Dresden Nuclear Power Station

Technical Requirements Manual

(TRM)

June 2017

Dresden Nuclear Power Station, Unit 2 and 3
Facility Operating License Nos. DPR-19 (Unit 2) and DPR-25 (Unit 3)
NRC Docket Nos. STN 50-237 (Unit 2) and 50-249 (Unit 3)

BASES

BASES

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. AND B.2 Be in MODE 4	12 hours 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. AND A.2 Restore subsystem To OPERABLE Status.	1 hour AND Once per 8 hours thereafter 72 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

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	<u>EXAMPLE 1.3-7</u> (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 $\geq$ 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 $\geq$ 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 ASD Overspeed limit setpoints and over frequency relays 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 $\leq$ 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.

TLCO 3.0.g

If directed to enter this action from the respective TRM REQUIRED ACTION, then:

Implement Alternate Measure(s) as determined by an approved technical evaluation.

1. The evaluation must demonstrate that the alternate compensatory measure would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire,
2. The use of an alternate compensatory measure(s) shall be entered into the Corrective Action Program, and
3. The evaluation must be maintained as a plant record subject to subsequent inspection.

The applicable TRM REQUIRED ACTION must be met until such time as an Alternative Compensatory Measures are approved.

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
TSR 3.3.a.7	-----------NOTE----------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --------------------------- Perform CHANNEL FUNCTIONAL TEST.	31 days

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.7 TSR 3.3.a.6	N.A.
	5(e)	2	TSR 3.3.a.7	N.A.
b. Upscale	2(d)	3	TSR 3.3.a.7 TSR 3.3.a.6	≤ 3.0×10^5 cps
	5	2	TSR 3.3.a.7 TSR 3.3.a.6	≤ 3.0×10^5 cps
c. Inoperative	2(d)	3	TSR 3.3.a.7	N.A.
	5	2	TSR 3.3.a.7	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[(h)]	6	TSR 3.3.a.1 TSR 3.3.a.6	N.A.
b. Upscale	2, 5[(h)]	6	TSR 3.3.a.1 TSR 3.3.a.6	≤ 112/125 of full scale
c. Inoperative	2, 5[(h)]	6	TSR 3.3.a.1	N.A.
d. Downscale	2[(f)], 5[(h)]	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."

(h) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

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. --------NOTE----------- Only applicable to Functions 4 and 5 A.2 Restore required channel to OPERABLE status.	 30 day 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. AND C.2 Prepare a corrective action program report.	Immediately 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. AND	Once per 4 hours (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. <u>AND</u> A.2 Perform a fire watch inspection of the affected area(s). <u>AND</u>	1 hour Once per hour for accessible areas <u>AND</u> Once per 8 hours for inaccessible areas (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Restore the fire detection instrumentation to OPERABLE status. OR A.3.2 Prepare a corrective action program report.	14 days 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	24 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 23 24 41	01 10, 13-22 01-26 01-06, 10	1 11 26 7	1 8 19 5	
Turbine Building Mezzanine El. 534	41	07-09, 11	4	3	
Turbine Oil Reservoir(**)	21 41	19 27	6 6	4 4	X X
Auxiliary Electric Equipment Room	81	01-26	26	18	X
Control Room Above Ceiling	52 53	01-16 01-18	16 18	12 13	
Below Ceiling	52 53	17-24 19-25	8 7	6 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 $\geq$ 44.2 seconds and $\leq$ 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. AND B.2.1 Restore one inoperable temperature monitor to OPERABLE status. OR B.2.2 Isolate the RWCU system.	1 hour AND Once per 24 hours thereafter 7 days 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. <u>OR</u> A.2 Isolate the affected component. <u>OR</u> A.3 Be in Mode 3 <u>AND</u> A.4 Be in Mode 4	Immediately Immediately 12 hours 36 hours

(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. OR 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. OR 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. AND A.2 Perform TSR 3.4.b.3. AND A.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 72 hours AND 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. OR 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.	Once per 8 hours when conductivity is not within limit
	AND		
	D.2	Perform TSR 3.4.b.3.	Once per 24 hours when conductivity is not within limit
	AND		
	D.3	Restore RCS chemistry to within limits.	48 hours
E. Required Action and associated Completion Time of Condition D not met.	E.1	Be in MODE 3.	12 hours
	AND		
	E.2	Be in MODE 4.	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 nitrogen storage tank is greater than or equal to 68 inches of water column: a. for nitrogen primary tank at Level Indicator LI 2/3-8541-16; or b. for nitrogen auxiliary tank at Level Indicator LI 2/3-8541-8001.	7 days <u>AND</u> After reinerting primary containment
TSR 3.6.b.2	Verify the rated nitrogen flow to primary containment.	24 months

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 recently 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 recently 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 recently 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.

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) <u>AND</u> A.2 Reduce affected tank contents to within limits.	Immediately 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. <u>AND</u> A.2.1 Initiate action to decontaminate and repair the sealed source. <u>OR</u>	Immediately Immediately (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
	<u>AND</u>	
	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 PLANT SYSTEMS

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.3 shall be completed whenever this Condition is entered. ---------------------- One or more required snubber(s) inoperable.	A.1 Initiate an Operability Evaluation for the attached system or component.	Immediately
	AND	
	A.2 Replace or restore the snubber to OPERABLE status.	72 hours
	<u>AND</u>	
	A.3 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
	<u>OR</u>	
	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. <u>AND</u> 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 $\geq$ 24 volts.	31 days
TSR 3.7.i.3	Verify the unit 1 diesel driven fire pump fuel storage day tank contains $\geq$ 150 gallons of fuel and the unit 2/3 diesel driven fire pump fuel storage day tank contains $\geq$ 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 $\geq$ 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 ≥ 126 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. AND	1 hour (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 inaccessible areas. 3. 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---------- 1. Not applicable for Unit 2/3 mezzanine 534 ft elevation area and hydrogen seal oil areas. 2. Not applicable for accessible areas. --------------------- Establish a once per 8 hour fire watch patrol with backup fire suppression equipment.	1 hour
	<u>AND</u>	

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.4 -------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
	AND	
	A.5.1 Restore the system to OPERABLE status.	14 days
	OR	
	A.5.2 Prepare a corrective action program report.	14 days
	OR	
	A.6 -------NOTE------- Only Applicable following completion and implementation of approved technical evaluation. ------------------	
	Enter 3.0.g	Immediately

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.	36 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.	36 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 to verify the discharge pattern of the nozzles and that each open head spray nozzle is properly aimed.	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. 570' - 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. DELETED
24. DELETED
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 <u>not</u> 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 3 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 Main 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 subsystem 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
	OR	
	A.3 -------NOTE------- Only Applicable following completion and implementation of approved technical evaluation. ------------------ Enter 3.0.g	Immediately
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	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 ---------NOTE------ Only applicable for inoperable main computer room halon subsystem. ------------------- Establish a dedicated roving fire watch.	 1 hour
	AND	
	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
	OR	
	B.4 -------NOTE------- Only Applicable following completion and implementation of approved technical evaluation. ------------------ Enter 3.0.g	 Immediately

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.	12 months
TSR 3.7.k.5	Verify each halon cylinder (initial and extended discharge) pressure is $\geq$ 90% of full charge pressure.	12 months
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.	36 months
TSR 3.7.k.7	Verify flow from each nozzle during a "Puff Test."	36 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. Main 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
	<u>AND</u>		
	A.3.1	Restore the inoperable fire hose station(s) to OPERABLE status.	14 days
	<u>OR</u>		
	A.3.2	Prepare a corrective action program report.	14 days
	<u>OR</u>		
	A.4	-------NOTE------- Only Applicable following completion and implementation of approved technical evaluation. ------------------	
		Enter 3.0.g	Immediately

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 $\geq$ 50 psig above the maximum line pressure at that station.	5 years after installation <u>AND</u> Once per 3 years thereafter

Table T3.7.I-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.I-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.I-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.I-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.I-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	
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 Main 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. OR	7 days (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	CR Egress	EL. 517'-6"	D-29	-128	109	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. 534'-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	-2210	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"	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
2	Turbine	EL. 517'-6"	G-32	-2219	462	F-205-6

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
2/3	HPCI Pump & Diesel Bldg.	EL. 518'-6"	N-46	-2220	296	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

(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	Crib House	EL. 509'-6"	C-5	-3241	337	F-214-6
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	
	A.2.1 Restore inoperable fire rated assembly(s) or device(s) to OPERABLE status.	7 days
	OR	
	A.2.2.1 Establish a dedicated continuous fire watch on at least one side of the affected fire rated assembly.	Immediately
	AND	
	A.2.2.2 Prepare a corrective action program report.	Immediately
	OR	
	A.3 -------NOTE------- Only Applicable following completion and implementation of approved technical evaluation. ------------------ Enter 3.0.g	Immediately

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. OR B.2 Declare CCSW System pumps A and D inoperable.	7 days 7 days
C. CCSW System vault inoperable.	C.1 Restore the CCSW vault to operable status. OR C.2 Declare CCSW System pumps B and C inoperable.	7 days 7 days

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.	24 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

SURVEILLANCE	FREQUENCY

(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

3.7.p Natural Gas Line Supply System:

TLCO 3.7.p The following Natural Gas Line Supply Systems shall be OPERABLE:

1. One Boiler House Ventilation Fan

2. 16 Methane Detectors

APPLICABILITY: When Natural Gas header is pressurized past 2/3 Heating boilers isolation valves.

ACTIONS

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

Separate Condition entry is allowed for each Methane Detector

----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Zero Boiler House Ventilation Fans in operation	A.1 Restore one ventilation fan to operation	48 hours
	OR	
	A.2 Isolate natural gas supply to the 2/3 Heating Boilers	Immediately
B. One or More Methane Detector(s) inoperable	B.1 Verify the methane detector(s) are not in the same or in adjacent zones.	Immediately
	AND	
	B.2 Restore a methane detector to OPERABLE	24 Hours
	OR	
	B.3.1 Evaluate condition for acceptability	24 Hours
	AND	
	B.3.2 Establish timeline for repair	24 Hours

(Continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two Methane Detectors inoperable in same or adjacent zones OR Timeline for repair of methane detector(s) established in B.3.2 exceeded.	C.1 Isolate Natural Gas	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.7.p.1 Verify boiler house ventilation fans are in operation	8 hours
--------------------------------NOTE-------------------- Required to be performed prior to each heating season -------------------------------- - -------------------- TSR 3.7.p.2 Perform Methane Detector LOGIC SYSTEM FUNCTIONAL TEST	12 months
TSR 3.7.p.2 Perform Low and Low-low pressure switch CALIBRATION	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
	<u>AND</u>	
	A.2 Verify battery cell parameters meet Table T3.8.a-1 Category C limits.	24 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>	
		(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 $\geq$ 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 <u>AND</u> Once within 7 days after battery discharge < 20.9 V <u>AND</u> 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 $\geq$ 65°F.	92 days <u>AND</u> Once within 7 days after battery discharge < 20.9 V <u>AND</u> 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. <u>OR</u> Verify battery connection resistance is $\leq$ 1.5E-4 ohm for inter-cell connections and $\leq$ 1.5E-4 ohm for terminal connections.	92 days <u>AND</u> Once within 7 days after battery discharge < 20.9 V <u>AND</u> 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 $\leq$ 1.5E-4 ohm for inter-cell connections and $\leq$ 1.5E-4 ohm for terminal connections.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.8.a.9	Verify battery capacity is $\geq$ 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 $\geq$ 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[(d)]	≥ 1.195 <u>AND</u> Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells <u>AND</u> Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum 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.

(d) A battery charging current of ≤ 2 amps when on float charge is acceptable for meeting specific gravity limits (TSR 3.8.a.1).

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
	<u>AND</u>	
	A.2 Verify battery cell parameters meet Table T3.8.b-1 Category C limits.	24 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>	
	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. ---------------------- One Battery with one or more cells with electrolyte level less than minimum established design limit.	B.1 Conduct an equalizing charge of the affected battery cell(s).	31 days
	<u>AND</u>	
	B.2 Verify successful completion of appropriate testing for the affected cell(s).	31 days

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]	≥ 1.200[d]	≥ 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 increase above the specified maximum level 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.b.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 <u>AND</u> 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 ER-AA-470.

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 5750-04, DOS 5750-13, DOS 7500-02, DTS 5750-04, DTS 5750-05, 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, CY-DR-120-1200, CY-DR-120-345, 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

CY-DR-120-201, CY-AB-120-200, 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 actual physical analysis of the fuel oil to determine its properties is performed by a contract laboratory, and the program is owned by the Diesel Fuel Oil System Manager.

The program is implemented by the following procedures:

CY-DR-120-900, Diesel Fuel Oil Testing; CY-AA-130-921, Corporate Chemistry Flash Point Analytical Procedure; DOS 0040-02, Operator Oil Sampling for Offsite Laboratory Analysis; DOS 6600-01, Diesel Generator Surveillance Tests; and DWP 15, Receiving Diesel Fuel Oil.

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 14)
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	45
220-2	X-106	M-12-2	2" MO GLOBE	DC	C	45
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 14)
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 14)
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	40
1201-1A	X-113	M-30	2" MO GLOBE	AC	C	40
1201-2	X-113	M-30	8" MO GATE	DC	O	40

(continued)

Table A-1 (page 4 of 14)
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	40
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	45
1301-3	X-109B	M-28	12" MO GATE	DC	C	45
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 14)
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 14)
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 14)
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

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Table A-1 (page 8 of 14)
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

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Table A-1 (page 9 of 14)
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	63
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	97
2301-36	X-303A-D	M-51	16" MO GATE	DC	C	97
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)

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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
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
3204-B-504	X-107B	M-14	1: 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

(continued)

Table A-1 (page 11 of 14)
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
4724	X-121	M-37-2	2" AO GLOBE	AC SOL	O	N/A
4799-100	X-121	M-37-2	0.25" GLOBE	HAND	LC	N/A
4799-101	X-121	M-37-2	0.25" GLOBE	HAND	LC	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
4799-531	X-121	M-37-2	2" CHECK	SELF	C	N/A
4799-532	X-121	M-37-2	0.25" GLOBE	HAND	LC	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
4799-577	X-121	M-37-2	1" GATE	HAND	O	N/A
4799-699	X-121	M-37-2	1” GATE	HAND	O	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
8507-501	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

Table A-1 (page 12 of 14)
Primary Containment Isolation Valves (Unit 2)

ISOLATION VALVE NO.	PENETRATION NUMBER	P&ID	VALVE TYPE	POWER	NORMAL POSITION	MAX CLOSING TIME, SEC
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 13 of 14)
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
8599-630	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

(continued)

Table A-1 (page 14 of 14)
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	45
220-2	X-106	M-345-2	2" MO GLOBE	DC	C	45
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

(continued)

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	40
1201-1A	X-113	M-361	2" MO GATE	AC	C	40
1201-2	X-113	M-361	8" MO GATE	DC	O	40

(continued)

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	40
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	45
1301-3	X-109A	M-359	12" MO GATE	DC	C	45
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
1301-601	X-109A	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

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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

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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

(continued)

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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Table A-2 (page 8 of 13)
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	63
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	97
2301-36	X-303A-D	M-374	16" MO GATE	DC	C	97
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

(continued)

Table A-2 (page 9 of 13)
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

(continued)

Table A-2 (page 10 of 13)
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
3204-B-504	X-107A	M-347	1” 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

(continued)

Table A-2 (page 11 of 13)
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	O	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

(continued)

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 Roof Drain Hydrolazer Connection Isolation Valve 3-4199-253	N/A
10.	Unit 3 Reactor Building Secondary Containment Penetration Valve 3-1699-130	N/A
11.	Decontamination Header Drain to Reactor Building Equipment Drain Tank 3-2099-978	N/A
12.	Unit 3 Reactor Building Secondary Containment South Isolation Valve 3-1699-131	N/A
13.	Unit 3 Reactor Building Secondary Containment South Isolation Valve 3-1699-132	N/A
14.	Unit 3 Reactor Building Secondary Containment Penetration Valve Elevation 517 Southwest - Valve #1 3-1699-127	N/A
15.	Unit 3 Reactor Building Secondary Containment Penetration Valve Elevation 517 Southwest - Valve #2 3-1699-128	N/A
16.	2A Inlet Damper 2-5741A	300
17.	2B Inlet Damper 2-5741B	300
18.	2A Outlet Damper 2-5742A	300
19.	2B Outlet Damper 2-5742B	300
20.	3A Inlet Damper 3-5741A	300
21.	3B Inlet Damper 3-5741B	300
22.	3A Outlet Damper 3-5742A	300
23.	3B Outlet Damper 3-5742B	300

APPENDIX C

SAFETY FUNCTION DETERMINATION PROGRAM

TABLE OF CONTENTS

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. <u>LIMITATIONS</u>

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).

<u>If</u> required SUPPORT SYSTEM(S) is <u>NOT</u> addressed in the Technical Specifications, <u>then</u> 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 <u>When</u> 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 <u>If</u> 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 <u>When</u> SUPPORT SYSTEM(S) Required Action directs a SUPPORTED SYSTEM(S) to be declared inoperable <u>or</u> directs entry into Conditions and Required Actions for a SUPPORTED SYSTEM(S), the applicable Conditions <u>and</u> 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.

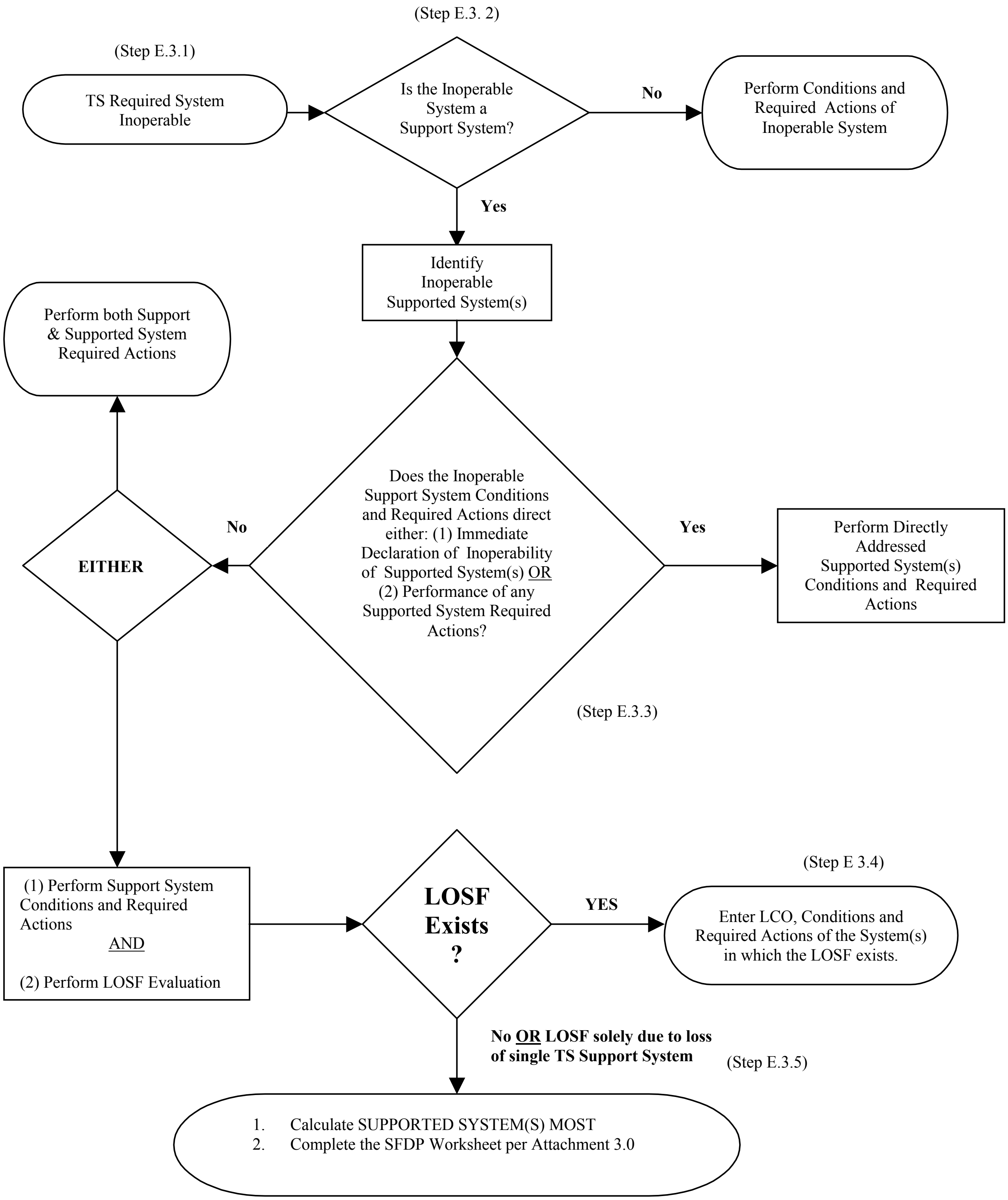
E.3.5.1.2 Complete the SFDP Worksheet per Attachment 3.

