE	HAND	O	N/A
9205A	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
9205B	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
9206A	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
9206B	X-143	M-25	0.5" AO GLOBE	AC SOL	O	5
9207A	X-101	M-25	1" AO GLOBE	AC SOL	O	5
9207B	X-101	M-25	1" AO GLOBE	AC SOL	O	5
9208A	X-101	M-25	1" AO GLOBE	AC SOL	O	5
9208B	X-101	M-25	1" AO GLOBE	AC SOL	O	5
9299-50	X-101	M-25	1" GLOBE	HAND	O	N/A
9299-51	X-101	M-25	1" GLOBE	HAND	O	N/A

Table A-2 (page 1 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
203-1A	X-105A	M-345-1	20" AO GLOBE	AC/DC	O	3-5
203-1B	X-105B	M-345-1	20" AO GLOBE	AC/DC	O	3-5
203-1C	X-105C	M-345-1	20" AO GLOBE	AC/DC	O	3-5
203-1D	X-105D	M-345-1	20" AO GLOBE	AC/DC	O	3-5
203-2A	X-105A	M-345-2	20" AO GLOBE	AC/DC	O	3-5
203-2B	X-105B	M-345-2	20" AO GLOBE	AC/DC	O	3-5
203-2C	X-105C	M-345-2	20" AO GLOBE	AC/DC	O	3-5
203-2D	X-105D	M-345-2	20" AO GLOBE	AC/DC	O	3-5
205-24	X-147	M-357-1	2.5" MO GATE	AC	C	60
205-25	X-147	M-357-1	0.75" GLOBE	HAND	LC	N/A
205-27	X-147	M-357-1	2.5" CHECK	SELF	C	N/A
220-1	X-106	M-345-1	2" MO GLOBE	AC	C	35
220-2	X-106	M-345-2	2" MO GLOBE	DC	C	35
220-5	X-106	M-345-1	0.75" GLOBE	HAND	LC	N/A
220-10A	X-105A	M-345-2	0.75" GLOBE	HAND	LC	N/A
220-10B	X-105B	M-345-2	0.75" GLOBE	HAND	LC	N/A
220-10C	X-105C	M-345-2	0.75" GLOBE	HAND	LC	N/A
220-10D	X-105D	M-345-2	0.75" GLOBE	HAND	LC	N/A
220-42	X-122	M-357-2	0.75" GLOBE	HAND	LC	N/A
220-44	X-122	M-357-2	0.75" AO GLOBE	AC SOL	O	5
220-45	X-122	M-357-2	0.75" AO GLOBE	AC SOL	O	5
220-58A	X-107B	M-347	18" CHECK	SELF	O	N/A
220-58B	X-107A	M-347	18" CHECK	SELF	O	N/A
220-62A	X-107B	M-347	18" CHECK	SELF	O	N/A
220-62B	X-107A	M-347	18" CHECK	SELF	O	N/A
220-103A	X-107B	M-347	0.75" GLOBE	HAND	LC	N/A
220-103B	X-107A	M-347	0.75" GLOBE	HAND	LC	N/A
0299-97A	X-209	M-357-3	0.375" CHECK	SELF	O	N/A
0299-97B	X-108B	M-357-3	0.375" CHECK	SELF	O	N/A
0299-98A	X-209	M-357-3	0.375" CHECK	SELF	O	N/A

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Table A-2 (page 2 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
0299-98B	X-108B	M-357-3	0.375" CHECK	SELF	O	N/A
0299-99A	X-209	M-357-3	0.375" CHECK	SELF	O	N/A
0299-99B	X-108B	M-357-3	0.375" CHECK	SELF	O	N/A
0299-100A	X-209	M-357-3	0.375" CHECK	SELF	O	N/A
0299-100B	X-108B	M-357-3	0.375" CHECK	SELF	O	N/A
0299-108A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-108B	X-108B	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-110A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-110B	X-108B	M-357-3	0.375' NEEDLE	HAND	LC	N/A
0299-112A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-112B	X-108B	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-113A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-113B	X-108B	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-114A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-114B	X-108B	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-115A	X-209	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-115B	X-108B	M-357-3	0.375" NEEDLE	HAND	LC	N/A
0299-116A	X-209	M-357-3	0.5" GLOBE	HAND	O	N/A
0299-116B	X-108B	M-357-3	0.5" GLOBE	HAND	O	N/A
0299-117A	X-209	M-357-3	0.5" GLOBE	HAND	O	N/A
0299-117B	X-108B	M-357-3	0.5" GLOBE	HAND	O	N/A
0399-506	X-139C	M-365	1.0" GATE	HAND	LC	N/A
0399-585	X-139C	M-365	0.75" GLOBE	HAND	LC	N/A
0399-586	X-139C	M-365	0.75" GLOBE	HAND	LC	N/A
0399-587	X-139C	M-365	1.0" GATE	HAND	LC	N/A
733A	X-136C	M-367-2	0.5" SOL BALL	AC	C	N/A
733B	X-136B	M-367-2	0.5" SOL BALL	AC	C	N/A
733C	X-136D	M-367-2	0.5" SOL BALL	AC	C	N/A
733D	X-136F	M-367-2	0.5" SOL BALL	AC	C	N/A
733E	X-136E	M-367-2	O.5" SOL BALL	AC	C	N/A
736-1	X-136C	M-367-2	0.5" SHEAR	DC	O	N/A

(continued)

Table A-2 (page 3 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
736-2	X-136B	M-367-2	0.5" SHEAR	DC	O	N/A
736-3	X-136D	M-367-2	0.5" SHEAR	DC	O	N/A
736-4	X-136E	M-367-2	0.5" SHEAR	DC	O	N/A
736-5	X-136F	M-367-2	0.5" SHEAR	DC	O	N/A
1001-1A	X-111A	M-363	16" MO GATE	AC	C	40
1001-1B	X-111B	M-363	16" MO GATE	AC	C	40
1001-2A	X-111A, B	M-363	14" MO GATE	DC	C	40
1001-2B	X-111A, B	M-363	14" MO GATE	DC	C	40
1001-2C	X-111A, B	M-363	14" MO GATE	DC	C	40
1001-4	X-111A, B	M-363	0.5" GLOBE	HAND	LC	N/A
1001-5A	X-116A	M-363	14" MO GATE	AC	C	50
1001-5B	X-116B	M-363	14" MO GATE	AC	C	50
1001-14A	X-116A	M-363	0.75" GLOBE	HAND	LC	N/A
1001-14B	X-116B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-45A	X-111A	M-363	0.75" GLOBE	HAND	LC	N/A
1001-45B	X-111B	M-363	O.75" GLOBE	HAND	LC	N/A
1001-47A	X-111A	M-363	0.75" GLOBE	HAND	LC	N/A
1001-47B	X-111B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-90A	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-90B	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-90C	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-91A	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-91B	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1001-91C	X-111A, B	M-363	0.75" GLOBE	HAND	LC	N/A
1101-15	X-138	M-364	1.5" CHECK	SELF	C	N/A
1101-16	X-138	M-364	1.5" CHECK	SELF	C	N/A
1199-003	X-138	M-364	0.75" GLOBE	HAND	LC	N/A
1201-1	X-113	M-361	8" MO GATE	AC	O	30
1201-1A	X-113	M-361	2" MO GATE	AC	C	30
1201-2	X-113	M-361	8" MO GATE	DC	O	30

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Table A-2 (page 4 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1201-3	X-113	M-361	8" MO GATE	DC	C	30
1201-32	X-113	M-361	1" GATE	HAND	LC	N/A
1299-7	X-113	M-361	0.5" GATE	HAND	LC	N/A
1301-1	X-108A	M-359	14" MO GATE	AC	O	40
1301-2	X-108A	M-359	14" MO GATE	DC	O	40
1301-3	X-109A	M-359	12" MO GATE	DC	C	40
1301-4	X-109A	M-359	12" MO GATE	AC	O	40
1301-17	X-108A	M-359	0.75" AO GLOBE	AC SOL	O	10
1301-20	X-108A	M-359	0.75" AO GLOBE	AC SOL	O	10
1301-32	X-109A	M-359	0.75" GLOBE	HAND	LC	N/A
1301-34	X-108A	M-359	0.75" GLOBE	HAND	LC	N/A
1302-500	X-108A	M-359	0.75" GLOBE	HAND	LC	N/A
1301-602	X-108A	M-359	0.5" GATE	HAND	LC	N/A
1304-500	X-109A	M-359	0.75" GLOBE	HAND	LC	N/A
1402-3A	X-303A-D	M-358	16" MO GATE	AC	O	N/A
1402-3B	X-303A-D	M-358	16" MO GATE	AC	O	N/A
1402-4A	X-310A	M-358	8" MO GLOBE	AC	C	N/A
1402-4B	X-310B	M-358	8" MO GLOBE	AC	C	N/A
1402-5A	X-149B	M-358	0.75" GLOBE	HAND	LC	N/A
1402-5B	X-149A	M-358	0.75" GLOBE	HAND	LC	N/A
1402-10A	X-303A-D	M-358	4" GATE	HAND	LC	N/A
1402-10B	X-303A-D	M-358	4" GATE	HAND	LC	N/A
1402-24A	X-149B	M-358	10" MO GATE	AC	O	N/A
1402-24B	X-149A	M-358	10" MO GATE	AC	O	N/A
1402-25A	X-149B	M-358	10" MO GATE	AC	C	N/A
1402-25B	X-149A	M-358	10" MO GATE	AC	C	N/A
1402-29A	X-303A-D	M-358	16" BUTTERFLY	HAND	LO	N/A
1402-29B	X-303A-D	M-358	16" GATE	HAND	LO	N/A
1402-32A	X-149B	M-358	0.75" GLOBE	HAND	LC	N/A
1402-32B	X-149A	M-358	0.75" GLOBE	HAND	LC	N/A

(continued)

Table A-2 (page 5 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1402-33A	X-149B	M-358	0.75" GLOBE	HAND	LC	N/A
1402-33B	X-149A	M-358	0.75" GLOBE	HAND	LC	N/A
1402-38A	X-310A	M-358	1.5" MO GATE	AC	O	N/A
1402-38B	X-310B	M-358	1.5" MO GATE	AC	O	N/A
1402-504	X-149B	M-358	0.75" GLOBE	HAND	LC	N/A
1402-507	X-149B	M-358	0.75" GLOBE	HAND	LC	N/A
1402-508	X-149A	M-358	0.75" GLOBE	HAND	LC	N/A
1402-510	X-149A	M-358	0.75" GLOBE	HAND	LC	N/A
1418B-500	X-303A-D	M-358	2" GLOBE	HAND	LC	N/A
1499-38	X-303A-D	M-358	4" GATE	HAND	LC	N/A
1499-39	X-303A-D	M-358	4" GATE	HAND	LC	N/A
1501-5A	X-303A-D	M-360-1	14" MO GATE	AC	O	N/A
1501-5B	X-303A-D	M-360-1	14" MO GATE	AC	O	N/A
1501-5C	X-303A-D	M-360-1	14" MO GATE	AC	O	N/A
1501-5D	X-303A-D	M-360-1	14" MO GATE	AC	O	N/A
1501-13A	X-310A	M-360-1	3" MO GATE	AC	O	N/A
1501-13A	X-303A-D	M-360-1	2" RELIEF	SELF	C	N/A
1501-13B	X-310B	M-360-1	3" MO GATE	AC	O	N/A
1501-13B	X-303A-D	M-360-1	2" RELIEF	SELF	C	N/A
1501-13C	X-303A-D	M-360-1	2" RELIEF	SELF	C	N/A
1501-13D	X-303A-D	M-360-1	2" RELIEF	SELF	C	N/A
1501-18B	X-311A	M-360-1	6" MO GLOBE	AC	C	N/A
1501-18B	X-311B	M-360-1	6" MO GLOBE	AC	C	N/A
1501-19A	X-311A	M-360-1	6" MO GATE	AC	C	N/A
1501-19B	X-311B	M-360-1	6" MO GATE	AC	C	N/A
1501-20A	X-310A	M-360-1	14" MO GATE	AC	C	N/A
1501-20B	X-310B	M-360-1	14" MO GATE	AC	C	N/A
1501-22A	X-116A	M-360-1	16" MO GATE	AC	C	N/A
1501-22B	X-116B	M-360-1	16" MO GATE	AC	C	N/A
1501-23A	X-116A	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-23B	X-116B	M-360-1	0.75" GLOBE	HAND	LC	N/A

(continued)

Table A-2 (page 6 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1501-25A	X-116A	M-360-1	16" AO CHECK	AC, SELF	C	N/A
1501-25B	X-116B	M-360-1	16" AO CHECK	AC, SELF	C	N/A
1501-27A	X-145	M-360-1	10" MO GATE	AC	C	N/A
1501-27B	X-150A	M-360-1	10" MO GATE	AC	C	N/A
1501-28A	X-145	M-360-1	10" MO GATE	AC	C	N/A
1501-28B	X-150A	M-360-1	10" MO GATE	AC	C	N/A
1501-30A	X-145	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-30B	X-150A	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-33A	X-303A-D	M-360-1	24" BUTTERFLY	HAND	LO	N/A
1501-33B	X-303A-D	M-360-1	24" BUTTERFLY	HAND	LO	N/A
1501-38A	X-310A	M-360-1	14" MO GLOBE	AC	C	N/A
1501-38B	X-310B	M-360-1	14" MO GLOBE	AC	C	N/A
1501-40A	X-311A	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-40B	X-311B	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-70A	X-303A-D	M-360-1	1.5" GLOBE	HAND	LC	N/A
1501-70B	X-303A-D	M-360-1	1.5" GLOBE	HAND	LC	N/A
1501-72A	X-303A-D	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-72B	X-303A-D	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-73A	X-303A-D	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-73B	X-303A-D	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-87A	X-310A	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-87B	X-310B	M-360-1	0.75" GLOBE	HAND	LC	N/A
1501-92A	X-116A	M-360-1 & 2	0.75" GLOBE	HAND	LC	N/A
1501-92B	X-116B	M-360-1 & 2	0.75" GLOBE	HAND	LC	N/A
1599-61	X-303A-D	M-360-1	3" AO GATE	AC SOL	C	10
1599-62	X-303A-D	M-360-1	3" AO GATE	AC SOL	C	10
1599-68	X-303A-D	M-360-1	0.75" GLOBE	HAND	LC	N/A
1599-76	X-303A-D	M-360-1	1.5" GATE	HAND	LC	N/A
1599-77	X-303A-D	M-360-1	1.5" GATE	HAND	LC	N/A
1599-124A	X-145	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-124B	X-150A	M-360-1	0.5" GLOBE	HAND	LC	N/A

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Table A-2 (page 7 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1599-125A	X-145	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-125B	X-150A	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-126A	X-311A	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-126B	X-311B	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-127A	X-311A	M-360-1	0.5" GLOBE	HAND	LC	N/A
1599-127B	X-311B	M-360-1	0.5" GLOBE	HAND	LC	N/A
1601-20A	X-304	M-356	20" AO BTTRFL	AC SOL	C	N/A
1601-20B	X-304	M-356	20" AO BTTRFL	AC SOL	C	N/A
1601-21	X-126	M-356	18" AO BTTRFL	AC SOL	C	10
1601-22	X-126, 304	M-356	18" AO BTTRFL	AC SOL	C	10
1601-23	X-125	M-356	18" AO BTTRFL	AC SOL	C	10
1601-24	X-125, 318A	M-356	18" AO BTTRFL	AC SOL	C	10
1601-31A	X-304	M-356	20" CHECK	SELF	C	N/A
1601-31B	X-304	M-356	20" CHECK	SELF	C	N/A
1601-48	X-121	M-367-2	1" GATE	HAND	O	N/A
1601-55	X-126, 304	M-356	4" AO BTTRFL	AC SOL	O	15
1601-56	X-304	M-356	18" AO BTTRFL	AC SOL	O	10
1601-57	X-126, 304	M-356	1" MO GLOBE	AC	O	15
1601-58	X-304	M-356	1" AO GLOBE	AC SOL	O/C	15
1601-59	X-126	M-356	1" AO GLOBE	AC SOL	O	15
1601-60	X-318A	M-356	18" AO BTTRFL	AC SOL	C	10
1601-61	X-318A	M-356	2" AO GLOBE	AC SOL	C	15
1601-62	X-125	M-356	2" AO GLOBE	AC SOL	C	15
1601-63	X-125, 318A	M-356	6" AO BTTRFL	AC SOL	C	10
1601-A-500	X-304	M-356	0.75" GLOBE	HAND	LC	N/A
1601-B-500	X-304	M-356	0.75" GLOBE	HAND	LC	N/A
1604-500	X-126	M-356	0.75" GLOBE	HAND	LC	N/A
1605-500	X-125	M-356	0.75" GLOBE	HAND	LC	N/A
1623-DV	X-304	M-356	0.75" GLOBE	HAND	LC	N/A
1679-52	X-318A	M-356	0.75" GLOBE	HAND	LC	N/A
1699-59A	X-313A	M-356	0.5" GLOBE	HAND	LC	N/A

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Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
1699-59B	X-313B	M-356	0.5" GLOBE	HAND	LC	N/A
1699-61A	X-304	M-356	0.5" GLOBE	HAND	LC	N/A
1699-61B	X-316B	M-356	0.5" GLOBE	HAND	LC	N/A
1699-71A	X-313A	M-356	2" GATE	HAND	LC	N/A
1699-71B	X-313B	M-356	2" GATE	HAND	LC	N/A
1699-72	X-126	M-356	0.75" GLOBE	HAND	LC	N/A
1699-75	X-305D	M-356	0.75" GLOBE	HAND	LC	N/A
1699-77	X-305D	M-356	0.75" GLOBE	HAND	LC	N/A
1699-81	X-125	M-356	0.75" GLOBE	HAND	LC	N/A
1699-83	X-313A	M-356	0.75" GLOBE	HAND	LC	N/A
1699-99	X-305A	M-356	1" GLOBE	HAND	LC	N/A
1699-100	X-305B	M-356	1" GLOBE	HAND	LC	N/A
1916-500	X-119	M-362	2" GLOBE	HAND	LC	N/A
2001-5	X-118	M-369	3" AO DIAPHRAGM	AC SOL	C	20
2001-6	X-118	M-369	3" AO DIAPHRAGM	AC SOL	C	20
2001-105	X-117	M-369	3" AO DIAPHRAGM	AC SOL	C	20
2001-106	X-117	M-369	3" AO DIAPHRAGM	AC SOL	C	20
2099-552	X-118	M-369	0.75" GATE	HAND	LC	N/A
2099-871	X-117	M-369	0.75" GATE	HAND	LC	N/A
2301-4	X-128	M-374	10" MO GATE	AC	O	50
2301-5	X-128	M-374	10" MO GATE	DC	O	50
2301-14	X-310A	M-374	4" MO GLOBE	DC	C	N/A
2301-16	X-128	M-374	0.75" GLOBE	HAND	LC	N/A
2301-34	X-312	M-374	2" CHECK	SELF	C	N/A
2301-35	X-303A-D	M-374	16" MO GATE	DC	C	80
2301-36	X-303A-D	M-374	16" MO GATE	DC	C	80
2301-37	X-303A-D	M-374	0.75" GLOBE	HAND	LC	N/A
2301-39	X-303A-D	M-374	16" CHECK	SELF	C	N/A
2301-40	X-310A	M-374	4" CHECK	SELF	C	N/A
2301-41A	X-317A	M-374	0.75" GLOBE	HAND	LC	N/A
2301-41B	X-312	M-374	0.75" GLOBE	HAND	LC	N/A

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Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
2301-45	X-317A	M-374	24" CHECK	SELF	C	N/A
2301-53	X-310A	M-374	4" RELIEF	SELF	C	N/A
2301-56	X-303A-D	M-374	16" BUTTERFLY	HAND	LO	N/A
2301-71	X-312	M-374	2" STOP CHECK	SELF	C	N/A
2301-74	X-317A	M-374	12" STOP CHECK	SELF	C	N/A
2301-93	X-303A-D	M-374	0.75" GLOBE	HAND	LC	N/A
2301-94	X-303A-D	M-374	0.75" GLOBE	HAND	LC	N/A
2351A-DV	X-305D		0.75" GLOBE	HAND	LC	N/A
2351B-DV	X-305D		0.75" GLOBE	HAND	LC	N/A
2399-15	X-303A-D	M-374	0.75" GLOBE	HAND	LC	N/A
2499-1A	X-146	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-1B	X-127	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-2A	X-146	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-2B	X-127	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-3A	X-316A	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-3B	X-316B	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-4A	X-316A	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-4B	X-316B	M-706-2	0.5" SOL GLOBE	AC	C	N/A
2499-7A	X-146	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-7B	X-127	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-9A	X-316A	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-9B	X-316B	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-27A	X-139B	M-706-2	0.5" GLOBE	HAND	O	N/A
2499-27B	X-127	M-706-2	0.5" GLOBE	HAND	O	N/A
2499-28A	X-139B	M-706-2	O.5" CHECK	SELF	C	N/A
2499-28B	X-127	M-706-2	0.5" CHECK	SELF	C	N/A
2499-29A	X-139B	M-706-2	0.5" GLOBE	HAND	O	N/A
2499-29B	X-127	M-706-2	0.5" GLOBE	HAND	O	N/A
2499-31A	X-139B	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-31B	X-127	M-706-2	0.5" GLOBE	HAND	LC	N/A
2499-32A	X-139B	M-706-2	0.5" GLOBE	HAND	LC	N/A

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Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
2499-32B	X-127	M-706-2	0.5" GLOBE	HAND	LC	N/A
3099-91	X-105D	M-345-2	0.75" GLOBE	HAND	LC	N/A
3099-92	X-105C	M-345-2	0.75" GLOBE	HAND	LC	N/A
3099-93	X-105B	M-345-2	0.75" GLOBE	HAND	LC	N/A
3099-94	X-105A	M-345-2	0.75" GLOBE	HAND	LC	N/A
3299-53	X-107A	M-347	0.75" GLOBE	HAND	LC	N/A
3299-55	X-107B	M-347	0.75" GLOBE	HAND	LC	N/A
3702	X-123	M-353	6' MO GATE	AC	O	N/A
3703	X-124	M-353	6' MO GATE	AC	O	N/A
3706	X-124	M-353	6" MO GATE	AC	O	N/A
3769-500	X-123	M-353	6" CHECK	SELF	O	N/A
3799-125	X-124	M-353	6" GATE	HAND	O	N/A
3799-126	X-123	M-353	6" GATE	HAND	O	N/A

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Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
3799-137	X-123	M-353	0.75" GLOBE	HAND	LC	N/A
3799-139	X-123	M-353	0.75" GLOBE	HAND	LC	N/A
3799-181	X-124	M-353	0.75" GLOBE	HAND	LC	N/A
3799-277	X-124	M-353	1" RELIEF	SELF	C	N/A
4327-500	X-119	M-366	3" GATE	HAND	LC	N/A
4327-501	X-119	M-366	3" GLOBE	HAND	C	N/A
4327-502	X-119	M-366	3" GLOBE	HAND	LC	N/A
4399-915	X-119	M-366	1" RELIEF	SELF	C	N/A
4640-500	X-120	M-360	1" GLOBE	HAND	LC	N/A
4722	X-121	M-367-2	2" AO GLOBE	AC SOL	O	N/A
4724	X-121	M-367-2	2" AO GLOBE	AC SOL	0	N/A
4799-514	X-136F	M-367-2	0.5" PRG CHECK (TIP)	SELF	C	N/A
4799-530	X-121	M-367-2	2" CHECK	SELF	C	N/A
4799-533	X-121	M-367-2	0.25" GLOBE	HAND	LC	N/A
4799-531	X-121	M-367-2	2" CHECK	SELF	C	N/A
4799-532	X-121	M-367-2	0.25" GLOBE	HAND	LC	N/A
4799-1775	X-121	M-367-2	0.5" GLOBE	HAND	LC	N/A
4799-1776	X-121	M-367-2	0.5" GLOBE	HAND	LC	N/A
8501-1A	X-309A	M-356	0.5" AO GLOBE	AC SOL	O	5
8501-1B	X-309A	M-356	0.5" AO GLOBE	AC SOL	O	5
8501-3A	X-115	M-356	1" AO GLOBE	AC SOL	O	5
8501-3B	X-115	M-356	1" AO GLOBE	AC SOL	O	5
8501-5A	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
8501-5B	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
8501-500	X-309A	M-356	0.5" GLOBE	HAND	O	N/A
8502-500	X-126, 304	M-356	3" GATE	HAND	LC	N/A
8507-501	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-502	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-503	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-504	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-505	X-144	M-421	0.5" GLOBE	HAND	LC	N/A

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Table A-2 (page 12 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
8507-506	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-507	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-508	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-509	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-510	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-511	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-512	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-513	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-514	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-515	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-516	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-517	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-518	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-519	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-520	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8507-521	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8526	X-126, 304	M-356	0.75" RELIEF	SELF	C	N/A
8599-527	X-126, 304	M-356	0.375" GLOBE	HAND	LC	N/A
8599-617	X-115	M-356	1" GLOBE	HAND	LC	N/A
8599-624	X-115	M-356	1" GLOBE	HAND	O	N/A
8599-630	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-631	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-632	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-633	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-634	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-635	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-636	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-637	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-638	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-639	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-640	X-144	M-421	0.5" GLOBE	HAND	LC	N/A

(continued)

Table A-2 (page 13 of 13)
Primary Containment Isolation Valves (Unit 3)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
8599-641	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-642	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-643	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-644	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-645	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-646	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-647	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-648	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-649	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
8599-650	X-144	M-421	0.5" GLOBE	HAND	LC	N/A
3A-9202-500	X-144	M-356	0.5" GLOBE	HAND	O	N/A
9205A	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
9205B	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
9206A	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
9206B	X-144	M-356	0.5" AO GLOBE	AC SOL	O	5
3A-9206-500	X-144	M-356	0.5" GLOBE	HAND	O	N/A
9207A	X-101	M-356	1" AO GLOBE	AC SOL	O	5
9207B	X-101	M-356	1" AO GLOBE	AC SOL	O	5
9208A	X-101	M-356	1" AO GLOBE	AC SOL	O	5
9208B	X-101	M-356	1" AO GLOBE	AC SOL	O	5
3A-9225-500	X-144	M-356	0.5" GLOBE	HAND	O	N/A
9299-50	X-101	M-356	1" GLOBE	HAND	O	N/A
9299-51	X-101	M-356	1" GLOBE	HAND	O	N/A

APPENDIX B

SECONDARY CONTAINMENT ISOLATION VALVES

Table B-1 (page 1 of 1)
Secondary Containment Isolation Valves

	VALVE	ISOLATION TIME (seconds)
1.	Unit 2 Reactor Building Secondary Containment Penetration Valve 2-1699-125	N/A
2.	Unit 2 Reactor Building Secondary Containment Penetration Valve 2-1699-126	N/A
3.	Unit 2 Reactor Building Secondary Containment Penetration Valve 2-1699-116	N/A
4.	Unit 2/3 Reactor Building Secondary Containment Penetration Valve 2/3-1699-115	N/A
5.	Decontamination Header Drain to Reactor Building Equipment Drain Tank 2-2099-978	N/A
6.	Unit 2 Isolation Condenser Loop Seal Drain Valve 2-4899-167	N/A
7.	Unit 2 Reactor Building Secondary Containment Penetration Valve 2-1699-129	N/A
8.	Unit 2 Roof Drain Hydrolazer Connection Isolation Valve 2-4199-253	N/A
9.	Unit 3 Reactor Building Secondary Containment Penetration Valve 3-1699-130	N/A
10.	Decontamination Header Drain to Reactor Building Equipment Drain Tank 3-2099-978	N/A
11.	Unit 3 Reactor Building Secondary Containment South Isolation Valve 3-1699-131	N/A
12.	Unit 3 Reactor Building Secondary Containment South Isolation Valve 3-1699-132	N/A
13.	Unit 3 Reactor Building Secondary Containment Penetration Valve Elevation 517 Southwest - Valve #1 3-1699-127	N/A
14.	Unit 3 Reactor Building Secondary Containment Penetration Valve Elevation 517 Southwest - Valve #2 3-1699-128	N/A
15.	2A Inlet Damper 2-5741A	300
16.	2B Inlet Damper 2-5741B	300
17.	2A Outlet Damper 2-5742A	300
18.	2B Outlet Damper 2-5742B	300
19.	3A Inlet Damper 3-5741A	300
20.	3B Inlet Damper 3-5741B	300
21.	3A Outlet Damper 3-5742A	300
22.	3B Outlet Damper 3-5742B	300

APPENDIX C

SAFETY FUNCTION DETERMINATION PROGRAM

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A. PURPOSE

A.1 Objective

The purpose of the SFDP is to enusre that when Technical Specification LCO 3.0.6 is used to preclude performing the Conditions and Actions for inoperable SUPPORTED SYSTEMS:

- A Loss of Safety Function does not go undetected,
- The plant will be placed in a safe condition if a Loss of Safety Function is determined to exist, and
- A SUPPORTED SYSTEM(S) Completion Time will not be inappropriately extended.

B. REFERENCES

B.1 Technical Specification (TS) 3.0.6.

B.2 TS 5.5.11, "Safety Function Determination Program (SFDP)"

C. DEFINITIONS

C.1 **SAFETY FUNCTION –**

An accident mitigation feature required by NRC regulation, plant design or Technical Specifications normally composed of two trains of SUPPORT and SUPPORTED equipment.

C.2 **LOSS OF SAFETY FUNCTION (LOSF) –**

A LOSF exists when, assuming no concurrent single failure and assuming no concurrent loss of offsite power or loss of onsite diesel generator(s), a safety function assumed in the accident analysis cannot be performed.
(SEE ATTACHMENT 1)

C.3 **SUPPORT SYSTEM –**
A SYSTEM(S) that is needed by another TS LCO required SYSTEM(S) to perform a safety function.

C.4 **SUPPORTED SYSTEM –**

A SYSTEM, required by the TS, which requires a SUPPORT SYSTEM to ensure its safety function can be performed. Process parameters or operating limits do not comprise SUPPORTED SYSTEM(S) for the purposes of implementing TS LCO 3.0.6.

C.5 **MAXIMUM OUT OF SERVICE TIME –**

A SUPPORTED SYSTEM(S) made inoperable by the SUPPORT SYSTEM(S) inoperability shall be restored to OPERABLE status within the Maximum Out Of Service Time (MOST). The MOST is the Completion Time specified in the Technical Specifications for restoring the first inoperable SUPPORT SYSTEM(S) to OPERABLE status plus the time specified in the TS for restoring the SUPPORTED SYSTEM(S) to OPERABLE status. (SEE ATTACHMENT 2 – Completion Time Extensions)

The inoperability of the SUPPORTED SYSTEM(S) must only be directly attributed to its associated SUPPORT SYSTEM(S) being inoperable and the SUPPORT SYSTEM(S) Required Actions not specifically requiring entry into the SUPPORTED SYSTEM(S) Conditions and Required Actions.

D. LIMITATIONS

D.1 Reporting Requirements will be done in accordance with the Reportability Manual.

D.2 Changes to this Program shall be performed in accordance with the TRM Change Control Program.

D.3 The Shift Manager is responsible for implementing the Safety Function Determination Program.

E. PROCEDURE

E.1 LCO 3.0.6 REQUIREMENTS

E.1.1 TS LCO 3.0.2 states that upon discovery of a failure to meet an TS LCO, the Required Actions of the associated Conditions shall be met, except as provided in TS LCO 3.0.5 and TS LCO 3.0.6.

E.1.2 TS LCO 3.0.6 provides an exception to TS LCO 3.0.2 for SUPPORT SYSTEM(S) by not requiring the Conditions and Required Actions for the SUPPORTED SYSTEM(S) to be performed when the failure to meet an TS LCO is solely due to a SUPPORT SYSTEM(S) LCO not being met. In this situation, although the SUPPORTED SYSTEM(S) is determined to be inoperable as defined in the Technical Specifications, LCO 3.0.6 requires only the ACTIONS of the SUPPORT SYSTEM(S) to be performed. The Conditions and Required Actions for the SUPPORTED SYSTEM(S) are not required to be performed (i.e., cascading to the SUPPORTED SYSTEM(S)) per TS LCO 3.0.6.