- 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

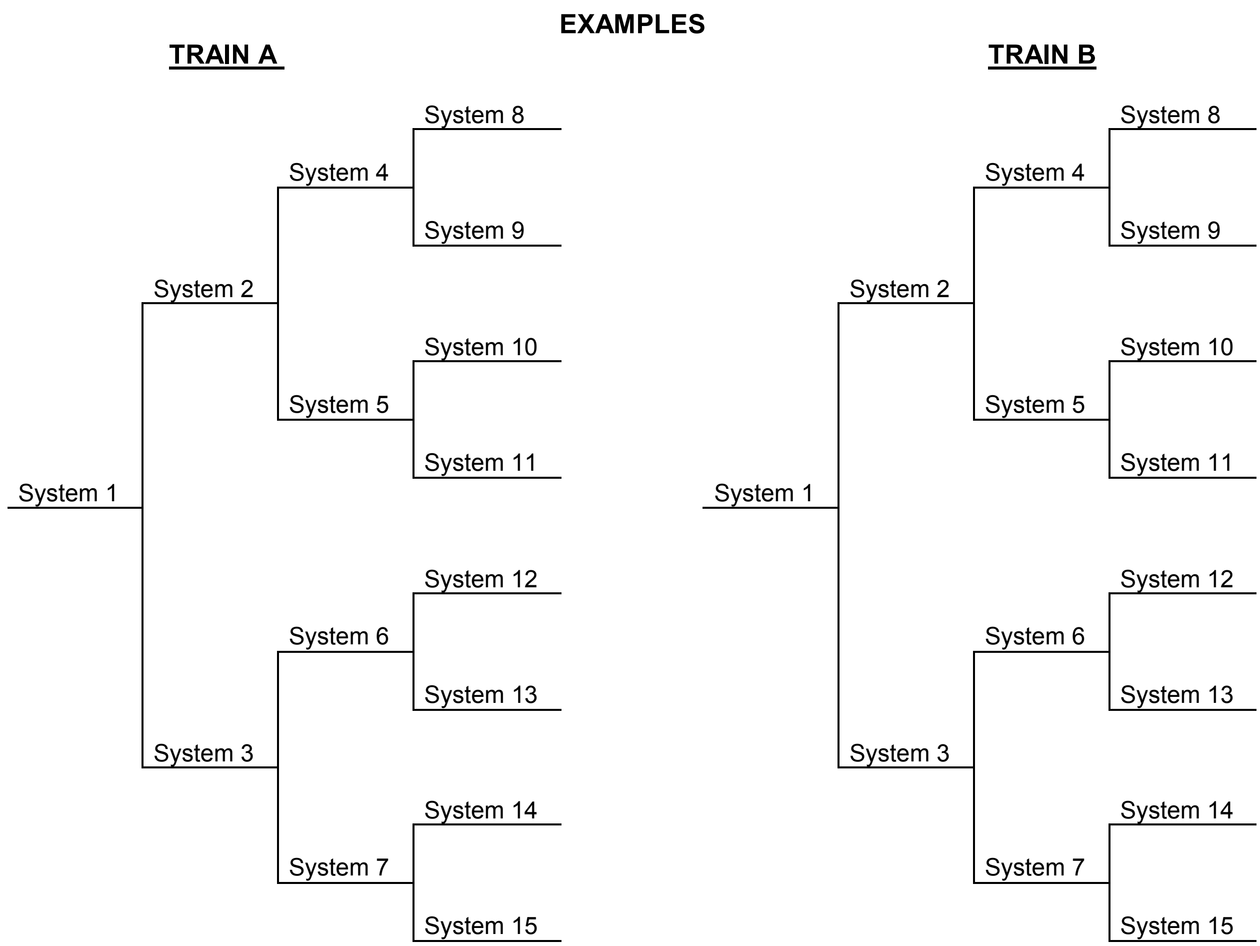
SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

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.



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

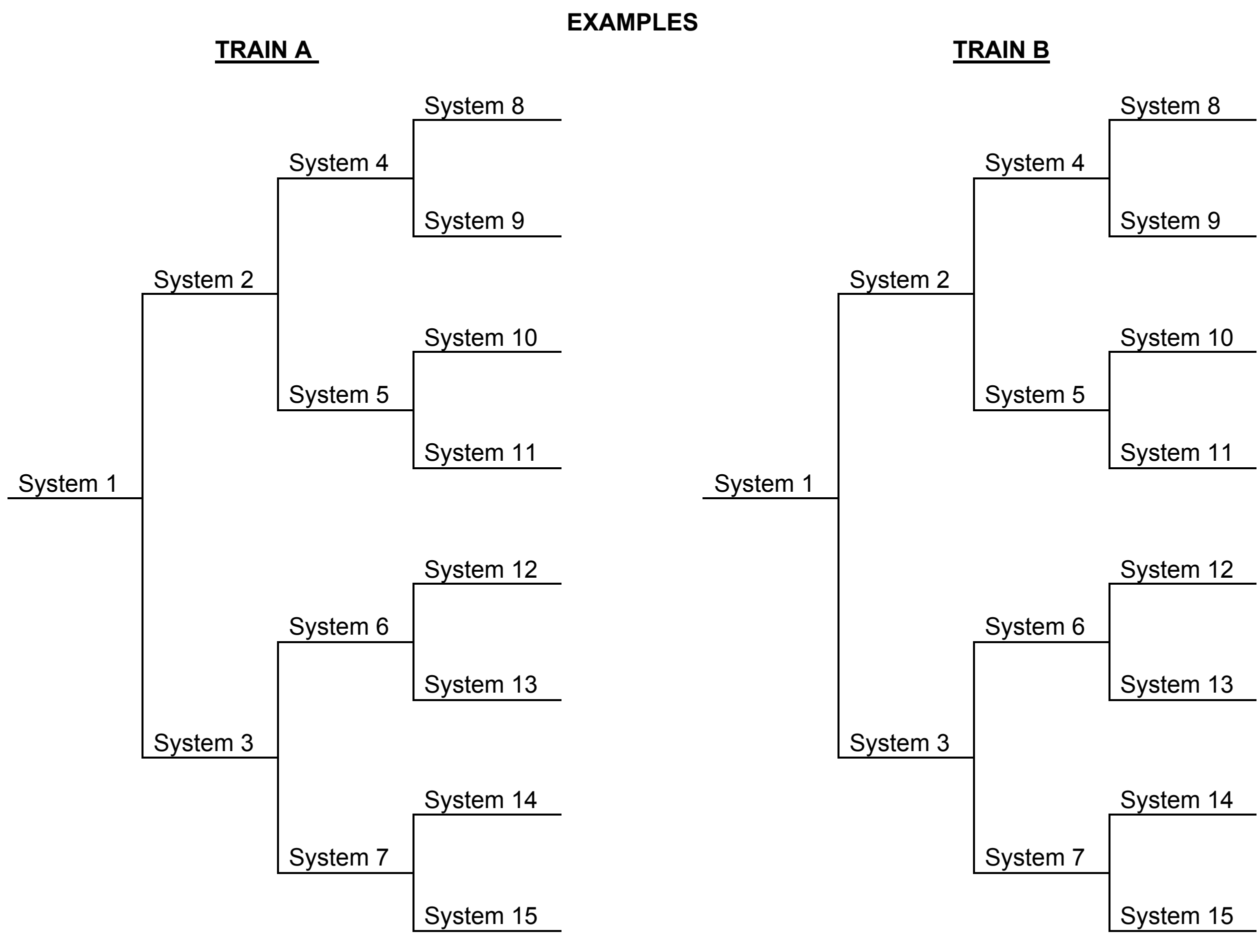
SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

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.



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

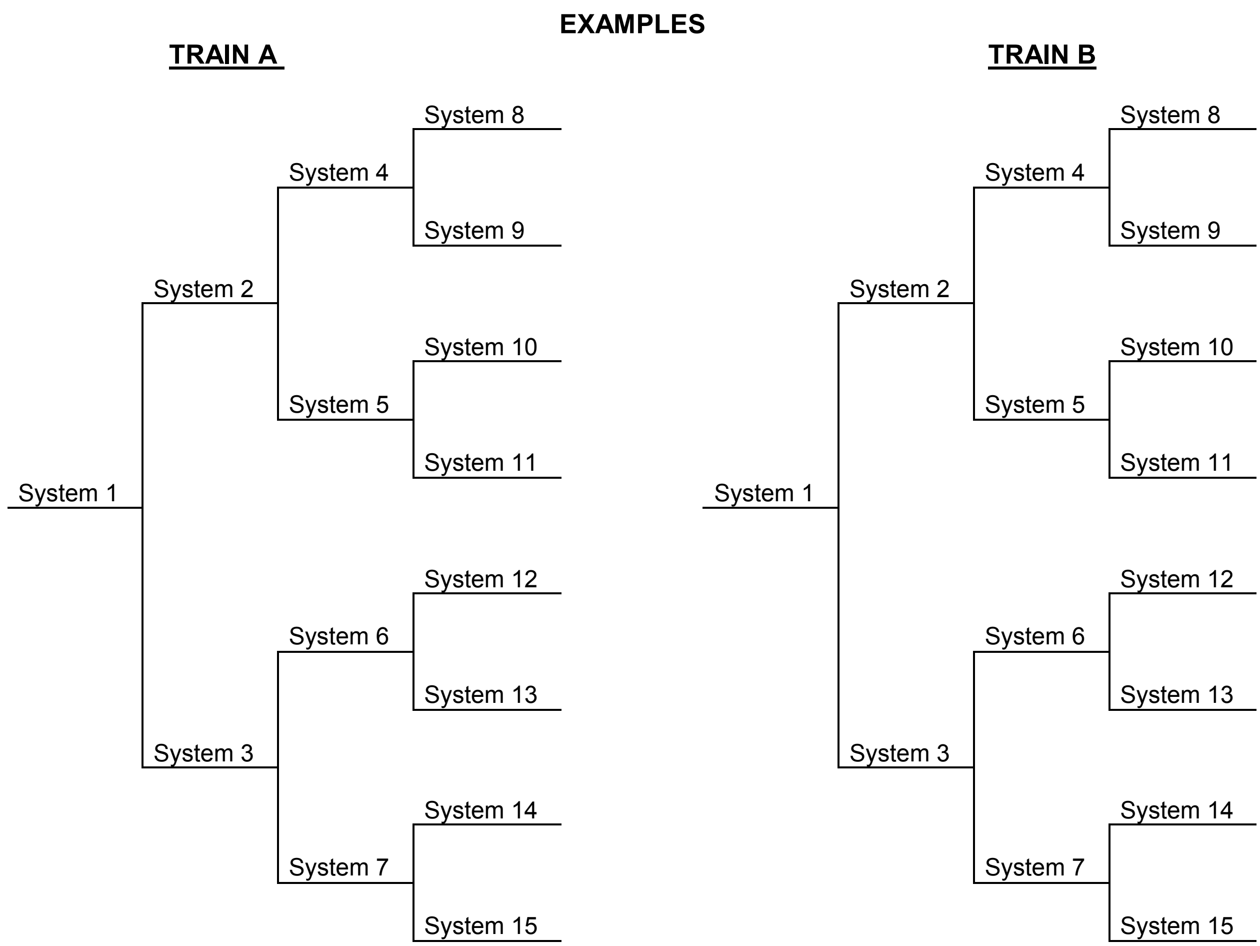
SUPPORT/SUPPORTED SYSTEM(S) DIAGRAM

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.



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 any 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.

<u>METHOD 1</u>

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 Completion Time = MOST
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 3.6.2.4 3.7.5	Suppression Pool Cooling Suppression Pool Spray Control Room Emergency Ventilation Air Conditioning (AC) System
3.7.3	Ultimate Heat Sink (UHS)	3.4.7 3.4.8 3.7.1 3.7.2 3.9.8 3.9.9	Shutdown Cooling (SDC) System - Hot Shutdown Shutdown Cooling (SDC) System - Cold Shutdown Containment Cooling Service Water (CCSW) System Diesel Generator Cooling Water (DGCW) System Shutdown Cooling (SDC) - High Water Level 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

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

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

5. 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 Qualified Review (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.

6. 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.

7. 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 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 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.

9. 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.

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

12. 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.

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

14. RS/RA completes Attachment B, "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 B;

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.

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

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

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.

16. 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.

17. 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.

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

19. 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 B and returns Attachment B to the appropriate RS NLA.

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
> 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 #: ____________________ Affecting 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 Qualifications ________________
☐	☐	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 bound 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 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 be
(SQR/PORC/Amendment Implementation Date)
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 B
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

Core Operating Limits Report

For

Dresden Unit 2 Cycle 25

Revision 1

Table of Contents

Record of Dresden 2 Cycle 25 COLR Revisions

Revision	**Description**
0	Initial issuance for D2C25
1	Update Section 5, Section 8 Note 1, and associated references for transition to POWERPLEX-XD on-line core monitoring system and revise the Table 5-13 LHGRFAC(P) values at 80% for PLUOOS and TCV Slow Closure to be no greater than the Base Case limits.

List of Tables

1. Terms and Definitions

2TBVOOS	Turbine bypass valve #8 and a second turbine bypass valve out of service
APLHGR	Average planar linear heat generation rate
ASD	Adjustable speed drive
CPR	Critical power ratio
DLO	Dual loop operation
EFPH	Effective full power hour
EOC	End of cycle
EOFPL	End of full power life
EOOS	Equipment out of service
FWT	Feedwater temperature
FWTR	Feedwater temperature reduction
GWd/MTU	Gigawatt days per metric ton Uranium
ICF	Increased core flow
ISS	Intermediate scram speed
LHGR	Linear heat generation rate
LHGRFAC(F)	Flow dependent linear heat generation rate multiplier
LHGRFAC(P)	Power dependent linear heat generation rate multiplier
LPRM	Local power range monitor
MAPLHGR	Maximum average planar linear heat generation rate
MCFL	Max combined flow limiter
MCPR	Minimum critical power ratio
MCPR(F)	Flow dependent minimum critical power ratio
MCPR(P)	Power dependent minimum critical power ratio
MELLLA	Maximum extended load line limit analysis
MSIV	Main steam isolation valve
MWd/MTU	Megawatt days per metric ton Uranium
NFWT	Nominal feedwater temperature
NRC	Nuclear Regulatory Commission
NSS	Nominal scram speed
OLMCPR	Operating limit minimum critical power ratio
OOS	Out of service
OPRM	Oscillation power range monitor
PBDA	Period based detection algorithm
PLUOOS	Power load unbalance out of service
PCOOS	Pressure controller out of service
RFWT	Reduced feedwater temperature
RWE	Rod withdrawal error
SER	Safety evaluation report
SLMCPR	Safety limit minimum critical power ratio
SLO	Single loop operation
TBVOOS	Turbine bypass valves out of service
TBV	Turbine bypass valve
TCV	Turbine control valve
TIP	Traversing in-core probe
TMOL	Thermal mechanical operating limit
TSSS	Technical Specification scram speed
TSV	Turbine stop valve

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.

Licensed rated thermal power is 2957 MWth. Rated core flow is 98 Mlb/hr. Operation up to 108% rated flow (ICF) is fully evaluated for this cycle; however, flow cannot exceed 103.4% rated flow due to unit specific limitations. For allowed operating regions, see applicable power/flow map.

The licensing analysis supports full power operation to EOFPL + 25 days (16182 MWD/MTU) and coastdown to a power of 70% given all burnup limits are satisfied (Reference 22).

Coastdown is defined as any cycle exposure beyond the full power, licensed increased core flow, and all rods out condition with the plant power gradually reducing as available core reactivity diminishes.

MCPR(P) and MCPR(F) values are independent of scram speed. MCPR(F) is independent of FWT.

LHGRFAC(P) and LHGRFAC(F) values are independent of scram speed and FWT.

All thermal limits are analyzed to NSS, ISS, and TSSS, except for the special case 2TBVOOS, which is only analyzed for NSS and NFWT (Reference 22). Only MCPR operating limits vary with scram speed.

For thermal limit monitoring above 100% rated power or 108% rated core flow, the 100% rated power or the 108% core flow thermal limit values, respectively, can be used unless otherwise indicated in the applicable table.

3. Average Planar Linear Heat Generation Rate

Technical Specifications Sections 3.2.1 and 3.4.1

For natural uranium lattices, DLO and SLO MAPLHGR values are provided in Table 3-1. For all other lattices, lattice-specific MAPLHGR values for DLO are provided in Tables 3-2 through 3-56. During SLO, these limits are multiplied by the SLO multiplier listed in Table 3-57.

Table 3-1: MAPLHGR for Lattices 81 and 89
(Reference 9, 15, 16 and 17)

All Bundles Lattice 81: Opt2-B0.71 89: Opt2-T0.71	
Average Planar Exposure (MWd/MTU)	**DLO and SLO MAPLHGR (kW/ft)**
0	7.50
75000	7.50

Table 3-2: MAPLHGR for Lattice 113
(References 9, 10, and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 113 : Opt2-B4.45-18G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.67
2500	8.86
5000	8.97
7500	9.04
10000	9.07
12000	9.11
15000	9.26
17000	9.38
20000	9.54
22000	9.69
24000	9.75
30000	9.68
36000	9.64
42000	9.62
50000	9.67
60000	9.66
72000	9.88

Table 3-3: MAPLHGR for Lattice 114
(References 9, 10 and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 114: Opt2-BE4.54-18G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.70
2500	8.88
5000	9.02
7500	9.08
10000	9.13
12000	9.18
15000	9.35
17000	9.47
20000	9.65
22000	9.80
24000	9.83
30000	9.76
36000	9.72
42000	9.70
50000	9.70
60000	9.70
72000	9.92

Table 3-4: MAPLHGR Lattice 115
(References 9, 10, and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 115: Opt2-M4.54-18G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.68
2500	8.85
5000	9.01
7500	9.10
10000	9.14
12000	9.21
15000	9.36
17000	9.49
20000	9.66
22000	9.82
24000	9.83
30000	9.76
36000	9.71
42000	9.70
50000	9.68
60000	9.68
72000	9.93

Table 3-5: MAPLHGR for Lattice 116
(References 9, 10, and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 116: Opt2-ME4.50-18G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.81
2500	9.00
5000	9.14
7500	9.25
10000	9.28
12000	9.36
15000	9.53
17000	9.68
20000	9.99
22000	10.03
24000	10.01
30000	9.97
36000	9.91
42000	9.90
50000	9.82
60000	9.85
72000	10.19

Table 3-6: MAPLHGR for Lattice 117
(References 9, 10, and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 117: Opt2-T4.50-18G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.85
2500	9.03
5000	9.17
7500	9.22
10000	9.22
12000	9.28
15000	9.46
17000	9.64
20000	10.00
22000	10.00
24000	10.00
30000	9.95
36000	9.89
42000	9.87
50000	9.79
60000	9.82
72000	10.19

Table 3-7: MAPLHGR for Lattice 118
(References 9, 10, and 11)

Bundle Opt2-4.05-18GZ8.00-14GZ5.50 Lattice 118: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.66
2500	9.77
5000	9.79
7500	9.71
10000	9.64
12000	9.66
15000	9.95
17000	10.15
20000	10.17
22000	10.16
24000	10.14
30000	10.07
36000	10.01
42000	9.95
50000	9.85
60000	9.90
72000	10.26

Table 3-8: MAPLHGR for Lattice 119
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 119: Opt2-B4.46-16G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.96
2500	9.11
5000	9.19
7500	9.21
10000	9.21
12000	9.23
15000	9.33
17000	9.41
20000	9.54
22000	9.67
24000	9.77
30000	9.72
36000	9.68
42000	9.66
50000	9.67
60000	9.65
72000	9.88

Table 3-9: MAPLHGR for Lattice 120
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 120: Opt2-BE4.55-16G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.00
2500	9.15
5000	9.25
7500	9.28
10000	9.28
12000	9.30
15000	9.41
17000	9.50
20000	9.64
22000	9.78
24000	9.86
30000	9.81
36000	9.76
42000	9.75
50000	9.69
60000	9.69
72000	9.93

Table 3-10: MAPLHGR for Lattice 121
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 121: Opt2-M4.55-16G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.99
2500	9.12
5000	9.24
7500	9.29
10000	9.28
12000	9.32
15000	9.42
17000	9.52
20000	9.65
22000	9.79
24000	9.85
30000	9.80
36000	9.76
42000	9.75
50000	9.67
60000	9.67
72000	9.93

Table 3-11: MAPLHGR for Lattice 122
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 122: Opt2-ME4.51-16G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.14
2500	9.30
5000	9.40
7500	9.46
10000	9.44
12000	9.48
15000	9.60
17000	9.71
20000	9.96
22000	10.05
24000	10.05
30000	10.01
36000	9.96
42000	9.89
50000	9.80
60000	9.84
72000	10.19

Table 3-12: MAPLHGR for Lattice 123
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 123: Opt2-T4.51-16G8.00	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.18
2500	9.33
5000	9.42
7500	9.43
10000	9.39
12000	9.42
15000	9.54
17000	9.67
20000	9.97
22000	10.03
24000	10.03
30000	10.00
36000	9.94
42000	9.85
50000	9.77
60000	9.81
72000	10.20

Table 3-13: MAPLHGR for Lattice 124
(References 9, 10, and 11)

Bundle Opt2-4.05-16GZ8.00-14GZ5.50 Lattice 124: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.66
2500	9.77
5000	9.79
7500	9.71
10000	9.64
12000	9.66
15000	9.95
17000	10.15
20000	10.17
22000	10.16
24000	10.14
30000	10.07
36000	10.01
42000	9.95
50000	9.85
60000	9.90
72000	10.26

Table 3-14: MAPLHGR for Lattice 125
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 125: Opt2-B4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.91
2500	9.07
5000	9.20
7500	9.26
10000	9.28
12000	9.31
15000	9.47
17000	9.65
20000	9.82
22000	9.87
24000	9.86
30000	9.79
36000	9.73
42000	9.71
50000	9.75
60000	9.73
72000	9.93

Table 3-15: MAPLHGR for Lattice 126
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 126: Opt2-BE4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.95
2500	9.11
5000	9.26
7500	9.32
10000	9.34
12000	9.39
15000	9.57
17000	9.76
20000	9.93
22000	9.97
24000	9.95
30000	9.88
36000	9.83
42000	9.80
50000	9.79
60000	9.77
72000	9.98

Table 3-16: MAPLHGR for Lattice 127
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 127: Opt2-M4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	8.94
2500	9.10
5000	9.25
7500	9.33
10000	9.36
12000	9.40
15000	9.58
17000	9.77
20000	9.95
22000	9.97
24000	9.95
30000	9.88
36000	9.82
42000	9.79
50000	9.77
60000	9.75
72000	9.98

Table 3-17: MAPLHGR for Lattice 128
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 128: Opt2-ME4.56-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.10
2500	9.26
5000	9.42
7500	9.52
10000	9.52
12000	9.60
15000	9.87
17000	10.10
20000	10.20
22000	10.19
24000	10.17
30000	10.09
36000	10.03
42000	10.01
50000	9.92
60000	9.93
72000	10.25

Table 3-18: MAPLHGR for Lattice 129
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 129: Opt2-T4.56-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.14
2500	9.31
5000	9.44
7500	9.46
10000	9.46
12000	9.53
15000	9.88
17000	10.11
20000	10.19
22000	10.17
24000	10.15
30000	10.08
36000	10.01
42000	9.99
50000	9.88
60000	9.91
72000	10.25

Table 3-19: MAPLHGR for Lattice 130
(References 9, 10, and 11)

Bundle Opt2-4.10-14GZ5.50-2GZ5.50 Lattice 130: Opt2-T4.57-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.50
2500	9.63
5000	9.71
7500	9.68
10000	9.61
12000	9.62
15000	9.88
17000	10.09
20000	10.21
22000	10.19
24000	10.18
30000	10.10
36000	10.04
42000	9.98
50000	9.87
60000	9.90
72000	10.25

Table 3-20: MAPLHGR for Lattice 131
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 131: Opt2-B4.44-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.21
2500	9.53
5000	9.45
7500	9.38
10000	9.49
12000	9.50
15000	9.55
17000	9.61
20000	9.80
22000	9.89
24000	9.83
30000	9.77
36000	9.71
42000	9.67
50000	9.70
60000	9.81
72000	10.07
75000	10.07

Table 3-21: MAPLHGR for Lattice 132
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 132: Opt2-BE4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.34
2500	9.62
5000	9.51
7500	9.43
10000	9.55
12000	9.57
15000	9.64
17000	9.73
20000	9.89
22000	10.02
24000	9.94
30000	9.86
36000	9.81
42000	9.74
50000	9.77
60000	9.80
72000	10.10
75000	10.10

Table 3-22: MAPLHGR for Lattice 133
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 133: Opt2-M4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.33
2500	9.62
5000	9.57
7500	9.43
10000	9.56
12000	9.62
15000	9.67
17000	9.75
20000	9.98
22000	9.99
24000	9.93
30000	9.85
36000	9.81
42000	9.74
50000	9.75
60000	9.78
72000	9.90
75000	9.90

Table 3-23: MAPLHGR for Lattice 134
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 134: Opt2-ME4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.46
2500	9.77
5000	9.62
7500	9.52
10000	9.72
12000	9.73
15000	9.83
17000	9.93
20000	10.19
22000	10.19
24000	10.11
30000	10.04
36000	9.97
42000	9.92
50000	9.85
60000	9.88
72000	10.39
75000	10.39

Table 3-24: MAPLHGR for Lattice 135
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 135: Opt2-T4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.48
2500	9.76
5000	9.56
7500	9.45
10000	9.55
12000	9.72
15000	9.78
17000	9.94
20000	10.19
22000	10.16
24000	10.11
30000	10.05
36000	9.97
42000	9.93
50000	9.81
60000	9.84
72000	10.25
75000	10.25

Table 3-25: MAPLHGR for Lattice 136
(References 3 and 15)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 136: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.21
2500	10.47
5000	10.28
7500	10.05
10000	10.09
12000	10.11
15000	10.22
17000	10.27
20000	10.26
22000	10.29
24000	10.22
30000	10.16
36000	10.09
42000	10.00
50000	9.87
60000	9.90
72000	10.26
75000	10.26

Table 3-26: MAPLHGR for Lattice 137
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 137: Opt2-B4.41-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.47
2500	9.76
5000	9.66
7500	9.57
10000	9.64
12000	9.54
15000	9.57
17000	9.60
20000	9.76
22000	9.90
24000	9.84
30000	9.79
36000	9.75
42000	9.70
50000	9.70
60000	9.79
72000	10.07
75000	10.07

Table 3-27: MAPLHGR for Lattice 138
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 138: Opt2-BE4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.63
2500	9.85
5000	9.81
7500	9.63
10000	9.70
12000	9.70
15000	9.70
17000	9.75
20000	9.89
22000	10.00
24000	9.95
30000	9.89
36000	9.85
42000	9.77
50000	9.70
60000	9.69
72000	10.02
75000	10.02

Table 3-28: MAPLHGR for Lattice 139
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 139: Opt2-M4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.62
2500	9.87
5000	9.91
7500	9.63
10000	9.72
12000	9.74
15000	9.73
17000	9.77
20000	9.91
22000	10.00
24000	9.95
30000	9.88
36000	9.85
42000	9.77
50000	9.68
60000	9.68
72000	10.06
75000	10.06

Table 3-29: MAPLHGR for Lattice 140
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 140: Opt2-ME4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.78
2500	10.04
5000	9.96
7500	9.80
10000	9.89
12000	9.89
15000	9.89
17000	9.94
20000	10.17
22000	10.19
24000	10.14
30000	10.08
36000	10.01
42000	9.92
50000	9.80
60000	9.84
72000	10.25
75000	10.25

Table 3-30: MAPLHGR for Lattice 141
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 141: Opt2-T4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.80
2500	10.02
5000	9.87
7500	9.76
10000	9.84
12000	9.84
15000	9.83
17000	9.95
20000	10.16
22000	10.15
24000	10.13
30000	10.08
36000	10.00
42000	9.88
50000	9.77
60000	9.71
72000	9.91
75000	9.91

Table 3-31: MAPLHGR for Lattice 142
(References 3 and 15)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 142: Opt2-T4.47-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.22
2500	10.45
5000	10.32
7500	10.07
10000	10.01
12000	10.11
15000	10.23
17000	10.25
20000	10.23
22000	10.23
24000	10.19
30000	10.14
36000	10.07
42000	9.96
50000	9.84
60000	9.87
72000	10.26
75000	10.26

Table 3-32: MAPLHGR for Lattice 143
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 143: Opt2-B4.44-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.48
2500	9.78
5000	9.79
7500	9.59
10000	9.69
12000	9.63
15000	9.75
17000	9.83
20000	10.01
22000	9.95
24000	9.90
30000	9.84
36000	9.79
42000	9.74
50000	9.72
60000	9.77
72000	9.85
75000	9.79

Table 3-33: MAPLHGR for Lattice 144
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 144: Opt2-BE4.54-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.55
2500	9.87
5000	10.02
7500	9.74
10000	9.78
12000	9.76
15000	9.89
17000	10.00
20000	10.15
22000	10.07
24000	10.02
30000	9.94
36000	9.91
42000	9.87
50000	9.84
60000	9.94
72000	10.19
75000	10.19

Table 3-34: MAPLHGR for Lattice 145
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 145:Opt2-M4.54-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.54
2500	9.87
5000	10.06
7500	9.85
10000	9.80
12000	9.80
15000	9.91
17000	10.04
20000	10.13
22000	10.07
24000	10.02
30000	9.94
36000	9.91
42000	9.87
50000	9.82
60000	9.94
72000	10.19
75000	10.19

Table 3-35: MAPLHGR for Lattice 146
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 146: Opt2-ME4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.70
2500	10.04
5000	10.15
7500	9.87
10000	9.96
12000	9.96
15000	10.18
17000	10.32
20000	10.34
22000	10.26
24000	10.23
30000	10.15
36000	10.09
42000	10.04
50000	9.88
60000	9.88
72000	10.30
75000	10.30

Table 3-36: MAPLHGR for Lattice 147
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 147: Opt2-T4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.74
2500	10.06
5000	10.08
7500	9.84
10000	9.92
12000	9.93
15000	10.14
17000	10.31
20000	10.25
22000	10.24
24000	10.20
30000	10.14
36000	10.07
42000	10.00
50000	9.85
60000	9.87
72000	10.25
75000	10.25

Table 3-37: MAPLHGR for Lattice 148
(References 3 and 15)

Bundle Opt2-4.04-14G5.50-2GZ5.50 Lattice 148: Opt2-T4.51-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.14
2500	10.42
5000	10.48
7500	10.06
10000	10.08
12000	10.07
15000	10.15
17000	10.27
20000	10.26
22000	10.30
24000	10.23
30000	10.17
36000	10.10
42000	9.98
50000	9.84
60000	9.77
72000	10.39
75000	10.39

Table 3-38: MAPLHGR for Lattice 149
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 149: Opt2-B4.31-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.51
2500	9.85
5000	9.92
7500	9.84
10000	10.09
12000	10.18
15000	10.32
17000	10.37
20000	10.43
22000	10.39
24000	10.41
30000	10.24
36000	10.12
42000	9.99
50000	9.89
75000	9.89

Table 3-39: MAPLHGR for Lattice 150
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 150: Opt2-B4.44-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.42
2500	9.75
5000	9.65
7500	9.57
10000	9.69
12000	9.72
15000	9.77
17000	9.84
20000	10.04
22000	10.14
24000	10.08
30000	10.02
36000	9.97
42000	9.93
50000	9.97
75000	9.97

Table 3-40: MAPLHGR for Lattice 151
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 151: Opt2-BE4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.55
2500	9.83
5000	9.72
7500	9.62
10000	9.75
12000	9.78
15000	9.87
17000	9.96
20000	10.12
22000	10.26
24000	10.19
30000	10.11
36000	10.07
42000	10.01
50000	10.04
75000	10.04

Table 3-41: MAPLHGR for Lattice 152
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 152: Opt2-M4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.54
2500	9.84
5000	9.79
7500	9.62
10000	9.75
12000	9.82
15000	9.90
17000	9.98
20000	10.20
22000	10.24
24000	10.17
30000	10.10
36000	10.06
42000	10.00
50000	10.02
75000	10.02

Table 3-42: MAPLHGR for Lattice 153
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 153: Opt2-ME4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.67
2500	10.00
5000	9.83
7500	9.72
10000	9.92
12000	9.94
15000	10.05
17000	10.16
20000	10.45
22000	10.43
24000	10.36
30000	10.30
36000	10.23
42000	10.19
50000	10.13
75000	10.13

Table 3-43: MAPLHGR for Lattice 154
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 154: Opt2-T4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.70
2500	9.98
5000	9.77
7500	9.64
10000	9.75
12000	9.93
15000	10.00
17000	10.16
20000	10.43
22000	10.40
24000	10.35
30000	10.30
36000	10.23
42000	10.19
50000	10.09
75000	10.09

Table 3-44: MAPLHGR for Lattice 155
(References 16 and 17)

Bundle Opt2-4.02-18GZ7.50-14GZ5.50 Lattice 155: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.40
2500	10.71
5000	10.55
7500	10.25
10000	10.30
12000	10.32
15000	10.45
17000	10.52
20000	10.51
22000	10.52
24000	10.47
30000	10.41
36000	10.35
42000	10.27
50000	10.16
75000	10.16

Table 3-45: MAPLHGR for Lattice 156
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 156: Opt2-B4.27-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.78
2500	10.09
5000	10.14
7500	10.04
10000	10.20
12000	10.25
15000	10.34
17000	10.38
20000	10.41
22000	10.44
24000	10.45
30000	10.19
36000	10.07
42000	9.94
50000	9.84
75000	9.84

Table 3-46: MAPLHGR for Lattice 157
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 157: Opt2-B4.41-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.69
2500	9.99
5000	9.88
7500	9.76
10000	9.83
12000	9.76
15000	9.79
17000	9.83
20000	10.00
22000	10.13
24000	10.09
30000	10.04
36000	10.00
42000	9.95
50000	9.95
75000	9.95

Table 3-47: MAPLHGR for Lattice 158
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 158: Opt2-BE4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.84
2500	10.08
5000	10.02
7500	9.82
10000	9.90
12000	9.92
15000	9.92
17000	9.98
20000	10.13
22000	10.24
24000	10.20
30000	10.14
36000	10.10
42000	10.04
50000	9.71
75000	9.71

Table 3-48: MAPLHGR for Lattice 159
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 159: Opt2-M4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.84
2500	10.09
5000	10.12
7500	9.83
10000	9.91
12000	9.96
15000	9.95
17000	10.00
20000	10.14
22000	10.24
24000	10.19
30000	10.13
36000	10.10
42000	10.03
50000	9.93
75000	9.93

Table 3-49: MAPLHGR for Lattice 160
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 160: Opt2-ME4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.01
2500	10.27
5000	10.19
7500	10.00
10000	10.10
12000	10.11
15000	10.11
17000	10.17
20000	10.42
22000	10.42
24000	10.39
30000	10.33
36000	10.27
42000	10.19
50000	10.08
75000	10.08

Table 3-50: MAPLHGR for Lattice 161
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 161: Opt2-T4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.03
2500	10.26
5000	10.09
7500	9.97
10000	10.04
12000	10.05
15000	10.06
17000	10.18
20000	10.40
22000	10.40
24000	10.37
30000	10.33
36000	10.26
42000	10.15
50000	10.00
75000	10.00

Table 3-51: MAPLHGR for Lattice 162
(References 16 and 17)

Bundle Opt2-3.98-16GZ7.50-14GZ5.50 Lattice 162: Opt2-T4.47-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.41
2500	10.69
5000	10.54
7500	10.28
10000	10.20
12000	10.32
15000	10.46
17000	10.49
20000	10.48
22000	10.47
24000	10.44
30000	10.39
36000	10.33
42000	10.22
50000	10.12
75000	10.12

Table 3-52: MAPLHGR for Lattice 163
(References 16 and 17)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 163: Opt2-B4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.47
2500	9.81
5000	9.71
7500	9.58
10000	9.68
12000	9.73
15000	9.89
17000	10.00
20000	10.18
22000	10.21
24000	10.18
30000	10.12
36000	10.07
42000	10.00
50000	10.02
75000	10.02

Table 3-53: MAPLHGR for Lattice 164
(References 16 and 17)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 164: Opt2-BE4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.53
2500	9.89
5000	9.85
7500	9.83
10000	9.76
12000	9.82
15000	10.01
17000	10.16
20000	10.33
22000	10.34
24000	10.31
30000	10.23
36000	10.18
42000	10.14
50000	10.09
75000	10.09

Table 3-54: MAPLHGR for Lattice 165
(References 16 and 17)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 165: Opt2-M4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.51
2500	9.91
5000	9.89
7500	9.85
10000	9.78
12000	9.85
15000	10.02
17000	10.18
20000	10.36
22000	10.36
24000	10.31
30000	10.23
36000	10.18
42000	10.14
50000	10.09
75000	10.09

Table 3-55: MAPLHGR for Lattice 166
(References 16 and 17)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 166: Opt2-ME4.57-16G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	9.68
2500	10.09
5000	10.04
7500	9.93
10000	9.95
12000	10.03
15000	10.31
17000	10.47
20000	10.62
22000	10.56
24000	10.51
30000	10.44
36000	10.37
42000	10.28
50000	10.22
75000	10.22

Table 3-56: MAPLHGR for Lattice 167
(References 16 and 17)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 167: Opt2-T4.58-14G5.50	
Average Planar Exposure (MWd/MTU)	**DLO MAPLHGR (kW/ft)**
0	10.13
2500	10.45
5000	10.44
7500	10.17
10000	10.08
12000	10.10
15000	10.29
17000	10.44
20000	10.56
22000	10.56
24000	10.52
30000	10.46
36000	10.39
42000	10.31
50000	10.17
75000	10.17

Table 3-57: MAPLHGR SLO Multiplier
(References 3, 11, and 16)

EOOS Condition	Multiplier
SLO	0.86

4. Operating Limit Minimum Critical Power Ratio

Technical Specification Sections 3.2.2, 3.4.1, and 3.7.7

The OLMCPRs for D2C25 were established to protect the SLMCPR for abnormal operational occurrences. The SLMCPR values for DLO and SLO for D2C25 were determined to be 1.12 and 1.14 (Reference 22), respectively, which are unchanged from the NRC-approved values for the previous operating cycle (D2C24).

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 or equal to 38.5% core thermal power, the power dependent OLMCPR is shown in Tables 4-8 and 4-9. For operation at greater than 38.5% core thermal power, the power dependent OLMCPR is determined by multiplying the applicable rated condition OLMCPR limit shown in Tables 4-2 through 4-7 by the applicable OLMCPR multiplier given in Tables 4-8 and 4-9.

4.1.2. Flow-Dependent MCPR

Table 4-10 gives the MCPR(F) limit as a function of the flow based on the applicable plant condition. The flow-dependent OLMCPR values are applicable to all base case and EOOS combinations.

4.2. Scram Time

TSSS, ISS, and NSS refer to scram speeds. The scram time values associated with these speeds are shown in Table 4-1. The TSSS scram times shown in Table 4-1 are the same as those specified in the Technical Specifications (Reference 5). Reference 22 indicates that the TSSS control rod insertion times that were actually used in the transient analysis are conservative with respect to the scram times specified in the Technical Specifications.

To utilize the OLMCPR limits for NSS in Tables 4-6 and 4-7, the average control rod insertion time at each control rod insertion fraction must be equal to or less than the NSS time shown in Table 4-1 below.

To utilize the OLMCPR limits for ISS in Tables 4-4 and 4-5, the average control rod insertion time at each control rod insertion fraction must be equal to or less than the ISS time shown in Table 4-1 below.

To utilize the OLMCPR limits for TSSS in Tables 4-2 and 4-3, the average control rod insertion time at each control rod insertion fraction must be equal to or less than the TSSS time shown in Table 4-1 below.

The “Average Control Rod Insertion Time” is defined as the sum of the control rod insertion times of all operable control rods divided by the number of operable control rods. The time for inoperable drives fully inserted (notch 00) can be conservatively included for calculation of core average scram speed. (Reference 22)

Table 4-1: Scram Times
(References 5 and 22)

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

4.3. Recirculation Pump ASD Settings

Technical Requirements Manual 2.1.a.1

Cycle 25 was analyzed with a maximum core flow runout of 110%; therefore the recirculation pump ASD must be set to maintain core flow less than 110% (107.8 Mlb/hr) for all runout events (Reference 13). This value is consistent with the analyses in Reference 22.

Table 4-2: MCPR TSSS Based Operating Limits – NFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.64	1.71
Base SLO	1.67	1.75
PLUOOS	1.70	1.76
PLUOOS SLO	1.74	1.80
TBVOOS	1.77	1.80
TBVOOS SLO	1.81	1.84
TCV Slow Closure	1.74	1.80
TCV Slow Closure SLO	1.78	1.84
TCV Stuck Closed	1.64	1.71
TCV Stuck Closed SLO	1.67	1.75

Table 4-3: MCPR TSSS Based Operating Limits – RFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.64	1.71
Base SLO	1.67	1.75
PLUOOS	1.70	1.76
PLUOOS SLO	1.74	1.80
TBVOOS	1.79	1.82
TBVOOS SLO	1.83	1.86
TCV Slow Closure	1.74	1.80
TCV Slow Closure SLO	1.78	1.84
TCV Stuck Closed	1.64	1.71
TCV Stuck Closed SLO	1.67	1.75

Table 4-4: MCPR ISS Based Operating Limits – NFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.46	1.48
Base SLO	1.49	1.51
PLUOOS	1.50	1.55
PLUOOS SLO	1.53	1.58
TBVOOS	1.55	1.60
TBVOOS SLO	1.58	1.63
TCV Slow Closure	1.52	1.57
TCV Slow Closure SLO	1.55	1.60
TCV Stuck Closed	1.46	1.48
TCV Stuck Closed SLO	1.49	1.51

Table 4-5: MCPR ISS Based Operating Limits – RFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.50	1.51
Base SLO	1.53	1.54
PLUOOS	1.50	1.55
PLUOOS SLO	1.53	1.58
TBVOOS	1.59	1.63
TBVOOS SLO	1.62	1.66
TCV Slow Closure	1.52	1.57
TCV Slow Closure SLO	1.55	1.60
TCV Stuck Closed	1.50	1.51
TCV Stuck Closed SLO	1.53	1.54

Table 4-6: MCPR NSS Based Operating Limits – NFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.46	1.46
Base SLO	1.49	1.49
2TBVOOS*	1.46	1.47
2TBVOOS SLO*	1.49	1.50
PLUOOS	1.49	1.53
PLUOOS SLO	1.52	1.56
TBVOOS	1.54	1.58
TBVOOS SLO	1.57	1.61
TCV Slow Closure	1.50	1.55
TCV Slow Closure SLO	1.53	1.58
TCV Stuck Closed	1.46	1.46
TCV Stuck Closed SLO	1.49	1.49

*The 2TBVOOS EOOS option for DLO and SLO is only available for NSS at NFWT.

Table 4-7: MCPR NSS Based Operating Limits – RFWT
(Reference 22)

EOOS Combination	Cycle Exposure ≤ 14500 MWd/MTU	Cycle Exposure > 14500 MWd/MTU
Base	1.50	1.51
Base SLO	1.53	1.54
PLUOOS	1.50	1.53
PLUOOS SLO	1.53	1.56
TBVOOS	1.58	1.61
TBVOOS SLO	1.61	1.64
TCV Slow Closure	1.50	1.55
TCV Slow Closure SLO	1.53	1.58
TCV Stuck Closed	1.50	1.51
TCV Stuck Closed SLO	1.53	1.54

Table 4-8: MCPR(P) – NFWT
(Reference 22)

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				
Base	≤ 60	3.02	2.46	2.16	1.35	1.21	1.14	1.06	1.00
	> 60	3.21	2.71	2.44					
Base SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
2TBVOOS*	≤ 60	3.02	2.46	2.22	1.35	1.21	1.14	1.06	1.00
	> 60	3.21	2.71	2.44					
2TBVOOS SLO*	≤ 60	3.08	2.51	2.26					
	> 60	3.27	2.76	2.49					
PLUOOS	≤ 60	3.02	2.46	2.16	1.60	1.48	1.28	1.06	1.00
	> 60	3.21	2.71	2.44					
PLUOOS SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
TBVOOS	≤ 60	4.47	3.19	2.50	1.35	1.21	1.14	1.06	1.00
	> 60	4.47	3.35	2.88					
TBVOOS SLO	≤ 60	4.55	3.25	2.55					
	> 60	4.55	3.41	2.94					
TCV Slow Closure	≤ 60	3.02	2.46	2.16	1.60	1.48	1.28	1.06	1.00
	> 60	3.21	2.71	2.44					
TCV Slow Closure SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
TCV Stuck Closed	≤ 60	3.02	2.46	2.16	1.35	1.21	1.14	1.06	1.00
	> 60	3.21	2.71	2.44					
TCV Stuck Closed SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					

*The 2TBVOOS EOOS option for DLO and SLO is only available for NSS at NFWT.