E.1.3 There are two types of SUPPORT SYSTEM(S) that must be considered when implementing TS LCO 3.0.6:

- SUPPORT SYSTEM(S) specifically addressed in Technical Specifications, and
- SUPPORT SYSTEM(S) that are not specifically addressed in Technical Specifications

> NOTE
>
> It may be necessary to perform OPERABILITY Determinations in accordance with Procedure RS-AA-105 in order to determine SUPPORTED SYSTEMS made Inoperable by Inoperable SUPPORT SYSTEMS.

If required SUPPORT SYSTEM(S) is addressed in the Technical Specifications, then only the SUPPORT SYSTEM(S) Conditions and Actions must be entered per TS LCO 3.0.6 (i.e., "cascading" to the SUPPORTED SYSTEM(S) is not required).

If required SUPPORT SYSTEM(S) is NOT addressed in the Technical Specifications, then impact of the SUPPORT SYSTEM(S) inoperability must be evaluated with respect to any SUPPORTED SYSTEM(S) that is addressed in Technical Specifications.

E.1.4 A single component inoperability may result in multiple inoperabilities within a single train and affect multiple TS LCOs. TS LCO 3.0.6 limits the amount of "cascading" Actions that are required when an inoperable SYSTEM(S) renders a SUPPORTED SYSTEM(S) inoperable.

E.1.5 Any SUPPORT SYSTEM(S) inoperability must be evaluated with respect to the existing plant conditions to ensure that a Loss of Safety Function (LOSF) does not exist.

Example: The loss of Containment Cooling Service Water (CCSW) Pump to one CCSW heat exchanger. If the heat exchanger bypass valve was found stuck open in the opposite subsystem, a LOSF will exist following a loss-of-coolant-accident and this plant configuration must be evaluated.

E.1.6 When exception of TS LCO 3.0.6 is utilized, evaluations are required in accordance with TS 5.5.11, "Safety Function Determination Program (SFDP)".

E.1.7 If LOSF is determined to exist by this Program, the appropriate Conditions and Required Actions of the TS LCO in which the LOSF exists are required to be entered.

E.1.8 When SUPPORT SYSTEM(S) Required Action directs a SUPPORTED SYSTEM(S) to be declared inoperable or directs entry into Conditions and Required Actions for a SUPPORTED SYSTEM(S), the applicable Conditions and Required Actions shall be entered in accordance with TS LCO 3.0.2.

E.1.9 It should be noted that for cases in which the inoperable SUPPORT SYSTEM(S) is addressed in Technical Specifications, "cascading" Conditions and Required Actions may still be performed in lieu of invoking TS LCO 3.0.6.

E.2 T.S. 5.5.11, SAFETY FUNCTION DETERMINATION PROGRAM (SFDP) REQUIREMENTS

NOTE

If failure of a TS required SUPPORT SYSTEM(S) results in the inoperability of a SYSTEM(S) outside of the TS, and that SYSTEM(S) is subsequently relied upon by a SUPPORTED SYSTEM(S) to remain OPERABLE, then TS LCO 3.0.6 could apply and only the SUPPORT SYSTEM(S) Required Actions would be entered.

E.2.1 When TS LCO 3.0.6 is used as an exception to TS LCO 3.0.2, an evaluation is required to ensure a LOSF is detected and appropriate actions are taken.

E.2.2 Therefore, the SFDP requires:

E.2.2.1 Cross train checks to ensure a LOSF does not go undetected;

- Since "cascading" the Conditions and Required Actions of a Specification are not required when applying TS LCO 3.0.6, a possibility exists that unrelated concurrent failures of more than one SYSTEM(S) could result in the complete loss of both trains of a SUPPORTED SYSTEM(S). Therefore, upon a failure to meet two or more LCOs during the same time period, an evaluation shall be conducted to determine if a LOSF exists. Generally, this is done by confirming that the remaining required redundant SYSTEM(S) are OPERABLE (Per ATTACHMENT 1 and TABLE 1). If a LOSF does exist, the SFDP directs that the appropriate actions be taken.

E.2.2.2 Placing the plant in a safe condition if a LOSF is detected;

- If LOSF is determined to exist by this Program, the appropriate Conditions and Required Actions of the LCO in which the LOSF exists are required to be entered per step E.3.4.

E.2.2.3 Controls on extending completion times on inoperable SUPPORTED SYSTEM(S);

- MOST is determined per Attachment 2.

E.2.2.4 Appropriate limitations and remedial or compensatory actions to be taken as a result of the SUPPORT SYSTEM(S) inoperability.

E.3 PROGRAM IMPLEMENTATION

> Note
> Performing steps E.3.1 thru E.3.7 and / or use of the Flowchart (Figure 1) will implement the requirements of the SFDP.

E.3.1 Does the degraded SYSTEM(S) render a TS required SYSTEM(S) inoperable?

E.3.1.1 If NO, then no further evaluation is necessary.

E.3.1.2 If YES, then evaluate this inoperabilities impact on any current SFDs and document on worksheet.

E.3.2 Is the inoperable SYSTEM(S) also a SUPPORT SYSTEM(S)?

E.3.2.1 If NO, then perform Conditions and Required Actions for the inoperable SYSTEM(S).

E.3.2.2 If YES, then identify all TS required SUPPORTED SYSTEM(S) that are rendered inoperable as a result of this TS SUPPORT SYSTEM Inoperability (Use Table 1 as an aid in evaluating potential Support Supported Relationships).

E.3.3 Does the Inoperable SUPPORT SYSTEM(S) Specification Conditions and Required Actions direct either the Immediate Declaration of Inoperability of SUPPORTED SYSTEM(S) or performance of any SUPPORTED SYSTEM(S) Required Action(s)?

E.3.3.1 If YES, then enter the TS Condition for the SUPPORTED SYSTEM(S) as directed and perform the Required Actions.

E.3.3.2 If NO, then:

EITHER

- Perform both the SUPPORT and the SUPPORTED SYSTEM(S) Required Actions.

OR

- Perform SUPPORT SYSTEM(S) Required Actions, And

- Perform a LOSF Evaluation for ALL inoperable SUPPORT and SUPPORTED SYSTEM(S) , per ATTACHMENT 1 and Table 1.

E.3.4 If LOSF is determined to exist, then perform the appropriate Conditions and Required Actions as determined from using the following guidance:

E.3.4.1 SINGLE SUPPORT SYSTEM INOPERABILITY-

When LOSF is solely due to a single T.S. SUPPORT SYSTEM (e.g., loss of a pump suction source due to low tank level) the appropriate LCO is the LCO for the SUPPORT SYSTEM. The Actions for the SUPPORT SYSTEM LCO adequately address the inoperabilities of that system without reliance upon the Actions of the SUPPORTED SYSTEM.

E.3.4.2 MULTIPLE SUPPORT SYSTEM INOPERABILITY-

When LOSF is due to multiple T.S. SUPPORT SYSTEM inoperabilities, the appropriate LCO is the LCO for the SUPPORTED SYSTEMS.

E.3.5 If NO LOSF exists or LOSF is solely due to a single T.S. support system, then for all SUPPORTED SYSTEM(S) which are rendered inoperable:

E.3.5.1 Invoke TS LCO 3.0.6 to defer entry into the Conditions and Required Actions associated with the inoperable SUPPORTED SYSTEM(S):

E.3.5.1.1 Calculate the MOST for the inoperable SUPPORTED SYSTEM(S) using ATTACHMENT 2.

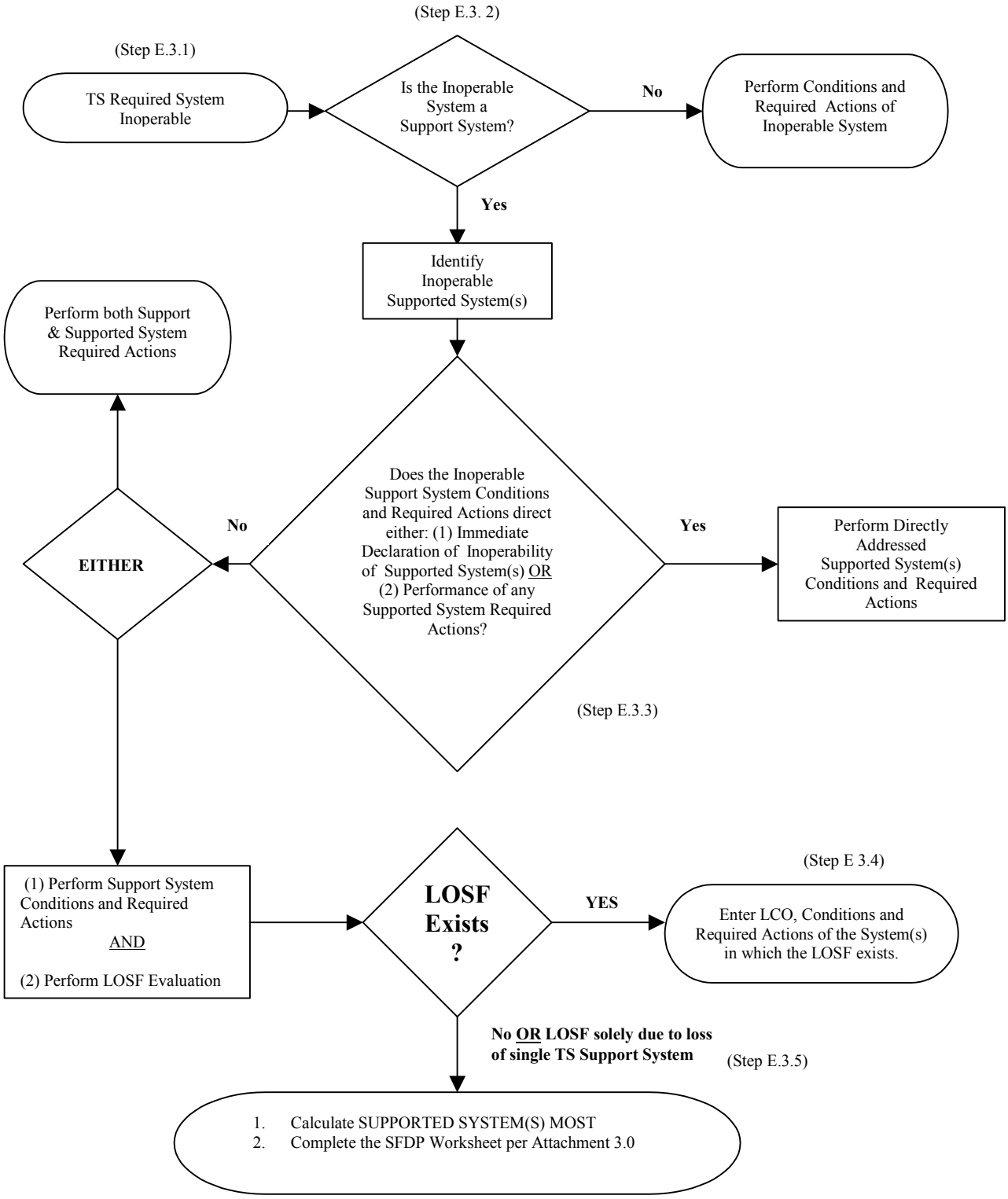
E.3.5.1.2 Complete the SFDP Worksheet per Attachment 3.

- When filling out the SFDP Worksheet it is only necessary to enter names of those SUPPORTED SYSTEMS that are made Inoperable by the Inoperable SUPPORT SYSTEM. It is not necessary to identify either OPERABLE SUPPORTED SYSTEMS or SUPPORTED SYSTEMS that are not in the MODE OF APPLICABILITY.

E.3.6 If SUPPORTED SYSTEM(S) is NOT restored to OPERABLE status (by restoring the SUPPORT SYSTEM(S) and all associated SUPPORTED SYSTEM(S) to Operable status) within the MOST, the associated Condition for the INOPERABLE SUPPORTED SYSTEM(S) Completion Time not being met shall be entered and the Required Actions shall be performed.

E.3.7 The SFD may be closed when the INOPERABLE SUPPORT SYSTEM and SUPPORTED SYSTEM(S) on the SFDP TRACKING SHEET are restored to Operable Status. Enter the time/date when the SUPPORT SYSTEM as well as all SUPPORTED SYSTEM(S) are restored to Operable status, and sign the SFD Worksheet.

Figure 1
LOSF Evaluation Flow Chart



ATTACHMENT 1
LOSS OF SAFETY FUNCTION EVALUATION

A. Guidance for Safety Function Evaluation

TS 5.5.11 states that a LOSF exists when, assuming no concurrent single failure, and assuming no concurrent loss of offsite power or loss of onsite diesel generator(s), a safety function assumed in the accident analysis cannot be performed.

For the purpose of this program, a "graduated" approach may be taken for determining the "safety function" of the SUPPORTED SYSTEM(S). This approach, detailed below, is graduated from most to least conservative. Even if the least conservative method is used, the requirements of TS 5.5.11 will be met. In determining whether a LOSF has occurred, at least one of these methods must be used.

The three methods are:

- Redundant SUBSYSTEM(S)/Division/Train
- TS LCO Function
- Safety Analysis

Method 1: Redundant SUBSYSTEM(S)/Division/Train

a. For this method, the safety function is assumed to be the SYSTEM(S) function as described in the TS BASES. Confirm the OPERABILITY of the corresponding redundant SUPPORTED SYSTEM(S).

b. If one or more of the redundant SYSTEM(S) are found to be INOPERABLE, a LOSF may exist. The appropriate ACTIONS for a LOSF may be taken or alternatively, one of the following methods below may be used.

A redundant train evaluation used to identify a LOSF can be seen in the following three examples.

ATTACHMENT 1 (Continued)
LOSS OF SAFETY FUNCTION EVALUATION

SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

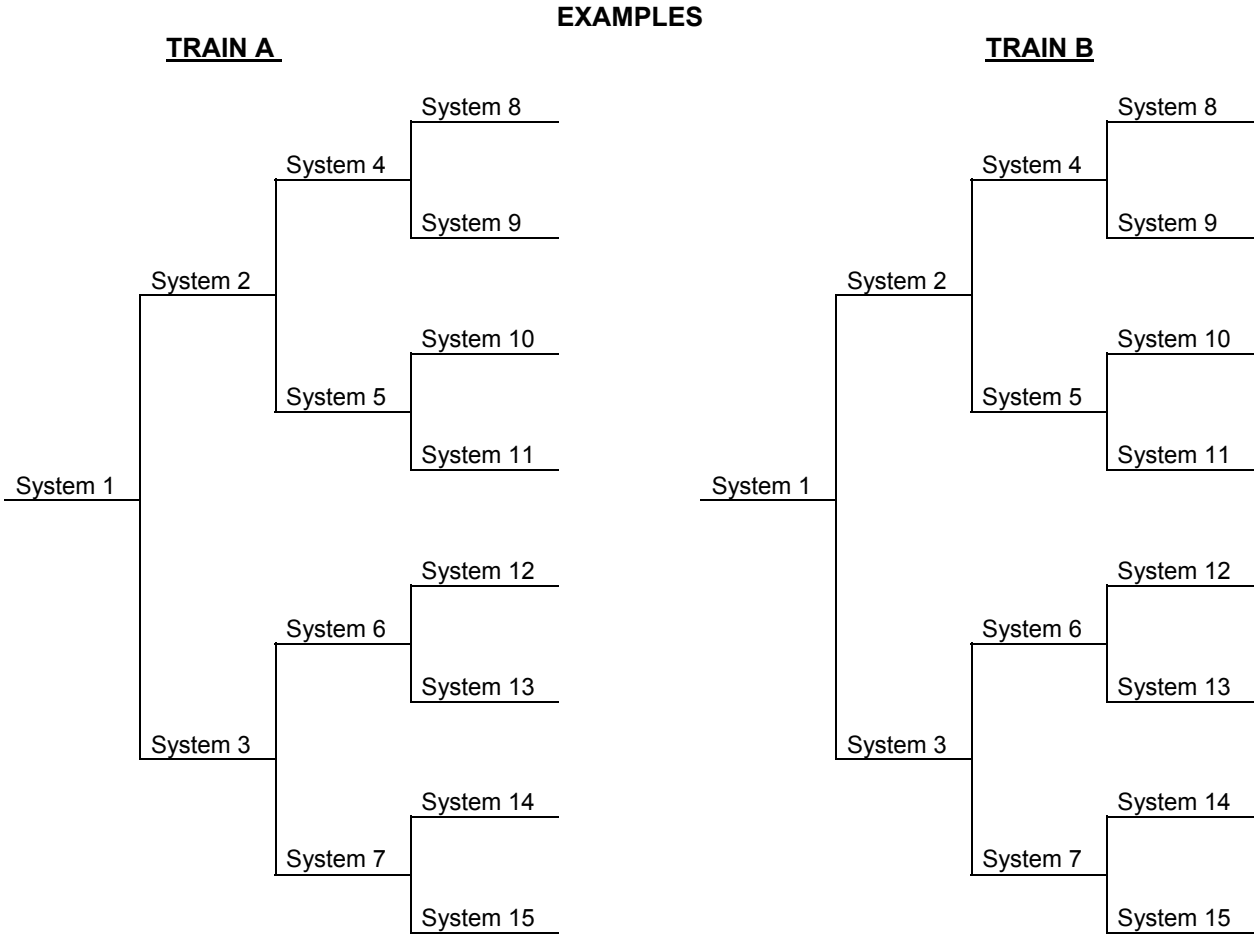
EXAMPLE 1

A LOSF may exist when a SUPPORT SYSTEM is INOPERABLE, and:

A required SYSTEM redundant to the SYSTEM(S) supported by the INOPERABLE SUPPORT SYSTEM is also INOPERABLE.

If SYSTEM 2 of Train A is INOPERABLE, and SYSTEM 5 of Train B is INOPERABLE, a LOSF may exist in SUPPORTED SYSTEM(S) 5, 10, 11.

EXAMPLES



Note: Chart reads from left to right, i.e., SYSTEM 1 is a SUPPORT SYSTEM for SYSTEM(S) 2 through 15.

ATTACHMENT 1 (Continued)
LOSS OF SAFETY FUNCTION EVALUATION

SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

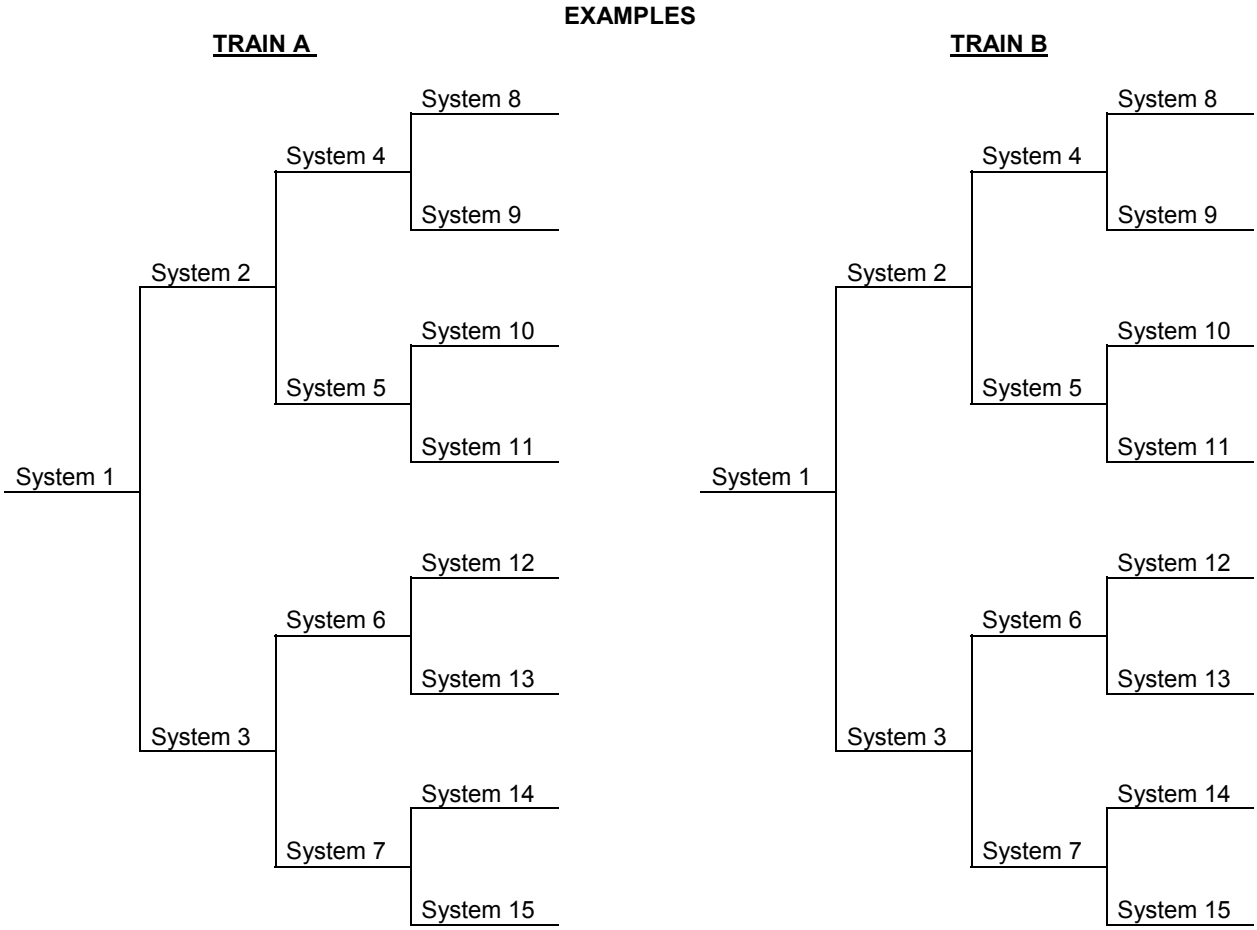
EXAMPLE 2

A LOSF may exist when a SUPPORT SYSTEM is INOPERABLE, and:

A required SYSTEM redundant to the SYSTEM(S) in turn supported by the INOPERABLE SUPPORTED SYSTEM(S) is also INOPERABLE.

If SYSTEM 2 of Train A is INOPERABLE, and SYSTEM 11 of Train B is INOPERABLE, a LOSF may exist in SYSTEM 11 which is in turn supported by SYSTEM 5.

EXAMPLES



Note: Chart reads from left to right, i.e., SYSTEM 1 is a SUPPORT SYSTEM for SYSTEM(S) 2 through 15.

ATTACHMENT 1 (Continued)
LOSS OF SAFETY FUNCTION EVALUATION

SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

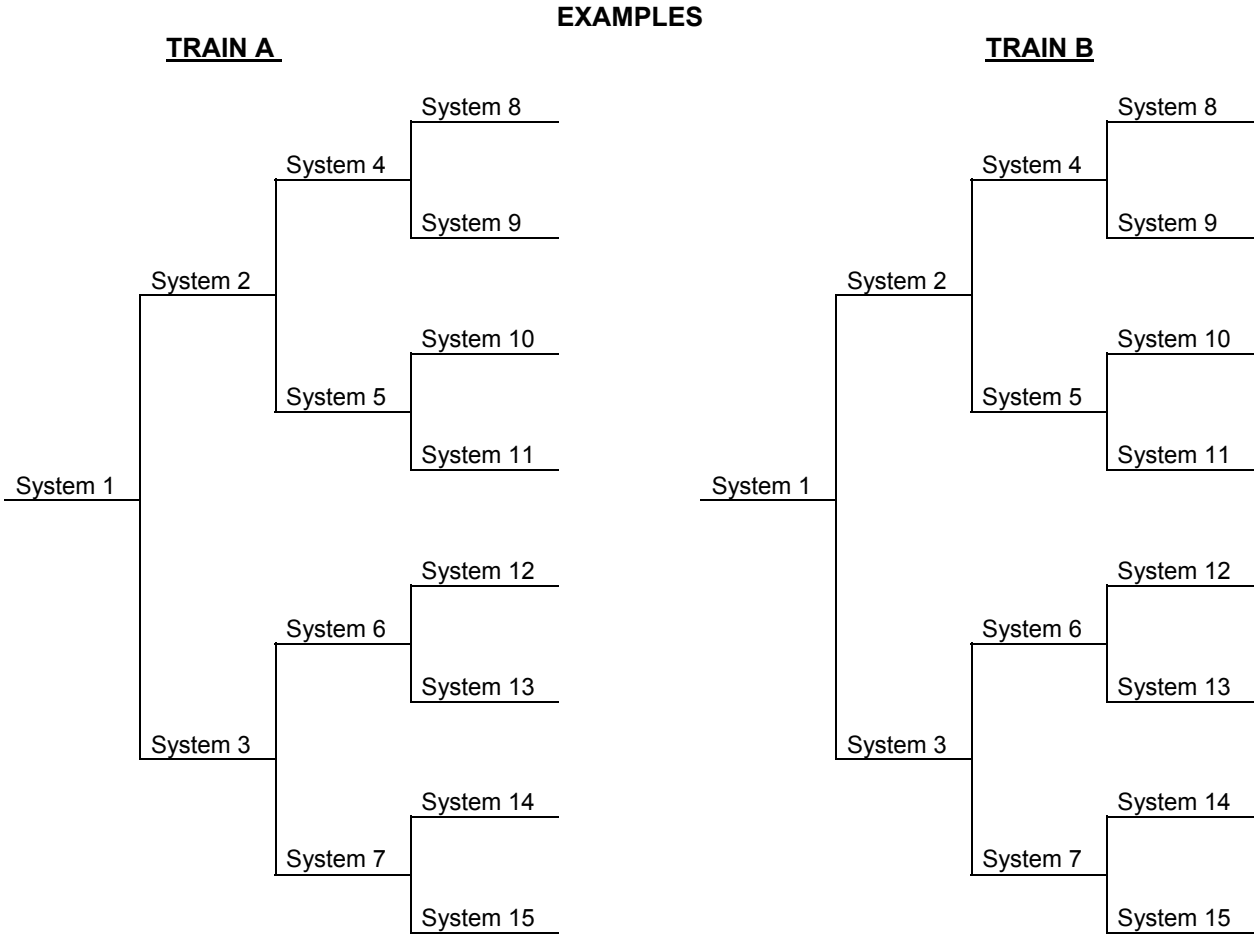
EXAMPLE 3

A LOSF may exist when a SUPPORT SYSTEM is INOPERABLE, and:

A required SYSTEM redundant to the SUPPORT SYSTEM(S) for the SUPPORTED SYSTEM(S) (a) and (b) above is also INOPERABLE.

If SYSTEM 2 of Train A is INOPERABLE, and SYSTEM 1 of Train B is INOPERABLE, a LOSF may exist in SYSTEM(S) 2, 4, 5, 8, 9, 10 and 11.

EXAMPLES



Note: Chart reads from left to right, i.e., SYSTEM 1 is a SUPPORT SYSTEM for SYSTEM(S) 2 through 15.

ATTACHMENT 1 (Continued)
LOSS OF SAFETY FUNCTION EVALUATION

Method 2: TS LCO Function Method 2: TS LCO Function

a. In certain cases, multiple SYSTEM(S) with diverse individual functions are specified under one TS LCO statement; i.e., in one Technical Specification. For these cases, the safety function may be considered to be broader than the individual SYSTEM(S) function – the safety function is the Technical Specification LCO function, not the SYSTEM(S) function (as described in Method 1 above).

b. An example of this is TS 3.5.1, "ECCS—Operating," in which four different SYSTEM(S) are included. In this case, the function as stated in the Bases, "…to cool the core during a LOCA," may be the safety function to be considered in the SFDP.

c. If a loss of TS LCO function is determined to exist, the appropriate Conditions and Required Actions for a LOSF may be taken or alternatively, the following method below may be used.

Method 3: Safety Analysis

In this approach, the function of the SYSTEM(S) described in the UFSAR accident analyses is considered to be the safety function. If the SYSTEM(S) in question is not credited in the accident analyses, or if the accident function it performs is intact, then no LOSF exists. However, if the SYSTEM(S) function is credited and is lost (i.e., the accident function it performs cannot be met), then the appropriate ACTIONS for a LOSF must be taken.

ATTACHMENT 1 (Continued)
LOSS OF SAFETY FUNCTION EVALUATION

B. Loss of Safety Function (LOSF) Evaluation

Is there <u>any</u> INOPERABLE or degraded SUPPORT SYSTEM(S) or SUPPORTED SYSTEM(S) equipment on the opposite/redundant train that, when coupled with this INOPERABLE equipment, might result in a complete loss of a Tech Spec required safety function.

1. NO - No LOSF exists. No further evaluation is necessary.

2. YES - A LOSF may exist. Evaluate which of the following conditions apply:

   a. The SYSTEM(S) is part of an TS LCO with multiple SUBSYSTEM(S) and the TS LCO specified function is intact. No LOSF exists.

   b. The SYSTEM(S) will still perform its required safety function as defined in the UFSAR. No LOSF exists.

   c. A LOSF exists. Perform the Required Actions in which the LOSF exists for the specific Condition(s) that apply.

C. SUPPORTED SYSTEM LOSF

When a LOSF is determined to exist, and the SFDP requires entry into the appropriate Conditions and Required Actions of the LCO in which the LOSF exists, consideration must be given to the specific type of function affected.

1. SINGLE SUPPORT SYSTEM INOPERABILITY-

   When a LOSF is solely due to a single T.S. SUPPORT SYSTEM (e.g., loss of a pump suction source due to low tank level) the appropriate LCO is the LCO for the SUPPORT SYSTEM. The Actions for the SUPPORT SYSTEM LCO adequately address the inoperabilities of that system without reliance upon the Actions of the SUPPORTED SYSTEM.

2. MULTIPLE SUPPORT SYSTEM INOPERABILITY-

   When a LOSF is due to multiple T.S. SUPPORT SYSTEM inoperabilities, the appropriate LCO is the LCO for the SUPPORTED SYSTEMS.

ATTACHMENT 2

SUPPORTED SYSTEM (S) COMPLETION TIME EXTENSIONS

BACKROUND

The T.S. require declaring SUPPORTED SYSTEM(S) INOPERABLE if a SUPPORT SYSTEM(S) inoperability renders the SUPPORTED SYSTEM(S) incapable of performing its required function. However, the Conditions and Required Actions of the SUPPORTED SYSTEM(S) do not have to be entered (i.e., the Conditions and Required Actions are not entered) except as directed by the SUPPORT SYSTEM(S) Required Actions.

Consequently, it is possible to have SUPPORTED SYSTEM(S) INOPERABLE for longer periods of time than their respective Completion Time would allow on their own. Per Technical Specifications 5.5.11, the SFDP must include measures to ensure that the SUPPORTED SYSTEM('S) Completion Times are not inappropriately extended.

The following two methods are provided for ensuring Completion Times are not inappropriately extended. METHOD 1 applies to SUPPORTED SYSTEM inoperabilities associated with a single SUPPORT SYSTEM inoperability. METHOD 2 is applicable to those SUPPORTED SYSTEM inoperabilities due to multiple SUPPORT SYSTEM inoperabilities.

METHOD 1

Single SUPPORT SYSTEM(S) INOPERABLE affecting SUPPORTED SYSTEM(S)

1. With a single SUPPORT SYSTEM(S) INOPERABLE, the affected SUPPORTED SYSTEM(S) Conditions and Required Actions are not required to be entered unless directed by the SUPPORT SYSTEM(S) Required Actions.

2. The method to accomplish this will be in the form of a calculated Maximum Out Of Service Time (MOST). The MOST will ensure that a time limit is placed on the INOPERABLE SUPPORTED SYSTEM(S) such that when an additional SUPPORT SYSTEM(S) becomes INOPERABLE no extension of time is added to the original MOST. MOST is only used when implementing the SFDP.