Table 4-9: MCPR(P) – RFWT
(Reference 22)

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				
Base	≤ 60	3.02	2.46	2.16	1.40	1.24	1.16	1.06	1.00
	> 60	3.21	2.71	2.44					
Base SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
PLUOOS	≤ 60	3.02	2.46	2.16	1.60	1.48	1.28	1.06	1.00
	> 60	3.21	2.71	2.44					
PLUOOS SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
TBVOOS	≤ 60	4.78	3.37	2.61	1.40	1.24	1.16	1.06	1.00
	> 60	4.78	3.37	2.95					
TBVOOS SLO	≤ 60	4.87	3.44	2.66					
	> 60	4.87	3.44	3.01					
TCV Slow Closure	≤ 60	3.02	2.46	2.16	1.60	1.48	1.28	1.06	1.00
	> 60	3.21	2.71	2.44					
TCV Slow Closure SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					
TCV Stuck Closed	≤ 60	3.02	2.46	2.16	1.40	1.24	1.16	1.06	1.00
	> 60	3.21	2.71	2.44					
TCV Stuck Closed SLO	≤ 60	3.08	2.51	2.20					
	> 60	3.27	2.76	2.49					

Table 4-10: MCPR(F)
(Reference 22)

Flow (% of 98 Mlb/hr)	DLO	SLO
0	1.98	2.02
100	1.38	1.41
108	1.38	1.41

5. Linear Heat Generation Rate

Technical Specification Sections 3.2.3 and 3.4.1

The TMOL at rated conditions is established in terms of the maximum LHGR as a function of rod nodal exposure. The limits in Table 5-5 apply to bundle lattices that do not require Gadolinia set down penalties. The limits in Table 5-12 apply to the natural Uranium blankets at the top and bottom of all fuel types. The limits in all other tables apply to bundle lattices that require Gadolinia set down penalties.

The LHGR limit is the product of the exposure dependent LHGR limit from Table 5-1 through Table 5-12 as appropriate and the minimum of the power dependent LHGR Factor, LHGRFAC(P), and the flow dependent LHGR Factor, LHGRFAC(F). The LHGRFAC(P) is determined from Table 5-13. The LHGRFAC(F) is determined from Table 5-14, and is applicable for DLO, SLO, and all Base Case and EOOS conditions.

Table 5-1: LHGR Limit for Lattices 113, 114, 115, 118, 122
(References 9 and 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.72
23.000	11.85
46.000	9.66
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-2: LHGR Limit for Lattice 116
(References 9 and 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.65
23.000	11.79
35.000	10.65
35.001	11.04
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-3: LHGR Limit for Lattices 117, 123, 124
(References 9 and 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
18.000	12.71
18.001	12.46
23.000	11.98
46.000	9.75
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-4: LHGR Limit for Lattices 119, 120, 121
(References 9 and 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
22.000	12.32
22.001	12.20
23.000	12.10
26.000	11.81
26.001	11.92
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-5: LHGR Limit for Lattices 125*, 126*, 127*, 128*, 129*, 130*, 137, 138, 139, 143, 144, 145, 146, 147, 148, 156, 157, 158, 159, 163, 164, 165, 166, 167
(References 9, 15, 17, 20, 21, and 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
23.000	12.22
57.000	8.87
62.000	8.38
75.000	3.43

* Limits for Lattice 125, 126, 127, 128, 129, and 130 from Reference 22.

Table 5-6: LHGR Limit for Lattices 135, 141
(References 15 and 20)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
22.000	12.32
22.001	12.20
23.000	12.10
35.000	10.93
35.001	11.04
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-7: LHGR Limit for Lattices 131, 132, 133, 136, 140, 142
(References 15 and 20)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.85
23.000	11.98
46.000	9.75
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-8: LHGR Limit for Lattice 134
(References 15 and 20)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.72
23.000	11.85
35.000	10.71
35.001	11.04
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-9: LHGR Limit for Lattices 154, 161
(References 17 and 21)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
23.000	12.22
23.001	12.10
33.000	11.12
33.001	11.23
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-10: LHGR Limit for Lattices 150, 151, 152, 155, 160, 162
(References 17 and 21)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.85
23.000	11.98
46.000	9.75
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-11: LHGR Limit for Lattices 149, 153
(References 17 and 21)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
15.000	13.01
15.001	12.62
23.000	11.85
33.000	10.90
33.001	11.23
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-12: LHGR Limit for Lattices 81, 89
(Reference 22)

Rod Nodal Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	11.96
14.000	11.43
23.000	10.66
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-13: LHGRFAC(P) Multipliers
(Reference 22)

EOOS Combination	Core Thermal Power (% of rated)							
	0	25	≤ 38.5	> 38.5	50	60	80	100
Base Base SLO	0.54	0.64	0.69	0.73	0.80	0.84	0.90	1.00
2TBVOOS* 2TBVOOS SLO*	0.54	0.64	0.69	0.73	0.80	0.84	0.90	1.00
PLUOOS PLUOOS SLO	0.54	0.64	0.69	0.69	0.73	0.82	0.90	1.00
TBVOOS TBVOOS SLO	0.33	0.46	0.53	0.69	0.75	0.78	0.84	1.00
TCV Slow Closure TCV Slow Closure SLO	0.54	0.64	0.69	0.69	0.73	0.82	0.90	1.00
TCV Stuck Closed TCV Stuck Closed SLO	0.54	0.64	0.69	0.73	0.80	0.84	0.90	1.00

*The 2TBVOOS EOOS Option for DLO and SLO are only available for NSS at NFWT.

Table 5-14: LHGRFAC(F) Multipliers
(Reference 22)

EOOS Condition	Flow (% of 98 Mlb/hr)						
	0	**20**	**40**	**60**	**80**	**100**	**108**
Base Case and all EOOS Conditions	0.27	0.43	0.60	0.80	1.00	1.00	1.00

6. Control Rod Block Setpoints

Technical Specification Sections 3.3.2.1 and 3.4.1

The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown below:

Table 6-1: Rod Block Monitor Upscale Instrumentation Setpoints
(Reference 6)

Rod Block Monitor Upscale Trip Function	Allowable Value
Two Recirculation Loop Operation	$0.65\ W_d + 55\%$
Single Recirculation Loop Operation	$0.65\ W_d + 51\%$

W_d – percent of recirculation loop drive flow required to produce a rated core flow of 98.0 Mlb/hr.

The setpoint may be lower/higher and will still comply with the RWE analysis because RWE is analyzed unblocked (Reference 22).

7. Stability Protection Setpoints

Technical Specification Section 3.3.1.3

The OPRM PBDA Trip Settings are provided in Table 7-1.

Table 7-1: OPRM PBDA Trip Settings
(Reference 22)

PBDA Trip Amplitude Setpoint (Sp)	Corresponding Maximum Confirmation Count Setpoint (Np)
1.15	16

The PBDA is the only OPRM setting credited in the safety analysis as documented in the licensing basis for the OPRM system (Methodology 2).

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power/flow dependent MCPR limits. Any change to the OLMCPR values and/or the power/flow 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 EOOS are as described below:

Table 8-1: Modes of Operation
(Reference 22)

EOOS Options	**Thermal Limit Sets**
Base	Base (DLO or SLO)
TBV #8 and any one additional TBV OOS with NSS and NFWT Only	2TBVOOS (DLO or SLO)
TBV #8 and any one additional TBV OOS in a condition other than NSS and NFWT	TBVOOS (DLO or SLO)
PLUOOS	PLUOOS (DLO or SLO)
TBVOOS	TBVOOS (DLO or SLO)
TCV Slow Closure	TCV Slow Closure (DLO or SLO)
TCV Stuck Closed* **	Base Case (DLO or SLO) ➢ See Table 8-2 for power restrictions
PCOOS	PLUOOS (DLO or SLO)
PCOOS and PLUOOS	PLUOOS (DLO or SLO)
PCOOS and TCV Slow Closure	TCV Slow Closure (DLO or SLO)
PCOOS and one TCV Stuck Closed*	PLUOOS (DLO or SLO) ➢ See Table 8-2 for power restrictions
PLUOOS and one TCV Stuck Closed*	PLUOOS (DLO or SLO) ➢ See Table 8-2 for power restrictions

*Also applicable to one TSV Closed and the combination of one TCV and one TSV stuck closed in the same line.
**EOOS condition has identical thermal limits as the Base Case. Therefore, this condition will use the Base Case thermal limit set.

Common Notes – Applicable to both Base Case and all EOOS Combinations for DLO/SLO:

1. All modes are allowed for operation at MELLLA, ICF (up to 108% rated core flow but subject to the restrictions in Section 2), and coastdown (subject to restrictions in Table 8-2). Either EOC must be reached or coastdown must begin prior to reaching 16182 MWd/MTU. The licensing analysis remains valid down to a coastdown power level of 70% given all burnup limits are satisfied per Methodology 6. Each OOS Option may be combined with each of the following conditions:
    a. Up to 16 TIP channel traces and 2 common channel traces may be substituted using the SUBTIP methodology (Reference 12) provided the requirements for utilizing SUBTIP methodology are met as clarified in Reference 18.
    b. Up to 50% of the LPRMs OOS (Reference 12)
    c. An LPRM calibration frequency of up to 2500 EFPH (2000 EFPH + 25%) (Reference 12)

2. Nominal FWT results are valid for application within a +10°F/-30°F temperature band around the nominal FWT curve and operating steam dome pressure region bounded by the maximum value of 1020 psia and the minimum pressure curve (Reference 8). The FWTR results are valid for the minimum FWT curve (Reference 22). For operation outside of NFWT, a FWTR of between 30°F and 120°F is supported for Base Case and all EOOS DLO/SLO conditions, except for 2TBVOOS, for cycle operation through EOC subject to the restriction in Reference 4 for feedwater temperature reductions of greater than 100°F. The restriction requires that, for a FWT reduction greater than 100°F, operation needs to be restricted to less than the 100% load line.

3. All analyses support the fastest Turbine Bypass Valve (assumed to be #1) OOS, with the remaining 8 TBVs meeting the assumed opening profile in Reference 7. The analyses also support Turbine Bypass flow of 3.456 Mlb/hr of vessel rated steam flow, equivalent to one TBV OOS (or partially closed TBVs equivalent to one closed TBV), if the assumed opening profile (Reference 7) for the remaining TBVs is met. If the opening profile is **NOT** met, or if the TBV system cannot pass an equivalent of 3.456 Mlb/hr of vessel rated steam flow and the 2TBVOOS EOOS option is not being used, utilize the TBVOOS condition (Reference 22).

4. The 2TBVOOS with NSS and NFWT analysis supports Turbine Bypass Valve #8 and any one additional Turbine Bypass Valve OOS, with the remaining 7 TBV meeting the assumed opening profile in Reference 7. If operating with more than one TBV OOS with RFWT, ISS, or TSSS, utilize the TBVOOS condition (Reference 22).

5. If any TBVs are OOS in the pressure control mode, the maximum steam flow removal capacity for pressure control needs to be evaluated to ensure that at least the equivalent of two TBVs are capable of being opened for pressure control within the limits of the MCFL (Reference 22).

6. A single MSIV may be taken OOS (shut) under all OOS Options, as long as core thermal power is maintained ≤ 75% of 2957 MWth (Reference 22).

Table 8-2: Core Thermal Power Restriction for OOS Conditions
(Reference 22)

EOOS Condition	Core Thermal Power (% of Rated Power)
One TCV Stuck Closed * PCOOS and One TCV Stuck Closed* PLUOOS and One TCV Stuck Closed*	$\leq$ 75**

* Also applicable to one TSV Closed and the combination of one TCV and one TSV stuck closed in the same line. (Reference 22).
** Operation above 75% rated power is included as part of the reload analysis. However, operation above 75% power may require raising the MCFL setpoint to increase the available total reactor vessel steam flow capability. Information regarding the steam flow capability necessary to satisfy the reload analysis for operation above 75% power is reported in Reference 22.

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. GE Topical Report NEDE-24011-P-A, Revision 15, “General Electric Standard Application for Reactor Fuel (GESTAR),” September 2005.

2. GE Topical Report NEDO-32465-A, Revision 0, “Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications,” August 1996.

3. Westinghouse Report WCAP-15682-P-A, Revision 0, “Westinghouse BWR ECCS Evaluation Model: Supplement 2 to Code Description, Qualification and Application,” April 2003.

4. Westinghouse Report WCAP-16078-P-A, Revision 0, “Westinghouse BWR ECCS Evaluation Model: Supplement 3 to Code Description, Qualification and Application to SVEA-96 Optima2 Fuel,” November 2004.

5. Westinghouse Report WCAP-16081-P-A, Revision 0, “10x10 SVEA Fuel Critical Power Experiments and CPR Correlation: SVEA-96 Optima2,” March 2005.

6. Westinghouse Topical Report CENPD-300-P-A, Revision 0, “Reference Safety Report for Boiling Water Reactor Reload Fuel,” July 1996.

7. Westinghouse Topical Report CENPD-390-P-A, Revision 0, “The Advanced PHOENIX and POLCA Codes for Nuclear Design of Boiling Water Reactors,” December 2000.

8. Westinghouse Topical Report WCAP-15836-P-A, Revision 0, “Fuel Rod Design Methods for Boiling Water Reactors – Supplement 1,” April 2006.

9. Westinghouse Topical Report WCAP-15942-P-A, Revision 0, “Fuel Assembly Mechanical Design Methodology for Boiling Water Reactors, Supplement 1 to CENPD-287,” March 2006.

10. Westinghouse Report WCAP-16865-P-A, Revision 1, “Westinghouse BWR ECCS Evaluation Model Updates: Supplement 4 to Code Description, Qualification and Application,” October 2011.

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. Removed.
3. Westinghouse Document NF-BEX-13-111-NP, Revision 0, “Dresden Nuclear Power Station Unit 2 Cycle 24 MAPLHGR Report,” September 2013.
4. 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.
5. Exelon Technical Specifications for Dresden 2 and 3, Table 3.1.4-1, “Control Rod Scram Times.”
6. GE DRF C51-00217-01, “Instrument Setpoint Calculation Nuclear Instrumentation, Rod Block Monitor, Commonwealth Edison Company, Dresden 2 & 3,” December 15, 1999.
7. Exelon TODI OPS Ltr: 15-13, Revision 0, “OPL-W Parameters for Dresden Unit 2 Cycle 25 Transient Analysis,” March 9, 2015.
8. Exelon TODI ES1500006, Revision 0, “Licensing Generic Inputs Report (LGIR),” March 10, 2015.
9. Westinghouse Document NF-BEX-11-58, Revision 0, “Bundle Design Report for Dresden 2 Cycle 23,” April 19, 2011.
10. Westinghouse Document NF-BEX-11-101-NP, Revision 0, “Dresden Nuclear Power Station Unit 2 Cycle 23 MAPLHGR Report,” August 2011.
11. Westinghouse Document NF-BEX-11-101-NP, Revision 1, “Dresden Nuclear Power Station Unit 2 Cycle 23 MAPLHGR Report,” September 2015.
12. Exelon Engineering Evaluation, EC 357691-000, “EVALUATION OF APPROPRIATE UNCERTAINTIES FOR USE BY WESTINGHOUSE IN SAFETY LIMIT MCPR ANALYSES,” November 28, 2005.
13. Westinghouse Document NF-BEX-15-98, Revision 0, “Dresden Nuclear Power Station Unit 2 Cycle 25 Reload Engineering Report,” September 2015.
14. Westinghouse Document NF-BEX-15-88, Revision 0, “Safety Limit MCPR for Dresden Unit 2 Cycle 25,” June 2, 2015.
15. Westinghouse Document NF-BEX-13-66, Revision 0, “Bundle Design Report for Dresden 2 Cycle 24,” May 3, 2013.
16. Westinghouse Document NF-BEX-15-101-NP, Revision 0, “Dresden Nuclear Power Station Unit 2 Cycle 25 MAPLHGR Report,” September 2015.
17. Westinghouse Document NF-BEX-15-72, Revision 0, “Bundle Design Report for Dresden 2 Cycle 25,” April 17, 2015.
18. FANP Letter, NJC:04:031/FAB04-496, “Startup with TIP Equipment Out of Service,” April 20, 2004. (Exelon EC 348897-000)
19. Westinghouse Document BTD 09-0311, Revision 1, “Westinghouse CMS – Operation guidelines for Dresden and Quad Cities plants,” July 20, 2009.
20. Westinghouse Letter NF-BEX-15-12, “Linear Heat Generation Rate Limits for Fresh and Once-Burned Fuel Loaded in Dresden Unit 2 Cycle 24,” January 14, 2015.
21. Westinghouse Letter NF-BEX-15-157, “Linear Heat Generation Rate Limits for Fresh Fuel Loaded in Dresden Unit 2 Cycle 25,” October 28, 28, 2015.
22. Westinghouse Document NF-BEX-15-105, Revision 1, “Dresden Nuclear Power Station Unit 2 Cycle 25 Reload Licensing Report,” August 2016.

Core Operating Limits Report

For

Dresden Unit 3 Cycle 25

Revision 0

Table of Contents

Record of Dresden 3 Cycle 25 COLR Revisions

Revision	Description
0	Initial issuance for D3C25

List of Tables

1. Terms and Definitions

AOO	Anticipated operational occurrence
APLHGR	Average planar linear heat generation rate
ASD	Adjustable Speed Drive
CAVEX	Core average exposure
CPR	Critical power ratio
CRWE	Control rod withdrawal error
CTP	Core thermal power
EFPD	Effective full power day
EFPH	Effective full power hour
EOC	End of cycle
EOCLB	End of cycle licensing basis
EOFPL	End of full power life
EOFPLB	End of full power licensing basis
EOOS	Equipment out of service
FWT	Feedwater temperature
FHOOS	Feedwater heater out of service
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
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
MWd/MTU	MegaWatt days per metric ton Uranium
NEOC	Near end of cycle
NRC	Nuclear Regulatory Commission
NSS	Nominal scram speed
OLMCPR	Operating limit minimum critical power ratio
OOS	Out of service
OPRM	Oscillation power range monitor
PBDA	Period based detection algorithm
PLUOOS	Power load unbalance out of service
PCOOS	Pressure controller out of service
SLMCPR	Safety limit minimum critical power ratio
SLO	Single loop operation
SRVOOS	Safety relief valve out of service
TBV	Turbine bypass valve
TCV	Turbine control valve
TIP	Traversing incore probe
TLO	Two loop operation
TMOL	Thermal mechanical operating limit
TSSS	Technical Specification scram speed
TSV	Turbine stop valve

2. General Information

This report is prepared in accordance with Technical Specification 5.6.5. The D3C25 reload is licensed by AREVA. However, some legacy analyses by Westinghouse are still applicable for OPTIMA2 fuel as described in Reference 2.

Licensed rated thermal power is 2957 MWth. Rated core flow is 98 Mlb/hr. Operation up to 108% rated flow is licensed for this cycle. For allowed operating regions, see applicable power/flow map.

The licensing analysis supports full power operation to EOCLB (37,612 MWd/MTU CAVEX). Note that this value includes coastdown, where full power operation is not expected. The transient analysis limits are provided for operation up to specific CAVEX exposures as defined in Section 4.3.

Power and flow dependent limits are listed for various power and flow levels. Linear interpolation on power or flow (as applicable) is to be used to find intermediate values. For cases where an entry in a table is blank and grayed out, values should be determined using linear interpolation between the values on either side of the grayed box.

Coastdown is defined as operation beyond EOFPL with the plant power gradually reducing as available core reactivity diminishes. The D3C25 reload analyses do not credit this reduced power during coastdown and the EOCLB limits remain valid for operation up to rated power. The minimum allowed coastdown power level is 40% rated CTP per Reference 1.

Only $MCPR_p$ varies with scram speed. All other thermal limits are analyzed to NSS, ISS, and TSSS.

For thermal limit monitoring above 100% rated power or 108% rated core flow, the 100% rated power and the 108% core flow thermal limit values, respectively, shall be used.

$LHGRFAC_p$ and $LHGRFAC_f$ are independent of scram speed. $LHGRFAC_f$ is independent of feedwater temperature and EOOS conditions.

3. Average Planar Linear Heat Generation Rate

Technical Specification Sections 3.2.1 and 3.4.1

For OPTIMA2 natural uranium lattices, TLO and SLO MAPLHGR values are provided in Table 3-2. For all other OPTIMA2 lattices, lattice-specific MAPLHGR values for TLO are provided in Tables 3-3 through 3-38.

For ATRIUM 10XM fuel, the MAPLHGR values applicable for all lattices can be found in Table 3-39.

During SLO, these limits are multiplied by the fuel-specific EOOS multiplier listed in Table 3-1. The ATRIUM 10XM multiplier may be applied to OPTIMA2 for SLO conditions, as the ATRIUM 10XM multiplier is more limiting.

Table 3-1: MAPLHGR EOOS Multipliers
(References 2, 5, and 8)

Fuel Type	EOOS Condition	Multiplier
ATRIUM 10XM	SLO	0.80
OPTIMA2	SLO	0.86

Table 3-2: MAPLHGR for OPTIMA2 Lattices 81 and 89
(References 4, 5, and 7)

All OPTIMA2 Bundles Lattices 81: Opt2-B0.71 89: Opt2-T0.71	
Average Planar Exposure (MWd/MTU)	**TLO and SLO MAPLHGR (kW/ft)**
0	7.50
75000	7.50

Table 3-3: MAPLHGR for OPTIMA2 Lattice 131
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 131: Opt2-B4.44-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.12
2500	9.44
5000	9.40
7500	9.33
10000	9.46
12000	9.49
15000	9.54
17000	9.61
20000	9.81
22000	9.89
24000	9.84
30000	9.77
36000	9.72
42000	9.68
50000	9.71
60000	9.82
62000	9.82
64000	9.82
72000	9.93

Table 3-4: MAPLHGR for OPTIMA2 Lattice 132
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 132: Opt2-BE4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.28
2500	9.56
5000	9.47
7500	9.38
10000	9.53
12000	9.55
15000	9.64
17000	9.73
20000	9.89
22000	10.01
24000	9.94
30000	9.86
36000	9.82
42000	9.75
50000	9.78
60000	9.81
62000	9.87
64000	9.92
72000	9.92

Table 3-5: MAPLHGR for OPTIMA2 Lattice 133
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 133: Opt2-M4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.26
2500	9.56
5000	9.53
7500	9.39
10000	9.53
12000	9.59
15000	9.66
17000	9.75
20000	9.97
22000	9.98
24000	9.93
30000	9.86
36000	9.81
42000	9.75
50000	9.76
60000	9.79
62000	9.83
64000	9.86
72000	9.87

Table 3-6: MAPLHGR for OPTIMA2 Lattice 134
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 134: Opt2-ME4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.39
2500	9.70
5000	9.57
7500	9.50
10000	9.68
12000	9.70
15000	9.81
17000	9.92
20000	10.17
22000	10.16
24000	10.09
30000	10.03
36000	9.96
42000	9.92
50000	9.85
60000	9.88
62000	9.99
64000	10.12
72000	10.29

Table 3-7: MAPLHGR for OPTIMA2 Lattice 135
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 135: Opt2-T4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.42
2500	9.68
5000	9.51
7500	9.41
10000	9.51
12000	9.69
15000	9.75
17000	9.93
20000	10.17
22000	10.14
24000	10.09
30000	10.04
36000	9.96
42000	9.92
50000	9.81
60000	9.84
62000	9.96
64000	10.09
72000	10.32

Table 3-8: MAPLHGR for OPTIMA2 Lattice 136
(References 7 and 8)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 136: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	10.15
2500	10.39
5000	10.24
7500	10.00
10000	10.05
12000	10.08
15000	10.20
17000	10.25
20000	10.24
22000	10.26
24000	10.20
30000	10.14
36000	10.08
42000	9.98
50000	9.87
60000	9.89
62000	10.01
64000	10.14
72000	10.25

Table 3-9: MAPLHGR for OPTIMA2 Lattice 137
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 137: Opt2-B4.45-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.44
2500	9.72
5000	9.70
7500	9.50
10000	9.60
12000	9.64
15000	9.60
17000	9.65
20000	9.79
22000	9.93
24000	9.87
30000	9.81
36000	9.76
42000	9.72
50000	9.74
60000	9.81
62000	9.81
64000	9.80
72000	9.93

Table 3-10: MAPLHGR for OPTIMA2 Lattice 138
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 138: Opt2-BE4.55-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.59
2500	9.82
5000	9.76
7500	9.57
10000	9.66
12000	9.69
15000	9.70
17000	9.75
20000	9.88
22000	10.02
24000	9.97
30000	9.90
36000	9.86
42000	9.79
50000	9.76
60000	9.80
62000	9.86
64000	9.91
72000	9.99

Table 3-11: MAPLHGR for OPTIMA2 Lattice 139
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 139: Opt2-M4.55-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.58
2500	9.83
5000	9.74
7500	9.58
10000	9.68
12000	9.72
15000	9.73
17000	9.77
20000	9.91
22000	10.01
24000	9.96
30000	9.90
36000	9.85
42000	9.78
50000	9.74
60000	9.78
62000	9.82
64000	9.85
72000	9.87

Table 3-12: MAPLHGR for OPTIMA2 Lattice 140
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 140: Opt2-ME4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.73
2500	9.99
5000	9.90
7500	9.75
10000	9.84
12000	9.86
15000	9.87
17000	9.93
20000	10.18
22000	10.18
24000	10.13
30000	10.07
36000	10.02
42000	9.95
50000	9.85
60000	9.86
62000	9.98
64000	10.11
72000	10.27

Table 3-13: MAPLHGR for OPTIMA2 Lattice 141
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 141: Opt2-T4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.76
2500	9.97
5000	9.81
7500	9.70
10000	9.79
12000	9.81
15000	9.83
17000	9.93
20000	10.17
22000	10.16
24000	10.13
30000	10.08
36000	10.00
42000	9.91
50000	9.80
60000	9.82
62000	9.95
64000	10.07
72000	10.35

Table 3-14: MAPLHGR for OPTIMA2 Lattice 142
(References 7 and 8)

Bundle Opt2-4.05-16GZ7.50-14GZ5.50 Lattice 142: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	10.15
2500	10.39
5000	10.24
7500	10.01
10000	10.05
12000	10.08
15000	10.20
17000	10.25
20000	10.24
22000	10.26
24000	10.20
30000	10.14
36000	10.08
42000	9.98
50000	9.87
60000	9.89
62000	10.01
64000	10.14
72000	10.25

Table 3-15: MAPLHGR for OPTIMA2 Lattice 143
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 143: Opt2-B4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.24
2500	9.54
5000	9.47
7500	9.37
10000	9.47
12000	9.52
15000	9.67
17000	9.78
20000	9.95
22000	9.98
24000	9.94
30000	9.85
36000	9.81
42000	9.75
50000	9.77
60000	9.86
62000	9.85
64000	9.83
72000	9.86

Table 3-16: MAPLHGR for OPTIMA2 Lattice 144
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 144: Opt2-BE4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.29
2500	9.64
5000	9.61
7500	9.61
10000	9.55
12000	9.61
15000	9.79
17000	9.93
20000	10.10
22000	10.10
24000	10.05
30000	9.97
36000	9.92
42000	9.88
50000	9.83
60000	9.86
62000	9.90
64000	9.92
72000	9.82

Table 3-17: MAPLHGR for OPTIMA2 Lattice 145
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 145: Opt2-M4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.28
2500	9.65
5000	9.65
7500	9.62
10000	9.57
12000	9.63
15000	9.81
17000	9.96
20000	10.13
22000	10.10
24000	10.05
30000	9.97
36000	9.92
42000	9.89
50000	9.81
60000	9.84
62000	9.87
64000	9.90
72000	9.83

Table 3-18: MAPLHGR for OPTIMA2 Lattice 146
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 146: Opt2-ME4.57-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.44
2500	9.82
5000	9.79
7500	9.70
10000	9.73
12000	9.81
15000	10.08
17000	10.23
20000	10.34
22000	10.28
24000	10.23
30000	10.16
36000	10.10
42000	10.00
50000	9.94
60000	9.93
62000	10.03
64000	10.18
72000	10.31

Table 3-19: MAPLHGR for OPTIMA2 Lattice 147
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 147: Opt2-T4.57-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.48
2500	9.83
5000	9.80
7500	9.59
10000	9.69
12000	9.77
15000	10.03
17000	10.22
20000	10.27
22000	10.26
24000	10.21
30000	10.15
36000	10.08
42000	10.02
50000	9.90
60000	9.89
62000	10.02
64000	10.12
72000	10.39

Table 3-20: MAPLHGR for OPTIMA2 Lattice 148
(References 7 and 8)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 148: Opt2-T4.58-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.86
2500	10.16
5000	10.16
7500	9.92
10000	9.87
12000	9.87
15000	10.05
17000	10.19
20000	10.28
22000	10.30
24000	10.24
30000	10.18
36000	10.11
42000	10.02
50000	9.90
60000	9.89
62000	10.01
64000	10.12
72000	10.41

Table 3-21: MAPLHGR for OPTIMA2 Lattice 149
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 149: Opt2-B4.44-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.14
2500	9.45
5000	9.41
7500	9.35
10000	9.48
12000	9.50
15000	9.55
17000	9.62
20000	9.82
22000	9.90
24000	9.85
30000	9.78
36000	9.72
42000	9.68
50000	9.70
60000	9.80
62000	9.85
64000	9.92
72000	10.05
75000	10.05

Table 3-22: MAPLHGR for OPTIMA2 Lattice 150
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 150: Opt2-BE4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.29
2500	9.57
5000	9.48
7500	9.39
10000	9.54
12000	9.56
15000	9.65
17000	9.74
20000	9.90
22000	10.02
24000	9.95
30000	9.86
36000	9.82
42000	9.75
50000	9.77
60000	9.80
62000	9.89
64000	9.95
72000	10.10
75000	10.10

Table 3-23: MAPLHGR for OPTIMA2 Lattice 151
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 151: Opt2-M4.54-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.28
2500	9.57
5000	9.55
7500	9.41
10000	9.54
12000	9.60
15000	9.68
17000	9.76
20000	10.00
22000	9.99
24000	9.93
30000	9.86
36000	9.82
42000	9.74
50000	9.75
60000	9.78
62000	9.87
64000	9.94
72000	10.10
75000	10.10

Table 3-24: MAPLHGR for OPTIMA2 Lattice 152
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 152: Opt2-ME4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.40
2500	9.72
5000	9.58
7500	9.49
10000	9.70
12000	9.72
15000	9.82
17000	9.93
20000	10.19
22000	10.17
24000	10.11
30000	10.03
36000	9.98
42000	9.91
50000	9.83
60000	9.89
62000	9.98
64000	10.11
72000	10.34
75000	10.34

Table 3-25: MAPLHGR for OPTIMA2 Lattice 153
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 153: Opt2-T4.50-18G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.43
2500	9.70
5000	9.52
7500	9.42
10000	9.52
12000	9.70
15000	9.77
17000	9.94
20000	10.18
22000	10.15
24000	10.10
30000	10.04
36000	9.97
42000	9.92
50000	9.80
60000	9.85
62000	9.95
64000	10.09
72000	10.34
75000	10.34

Table 3-26: MAPLHGR for OPTIMA2 Lattice 154
(References 4 and 5)

Bundle Opt2-4.04-18GZ7.50-14GZ5.50 Lattice 154: Opt2-T4.52-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	10.17
2500	10.41
5000	10.26
7500	10.02
10000	10.06
12000	10.09
15000	10.22
17000	10.26
20000	10.26
22000	10.28
24000	10.22
30000	10.15
36000	10.09
42000	9.98
50000	9.86
60000	9.91
62000	10.01
64000	10.15
72000	10.40
75000	10.40

Table 3-27: MAPLHGR for OPTIMA2 Lattice 155
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 155: Opt2-B4.41-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.40
2500	9.68
5000	9.63
7500	9.53
10000	9.61
12000	9.54
15000	9.58
17000	9.61
20000	9.78
22000	9.90
24000	9.86
30000	9.81
36000	9.76
42000	9.70
50000	9.69
60000	9.71
62000	9.79
64000	9.88
72000	10.05
75000	10.05

Table 3-28: MAPLHGR for OPTIMA2 Lattice 156
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 156: Opt2-BE4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.58
2500	9.81
5000	9.78
7500	9.60
10000	9.68
12000	9.70
15000	9.71
17000	9.76
20000	9.91
22000	10.00
24000	9.96
30000	9.90
36000	9.86
42000	9.78
50000	9.70
60000	9.70
62000	9.79
64000	9.91
72000	10.09
75000	10.09

Table 3-29: MAPLHGR for OPTIMA2 Lattice 157
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 157: Opt2-M4.51-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.57
2500	9.82
5000	9.87
7500	9.60
10000	9.70
12000	9.74
15000	9.73
17000	9.78
20000	9.92
22000	10.01
24000	9.96
30000	9.89
36000	9.85
42000	9.78
50000	9.68
60000	9.68
62000	9.77
64000	9.91
72000	10.09
75000	10.09

Table 3-30: MAPLHGR for OPTIMA2 Lattice 158
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 158: Opt2-ME4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.72
2500	9.98
5000	9.92
7500	9.77
10000	9.86
12000	9.87
15000	9.88
17000	9.95
20000	10.17
22000	10.18
24000	10.13
30000	10.07
36000	10.01
42000	9.91
50000	9.79
60000	9.84
62000	9.95
64000	10.10
72000	10.34
75000	10.34

Table 3-31: MAPLHGR for OPTIMA2 Lattice 159
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 159: Opt2-T4.46-16G7.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.75
2500	9.96
5000	9.83
7500	9.73
10000	9.80
12000	9.80
15000	9.83
17000	9.95
20000	10.16
22000	10.15
24000	10.12
30000	10.08
36000	10.00
42000	9.87
50000	9.76
60000	9.73
62000	9.74
64000	9.79
72000	10.29
75000	10.29

Table 3-32: MAPLHGR for OPTIMA2 Lattice 160
(References 4 and 5)

Bundle Opt2-4.01-16GZ7.50-14GZ5.50 Lattice 160: Opt2-T4.47-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	10.18
2500	10.39
5000	10.27
7500	10.04
10000	10.01
12000	10.09
15000	10.23
17000	10.24
20000	10.23
22000	10.22
24000	10.19
30000	10.14
36000	10.07
42000	9.94
50000	9.82
60000	9.88
62000	9.99
64000	10.13
72000	10.40
75000	10.40

Table 3-33: MAPLHGR for OPTIMA2 Lattice 161
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 161: Opt2-B4.50-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.25
2500	9.56
5000	9.49
7500	9.38
10000	9.49
12000	9.53
15000	9.68
17000	9.79
20000	9.96
22000	9.99
24000	9.94
30000	9.87
36000	9.82
42000	9.74
50000	9.76
60000	9.85
62000	9.88
64000	9.97
72000	10.10
75000	10.10

Table 3-34: MAPLHGR for OPTIMA2 Lattice 162
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 162: Opt2-BE4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.31
2500	9.66
5000	9.62
7500	9.62
10000	9.56
12000	9.62
15000	9.80
17000	9.94
20000	10.13
22000	10.11
24000	10.06
30000	9.98
36000	9.94
42000	9.88
50000	9.83
60000	9.85
62000	9.93
64000	9.99
72000	10.14
75000	10.14

Table 3-35: MAPLHGR for OPTIMA2 Lattice 163
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 163: Opt2-M4.60-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.30
2500	9.67
5000	9.66
7500	9.63
10000	9.58
12000	9.64
15000	9.82
17000	9.96
20000	10.17
22000	10.12
24000	10.06
30000	9.98
36000	9.94
42000	9.89
50000	9.80
60000	9.82
62000	9.92
64000	9.99
72000	10.15
75000	10.15

Table 3-36: MAPLHGR for OPTIMA2 Lattice 164
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 164: Opt2-ME4.57-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.46
2500	9.83
5000	9.80
7500	9.71
10000	9.74
12000	9.83
15000	10.09
17000	10.24
20000	10.41
22000	10.29
24000	10.24
30000	10.18
36000	10.11
42000	10.00
50000	9.93
60000	9.95
62000	10.04
64000	10.17
72000	10.39
75000	10.39

Table 3-37: MAPLHGR for OPTIMA2 Lattice 165
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 165: Opt2-T4.57-16G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.50
2500	9.85
5000	9.81
7500	9.60
10000	9.70
12000	9.78
15000	10.04
17000	10.24
20000	10.28
22000	10.27
24000	10.23
30000	10.16
36000	10.09
42000	10.02
50000	9.89
60000	9.91
62000	10.01
64000	10.16
72000	10.39
75000	10.39

Table 3-38: MAPLHGR for OPTIMA2 Lattice 166
(References 4 and 5)

Bundle Opt2-4.10-14G5.50-2GZ5.50 Lattice 166: Opt2-T4.58-14G5.50	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	9.88
2500	10.18
5000	10.18
7500	9.94
10000	9.87
12000	9.89
15000	10.06
17000	10.20
20000	10.29
22000	10.32
24000	10.26
30000	10.19
36000	10.12
42000	10.02
50000	9.88
60000	9.91
62000	10.01
64000	10.15
72000	10.39
75000	10.39

Table 3-39: MAPLHGR for ATRIUM 10XM
(Reference 2)

All ATRIUM 10XM Lattices	
Average Planar Exposure (MWd/MTU)	**TLO MAPLHGR (kW/ft)**
0	11.50
20000	11.50
25000	10.70
67000	7.01

4. Operating Limit Minimum Critical Power Ratio

Technical Specification Sections 3.2.2, 3.4.1, and 3.7.7

The OLMCPRs for D3C25 are established so that less than 0.1% of the fuel rods in the core are expected to experience boiling transition during an AOO initiated from rated or off-rated conditions and are based on the Technical Specifications SLMCPR values (Reference 2).

Tables 4-3 through 4-27 include MCPR limits for various specified EOOS conditions. The EOOS conditions separated by “/” in these tables represent each individual EOOS condition, not any combination of slash-separated EOOS conditions. The word “and” indicates that any single EOOS condition prior to the word “and” can be combined with the single EOOS condition after the word “and.” Refer to Section 8 for a detailed explanation of allowable combined EOOS conditions.

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

The OLMCPR as a function of core thermal power ($MCPR_p$) is shown in Tables 4-3 through 4-26. $MCPR_p$ limits are dependent on scram times as described in Section 4.2, exposure as described in Section 4.3, fuel type, FWT, and whether the plant is in TLO or SLO. TLO limits for ATRIUM 10XM fuel are given in Tables 4-3 through 4-11 and SLO limits for ATRIUM 10XM fuel are given in Tables 4-21 through 4-23. TLO limits for OPTIMA2 fuel are given in Tables 4-12 through 4-20 and SLO limits for OPTIMA2 fuel are given in Tables 4-24 through 4-26.

4.1.2. Flow-Dependent MCPR

Table 4-27 gives the OLMCPR limit as a function of the flow ($MCPR_f$) based on the applicable plant condition. These values are applicable to both ATRIUM 10XM and OPTIMA2 fuel.

4.2. Scram Time

TSSS, ISS, and NSS refer to scram speeds. The scram time values associated with these speeds are shown in Table 4-1. The TSSS scram times shown in Table 4-1 are the same as those specified in the Technical Specifications (Reference 15).

To utilize the OLMCPR limits for NSS in Tables 4-3, 4-6, 4-9, 4-12, 4-15, 4-18, 4-21, and 4-24, the average control rod insertion time at each control rod insertion fraction must be equal to or less than the NSS time shown on Table 4-1 below.

To utilize the OLMCPR limits for ISS in Tables 4-4, 4-7, 4-10, 4-13, 4-16, 4-19, 4-22, and 4-25, the average control rod insertion time at each control rod insertion fraction must be equal to or less than the ISS time shown on Table 4-1 below.

The "Average Control Rod Insertion Time" is defined as the sum of the control rod insertion times of all operable control rods divided by the number of operable control rods. Conservative adjustments to the NSS and ISS scram speeds were made to the analysis inputs to appropriately account for the effects of 1 stuck control rod and one additional control rod that is assumed to fail to scram (Reference 2).

To utilize the OLMCPR limits for TSSS in Tables 4-5, 4-8, 4-11, 4-14, 4-17, 4-20, 4-23, and 4-26, the control rod insertion time of each operable control rod at each control rod insertion fraction must be less than equal to the TSSS time shown on Table 4-1. The Technical Specifications allow operation with up to 12 "slow" and 1 stuck control rod. One additional control rod is assumed to fail to scram for the system transient analyses performed to establish $MCPR_p$ limits (Reference 2). Conservative adjustments to the TSSS scram speeds were made to the analysis inputs to appropriately account for the effects of the slow and stuck rods on scram reactivity (Reference 2).

For cases below 38.5% power (P_{bypass}), the results are relatively insensitive to scram speed, and only TSSS analyses were performed (Reference 2).

Table 4-1: Scram Times
(References 2 and 15)

Control Rod Insertion Fraction (%)	NSS (seconds)	ISS (seconds)	TSSS (seconds)
5	0.324	0.36	0.48
20	0.700	0.72	0.89
50	1.510	1.58	1.98
90	2.635	2.74	3.44

4.3. Exposure Dependent MCPR Limits

Exposure-dependent $MCPR_p$ limits were established to support operation from BOC to NEOC (CAVEX of 35,677 MWd/MTU), NEOC to EOFPLB (CAVEX of 36,814 MWd/MTU), and EOFPLB to EOCLB (CAVEX of 37,612 MWd/MTU) as defined by the CAVEX values listed in Table 4-2. Note that the thermal limits are based on CAVEX. The limits at a later exposure range can be used earlier in the cycle as they are the same or more conservative.

Table 4-2: Exposure Basis for Transient Analysis
(Reference 2)

Core Average Exposure (MWd/MTU)	Description
35,677	Break point for exposure-dependent $MCPR_p$ limits (NEOC)
36,814	Design basis rod patterns to EOFPL + 25 EFPD (EOFPLB)
37,612	EOCLB – Maximum licensing core exposure, including coastdown

4.4. Recirculation Pump ASD Settings

Technical Requirement Manual 2.1.a.1

Cycle 25 was analyzed with a slow flow excursion event assuming a failure of the recirculation flow control system such that the core flow increases slowly to the maximum flow physically permitted by the equipment, assumed to be 110% of rated core flow (Reference 2); therefore the recirculation pump ASD must be set to maintain core flow less than 110% (107.8 Mlb/hr) for all runout events.