3. The MOST is calculated in the following manner:

Support LCO Required Action Completion Time	+	Supported LCO Required Action = MOST Completion Time
Support Train A, LCO AAA (72hrs)	+	Supported Train A, LCO BBB (72 hrs)=144 hrs
	+	Supported Train A, LCO UUU (72 hrs)=144 hrs
	+	Supported Train A, LCO ZZZ(72 hrs)=240 hrs
	+	Supported Train A, LCO RRR (168 hrs)=240 hrs

ATTACHMENT 2 (Continued)

SUPPORTED SYSTEM (S) COMPLETION TIME EXTENSIONS

EXAMPLE 1- Single SUPPORT SYSTEM(S)

2A CCSW Pump is declared INOPERABLE @ 0800 on 8/13/01. TS LCO 3.7.1 Conditions and Required Actions are entered. A LOSF is performed and all B train components are verified to be operable. Therefore, the TS LCO 3.0.6 and the SFDP can be implemented. All SUPPORTED SYSTEM(S) have been identified and the calculated MOST are as follows:

SUPPORT / SUPPORTED SYSTEM(S)	LCO CONDITION	COMPLETION TIME	MOST
CCSW SYSTEM (A Pump) Support	3.7.1 A.1	30 days	
Suppression Pool Spray Supported	3.6.2.4 A.1	7 days	37 days
Suppression Pool Cooling Supported	3.6.2.3 A.1	7 days	37 days

EXAMPLE 2

With the 2A CCSW pump still inoperable, the 2B CCSW is determined to be inoperable @ 0800 on 8/15/01. TS LCO 3.7.1 Conditions and Required Actions are entered. A LOSF is performed and all B train components are verified to be operable. Therefore, the TS LCO 3.0.6 and the SFDP can be implemented. All SUPPORTED SYSTEM(S) have been identified and the calculated MOST are as follows:

SUPPORT / SUPPORTED SYSTEM(S)	LCO CONDITION	COMPLETION TIME	MOST
CCSW SYSTEM (B Pump) Support	3.7.1 A.1	30 days (+ 24 HRS)	
CCSW SYSTEM (A & B Pump) Supported	3.7.1 C.1	7 days	
Suppression Pool Spray Supported	3.6.2.4 A.1	7 days	37 days
Suppression Pool Cooling Supported	3.6.2.3 A.1	7 days	37 days

3.7.1 Condition A applies to both inoperable pumps. Additionally you now have a subsystem inoperable for reasons other than Condition A and therefore Condition C is applicable. The MOST is calculated based on the times associated with Condition A entry. The Condition A time is based on the entry time for the A pump. However, the 24 HR extension (T.S. 1.3) is now applicable.

ATTACHMENT 2 (Continued)

SUPPORTED SYSTEM (S) COMPLETION TIME EXTENSIONS

EXAMPLE 3

The 2A CCSW pump is declared operable @ 0800 on 8/20/01 while the 2B CCSW remains inoperable. TS LCO 3.7.1 Conditions and Required Actions are evaluated. It has been determined that both Condition 3.7.1.C and 3.7.1.A for the A CCSW Pump are now no longer applicable.

SUPPORT / SUPPORTED SYSTEM(S)		LCO CONDITION	COMPLETION TIME	MOST
CCSW SYSTEM (B Pump)	Support	3.7.1 A.1	30 days (+ 24 HRS)	
Suppression Pool Spray	Supported	3.6.2.4 A.1	7 days	37 days
Suppression Pool Cooling	Supported	3.6.2.3 A.1	7 days	37 days

3.7.1 Condition A now only applies to the B pump. The Condition A time is based on the entry time for the A pump. However, the 24 HR extension (T.S. 1.3) is still applicable.

EXAMPLE 4

With the 2B CCSW pump still inoperable, the 2C CCSW is determined to be inoperable @ 0800 on 8/20/01. TS LCO 3.7.1 Conditions and Required Actions are entered. A LOSF is performed and both trains of Supported equipment are evaluated for operability.

SUPPORT / SUPPORTED SYSTEM(S)		LCO CONDITION	COMPLETION TIME	MOST
CCSW SYSTEM (B Pump)	Support	3.7.1 A.1	30 days (+ 24 HRS)	
Suppression Pool Spray	Supported	3.6.2.4 A.1	7 days	37 days
Suppression Pool Cooling	Supported	3.6.2.3 A.1	7 days	37 days

In addition to the existing inoperability above, it has been determined that both Condition 3.7.1.B and 3.7.1.A for the 2C CCSW Pump are now applicable, resulting in both Subsystems of CCSW being declared inoperable. LCO 3.0.6 / 5.5.11 can be used to evaluate the impact of the SUPPORTED SYSTEMS INOPERABILITY on a LOSF.

Using the BASES for 3.7.1 to evaluate the existing failures, it can be determined that the remaining equipment is sufficient to support the assumption in the accident analysis, thus the function is maintained.

ATTACHMENT 2 (Continued)

SUPPORTED SYSTEM (S) COMPLETION TIME EXTENSIONS

This results in tracking the following inoperabilities and associated MOST:

SUPPORT / SUPPORTED SYSTEM(S)		LCO CONDITION	COMPLETION TIME	MOST
CCSW SYSTEM (B Pump)	Support	3.7.1 A.1	30 days (+ 24 HRS)	
CCSW SYSTEM (C Pump)	Support	3.7.1. A.1	30 days (+ 24 HRS)	
CCSW SYSTEM (B & C Pump)	Support	3.7.1 B.1	7 days	
Suppression Pool Cooling	Supported	3.6.2.3 A.1	7 days	37 days
Suppression Pool Spray	Supported	3.6.2.4. A.1	7 days	37 days
Suppression Pool Cooling	Supported	3.6.2.3 B.1	8 HRS	176 HRS
Suppression Pool Spray	Supported	3.6.2.4 B.1	8 HRS	176 HRS

ATTACHMENT 2 (Continued)

SUPPORTED SYSTEM (S) COMPLETION TIME EXTENSIONS

METHOD 2

Multiple SUPPORT SYSTEM(S) become INOPERABLE affecting the same SUPPORTED SYSTEM(S)

There may be some cases where two SUPPORT SYSTEMS for a common SUPPORTED SYSTEM become INOPERABLE simultaneously. In this case, the following method should be used to calculate the MOST.

a. The first SUPPORT / SUPPORTED MOST plus an additional 24 hours; or

b. The subsequent SUPPORT / SUPPORTED MOST as measured from discovery of the first SUPPORT inoperability.

EXAMPLE 1- Multiple SUPPORT SYSTEM(S)

Two SUPPORT SYSTEM(S) become INOPERABLE at different times.

1. SYSTEMS B and C support SYSTEM A.
   SYSTEM B (SUPPORT SYSTEM) becomes INOPERABLE at T = 0 days.

   - SYSTEM A (SUPPORTED SYSTEM) Completion Time - 3 days
   - SYSTEM B (SUPPORT SYSTEM) Completion Time - 3 days
   - SYSTEM C (SUPPORT SYSTEM) Completion Time - 7 days

2. SYSTEM B (SUPPORT SYSTEM) with a Completion Time of 3 days, renders SYSTEM A (SUPPORTED SYSTEM) INOPERABLE. Method 1 is applied, which allows an overall MOST of 6 days for the SYSTEM A (SUPPORTED SYSTEM).

3. At T = 1 day, SYSTEM C (SUPPORT SYSTEM) becomes INOPERABLE and has a Completion Time of 7 days. SYSTEM C (SUPPORT SYSTEM) also supports SYSTEM A (SUPPORTED SYSTEM). SYSTEM B (SUPPORT SYSTEM) continues to remain INOPERABLE through its Completion Time T = 3 days.

4. Once SYSTEM C (SUPPORT SYSTEM) becomes INOPERABLE concurrent with SYSTEM B, Method 2 is applied at T=1, the Most is as follows:

   Method 2a: Original MOST (SYSTEM A +B) + 24 hours = 7days, OR

   Method 2b: New MOST (SYSTEM A + C) = 10 days measured from T = 0.

ATTACHMENT 3

SFDP TRACKING WORKSHEET

INSTRUCTIONS

The Safety Function Determination (SFD) Worksheet is used to document the SUPPORTED SYSTEMS of an INOPERABLE SUPPORT SYSTEM, track their Maximum Out Of Service Time (MOST), and document whether or not a loss of safety function exists. It is also the mechanism for documenting the reevaluation of safety function determinations that are necessary when subsequent LCO's are entered.

1. Enter the noun name of the INOPERABLE SUPPORT SYSTEM / component.

2. SUPPORT SYSTEM Tech Spec Condition / Required Action.

3. Date and time of entry into LCO Conditions and Required Actions for the SUPPORT SYSTEM.

4. Completion time allowed for the Required Action of the SUPPORT SYSTEM Tech Spec.

5. The SFD# will be a sequential number (year/unit/ # e.g. 01/02/001).

6. Enter the noun name of each Tech Spec system supported by the INOPERABLE SUPPORT SYSTEM.

7. For each SUPPORTED SYSTEM, list the Tech Spec Condition / Required Action.

8. Record the allowed completion time for the SUPPORTED SYSTEM Required Action.

9. Perform a cross train check (ATTACHMENT 1/ Method 1 and TABLE 1) to verify operability of the INOPERABLE SUPPORTED SYSTEM(S) redundant equipment, as well as the support features for the redundant equipment. Block 9 is filled in with yes or no.

ATTACHMENT 3 (Continued)

SFDP TRACKING WORKSHEET

10. Based on the results of the cross train check performed in step 9 of the worksheet, determine whether or not the safety function of the SUPPORTED SYSTEM has been lost. If the cross train check, ATTACHMENT 1/ Method 1 has failed or can not be performed, Methods 2 or 3 may be used to assess the status of the safety function in question. If the safety function has been lost, then enter the appropriate Conditions and Required Actions for that system or component using the following guidance: 1. SINGLE SUPPORT SYSTEM INOPERABILITY- When a LOSF is solely due to a single T.S. SUPPORT SYSTEM (e.g., loss of a pump suction source due to low tank level) the appropriate LCO is the LCO for the SUPPORT SYSTEM. The Actions for the SUPPORT SYSTEM LCO adequately address the inoperabilities of that system without reliance upon the Actions of the SUPPORTED SYSTEM. 2. MULTIPLE SUPPORT SYSTEM INOPERABILITY- When a LOSF is due to multiple T.S. SUPPORT SYSTEM inoperabilities, the appropriate LCO is the LCO for the SUPPORTED SYSTEMS.

11. If the safety function has not been lost or LOSF is solely due to a single T.S. SUPPORT SYSTEM, calculate the Maximum Out of Service Time for the SUPPORTED SYSTEM. If ATTACHMENT 2 Method 1 is used, this will be the sum of block 4 and block 8. If Method 2 is used, see ATTACHMENT 2.

12. Expiration time: Time determined in either Method 1 or 2 ATTACHMENT 2 measured from the time in step 3 (Date/Time Entered) in HR: MIN on the MM/DD/YR.

13. The comment block can be used to record any notes or other references.

14. Preparer sign and date.

15. Sign and date for Verification of the SFD, indicating that you concur with the listed results.

16. As subsequent inoperabilities occur, all existing SFD's must be reviewed to determine their validity. Record the new LCO Condition and Required Actions and initial and date indicating either yes, the SFD is still valid, or no the SFD is no longer valid. If the SFD is no longer valid based on the new LCO Conditions and Required Actions, a new SFD must be performed. Record the number of the new SFD and attach to the now invalid SFD. Subsequent SFD's done for the same LCO Conditions and Required Actions will be numbered 01-01-001A, 01-01-001B, etc.

17. The SFD may be closed out when the INOPERABLE SUPPORT SYSTEM and SUPPORTED SYSTEM(S) listed on the SFDP Tracking Sheet are returned to OPERABLE STATUS. Enter the Time and Date when the SUPPORT SYSTEM and SUPPORTED SYSTEM(S) are returned to OPERABLE STATUS and sign the Worksheet.

ATTACHMENT 3 (Continued)

SFDP TRACKING WORKSHEET
SUPPORT SYSTEM INOPERABLE

1. System Name / Component _____ 2. Tech Spec Condition / Required Action _____

3. Date / Time Entered _____ 4. Completion Time _____ 5. SFD # _____

SUPPORTED SYSTEMS / COMPONENTS

6. Supported System Name	7. T.S. Condition / Required Action	8. Completion Time	9. Redundant Inoperability?	10. Loss of Safety Function?	11. M.O.S.T.	12. Expiration Time	13. Comments

14. Prepared by: _____
sign and date

15. Verified by: _____
sign and date

16. REVIEW FOR SUBSEQUENT INOPERABILITIES (See Attached Worksheet)

17. SFD CLOSE OUT: The SUPPORT SYSTEM(S) and SUPPORTED SYSTEM(S) listed above have been returned to OPERABLE status

_____
Time / Date / Signature

ATTACHMENT 3 (Continued)

SFDP TRACKING WORKSHEET

SFDP REVIEW FOR SUBSEQUENT INOPERABILITIES		
NEW LCO CONDITION #	ALL OPEN SFDPs VALID (Y / N)	VERIFIED BY (INITIAL / DATE)

TABLE 1

CROSS TRAIN CHECK GUIDANCE

Guidelines for Performing Cross Train Checks

The following matrix is meant to list possible SUPPORT to SUPPORTED LCO relationships for the purpose of implementing the cross train checks as required by LCO 3.0.6. and 5.5.11.

This matrix does **NOT**:

- Cover all possible combinations or permutations of SUPPORT / SUPPORTED LCO relationships.
- Cover SUPPORT / SUPPORTED relationships for items outside of Tech Spec (i.e., room coolers or snubbers).
- Cover SUPPORT / SUPPORTED relationships for LCOs that are **NOT** applicable in a given mode
- Cover Technical Requirement Manual LCOs or features.
- Include Support Features and SUPPORTED SYSTEMS if the Required Actions for the INOPERABLE Support Feature direct the entry into the TS ACTIONS for the SUPPORTED SYSTEM.

The purpose behind this matrix is to provide guidance when assessing a LOSF on based on SUPPORTED SYSTEM LCOs, due to inoperability of a SUPPORT SYSTEM LCO.

The following minimum items should be considered when evaluating the redundant train:

- Panel Walkdown
- DEL Review
- Schedule Review
- Timeclock board / LCO's in effect
- Physical walkdown as needed by the US
- Any procedural requirements in effect
- OOS Review
- Configuration Control Log
- TMOD / partial MOD's
- Operability Evaluations

Each situation should be assessed on its own merit, to determine LCO impact.

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation	3.5.1 3.5.2 3.8.1 3.8.2	ECCS - Operating ECCS - Shutdown AC Sources - Operating AC Sources - Shutdown
3.3.5.2	Isolation Condenser (IC) System Instrumentation	3.5.3	IC System
3.3.6.1	Primary Containment Isolation Instrumentation	3.1.7 3.6.1.3	Standby Liquid Control (SLC) System Primary Containment Isolation Valves (PCIVs)
3.3.6.2	Secondary Containment Isolation Instrumentation	3.6.4.2 3.6.4.3	Secondary Containment Isolation Valves (SCIVs) Standby Gas Treatment (SGT) System
3.3.6.3	Relief Valve Instrumentation	3.4.3 3.6.1.6	Safety and Relief Valves Low Set Relief Valves
3.3.7.1	Control Room Emergency Ventilation (CREV) System Instrumentation	3.7.4	Control Room Emergency Ventilation (CREV) System
3.3.8.1	Loss of Power (LOP) System Instrumentation	3.3.5.1 3.8.1 3.8.2	Emergency Core Cooling System (ECCS) Instrumentation AC Sources - Operating AC Sources - Shutdown
3.3.8.2	Reactor Protection System (RPS) Electric Power Monitoring	3.3.1.1 3.3.7.1	RPS Instrumentation Control Room Emergency Ventilation (CREV) System Instrumentation

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.6.1.7	Reactor Building-to-Suppression Chamber Vacuum Breakers	3.6.1.1	Primary Containment
3.6.1.8	Suppression Chamber-to-Drywell Vacuum Breakers	3.6.1.1	Primary Containment
3.6.4.2	Secondary Containment Isolation Valves (SCIVs)	3.6.4.1	Secondary Containment
3.6.4.3	Standby Gas Treatment (SGT) System	3.6.4.1	Suppression Pool Cooling
3.7.1	Containment Cooling Service Water (CCSW) System	3.6.2.3	Suppression Pool Cooling
		3.6.2.4	Suppression Pool Spray
		3.7.5	Control Room Emergency Ventilation Air Conditioning (AC) System
3.7.3	Ultimate Heat Sink (UHS)	3.4.7	Shutdown Cooling (SDC) System - Hot Shutdown
		3.4.8	Shutdown Cooling (SDC) System - Cold Shutdown
		3.7.1	Containment Cooling Service Water (CCSW) System
		3.7.2	Diesel Generator Cooling Water (DGCW) System
		3.9.8	Shutdown Cooling (SDC) - High Water Level
		3.9.9	Shutdown Cooling (SDC) Low Water Level
3.8.1	AC Sources - Operating	3.8.7	Distribution System - Operating (AC Portion Only)
3.8.2	AC Sources - Shutdown	3.8.8	Distribution System - Shutdown (AC Portion Only)
3.8.4	DC Sources - Operating	3.8.7	Distribution System - Shutdown (DC Portion Only)
3.8.5	DC Sources - Shutdown	3.8.8	Distribution System - Shutdown (DC Portion Only)

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.7 (AC Only)	Distribution System – Operating (AC portion Only)	3.1.7	Standby Liquid Control (SLC) System
		3.3.1.1	RPS Instrumentation
		3.3.2.2	Feedwater System and Main Turbine High Water Level Trip Instrumentation
		3.3.3.1	Post Accident Monitoring (PAM) Instrumentation
		3.3.4.1	Anticipated Transient Without SCRAM Recirculation Pump Trip (ATWS-RPT) Instrumentation
		3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation
		3.3.5.2	Isolation Condenser (IC) System Instrumentation (17 & 20 valves)
		3.3.6.1	Primary Containment Isolation Instrumentation
		3.3.6.2	Secondary Containment Isolation Instrumentation
		3.3.7.1	Control Room Emergency Ventilation (CREV) System Instrumentation
		3.3.8.2	Reactor Protection System (RPS) Electric Power Monitoring
		3.4.5	RCS Leakage Detection Instrumentation

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.7 (continued) (AC Only)	Distribution System – Operating (AC portion Only)	3.4.7	Shutdown Cooling (SDC) System - Hot Shutdown
		3.5.1	Emergency Core Cooling System (ECCS) - Operating
		3.5.3	IC System
		3.6.1.3	Primary Containment Isolation Valves (PCIVs)
		3.6.2.3	Suppression Pool Cooling
		3.6.2.4	Suppression Pool Spray
		3.6.4.3	Standby Gas Treatment (SGT) System
		3.7.1	Containment Cooling Service Water (CCSW) System
		3.7.2	Diesel Generator Cooling Water (DGCW) System
		3.7.4	Control Room Emergency Ventilation (CREV) System
		3.7.5	Control Room Emergency Ventilation Air Conditioning (AC) System
		3.8.1	AC Sources - Operating
		3.8.3	Diesel Fuel Oil and Starting Air
		3.8.4	DC Sources - Operating

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.7 (DC Only)	Distribution Systems – Operating (DC Only)	3.3.3.1	Post Accident Monitoring (Pam) Instrumentation
		3.3.1.1	Rps Instrumentation
		3.3.2.2	Feedwater System And Main Turbine High Water Level Trip Instrumentation
		3.3.4.1	Anticipated Transient Without Scram Recirculation Pump Trip (Atws-Rpt) Instrumentation
		3.3.5.1	Emergency Core Cooling System (Eccs) Instrumentation
		3.3.5.2	Isolation Condenser (Ic) System Instrumentation
		3.3.6.1	Primary Containment Isolation Instrumentation (Group Iv)
		3.3.6.2	Secondary Containment Isolation Instrumentation
		3.3.8.1	Loss Of Power (LOP) System Instrumentation
		3.4.3	Safety and Relief Valves
		3.4.7	Shutdown Cooling (SDC) System - Hot Shutdown
		3.5.1	Emergency Core Cooling System (ECCS) - Opeating

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.7 (continued) (DC Only)	Distribution Systems – Operating (DC Portion Only)	3.5.3	Isolation Condenser (IC) System
		3.6.1.3	Primary Containment Isolation Valves (PCIVs)
		3.6.2.3	Suppression Pool Cooling
		3.6.2.4	Suppression Pool Spray
		3.6.4.2	Secondary Containment Isolation Valves
		3.7.1	Containment Cooling Service Water (CCSW) System
		3.8.1	AC Sources - Operating

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.8 (AC Only)	Distribution Systems – Shutdown (AC Portion Only)	3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation
		3.3.6.1	Primary Containment Isolation Instrumentation
		3.3.6.2	Secondary Containment Isolation Instrumentation
		3.3.7.1	Control Room Air Filtration (CRAF) System Instrumentation
		3.3.8.2	Reactor Protection System (RPS) Electric Power Monitoring
		3.4.8	Shutdown Cooling (SDC) System - Cold Shutdown
		3.5.2	Emergency Core Cooling System (ECCS) - Shutdown
		3.6.1.3	Primary Containment Isolation Valves (PCIVs)

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.8 (continued) (AC Only)	Distribution Systems – Shutdown (AC Portion Only)	3.6.4.3	Standby Gas Treatment (SGT) System
		3.7.1	Containment Cooling Service Water (CCSW) System
		3.7.2	Diesel Generator Cooling Water (DGCW) System
		3.7.4	Control Room Emergency Ventilation (CREV) System
		3.7.5	Control Room Emergency Ventilation Air Conditioning (AC) System
		3.8.2	AC Sources - Shutdown
		3.8.3	Diesel Fuel Oil and Starting Air
		3.8.5	DC Sources - Shutdown
		3.9.8	Shutdown Cooling (SDC) - High Water Level
		3.9.9	Shutdown Cooling (SDC) - Low Water Level

TABLE 1 (Continued)

CROSS TRAIN CHECK GUIDANCE

Support Feature TS Number	Support Feature	Supported System TS Number	Supported System
3.8.8 (DC Only)	Distribution Systems – Shutdown (DC Portion Only)	3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation
		3.3.6.1	Primary Containment Isolation Instrumentation
		3.3.8.1	Loss of Power (LOP) System Instrumentation
		3.4.8	Shutdown Cooling (SDC) System - Cold Shutdown
		3.5.2	ECCS - Shutdown
		3.6.1.3	Primary Containment Isolation Valves (PCIVs)
		3.6.4.2	Secondary Containment Isolation Valves
		3.8.2	AC Sources - Shutdown
		3.9.8	Shutdown Cooling (SDC) - High Water Level
		3.9.9	Shutdown Cooling (SDC) - Low Water Level

TECHNICAL SPECIFICATIONS BASES CONTROL PROGRAM

TABLE OF CONTENTS

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1.9	CHANGE CONTROL

1.1 PURPOSE

The purpose of this Program is to provide guidance for identifying, processing, and implementing changes to the Technical Specifications (TS) Bases. This Program implements and satisfies the requirements of TS 5.5.10, "Technical Specifications (TS) Bases Control Program."

This Program is applicable to the preparation, review, implementation, and distribution of changes to the TS Bases. This Program also provides guidance for preparing TS Bases Change Packages for distribution.

1.2 REFERENCES

1. TS 5.5.10, "Technical Specifications (TS) Bases Control Program"
2. 10 CFR 50.4, "Written Communications"
3. 10 CFR 50.59, "Changes, Tests and Experiments"
4. 10 CFR 50.71, "Maintenance of Records, Making of Reports"
5. 10 CFR 50.90, "Application for Amendment of License or Construction Permit"

1.3 DEFINITIONS AND/OR ACRONYMS

1. 10 CFR 50.59 REVIEW - A written regulatory evaluation which provides the basis for the determination that a change does, or does not, require NRC approval pursuant to 10 CFR 50.59. The scope of the evaluation should be commensurate with the potential safety significance of the change, but must address the relevant safety concerns included in the Safety Analysis Report and other owner controlled documents. The depth of the evaluation must be sufficient to determine whether or not NRC approval is required prior to implementation. Depending upon the significance of the change, the evaluation may be brief; however, a simple statement of conclusion is not sufficient.

2. EDITORIAL CHANGE - Editorial changes include correction of punctuation, insignificant word or title changes, style or format changes, typographical errors, or correction of reference errors that do not change the intent, outcome, results, functions, processes, responsibilities, or performance requirements of the item being changed. Changes in numerical values shall not be considered as editorial changes. Editorial changes do not constitute a change to the TS Bases and therefore do not require further 10 CFR 50.59 Reviews. If the full scope of this proposed change is encompassed by one or more of the below, then the change is considered editorial.

   - Rewording or format changes that do not result in changing actions to be accomplished.
   - Deletion of cycle-specific information that is no longer applicable.
   - Addition of clarifying information, such as:
     - Spelling, grammar, or punctuation changes
     - Changes to references
     - Name or title references

1.4 PROGRAM DESCRIPTION

1. A Licensee may make changes to the TS Bases without prior NRC approval provided the changes do not require either of the following:

   a. A change in the TS as currently incorporated in the license; or

   b. A change to the Updated Final Safety Analysis Report (UFSAR) or TS Bases that requires NRC approval pursuant to 10 CFR 50.59.

2. Changes that meet the above criteria (i.e., 1.4.1.a or 1.4.1.b) shall be submitted to the NRC pursuant to
10 CFR 50.90 and reviewed and approved by the NRC prior to implementation.

3. The TS Bases shall be maintained consistent with the UFSAR.

4. If a change to the TS Bases is not consistent with the UFSAR, then the cognizant Engineer shall prepare and submit a UFSAR Change Package when the TS Bases Change Request is submitted to Regulatory Assurance (RA) for processing.

5. Changes to the TS Bases that do not require prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e), as modified by approved exemptions.

6. Any change to a Station's TS Bases shall be transmitted, via Attachment D, "Technical Specifications Bases Change Applicability Review Form," to the Regulatory Assurance Managers (RAMs) at each of the other Stations. The RAM will review the TS Bases change for applicability at their respective Station and document their review on Attachment D.

7. TS Bases changes associated with a TS Amendment shall be implemented consistent with the implementation requirements of the TS Amendment.

8. RS is responsible for the control and distribution of the TS Bases. In order to prevent distribution errors (i.e., omissions or duplications), RS shall maintain the master TS Bases distribution list.

1.5 PROGRAM IMPLEMENTATION

1. TS Bases Change Requestor identifies the need for a revision to the TS Bases and notifies the RA Licensing Engineer (i.e., hereafter referred to as RA LE). A TS Bases change can be initiated through any Stations' RA. TS Bases Change Requestor notifies their counterparts on the need for a change.

2. RA LE notifies their counterparts of identified need for revision to the TS Bases.

3. RA LE obtains concurrence from RS on the need for a change.

4. RS Nuclear Licensing Administrator (i.e., hereafter referred to as RS NLA) assigns a TS Bases Change Request Number (CR #) and records on Attachment B, "Technical Specifications Bases Change Request Log." The CR # should be a sequential number beginning with the last two digits of the year (e.g., 00-00#).

5. RA LE drafts TS Bases changes considering format, rules of usage, and technical adequacy, and notifies RAMs at each of the other Stations by transmitting Attachment D, "Technical Specifications Bases Change Applicability Review

Form."

6. RS NLA reviews the agreed upon TS Bases wording changes for consistency with format, rules of usage, and technical adequacy and provides final concurrence.

7. After concurrence of the TS Bases wording changes is obtained, RS NLA makes an electronic version available in a working directory for use in the preparation of the 10 CFR 50.59 REVIEW and Station QualifiedReview (SQR) process. The RS NLA shall ensure that the master electronic TS Bases files are revised per step 15 below upon receiving SQR approval. The Revision number in the footer should be a sequential number (i.e., 1, 2, etc.).

NOTE
If the TS Bases changes are applicable to more than one Station, the following steps should be performed concurrently for each Station.

8. TS Bases Change Requestor provides a 10 CFR 50.59 REVIEW for the TS Bases changes in accordance with appropriate plant procedures. An exception to this requirement applies when the changes are being requested in order to reflect an approved NRC Safety Evaluation (SE) associated with a site specific operating license or TS change. The NRC SE is sufficient to support the changes provided it has been determined that the changes are consistent with and entirely bounded by the NRC SE. A 50.59 REVIEW shall be performed for TS Bases changes that reflect generic industry approval by an NRC SE to determine site specific applicability. A 10 CFR 50.59 REVIEW is not required for an EDITORIAL CHANGE.

9. TS Bases Change Requestor completes Attachment A, "Technical Specifications Bases Change Request Form," as follows:

   a. Identifies the affected sections, and includes a copy of the proposed TS Bases changes;

   b. Briefly summarizes the changes including the LCO, Action, or Surveillance Requirement to which the changes apply;

   c. Briefly summarizes the reason for the changes and attaches all supporting documentation;

d. Identifies any schedule requirements and proposed implementation date that apply (i.e., describe any time limitations that might apply which would require expedited processing). If the changes are outage related, then checks "yes" and lists the applicable outage identifier;

e. Identifies any known implementation requirements such as procedure changes, UFSAR changes, Electronic Work Control System (EWCS) changes, Reportability Manual revisions, pre-implementation training requirements, etc.;

f. If a 10 CFR 50.59 REVIEW was prepared to support the TS Bases changes, the Requestor then checks the appropriate box, lists the associated 10 CFR 50.59 REVIEW Number, and attaches the original;

g. If the changes to the TS Bases are the result of an NRC SE and the scope of the changes determined to be consistent with and entirely bounded by the NRC SE, then the Requestor checks the appropriate box and attaches a copy;

h. If the changes to the TS Bases are EDITORIAL CHANGES, the the Requestor checks the appropriate box and no 10 CFR 50.59 REVIEW is required;

i. Signs and dates as Requestor and identifies the originating department;

j. Obtains approval to proceed from Department Supervisor (or designee); and

k. Returns Attachment A to the RA LE.

10. RA LE reviews the TS Bases Change Request Form, including supporting documentation, and documents the review by signing Attachment A. The review verifies that the following information or documentation is included:

    a. Completed 10 CFR 50.59 REVIEW. If the changes are related to an NRC SE and determined to be entirely bounded by the NRC SE, then only a copy of the SE is required to be attached and no 10 CFR 50.59 REVIEW is required. A 10 CFR 50.59 REVIEW is not required for an EDITORIAL CHANGE;

    b. Identification of known documents requiring revisions; and

    c. Completed UFSAR Change Request with supporting documentation, in accordance with appropriate plant procedures, if applicable.

11. If the TS Bases change is not an EDITORIAL CHANGE, the RA LE/TS Bases Change Requestor obtains SQR approval of the TS Bases changes by performing the following:

    a. RA LE prepares the TS Bases Change SQR package. The SQR package shall include Attachment A (including completed 10 CFR 50.59 REVIEW or NRC SE) and the revised TS Bases pages. Attachment A is provided for the purpose of reviewing and finalizing the implementation requirements and ensuring the necessary actions have been initiated. RA LE shall assign Action Tracking (AT) items, as necessary, to track implementation requirements;

    b. TS Bases Change Requestor submits the TS Bases Change SQR package to the SQR Committee members for a preliminary review. The SQR composition shall include RA and Operating Departments in all cases; and

    c. TS Bases Change Requestor resolves preliminary review comments and finalizes the TS Bases Change SQR package.

12. The RAM shall determine the need for Plant Operations Review Committee (PORC) approval. The need for PORC approval shall be documented on Attachment A.

13. RA LE/TS Bases Change Requestor obtains PORC approval, if necessary.

14. RA LE notifies RS NLA of approval of the TS Bases changes by forwarding a copy of the approved SQR/PORC Change package to RS NLA.

15. After approval of the TS Bases changes by SQR/PORC, RS NLA ensures that the controlled master electronic files are updated.

16. RS/RA completes Attachment C, "Technical Specifications Bases Change Instruction Form," as follows:

    a. RS NLA indicates the effective date of the TS Bases changes consistent with the SQR/PORC approval or TS amendment required implementation date. If the TS Bases change is a result of a TS Amendment, the update shall be implemented coincident with implementation requirements of the TS Amendment. Otherwise, the update must be implemented by the date indicated on Attachment C;

    b. RS NLA lists each page to be removed and inserted, including the Affected Page List; and

    c. RA LE provides the updated master file directory for updating Electronic Central Files (ECF), if applicable.

17. RS NLA creates a TS Bases Change Package. The TS Bases Change Package shall consist of:

    a. TS Bases Change Instruction Form (Attachment C);

    b. Revised Affected Page List; and

    c. Revised TS Bases pages.