Table 4-3: ATRIUM 10XM TLO $MCPR_p$ Limits for NSS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.27	1.95	1.46
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.07		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.11		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.27	1.95	1.46
	> 60	2.69	2.69	2.32			

Table 4-4: ATRIUM 10XM TLO $MCPR_p$ Limits for ISS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.28	1.95	1.47
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.08		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.12		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.28	1.95	1.47
	> 60	2.69	2.69	2.32			

Table 4-5: ATRIUM 10XM TLO $MCPR_p$ Limits for TSSS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	2.01		1.47
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.04		1.52
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.29	1.98	1.50
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.15		1.49
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.15		1.53
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.29	1.98	1.50
	> 60	2.69	2.69	2.32			

Table 4-6: ATRIUM 10XM TLO $MCPR_p$ Limits for NSS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.27	1.95	1.47
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.07		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.11		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.27	1.95	1.47
	> 60	2.69	2.69	2.32			

Table 4-7: ATRIUM 10XM TLO $MCPR_p$ Limits for ISS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.28	1.95	1.47
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.08		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.12		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.28	1.95	1.47
	> 60	2.69	2.69	2.32			

Table 4-8: ATRIUM 10XM TLO $MCPR_p$ Limits for TSSS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	2.01		1.47
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.04		1.52
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.29	1.98	1.50
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.15		1.49
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.15		1.53
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.29	1.98	1.50
	> 60	2.69	2.69	2.32			

Table 4-9: ATRIUM 10XM TLO $MCPR_p$ Limits for NSS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.27	1.95	1.47
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.07		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.11		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.27	1.95	1.47
	> 60	2.69	2.69	2.32			

Table 4-10: ATRIUM 10XM TLO $MCPR_p$ Limits for ISS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	1.97		1.46
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.02		1.49
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.28	1.95	1.48
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.08		1.46
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.12		1.49
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.28	1.95	1.48
	> 60	2.69	2.69	2.32			

Table 4-11: ATRIUM 10XM TLO MCPR$_p$ Limits for TSSS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.51	2.51	2.22	2.01		1.48
	> 60	2.61	2.61	2.29			
TBVOOS	≤ 60	3.48	3.48	2.66	2.04		1.52
	> 60	3.53	3.53	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.52	2.52	2.29	2.29	1.98	1.50
	> 60	2.62	2.62	2.29			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.15		1.49
	> 60	2.69	2.69	2.32			
TBVOOS and FHOOS	≤ 60	3.60	3.60	2.75	2.15		1.53
	> 60	3.64	3.64	2.81			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.69	2.69	2.32	2.29	1.98	1.50
	> 60	2.69	2.69	2.32			

Table 4-12: OPTIMA2 TLO MCPR$_p$ Limits for NSS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.96		1.44
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.46
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.33	2.31	1.98	1.47
	> 60	2.59	2.59	2.33			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.44
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.48
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.33	2.31	1.98	1.47
	> 60	2.66	2.66	2.33			

Table 4-13: OPTIMA2 TLO $MCPR_p$ Limits for ISS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.97		1.44
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.47
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.33	2.31	1.98	1.48
	> 60	2.59	2.59	2.33			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.44
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.48
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.33	2.31	1.98	1.48
	> 60	2.66	2.66	2.33			

Table 4-14: OPTIMA2 TLO $MCPR_p$ Limits for TSSS Insertion Times, BOC to NEOC (35,677 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.99		1.48
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.06		1.52
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.33	2.33	2.01	1.51
	> 60	2.59	2.59	2.33			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.14		1.48
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.17		1.52
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.33	2.33	2.01	1.51
	> 60	2.66	2.66	2.33			

Table 4-15: OPTIMA2 TLO $MCPR_p$ Limits for NSS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.96		1.46
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.49
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.31	1.98	1.50
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.46
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.50
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.31	1.98	1.50
	> 60	2.66	2.66	2.34			

Table 4-16: OPTIMA2 TLO $MCPR_p$ Limits for ISS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.97		1.47
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.50
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.31	1.99	1.50
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.47
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.50
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.31	1.99	1.50
	> 60	2.66	2.66	2.34			

Table 4-17: OPTIMA2 TLO $MCPR_p$ Limits for TSSS Insertion Times, NEOC to EOFPLB (36,814 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.99		1.50
	> 60	2.59	2.59	2.33			
TBVOOS	≤ 60	3.21	3.21	2.47	2.06		1.53
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.34	2.02	1.53
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.14		1.50
	> 60	2.66	2.66	2.33			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.17		1.54
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.34	2.02	1.53
	> 60	2.66	2.66	2.34			

Table 4-18: OPTIMA2 TLO $MCPR_p$ Limits for NSS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.96		1.47
	> 60	2.59	2.59	2.34			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.50
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.31	1.99	1.51
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.47
	> 60	2.66	2.66	2.34			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.50
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.31	1.99	1.51
	> 60	2.66	2.66	2.34			

Table 4-19: OPTIMA2 TLO $MCPR_p$ Limits for ISS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.97		1.48
	> 60	2.59	2.59	2.34			
TBVOOS	≤ 60	3.21	3.21	2.47	2.03		1.51
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.31	2.00	1.51
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.08		1.48
	> 60	2.66	2.66	2.34			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.14		1.51
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.31	2.00	1.51
	> 60	2.66	2.66	2.34			

Table 4-20: OPTIMA2 TLO $MCPR_p$ Limits for TSSS Insertion Times, EOFPLB to EOCLB (37,612 MWd/MTU CAVEX)
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (% rated)					
		0	25	≤ 38.5	> 38.5	70	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	2.39	2.39	2.10	1.99		1.52
	> 60	2.59	2.59	2.34			
TBVOOS	≤ 60	3.21	3.21	2.47	2.06		1.55
	> 60	3.42	3.42	2.75			
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	2.39	2.39	2.34	2.34	2.03	1.55
	> 60	2.59	2.59	2.34			
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	2.53	2.53	2.17	2.14		1.52
	> 60	2.66	2.66	2.34			
TBVOOS and FHOOS	≤ 60	3.33	3.33	2.54	2.17		1.55
	> 60	3.54	3.54	2.82			
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	2.53	2.53	2.34	2.34	2.03	1.55
	> 60	2.66	2.66	2.34			

Table 4-21: ATRIUM 10XM SLO $MCPR_p$ Limits for NSS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.53	2.53	2.24	2.11	2.11
TBVOOS	3.50	3.50	2.68	2.11	2.11
TCV Slow Closure/PLUOOS/PCOOS	2.54	2.54	2.31	2.29	2.18
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.71	2.71	2.34	2.11	2.11
TBVOOS and FHOOS	3.62	3.62	2.77	2.13	2.11
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.71	2.71	2.34	2.29	2.18

Table 4-22: ATRIUM 10XM SLO $MCPR_p$ Limits for ISS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.53	2.53	2.24	2.11	2.11
TBVOOS	3.50	3.50	2.68	2.11	2.11
TCV Slow Closure/PLUOOS/PCOOS	2.54	2.54	2.31	2.30	2.18
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.71	2.71	2.34	2.11	2.11
TBVOOS and FHOOS	3.62	3.62	2.77	2.14	2.11
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.71	2.71	2.34	2.30	2.18

Table 4-23: ATRIUM 10XM SLO $MCPR_p$ Limits for TSSS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.53	2.53	2.24	2.11	2.11
TBVOOS	3.50	3.50	2.68	2.11	2.11
TCV Slow Closure/PLUOOS/PCOOS	2.54	2.54	2.31	2.31	2.20
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.71	2.71	2.34	2.17	2.11
TBVOOS and FHOOS	3.62	3.62	2.77	2.17	2.11
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.71	2.71	2.34	2.31	2.20

Table 4-24: OPTIMA2 SLO $MCPR_p$ Limits for NSS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.41	2.41	2.14	2.14	2.14
TBVOOS	3.23	3.23	2.49	2.14	2.14
TCV Slow Closure/PLUOOS/PCOOS	2.41	2.41	2.36	2.33	2.22
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.55	2.55	2.19	2.14	2.14
TBVOOS and FHOOS	3.35	3.35	2.56	2.16	2.14
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.55	2.55	2.36	2.33	2.22

Table 4-25: OPTIMA2 SLO $MCPR_p$ Limits for ISS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.41	2.41	2.14	2.14	2.14
TBVOOS	3.23	3.23	2.49	2.14	2.14
TCV Slow Closure/PLUOOS/PCOOS	2.41	2.41	2.36	2.33	2.22
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.55	2.55	2.19	2.14	2.14
TBVOOS and FHOOS	3.35	3.35	2.56	2.16	2.14
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.55	2.55	2.36	2.33	2.22

Table 4-26: OPTIMA2 SLO $MCPR_p$ Limits for TSSS Insertion Times, All Exposures
(Reference 2)

EOOS Condition	Core Power (% rated)				
	0	25	≤ 38.5	> 38.5	50
Base/TCV Stuck Closed/MSIVOOS	2.41	2.41	2.14	2.14	2.14
TBVOOS	3.23	3.23	2.49	2.14	2.14
TCV Slow Closure/PLUOOS/PCOOS	2.41	2.41	2.36	2.36	2.25
Base/TCV Stuck Closed/MSIVOOS and FHOOS	2.55	2.55	2.19	2.16	2.14
TBVOOS and FHOOS	3.35	3.35	2.56	2.19	2.14
TCV Slow Closure/PLUOOS/ PCOOS and FHOOS	2.55	2.55	2.36	2.36	2.25

Table 4-27: ATRIUM 10XM and OPTIMA2 $MCPR_f$ Limits
(Reference 2)

EOOS Condition*	Core Flow (% rated)	$MCPR_f$ Limit
Base Case/FHOOS/ PCOOS/PLUOOS/PCOOS+PLUOOS/TCV Slow Closure*	0	1.70
	35	1.70
	108	1.19
Any Scenario** with One MSIVOOS	0	1.88
	35	1.88
	108	1.19
Any Scenario** with TBVOOS	0	1.90
	35	1.90
	108	1.35
Any Scenario** with 1 Stuck Closed TCV/TSV	0	1.70
	35	1.70
	108	1.19

*See Section 8 for further operating restrictions.
**"Any Scenario" implies any other combination of allowable EOOS conditions that is not otherwise covered by this table.

5. Linear Heat Generation Rate

Technical Specification Sections 3.2.3 and 3.4.1

The TMOL at rated conditions for the OPTIMA2 and ATRIUM 10XM fuel is established in terms of the maximum LHGR as a function of peak pellet exposure. The LHGR limits for OPTIMA2 fuel are presented in Tables 5-1 through 5-8. The limits in Table 5-1 apply to OPTIMA2 lattices that do not require Gadolinia set down penalties. The limits in Tables 5-2 through 5-7 apply to OPTIMA2 lattices that do require Gadolinia set down penalties. The limits in Table 5-8 apply to the OPTIMA2 natural U blankets in lattices 81 and 89. The LHGR limits for ATRIUM 10XM fuel are presented in Table 5-9.

The power- and flow-dependent LHGR multipliers ($LHGRFAC_p$ and $LHGRFAC_f$) are applied directly to the LHGR limits to protect against fuel melting and overstraining of the cladding during an AOO (Reference 2). In all conditions, the margin to the LHGR limits is determined by applying the lowest multiplier from the applicable $LHGRFAC_p$ and $LHGRFAC_f$ multipliers for the power/flow statepoint of interest to the steady state LHGR limit (Reference 2).

$LHGRFAC_p$ and $LHGRFAC_f$ multipliers were established to support base case and all EOOS conditions for all Cycle 25 exposures and scram speeds. The $LHGRFAC_p$ multipliers for ATRIUM 10XM and OPTIMA2 are presented in Table 5-10 and Table 5-11, respectively. The $LHGRFAC_f$ multipliers for ATRIUM 10XM and OPTIMA2 are presented in Table 5-12 and Table 5-13, respectively.

Table 5-1: LHGR Limits for OPTIMA2 Lattices 137, 138, 139, 143, 144, 145, 146, 147, 148, 155, 156, 157, 161, 162, 163, 164, 165, 166
(References 22 and 24)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.00	13.72
14.00	13.11
23.00	12.22
57.00	8.87
62.00	8.38
75.00	3.43

Table 5-2: LHGR Limits for OPTIMA2 Lattices 135, 141
(Reference 24)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
23.000	12.22
23.001	12.09
32.000	11.21
32.001	11.33
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-3: LHGR Limits for OPTIMA2 Lattices 131, 132, 133, 136, 140, 142
(Reference 24)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
15.000	13.01
15.001	12.75
23.000	11.97
46.000	9.75
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-4: LHGR Limits for OPTIMA2 Lattice 134
(Reference 24)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
15.000	13.01
15.001	12.61
23.000	11.85
33.000	10.89
33.001	11.23
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-5: LHGR Limits for OPTIMA2 Lattices 153, 159
(Reference 22)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
23.000	12.22
23.001	12.10
33.000	11.12
33.001	11.23
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-6: LHGR Limits for OPTIMA2 Lattices 149, 150, 151, 154, 158, 160
(Reference 22)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
14.001	12.85
23.000	11.98
46.000	9.75
46.001	9.95
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-7: LHGR Limits for OPTIMA2 Lattice 152
(Reference 22)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	13.72
14.000	13.11
15.000	13.01
15.001	12.62
23.000	11.85
33.000	10.90
33.001	11.23
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-8: LHGR Limits for OPTIMA2 Lattices 81, 89
(Reference 3)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.000	11.96
14.000	11.43
23.000	10.66
57.000	8.87
62.000	8.38
75.000	3.43

Table 5-9: LHGR Limits for ATRIUM 10XM
(Reference 2)

Peak Pellet Exposure (GWd/MTU)	LHGR Limit (kW/ft)
0.0	14.1
18.9	14.1
74.4	7.4

Table 5-10: ATRIUM 10XM LHGRFAC$_p$ Multipliers
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (%rated)						
		0	25	≤ 38.5	> 38.5	50	90	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	0.52	0.52	0.60	0.65	0.70	0.95	1.00
	> 60	0.52	0.52	0.60				
TBVOOS	≤ 60	0.42	0.42	0.55	0.65	0.70	0.95	0.95
	> 60	0.39	0.39	0.50				
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	0.52	0.52	0.60	0.65	0.70	0.95	1.00
	> 60	0.52	0.52	0.60				
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	0.49	0.49	0.57	0.65	0.70	0.95	1.00
	> 60	0.49	0.49	0.57				
TBVOOS and FHOOS	≤ 60	0.37	0.37	0.54	0.65	0.70	0.95	0.95
	> 60	0.37	0.37	0.48				
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	0.49	0.49	0.57	0.65	0.70	0.95	1.00
	> 60	0.49	0.49	0.57				

Table 5-11: OPTIMA2 LHGRFAC$_p$ Multipliers
(Reference 2)

EOOS Condition	Core Flow (% rated)	Core Power (%rated)								
		0	25	≤ 38.5	> 38.5	50	60	70	80	100
Base/TCV Stuck Closed/MSIVOOS	≤ 60	0.62	0.62	0.68	0.72	0.76	0.81		0.85	1.00
	> 60	0.58	0.58	0.63						
TBVOOS	≤ 60	0.45	0.45	0.52	0.68	0.74	0.74		0.77	1.00
	> 60	0.44	0.44	0.52						
TCV Slow Closure/ PLUOOS/PCOOS	≤ 60	0.62	0.62	0.63	0.63	0.69		0.73	0.83	1.00
	> 60	0.58	0.58	0.63						
Base/TCV Stuck Closed/MSIVOOS and FHOOS	≤ 60	0.61	0.61	0.65	0.68	0.76	0.81		0.85	1.00
	> 60	0.58	0.58	0.63						
TBVOOS and FHOOS	≤ 60	0.44	0.44	0.52	0.67	0.74	0.74		0.77	1.00
	> 60	0.43	0.43	0.51						
TCV Slow Closure/ PLUOOS/PCOOS and FHOOS	≤ 60	0.61	0.61	0.63	0.63	0.69		0.73	0.83	1.00
	> 60	0.58	0.58	0.63						

Table 5-12: ATRIUM 10XM $LHGRFAC_f$ Multipliers
(Reference 2)

Core Flow (% rated)	$LHGRFAC_f$
0.0	0.57
35.0	0.57
75.0	1.00
108.0	1.00

Table 5-13: OPTIMA2 $LHGRFAC_f$ Multipliers
(Reference 2)

Core Flow (% rated)	$LHGRFAC_f$
0.0	0.27
20.0	0.43
40.0	0.60
80.0	1.00
100.0	1.00
108.0	1.00

6. Control Rod Block Setpoints

Technical Specification Sections 3.3.2.1 and 3.4.1

The Rod Block Monitor Upscale Instrumentation Setpoints are determined from the relationships shown in Table 6-1:

Table 6-1: Rod Block Monitor Upscale Instrumentation Setpoints
(Reference 17)

ROD BLOCK MONITOR UPSCALE TRIP FUNCTION	ALLOWABLE VALUE
Two Recirculation Loop Operation	$0.65\ W_d + 55.0\%$
Single Recirculation Loop Operation	$0.65\ W_d + 51.0\%$

W_d – percent of recirculation loop drive flow required to produce a rated core flow of 98.0 Mlb/hr.

The setpoint may be lower/higher and will still comply with the CRWE analysis because CRWE is analyzed unblocked (Reference 2).

7. Stability Protection Setpoints

Technical Specifications Section 3.3.1.3

The OPRM PBDA Trip Settings are provided in Table 7-1.

Table 7-1: OPRM PBDA Trip Settings
(Reference 2)

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 (Methodology 3).

The OPRM PBDA trip settings are based, in part, on the cycle specific OLMCPR and the power/flow-dependent MCPR limits. Any change to the OLMCPR values and/or the power/flow-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 in Table 8-1.

Note that the following EOOS options have operational restrictions: all SLO, all EOOS options with 1 TCV/TSV stuck closed, and MSIVOOS. See Table 8-2 for specific restrictions.

Table 8-1: Modes of Operation
(Reference 2)

EOOS Option	Thermal Limit Set
Base Case	Base Case ➢ TLO or SLO ➢ Nominal FWT or FHOOS
PLUOOS	PLUOOS/TCV Slow Closure ➢ TLO or SLO ➢ Nominal FWT or FHOOS
TBVOOS	TBVOOS ➢ TLO or SLO ➢ Nominal FWT or FHOOS
TCV Slow Closure	PLUOOS/TCV Slow Closure ➢ TLO or SLO ➢ Nominal FWT or FHOOS
1 TCV/TSV Stuck Closed	Base Case ➢ TLO or SLO ➢ Nominal FWT or FHOOS
PLUOOS and 1 TCV/TSV Stuck Closed	PLUOOS/TCV Slow Closure ➢ TLO for Nominal FWT or FHOOS ➢ SLO for Nominal FWT*
PCOOS	PLUOOS/TCV Slow Closure ➢ TLO or SLO ➢ Nominal FWT or FHOOS
PCOOS + PLUOOS	PLUOOS/TCV Slow Closure ➢ TLO for Nominal FWT or FHOOS ➢ SLO for Nominal FWT*
PCOOS and 1 TCV/TSV Stuck Closed	PLUOOS/TCV Slow Closure ➢ TLO for Nominal FWT or FHOOS ➢ SLO for Nominal FWT*
One MSIVOOS	MSIVOOS ➢ TLO or SLO ➢ Nominal FWT or FHOOS

*FHOOS cannot be applied to SLO for the case of PLUOOS and 1 TCV/TSV stuck closed, PCOOS and PLUOOS, or PCOOS and 1 TCV/TSV stuck closed.

<u>Common Notes:</u>

1. All modes are allowed for operation at MELLLA, ICF (up to 108% rated core flow), and coastdown subject to the power restrictions in Table 8-2 (Reference 2). The licensing analysis supports full power operation to EOCLB (37,612 MWd/MTU CAVEX). Note that this value includes coastdown, where full power operation is not expected. The minimum coastdown power level cannot exceed 40% per Reference 1. Each OOS Option may be combined with each of the following conditions (Reference 2):
    a. Up to 40% of the TIP channels OOS or the equivalent number of TIP channels, using the guidance in Reference 19 for startup with TIP machines OOS
    b. Up to 50% of the LPRMs OOS
    c. An LPRM calibration frequency of up to 2500 EFPH

2. Nominal FWT results are valid for application within a +10°F/-30ºF temperature band around the nominal FWT curve (Reference 2). For operation outside of nominal FWT, a FWT reduction of between 30°F and 120°F is supported for all FHOOS conditions listed in Table 8-1 for cycle operation through EOCLB (Reference 2). The restriction requires that for a FWT reduction greater than 100°F, operation needs to be restricted to less than the 100% load line.

3. The base case and EOOS limits and multipliers support operation with 8 of the 9 turbine bypass valves operational (i.e., one bypass valve out of service) with the exception of the TBVOOS condition in which all bypass valves are inoperable (Reference 2). Use of the response curve in TRM Appendix H supports operation with any single TBV OOS. TRM Appendix H facilitates analysis with one valve OOS in that the capacity at 0.5 seconds from start of TSV closure is equivalent to the total capacity with eight out of the nine valves in service (Reference 9). The analyses also support Turbine Bypass flow of 29.8% of vessel rated steam flow, equivalent to one TBV OOS (or partially closed TBVs equivalent to one closed TBV), if the assumed opening profile for the remaining TBVs is met. If the opening profile is NOT met, or if the TBV system CANNOT pass an equivalent of 29.8% of vessel rated steam flow, utilize the TBVOOS condition.

4. TBVOOS assumes that all the TBVs do <u>not</u> trip open on TCV fast closure or TSV closure and that all TBVs are <u>not</u> capable of opening via the pressure control system (Reference 6). Steam relief capacity is defined in Reference 9.

Table 8-2: Core Operational Restrictions for EOOS Conditions
(Reference 2)

EOOS Condition	Core Flow (% of Rated)	Core Thermal Power (% of Rated Power)	Rod Line (%)
1 TCV Stuck Closed*, PCOOS and 1 TCV Stuck Closed*, PLUOOS and 1 TCV Stuck Closed*	N/A	< 75	< 80
One MSIVOOS	N/A	< 75	N/A
SLO	< 51	< 50	N/A

* Also applicable to one TSV stuck closed.

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. Removed.
2. GE Topical Report NEDE-24011-P-A, Revision 15, "General Electric Standard Application for Reactor Fuel (GESTAR)," September 2005.
3. GE Topical Report NEDO-32465-A, Revision 0, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996.
4. Westinghouse Topical Report CENPD-300-P-A, Revision 0, "Reference Safety Report for Boiling Water Reactor Reload Fuel," July 1996.
5. Removed.
6. Westinghouse Report WCAP-15682-P-A, Revision 0, "Westinghouse BWR ECCS Evaluation Model: Supplement 2 to Code Description, Qualification and Application," April 2003.
7. Westinghouse Report WCAP-16078-P-A, Revision 0, "Westinghouse BWR ECCS Evaluation Model: Supplement 3 to Code Description, Qualification and Application to SVEA-96 Optima2 Fuel," November 2004.
8. Westinghouse Topical Report WCAP-15836-P-A, Revision 0, "Fuel Rod Design Methods for Boiling Water Reactors – Supplement 1," April 2006.
9. Westinghouse Topical Report WCAP-15942-P-A, Revision 0, "Fuel Assembly Mechanical Design Methodology for Boiling Water Reactors Supplement 1 to CENP-287," March 2006.
10. Westinghouse Topical Report CENPD-390-P-A, Revision 0, "The Advanced PHOENIX and POLCA Codes for Nuclear Design of Boiling Water Reactors," December 2000.
11. Removed.
12. Removed.
13. Removed.
14. Exxon Nuclear Company Report XN-NF-81-58(P)(A), Revision 2 and Supplements 1 and 2, "RODEX2 Fuel Rod Thermal-Mechanical Response Evaluation Model," March 1984.
15. Advanced Nuclear Fuels Corporation Report ANF-89-98(P)(A), Revision 1 and Supplement 1, "Generic Mechanical Design Criteria for BWR Fuel Designs," May 1995.
16. Siemens Power Corporation Report EMF-85-74(P), Revision 0 Supplement 1 (P)(A) and Supplement 2 (P)(A), "RODEX2A (BWR) Fuel Rod Thermal-Mechanical Evaluation Model," February 1998.
17. AREVA NP Topical Report BAW-10247PA, Revision 0, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors," February 2008.

18. Exxon Nuclear Company Topical Report XN-NF-80-19(P)(A), Volume 1 Revision 0 and Supplements 1 and 2, “Exxon Nuclear Methodology for Boiling Water Reactors – Neutronic Methods for Design and Analysis,” March 1983.

19. Exxon Nuclear Company Topical Report XN-NF-80-19(P)(A), Volume 4 Revision 1, “Exxon Nuclear Methodology for Boiling Water Reactors: Application of the ENC Methodology for BWR Reloads,” June 1986.