    One RS NLA shall assemble and approve the TS Bases Change Package for distribution and a second RS NLA shall perform a peer check to verify completeness of the TS Bases Change Package.

18. After the RA LE notifies the RS NLA that SQR/PORC approval of the TS Bases changes has been obtained and that all AT items assigned to track implementation requirements have been completed, RS NLA forwards the TS Bases Change Package to the RA LE as notification of the need to update the onsite TS Bases controlled copies and ECF, if applicable. RS NLA also forwards the TS Bases Change Package to RS Administration Department as notification of the need to update the offsite (RS) TS Bases controlled copies and to transmit updates to the offsite (non-RS) TS Bases controlled copies.

19. RA LE forwards the TS Bases Change Package to Station Administration Department as notification of the need to update the onsite TS Bases controlled copies and ECF, if applicable.

20. Upon completion of updating the onsite TS Bases controlled copies and ECF (if applicable), Station Administration Department Supervisor signs and dates Attachment C and returns Attachment C to the appropriate RS NLA.

21. Upon completion of updating the offsite (RS) TS Bases controlled copies and transmitting updates to the offsite (non-RS) TS Bases controlled copies, RS Administration Department signs and dates Attachment C and returns Attachment C to the appropriate RS NLA.

22. RS NLA updates the TS Bases Change Request Log (Attachment B) with the following information:

    a. 10 CFR 50.59 REVIEW Number;
    b. SQR Number, if applicable;
    c. SQR Approval Date; and
    d. TS Bases change implementation date.

23. RA LE ensures that the documentation required to be maintained as a quality record is provided to Station Administration Department for the purpose of record retention.

1.6 ACCEPTANCE CRITERIA

Not applicable.

1.7 LCOARS/COMPENSATORY MEASURES

A Condition Report may need to be generated to provide proper tracking and resolution of noted problems associated with the implementation of this Program.

The RAM will be responsible for ensuring that Program failures have been resolved.

1.8 REPORTING REQUIREMENTS

NOTE
TS Bases changes requiring prior NRC approval shall be submitted in accordance with Reference 5.

TS Bases changes not requiring prior NRC approval, as described in Section 1.4 of this Program, shall be submitted to the NRC in accordance with 10 CFR 50.71(e).

1.9 CHANGE CONTROL

Changes to this Program, other than EDITORIAL CHANGES, shall include a 10 CFR 50.59 REVIEW and an SQR. The SQR composition shall include RA Department in all cases. For a change to this Program, PORC approval from all Stations is required. The concurrence shall be that the other Stations are implementing the same changes or that the changes have been reviewed and determined not to be applicable to the other Stations.

ATTACHMENT A
TECHNICAL SPECIFICATIONS BASES CHANGE REQUEST FORM

1. Change Request #: _____ Affected Bases Section(s): _____
_____

2. Description of changes: _____
_____
_____
_____
_____

3. Reason for changes (attach all supporting documentation):
_____
_____
_____
_____
_____
_____

4. Schedule Requirements:
Outage Related (check one) ☐ No ☐ Yes, Outage # _____
Other (explain)
_____

5. Implementation Requirements (attach additional pages, as necessary):
Identify the impact of the changes on the following:

Affected	N/A	
☐	☐	UFSAR _____
☐	☐	TS _____
☐	☐	Technical Requirements Manual _____
☐	☐	NRC Safety Evaluation _____
☐	☐	Fire Protection Report _____
☐	☐	NRC Commitments _____
☐	☐	Vendor Documentation _____
☐	☐	Special Permits/Licenses _____
☐	☐	Procedures _____
☐	☐	Environmental Qualification _____
☐	☐	Design Basis Documentation _____
☐	☐	Engineering Calculations _____
☐	☐	Drawings/Prints _____
☐	☐	PRA Information _____
☐	☐	Programs _____
☐	☐	Reportability Manual _____
☐	☐	QA Topical Report _____
☐	☐	Passport (Surveillances, Predefines, EC's etc)_____
☐	☐	Pre-Implementation Training Required _____
☐	☐	Maintenance Rule _____
☐	☐	Offsite Dose Calculation Manual _____
☐	☐	Other _____

ATTACHMENT A
TECHNICAL SPECIFICATIONS BASES CHANGE REQUEST FORM

6. Check one:
   - ☐ 10 CFR 50.59 REVIEW Attached, 10 CFR 50.59 REVIEW #:_____
   - ☐ NRC SE Attached, Changes consistent with and entirely bounded by NRC SE
   - ☐ EDITORIAL CHANGE, No 10 CFR 50.59 REVIEW required

7. Requestor: _____/_____/_____
   (Signature) (Date) (Department)

8. Requesting Supervisor Approval: _____/_____
   (Signature) (Date)

9. PORC Approval Required: ☐ Yes ☐ No

10. Licensing Engineer Review: _____/_____
    (Signature) (Date)

ATTACHMENT B
TECHNICAL SPECIFICATIONS BASES CHANGE REQUEST LOG

CR #	Brief Description of Changes	Affected Section(s)	10 CFR 50.59 REVIEW #	SQR #	SQR Approval Date	Date Implemented

ATTACHMENT C
TECHNICAL SPECIFICATIONS BASES CHANGE INSTRUCTION FORM
FOR ONSITE/OFFSITE DISTRIBUTION AND FOR UPDATING ECF

Braidwood/Byron/Dresden/LaSalle/QC (circle one) TS Bases Revision # _____

NOTE: This change is effective as of _____ and shall
(SQR/PORC or Amendment Implementation Date)
be implemented by _____
(Date)

Approved for distribution: _____/_____
(RS NLA Signature) (Date)

Verified: _____/_____
(RS NLA Signature) (Date)

Shift Manager is made aware of affected sections of the Tech Spec Bases for this impending revision package:

_____/_____
Shift Manager / Date

REMOVE Section	REMOVE Page	INSERT Section	INSERT Page	UPDATE ECF Section	UPDATE ECF Page
Affected Page List	All	Affected Page List	All	N/A	N/A

ATTACHMENT C
TECHNICAL SPECIFICATIONS BASES CHANGE INSTRUCTION FORM
FOR ONSITE/OFFSITE DISTRIBUTION AND FOR UPDATING ECF

Braidwood/Byron/Dresden/LaSalle/QC (circle one) TS Bases Revision # _____

Station Administration Department:

Onsite Distribution Completed: _____/_____
(Station Admin. Dept. Supr.) (Date)

ECF Update Completed: _____/_____
(Station Admin. Dept. Supr.) (Date)

** Return this sheet to: Regulatory Services
Braidwood/Byron/Dresden/LaSalle/QC (circle one)

RS Administration Department:

Offsite (RS) Distribution Completed: _____/_____
(RS Admin. Dept.) (Date)

Offsite (non-RS) Distribution Transmitted:
_____/_____
(RS Admin. Dept.) (Date)

** Return this sheet to Braidwood/Byron/Dresden/LaSalle/QC (circle one) NLA

Offsite (non-RS) Controlled Copy Holders:

Offsite (non-RS) Distribution Completed: _____/_____
(Signature) (Date)

Return this sheet to: EXELON GENERATION COMPANY, LLC
ATTN:REGULATORY SERVICES ADMINISTRATION DEPARTMENT
4300 Winfield Road
Warrenville, Il 60555

ATTACHMENT D
TECHNICAL SPECIFICATIONS BASES CHANGE APPLICABILITY REVIEW FORM

Any change to a Station's Technical Specifications (TS) Bases shall be transmitted to the Regulatory Assurance Managers (RAMs) at each of the other Stations. The RAM will review the TS Bases change for applicability at their respective Station. Review of applicability shall be documented on this Attachment and forwarded to the Regulatory Assurance Licensing Engineer(s) at the Station(s) making the change.

Braidwood/Byron/Dresden/LaSalle/QC (circle one)

TS Section(s)/Title(s):
_____

Description of the change:
_____
_____
_____

Braidwood RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Byron RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Dresden RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

LaSalle RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

QC RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Return this sheet to: Regulatory Assurance
Braidwood/Byron/Dresden/LaSalle/QC (circle one)

TECHNICAL REQUIREMENTS MANUAL
CONTROL PROGRAM

TABLE OF CONTENTS

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1.6	ACCEPTANCE CRITERIA
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1.9	CHANGE CONTROL

1.1 PURPOSE

The purpose of this Program is to provide guidance for identifying, processing, and implementing changes to the Technical Requirements Manual (TRM). This Program implements and satisfies the requirements of TRM Section 1.6, "Technical Requirements Manual Revisions."

This Program is applicable to the preparation, review, implementation, and distribution of changes to the TRM. This Program also provides guidance for preparing TRM Change Packages for distribution.

1.2 REFERENCES

1. TRM Section 1.6, "Technical Requirements Manual Revisions"
2. 10 CFR 50.4, "Written Communications"
3. 10 CFR 50.59, "Changes, Tests and Experiments"
4. 10 CFR 50.71, "Maintenance of Records, Making of Reports"
5. 10 CFR 50.90, "Application for Amendment of License or Construction Permit"

1.3 DEFINITIONS AND/OR ACRONYMS

10 CFR 50.59 REVIEW - A written regulatory evaluation which provides the basis for the determination that a change does, or does not, require NRC approval pursuant to 10 CFR 50.59. The scope of the evaluation should be commensurate with the potential safety significance of the change, but must address the relevant safety concerns included in the Safety Analysis Report and other owner controlled documents. The depth of the evaluation must be sufficient to determine whether or not NRC approval is required prior to implementation. Depending upon the significance of the change, the evaluation may be brief; however, a simple statement of conclusion is not sufficient.

EDITORIAL CHANGE - Editorial changes include correction of punctuation, insignificant word or title changes, style or format changes, typographical errors, or correction of reference errors that do not change the intent, outcome, results, functions, processes, responsibilities, or performance requirements of the item being changed. Changes in numerical values shall not be considered as editorial changes. Editorial changes do not constitute a change to the TRM and therefore do not require further 10 CFR 50.59 Reviews. If the full scope of this proposed change is encompassed by one or more of the below, then the change is considered editorial.

- Rewording or format changes that do not result in changing actions to be accomplished.
- Deletion of cycle-specific information that is no longer applicable.
- Addition of clarifying information, such as:
  - Spelling, grammar, or punctuation changes
  - Changes to references
  - Name or title references

1.4 PROGRAM DESCRIPTION

1. A Licensee may make changes to the TRM without prior NRC approval provided the changes do not require NRC approval pursuant to 10 CFR 50.59.

2. Changes that require NRC approval pursuant to 10 CFR 50.59 shall be submitted to the NRC pursuant to 10 CFR 50.90 and reviewed and approved by the NRC prior to implementation.

3. The TRM is part of the Updated Final Safety Analysis Report (UFSAR) by reference and shall be maintained consistent with the remainder of the UFSAR.

4. If a change to the TRM is not consistent with the remainder of the UFSAR, then the cognizant Engineer shall prepare and submit a UFSAR Change Package when the TRM Change Request is submitted to Regulatory Assurance (RA) for processing.

5. Changes to the TRM that do not require prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e), as modified by approved exemptions.

6. Any change to a Station's TRM shall be transmitted, via Attachment D, "Technical Requirements Manual Change Applicability Review Form," to the Regulatory Assurance Managers (RAMs) at each of the other Stations. The RAM will review the TRM change for applicability at their respective Station and document their review on Attachment D.

7. TRM changes associated with a Technical Specifications (TS) Amendment shall be implemented consistent with the implementation requirements of the TS Amendment.

8. RA is responsible for the control and distribution of the TRM. In order to prevent distribution errors (i.e., omissions or duplications), RA shall maintain the master TRM distribution list.

1.5 PROGRAM IMPLEMENTATION

1. TRM Change Requestor identifies the need for a revision to the TRM and notifies the RA Licensing Engineer (i.e., hereafter referred to as RA LE). A TRM change can be initiated through any Stations' RA. TRM Change Requestor notifies their counterparts on the need for a change.

2. RA LE notifies their counterparts of identified need for revision to the TRM.

3. RA LE assigns a TRM Change Request Number (CR #) and records on Attachment B, "Technical Requirements Manual Change Request Log." The CR # should be a sequential number beginning with the last two digits of the year (e.g., 00-00#).

4. RA LE drafts TRM changes considering format, rules of usage, and technical adequacy, and notifies RAMs at each of the other Stations by transmitting Attachment D, "Technical Requirements Manual Change Applicability Review Form."

5. RA LE makes an electronic version of the proposed TRM changes available in a working directory for use in the preparation of the 10 CFR 50.59 REVIEW and Station Qualified Review (SQR) process. The RA LE shall ensure that the master electronic TRM files are revised per step 12 below upon receiving SQR approval. The Revision number in the footer should be a sequential number (i.e., 1, 2, etc.).

NOTE
If the TRM changes are applicable to more than one Station, the following steps should be performed concurrently for each Station.

6. TRM Change Requestor provides a 10 CFR 50.59 REVIEW for the TRM changes in accordance with appropriate plant procedures. An exception to this requirement applies when the changes are being requested in order to reflect an approved NRC Safety Evaluation (SE) associated with a site specific operating license or TS change. The NRC SE is sufficient to support the changes provided it has been determined that the changes are consistent with and entirely bounded by the NRC SE. A 50.59 REVIEW shall be performed for TRM changes that reflect generic industry approval by an NRC SE to determine site specific applicability. A 10 CFR 50.59 REVIEW is not required for an EDITORIAL CHANGE.

7. TRM Change Requestor completes Attachment A, "Technical Requirements Manual Change Request Form," as follows:

   a. Identifies the affected sections, and includes a copy of the proposed TRM changes;

   b. Briefly summarizes the changes including the TLCO, Action, Surveillance Requirement, or Bases (if applicable) to which the changes apply;

   c. Briefly summarizes the reason for the changes and attaches all supporting documentation;

   d. Identifies any schedule requirements and proposed implementation date that apply (i.e., describe any time limitations that might apply which would require expedited processing). If the changes are outage related, then checks "yes" and lists the applicable outage identifier;

e. Identifies any known implementation requirements such as procedure changes, UFSAR changes, Electronic Work Control System (EWCS) changes, Reportability Manual revisions, pre-implementation training requirements, etc.;

f. If a 10 CFR 50.59 REVIEW was prepared to support the TRM changes, the Requestor then checks the appropriate box, lists the associated 10 CFR 50.59 REVIEW Number, and attaches the original;

g. If the changes to the TRM are the result of an NRC SE and the scope of the changes determined to be consistent with and entirely bounded by the NRC SE, then the Requestor checks the appropriate box and attaches a copy;

h. If the changes to the TRM are EDITORIAL CHANGES, then the Requestor checks the appropriate box and no 10 CFR 50.59 REVIEW is required;

i. Signs and dates as Requestor and identifies the originating department;

j. Obtains approval to proceed from Department Supervisor (or designee); and

k. Returns Attachment A to the RA LE.

8. RA LE reviews the TRM Change Request Form, including supporting documentation, and documents the review by signing Attachment A. The review verifies that the following information or documentation is included:

a. Completed 10 CFR 50.59 REVIEW. If the changes are related to an NRC SE and determined to be entirely bounded by the NRC SE, then only a copy of the SE is required to be attached and no 10 CFR 50.59 REVIEW is required. A 10 CFR 50.59 REVIEW is not required for an EDITORIAL CHANGE;

b. Identification of known documents requiring revisions; and

c. Completed UFSAR Change Request with supporting documentation, in accordance with appropriate plant procedures, if applicable.

9. If the TRM change is not an EDITORIAL CHANGE, the RA LE/TRM Change Requestor obtains SQR approval of the TRM change by performing the following:

   a. RA LE prepares the TRM Change SQR package. The SQR package shall include Attachment A (including completed 10 CFR 50.59 REVIEW or NRC SE) and the revised TRM pages. Attachment A is provided for the purpose of reviewing and finalizing the implementation requirements and ensuring the necessary actions have been initiated. RA LE shall assign Action Tracking (AT) items, as necessary, to track implementation requirements;

   b. TRM Change Requestor submits the TRM Change SQR package to the SQR Committee members for a preliminary review. The SQR composition shall include RA and Operating Departments in all cases; and

   c. TRM Change Requestor resolves preliminary review comments and finalizes the TRM Change SQR package.

10. The RAM shall determine the need for Plant Operations Review Committee (PORC) approval. The need for PORC approval shall be documented on Attachment A.

11. RA LE/TRM Change Requestor obtains PORC approval, if necessary.

12. After approval of the TRM changes by SQR/PORC, RA LE ensures that the controlled master electronic files are updated.

13. RA LE completes Attachment C, "Technical Requirements Manual Change Instruction Form," as follows:

    a. Indicates the effective date of the TRM changes consistent with the SQR/PORC approval or TS amendment required implementation date. If the TRM change is a result of a TS Amendment, the update shall be implemented consistent with the implementation requirements of the TS Amendment. Otherwise, the update must be implemented by the date indicated on Attachment C;
    b. Lists each page to be removed and inserted, including the Affected Page List; and

    c. Provides the updated master file directory for updating Electronic Central Files (ECF), if applicable.

14. RA LE creates a TRM Change Package. The TRM Change Package shall consist of:
    1. TRM Change Instruction Form (Attachment C);
    2. Revised Affected Page List; and
    3. Revised TRM pages.

    One RA LE shall assemble and approve the TRM Change Package for distribution and a second RA LE shall perform a peer check to verify completeness of the TRM Change Package.

15. After verifying that SQR/PORC approval of the TRM changes has been obtained and that all AT items assigned to track implementation requirements have been completed, RA LE forwards the TRM Change Package to Station Administration Department as notification of the need to update the onsite TRM controlled copies and ECF, if applicable.

16. RA LE also forwards the TRM Change Package to RS Administration Department as notification of the need to update the offsite (RS) TRM controlled copies and to transmit updates to the offsite (non-RS) TRM controlled copies.

17. Upon completion of updating the onsite TRM controlled copies and ECF (if applicable), Station Administration Department Supervisor signs and dates Attachment C and returns Attachment C to the RA LE.

18. Upon completion of updating the offsite (RS) TRM controlled copies and transmitting updates to the offsite (non-RS) TRM controlled copies, RS Administration Department signs and dates Attachment C and returns Attachment C to the RA LE.

19. RA LE updates the TRM Change Request Log (Attachment B) with the following information:

    a. 10 CFR 50.59 REVIEW Number;
    b. SQR Number, if applicable;
    c. SQR Approval Date; and
    d. TRM change implementation date.

20. RA LE ensures that the documentation required to be maintained as a quality record is provided to Station Administration Department for the purpose of record retention.

1.6 ACCEPTANCE CRITERIA

Not applicable.

1.7 LCOARS/COMPENSATORY MEASURES

A Condition Report may need to be generated to provide proper tracking and resolution of noted problems associated with the implementation of this Program.

The RAM will be responsible for ensuring that Program failures have been resolved.

1.8 REPORTING REQUIREMENTS

NOTE
TRM changes not requiring prior NRC approval, as described in Section 1.4 of this Program, shall be submitted to the NRC in accordance with 10 CFR 50.71(e).

1.9 CHANGE CONTROL

Changes to this Program, other than EDITORIAL CHANGES, shall include a 10 CFR 50.59 REVIEW and an SQR. The SQR composition shall include RA Department in all cases. For a change to this Program, PORC approval from all Stations is required. The concurrence shall be that the other Stations are implementing the same changes or that the changes have been reviewed and determined not to be applicable to the other Stations.

ATTACHMENT A
TECHNICAL REQUIREMENTS MANUAL CHANGE REQUEST FORM

1. Change Request #: _____ Affected TRM Section(s): _____
_____

2. Description of changes:
_____
_____
_____
_____
_____

3. Reason for changes (attach all supporting documentation):
_____
_____
_____
_____
_____
_____

4. Schedule Requirements:
Outage Related (check one) ☐ No ☐ Yes, Outage #_____
Other (explain)
_____

5. Implementation Requirements (attach additional pages, as necessary):
Identify the impact of the changes on the following:

Affected	N/A	
☐	☐	UFSAR _____
☐	☐	TS _____
☐	☐	TS Bases _____
☐	☐	NRC Safety Evaluation _____
☐	☐	Fire Protection Report _____
☐	☐	NRC Commitments _____
☐	☐	Vendor Documentation _____
☐	☐	Special Permits/Licenses _____
☐	☐	Procedures _____
☐	☐	Environmental Qualification _____
☐	☐	Design Basis Documentation _____
☐	☐	Engineering Calculations _____
☐	☐	Drawings/Prints _____
☐	☐	PRA Information _____
☐	☐	Programs _____
☐	☐	Reportability Manual _____
☐	☐	QA Topical Report _____
☐	☐	Passport (Surveillances, Predefines, EC's etc) _____
☐	☐	Pre-Implementation Training Required _____
☐	☐	Maintenance Rule _____
☐	☐	Offsite Dose Calculation Manual _____
☐	☐	Other _____

ATTACHMENT A
TECHNICAL REQUIREMENTS MANUAL CHANGE REQUEST FORM

6. Check one:
   - ☐ 10 CFR 50.59 REVIEW Attached, 10 CFR 50.59 REVIEW #:_____
   - ☐ NRC SE Attached, Changes consistent with and entirely bounded by NRC SE
   - ☐ EDITORIAL CHANGE, No 10 CFR 50.59 REVIEW required

7. Requestor: _____/_____/_____
   (Signature) (Date) (Department)

8. Requesting Supervisor Approval: _____/_____
   (Signature) (Date)

9. PORC Approval Required: ☐ Yes ☐ No

10. Licensing Engineer Review: _____/_____
    (Signature) (Date)

ATTACHMENT B
TECHNICAL REQUIREMENTS MANUAL CHANGE REQUEST LOG

CR #	Brief Description of Changes	Affected Section(s)	10 CFR 50.59 REVIEW #	SQR #	SQR Approval Date	Implemented Date

ATTACHMENT C
TECHNICAL REQUIREMENTS MANUAL CHANGE INSTRUCTION FORM
FOR ONSITE/OFFSITE DISTRIBUTION AND FOR UPDATING ECF

Braidwood/Byron/Dresden/LaSalle/QC (circle one) TRM Revision # _____

NOTE: This change is effective as of _____ and shall
(SQR/PORC or Amendment Implementation Date)

be implemented by _____
(Date)

Approved for distribution: _____/_____
(RA LE Signature) (Date)

Verified: _____/_____
(RA LE Signature) (Date)

Shift Manager is made aware of affected sections of the Technical Requirements Manual for this impending revision package:

_____/_____
Shift Manager / Date

REMOVE Section	REMOVE Page	INSERT Section	INSERT Page	UPDATE ECF Section	UPDATE ECF Page
Affected Page List	All	Affected Page List	All	N/A	N/A

ATTACHMENT C
TECHNICAL REQUIREMENTS MANUAL CHANGE INSTRUCTION FORM
FOR ONSITE/OFFSITE DISTRIBUTION AND FOR UPDATING ECF

Braidwood/Byron/Dresden/LaSalle/QC (circle one) TRM Revision # _____

Station Administration Department:

Onsite Distribution Completed: _____/_____
(Station Admin. Dept. Supr.) (Date)

ECF Update Completed: _____/_____
(Station Admin. Dept. Supr.) (Date)

** Return this sheet to: Regulatory Assurance
Braidwood/Byron/Dresden/LaSalle/QC (circle one)

RS Administration Department:

Offsite (RS) Distribution Completed: _____/_____
(RS Admin. Dept.) (Date)

Offsite (non-RS) Distribution Transmitted:
_____/_____
(RS Admin. Dept.) (Date)

** Return this sheet to: Regulatory Assurance
Braidwood/Byron/Dresden/LaSalle/QC (circle one)
Station

Offsite (non-RS) Controlled Copy Holders:

Offsite (non-RS) Distribution Completed: _____/_____
(Signature) (Date)

Return this sheet to: EXELON GENERATION COMPANY, LLC
ATTN:REGULATORY SERVICES ADMINISTRATION DEPARTMENT
4300 Winfield Road
Warrenville, Il 60555

ATTACHMENT D
TECHNICAL REQUIREMENTS MANUAL CHANGE APPLICABILITY REVIEW FORM

Any change to a Station's Technical Requirements Manual (TRM) shall be transmitted to the Regulatory Assurance Managers (RAMs) at each of the other Stations. The RAM will review the TRM change for applicability at their respective Station. Review of applicability shall be documented on this Attachment and forwarded to the Regulatory Assurance Licensing Engineer(s) at the Station(s) making the change.

Braidwood/Byron/Dresden/LaSalle/QC (circle one)

TRM Section(s)/Title(s):
_____

Description of the change:
_____
_____
_____
_____

Braidwood RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Byron RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Dresden RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

LaSalle RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

QC RAM Review: _____/_____
(Signature) (Date)

Change Applicable: ☐ Yes ☐ No

Return this sheet to: Regulatory Assurance
Braidwood/Byron/Dresden/LaSalle/QC (circle one)

APPENDIX H

RESPONSE TIMES

Table H-1 (page 1 of 1)
Response Times

	FUNCTION	RESPONSE TIME
1.	Turbine Bypass Valve – Unit 2	
	Delay to first opening[a]	140 msec
	0% to 20% capacity (linear)	40 msec
	20% to 71% capacity (linear)	95 msec
	71% to 88% Capacity (linear)	125 msec
2.	Turbine Bypass Valve – Unit 3	
	Delay to first opening[a]	140 msec
	0% to 20% capacity (linear)	40 msec
	20% to 71% capacity (linear)	95 msec
	71% to 88% capacity (linear)	125 msec
3.	Reactor Protection System Response Times	50 msec[b]

(a) From turbine stop valve full closure to start of turbine bypass valve opening (fastest valve ignored)

(b) Neutron detectors are exempt from response time testing. Response time testing shall be measured from the detector output or from the input of the first electronic component in the channel.

B 3.0 TECHNICAL REQUIREMENTS MANUAL LIMITING CONDITION FOR OPERATION (TLCO) APPLICABILITY

BASES

TLCOs	TLCO 3.0.a through TLCO 3.0.f establish the general requirements applicable to all TLCOs in Sections 2.1. and 3.1 through 3.9 and apply at all times, unless otherwise stated.
TLCO 3.0.a	TLCO 3.0.a establishes the Applicability statement within each individual TLCO as the requirement for when the TLCO 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).
TLCO 3.0.b	TLCO 3.0.b establishes that upon discovery of a failure to meet a TLCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of a TLCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a TLCO; and b. Completion of the Required Actions is not required when a TLCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the TLCO 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 Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the TLCO is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The

(continued)

BASES

TLCO 3.0.b (continued)

second type of Required Action 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 Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when a TLCO is met or is no longer applicable, unless otherwise stated in the individual TLCOs.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Condition no longer exists. The individual TLCO's ACTIONS specify the Required Actions where this is the case. An example of this is in TLCO 3.7.h, "Snubbers."

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience. Additionally, if intentional entry into ACTIONS would result in redundant equipment being inoperable, alternatives should be used instead. Doing so limits the time both subsystems/divisions of a safety function are inoperable and limits the time conditions exist which may result in TLCO 3.0.c being entered. Individual TLCOs may specify a time limit for performing a TSR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are 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 Required Actions, the unit may enter a MODE or other specified condition in which another TLCO becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new TLCO becomes applicable and the ACTIONS Condition(s) are entered.

(continued)

BASES (continued)

TLCO 3.0.c

TLCO 3.0.c establishes the actions that must be implemented when a TLCO is not met and:

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

b. The condition of the unit is not specifically addressed by the associated ACTIONS. This means that no combination of Conditions stated in the ACTIONS can be made that exactly corresponds to the actual condition of the unit. Sometimes, possible combinations of Conditions are such that entering TLCO 3.0.c is warranted; in such cases, the ACTIONS specifically state a Condition corresponding to such combinations and also that TLCO 3.0.c be entered immediately.

Upon entering TLCO 3.0.c, 1 hour is allowed to initiate actions to implement appropriate compensatory actions and verify the plant is not in an unanalyzed condition or that a required safety function is not compromised. Within 12 hours, Station Duty Officer approval of the compensatory actions and the plan for exiting TLCO 3.0.c must be obtained. The use and interpretation of specified times to complete the actions of TLCO 3.0.c are consistent with the discussion of Section 1.3, Completion Times.

The actions required in accordance with TLCO 3.0.c may be terminated and TLCO 3.0.c exited if any of the following occurs:

a. The TLCO is now met.

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

c. ACTIONS exist 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 TLCO 3.0.c is exited.

(continued)

BASES

TLCO 3.0.c (continued)

In MODES 1,2, and 3, TLCO 3.0.c provides actions for Conditions not covered in other Specifications. The requirements of TLCO 3.0.c do not apply in MODES 4 and 5 because the unit is already in the most restrictive Condition. The requirements of TLCO 3.0.c do not apply in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the ACTIONS of individual TLCOs sufficiently define the remedial measures to be taken.

TLCO 3.0.d

TLCO 3.0.d establishes limitations on changes in MODES or other specified conditions in the Applicability when an TLCO is not met. It allows placing the unit in a MODE or other specified condition stated in that Applicability (e.g., the Applicability desired to be entered) when unit conditions are such that the requirements of the TLCO would not be met, in accordance with TLCO 3.0.d.1, TLCO 3.0.d.2, or TLCO 3.0.d.3.

TLCO 3.0.d.1 allows entry into a MODE or other specified condition in the Applicability with the TLCO not met when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. Compliance with Required Actions that permit 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 Actions.

TLCO 3.0.d.2 allows entry into a MODE or other specified condition in the Applicability with the TLCO not met after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate.

The risk assessment may use quantitative, qualitative, or blended approaches, and the risk assessment will be conducted using the plant program, procedures, and criteria in place to implement 10 CFR 50.65(a)(4), which requires that risk impacts of maintenance activities be assessed and managed.

(continued)

BASES (continued)

TLCO 3.0.d (Continued)

The risk assessment, for the purposes of TLCO 3.0.d.2, must take into account all inoperable TRM equipment regardless of whether the equipment is included in the normal 10 CFR 50.65(a)(4) risk assessment scope.

The risk assessments will be conducted using the procedures and guidance endorsed by Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." Regulatory Guide 1.182 endorses the guidance in Section 11 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. These documents address general guidance for conduct of the risk assessment, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the condition, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is acceptable. Consideration should also be given to the probability of completing restoration such that the requirements of the TLCO would be met prior to the expiration of ACTIONS Completion Times that would require exiting the Applicability.

TLCO 3.0.d.2 may be used with single, or multiple systems and components unavailable. NUMARC 93-01 provides guidance relative to consideration of simultaneous unavailability of multiple systems and components.

The results of the risk assessment shall be considered in determining the acceptability of entering the MODE or other specified condition in the Applicability, and any corresponding risk management actions. The TLCO 3.0.d.2 risk assessments do not have to be documented.

(continued)

BASES (continued)

TLCO 3.0.d (Continued)

The TRM allows continued operation with equipment unavailable in MODE 1 for the duration of the Completion Time. Since this is allowable, and since in general the risk impact in that particular MODE bounds the risk of transitioning into and through the applicable MODES or other specified conditions in the Applicability of the TLCO, the use of the TLCO 3.0.d.2 allowance should be generally acceptable, as long as the risk is assessed and managed as stated above.

The provisions of this TLCO 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 TLCO 3.0.d shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TLCO 3.0.d shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2, MODE 2 to MODE 3, and MODE 3 to MODE 4.

Upon entry into a MODE or other specified condition in the Applicability with the TLCO not met, TLCO 3.0.a and TLCO 3.0.b require entry into the applicable Conditions and Required Actions until the Condition is resolved, until the TLCO is met, or until the unit is not within the Applicability of the TLCO.

TSRs do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by TSR 3.0.a. Therefore, utilizing TLCO 3.0.d is not a violation of TSR 3.0.a or TSR 3.0.d for any TSRs that have not been performed on inoperable equipment. However, TSRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected TLCO.

(continued)

BASES

TLCO 3.0.e

TLCO 3.0.e establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to TLCO 3.0.b (e.g., to not comply with the applicable Required Action(s)) to allow the performance of required testing 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 ACTIONS is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY. This Specification does not provide time to perform any other preventive or corrective maintenance.

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 required testing 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 required testing on another channel in the same trip system.