20. Exxon Nuclear Company Topical Report XN-NF-80-19(P)(A), Volume 3 Revision 2, “Exxon Nuclear Methodology for Boiling Water Reactors, THERMEX: Thermal Limits Methodology Summary Description,” January 1987.

21. Siemens Power Corporation Topical Report EMF-2158(P)(A), Revision 0, “Siemens Power Corporation Methodology for Boiling Water Reactors: Evaluation and Validation of CASMO-4/MICROBURN-B2,” October 1999.

22. Siemens Power Corporation Report EMF-2245(P)(A), Revision 0, “Application of Siemens Power Corporation’s Critical Power Correlations to Co-Resident Fuel,” August 2000.

23. AREVA NP Report EMF-2209(P)(A), Revision 3, “SPCB Critical Power Correlation,” September 2009.

24. AREVA Topical Report ANP-10298P-A, Revision 1, “ACE/ATRIUM 10XM Critical Power Correlation,” March 2014.

25. AREVA NP Topical Report ANP-10307PA, Revision 0, “AREVA MCPR Safety Limit Methodology for Boiling Water Reactors,” June 2011.

26. Exxon Nuclear Company Report XN-NF-84-105(P)(A), Volume 1 Revision 0 and Volume 1 Supplements 1 and 2, “XCOBRA-T: A Computer Code for BWR Transient Thermal-Hydraulic Core Analysis,” February 1987.

27. Advanced Nuclear Fuels Corporation Report ANF-913(P)(A), Volume 1 Revision 1 and Volume 1 Supplements 2, 3, and 4, “COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses,” August 1990.

28. Framatome ANP Report EMF-2361(P)(A), Revision 0, “EXEM BWR-2000 ECCS Evaluation Model,” May 2001.

29. Siemens Power Corporation Report EMF-2292 (P)(A), Revision 0, “ATRIUM™-10: Appendix K Spray Heat Transfer Coefficients,” September 2000.

30. Framatome ANP Topical Report ANF-1358(P)(A), Revision 3, “The Loss of Feedwater Heating Transient in Boiling Water Reactors,” September 2005.

31. Siemens Power Corporation Topical Report EMF-CC-074(P)(A), Volume 4 Revision 0, “BWR Stability Analysis: Assessment of STAIF with Input from MICROBURN-B2,” August 2000.

10. References

1. Exelon Generation Company, LLC, Docket No. 50-249, Dresden Nuclear Power Station, Unit 3, Renewed Facility Operating License, License No. DPR-25.

2. AREVA Report ANP-3516P Revision 0, “Dresden Unit 3 Cycle 25 Reload Safety Analysis,” September 2016.

3. Westinghouse Report NF-BEX-14-94, “Dresden Nuclear Power Station Unit 3 Cycle 24 Reload Licensing Report”, September 2014.

4. Westinghouse Letter NF-BEX-14-50 “Bundle Design Report for Dresden 3 Cycle 24”, April 8, 2014.

5. Westinghouse Report NF-BEX-14-77-NP Revision 0, “Dresden Nuclear Power Station Unit 3 Cycle 24 MAPLHGR Report”, September 2014.

6. Exelon TODI ES1500011 Revision 0, “Equipment Out of Service Description for Transition to AREVA Fuel – Dresden,” May 20, 2015.

7. Westinghouse Letter NF-BEX-12-66 “Bundle Design Report for Dresden 3 Cycle 23,” April 11, 2012.

8. Westinghouse Report NF-BEX-12-100-NP Revision 1, “Dresden Nuclear Power Station Unit 3 Cycle 23 MAPLHGR Report”, May 2015.

9. Exelon TODI ES1600005 Revision 1, “Dresden Unit 3 Cycle 25 Plant Parameters Document,” June 17, 2016.

10. Removed.

11. Removed.

12. Removed.

13. Removed.

14. Removed.

15. Exelon Technical Specifications for Dresden 2 and 3, Table 3.1.4-1, “Control Rod Scram Times.”

16. Removed.

17. GE Nuclear Energy Design Analysis GE DRF C51-00217-01, “Instrument Setpoint Calculation Nuclear Instrumentation Rod Block Monitor,” July 30, 2012.

18. Removed.

19. FANP Letter, NJC:04:031/FAB04-496, “Startup with TIP Equipment Out of Service,” April 20, 2004. (Exelon EC 348897-000)

20. Removed.

21. 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.

22. Westinghouse Letter NF-BEX-15-82, “Linear Heat Generation Rate Limits for Fuel Loaded in Dresden Unit 3 Cycle 24,” May 12, 2015.

23. Removed.

24. Exelon Design Analysis DRE16-0006 Revision 0, “LHGR Penalties for Fuel Loaded in D3C23,” March 1, 2016.

TECHNICAL REQUIREMENTS MANUAL
CONTROL PROGRAM

TABLE OF CONTENTS

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 #: ____________ Affecting 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 ____________
☐	☐	Technical Requirements Manual ____________
☐	☐	NRC Safety Evaluation ____________
☐	☐	Fire Protection Report ____________
☐	☐	NRC Commitments ____________
☐	☐	Vendor Documentation ____________
☐	☐	Special Permits/Licenses ____________
☐	☐	Procedures ____________
☐	☐	Environmental Qualifications ____________
☐	☐	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 bound 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 be
(SQR/PORC/Amendment Implementation Date)
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)

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.

APPENDIX I

Surveillance Frequency Control Program

Surveillance Frequency Control Program

The Surveillance Frequency Control Program (SFCP) is described in Technical Specifications (TS) Section 5.5.15, “Surveillance Frequency Control Program.” The program provides the administrative controls for modifying[1] surveillance frequencies. The program ensures that Surveillance Requirements (SRs) specified in the TS are performed at intervals sufficient to assure the associated Limiting Conditions for Operation (LCO) are met.

The SFCP program document contains the following sections:

I. Program Description

II. Definitions

III. Revision Summary

IV. Table 1, “Surveillance Requirement Frequencies”

V. Table 2, “Surveillance Requirement Bases”

The program document is retained as Appendix I of the Technical Requirements Manual (TRM). However, the process for revising the SFCP is governed by specific procedures (see Program Description below). Accordingly, the TRM change process (i.e., TRM Appendix G) does not apply to SFCP updates (although a TRM change number will be assigned for tracking purposes).

[1] SFCP monitoring applies to Surveillance Frequencies modified by the SFCP program (not to Surveillance Frequencies in effect at the time of implementation of License Amendments 237/230).

I. Program Description

Table 1 includes the periodic surveillances that were relocated to SFCP control as part of License Amendments 237/230 for Dresden Unit 2 and Unit 3 respectfully. Each surveillance frequency is associated with a corresponding TS SR (identified by TS SR number). Table 2 provides a bases description for each SR.

Changes to the type or scope of testing (e.g., Channel Check, Channel Functional Test, or Channel Calibration) are not allowed without prior NRC approval. The specified frequencies ensure SRs are performed at intervals sufficient to assure associated Limiting Conditions for Operation (LCOs) are met.

Changes to the information in Tables 1 and 2 may occur for one of two reasons:

1. Addition, deletion, or modification of the associated TS SR through a license amendment request, or

2. A change to a surveillance frequency in accordance with the SFCP and associated implementing procedures. Changes to individual surveillance frequencies are evaluated using the methodology provided in NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies."

Changes to the Surveillance Frequency Control Program shall be made in accordance with ER-AA-425.

Table 1 includes a reference to the TS SR number, a surveillance description, frequency, denotation if the TS SR is conditioned[2], and the current revision. Table 2 provides the Bases for each SR frequency. The Descriptions is a summary description of the referenced TS SR which is provided for information purposes only and is not intended to be a substitute for the actual TS requirements. Refer to the TS for the specific action required by each respective SR identified in the list.

As noted in Tables 1 and 2, surveillance frequencies beyond Revision 0 have been evaluated in accordance with TS Section 5.5.14, “Surveillance Frequency Control Program.” Surveillance frequencies at Revision 0 reflect the approved licensing basis upon initial SFCP implementation.

The provisions of TS SR 3.0.2 and 3.0.3 are applicable to the frequencies established in the SFCP. Noncompliance with the frequencies specified in the SFCP (e.g., a missed surveillance) requires generation of an Issue Report in accordance with LS-AA-125. Based on the guidance provided in NUREG-1022, "Event Reporting Guidelines, 10 CFR 50.72 and 50.73," Rev. 2, missed surveillances are not reportable as a condition prohibited by TS unless the surveillance, once performed, indicates that the equipment was not capable of performing its specified safety function(s) for a period of time longer than allowed by TS.

[2] A conditioned SR has more than one frequency element that is dependent on plant conditions. Refer to the TS.

II. Definitions

STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.

III. Revision Summary

Rev.	Description	TRM Tracking No.	Approval Date
0	Initial implementation.	N/A	N/A
1	Changed Program Reference, Description, and SR 3.3.1.1.5	14-003	3/13/14
2	SR 3.8.4.2 frequency Changed from 18 Months to 24 Months	14-006	6/23/14
3	SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.14, SR 3.8.1.17, SR 3.8.1.18, SR 3.8.1.19, and 3.3.8.1.5 frequency changed from 24 months to 24 months on a STAGGERED TEST BASIS	15-004	7/31/15
4	Added/Revised SR 3.4.7.2, 3.4.8.2, 3.5.1.1, 3.5.2.2, 3.6.2.3.3, 3.6.2.4.3, 3.9.8.2, 3.9.9.2	15-006	9/28/15
5	SR 3.3.1.1.18 frequency changed from 24 months to 48 months and SR 3.3.6.1.7 frequency Changed from 24 Months to 48 Months	16-008	09/02/2016
6	SR 3.9.1.1 and SR 3.9.2.2 frequency changed from 7 days to 30 days	15-007	10/22/2015
7	SR 3.3.1.2.5 frequency changed from 7 days to 31 days	16-015	10/4/2016
8	SR 3.3.8.1.3 and SR 3.3.8.1.4 frequency changed from 24 months to 48 months	16-016	10/11/2016
9	SR 3.6.4.3.1 frequency changed from 31 days to 92 days; SR 3.6.1.8.2 frequency changed from 31 days to 92 days; SR 3.3.5.2.1 frequency changed from 31 days to 92 days	16-007	2/3/2017

Section IV

Surveillance Requirement Frequencies

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.1.3 Control Rod OPERABILITY				
3.1.3.1	Control rod position	24 hours	No	Rev. 0
3.1.3.3	Control rod exercising	31 days	No	Rev. 0
3.1.4 Control Rod Scram Times				
3.1.4.2	Control rod scram time testing	120 days cumulative operation in MODE 1	No	Rev. 0
3.1.5 Control Rod Scram Accumulators				
3.1.5.1	Control rod scram accumulator pressure	7 days	No	Rev. 0
3.1.6 Rod Pattern Control				
3.1.6.1	Verify analyzed rod position sequence	24 hours	No	Rev. 0
3.1.7 SLC System				
3.1.7.1	Volume of sodium pentaborate in SLC tank	24 hours	No	Rev. 0
3.1.7.2	Temperature of sodium pentaborate solution	24 hours	No	Rev. 0
3.1.7.3	Temperature of pump suction piping	24 hours	No	Rev. 0
3.1.7.4	Continuity of explosive charge	31 days	No	Rev. 0
3.1.7.5	Concentration of boron solution	31 days	Yes	Rev. 0
3.1.7.6	SLC manual valve position	31 days	No	Rev. 0
3.1.7.8	Flow through one SLC subsystem	24 months on a STAGGERED TEST BASIS	No	Rev. 0
3.1.7.9	Heat traced piping is unblocked	24 months	Yes	Rev. 0
3.1.8 SDV Vent and Drain Valves				
3.1.8.1	SDV vent & drain valves open	31 days	No	Rev. 0
3.1.8.2	Cycle SDV vent & drain valves	92 days	No	Rev. 0
3.1.8.3	SDV vent & drain valves scram response	24 months	No	Rev. 0
3.2.1 APLHGR				
3.2.1.1	APLHGR limits	24 hours	Yes	Rev. 0
3.2.2 MCPR				
3.2.2.1	MCPR limits	24 hours	Yes	Rev. 0
3.2.3 LHGR				
3.2.3.1	LHGR limits	24 hours	Yes	Rev. 0
3.3.1.1 RPS Instrumentation				
3.3.1.1.1	Channel Check	12 hours	No	Rev. 0
3.3.1.1.2	Absolute difference between APRM and calculated power	7 days	No	Rev. 0
3.3.1.1.3	Adjust channel to conform to calibrated flow signal	7 days	No	Rev. 0
3.3.1.1.4	Channel Functional Test	7 days	No	Rev. 0
3.3.1.1.5	Functional test of scram contactors	31 days	No	Rev. 1
3.3.1.1.7	IRM/APRM channel overlap	7 days	No	Rev. 0
3.3.1.1.8	Channel Functional Test	31 days	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.3.1.1.9	Calibrate local power range monitors	2000 effective full power hours	No	Rev. 0
3.3.1.1.11	Channel Functional Test	92 days	No	Rev. 0
3.3.1.1.12	Calibrate trip unit	92 days	No	Rev. 0
3.3.1.1.13	Channel Calibration	92 days	No	Rev. 0
3.3.1.1.14	Verify TSV/TCV trip functions not bypassed	92 days	No	Rev. 0
3.3.1.1.15	Channel Calibration	184 days	No	Rev. 0
3.3.1.1.16	Channel Functional Test	24 months	No	Rev. 0
3.3.1.1.17	Channel Calibration	24 months	No	Rev. 0
3.3.1.1.18	Logic System Functional Test	48 months	No	Rev. 5
3.3.1.1.19	Verify RPS Response Time	24 months on a STAGGERED TEST BASIS	No	Rev. 0
3.3.1.2 SRM Instrumentation				
3.3.1.2.1	Channel Check	12 hours	No	Rev. 0
3.3.1.2.2	Verify Operable SRM Detector	12 hours	No	Rev. 0
3.3.1.2.3	Channel Check	24 hours	No	Rev. 0
3.3.1.2.4	Verify SRM count rate	24 hours	No	Rev. 0
3.3.1.2.5	Channel Functional Test	31 days	No	Rev. 7
3.3.1.2.6	Channel Functional Test	31 days	No	Rev. 0
3.3.1.2.7	Channel Calibration	24 months	No	Rev. 0
3.3.1.3 OPRM Instrumentation				
3.3.1.3.1	Channel Functional Test	184 days	No	Rev. 0
3.3.1.3.2	Calibrate LPRMs	2000 effective full power hours	No	Rev. 0
3.3.1.3.3	Channel Calibration	24 months	No	Rev. 0
3.3.1.3.4	Logic System Functional Test	24 months	No	Rev. 0
3.3.1.3.5	Verify OPRM not bypassed	24 months	No	Rev. 0
3.3.1.3.6	RPS Response Time	24 months on a STAGGERED TEST BASIS	No	Rev. 0
3.3.2.1 Control Rod Block Instrumentation				
3.3.2.1.1	Channel Functional Test	92 days	No	Rev. 0
3.3.2.1.2	Channel Functional Test	92 days	No	Rev. 0
3.3.2.1.3	Channel Functional Test	92 days	No	Rev. 0
3.3.2.1.4	Channel Calibration	92 days	No	Rev. 0
3.3.2.1.5	Verify RBM not bypassed	92 days	No	Rev. 0
3.3.2.1.6	Verify RWM not bypassed	24 months	No	Rev. 0
3.3.2.1.7	Channel Functional Test	24 months	No	Rev. 0
3.3.2.2 Feed System and Main Turbine High Water Level Trip Instrumentation				
3.3.2.2.1	Channel Check	12 hours	No	Rev. 0
3.3.2.2.2	Channel Functional Test	92 days	No	Rev. 0
3.3.2.2.3	Calibrate trip units	92 days	No	Rev. 0
3.3.2.2.4	Channel Calibration	24 months	No	Rev. 0
3.3.2.2.5	Logic System Functional Test	24 months	No	Rev. 0
3.3.3.1 PAM Instrumentation				

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.3.3.1.1	Channel Check	31 days	No	Rev. 0
3.3.3.1.2	Channel Calibration Function 4.b	92 days	No	Rev. 0
3.3.3.1.3	Channel Calibration Functions 1 and 2	184 days	No	Rev. 0
3.3.3.1.4	Channel Calibration Functions 3 and 9	12 months	No	Rev. 0
3.3.3.1.5	Channel Calibration Functions 2, 4.a, 5 and 6	24 months	No	Rev. 0
3.3.4.1 ATWS-RPT Instrumentation				
3.3.4.1.1	Channel Check	12 hours	No	Rev. 0
3.3.4.1.2	Calibrate trip units	92 days	No	Rev. 0
3.3.4.1.3	Channel Functional Test	92 days	No	Rev. 0
3.3.4.1.4	Channel Calibration	24 months	No	Rev. 0
3.3.4.1.5	Logic System Functional Test	24 months	No	Rev. 0
3.3.5.1 ECCS Instrumentation				
3.3.5.1.1	Channel Check	12 hours	No	Rev. 0
3.3.5.1.2	Channel Functional Test	92 days	No	Rev. 0
3.3.5.1.3	Calibrate trip unit	92 days	No	Rev. 0
3.3.5.1.4	Channel Calibration	92 days	No	Rev. 0
3.3.5.1.5	Channel Calibration	24 months	No	Rev. 0
3.3.5.1.6	Logic System Functional Test	24 months	No	Rev. 0
3.3.5.2 IC System Instrumentation				
3.3.5.2.1	Channel Functional Test	92 days	No	Rev. 9
3.3.5.2.2	Channel Calibration	92 days	No	Rev. 0
3.3.5.2.3	Channel Calibration	24 months	No	Rev. 0
3.3.5.2.4	Logic System Functional Test	24 months	No	Rev. 0
3.3.6.1 Primary Containment Isolation Instrumentation				
3.3.6.1.1	Channel Check	12 hours	No	Rev. 0
3.3.6.1.2	Channel Functional Test	92 days	No	Rev. 0
3.3.6.1.3	Calibrate trip unit	92 days	No	Rev. 0
3.3.6.1.4	Channel Calibration	92 days	No	Rev. 0
3.3.6.1.5	Channel Functional Test	24 months	No	Rev. 0
3.3.6.1.6	Channel Calibration	24 months	No	Rev. 0
3.3.6.1.7	Logic System Functional Test	48 months	No	Rev. 5
3.3.6.2 Secondary Containment Isolation Instrumentation				
3.3.6.2.1	Channel Check	12 hours	No	Rev. 0
3.3.6.2.2	Channel Functional Test	92 days	No	Rev. 0
3.3.6.2.3	Calibrate trip unit	92 days	No	Rev. 0
3.3.6.2.4	Channel Calibration	92 days	No	Rev. 0
3.3.6.2.5	Channel Calibration	24 months	No	Rev. 0
3.3.6.2.6	Logic System Functional Test	24 months	No	Rev. 0
3.3.6.3 Relief Valve Instrumentation				
3.3.6.3.1	Channel Calibration	92 days	No	Rev. 0
3.3.6.3.2	Channel Calibration	24 months	No	Rev. 0
3.3.6.3.3	Logic System Functional Test	24 months	No	Rev. 0
3.3.7.1 CREV System Instrumentation				
3.3.7.1.1	Channel Check	12 hours	No	Rev. 0
3.3.7.1.2	Channel Functional Test	92 days	No	Rev. 0
3.3.7.1.3	Channel Calibration	92 days	No	Rev. 0
3.3.7.2 Mechanical Vacuum Pump Trip Instrumentation				
3.3.7.2.1	Channel Check	12 hours	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.3.7.2.2	Channel Functional Test	92 days	No	Rev. 0
3.3.7.2.3	Channel Calibration	92 days	No	Rev. 0
3.3.7.2.4	Channel Calibration	24 months	No	Rev. 0
3.3.7.2.5	Logic System Functional Test	24 months	No	Rev. 0
3.3.8.1 LOP Instrumentation				
3.3.8.1.1	Channel Functional Test	18 months	No	Rev. 0
3.3.8.1.2	Channel Calibration	18 months	No	Rev. 0
3.3.8.1.3	Channel Functional Test	48 months	No	Rev. 8
3.3.8.1.4	Channel Calibration	48 months	No	Rev. 8
3.3.8.1.5	Logic System Functional Test	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.3.8.2 RPS Electric Power Monitoring				
3.3.8.2.1	Channel Functional Test	184 days	No	Rev. 0
3.3.8.2.2	Channel Calibration	24 months	No	Rev. 0
3.3.8.2.3	System functional test	24 months	No	Rev. 0
3.4.1 Recirculation Loops Operating				
3.4.1.1	Recirc loop operability	24 hours	No	Rev. 0
3.4.2 Jet Pumps				
3.4.2.1	Jet pump operability	24 hours	No	Rev. 0
3.4.3 Safety and Relief Valves				
3.4.3.2	RV actuator manual actuation	24 months	No	Rev. 0
3.4.3.3	RV actuation automatic	24 months	No	Rev. 0
3.4.4 RCS Operational LEAKAGE				
3.4.4.1	RCS leakage increase within limits	12 hours	No	Rev. 0
3.4.5 RCS Leakage Detection Instrumentation				
3.4.5.1	Channel Check	12 hours	No	Rev. 0
3.4.5.2	Channel Functional Test	31 days	No	Rev. 0
3.4.5.3	Channel Calibration	12 months	No	Rev. 0
3.4.6 RCS Specific Activity				
3.4.6.1	Dose Equivalent I-131 specific activity	7 days	No	Rev. 0
3.4.7 SDC System - Hot Shutdown				
3.4.7.1	Verify operation	12 hours	No	Rev. 0
3.4.7.2	Verify SDC subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.4.8 SDC System - Cold Shutdown				
3.4.8.1	Verify operation	12 hours	No	Rev. 0
3.4.8.2	Verify SDC subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.4.9 RCS P/T Limits				
3.4.9.1	RCS pressure and temperature limits	30 minutes	No	Rev. 0
3.4.9.5	Reactor vessel head flange temperatures	30 minutes	No	Rev. 0
3.4.9.6	Reactor vessel head flange temperatures	30 minutes	No	Rev. 0
3.4.9.7	Reactor vessel head flange temperatures	12 hours	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.4.10 Reactor Steam Dome Pressure				
3.4.10.1	Reactor steam dome pressure	12 hours	No	Rev. 0
3.5.1 ECCS - Operating				
3.5.1.1	Verify, for each ECCS injection/spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.5.1.2	Valve position verification	31 days	No	Rev. 0
3.5.1.3	Breaker alignment to swing bus	31 days	No	Rev. 0
3.5.1.7	HPCI flow rate verification	24 months	No	Rev. 0
3.5.1.8	ECCS automatic initiation	24 months	No	Rev. 0
3.5.1.9	ADS automatic initiation	24 months	No	Rev. 0
3.5.1.10	Stroke ADS actuator	24 months	No	Rev. 0
3.5.1.11	LPCI swing bus transfer capability	24 months	No	Rev. 0
3.5.1.12	Verify ADS pneumatic supply header pressure	31 days	No	Rev. 0
3.5.2 ECCS - Shutdown				
3.5.2.1	ECCS suppression pool / CCST water level	12 hours	No	Rev. 0
3.5.2.2	Verify, for each required ECCS injection/ spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.5.2.3	Valve position verification	31 days	No	Rev. 0
3.5.2.5	ECCS automatic initiation	24 months	No	Rev. 0
3.5.3 IC System				
3.5.3.1	Verify level and temperature	24 hours	No	Rev. 0
3.5.3.2	Valve position verification	31 days	No	Rev. 0
3.5.3.3	IC actuation	24 months	No	Rev. 0
3.5.3.4	IC heat removal capability test	60 months	No	Rev. 0
3.6.1.1 Primary Containment				
3.6.1.1.2	Drywell-to-suppression chamber bypass leakage	24 months	Yes	Rev. 0
3.6.1.2 Primary Containment Air Lock				
3.6.1.2.2	Verify air lock door	24 months	No	Rev. 0
3.6.1.3 PCIVs				
3.6.1.3.1	Vent and purge valve verification	31 days	No	Rev. 0
3.6.1.3.2	Manual PCIV verification	31 days	No	Rev. 0
3.6.1.3.4	TIP shear valve continuity	31 days	No	Rev. 0
3.6.1.3.7	PCIV automatic isolation	24 months	No	Rev. 0
3.6.1.3.8	Excess Flow Check Valve isolation	24 months	No	Rev. 0
3.6.1.3.9	Test explosive squib	24 months on a STAGGERED TEST BASIS	No	Rev. 0
3.6.1.4 Drywell Pressure				
3.6.1.4.1	Drywell pressure verification	12 hours	No	Rev. 0
3.6.1.5 Drywell Air Temperature				
3.6.1.5.1	Drywell air temperature verification	24 hours	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.6.1.6 Low Set Relief Valves				
3.6.1.6.1	RV actuator manual stroke	24 months	No	Rev. 0
3.6.1.6.2	RV automatic actuation	24 months	No	Rev. 0
3.6.1.7 Reactor Building-to-Suppression Chamber Vacuum Breakers				
3.6.1.7.1	Vacuum breaker verification	14 days	No	Rev. 0
3.6.1.7.2	Vacuum breaker functional test	92 days	No	Rev. 0
3.6.1.7.3	Vacuum breaker setpoint verification	24 months	No	Rev. 0
3.6.1.8 Suppression Chamber-to-Drywell Vacuum Breakers				
3.6.1.8.1	Vacuum breaker verification	14 days	No	Rev. 0
3.6.1.8.2	Vacuum breaker functional test	92 days	Yes	Rev. 9
3.6.1.8.3	Vacuum breaker setpoint verification	24 months	No	Rev. 0
3.6.2.1 Suppression Pool Average Temperature				
3.6.2.1.1	Suppression pool temperature limits	24 hours	Yes	Rev. 0
3.6.2.2 Suppression Pool Water Level				
3.6.2.2.1	Suppression pool water level limits	24 hours	No	Rev. 0
3.6.2.3 Suppression Pool Cooling				
3.6.2.3.1	Valve position verification	31 days	No	Rev. 0
3.6.2.3.3	Verify suppression pool cooling subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.6.2.4 Suppression Pool Spray				
3.6.2.4.1	Valve position verification	31 days	No	Rev. 0
3.6.2.4.2	Spray nozzle unobstructed	10 years	No	Rev. 0
3.6.2.4.3	Verify suppression pool spray subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.6.2.5 Drywell-to-Suppression Chamber Differential Pressure				
3.6.2.5.1	Differential pressure within limit	12 hours	No	Rev. 0
3.6.3.1 Primary Containment Oxygen Concentration				
3.6.3.1.1	Oxygen concentration within limit	7 days	No	Rev. 0
3.6.4.1 Secondary Containment				
3.6.4.1.1	Secondary containment vacuum verification	24 hours	No	Rev. 0
3.6.4.1.2	Secondary containment access door verification	31 days	No	Rev. 0
3.6.4.1.3	Secondary containment capability	24 months on a STAGGERED TEST BASIS	No	Rev. 0
3.6.4.1.4	Secondary containment hatches	24 months	No	Rev. 0
3.6.4.2 SCIVs				
3.6.4.2.1	Valve position verification	31 days	No	Rev. 0
3.6.4.2.2	SCIV timing	92 days	No	Rev. 0
3.6.4.2.3	SCIV automatic isolation	24 months	No	Rev. 0
3.6.4.3 SGT System				
3.6.4.3.1	SGT system operability	92 days	No	Rev. 9
3.6.4.3.3	SGT system automatic initiation	24 months	No	Rev. 0
3.7.1 CCSW System				