TLCO 3.0.f

TLCO 3.0.f establishes the applicability of each TLCO to both Unit 2 and Unit 3 operation. Whenever a requirement applies to only one unit, or is different for each unit, this will be identified in the appropriate section of the TLCO (e.g., Applicability, TSR, etc.) with parenthetical reference, Notes, or other appropriate presentation within the body of the requirement.

B 3.0 TECHNICAL REQUIREMENTS MANUAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES

TSRs	TSR 3.0.a through TSR 3.0.d establish the general requirements applicable to all Specifications in Sections 2.1 and 3.1 through 3.9 and apply at all times, unless otherwise stated.
TSR 3.0.a	TSR 3.0.a establishes the requirement that TSRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the TLCO apply, unless otherwise specified in the individual TSRs. This TLCO is to ensure that TSRs are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a TSR within the specified Frequency, in accordance with TSR 3.0.b, constitutes a failure to meet a TLCO. Systems and components are assumed to be OPERABLE when the associated TSRs have been met. Nothing in this TSR, 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 TSRs; or b. The requirements of the TSR(s) are known to be not met between required TSR performances. TSR do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated TLCO are not applicable, unless otherwise specified. Unplanned events may satisfy the requirements (including applicable acceptance criteria) for a given TSR. In this case, the unplanned event may be credited as fulfilling the performance of the TSR.

(continued)

BASES

TSR 3.0.a (continued)

TSRs, including TSRs invoked by Required Actions, do not have to be performed on inoperable equipment because the ACTIONS define the remedial measures that apply. TSRs have to be met and performed in accordance with TSR 3.0.b, 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 TSRs are not failed and their most recent performance is in accordance with TSR 3.0.b. 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 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.

TSR 3.0.b

TSR 3.0.b establishes the requirements for meeting the specified Frequency for TSRs and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per..." interval.

TSR 3.0.b permits a 25% extension of the interval specified in the Frequency. This extension facilitates TSR scheduling and considers plant operating conditions that may not be suitable for conducting the TSR (e.g., transient conditions or other ongoing TSR or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the TSR at its specified Frequency. This is based on the recognition that the most probable result of any particular TSR being performed is the verification of conformance with the TSRs.

As stated in TSR 3.0.b, 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

(continued)

BASES

TSR 3.0.b (continued)

Action, whether it is a particular TSR 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 TSR 3.0.b are not intended to be used repeatedly merely as an operational convenience to extend TSR intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

TSR 3.0.c

TSR 3.0.c establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a TSR has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is greater, applies from the point in time it is discovered that the TSR has not been performed in accordance with TSR 3.0.b, and not at the time that the specified Frequency was not met. This delay period provides adequate time to complete TSRs that have been missed. This delay period permits the completion of a TSR before complying with Required Actions or other remedial measures that might preclude completion of the TSR.

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

When a TSR with a Frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to start of movement of fuel assemblies or control rods, or in accordance with the Diesel Fuel Oil Testing Program, etc.) is discovered to not have been performed when specified, TSR 3.0.c allows for the full delay period of up to the specified Frequency to perform the TSR. However, since there is not a time interval specified, the missed TSR should be performed at the first reasonable opportunity.

(continued)

BASES

TSR 3.0.c (continued)

TSR 3.0.c provides a time limit for, and allowances for the performance of, TSRs that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for TSRs is expected to be an infrequent occurrence. Use of the delay period established by TSR 3.0.c is a flexibility which is not intended to be used as an operational convenience to extend TSR intervals. While up to 24 hours or the limit of the specified Frequency is provided to perform the missed TSR, it is expected that the missed TSR 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 TSR as well as any plant configuration changes required or shutting the plant down to perform the TSR) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the TSR. 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 consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management up to and including plant shutdown. The missed TSR 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 TSRs 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 TSRs will be placed in the station’s Corrective Action Program.

If a TSR 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 Times of the Required Actions for the applicable TLCO Conditions begin immediately upon expiration of the delay period. If a TSR is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable TLCO Conditions begin immediately upon the failure of the TSR.

(continued)

BASES

TSR 3.0.c (continued)

Completion of the TSR within the delay period allowed by this TSR, or within the Completion Time of the ACTIONS, restores compliance with TSR 3.0.a.

TSR 3.0.d

TSR 3.0.d establishes the requirement that all applicable TSRs must be met before entry into a MODE or other specified condition in the Applicability.

This TSR 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 TSR 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.

A provision is included to allow entry into a MODE or other specified condition in the Applicability when an TLCO is not met due to a TSR not being met in accordance with TLCO 3.0.d.

However, in certain circumstances, failing to meet an TSR will not result in TSR 3.0.d 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 TSR(s) are not required to be performed, per TSR 3.0.a, which states that TSRs do not have to be performed on inoperable equipment. When equipment is inoperable, TSR 3.0.d does not apply to the associated TSR(s) since the requirement for the TSR(s) to be performed is removed. Therefore, failing to perform the TSR(s) within the specified Frequency does not result in an TSR 3.0.d restriction to changing MODES or other specified conditions of the Applicability.

However, since the TLCO is not met in this instance, TLCO 3.0.d will govern any restrictions that may (or may not) apply to MODE or other specified condition changes. TSR 3.0.d does not restrict changing MODES or other specified conditions of the Applicability when a TSR has not been performed within the specified Frequency, provided the requirement to declare the TLCO not met has been delayed in accordance with TSR 3.0.c.

(continued)

BASES

TSR 3.0.d (Continued)

The provisions of TSR 3.0.d shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TSR 3.0.d shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2, MODE 2 to MODE 3, and MODE 3 to MODE 4.

The precise requirements for performance of TSRs are specified such that exceptions to TSR 3.0.d are not necessary. The specific time frames and conditions necessary for meeting the TSRs are specified in the Frequency, in the TSR, or both. This allows performance of TSRs 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 TLCO prior to the performance or completion of a TSR. A TSR that could not be performed until after entering the TLCO's Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the TSR 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. Further discussion of the specific formats of TSRs' annotation is found in TRM Section 1.4, Frequency.

TSR 3.0.e

TSR 3.0.e establishes the applicability of each TSR to both Unit 1 and Unit 2 operation. Whenever a requirement applies to only one unit, or is different for each unit, this will be identified with parenthetical reference, Notes, or other appropriate presentation within the TSR.

THIS SECTION IS NOT CURRENTLY BEING USED.

B 3.3 INSTRUMENTATION

B 3.3.a Control Rod Block Instrumentation

BASES

The trip logic for the control rod block functions is one-out-of-n; e.g., any trip of one of the six average power range monitors (APRMs), eight intermediate range monitors (IRMs), or four source range monitors (SRMs), will result in a rod block. The minimum instrument CHANNEL requirements assure sufficient instrumentation to assure that the single failure criterion is met. The minimum instrument CHANNEL requirements for the rod block monitor may be reduced by one for a short period of time to allow for maintenance, testing, or calibration.

The APRM rod block function is flow-biased and prevents a significant reduction in minimum critical power range (MCPR), especially during operation at reduced flow. The APRM rod block function is flow dependent until it reaches the applicable setting where it is "clamped" at its maximum allowed value. The APRM provides gross core protection, i.e., limits the gross withdrawal of control rods in the normal withdrawal sequence.

In MODE 5 and MODE 2, the APRM rod block function setpoint is significantly reduced to provide the same type of protection in MODE 5 and MODE 2 as the APRM flow-biased rod block does in MODE 1 i.e., prevents control rod withdrawal before a scram is reached.

The APRM Flow Biased Neutron Flux—High Control Rod Block Function is varied as a function of recirculation loop flow (W) up to its clamped value. “W” is equal to the percentage of the drive flow required to produce a rated core flow of 98 X 10^6 lbs/hr.

The IRM rod block function provides local as well as gross core protection. The scaling arrangement is such that the trip setting is less than a factor of ten above the indicated level. Analysis of the worst case accident results in rod block action before MCPR approaches the MCPR fuel cladding integrity Safety Limit.

A downscale indication on an APRM is an indication that the instrument has failed or is not sufficiently sensitive. In either case, the instrument will not respond to changes in control rod motion, and the control rod motion is thus prevented.

(continued)

BASES (continued)

The SRM rod blocks of low count rate and the detector not fully inserted assure that the SRMs are not withdrawn from the core prior to commencing rod withdrawal for startup. The scram discharge volume, high water level rod block provides annunciation for operator action. The alarm setpoint has been selected to provide adequate time to allow for the determination of the cause for the level increase and corrective action prior to automatic scram initiation.

B 3.3 INSTRUMENTATION

B 3.3.b Post Accident Monitoring (PAM) Instrumentation

BASES

Instrumentation is provided to monitor sufficient accident conditions to adequately assess important variables and provide the operators with the necessary information to complete the appropriate mitigation actions. OPERABILITY of the instrumentation listed provides adequate monitoring of the containment following a loss-of-coolant accident. Information from this instrumentation will provide the operator with a detailed knowledge of the conditions resulting from the accident; based on this information, the operator can make logical decisions regarding post accident recovery. Allowable outage times are based on diverse instrumentation availability for guiding the operator should an accident occur, and on the low probability of an instrument being out-of-service concurrent with an accident.

Channel Check of the Acoustic Monitors shall consist of verifying the instrument threshold levels.

In Reference 1, Exelon submitted a License Amendment Request (LAR) removing the Drywell H_2/O_2 Post Accident Monitoring (PAM) instruments from the Technical Specifications. The NRC approved this request in Reference 2. The LAR contained a regulatory commitment to maintain the capability of the drywell H_2 and O_2 concentration analyzers. The surveillance requirements provided in TRM section 3.3.b for Functions 4 and 5 are required to satisfy this regulatory commitment.

REFERENCES:

1. Letter from K.R. Jury (Exelon) to USNRC, “Request for Amendment to Technical Specifications to Eliminate Requirements for Hydrogen Recombiners and Hydrogen/Oxygen Monitors Using the Consolidated Line Item Improvement Process,” dated September 15, 2004
2. Letter from M. Banerjee (USNRC) to C.M. Crane, “Dresden Nuclear Power Station, Units 2 and 3 – Issuance of Amendments,” dated April 28, 2005

B 3.3 INSTRUMENTATION

B 3.3.c Explosive Gas Monitoring Instrumentation

BASES

This instrumentation provides for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the Offgas (Waste) Holdup System.

B 3.3 INSTRUMENTATION

B 3.3.d Suppression Chamber and Drywell Spray Actuation Instrumentation

BASES

Instrumentation is provided to monitor the parameters which are necessary to permit initiation of the suppression chamber and drywell spray mode of the low pressure coolant injection/containment cooling system to condense steam in the containment atmosphere. The spray mode does not significantly affect the rise of drywell pressure following a loss of coolant accident, but does result in quicker depressurization following completion of the blowdown.

B 3.3 INSTRUMENTATION

B 3.3.e Fire Detection Instrumentation

BASES

OPERABILITY of the detection instrumentation ensures that both adequate warning capability is available for the prompt detection of fires and that Fire Suppression Systems, actuated by fire detectors, will discharge extinguishing agents in a timely manner. Prompt detection and suppression of fires will reduce the potential for damage to safety related equipment or redundant/alternate equipment important to safe shutdown and is an integral element in the overall facility fire protection program. The zone designations given in Tables T 3.3.e-1, T 3.3.e-2, and T 3.3.e-3 are XL3 fire detection system loop designations. Fire detectors that are used to actuate Fire Suppression Systems represent a more critically important component of a plant's fire protection program than detectors that are installed solely for early fire warning and notification.

The establishment of dedicated roving fire watches in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to service.

B 3.3 INSTRUMENTATION

B 3.3.f Anticipated Transient Without Scram (ATWS)—Alternate Rod Insertion (ARI) System

BASES

An anticipated transient without scram (ATWS) is a postulated operational transient (such as loss of feedwater, loss of condenser vacuum, or loss of offsite power) accompanied by a failure of the reactor protection or control rod drive systems to shut down the reactor. Even though the reactor protection and control rod drive systems have been shown to be highly reliable, it is postulated that a common mode electrical or mechanical failure is possible.

If the control rods fail to insert following a transient which isolates the reactor from the normal cooling system, the resulting pressure rise could be large enough to threaten the integrity of the reactor coolant pressure boundary. Unless core power and system pressure are reduced to within the capacities of the standby cooling and makeup systems within a few minutes, the core can be uncovered and melting can occur, resulting in large releases of radioactive fission products.

Since a normal scram (RPS) is assumed to be unavailable to insert control rods for reducing reactor power, alternate rod insertion (ARI)is utilized for control rod insertion. Should both the RPS and ARI fail to insert the control rods, the SBLC would be manually initiated to control reactivity.

ARI has two independent subsystems. Each subsystem consists of two manual initiation pushbutton switches in the control room, and three valves which ensure depressurization of the scram air header.

Two ARI valves, which are normally closed, open when energized to depressurize the scram air header. Additionally, one three-way ARI valve is installed in the scram air header supply line. This valve is normally positioned to allow air to be supplied to the scram air header. When energized, this valve repositions to close off the supply air and vent the scram air header to the atmosphere. Each subsystem has sufficient capacity to accomplish rod insertion.

(continued)

BASES (continued)

Alternate rod insertion is a means of control rod insertion which is motivated mechanically by the normal hydraulic control units and control rod drives but which utilizes totally separate and diverse logic from RPS. Alternate rod insertion energizes valves which cause the scram valve pilot air header to bleed down. Although this type of alternate rod insertion does not eliminate the short-term consequences of the assumed failure of normal scram action, it does reduce the long-term consequences. The most significant long-term consequences involve containment limits, particularly suppression pool temperature.

Once actuated, a time delay ensures that the ARI valves remain energized to ensure the scram air header is adequately depressurized. After this delay, if the initiation signal has cleared, the ARI valves are deenergized. If the initiation signal is still present after the delay, the ARI valves remain energized until the initiation signal clears.

The required logic test is adequate to ensure OPERABILITY of the ATWS—ARI Function.

B 3.3 INSTRUMENTATION

B 3.3.g Not used

B 3.3 INSTRUMENTATION

B 3.3.h Reactor Vessel Water Level Instrumentation System (RVWLIS) Backfill System

BASES

The Reactor Vessel Water Level Instrumentation System (RVWLIS) Backfill System was installed as a result of industry experience in which reactor level indication errors were experienced during reactor vessel depressurizations. During these events, non-condensible gases that are produced during normal operation diffuse into the reference leg water over a period of time and are released when reactor pressure is decreased, creating a void in the reference leg. This void causes reactor level to read higher than normal. NRC Bulletin 93-03, Resolution of Issues Related to Reactor Water Level Instrumentation in BWRs, was issued as a result of the industry experience.

Both units have four (4) RVWLIS Backfill lines, one for each medium range reference leg and one for each narrow range/fuel zone reference leg. Each backfill line should be placed in service on each unit startup and isolated after each unit shutdown. With the backfill line in service for each reference leg, level indication errors caused by the build up of non-condensible gases cannot occur.

Requirements are provided so as to assure reliable reactor level indication. The RVWLIS Backfill from the Control Rod Drive System is a support system to ensure reliable reactor level indication.

Perform the following compensatory actions during any reactor vessel depressurization:

a. Place the following computer points on high speed (1500 mm/hr):

   C263 (C363) RPV Level MR Indicator from 2(3)-263-100A

   C264 (C364) RPV Level MR Indicator from 2(3)-263-100B

   C260 (C360) “A” RPV Narrow Range (NR) Level Indicator or C209 (C309) “B” RPV NR Level Indicator, whichever NR Indicator is not selected for Feedwater Level Control.

(continued)

BASES (continued)

b. A heightened Level of Awareness briefing with Control Room personnel with respect to the potential RPV level indication anomalies will be instituted and maintained until the Reactor is in MODE 4 or MODE 1 is achieved.

Additionally, if an indicated level notching phenomenon occurs, as observed on the reactor vessel level recorders, AND indication level shows greater than a nine (9) inch level increase for more than five (5) minutes, then:

a. All level instruments utilized by the affected reference leg shall be declared inoperable and entered into the Degraded Equipment Log.

b. Refer to the Technical Specifications for required actions associated with the affected instruments.

c. The affected reference legs shall be backfilled prior to declaring the associated instruments operable.

Surveillance requirements are provided to assure proper system operation.

B 3.3 INSTRUMENTATION

B 3.3.i Reactor Water Cleanup (RWCU) Area Temperature Monitoring

BASES

Dresden and Com Ed engineering have recently evaluated the effects of a RWCU system break outside of the containment with a break small enough such that the feedwater system can maintain reactor water level above +8 inches. This analysis was necessary since Monticello reported that below 87 % power, more mass would be discharged to their secondary containment than in the main steam line break outside the containment; previously thought to be the most limiting break. Results of the Dresden evaluation show that more mass would be discharged to the secondary boundary containment during the postulated break and the reacotr building blowout panels will blow, however, the equipment needed for safe shutdown can perform their function and dose to the public will remain below 10 CFR 100 limits. Crucial to mitigating this scenario is that prompt action is taken when the RWCU Area Temperature annunciators are in the alarm state. This TRM section provides greater control of the RWCU Temperature Area Monitors so that a high level of operability is maintained to support the prompt action required by the operators.

A modification has been installed which results in a RWCU System Isolation when high area temperature is detected. This system monitors 5 areas around the RWCU System Piping and also receives input from the X-area Temperature monitors.

This is a two channel system with two temperature for each area. The RWCU System will isolate if one of the two monitors in any one area senses a high temperature.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.a Structural Integrity

BASES

The inspection programs for ASME Code Class 1, 2, and 3 components ensure that the structural integrity of these components will be maintained at an acceptable level throughout the life of the plant.

The inservice inspection program for ASME Code Class 1, 2, and 3 components will be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the NRC pursuant to 10 CFR 50.55a(g)(6)(i).

ASME Class 1, 2, and 3 systems (i.e., code class systems) are classified based upon the systems' safety function. These systems are required to perform those safety functions in the modes specified by the Technical Specifications. Maintenance activities that involve temporary alterations to a code class system when the system safety function is not required, and that are not classified as Section XI Repair/Replacement activities do not fall under the scope of the Inservice Inspection and Testing program and TRM 3.4.a. However, the code class system design bases must be maintained and controlled by applicable processes/procedures during these maintenance activities.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.b Reactor Coolant System (RCS) Chemistry

BASES

The water chemistry limits of the reactor coolant system are established to prevent damage to the reactor materials in contact with the coolant. Chloride limits are specified to prevent stress corrosion cracking of the stainless steel. The effect of chloride is not as great when the oxygen concentration in the coolant is low, thus the higher limit on chlorides is permitted during MODE 1.

Conductivity measurements are required on a continuous basis since changes in this parameter are an indication of abnormal conditions. Without significant damage to stress corrosion cracking of rector materials in contact with reactor coolant, during a Noble Metal Chemical Application (NMCA), the higher conductivity and pH limits are permitted for a maximum of 48 hours for the injection of noble metal chemicals in MODE 3 and for a maximum of 24 hours after the end of the injection with the plant being in MODE 4 as rapidly as the cooldown rate limits permit after the end of the injection.

When the conductivity is within limits, the pH, chlorides and other impurities affecting conductivity must also be within their acceptable limits. With the conductivity meter inoperable, additional samples must be analyzed to ensure that the chlorides are not exceeding the limits.

An exception to 3.0.d is added to allow a change in MODES while not meeting limits of TLCO 3.4.b. This allowance is based on the likelihood that the condition has a high probability to be rectified during plant operation. However, in the event the limits can not be restored within the specified completion times of the required action, the required action must be taken to place the plant in required condition specified by the applicable action.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.c Not Used

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.d Drywell Continuous Air Monitor (CAM)

BASES

The Drywell CAM is installed on Reactor Building elevation 517' just outside of the drywell personnel access door. The atmosphere sample from the drywell passes through two primary containment Group II isolation valves, is pumped through the CAM radiation detector and iodine/particulate sampler, and is returned to the drywell through two additional primary containment Group II isolation valves. The requirement for continuous air monitoring is given in the following documents:

1. FSAR Amendment 13, Question B.14 response.
2. UFSAR Section 5.2.5.2
3. Response to SEP Topic V-5 (Reactor Coolant Pressure Boundary Leakage Detection).
4. Supplemental response to NUREG 0313 Rev. 1, Installed Leakage Detection.

The purpose and intent of the CAM radiation detector is to count gross beta activity (to be recorded and alarm on an increase) to provide an indication that a leak has occurred in the drywell. In addition to the radiation detector, an iodine/particulate sampler is provided. When both the Drywell CAM radiation detector and the iodine/particulate sampler are operable, then the Drywell CAM is used as a continuous sampling system for primary containment atmospheric particulate radioactivity.

The Drywell CAM is one system that monitors the primary containment particulate radioactivity by continuously sampling the drywell atmosphere. When the Drywell CAM becomes inoperable, an alternate sample pump may be used to sample the drywell atmosphere from a variety of locations including the Drywell CAM or Drywell Manifold or, if the drywell is accessible, directly from the drywell atmosphere.

B 3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

B 3.5.a Core Spray/Low Pressure Coolant Injection (LPCI) Corner Room Submarine Doors

BASES

Submarine type doors have been installed between the low pressure coolant injection (LPCI) corner rooms and the torus basement to provide a leaktight barrier in the event of flooding in the torus basement. The doors that separate the Unit 2 west Core Spray/LPCI corner room from the Unit 3 east Core Spray/LPCI corner room are not watertight. Therefore, submarine doors that are open or undogged in these rooms affect OPERABILITY of equipment in the other unit.

Maintenance of the submarine doors is allowed. When such maintenance requires the submarine doors to be either open or dogged for greater than one hour, equivalent barriers must be put in place.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.a Drywell Spray

BASES

Each of the two drywell spray subsystems contain one OPERABLE low pressure coolant injection pump and an OPERABLE flow path capable of recirculating water from the suppression pool through a heat exchanger and the drywell spray nozzles.

Periodic operation of the drywell sprays may be used following a Design Basis Accident to assist the natural convection and diffusion mixing of hydrogen and oxygen when other ECCS requirements are met and oxygen concentration exceeds 4%. Since the spray system is a function of the LPCI/Containment Cooling System, the loops will not be aligned for the spray function during normal operation, but all components required to operate for proper alignment must be OPERABLE.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.b Nitrogen Containment Atmosphere Dilution (NCAD) System

BASES

The NCAD system shall be capable of supplying nitrogen to containment.

The potential generation and control of hydrogen within the containment following a LOCA has been a concern since the first nuclear power plant was constructed. However, it was not until 1971 that the AEC documented its acceptance criteria for combustible gas control in Safety Guide 7, "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident." Although the primary means for mitigating the presence of combustible gases within the containment is inerting with nitrogen, existing plants as well as plants under construction were requested to design and install original CAD systems, with independent compressors that supply nitrogen from independent storage tanks. This system is described in the pre-TSUP Technical Specification bases as the CAD system, which was never installed. Dresden developed interim combustible gas control methods using the existing nitrogen makeup and inerting system. OPERABILITY of the systems required to assure this method was available was controlled via the pre-TSUP Technical Specification 3.7.A.6.

Containment atmosphere dilution by air injection was considered a viable method of managing the conflagration of the containment atmosphere, therefore ComEd pursued installation of the ACAD System. However, new information from the TMI accident resulted in 10 CFR 50.44 rule changes and the requirement for licensees to install primary containment hydrogen recombiners to remove hydrogen from the containment altogether. ComEd as well as other Mark I containment owners sought an alternative solution via the BWR Owners Group. The NRC recognized that the costs of recombiner installation outweighed the risk and probability of an accident that yielded hydrogen generation and issued NRC Generic Letter (GL) 84-09 to reflect this position. In the GL, licensees that did not install hydrogen recombiners were to meet the following requirement if the following were true:

a. Technical Specifications must require the containment atmosphere to be less than 4% oxygen when the containment is required to be inerted;

b. Nitrogen or recycled containment atmosphere must be used for all pneumatic applications within containment; and

(continued)

BASES (continued)

c. No potential sources of air and oxygen may be present other than radiolysis of reactor coolant.

Dresden met the above criteria if the ACAD System was not used. Without ACAD, Dresden did not have a “low single failure vulnerability” system to mitigate combustible gas control. The NRC reviewed the single failure vulnerabilities of the nitrogen makeup and inerting system and ComEd’s proposed modification to reduce such vulnerabilities. ComEd referred to the valves and piping added to the existing makeup and inerting system as the NCAD System.

The NCAD System will be used concurrently with purging the containment. This method is based on the Revision 4 to BWR Owners Group Emergency Procedure Guidelines.

The NCAD System has been installed on both Unit 2 and Unit 3 to replace ACAD. Unit 2 NCAD was installed in D2R14 in 1996 and the Unit 3 NCAD was installed in D3R14 in 1997. The NRC Safety Evaluation for NCAD dated 6/29/93 has a requirement that once NCAD is operational, ACAD (dilution) must be removed as a potential post accident oxygen source. Therefore, there is no basis for use of the ACAD dilution or bleed systems and the OPERABILITY provisions for such systems have not been identified in the TRM.

The basis of the liquid storage tank level is to assure a supply of 200,000 scf of nitrogen for NCAD. This is consistent with Section 4.5.1 of the NRC’s Safety Evaluation for Extended Power Uprate.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.c Drywell-to-Suppression Chamber Differential Pressure

BASES

BACKGROUND

During the Mark I Containment Long-Term Program (LTP), which defined the hydrodynamic loads for Mark I plants, it was determined that pool swell loads were mitigated by maintaining a positive drywell-to wetwell pressure difference (DW – SP DP). Based on this determination, a Technical Specification (TS) Limiting Condition for Operation (LCO) was specified to maintain a positive DW – SP DP. As required by Reference 1, plants with Mark I containments had the option of either confirming their design was adequate for the higher pool swell loads with zero DW – SP DP (zero DP), or of maintaining an operating DW – SP DP (operating DP) and demonstrating that their containment design was adequate for lower pool swell loads.

The applicable generic TS LCO included action items to restore the operating DP within a specified time period. If the operating DP could not be restored, subsequent actions were described that required the plant to be in the hot shutdown condition and ultimately in the cold shutdown (CSD) condition within specified times. Since pool swell loads are driven by the reactor pressure, the action to be in CSD (which requires the reactor vessel to be depressurized) is adequate to eliminate pool swell loads during a postulated Loss of Coolant Accident.

In the course of reviewing the plant’s TS following issuance of General Electric’s Safety Information Communication, SC02-10, it was discovered that the existing Required Action for not meeting the TS LCO requirements of LCO 3.6.2.5 would not mitigate pool swell loads during a postulated Design Basis Accident – LOCA.

APPLICABLE SAFETY ANALYSIS

As a part of NUREG 0661, Mark I plants had to design to the higher loads associated with pool swells or operate with a DP. Plants that were required to operate with a DP also had to demonstrate that the containment could maintain its functional capability without DP. The DBA LOCA without a DP was evaluated to validate containment functionality for Dresden Station. The results of the evaluation were documented in the Plant Unique Analysis Report (PUAR). Compliance with the NRC requirements specified in NUREG 0661 is sufficient to demonstrate that if a postulated DBA-LOCA occurred, it would not result in a significant hazard.

(continued)

BASES (continued)

Therefore the 1978 NRC SE established a delay time, after which the DP limits were applicable. However the time clock did not start until the Mode Switch was placed in the RUN position (~ 15 % RTP). The basis for the acceptance of this condition is the low probability that a DBA-LOCA would occur during this short period.

In accordance with NRC Administrative Letter 98-10, "Disposition of Technical Specifications That Are Insufficient to Assure Safety", the identification of an inadequate TS action is considered a nonconforming condition as defined in NRC Generic Letter 91-18. Imposing administrative controls in response to an improper TS is considered an acceptable short term corrective action.

Even though the DBA-LOCA results were acceptable for Dresden's Mark I containment loads as documented in the PUAR, a DBA-LOCA along with a seismic event was not evaluated. Using a probabilistic evaluation can provide reasonable assurance of safety. Therefore, a risk evaluation was performed to evaluate the probability of a seismic induced LOCA occurring during the time that the plant would be operating in a zero DP condition.

The probability of a seismic event is directly proportional to time. Thus the longer a plant is allowed to operate in the zero DP condition with a pressurized reactor vessel increases the probability of a seismic event.

In order to develop administrative controls that are both commensurate with safety and provide operational flexibility, an assessment was performed to provide a bounding length of time for which the probability of a LOCA and seismic event would be considered low. The assessment used historical data gathered as a part of actions resulting from Condition Report 117545. This data covered a three-year period for both operating units. Below are the conclusions of assessment SA-1115, Revision 1.

> The purpose of this assessment is to provide a bounding length of time for which the probability of a concurrent seismic event and loss of coolant accident (LOCA) would be considered acceptably low.
>
> Consideration was given to the frequency for seismic-induced LOCAs at the Dresden site and the estimated amount of time per fuel cycle during which D/W-SP DP would be inadequate for the combination of blowdown and seismic loads. Based on these considerations, a bounding assessment finds that a period of up to 103 hours per occurrence would be non-risk significant. Therefore, a period of up to 103 hours would be acceptable from a risk perspective for use as an administrative control allowed outage time (AOT) for this condition.

Based on the above assessment the frequency of a seismic induced LOCA coupled with the historical DP data, a bounding time of 103 hours was determined.

(continued)

BASES (continued)

TLCO

A drywell-to-suppression chamber differential pressure limit of 1.0 psid is required to ensure that the containment conditions assumed in the safety analyses are met. A drywell-to-suppression chamber differential pressure of < 1.0 psid corresponds to a downcomer water leg of > 3.54 ft. Failure to maintain the required differential pressure could result in excessive forces on the suppression chamber due to higher water clearing loads from downcomer vents and higher pressure buildup in the drywell.

A Note is provided to allow for periods of up to 4 hours when the LCO is not required to be met during the performance of required Surveillances that reduce the differential pressure. The 4 hour time is acceptable since the probability of a DBA LOCA occurring during this time is low.

APPLICABILITY

Drywell-to-suppression chamber differential pressure must be controlled when the reactor is pressurized. A detailed analysis has not been performed to determine the pressure at which containment loading would exceed its limits. Therefore, drywell- to – suppression chamber differential pressure is required to be maintained at the onset of vessel pressurization which begins when coolant temperatures exceed 212 degrees Fahrenheit.

ACTION

A Note has been added to the ACTIONS to exclude the MODE change restriction of TLCO 3.0.d.

A.1

If drywell-to-suppression chamber differential pressure is not within the limit, the conditions assumed in the safety analyses are not met and the differential pressure must be restored to within the limit within 67 hours. The 67 hour Completion Time provides sufficient time to restore differential pressure to within limit and takes into account the low probability of an event that would create excessive suppression chamber loads occurring during this time period.

B.1

If the differential pressure cannot be restored to within limits within the associated Completion Time, the plant must be placed in a MODE in which the TLCO does not apply. This is done by placing the plant in Mode 3 within 12 hours and Mode 4 within 36 hours. The Completion Times are reasonable, based on the probability of a LOCA concurrent with seismic event and the time necessary to reduce reactor power from full power conditions to cold shutdown in an orderly manner and without challenging plant systems.

(continued)

SURVEILLANCE REQUIREMENT

The drywell-to-suppression chamber differential pressure is regularly monitored to ensure that the required limits are satisfied. The 12 hour Frequency of this SR was developed based on operating experience relative to differential pressure variations and pressure instrument drift during applicable MODES and by assessing the proximity to the specified LCO differential pressure limit. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal pressure condition.

B 3.7 PLANT SYSTEMS

B 3.7.a Containment Cooling Service Water (CCSW) System—Shutdown

BASES

The Unit 2 CCSW System provides backup cooling capacity for the control room emergency ventilation system refrigeration unit (CREV RCU). The CCSW system consists of four pumps which only one is required to support the cooling requirements of the CREV RCU. The Unit 2 CCSW is considered OPERABLE when one pump is OPERABLE and an OPERABLE flow path is capable of taking suction from the Ultimate Heat Sink and transferring the water to the Control Room Ventilation Air Conditioning System at the assumed flow rate.

The Unit 2 CCSW System is required to be OPERABLE during the movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, and during operations with a potential for draining the reactor pressure vessel (OPDRVs). At least one Unit 2 CCSW pump, the Ultimate Heat Sink, and a flow path are required during these conditions to provide backup cooling to the condensing unit of the Control Room Emergency Ventilation Air Conditioning (AC) System (LCO 3.7.5 “Control Room Emergency Ventilation Air Conditioning (AC) System”).

REFERENCES

1. UFSAR, Section 2.4.8.
2. UFSAR, Section 6.2.1.3.2.
3. UFSAR, Section 6.2.2.
4. UFSAR, Section 9.2.1.
5. UFSAR, Section 9.2.2.
6. UFSAR, Section 9.2.5.

B 3.7 PLANT SYSTEMS

B 3.7.b Diesel Generator Cooling Water (DGCW) System—Shutdown

BASES

The Diesel Generator Cooling Water System, with the Ultimate Heat Sink, provides sufficient cooling capacity for continued operation of the diesel generators during normal and accident conditions. The cooling capacity of the system is consistent with the assumptions used in the safety analysis to keep the accident conditions within acceptable limits.

B 3.7 PLANT SYSTEMS

B 3.7.c Ultimate Heat Sink (UHS)—Shutdown

BASES

The canals provide an Ultimate Heat Sink with sufficient cooling capacity to either provide normal cooldown of the units, or to mitigate the effects of accident conditions within acceptable limits for one unit while conducting a normal cooldown on the other unit.

The UHS consists of water sources from either the Kankakee River (normal), or the cooling lake (alternative) and can be aligned as either a closed cycle operating system utilizing the cooling lake and canals, or an open cycle operating system with the discharge returning to the Illinois River. Condenser Circulating Water System (primary user), the CCSW System, the Service Water System, the Fire Protection System, and the DGCW System) for both normal and emergency plant operations.

The OPERABILITY of the UHS is based on having a minimum water level in the CCSW andDGCW pump suction bays of 501.5 ft mean sea level and a maximum water temperature of 95°F.

In MODES 4 and 5, the OPERABILITY requirements of the UHS is determined by the system it supports.

B 3.7 PLANT SYSTEMS

B 3.7.d Liquid Holdup Tanks

BASES

Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table 2, Column 2, in an unrestricted area. Recirculation of the tank contents for the purpose of reducing the radioactive content is not considered to be an addition of radioactive material to the tank.

B 3.7 PLANT SYSTEMS

B 3.7.e Explosive Gas Mixture

BASES

The specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the offgas holdup system is maintained below the flammability limits of hydrogen and oxygen. Maintaining the concentration of hydrogen and oxygen below their flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

B 3.7 PLANT SYSTEMS

B 3.7.f Flood Protection

BASES

Flood protection measures are provided to protect the systems and equipment necessary for safe shutdown during high water conditions. The equipment necessary to implement the appropriate measures, as detailed in plant procedures, is required to be available, but not necessarily onsite, to implement the procedures in a timely manner. The selected water levels are based on providing timely protection from the design basis flood of the river.

B 3.7 PLANT SYSTEMS

B 3.7.g Sealed Source Contamination

BASES

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. This limitation will ensure that leakage from byproduct, source, and special nuclear material sources will not exceed allowable intake values. Sealed sources, including startup sources and fission detectors, are classified into three groups according to their use, with surveillance requirements commensurate with the probability of damage to a source in that group. Those sources which are frequently handled are required to be tested more often than those which are not. Sealed sources which are continuously enclosed within a shielded mechanism, i.e., sealed sources within radiation monitoring or boron measuring devices, are considered to be stored and need not be tested unless they are removed from the shielded mechanism.

B 3.7 PLANT SYSTEMS

B 3.7.h Snubbers

BASES

Mechanical snubbers are provided to ensure that the structural integrity of the reactor coolant system and all other safety related systems is maintained during and following a seismic event or other event initiating dynamic loads. Snubbers are classified and grouped by design, manufacturer and accessibility. A list of individual snubbers with information of snubber location, classification or group, and system affected is maintained at the plant. The accessibility of each snubber is determined and documented for each snubber. The determination is based upon the existing radiation levels and the expected time to perform a visual inspection in each snubber location as well as other factors associated with accessibility during plant operation (e.g., temperature, atmosphere, location, etc.), and the recommendations of Regulatory Guides 8.8 and 8.10.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to the systems. Therefore, the required inspection interval varies with the number of unacceptable snubbers found during the previous inspection, the total population or category size for each snubber type, and the previous inspection interval. A snubber is considered unacceptable if it fails to satisfy 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 as determined and documented prior to the inspections. The categorization is used as the basis for determining the next inspection interval for that category.

If a review and evaluation can not justify continued operation with an unacceptable snubber, the snubber is declared inoperable and the applicable action taken. To determine the next surveillance interval, the unacceptable snubber may be reclassified as acceptable if it can be demonstrated that the snubber is OPERABLE in its as-found condition by the performance of a functional test. The next visual inspection interval may be twice, the same, or reduced by as much as two-thirds of the previous inspection interval, depending on the number of unacceptable snubbers found in proportion to the size of the population or category for each type of snubber included in the previous inspection. The inspection interval may be as long as 48 months and the provisions of TSR 3.0.b may be applied.

(continued)

BASES (continued)

When a snubber is found to be inoperable, an engineering evaluation is performed, in addition to the determination of the snubber mode of failure, in order to determine if any safety related component or system has been adversely affected by the inoperability of the snubber. The engineering evaluation shall determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

To provide additional assurance of snubber functional reliability, a representative sample of the installed snubbers will be functionally tested at 24 month intervals. This sample is identified using one of the methods outlined in the 10 CFR 50.55a approved addition of the ASME OMa code, subsection ISTD.

Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the NRC if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubber for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted are 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 replace, 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 provide statistical bases for future consideration of snubber service life.

B 3.7 PLANT SYSTEMS

B 3.7.i Fire Water Supply Systems

BASES

A Fire Water Supply System shall consist of a water source, pumps, distribution piping with associated valves. Such valves shall include sectionalizing, control and isolation valves for the sprinkler systems or hose standpipe risers. Water supply is taken from the canals feeding the Unit 2/3 and Unit 1 intake structures. The minimum supply requirements for the 100% capacity fire pumps exceed the maximum supply requirements of the installed water suppression systems with an allowance for fire hose usage. The maximum supply requirements were calculated assuming a conservative condition of the underground piping with either the shortest pipe leg out of service or one pump out of service. The minimum supply requirements for each pump differs due to the location and capacity of the pump.

In the event that the fire water system becomes inoperable, immediate corrective measures must be taken since this system provides the major fire water capability for the plant. The requirement for a 24 hour limit to establish a backup fire water system is to provide adequate firewater capability for continued protection of the nuclear plant. The Surveillance Requirements provide assurance that the minimum OPERABILITY requirements are met.

B 3.7 PLANT SYSTEMS

B 3.7.j Water Suppression Systems

BASES

The OPERABILITY of the Water Suppression Systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in various portions of the facility. The Water Suppression System consists of spray, and/or sprinklers. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to equipment and is a major element in the facility Fire Protection Program.

In the event that portions of the Water Suppression Systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the inoperable equipment is restored to service.

The Surveillance Requirements provide assurance that the minimum OPERABILITY requirements of the Water Suppression Systems are met.

B 3.7 PLANT SYSTEMS

B 3.7.k Gaseous Suppression System

BASES

The Carbon Dioxide Suppression Systems in the plant are the primary means of suppression in the diesel generator rooms. The minimum levels specified in the CO_2 storage tank ensures that the required discharge into the affected area will be available to extinguish a postulated fire. The Carbon Dioxide System installed in the Auxiliary Electric Equipment Room is a manual backup to the installed Halon System and therefore measures provided while it is inoperable are less stringent than for the diesel generator rooms.

The Halon Systems listed in Table T 3.7.k-1 are the primary means of fire suppression in these areas. The minimum requirements on the Halon storage cylinder(s) ensure that sufficient Halon is available to extinguish the postulated fire. Measurement of Halon volume in each cylinder is by verifying the weight of the cylinders per NFPA 12A.

B 3.7 PLANT SYSTEMS

B 3.7.1 Fire Hose Stations

BASES

Fire hose stations are the primary fire fighting equipment in numerous areas of the plant as well as backup suppression elsewhere. The hose contained on the reel/rack was selected to provide sufficient coverage in the vicinity. In the event that a hose station is inoperable, compensatory measures imposed ensure that fire fighting capability is maintained in the area. When the inoperable fire hose station is intended for use as a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the inoperable equipment is the primary means of fire suppression.

B 3.7 PLANT SYSTEMS

B 3.7.m Safe Shutdown Lighting

BASES

The OPERABILITY of 8 hour emergency lighting units installed to satisfy Section III.J of 10 CFR 50 Appendix R ensures adequate illumination in areas needed for operation of safe shutdown equipment and access and egress routes thereto. These design features provide illumination to enable operators to reach the necessary areas, including the remote shutdown panels, and perform shutdown functions so the reactor can be safely shutdown in the event of a fire emergency. The Surveillance Requirements provide assurance that the minimum OPERABILITY requirements are met. In the event that an Appendix R emergency light is inoperable, backup or portable lighting is required to be established to provide illumination capability.

B 3.7 PLANT SYSTEMS

B 3.7.n Fire Rated Assemblies

BASES

The functional integrity of the fire rated assemblies and sealing devices in fire rated assemblies ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. These design features minimize the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishing of the fire. The sealing devices in fire rated assemblies are a passive element in the facility fire protection program and are subject to periodic inspections.

Fire barriers, including cable penetration barriers, fire doors and dampers are considered functional when the observed condition is the same as the as-designed condition. For those fire barriers that are not in the as-designed condition, an evaluation shall be performed to show that the modification has not degraded the fire rating of the fire barrier.

During periods of time when a barrier is not functional, either: (1) a continuous fire watch is required to be maintained in the vicinity of the affected barrier, or (2) the fire detectors on at least one side of the affected barrier must be verified OPERABLE and an hourly fire inspection established, until the barrier is restored to functional status.

B 3.7 PLANT SYSTEMS

B 3.7.o Condensate Pump Room Flood Protection

BASES

Condensate pump room flood protection will assure the availability of the Containment Cooling Service Water (CCSW) System during a postulated incident of flooding in the turbine building. The redundant level switches in the condenser pit will preclude any postulated flooding of the turbine building to an elevation above river water level. The level switches provide alarm and circulating water pump trip in the event a water level is detected in the condenser pit.

The watertight bulkhead door and the penetration seals for pipes and cables penetrating the vault walls have been designed to withstand the maximum flood conditions. To assure that their installation is adequate for maximum flood conditions, a method of testing each seal has been devised.

To test a pipe seal, another seal has been installed on the opposite side of the penetration creating a space between the two seals that can be pressurized. Compressed air is then supplied to a fitting on one seal and the space inside the sleeve is pressurized to approximately 15 psi.

In order to test the watertight bulkhead doors, a test frame must be installed around each door. At the time of the test, a reinforced steel box with rubber gasketing is clamped to the wall around the door. The fixture is then pressurized to approximately 15 psig to test for leak tightness.

Floor drainage of each vault is accomplished through a carbon steel pipe which penetrates the vault. When open, this pipe will drain the vault floor to a floor drain sump in the condensate pump room.

Equipment drainage from the vault coolers and the CCSW pump bedplates will also be routed to the vault floor drains.

As a means of preventing backflow from outside the vault in the event of a flood, a check valve and an air operated valve are installed in the 2" vault floor drain line 6'0" above the floor of the condensate pump room.

(continued)

BASES (continued)

The check valve is a 2" swing check designed for 125 psig service. The air operated valve is a control valve designed for a 50 psi differential pressure. The control valve will be in the normally open position in the energized condition and will close upon any one of the following:

1. Loss of air or power

2. High level (5'0") in the condensate pump room

Closure of the air operated valve on high water level in the condensate pump room is effected by use of a level switch set at water level of 5'0". Upon actuation, the switch will close the control valve and alarm in the control room.

The vault floor drain line check valve is pressurized to approximately 10 psig to check for seat leakage tightness.

The operator will also be aware of problems in the vaults or condensate pump room if the high level alarm on the equipment drain sump is not terminated in a reasonable amount of time. It must be pointed out that these alarms provide information to the operator but that operator action upon the above alarms is not a necessity for reactor safety since the other provisions provide adequate protection.

A system of level switches has been installed in the condenser pit to indicate and control flooding of the condenser area. The following switches are installed:

	Level	Function
1.	1'0" (1 switch)	Alarm, Panel High-Water-Condenser Pit
2.	3'0" (1 switch)	Alarm, Panel High-High Water Condenser Pit
3.	5'0" (2 redundant switch pairs)	Alarm and Circ. Water Pump Trip

Level (a) indicates water in the condenser pit from either the hotwell or the circulating water system. Level (b) is above the hotwell capacity and indicates a probable circulating water failure.

Should the switches at level (a) and (b) fail or the operator fail to trip the circulating water pumps on alarm at level (b), the actuation of either level switch pair at level (c) shall trip the circulating water pumps automatically and alarm in the control room. These redundant level switch pairs at level (c) are designed and installed to IEEE-279, “Criteria for Nuclear Power Plant

(continued)

BASES (continued)

Protection Systems." As the circulating water pumps are tripped, either manually or automatically, at level (c) of 5'0", the maximum water level reached in the condenser pit due to pumping will be at the 491'0" elevation (10' above condenser pit floor elevation 481'0"; 5' plus an additional 5' attributed to pump coastdown).

In order to prevent overheating of the CCSW pump motors, a vault cooler is supplied for each pump. Each vault cooler is designed to maintain the vault at a maximum 120°F temperature during operation of its respective pump. For example, if CCSW pump 2B-1501 starts, its cooler will also start and compensate for the heat supplied to the vault by the 2B pump motor keeping the vault at less than 120°F.

Each of the coolers is supplied with cooling water from its respective pump's discharge line. After the water has been passed through the cooler, it returns to its respective pump's suction line. In this way, the vault coolers are supplied with cooling water totally inside the vault. The cooling water quantity needed for each cooler is approximately 1% to 5% of the design flow of the pumps so that the recirculation of this small amount of heated water will not affect pump or cooler operation.

Operation of the fans and coolers is required during pump OPERABILITY testing and thus additional surveillance is not required.

Verification that access doors to each vault are closed, following entrance by personnel, is covered by station operating procedures.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.a 24/48 Volt DC System

BASES

Parameter	Unit 2	Unit 3	Basis
Ave. Electrolyte Temperature	65°F	65°F	Sizing calculations based on 65°F
Total battery voltage	24.2 Volts	24.2 Volts	Based on 11 cells per battery
Minimum battery voltage	20.9 Volts	20.9 Volts	Unit 2(3) sizing calculation

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.b Battery Monitoring and Maintenance

BASES

BACKGROUND This TLCO delineates the requirement of the Battery Monitoring and Maintenance Program is in accordance with Technical Specification (TS) 5.5.13. A discussion of these batteries and their OPERABILITY requirements is provided in the TS Bases for LCO 3.8.4, "DC Sources—Operating," LCO 3.8.5, "DC Sources—Shutdown," and LCO 3.8.6, “Battery Parameters.”

APPLICABLE SAFETY ANALYSES
The initial conditions of Design Basis Accident (DBA) and transient analyses in UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power subsystems provide normal and emergency DC electrical power for the diesel generators (DGs), emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit as discussed in the TS Bases for LCO 3.8.4 and LCO 3.8.5.

TLCO Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met. OPERABILITY of the batteries is defined by LCO 3.8.6.

APPLICABILITY The battery cell parameters are required solely for the support of the associated DC electrical power subsystem. Therefore, these cell parameters are only required when the associated DC electrical power subsystem is required to be OPERABLE. Refer to the Applicability discussions in TS Bases for LCO 3.8.4 and LCO 3.8.5.

(continued)

BASES

ACTIONS The ACTIONS Table is modified by a Note which indicates that separate Condition entry is allowed for each battery. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DC electrical power subsystem. Complying with the Required Actions for one inoperable DC electrical power subsystem may allow for continued operation, and subsequent battery parameters out of limits are governed by separate Condition entry and application of associated Required Actions.

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

With parameters of one or more cells in one or more batteries not within Table T3.8.b-1 limits (i.e., Category A limits not met or Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table T3.8.b-1, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met, and continued operation is permitted for a limited period.

The pilot cell(s) electrolyte level and float voltage are required to be verified to meet the Category C limits within 1 hour (Required Action A.1). This check provides a quick indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cell(s). One hour is considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Action A.2) provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is

(continued)

BASES

A.1, A.2, and A.3 (continued)

considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A and B limits. This periodic verification is consistent with the normal Frequency of pilot cell Surveillances.

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. Taking into consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable.

B.1 and B.2

When any battery parameter is outside the Table 3.8.b-1 Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not ensured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as any Required Actions of Condition A and associated Completion Time not met or average electrolyte temperature of representative cells ≤ 65°F, also are cause for immediately declaring the associated DC electrical power subsystem inoperable.

SURVEILLANCE REQUIREMENTS

TSR 3.8.b.1

This TSR verifies that Table T3.8.b-1 Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte level of pilot cells.

TSR 3.8.b.2

The quarterly inspection of specific gravity, voltage, and electrolyte level for each connected cell is consistent with IEEE-450 (Ref. 3). In addition, within 7 days of a battery

(continued)

BASES

TSR 3.8.b.2 (continued)

discharge (ie, less than 105 V for a 125 V battery and less than 210 V for a 250 V battery), or a battery overcharge (ie, greater than 150 V for a 125 V battery and greater than 300 V for a 250 V battery), the battery must be demonstrated to meet Table T3.8.b-1 Category B limits. Transients, such as motor starting transients, which may momentarily cause battery voltage to drop to less than 105 V or less than 210 V, as applicable, do not constitute a battery discharge provided the battery terminal voltage and float current return to pre-transient values. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge. The 7 day frequency is based on engineering judgement.

TSR 3.8.b.3

This Surveillance verification that the average temperature of representative cells is within limits is consistent with a recommendation of IEEE-450 (Ref. 3) that states that the temperature of electrolytes in representative cells should be determined on a quarterly basis. For this TSR, a check of 10% of the connected cells is considered representative.

Lower than normal temperatures act to inhibit or reduce battery capacity. This TSR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer's recommendations and the battery sizing calculation.

TSR 3.8.b.4

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each intercell and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

(continued)

BASES

TSR 3.8.b.4 (continued)
The connection resistance limits established for this TSR are within the values established by industry practice. The connection resistance limits of this TSR are related to the total connection resistance defined as the summation of all connection resistances in the battery string as follows:

- Positive cable lug to Post
- Negative cable lug to Post
- Intercell Post to Post
- Intertier Post to Post
- Interrack Post to Post

The Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

TSR 3.8.b.5

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this TSR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The one year frequency for the Surveillance is based on IEEE 450 “IEEE Recommended Practices for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Stationary Applications” and aligns with other recommended battery maintenance and surveillance requirements.

TSR 3.8.b.6 and TSR 3.8.b.7

Visual inspection and resistance measurements of intercell and terminal connections provides an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anti-corrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection.

(continued)

BASES

TSR 3.8.b.6 and TSR 3.8.b.7 (continued)

The removal of visible corrosion is a preventive maintenance TSR. The presence of visible corrosion does not necessarily represent a failure of this TSR, provided visible corrosion is removed during performance of this Surveillance.

The connection resistance limits are within the values established by industry practice. The connection resistance limits of this TSR are related to the total connection resistance derived by the connection resistance defined as the summation of all connection resistances in the battery string as follows:

- Positive cable lug to Post
- Negative cable lug to Post
- Intercell Post to Post
- Intertier Post to Post
- Interrack Post to Post

The one year frequency for the Surveillance is based on IEEE 450 “IEEE Recommended Practices for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Stationary Applications” and aligns with other recommended battery maintenance and surveillance requirements.

Table T3.8.b-1

This Table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designed pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer's recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra 1/4 inch allowance above the high water level indication for operating margin to account for temperature and charge effects. In addition to this allowance, footnote (a) to Table T3.8.b-1 permits the electrolyte level to be temporarily above the specified maximum level during and, for a limited time, following an equalizing charge (normally up to 3 days following the completion of an equalize charge to allow electrolyte stabilization), provided it is not overflowing.
(continued)

BASES

Table T3.8.b-1 (continued)

These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendation of IEEE-450 (Ref. 3), which states that prolonged operation of cells below 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.200 (0.015 below the manufacturer's fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C).

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation. Level correction will be in accordance with manufacturer's recommendations.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ 1.195 (0.020 below the manufacturer's fully charged, nominal specific gravity) with the average of all connected cells 1.205 (0.010 below the manufacturer's fully charged, nominal specific gravity).

(continued)

BASES

Table T3.8.b-1 (continued)

These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limit specified for electrolyte level (above the top of the plates and not overflowing) ensures that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limit for voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit on average specific gravity ≥ 1.195, is based on manufacturer's recommendations (0.020 below the manufacturer's recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no more than 0.020 below the average of all connected cells. This limit ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

The footnotes to Table T3.8.b-1 that apply to specific gravity are applicable to Category A, B, and C specific gravity. Footnote (b) requires the above mentioned correction for electrolyte level and temperature.

(continued)

BASES

Table T3.8.b-1 (continued)

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charging current is an acceptable alternative to specific gravity measurement for determining the state of charge of the designated pilot cell. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (c) allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within 7 days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than 7 days.

Footnote (d) allows the use of battery float current to replace specific gravity measurement. This also satisfies TS 3.8.6 SR 3.8.6.1 when battery float current is less than or equal to 2 amps on float charge. If the battery is on equalize the float current may be higher due to the higher voltage potential

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

3. IEEE Standard 450-1995, “IEEE Recommended Practice for Maintenance, Testing, and Replacment of Vented Lead-Acid Batteries for Stationary Applications.”

4. Calculation DRE 07-0021, “Determination of Intercell connection Resistance Limits”.

B 3.9 REFUELING OPERATIONS

B 3.9.a Communications

BASES

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant or potential changes in the facility status or core reactivity during CORE ALTERATIONS.

Core Operating Limits Report

For

Dresden Unit 2 Cycle 20

Revision 1

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GE14-P10DNAB418-16GZ-100T-145-T6-2646
GE14-P10DNAB389-18GZ-100T-145-T6-2650
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1. Terms and Definitions

APLHGR	Average planar linear heat generation rate
APRM	Average power range monitor
BOC	Beginning of cycle
DLO	Dual loop operation
ELLLA	Extended load line limit analysis
EOC	End of cycle
EOOS	Equipment out of service
EOR	End of rated conditions (i.e. cycle exposure at 100% power, 100% flow, all-rods-out)
FFTR	Final feedwater temperature reduction
FWHOOS	Feedwater heater out of service
GE14	GE14C fuel
GNF	Global Nuclear Fuel
ICF	Increased core flow
LHGR	Linear heat generation rate
LHGRFAC(F)	Flow dependent LHGR multiplier
LHGRFAC(P)	Power dependent LHGR multiplier
LPRM	Local power range monitor
MAPFAC(F)	Flow dependent MAPLHGR multiplier
MAPFAC(P)	Power dependent MAPLHGR multiplier
MAPLHGR	Maximum average planar linear heat generation rate
MCPR	Minimum critical power ratio
MCPR(F)	Flow dependent MCPR
MCPR(P)	Power dependent MCPR
MELLLA	Maximum extended load line limit analysis
MSIV	Main steam isolation valve
OLMCPR	Operating limit minimum critical power ratio
OPRM	Oscillation power range monitor
PBDA	Period based detection algorithm
PLUOOS	Power load unbalance out of service
PROOS	Pressure regulator out of service
RBM	Rod block monitor
RWCU	Reactor water clean-up
RWE	Rod withdrawal error
RPTOOS	Recirculation pump trip out of service
SLMCPR	Safety limit minimum critical power ratio
SLO	Single loop operation
SRVOOS	Safety-relief valve out of service
TBPOOS	Turbine bypass system out of service
TCV	Turbine control valve
TCVOOS	Turbine control valve out of service
TIP	Traversing incore probe
TSV	Turbine stop valve
TSVOOS	Turbine stop valve out of service

2. General Information

Power and flow dependent limits are listed for various power and flow levels. Linear interpolation is to be used to find intermediate values.

Rated core flow is 98 Mlb/hr. Operation up to 108% rated flow is analyzed for this cycle. Licensed rated thermal power is 2957 MWth.

MCPR(P) and MCPR(F) values are independent of scram time.

LHGRFAC(P) and LHGRFAC(F) values are independent of scram speed.

For thermal limit monitoring above 100% rated power or 100% rated core flow, the 100% rated power and the 100% core flow values, respectively, can be used unless otherwise indicated in the applicable table.

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power dependent MCPR limits. Any change to the OLMCPR values and/or the power dependent MCPR limits should be evaluated for potential impact on the OPRM PBDA trip settings.

3. Average Planar Linear Heat Generation Rate

The MAPLHGR values for the most limiting lattice (excluding natural uranium) of each fuel type as a function of average planar exposure is given in Table 3-1. During single loop operation, these limits are multiplied by the SLO multiplier listed in Table 3-2.

Table 3-1 MAPLHGR for bundle(s):
GE14-P10HNAB408-16GZ-100T-145-T6-2483
GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484
GE14-P10DNAB418-16GZ-100T-145-T6-2646
GE14-P10DNAB389-18GZ-100T-145-T6-2650
GE14-P10DNAB390-16GZ-100T-145-T6-2851
GE14-P10DNAB397-18GZ-100T-145-T6-2852
(References 3 and 17)

Avg. Planar Exposure (GWd/MT)	MAPLHGR (kW/ft)
0.00	11.68
16.00	11.68
55.12	8.02
63.50	6.97
70.00	4.36

Table 3-2 MAPLHGR SLO multiplier
(Reference 3)

Fuel Type	SLO Multiplier
GE14	0.77

4. Operating Limit Minimum Critical Power Ratio

4.1. Manual Flow Control MCPR Limits

The OLMCPR is determined for a given power and flow condition by evaluating the power-dependent MCPR and the flow-dependent MCPR and selecting the greater of the two.

4.1.1. Power-Dependent MCPR

For operation at less than 38.5% of rated core thermal power, the OLMCPR as a function of core thermal power (MCPR(P)) is shown in Table 4-3. For operation at greater than 38.5% of rated core thermal power, the OLMCPR as a function of core thermal power is determined by multiplying the applicable rated condition OLMCPR limit shown in Table 4-1 or 4-2 by the applicable MCPR multiplier K(P) given in Table 4-3. For operation at exactly 38.5% of rated core thermal power, the OLMCPR as a function of core thermal power is the maximum of either of the two aforementioned methods evaluated at 38.5% of rated core thermal power.

4.1.2. Flow-Dependent MCPR

Tables 4-4 and 4-5 give the MCPR(F) limit as a function of the flow based on the applicable plant condition. The MCPR(F) limit determined from these tables is the flow dependent OLMCPR.

4.2. Automatic Flow Control MCPR Limits

Automatic Flow Control MCPR Limits are not provided.

4.3. Scram Time

Option A and Option B refer to scram speeds.

Option A scram speed is the Improved Technical Specification scram speed. The core average scram speed insertion time for 20% insertion must be less than or equal to the Technical Specification scram speed to utilize Option A MCPR limits. Reload analyses performed by (GNF) for Cycle 20 Option A MCPR limits utilized a 20% core average insertion time of 0.900 seconds (Reference 7).

To utilize the MCPR limits for the Option B scram speed, the core average scram insertion time for 20% insertion must be less than or equal to 0.694 seconds (Reference 7). If the core average scram insertion time does not meet the Option B criteria, but is within the Option A criteria, the appropriate MCPR value may be determined from a linear interpolation between the Option A and B limits with standard mathematical rounding to two decimal places. When performing a linear interpolation to determine MCPR limits, ensure that the time used for Option A is 0.900 seconds.

4.4. Recirculation Pump Motor Generator Settings

Cycle 20 was analyzed with a maximum core flow runout of 105%; therefore the recirculation pump motor generator scoop tube mechanical and electrical stops must be set to maintain core flow less than 105% (102.9 Mlb/hr) for all runout events (Reference 11 and 21). This value is bounded by the analyses of References 3 and 4.

Table 4-1 MCPR Option A Based Operating Limits
(References 3 and 4)

EOOS Combination	Fuel Type	Cycle Exposure	
		< EOR - 1707 MWd/MT	≥ EOR - 1707 MWd/MT
BASE	GE14	1.56	1.67
BASE SLO	GE14	1.57	1.68
TBPOOS	GE14	1.74	1.76
TBPOOS SLO	GE14	1.75	1.77
TCV SLOW CLOSURE	GE14	1.60	1.67
TCV SLOW CLOSURE SLO	GE14	1.61	1.68
PLUOOS	GE14	1.64	1.67
PLUOOS SLO	GE14	1.65	1.68
TCV STUCK CLOSED	GE14	1.56	1.67
TCV STUCK CLOSED SLO	GE14	1.57	1.68

Table 4-2 MCPR Option B Based Operating Limits
(References 3 and 4)

EOOS Combination	Fuel Type	Cycle Exposure	
		< EOR - 1707 MWd/MT	≥ EOR - 1707 MWd/MT
BASE	GE14	1.45	1.50
BASE SLO	GE14	1.46	1.51
TBPOOS	GE14	1.57	1.59
TBPOOS SLO	GE14	1.58	1.60
TCV SLOW CLOSURE	GE14	1.45	1.50
TCV SLOW CLOSURE SLO	GE14	1.46	1.51
PLUOOS	GE14	1.47	1.50
PLUOOS SLO	GE14	1.48	1.51
TCV STUCK CLOSED	GE14	1.45	1.50
TCV STUCK CLOSED SLO	GE14	1.46	1.51

Table 4-3 MCPR(P) for GE Fuel
(Reference 4)

EOOS Combination	Core Flow (% Rated)	Core Thermal Power (% Rated)								
		0	25	38.5	38.5	45	60	70	70	100
		Operating Limit MCPR			Operating Limit MCPR Multiplier, K_P					
Base Case	≤60	3.19	2.61	2.29	1.32	1.28	1.15			1.00
	>60	3.81	3.01	2.59						
Base Case SLO	≤60	3.20	2.62	2.30	1.32	1.28	1.15			1.00
	>60	3.82	3.02	2.60						
TBPOOS	≤60	5.60	3.81	2.84	1.37	1.28	1.15			1.00
	>60	6.85	4.66	3.48						
TBPOOS SLO	≤60	5.61	3.82	2.85	1.37	1.28	1.15			1.00
	>60	6.86	4.67	3.49						
TCV Slow Closure	≤60	3.19	2.61	2.29	1.64		1.45	1.26	1.11	1.00
	>60	3.81	3.01	2.59						
TCV Slow Closure SLO	≤60	3.20	2.62	2.30	1.64		1.45	1.26	1.11	1.00
	>60	3.82	3.02	2.60						
PLUOOS	≤60	3.19	2.61	2.29	1.64		1.45	1.26	1.11	1.00
	>60	3.81	3.01	2.59						
PLUOOS SLO	≤60	3.20	2.62	2.30	1.64		1.45	1.26	1.11	1.00
	>60	3.82	3.02	2.60						
TCV Stuck Closed	≤60	3.19	2.61	2.29	1.32	1.28	1.15			1.00
	>60	3.81	3.01	2.59						
TCV Stuck Closed SLO	≤60	3.20	2.62	2.30	1.32	1.28	1.15			1.00
	>60	3.82	3.02	2.60						

Table 4-4 MCPR(F) Limits for GE Fuel
All EOOS except TCV Stuck Closed
DLO or SLO Operation
(Reference 9)

Flow (% rated)	MCPR(F) Limit
110.0	1.22
100.0	1.22
0.0	1.86

Table 4-5 MCPR(F) Limits for GE Fuel
with TCV Stuck Closed
DLO or SLO Operation
(Reference 9)

Flow (% rated)	MCPR(F) Limit
110.0	1.27
108.9	1.27
0.0	1.97

5. Linear Heat Generation Rate

The maximum Steady-State LHGR shall not exceed the limit of 13.4 KW/ft for the following fuel bundles (Reference 8).

GE14-P10HNAB408-16GZ-100T-145-T6-2483
GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484
GE14-P10DNAB418-16GZ-100T-145-T6-2646
GE14-P10DNAB389-18GZ-100T-145-T6-2650
GE14-P10DNAB390-16GZ-100T-145-T6-2851
GE14-P10DNAB397-18GZ-100T-145-T6-2852

The linear heat generation rate (LHGR) limit is the product of the exposure dependent LHGR limit from Tables 5-1 through 5-15 and the minimum of: the power dependent LHGR Factor, LHGRFAC(P), the flow dependent LHGR Factor, LHGRFAC(F), or the single loop operation (SLO) multiplication factor where applicable. The LHGRFAC(P) is determined from Table 5-16. The LHGRFAC(F) is determined from Table 5-17 or 5-18. The SLO multiplication factor can be found in Table 5-19.

Table 5-1: LHGR Limit for GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484
(Reference 5)

Lattices 5146, 5153, 5151, and 5156 Composite Limit kW/ft

5146: P10HNAL071-NOG-100T-T6-5146
5153: P10HNAL458-4G7.0/9G6.0-100T-T6-5153
5151: P10HNAL071-NOG-100T-V-T6-5151
5156: P10HNAL071-13GE-100T-V-T6-5156

UO2 Pellet Burnup (GWd/MTU)	Composite Limit (kW/ft)
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-2: LHGR Limit for: GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484, Lattice 5154
(Reference 5)

Lattice 5154 Composite Limit kW/ft P10HNAL453-4G7.0/9G6.0-100T-E-T6-5154	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1155	13.40
16.4055	13.3539
17.6796	13.1694
18.9383	13.0139
20.1833	12.8740
22.2507	12.5985
25.9250	12.1329
31.9779	11.3724
37.9426	10.6460
43.8088	9.9638
49.5729	9.3308
55.2416	8.7448
60.8333	8.1967
66.3754	6.6729
70.00	5.00

Table 5-3: LHGR Limit for: GE14-P10HNAB411-4G7.0/9G6.0-100T-145-T6-2484, Lattice 5155
(Reference 5)

Lattice 5155 Composite Limit kW/ft P10HNAL453-4G7.0/9G6.0-100T-V-T6-5155	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.0231	13.40
16.3045	13.1997
17.5697	12.8942
18.8192	12.7533
19.6777	12.6793
22.1391	12.3631
25.7931	11.9027
31.8166	11.1486
37.7552	10.4255
43.5974	9.7428
49.3382	9.1060
54.9830	8.5136
60.5487	7.9572
66.0623	6.6464
70.00	4.8953

Table 5-4: LHGR Limit for GE14-P10HNAB408-16GZ-100T-145-T6-2483
(Reference 5)

Lattices 5146, 5151, and 5152 Composite Limit kW/ft 5146: P10HNAL071-NOG-100T-T6-5146 5151: P10HNAL071-NOG-100T-V-T6-5151 5152: P10HNAL071-16GE-100T-V-T6-5152	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-5: LHGR Limit for GE14-P10HNAB408-16GZ-100T-145-T6-2483, Lattice 5147
(Reference 5)

Lattice 5147 Composite Limit kW/ft P10HNAL453-6G7.0/10G6.0-100T-T6-5147	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1029	13.40
16.3915	13.3555
17.8387	13.1910
19.0967	13.0480
20.3425	12.9063
22.8024	12.6267
26.4384	12.0410
32.4022	11.2075
38.2538	10.4682
42.7774	9.9945
48.5585	9.4147
54.2876	8.8630
59.9673	8.4016
66.2463	6.7325
70.00	5.00

Table 5-6: LHGR Limit for GE14-P10HNAB408-16GZ-100T-145-T6-2483, Lattice 5148
(Reference 5)

Lattice 5148 Composite Limit kW/ft P10HNAL453-4G7.0/10G6.0-100T-T6-5148	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1091	13.40
16.4011	13.3544
17.5754	13.2209
18.8411	13.0770
20.0941	12.9346
22.5665	12.6535
26.2178	12.2384
32.2045	11.4033
38.0774	10.5818
42.5631	9.9920
48.3669	9.3715
54.1169	8.7856
59.8150	8.2252
66.1438	6.7798
70.00	5.00

Table 5-7: LHGR Limit for GE14-P10HNAB408-16GZ-100T-145-T6-2483, Lattice 5149
(Reference 5)

Lattice 5149 Composite Limit kW/ft P10HNAL449-4G7.0/10G6.0-100T-E-T6-5149	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.3349
0.2995	13.3904
1.4867	13.40
2.9450	13.3896
4.3716	13.3335
5.7199	13.3052
7.0940	13.3190
8.3865	13.3625
9.7191	13.40
14.6797	13.40
15.9349	13.1347
17.1752	12.7239
18.4013	12.5086
19.6149	12.3467
22.0145	11.9721
25.5738	11.4887
31.4239	10.7236
36.1209	10.1987
41.9286	9.6294
47.6904	9.0846
53.4002	8.5554
59.0576	8.0299
64.6690	6.6179
68.5288	4.3146

Table 5-8: LHGR Limit for GE14-P10HNAB408-16GZ-100T-145-T6-2483, Lattice 5150
(Reference 5)

Lattice 5150 Composite Limit kW/ft P10HNAL449-4G7.0/10G6.0-100T-V-T6-5150	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.2336
0.3021	13.2853
1.4995	13.3007
2.9694	13.2651
4.3763	13.2094
5.7878	13.2221
7.1749	13.2302
8.5372	13.2351
9.7588	13.2502
10.9018	13.3145
12.2024	13.40
14.7592	13.40
16.0142	13.1015
17.2530	12.6893
18.4767	12.4795
19.6874	12.3406
22.0815	11.9671
25.6334	11.4807
31.4698	10.7081
36.2217	10.1947
42.0217	9.6164
47.7731	9.0632
53.4702	8.5267
59.1133	7.9955
64.7098	6.6069
68.6043	4.3130

Table 5-9: LHGR Limit for GE14-P10DNAB418-16GZ-100T-145-T6-2646
(Reference 14)

Lattices 5963, 5970, 5971, 5974 and 5975 Composite Limit kW/ft 5963: P10DNAL071-NOG-100T-T6-5963 5970: P10DNAL465-16G7.0-100T-T6-5970 5971: P10DNAL465-13G7.0/3G6.0-100T-T6-5971 5974: P10DNAL071-NOG-100T-V-T6-5974 5975: P10DNAL071-16GE-100T-V-T6-5975	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-10: LHGR Limit for: GE14-P10DNAB418-16GZ-100T-145-T6-2646, Lattice 5972
(Reference 14)

Lattice 5972 Composite Limit kW/ft P10DNAL461-12G7.0/3G6.0-100T-E-T6-5972	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0000	13.4000
15.9515	13.4000
17.2857	13.2538
18.1089	13.1602
19.4140	13.0119
20.7050	12.8651
23.2463	12.5762
26.9800	12.1517
33.0780	11.4585
39.0585	10.7786
44.9195	10.0506
50.6634	9.3499
56.3043	8.7427
61.8691	8.1854
67.3941	6.2027
70.0000	5.0000

Table 5-11: LHGR Limit for: GE14-P10DNAB418-16GZ-100T-145-T6-2646, Lattice 5973
(Reference 14)

Lattice 5973 Composite Limit kW/ft P10DNAL461-12G7.0/3G6.0-100T-V-T6-5973	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0000	13.4000
14.6537	13.4000
16.0077	13.3991
17.3409	13.2476
18.1982	13.1501
19.5019	13.0019
20.7905	12.8554
23.3251	12.5672
27.0482	12.1440
33.1306	11.4525
39.0945	10.7607
44.9367	9.9688
50.6595	9.2608
56.2772	8.6476
61.8172	8.1267
67.3169	6.2384
70.0000	5.0000

Table 5-12: LHGR Limit for GE14-P10DNAB389-18GZ-100T-145-T6-2650
(Reference 14)

Lattices 5963, 5994, 5995, 5998 and 5999 Composite Limit kW/ft 5963: P10DNAL071-NOG-100T-T6-5963 5994: P10DNAL430-17G8.0/1G3.0-100T-T6-5994 5995: P10DNAL431-9G8.0/8G6.0/1G3.0-100T-T6-5995 5998: P10DNAL071-NOG-100T-V-T6-5998 5999: P10DNAL071-18GE-100T-V-T6-5999	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-13: LHGR Limit for GE14-P10DNAB389-18GZ-100T-145-T6-2650, Lattice 5996
(Reference 14)

Lattice 5996 Composite Limit kW/ft P10DNAL430-7G8.0/8G6.0-100T-E-T6-5996	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0000	13.4000
14.8906	13.4000
16.2580	13.3707
17.6015	13.2179
18.9215	13.0679
19.4423	13.0087
20.7453	12.8605
23.3142	12.5685
27.0881	12.1395
33.2434	11.4389
39.2913	10.5936
45.2308	9.8060
51.0564	9.1014
56.7750	8.4943
61.9432	8.0319
67.9800	5.9323
70.0000	5.0000

Table 5-14: LHGR Limit for GE14-P10DNAB389-18GZ-100T-145-T6-2650, Lattice 5997
(Reference 14)

Lattice 5997 Composite Limit kW/ft P10DNAL430-7G8.0/8G6.0-100T-V-T6-5997	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0000	13.4000
14.9485	13.4000
16.3156	13.3641
17.6577	13.1592
18.9752	12.9330
19.3601	12.9427
20.6567	12.8235
23.2117	12.5211
26.9637	12.0810
33.0874	11.3527
39.1088	10.5071
45.0238	9.6894
50.6192	8.9710
56.3453	8.3308
62.0012	7.7843
67.6125	6.1019
70.0000	5.0000

Table 5-15: LHGR Limit for GE14-P10DNAB397-18GZ-100T-145-T6-2852 and GE14-P10DNAB390-16GZ-100T-145-T6-2851, all Lattices
(Reference 16)

Composite Limit (kW/ft), all Lattices	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-16 LHGRFAC(P) for GE Fuel
(Reference 4)

EOOS Combination	Core Flow (% Rated)	Core Thermal Power (% Rated)							
		0	25	38.5	38.5	70	70	80	100
		LHGRFAC(P) Multiplier							
Base Case	All	0.50	0.56	0.59	0.68			0.86	1.00
Base Case SLO	All	0.50	0.56	0.59	0.68			0.86	1.00
TBPOOS	≤60	0.22	0.39	0.48	0.54				1.00
	>60	0.33	0.39	0.42					
TBPOOS SLO	≤60	0.22	0.39	0.48	0.54				1.00
	>60	0.33	0.39	0.42					
TCV Slow Closure	All	0.54	0.54		0.54	0.73	0.78		1.00
TCV Slow Closure SLO	All	0.54	0.54		0.54	0.73	0.78		1.00
PLUOOS	All	0.54	0.54		0.54	0.73	0.78		1.00
PLUOOS SLO	All	0.54	0.54		0.54	0.73	0.78		1.00
TCV Stuck Closed	All	0.50	0.56	0.59	0.68			0.86	1.00
TCV Stuck Closed SLO	All	0.50	0.56	0.59	0.68			0.86	1.00

Table 5-17 LHGRFAC(F) Multipliers for GE Fuel
All EOOS except TCV Stuck Closed
DLO or SLO Operation
(Reference 4)

Flow (% rated)	LHGRFAC(F) Multiplier
110.0	1.00
100.0	1.00
80.0	1.00
50.0	0.77
40.0	0.64
30.0	0.55
0.0	0.28

Table 5-18 LHGRFAC(F) Multipliers for GE Fuel
with TCV Stuck Closed
DLO or SLO Operation
(Reference 4)

Flow (% rated)	LHGRFAC(F) Multiplier
110.0	1.00
100.0	1.00
98.3	1.00
80.0	0.86
50.0	0.63
40.0	0.50
30.0	0.41
0.0	0.14

Table 5-19 LHGR SLO Multiplier
(Reference 3)

Fuel Type	SLO Multiplier
GE14	0.77

6. Rod Block Monitor

The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown below (Reference 6):

ROD BLOCK MONITOR UPSCALE TRIP FUNCTION	ALLOWABLE VALUE
Two Recirculation Loop Operation	0.65 W_d + 55%
Single Recirculation Loop Operation	0.65 W_d + 51%

The setpoint may be lower/higher and will still comply with the rod withdrawal error (RWE) analysis because RWE is analyzed unblocked.

W_d – percent of recirculation loop drive flow required to produce a rated core flow of 98.0 Mlb/hr.

7. Stability Protection Setpoints

The OPRM PBDA Trip Settings (Reference 3):

PBDA Trip Amplitude Setpoint (Sp)	Corresponding Maximum Confirmation Count Setpoint (Np)
≤ 1.13	≤ 15

The PBDA is the only OPRM setting credited in the safety analysis as documented in the licensing basis for the OPRM system.

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power dependent MCPR limits. Any change to the OLMCPR values and/or the power dependent MCPR limits should be evaluated for potential impact on the OPRM PBDA trip settings.

The OPRM PBDA trip settings are applicable when the OPRM system is declared operable, and the associated Technical Specifications are implemented.

8. Modes of Operation

The allowed modes of operation with combinations of equipment out-of-service are as described below:

Equipment Out of Service Options[1, 2, 3, 5, 7, 8, 9, 10]	Standard	ICF	MELLLA	Coastdown[4]
Base Case	Yes	Yes	Yes	Yes
Base Case SLO	Yes	No	Yes	Yes
TBPOOS	Yes	Yes	Yes	Yes
TBPOOS SLO	Yes	No	Yes	Yes
TCV Slow Closure	Yes	Yes	Yes	Yes
TCV Slow Closure SLO	Yes	No	Yes	Yes
PLUOOS	Yes	Yes	Yes	Yes
PLUOOS SLO	Yes	No	Yes	Yes
TCV Stuck Closed[6]	Yes	Yes	Yes	Yes
TCV Stuck Closed SLO[6]	Yes	No	Yes	Yes

1. Each OOS Option may be combined with up to 18 TIP channels OOS (provided the requirements for utilizing SUBTIP methodology are met as clarified in Reference 18) with all TIPS available at startup from a refueling outage and up to 50% of the LPRMs OOS with an LPRM calibration frequency of 2500 Effective Full Power Hours (EFPH) (2000 EFPH +25%).
2. A single MSIV may be taken OOS (shut) under any and all OOS Options, so long as core thermal power is maintained ≤75% of 2957 MWth (Reference 4).
3. Each EOOS option except TBPOOS requires the opening profile for the Turbine Bypass Valves provided in Reference 7 to be met. These conditions also support 1 Turbine Bypass Valve OOS (TBPOOS) if the assumed opening profile (Reference 7) for the remaining 8 Turbine Bypass Valves is met. If the opening profile is **not** met with 8 or 9 operating Turbine Bypass Valves, or if two Turbine Bypass Valves are OOS, utilize the TBPOOS condition.
4. Coastdown operation is defined as any cycle exposure beyond the full power, all rods out condition with plant power slowly lowering to a lesser value while core flow is held constant (Reference 10 Section 4.3.1.2.8). Up to a 15% overpower is analyzed per Reference 4.
5. For operation with a pressure regulator out-of-service (PROOS), the TCV Slow Closure limits should be applied. For operation with a PROOS and TCV Slow Closure, the TCV slow closure limits are applicable. For operation with a PROOS and PLUOOS, the PLUOOS limits are applicable (References 12 and 19).
6. Operation with one Turbine Stop Valve out-of-service (TSVOOS) is allowed as evaluated in Reference 15. Combination of one TSVOOS and TCV Stuck Closed is not allowed.
7. The cycle specific stability analysis may impose restrictions on the Power-to-flow map and/or restrict the applicable temperature for feedwater temperature reduction (FWTR).
8. Each EOOS option allows operation with up to a 120°F reduction in feedwater temperature (final feedwater temperature reduction or feedwater heaters OOS) throughout the cycle and is subject to the restrictions in Reference 13.
9. Asymmetric inlet enthalpy distribution produced by RWCU injection does not have a substantial impact on thermal margins; therefore no adjustments to the thermal margins are required (Reference 20).
10. For operation with a Pressure Regulator Out-Of-Service (PROOS) and TCV Stuck Closed, apply the more restrictive of the two limits, as applicable, for the TCV Stuck Closed flow dependent limits provided in Tables 4-5 and 5-18 and the TCV Slow Closure or PLUOOS power dependent limits provided in Tables 4-3 and 5-16 (Reference 4).

9. Methodology

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

1. NEDE-24011-P-A-14, June 2000 and the U.S. Supplement NEDE-24011-P-A-US, June 2000, “General Electric Standard Application for Reactor Fuel”.

2. Commonwealth Edison Company Topical Report NFSR-0091, “Benchmark of CASMO/ MICROBURN BWR Nuclear Design Methods,” Revision 0 and Supplements on Neutronic Licensing Analysis (Supplement 1) and La Salle County Unit 2 benchmarking (Supplement 2), December 1991, March 1992, and May 1992, respectively.

3. NEDO-32465-A, “BWR Owner’s Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications”, August 1996.

10. References

1. Exelon Generation Company, LLC, Docket No. 50-237, Dresden Nuclear Power Station, Unit 2 Renewed Facility Operating License, License No. DPR-19.
2. Letter from D. M. Crutchfield to All Power Reactor Licensees and Applicants, Generic Letter 88-16; Concerning the Removal of Cycle-Specific Parameter Limits from Tech Specs, October 3, 1988.
3. GNF Document, 0000-0035-6363-SRLR, Rev. 1, ”Supplemental Reload Licensing Report for Dresden 2 Reload 19 Cycle 20,” October 2005 (TODI NF0500248, Revision 0).
4. GE Document, GE-NE-J11-03912-00-01-R3, “Dresden 2 and 3 Quad Cities 1 and 2 Equipment Out-Of-Service and Legacy Fuel Transient Analysis,” September 2005 (TODI NFM0100091 Sequence 03).
5. GNF Letter, FRL02EX-013, “Quad Cities Unit 1 Cycle 18 and Dresden Unit 3 Cycle 18 Pellet Based LHGR Limits”, September 30, 2002.
6. GE DRF C51-00217-01, “Instrument Setpoint Calculation Nuclear Instrumentation, Rod Block Monitor, Commonwealth Edison Company, Dresden 2 & 3,” December 15, 1999.
7. Dresden TODI Ops Ltr: 05-23, “OPL-3 Parameters for Dresden Unit 2 Cycle 20 Transient Analysis,” July 15, 2005.
8. GE Design Basis Document, DB-0012.03, Revision 1, “Fuel-Rod Thermal-Mechanical Performance Limits for GE14C,” May 2005.
9. NF Calculation, BNDG:02-001, Revision 0, ”Determination of Generic $MCPR_F$ Limits,” May 17, 2002.
10. GE Document, NEDE-24011-P-A-14, “General Electric Standard Application for Reactor Fuel,” June 2000.
11. Nuclear Fuels TODI NF0500098, Revision 1, “Dresden 2 Cycle 20 FRED Form,” July 5, 2005.
12. Nuclear Fuels Letter, NF-MW:02-0413, “Approval of GE Evaluation of Dresden and Quad Cities Pressure Regulator Out of Service Analysis,” October 22, 2002.
13. Nuclear Fuels Letter, NF-MW:02-0081, “Approval of GE Evaluation of Dresden and Quad Cities Extended Final Feedwater Temperature Reduction,” August 27, 2002.
14. GNF Letter, FRL-EXN-EE2-04-002, “Quad Cities Unit 2 Cycle 18 Fresh Fuel Peak Pellet LHGR Limits,” January 16, 2004.
15. Nuclear Fuels Letter, NF-MW:03-069, “Dresden and Quad Cities Operation with One TSV OOS,” July 28, 2003.
16. GNF Letter, MJM-EXN-EB2-05-108, “TSD B263: Dresden Unit 2 C20 LHGR Limits and R-Factors Data”, October 7, 2005.
17. GNF Document 0000-0016-1235-SRLR, Rev. 0, ”Supplemental Reload Licensing Report for Dresden Unit 2 Reload 18 Cycle 19”, September 2003 (TODI NF0300089, Revision 0).
18. FANP Letter, NJC:04:031/FAB04-496, “Startup with TIP Equipment Out of Service,” April 20, 2004 (EC 348897-00)
19. GE Document, GE-NE-0000-0040-2860-R0, “Dresden Units 2 and 3 and Quad Cities Units 1 and 2 Offrated Analyses Below the PLU Power Level”, July 2005.
20. GE Document, GE-NE-0000-0036-4343-R0, “Evaluation of Dresden Asymmetric Reactor Water Cleanup Flow Injection”, August 2005.
21. GE Document, GE-NE-0000-0044-3030-R0, “Evaluation of New Maximum Combined Flow Limiter Setting of 107% for Dresden 2”, October 2005.

Core Operating Limits Report

for

Dresden Unit 3 Cycle 20

Revision 0

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Opt2-3.88-10G8.00/6.00-6GZ8.00-2.00G6.00
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1. Terms and Definitions

APLHGR	Average planar linear heat generation rate
APRM	Average power range monitor
BOC	Beginning of cycle
DLO	Dual loop operation
EFPH	Effective full power hours
ELLLA	Extended load line limit analysis
EOC	End of cycle
EOOS	Equipment out of service
FFTR	Final feedwater temperature reduction
FWHOOS	Feedwater heater out of service
FW	Feedwater
GE14	GE14C fuel
GNF	Global Nuclear Fuel
ICF	Increased core flow
ISS	Intermediate scram speed
LHGR	Linear heat generation rate
LHGRFAC(F)	Flow dependent LHGR multiplier
LHGRFAC(P)	Power dependent LHGR multiplier
LPRM	Local power range monitor
MAPLHGR	Maximum average planar linear heat generation rate
MELLLA	Maximum extended load line limit analysis
MCPR	Minimum critical power ratio
MCPR(F)	Flow dependent MCPR
MCPR(P)	Power dependent MCPR
MSIV	Main steam isolation valve
NFWT	Nominal feedwater temperature
NSS	Nominal scram speed
OLMCPR	Operating limit minimum critical power ratio
OPRM	Oscillation power range monitor
PBDA	Period based detection algorithm
PLUOOS	Power load unbalance out of service
PROOS	Pressure regulator out of service
RBM	Rod block monitor
RFWT	Reduced feedwater temperature
RWE	Rod withdrawal error
RWCU	Reactor water cleanup
SLMCPR	Safety limit minimum critical power ratio
SLO	Single loop operation
SRVOOS	Safety-relief valve out of service
TBPOOS	Turbine bypass valve out of service
TCV	Turbine control valve
TIP	Traversing incore probe
TSSS	Technical Specification scram speed
TSV	Turbine stop valve
TSVOOS	Turbine stop valve out of service

2. General Information

Power and flow dependent limits are listed for various power and flow levels. Linear interpolation is to be used to find intermediate values.

Rated core flow is 98 Mlb/hr. Operation up to 108% rated flow is analyzed for this cycle. Licensed rated thermal power is 2957 MWth.

MCPR(P) and MCPR(F) values are independent of scram time.

LHGRFAC(P) and LHGRFAC(F) values are independent of scram time.

For thermal limit monitoring above 100% rated power or 100% rated core flow, the 100% rated power and the 100% core flow thermal limit values, respectively, should be used unless otherwise indicated in the applicable table.

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power dependent MCPR limits. Any change to the OLMCPR values and/or the power dependent MCPR limits should be evaluated for potential impact on the OPRM PBDA trip settings.

For both Base and EOOS DLO/SLO conditions, for operation at NFWT, the OLMCPR limit is applicable to a variation of +10°F/-30°F in feedwater temperature. For operation outside of NFWT, a feedwater temperature reduction of up to 120°F (RFWT) is also supported at rated conditions for Base and EOOS DLO/SLO conditions for cycle operation through EOC. This includes, but is not limited to, Feedwater Heaters OOS (FWHOOS) and Final Feedwater Temperature Reduction (FFTR). At off-rated conditions, the allowed feedwater temperature reduction is defined in Figure 9.2 of Reference 3. For a feedwater temperature reduction of between 30°F and the allowable value (the “Minimum Feedwater Temperature Curve” as defined in Figure 9.2 of Reference 3), the RFWT limits should be applied.

3. Average Planar Linear Heat Generation Rate

The MAPLHGR values for the most limiting lattice (excluding natural uranium) of each fuel type as a function of average planar exposure are given in Tables 3-1 and 3-2. During single loop operation, these limits are multiplied by the SLO multiplier listed in Table 3-3.

Table 3-1 MAPLHGR for bundle(s):
GE14-P10DNAB411-4G7.0/9G6.0-100T-145-T6-2553
GE14-P10DNAB408-16GZ-100T-145-T6-2554
GE14-P10DNAB396-18GZ-100T-145-T6-2808
GE14-P10DNAB406-18GZ-100T-145-T6-2809
(References 5 and 6)

Average Planar Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.00	11.68
16.00	11.68
55.12	8.01
63.50	6.97
70.00	4.36

Table 3-2 MAPLHGR for bundle(s):
Opt2-3.90-10G8.00/6.00-4GZ8.00-2.00G6.00
Opt2-3.88-10G8.00/6.00-6GZ8.00-2.00G6.00
Opt2-3.93-14GZ6.00
(Reference 3)

Average Planar Exposure (GWd/MTU)	MAPLHGR (kW/ft)
0.00	8.671
7.50	8.250
17.50	8.250
24.00	8.651
58.00	8.651
72.00	7.128

Table 3-3 MAPLHGR SLO multiplier for GE and Westinghouse Fuel
(References 3 and 6)

Fuel Type	SLO Multiplier
Optima2	0.86
GE14	0.77

4. Operating Limit Minimum Critical Power Ratio

4.1. Manual Flow Control MCPR Limits

The OLMCPR is determined for a given power and flow condition by evaluating the power-dependent MCPR and the flow-dependent MCPR and selecting the greater of the two.

4.1.1. Power-Dependent MCPR

For operation at less than 38.5% core thermal power, the OLMCPR as a function of core thermal power is shown in Tables 4-7 and 4-8. For operation at greater than 38.5% core thermal power, the OLMCPR as a function of core thermal power is determined by multiplying the applicable rated condition OLMCPR limit shown in Tables 4-2 through 4-6 by the applicable MCPR multiplier K(P) given in Tables 4-7 and 4-8. For operation at exactly 38.5% core thermal power, the OLMCPR as a function of core thermal power is the higher of either of the two methods evaluated at 38.5% core thermal power.

4.1.2. Flow-Dependent MCPR

Tables 4-9 and 4-10 give the MCPR(F) limit as a function of the flow based on the applicable plant condition. The MCPR(F) limit determined from these tables is the flow dependent OLMCPR.

4.2. Automatic Flow Control MCPR Limits

Automatic Flow Control MCPR Limits are not provided.

4.3. Scram Time

TSSS, ISS, and NSS refer to scram speeds. TSSS is the Technical Specification Scram Speed, ISS is the Intermediate Scram Speed, and NSS is the Nominal Scram Speed. The scram time values are shown in Table 4-1.

The NSS scram times are based on a conservative interpretation of scram time surveillance measurements. In the event that plant surveillance shows these scram insertion times to be exceeded, the MCPR limits are to default to the values which correspond to the ISS scram time. The ISS times have been chosen to provide an intermediate value between the NSS and TSSS, but the interpolation between these values is not supported by Westinghouse methodology. In the event that the ISS times are exceeded, MCPR limits for the TSSS apply.

Table 4-1 Scram Times
(References 3 and 21)

Control Rod Insertion Fraction (%)	TSSS (seconds)	ISS (seconds)	NSS (seconds)
5	0.48	0.360	0.324
20	0.89	0.720	0.700
50	1.98	1.580	1.510
90	3.44	2.740	2.635

4.4. Recirculation Pump Motor Generator Settings

Cycle 20 was analyzed with a maximum core flow runout of 110%; therefore the recirculation pump motor generator scoop tube mechanical and electrical stops must be set to maintain core flow less than 110% (107.8 Mlb/hr) for all runout events (Reference 17). This value is consistent with the analyses of Reference 3.

Table 4-2 MCPR TSSS Based Operating Limits – NFWT and RFWT
(Reference 3)

EOOS Combination	Fuel Type	Cycle Exposure	
		≤ 10651 MWd/MT	> 10651 MWd/MT
BASE	Optima2	1.67	1.69
	GE14	1.73	1.70
BASE SLO	Optima2	1.70	1.73
	GE14	1.76	1.73
PLUOOS	Optima2	1.77	1.81
	GE14	1.84	1.80
PLUOOS SLO	Optima2	1.81	1.85
	GE14	1.87	1.83
TBPOOS	Optima2	1.83	1.88
	GE14	1.89	1.86
TBPOOS SLO	Optima2	1.87	1.92
	GE14	1.92	1.89
TCV SLOW CLOSURE	Optima2	1.67	1.69
	GE14	1.73	1.70
TCV SLOW CLOSURE SLO	Optima2	1.70	1.73
	GE14	1.76	1.73
TCV STUCK CLOSED	Optima2	1.67	1.69
	GE14	1.73	1.70
TCV STUCK CLOSED SLO	Optima2	1.70	1.73
	GE14	1.76	1.73

Table 4-3 MCPR ISS Based Operating Limits – NFWT
(Reference 3)

EOOS Combination	Fuel Type	Cycle Exposure	
		≤ 10651 MWd/MT	> 10651 MWd/MT
BASE	Optima2	1.54	1.53
	GE14	1.70	1.70
BASE SLO	Optima2	1.57	1.56
	GE14	1.73	1.73
PLUOOS	Optima2	1.59	1.64
	GE14	1.70	1.70
PLUOOS SLO	Optima2	1.62	1.67
	GE14	1.73	1.73
TBPOOS	Optima2	1.64	1.68
	GE14	1.71	1.70
TBPOOS SLO	Optima2	1.67	1.71
	GE14	1.74	1.73
TCV SLOW CLOSURE	Optima2	1.54	1.53
	GE14	1.70	1.70
TCV SLOW CLOSURE SLO	Optima2	1.57	1.56
	GE14	1.73	1.73
TCV STUCK CLOSED	Optima2	1.54	1.53
	GE14	1.70	1.70
TCV STUCK CLOSED SLO	Optima2	1.57	1.56
	GE14	1.73	1.73

Table 4-4 MCPR ISS Based Operating Limits – RFWT
(Reference 3)

EOOS Combination	Fuel Type	Cycle Exposure	
		≤ 10651 MWd/MT	> 10651 MWd/MT
BASE	Optima2	1.58	1.58
	GE14	1.70	1.70
BASE SLO	Optima2	1.61	1.61
	GE14	1.73	1.73
PLUOOS	Optima2	1.59	1.64
	GE14	1.70	1.70
PLUOOS SLO	Optima2	1.62	1.67
	GE14	1.73	1.73
TBPOOS	Optima2	1.67	1.69
	GE14	1.73	1.71
TBPOOS SLO	Optima2	1.70	1.73
	GE14	1.76	1.74
TCV SLOW CLOSURE	Optima2	1.58	1.58
	GE14	1.70	1.70
TCV SLOW CLOSURE SLO	Optima2	1.61	1.61
	GE14	1.73	1.73
TCV STUCK CLOSED	Optima2	1.58	1.58
	GE14	1.70	1.70
TCV STUCK CLOSED SLO	Optima2	1.61	1.61
	GE14	1.73	1.73

Table 4-5 MCPR NSS Based Operating Limits – NFWT
(Reference 3)

EOOS Combination	Fuel Type	Cycle Exposure	
		≤ 10651 MWd/MT	> 10651 MWd/MT
BASE	Optima2	1.52	1.52
	GE14	1.70	1.70
BASE SLO	Optima2	1.55	1.55
	GE14	1.73	1.73
PLUOOS	Optima2	1.58	1.62
	GE14	1.70	1.70
PLUOOS SLO	Optima2	1.61	1.65
	GE14	1.73	1.73
TBPOOS	Optima2	1.63	1.66
	GE14	1.70	1.70
TBPOOS SLO	Optima2	1.66	1.69
	GE14	1.73	1.73
TCV SLOW CLOSURE	Optima2	1.52	1.52
	GE14	1.70	1.70
TCV SLOW CLOSURE SLO	Optima2	1.55	1.55
	GE14	1.73	1.73
TCV STUCK CLOSED	Optima2	1.52	1.52
	GE14	1.70	1.70
TCV STUCK CLOSED SLO	Optima2	1.55	1.55
	GE14	1.73	1.73

Table 4-6 MCPR NSS Based Operating Limits – RFWT
(Reference 3)

EOOS Combination	Fuel Type	Cycle Exposure	
		≤ 10651 MWd/MT	> 10651 MWd/MT
BASE	Optima2	1.57	1.57
	GE14	1.70	1.70
BASE SLO	Optima2	1.60	1.60
	GE14	1.73	1.73
PLUOOS	Optima2	1.58	1.62
	GE14	1.70	1.70
PLUOOS SLO	Optima2	1.61	1.65
	GE14	1.73	1.73
TBPOOS	Optima2	1.66	1.67
	GE14	1.72	1.70
TBPOOS SLO	Optima2	1.69	1.70
	GE14	1.75	1.73
TCV SLOW CLOSURE	Optima2	1.57	1.57
	GE14	1.70	1.70
TCV SLOW CLOSURE SLO	Optima2	1.60	1.60
	GE14	1.73	1.73
TCV STUCK CLOSED	Optima2	1.57	1.57
	GE14	1.70	1.70
TCV STUCK CLOSED SLO	Optima2	1.60	1.60
	GE14	1.73	1.73

Table 4-7 MCPR(P) for GE and Westinghouse Fuel – NFWT
(Reference 3)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)							
		0	25	38.5	38.5	50	60	80	100
		Operating Limit MCPR			Operating Limit MCPR Multiplier, Kp				
Base	≤ 60	2.53	2.34	2.25	1.28	1.19	1.14	1.06	1.00
	> 60	2.80	2.59	2.48					
Base SLO	≤ 60	2.58	2.39	2.30	1.28	1.19	1.14	1.06	1.00
	> 60	2.85	2.64	2.53					
PLUOOS	≤ 60	2.53	2.34	2.25	1.52	1.46	1.31	1.10	1.00
	> 60	2.80	2.59	2.48					
PLUOOS SLO	≤ 60	2.58	2.39	2.30	1.52	1.46	1.31	1.10	1.00
	> 60	2.85	2.64	2.53					
TBPOOS	≤ 60	3.68	2.95	2.56	1.28	1.19	1.14	1.06	1.00
	> 60	3.97	3.28	2.90					
TBPOOS SLO	≤ 60	3.75	3.01	2.61	1.28	1.19	1.14	1.06	1.00
	> 60	4.05	3.34	2.96					
TCV Slow Closure	≤ 60	2.53	2.34	2.25	1.64	1.57	1.47	1.11	1.00
	> 60	2.80	2.59	2.48					
TCV Slow Closure SLO	≤ 60	2.58	2.39	2.30	1.64	1.57	1.47	1.11	1.00
	> 60	2.85	2.64	2.53					
TCV Stuck Closed	≤ 60	2.53	2.34	2.25	1.28	1.19	1.14	1.06	1.00
	> 60	2.80	2.59	2.48					
TCV Stuck Closed SLO	≤ 60	2.58	2.39	2.30	1.28	1.19	1.14	1.06	1.00
	> 60	2.85	2.64	2.53					

Table 4-8 MCPR(P) for GE and Westinghouse Fuel – RFWT
(Reference 3)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)							
		0	25	38.5	38.5	50	60	80	100
		Operating Limit MCPR			Operating Limit MCPR Multiplier, Kp				
Base	≤ 60	2.70	2.49	2.38	1.28	1.19	1.14	1.06	1.00
	> 60	3.00	2.77	2.65					
Base SLO	≤ 60	2.75	2.54	2.43	1.28	1.19	1.14	1.06	1.00
	> 60	3.06	2.82	2.70					
PLUOOS	≤ 60	2.70	2.49	2.38	1.52	1.46	1.31	1.10	1.00
	> 60	3.00	2.77	2.65					
PLUOOS SLO	≤ 60	2.75	2.54	2.43	1.52	1.46	1.31	1.10	1.00
	> 60	3.06	2.82	2.70					
TBPOOS	≤ 60	3.99	3.17	2.73	1.28	1.19	1.14	1.06	1.00
	> 60	4.31	3.53	3.12					
TBPOOS SLO	≤ 60	4.07	3.23	2.78	1.28	1.19	1.14	1.06	1.00
	> 60	4.39	3.60	3.18					
TCV Slow Closure	≤ 60	2.70	2.49	2.38	1.64	1.57	1.47	1.11	1.00
	> 60	3.00	2.77	2.65					
TCV Slow Closure SLO	≤ 60	2.75	2.54	2.43	1.64	1.57	1.47	1.11	1.00
	> 60	3.06	2.82	2.70					
TCV Stuck Closed	≤ 60	2.70	2.49	2.38	1.28	1.19	1.14	1.06	1.00
	> 60	3.00	2.77	2.65					
TCV Stuck Closed SLO	≤ 60	2.75	2.54	2.43	1.28	1.19	1.14	1.06	1.00
	> 60	3.06	2.82	2.70					

Table 4-9 MCPR(F) Limits for GE Fuel, DLO or SLO Operation
(Reference 3)

Flow (% rated)	MCPR(F) Limit
110.0	1.26
100.0	1.26
80.0	1.44
60.0	1.64
40.0	1.81
20.0	2.01
0.0	2.21

Table 4-10 MCPR(F) Limits for Westinghouse Fuel, DLO or SLO Operation
(Reference 3)

Flow (% rated)	MCPR(F) Limit
110.0	1.17
100.0	1.17
80.0	1.34
60.0	1.49
40.0	1.56
20.0	1.63
0.00	1.70

5. Linear Heat Generation Rate

The maximum LHGR shall not exceed the zero exposure limit of 13.4 (kW/ft) for the following fuel bundles (Reference 10):

GE14-P10DNAB411-4G7.0/9G6.0-100T-145-T6-2553
GE14-P10DNAB408-16GZ-100T-145-T6-2554
GE14-P10DNAB396-18GZ-100T-145-T6-2808
GE14-P10DNAB406-18GZ-100T-145-T6-2809

The thermal mechanical operating limit at rated conditions for the Optima2 fuel is established in terms of the maximum LHGR given in Table 5-16 as a function of rod nodal (pellet) exposure. The limit applies to all Optima2 bundle designs.

The linear heat generation rate (LHGR) limit is the product of the exposure dependent LHGR limit from Tables 5-1 through 5-16 and the minimum of: the power dependent LHGR Factor, LHGRFAC(P), or the flow dependent LHGR Factor, LHGRFAC(F). The LHGRFAC(P) is determined from Table 5-17, 5-18, or 5-19. The LHGRFAC(F) is determined from Table 5-20, 5-21, 5-22, 5-23, or 5-24.

Table 5-1 LHGR Limit for GE14-P10DNAB411-4G7.0/9G6.0-100T-145-T6-2553
(Reference 12)

Lattices 5500, 5501, 5504, and 5505 Composite Limit kW/ft

5500: P10DNAL071-NOG-100T-T6-5500
5501: P10DNAL458-4G7.0/9G6.0-100T-T6-5501
5504: P10DNAL071-NOG-100T-V-T6-5504
5505: P10DNAL071-13GE-100T-V-T6-5505

UO2 Pellet Burnup (GWd/MTU)	Composite Limit (kW/ft)
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-2 LHGR Limit for GE14-P10DNAB411-4G7.0/9G6.0-100T-145-T6-2553, Lattice 5502
(Reference 12)

Lattice 5502 Composite Limit kW/ft P10DNAL453-4G7.0/9G6.0-100T-E-T6-5502	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1155	13.40
16.4055	13.3539
17.6796	13.1694
18.9383	13.0139
20.1833	12.8740
22.2507	12.5985
25.9250	12.1329
31.9779	11.3724
37.9426	10.6460
43.8088	9.9638
49.5729	9.3308
55.2416	8.7448
60.8333	8.1967
66.3754	6.6729
70.00	5.00

Table 5-3 LHGR Limit for GE14-P10DNAB411-4G7.0/9G6.0-100T-145-T6-2553, Lattice 5503
(Reference 12)

Lattice 5503 Composite Limit kW/ft P10DNAL453-4G7.0/9G6.0-100T-V-T6-5503	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.0231	13.40
16.3045	13.1997
17.5697	12.8942
18.8192	12.7533
19.6777	12.6793
22.1391	12.3631
25.7931	11.9027
31.8166	11.1486
37.7552	10.4255
43.5974	9.7428
49.3382	9.1060
54.9830	8.5136
60.5487	7.9572
66.0623	6.6464
70.00	4.8953

Table 5-4 LHGR Limit for GE14-P10DNAB408-16GZ-100T-145-T6-2554
(Reference 12)

Lattices 5500, 5504, and 5510 Composite Limit kW/ft 5500: P10DNAL071-NOG-100T-T6-5500 5504: P10DNAL071-NOG-100T-V-T6-5504 5510: P10DNAL071-16GE-100T-V-T6-5510	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-5 LHGR Limit for GE14-P10DNAB408-16GZ-100T-145-T6-2554, Lattice 5506
(Reference 12)

Lattice 5506 Composite Limit kW/ft P10DNAL453-6G7.0/10G6.0-100T-T6-5506	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1029	13.40
16.3915	13.3555
17.8387	13.1910
19.0967	13.0480
20.3425	12.9063
22.8024	12.6267
26.4384	12.0410
32.4022	11.2075
38.2538	10.4682
42.7774	9.9945
48.5585	9.4147
54.2876	8.8630
59.9673	8.4016
66.2463	6.7325
70.00	5.00

Table 5-6 LHGR Limit for GE14-P10DNAB408-16GZ-100T-145-T6-2554, Lattice 5507
(Reference 12)

Lattice 5507 Composite Limit kW/ft P10DNAL453-4G7.0/10G6.0-100T-T6-5507	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1091	13.40
16.4011	13.3544
17.5754	13.2209
18.8411	13.0770
20.0941	12.9346
22.5665	12.6535
26.2178	12.2384
32.2045	11.4033
38.0774	10.5818
42.5631	9.9920
48.3669	9.3715
54.1169	8.7856
59.8150	8.2252
66.1438	6.7798
70.00	5.00

Table 5-7 LHGR Limit for GE14-P10DNAB408-16GZ-100T-145-T6-2554, Lattice 5508
(Reference 12)

Lattice 5508 Composite Limit kW/ft P10DNAL449-4G7.0/10G6.0-100T-E-T6-5508	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.3349
0.2995	13.3904
1.4867	13.40
2.9450	13.3896
4.3716	13.3335
5.7199	13.3052
7.0940	13.3190
8.3865	13.3625
9.7191	13.40
14.6797	13.40
15.9349	13.1347
17.1752	12.7239
18.4013	12.5086
19.6149	12.3467
22.0145	11.9721
25.5738	11.4887
31.4239	10.7236
36.1209	10.1987
41.9286	9.6294
47.6904	9.0846
53.4002	8.5554
59.0576	8.0299
64.6690	6.6179
68.5288	4.3146

Table 5-8 LHGR Limit for GE14-P10DNAB408-16GZ-100T-145-T6-2554, Lattice 5509
(Reference 12)

Lattice 5509 Composite Limit kW/ft P10DNAL449-4G7.0/10G6.0-100T-V-T6-5509	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.2336
0.3021	13.2853
1.4995	13.3007
2.9694	13.2651
4.3763	13.2094
5.7878	13.2221
7.1749	13.2302
8.5372	13.2351
9.7588	13.2502
10.9018	13.3145
12.2024	13.40
14.7592	13.40
16.0142	13.1015
17.2530	12.6893
18.4767	12.4795
19.6874	12.3406
22.0815	11.9671
25.6334	11.4807
31.4698	10.7081
36.2217	10.1947
42.0217	9.6164
47.7731	9.0632
53.4702	8.5267
59.1133	7.9955
64.7098	6.6069
68.6043	4.3130

Table 5-9 LHGR Limit for GE14-P10DNAB396-18GZ-100T-145-T6-2808
(Reference 4)

Lattices 6739, 6741, 6744, and 6745 Composite Limit kW/ft 6739: P10DNAL071-NOG-100T-T6-6739 6741: P10DNAL439-18G8.0-100T-T6-6741 6744: P10DNAL071-NOG-100T-V-T6-6744 6745: P10DNAL071-18GE-100T-V-T6-6745	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-10 LHGR Limit for GE14-P10DNAB396-18GZ-100T-145-T6-2808, Lattice 6740
(Reference 4)

Lattice 6740 Composite Limit kW/ft P10DNAL444-18G8.0-100T-T6-6740	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
14.9712	13.40
16.3671	13.3583
17.7446	13.2017
19.1037	13.0472
20.4441	12.8948
21.7653	12.7446
24.3496	12.4508
28.0911	12.0254
34.0754	11.3451
39.8832	10.6849
43.7852	10.2413
49.5509	9.5858
55.2590	8.9369
60.9131	8.2573
67.5734	6.12
70.00	5.00

Table 5-11 LHGR Limit for GE14-P10DNAB396-18GZ-100T-145-T6-2808, Lattice 6742
(Reference 4)

Lattice 6742 Composite Limit kW/ft P10DNAL432-15G7.0-100T-E-T6-6742	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
14.9724	13.40
16.3337	13.3621
17.67	13.2101
18.9818	13.0610
20.2701	12.9146
21.5365	12.7706
24.0097	12.4894
27.6101	12.0801
33.4510	11.4161
37.3371	10.9656
43.1851	10.2911
48.9751	9.6432
54.7013	9.0003
60.3647	8.3033
66.4877	6.6211
70.00	5.00

Table 5-12 LHGR Limit for GE14-P10DNAB396-18GZ-100T-145-T6-2808, Lattice 6743
(Reference 4)

Lattice 6743 Composite Limit kW/ft P10DNAL432-15G7.0-100T-V-T6-6743	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.1007	13.40
16.4658	13.347
17.8038	13.1949
19.1156	13.0458
20.4024	12.8995
21.6658	12.7559
24.1307	12.4757
27.7186	12.0678
31.5674	11.4927
37.4588	10.7989
43.2994	10.1306
49.0786	9.4878
54.7906	8.8678
60.4375	8.2591
66.3941	6.6642
70.00	5.00

Table 5-13 LHGR Limit for GE14-P10DNAB406-18GZ-100T-145-T6-2809
(Reference 4)

Lattices 6739, 6746, 6747, 6750, and 6751 Composite Limit kW/ft 6739: P10DNAL071-NOG-100T-T6-6739 6746: P10DNAL451-12G5.0/6G2.0-100T-T6-6746 6747: P10DNAL451-12G5.0/6G2.0-100T-T6-6747 6750: P10DNAL071-NOG-100T-V-T6-6750 6751: P10DNAL071-18GE-100T-V-T6-6751	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.0	13.4
16.0	13.4
63.5	8.0
70.0	5.0

Table 5-14 LHGR Limit for GE14-P10DNAB406-18GZ-100T-145-T6-2809, Lattice 6748
(Reference 4)

Lattice 6748 Composite Limit kW/ft P10DNAL446-12G5.0/5G2.0-100T-E-T6-6748	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.3938	13.40
16.6632	13.3246
17.9126	13.1826
19.1444	13.0425
20.3618	12.9041
22.9022	12.6153
26.4710	12.2096
32.3475	11.5415
36.7448	11.0416
42.5408	10.3827
48.2824	9.6914
53.9658	8.9586
59.5939	8.2802
65.1764	7.2263
70.00	5.00

Table 5-15 LHGR Limit for GE14-P10DNAB406-18GZ-100T-145-T6-2809, Lattice 6749
(Reference 4)

Lattice 6749 Composite Limit kW/ft P10DNAL446-12G5.0/5G2.0-100T-V-T6-6749	
UO2 Pellet Burnup (GWd/MTU)	**Composite Limit (kW/ft)**
0.00	13.40
15.7107	13.40
16.9856	13.2880
18.2402	13.1453
19.4771	13.0047
20.6999	12.8657
23.1169	12.5909
26.7017	12.1834
32.6038	11.5124
38.4063	10.8528
42.6488	10.3705
48.3802	9.6379
54.05	8.9110
59.6619	8.2408
65.2274	7.2027
70.00	5.00

Table 5-16 LHGR Limit for Westinghouse Optima2 Fuel
Opt2-3.90-10G8.00/6.00-4GZ8.00-2.00G6.00
Opt2-3.88-10G8.00/6.00-6GZ8.00-2.00G6.00
Opt2-3.93-14GZ6.00
(Reference 3)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.00	13.11
14.00	13.11
72.00	6.48

Table 5-17 LHGRFAC(P) for GE Fuel, DLO
(Reference 3)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)							
		0	25	38.5	38.5	70	70	80	100
		LHGRFAC(P) Multiplier							
Base	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								
PLUOOS	≤ 60	0.54	0.54	0.54	0.54	0.73	0.78		1.00
	> 60								
TBPOOS	≤ 60	0.22	0.39	0.48	0.54				1.00
	> 60	0.33		0.42					
TCV Slow Closure	≤ 60	0.54	0.54	0.54	0.54	0.73	0.78		1.00
	> 60								
TCV Stuck Closed	≤ 60	0.50	0.56	0.59	0.68			0.86	1.00
	> 60								

Table 5-18 LHGRFAC(P) for GE Fuel, SLO
(Reference 3)

EOOS Combination	Core Flow (% of rated)	Core Thermal Power (% of rated)						
		0	25	38.5	38.5	70	CP*	100
		LHGRFAC(P) Multiplier						
Base SLO	≤ 60	0.50	0.56	0.59	0.68		0.77	0.77
	> 60							
PLUOOS SLO	≤ 60	0.54	0.54	0.54	0.54	0.73	0.77	0.77
	> 60							
TBPOOS SLO	≤ 60	0.22	0.39	0.48	0.54		0.77	0.77
	> 60	0.33		0.42				
TCV Slow Closure SLO	≤ 60	0.54	0.54	0.54	0.54	0.73	0.77	0.77
	> 60							
TCV Stuck Closed SLO	≤ 60	0.50	0.56	0.59	0.68		0.77	0.77
	> 60							

* CP is the cutoff power level and is equal to 59.25% for Base Case SLO and TCV Stuck Closed SLO, 70% for PLUOOS SLO, 69.25% for TBPOOS SLO, and 70% for TCV Slow Closure SLO.

Table 5-19 LHGRFAC(P) for Westinghouse Fuel
(Reference 3)

EOOS Combination	Core Thermal Power (% of rated)								
	0	25	38.5	38.5	50	60	80	100	102
	LHGRFAC(P) Multiplier								
Base	0.60	0.64	0.66	0.73	0.83	0.83	0.90	1.00	1.00
Base SLO	0.60	0.64	0.66	0.73	0.83	0.83	0.90	1.00	1.00
PLUOOS	0.60	0.64	0.66	0.66	0.68	0.75	0.90	1.00	1.00
PLUOOS SLO	0.60	0.64	0.66	0.66	0.68	0.75	0.90	1.00	1.00
TBPOOS	0.37	0.49	0.55	0.68	0.83	0.83	0.90	1.00	1.00
TBPOOS SLO	0.37	0.49	0.55	0.68	0.83	0.83	0.90	1.00	1.00
TCV Slow Closure	0.60	0.62	0.62	0.62	0.65	0.70	0.90	1.00	1.00
TCV Slow Closure SLO	0.60	0.62	0.62	0.62	0.65	0.70	0.90	1.00	1.00
TCV Stuck Closed	0.60	0.64	0.66	0.73	0.83	0.83	0.90	1.00	1.00
TCV Stuck Closed SLO	0.60	0.64	0.66	0.73	0.83	0.83	0.90	1.00	1.00

Table 5-20 LHGRFAC(F) Multipliers, GE Fuel, DLO, All Cases Except TCV Stuck Closed
(Reference 3)

Flow (% rated)	LHGRFAC(F) Multiplier
100.00	1.00
80.00	1.00
50.00	0.77
40.00	0.64
30.00	0.55
0.00	0.28

Table 5-21 LHGRFAC(F) Multipliers, GE Fuel, DLO, TCV Stuck Closed
(Reference 3)

Flow (% rated)	LHGRFAC(F) Multiplier
100.00	1.00
98.30	1.00
80.00	0.86
50.00	0.63
40.00	0.50
30.00	0.41
0.00	0.14

Table 5-22 LHGRFAC(F) Multipliers, GE Fuel, SLO, All Cases Except TCV Stuck Closed
(Reference 3)

Flow (% rated)	LHGRFAC(F) Multiplier
100.00	0.77
80.00	0.77
50.00	0.77
40.00	0.64
30.00	0.55
0.00	0.28

Table 5-23 LHGRFAC(F) Multipliers, GE Fuel, SLO, TCV Stuck Closed
(Reference 3)

Flow (% rated)	LHGRFAC(F) Multiplier
100.00	0.77
80.00	0.77
68.30	0.77
50.00	0.63
40.00	0.50
30.00	0.41
0.00	0.14

Table 5-24 LHGRFAC(F) Multipliers, Westinghouse Fuel
(Reference 3)

Flow (% rated)	LHGRFAC(F) Multiplier
110.00	1.00
100.00	1.00
80.00	1.00
60.00	0.80
40.00	0.59
20.00	0.43
0.00	0.27

6. Rod Block Monitor

The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown below (Reference 11):

ROD BLOCK MONITOR UPSCALE TRIP FUNCTION	ALLOWABLE VALUE
Two Recirculation Loop Operation	0.65 W_d + 55%
Single Recirculation Loop Operation	0.65 W_d + 51%

The setpoint may be lower/higher and will still comply with the rod withdrawal error (RWE) analysis because RWE is analyzed unblocked.

W_d – percent of recirculation loop drive flow required to produce a rated core flow of 98 Mlb/hr.

7. Stability Protection Setpoints

The OPRM PBDA Trip Settings (Reference 3):

PBDA Trip Amplitude Setpoint (Sp)	Corresponding Maximum Confirmation Count Setpoint (Np)
1.18	18

The PBDA is the only OPRM setting credited in the safety analysis as documented in the licensing basis for the OPRM system.

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power dependent MCPR limits. Any change to the OLMCPR values and/or the power dependent MCPR limits should be evaluated for potential impact on the OPRM PBDA trip settings.

The OPRM PBDA trip settings are applicable when the OPRM system is declared operable, and the associated Technical Specifications are implemented.

8. Modes of Operation

The allowed Modes of Operation with the combinations of EOOS are as described below:

EOOS Options[1,2,3,5,7,8,9]	Operating Region			
	Standard	ICF	MELLLA	Coastdown[4]
Base, TSSS, ISS, or NSS	Yes	Yes	Yes	Yes
Base SLO, TSSS, ISS, or NSS	Yes	No	Yes	Yes
TBPOOS, TSSS, ISS, or NSS	Yes	Yes	Yes	Yes
TBPOOS SLO, TSSS, ISS, or NSS	Yes	No	Yes	Yes
PLUOOS, TSSS, ISS, or NSS	Yes	Yes	Yes	Yes
PLUOOS SLO, TSSS, ISS, or NSS	Yes	No	Yes	Yes
TCV Slow Closure, TSSS, ISS, or NSS	Yes	Yes	Yes	Yes
TCV Slow Closure SLO, TSSS, ISS, or NSS	Yes	No	Yes	Yes
TCV Stuck Closed[6], TSSS, ISS, or NSS	Yes	Yes	Yes	Yes
TCV Stuck Closed SLO[6], TSSS, ISS, or NSS	Yes	No	Yes	Yes

[1] Each OOS Option may be combined with up to 18 TIP channels OOS provided the requirements (as clarified in Reference 20) for utilizing SUBTIP methodology are met with all TIPS available at startup from a refueling outage and up to 50% of the LPRMs OOS with an LPRM calibration frequency of 2500 Effective Full Power Hours (EFPH) (2000 EFPH +25%).

[2] A single MSIV may be taken OOS (shut) under any of the OOS Options, so long as core thermal power is maintained ≤75% of 2957 MWth (Reference 3).

[3] Each EOOS option except TBPOOS requires the opening profile for the Turbine Bypass Valves provided in Reference 8 to be met. These conditions also support 1 Turbine Bypass Valve OOS (TBPOOS) if the assumed opening profile (Reference 8) for the remaining 8 Turbine Bypass Valves is met. If the opening profile is **not** met with 8 or 9 operating Turbine Bypass Valves, or if more than one Turbine Bypass Valve is OOS, utilize the TBPOOS condition.

[4] Coastdown operation is defined as any cycle exposure beyond the full power, all rods out condition with plant power slowly lowering to a lesser value while core flow is held constant. Coastdown analysis has been performed with bounding assumption of full power operation up to a cycle exposure of 16,338 MWD/MTU (or 16,450 MWD/MTU including FFTR).

[5] For operation with a Pressure Regulator Out-Of-Service (PROOS), the TCV Slow Closure limits should be applied. For operation with a PROOS and TCV Slow Closure, the TCV Slow Closure limits should be applied. For operation with a PROOS and PLUOOS, the PLUOOS limits should be applied. For operation with a PROOS and TCV Stuck Closed, the more restrictive of the flow-dependent limits (established by TCV Stuck Closed) and power dependent limits (established by TCV Slow Closure and PLUOOS limits) should be applied (Reference 3).

[6] For operation with one Turbine Stop Valve Out-Of-Service (TSVOOS), the TCV Stuck Closed limits should be applied. Combination of one TSVOOS and TCV Stuck Closed is **not** analyzed (Reference 3).

[7] The cycle specific stability analysis may impose restrictions on the Power-to-Flow map and/or restrict the applicable temperature for a reduction in feedwater temperature (RFWT) (Reference 15).

[8] For both Base and EOOS DLO/SLO conditions, for operation at NFWT, the OLMCPR limit is applicable to a variation of +10°F/-30°F in feedwater temperature. For operation outside of

NFWT, a feedwater temperature reduction of up to 120°F (RFWT) is also supported at rated conditions for Base and EOOS DLO/SLO conditions for cycle operation through EOC. This includes, but is not limited to, Feedwater Heaters OOS (FWHOOS) and Final Feedwater Temperature Reduction (FFTR). At off-rated conditions, the allowed feedwater temperature reduction is defined in Figure 9.2 of Reference 3. For a feedwater temperature reduction of between 30°F and the allowable value (the "Minimum Feedwater Temperature Curve" as defined in Figure 9.2 of Reference 3), the RFWT limits should be applied.

[9] Asymmetric inlet enthalpy distribution produced by RWCU injection does not have a substantial impact on thermal limits; therefore no adjustments to the thermal limits are required (Reference 3).

9. Methodology

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

1. Commonwealth Edison Company Topical Report NFSR-0091, “Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods,” Revision 0 and Supplements on Neutronics Licensing Analysis (Supplement 1) and La Salle County Unit 2 benchmarking (Supplement 2), December 1991, March 1992, and May 1992, respectively.

2. NEDE-24011-P-A-15 (Revision 15), “General Electric Standard Application for Reactor Fuel (GESTAR-II),” September 2005.

3. NEDO-32465-A, “Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications,” August 1996.

4. Westinghouse Report WCAP-15682-P-A, “Westinghouse BWR ECCS Evaluation Model: Supplement 2 to Code Description, Qualification and Application,” April 2003.

5. Westinghouse Report WCAP-16078-P-A, “Westinghouse BWR ECCS Evaluation Model: Supplement 3 to Code Description, Qualification and Application to SVEA-96 Optima2 Fuel,” November 2004.

6. Westinghouse Report WCAP-16081-P-A, “10x10 SVEA Fuel Critical Power Experiments and CPR Correlation: SVEA-96 Optima2,” March 2005.

7. Westinghouse Topical Report CENPD-300-P-A, “Reference Safety Report for Boiling Water Reactor Reload Fuel,” July 1996.

8. Westinghouse Topical Report CENPD-390-P-A, “The Advanced PHOENIX and POLCA Codes for Nuclear Design of Boiling Water Reactors,” December 2000.

9. Westinghouse Topical Report WCAP-15836-P-A, “Fuel Rod Design Methods for Boiling Water Reactors – Supplement 1,” June 2002.

10. Westinghouse Topical Report WCAP-15942-P-A, “Fuel Assembly Mechanical Design Methodology for Boiling Water Reactors, Supplement 1 to CENP-287,” October 2004.

10. References

1. Exelon Generation Company, LLC, Docket No. 50-249, Dresden Nuclear Power Station, Unit 3, Facility Operating License, License No. DPR-25.

2. Letter from D. M. Crutchfield to All Power Reactor Licensees and Applicants, Generic Letter 88-16; "Removal of Cycle-Specific Parameter Limits from Technical Specifications," October 3, 1988.

3. Westinghouse Document, WCAP-16645-P, Revision 0, "Dresden Nuclear Power Station Unit 3 Cycle 20 Reload Licensing Report," October 2006.

4. GNF Letter, MJM-EXN-EB3-04-015, "Transmittal of the Dresden 3 C19 SRLR / LHGR Limits and R-factors," Mark J. Mneimneh to Haksoo Kim, October 12, 2004.

5. GNF Document, 0000-0025-1300-SRLR, Revision 1, "Supplemental Reload Licensing Report for Dresden 3 Reload 18 Cycle 19," October 2004. (TODI NF0400258 Revision 1, December 2004)

6. GNF Document, 0000-0006-9848-SRLR, Revision 2, "Supplemental Reload Licensing Report for DRESDEN UNIT 3 Reload 17 Cycle 18," October 2003. (TODI NF0200124 Revision 1, December 2003)

7. GE Document, GE-NE-J11-03912-00-01-R3, "Dresden 2 and 3 Quad Cities 1 and 2 Equipment Out-Of-Service and Legacy Fuel Transient Analysis," September 2005. (TODI NFM0100091 Sequence 03)

8. Exelon TODI, Ops Ltr:06-28, Revision 1, "OPL-W Parameters for Dresden Unit 3 Cycle 20 Transient Analysis," June 15, 2006.

9. Exelon Calculation Note, BNDG:02-001, Revision 0, "Determination of Generic $MCPR_F$ Limits," May 17, 2002.

10. GE Design Basis Document, DB-0012.03, Revision 1, "Fuel-Rod Thermal-Mechanical Performance Limits for GE14C," May 2005.

11. GE Document, GE DRF C51-00217-01, "Instrument Setpoint Calculation Nuclear Instrumentation Rod Block Monitor Dresden 2 & 3," December 15, 1999.

12. GNF Letter, FRL02EX-013, "Quad Cities Unit 1 Cycle 18 and Dresden Unit 3 Cycle 18 Pellet Based LHGR Limits," F. R. Lindquist to J. Nevling, September 30, 2002.

13. Westinghouse Letter, NF-BEX-06-140, Revision 1, "Exelon Nuclear Final Task Report for Dresden 3 Cycle 20 Reload Licensing Generic Inputs Report, Revision 1," October 3, 2006. (TODI NF0600144 Revision 1, October 2006)

14. Exelon Letter, NF-MW:02-0413, "Approval of GE Evaluation of Dresden and Quad Cities Pressure Regulator Out of Service Analysis," Carlos de la Hoz to Doug Wise and Alex Misak, October 22, 2002.

15. Exelon Letter, NF-MW:02-0081, "Approval of GE Evaluation of Dresden and Quad Cities Extended Final Feedwater Temperature Reduction," Carlos de la Hoz to Doug Wise and Alex Misak, August 27, 2002.

16. Exelon Letter, NF-MW:03-069, “Dresden and Quad Cities Operation with one TSV OOS,” Candice Chou to Alex Misak and Doug Wise, July 28, 2003.

17. Exelon TODI NF0600169, Revision 1, “Dresden 3 Cycle 20 Reload Licensing Analysis Plan (RLAP),” October 2006.

18. GE Document, GE-NE-0000-0040-2860-R0, “Dresden Units 2 and 3 and Quad Cities Units 1 and 2 Offrated Analyses Below the PLU Power Level,” July 2005.

19. GE Document, NEDE-24011-P-A-15, “General Electric Standard Application for Reactor Fuel (GESTAR-II),” September 2005.

20. FANP Letter, NJC:04:031/FAB04-496, “Startup with TIP Equipment Out of Service,” April 20, 2004 (EC 348897-00).

21. Technical Specifications for Dresden 2 and 3, Table 3.1.4-1, “Control Rod Scram Times.”