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.7.1.1	Valve position verification	31 days	No	Rev. 0
3.7.2 DGCW System				
3.7.2.1	Valve position verification	31 days	No	Rev. 0
3.7.2.2	Automatic pump start verification	24 months	No	Rev. 0
3.7.3 UHS				
3.7.3.1	UHS water level	24 hours	No	Rev. 0
3.7.3.2	UHS water temperature	24 hours	No	Rev. 0
3.7.4 CREV System				
3.7.4.1	CREV system operability	31 days	No	Rev. 0
3.7.4.3	CREV actuation	24 months	No	Rev. 0
3.7.5 Control Room Emergency Ventilation AC System				
3.7.5.1	CREV AC operability	24 months	No	Rev. 0
3.7.6 Main Condenser Offgas				
3.7.6.1	Gross gamma activity rate	31 days	Yes	Rev. 0
3.7.7 Main Turbine Bypass System				
3.7.7.1	Cycle main turbine bypass valves	92 days	No	Rev. 0
3.7.7.2	System functional test	24 months	No	Rev. 0
3.7.7.3	Turbine bypass system response time	24 months	No	Rev. 0
3.7.8 Spent Fuel Storage Pool Water Level				
3.7.8.1	Spent fuel pool water level	7 days	No	Rev. 0
3.8.1 AC Sources - Operating				
3.8.1.1	Breaker alignment	7 days	No	Rev. 0
3.8.1.2	DG operability	31 days	No	Rev. 0
3.8.1.3	DG load test	31 days	No	Rev. 0
3.8.1.4	Day tank level	31 days	No	Rev. 0
3.8.1.5	Accumulated water removal - day tank	31 days	No	Rev. 0
3.8.1.6	Fuel oil transfer pump operability	31 days	No	Rev. 0
3.8.1.7	Accumulated water removal – storage tank	92 days	No	Rev. 0
3.8.1.8	DG start test	184 days	No	Rev. 0
3.8.1.9	Offsite power manual transfer test	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.10	DG largest single load reject	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.11	DG voltage load reject	24 months	No	Rev. 0
3.8.1.12	Simulated loss of offsite power	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.13	DG ECCS initiation test	24 months	No	Rev. 0
3.8.1.14	DG automatic trip bypass test	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.15	DG endurance test	24 months	No	Rev. 0
3.8.1.16	DG hot restart test	24 months	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.8.1.17	DG synchronization test	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.18	DG load sequence test	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.19	LOOP / ECCS initiation	24 months on a STAGGERED TEST BASIS	No	Rev. 3
3.8.1.20	Simultaneous DG start	10 years	No	Rev. 0
3.8.3 Diesel Fuel Oil and Starting Air				
3.8.3.2	DG air start receiver pressure	31 days	No	Rev. 0
3.8.4 DC Sources - Operating				
3.8.4.1	Battery terminal voltage	7 days	No	Rev. 0
3.8.4.2	250 DCV Battery charger test	24 months	No	Rev. 2
3.8.4.3	125 DCV Battery charger test	24 months	No	Rev. 0
3.8.4.4	Battery service test	24 months	No	Rev. 0
3.8.6 Battery Parameters				
3.8.6.1	Battery float current	7 days	No	Rev. 0
3.8.6.2	Battery pilot cell voltage	31 days	No	Rev. 0
3.8.6.3	Battery electrolyte level	31 days	No	Rev. 0
3.8.6.4	Battery pilot cell temperature	31 days	No	Rev. 0
3.8.6.5	Battery cell voltage	92 days	No	Rev. 0
3.8.6.6	Battery performance test	60 months	Yes	Rev. 0
3.8.7 Distribution Systems - Operating				
3.8.7.1	Electrical distribution alignment	7 days	No	Rev. 0
3.8.8 Distribution Systems – Shutdown				
3.8.8.1	Electrical distribution alignment	7 days	No	Rev. 0
3.9.1 Refueling Equipment Interlocks				
3.9.1.1	Channel Functional Test	30 days	No	Rev. 6
3.9.2 Refuel Position One-Rod-Out Interlock				
3.9.2.1	Reactor mode switch locked	12 hours	No	Rev. 0
3.9.2.2	Channel Functional Test	30 days	No	Rev. 6
3.9.3 Control Rod Position				
3.9.3.1	Control rods fully inserted	12 hours	No	Rev. 0
3.9.5 Control Rod OPERABILITY - Refueling				
3.9.5.1	Control rod exercising	7 days	No	Rev. 0
3.9.5.2	Control rod scram accumulator pressure	7 days	No	Rev. 0
3.9.6 RPV Water Level - Irradiated Fuel				
3.9.6.1	RPV water level	24 hours	No	Rev. 0
3.9.7 RPV Water Level - New Fuel or Control Rods				
3.9.7.1	RPV water level	24 hours	No	Rev. 0
3.9.8 SDC – High Water Level				
3.9.8.1	Verify system operability	12 hours	No	Rev. 0
3.9.8.2	Verify required SDC subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4

TABLE 1

Surveillance Requirement Frequencies

Surveillance	Description[a]	Frequency	Conditioned[b]	Status[c]
3.9.9 SDC - Low Water Level				
3.9.9.1	Verify system operability	12 hours	No	Rev. 0
3.9.9.2	Verify SDC subsystem locations susceptible to gas accumulation are sufficiently filled with water.	31 days	No	Rev. 4
3.10.1 Reactor Mode Switch Interlock Testing				
3.10.1.1	Control rods fully inserted	12 hours	No	Rev. 0
3.10.1.2	No core alterations in progress	24 hours	No	Rev. 0
3.10.2 Single Control Rod Withdrawal - Hot Shutdown				
3.10.2.2	Control rods disarmed	24 hours	No	Rev. 0
3.10.2.3	Control rods fully inserted	24 hours	No	Rev. 0
3.10.3 Single Control Rod Withdrawal - Cold Shutdown				
3.10.3.2	Control rods disarmed	24 hours	No	Rev. 0
3.10.3.3	Control rods fully inserted	24 hours	No	Rev. 0
3.10.3.4	Control rod withdrawal block inserted	24 hours	No	Rev. 0
3.10.4 Single CRD Removal - Refueling				
3.10.4.1	Control rods fully inserted	24 hours	No	Rev. 0
3.10.4.2	Control rods disarmed	24 hours	No	Rev. 0
3.10.4.3	Control rod withdrawal block inserted	24 hours	No	Rev. 0
3.10.4.5	No core alterations in progress	24 hours	No	Rev. 0
3.10.5 Multiple Control Rod Withdrawal - Refueling				
3.10.5.1	Fuel assemblies removed from core cells	24 hours	No	Rev. 0
3.10.5.2	Control rods inserted	24 hours	No	Rev. 0
3.10.5.3	Spiral reload sequence	24 hours	No	Rev. 0
3.10.7 SDM Test - Refueling				
3.10.7.4	No other core alterations in progress	12 hours	No	Rev. 0
3.10.7.6	CRD charging water header pressure	7 days	No	Rev. 0

TABLE 1

Surveillance Requirement Frequencies

Table 1 Notes:

(a) The description is provided for information purposes only and is not intended to be a verbatim description of the TS SR.
(b) If the surveillance is conditioned, the TS may require additional actions.
(c) Surveillance frequencies beyond Revision 0 have been evaluated in accordance with Technical Specifications Section 5.5.15, “Surveillance Frequency Control Program.” Surveillance frequencies at Revision 0 reflect the licensing basis prior to SFCP implementation.

Section V

Surveillance Requirement Bases

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.1.3	3.1.3.1	The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.	Rev. 0
3.1.3	3.1.3.3	The 31 day Frequency takes into account operating experience related to changes in CRD performance.	Rev. 0
3.1.4	3.1.4.2	The 120 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable based on the additional Surveillances done on the CRDs at more frequent in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."	Rev. 0
3.1.5	3.1.5.1	The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.	Rev. 0
3.1.6	3.1.6.1	The 24 hour Frequency was developed considering that the primary check on compliance with the analyzed rod position sequence is performed by the RWM (LCO 3.3.2.1), which provides control rod blocks to enforce the required sequence and is required to be operable when operating at ≤ 10% RTP.	Rev. 0
3.1.7	3.1.7.1	The 24 hour Frequency is based on operating experience and has shown there are relatively slow variations in the measured parameters of volume and temperature.	Rev. 0
3.1.7	3.1.7.2	The 24 hour Frequency is based on operating experience and has shown there are relatively slow variations in the measured parameters of volume and temperature.	Rev. 0
3.1.7	3.1.7.3	The 24 hour Frequency is based on operating experience and has shown there are relatively slow variations in the measured parameters of volume and temperature.	Rev. 0
3.1.7	3.1.7.4	The 31 day Frequency is based on operating experience and has demonstrated the reliability of the explosive charge continuity.	Rev. 0
3.1.7	3.1.7.5	The 31 day Frequency of this Surveillance is appropriate because of the relatively slow variation of sodium pentaborate concentration between surveillances.	Rev. 0
3.1.7	3.1.7.6	The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation that ensures correct valve positions.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.1.7	3.1.7.8	The pump and explosive valve tested should be alternated such that both complete flow paths are tested every 48 months at alternating 24 month intervals. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.1.7	3.1.7.9	The 24 month Frequency is acceptable since there is a low probability that the subject piping will be blocked due to precipitation of the boron from solution in the heat traced piping. This is especially true in light of the temperature verification of this piping required by SR 3.1.7.3.	Rev. 0
3.1.8	3.1.8.1	The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation, which ensure correct valve positions.	Rev. 0
3.1.8	3.1.8.2	The 92 day Frequency is based on operating experience and takes into account the level of redundancy in the system design.	Rev. 0
3.1.8	3.1.8.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency; therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.2.1	3.2.1.1	The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution during normal operation.	Rev. 0
3.2.2	3.2.2.1	The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution during normal operation.	Rev. 0
3.2.3	3.2.3.1	The 24 hour Frequency is based on both engineering judgment and recognition of the slow changes in power distribution during normal operation.	Rev. 0
3.3.1.1	3.3.1.1.1	The 12 hour Frequency is based upon operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.1.1	3.3.1.1.2	The 7 day Frequency is based upon operating experience.	Rev. 0
3.3.1.1	3.3.1.1.3	The Frequency of 7 days is based on engineering judgment, operating experience, and the reliability of this instrumentation.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.1.1	3.3.1.1.4	The frequency of 7 days provides an acceptable level of system average unavailability over the Frequency interval and is based on reliability analysis performed in.	Rev. 0
3.3.1.1	3.3.1.1.5	The Frequency of 31 days is based on a reliability analysis.	Rev. 1
3.3.1.1	3.3.1.1.7	A Frequency of 7 days is reasonable based on engineering judgment and the reliability of the IRMs and APRMs.	Rev. 0
3.3.1.1	3.3.1.1.8	The Frequency of 31 days is acceptable based on engineering judgment, operating experience, and the reliability of this instrumentation.	Rev. 0
3.3.1.1	3.3.1.1.9	The 2000 effective full power hours (EFPH) Frequency is based on operating experience with LPRM sensitivity changes.	Rev. 0
3.3.1.1	3.3.1.1.11	The 92 day Frequency is based on a reliability analysis.	Rev. 0
3.3.1.1	3.3.1.1.12	The 92 day Frequency is based on a reliability analysis.	Rev. 0
3.3.1.1	3.3.1.1.13	The Frequency is based upon the assumption of a 92 day calibration interval in determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.1.1	3.3.1.1.14	The Frequency of 92 days is based on engineering judgment and the reliability of this instrumentation.	Rev. 0
3.3.1.1	3.3.1.1.15	The Frequency is based upon the assumption of a 184 day calibration interval in determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.1.1	3.3.1.1.16	The 24 month is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.1.1	3.3.1.1.17	The Frequency is based upon the assumption of a 24 month calibration interval in determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.1.1	3.3.1.1.18	The 48 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 48 month Frequency. This frequency is based on STI evaluation DRE 15-003	Rev. 5

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.3.1.1	3.3.1.1.19	RPS response time tests are conducted on a 24 month STAGGERED TEST BASIS. Note 2 requires STAGGERED TEST BASIS Frequency to be determined based on 4 channels per trip system, in lieu of the 8 channels specified in Table 3.3.1.1-1 for the MSIV Closure Function. This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. The 24 month Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.	Rev. 0
3.3.1.2	3.3.1.2.1	The Frequency of once every 12 hours is based on operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.1.2	3.3.1.2.2	The 12 hour Frequency is based upon operating experience and supplements operational controls over refueling activities that include steps to ensure that the SRMs required by the LCO are in the proper quadrant.	Rev. 0
3.3.1.2	3.3.1.2.3	The Frequency of once every 12 hours is based on operating experience that demonstrates channel failure is rare. While in MODES 3 and 4, reactivity changes are not expected; therefore, the 12 hour Frequency is relaxed to 24 hours.	Rev. 0
3.3.1.2	3.3.1.2.4	The Frequency is based upon channel redundancy and other information available in the control room, and ensures that the required channels are frequently monitored while core reactivity changes are occurring. When no reactivity changes are in progress, the Frequency is relaxed from 12 hours to 24 hours.	Rev. 0
3.3.1.2	3.3.1.2.5	The 31 day frequency is based STI Evaluation DRE 14-004.	Rev. 7
3.3.1.2	3.3.1.2.6	The 31 day Frequency is based on operating experience and on other Surveillances (such as channel check) that ensure proper functioning between channel functional tests.	Rev. 0
3.3.1.2	3.3.1.2.7	The Frequency considers the plant conditions required to perform the test, the ease of performing the test, and the likelihood of a change in the system or component status.	Rev. 0
3.3.1.3	3.3.1.3.1	A Frequency of 184 days provides an acceptable level of system average unavailability over the Frequency interval and is based on the reliability analysis.	Rev. 0
3.3.1.3	3.3.1.3.2	The 2000 effective full power hours (EFPH) Frequency is based on operating experience with LPRM sensitivity changes.	Rev. 0
3.3.1.3	3.3.1.3.3	The Frequency of 24 months is based upon the assumption of the magnitude of equipment drift provided by the equipment supplier.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.1.3	3.3.1.3.4	The 24 month Frequency is based on engineering judgment and reliability of the components. Operating experience has shown these components usually pass the surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.1.3	3.3.1.3.5	The Frequency of 24 months is based on engineering judgment and reliability of the components.	Rev. 0
3.3.1.3	3.3.1.3.6	RPS response time tests are conducted on a 24 month STAGGERED TEST BASES. This frequency is based upon operating experience, which shows that random failures of instrumentation components causing serious time degradation, but not channel failure, are infrequent.	Rev. 0
3.3.2.1	3.3.2.1.1	The Frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.2.1	3.3.2.1.2	Operating experience has shown that these components usually pass the Surveillance when performed at the 92 day Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.3.2.1	3.3.2.1.3	Operating experience has shown that these components usually pass the Surveillance when performed at the 92 day Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.3.2.1	3.3.2.1.4	The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.2.1	3.3.2.1.5	The 92 day Frequency is based on the actual trip setpoint methodology utilized for these channels.	Rev. 0
3.3.2.1	3.3.2.1.6	The Frequency is based on the trip setpoint methodology utilized for the low power setpoint channel.	Rev. 0
3.3.2.1	3.3.2.1.7	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.2.2	3.3.2.2.1	The Frequency is based on operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.2.2	3.3.2.2.2	The Frequency of 92 days is based on reliability analysis.	Rev. 0
3.3.2.2	3.3.2.2.3	The Frequency of 92 days is based on reliability analysis.	Rev. 0
3.3.2.2	3.3.2.2.4	The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.2.2	3.3.2.2.5	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.3.1	3.3.3.1.1	The Frequency of 31 days is based upon plant operating experience, with regard to channel operability and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare.	Rev. 0
3.3.3.1	3.3.3.1.2	The Frequency of 92 days is based on operating experience.	Rev. 0
3.3.3.1	3.3.3.1.3	The Frequency of 184 days is based on operating experience.	Rev. 0
3.3.3.1	3.3.3.1.4	The Frequency of 12 months is based on operating experience.	Rev. 0
3.3.3.1	3.3.3.1.5	The Frequency of 24 months is based on operating experience.	Rev. 0
3.3.4.1	3.3.4.1.1	The Frequency is based upon operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.4.1	3.3.4.1.2	The Frequency of 92 days is based on engineering judgment and the reliability of thee components.	Rev. 0
3.3.4.1	3.3.4.1.3	The Frequency of 92 days is based on engineering judgment and the reliability of thee components.	Rev. 0
3.3.4.1	3.3.4.1.4	The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.4.1	3.3.4.1.5	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.5.1	3.3.5.1.1	The Frequency is based upon operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.5.1	3.3.5.1.2	The Frequency of 92 days is based on reliability analysis.	Rev. 0
3.3.5.1	3.3.5.1.3	The frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.5.1	3.3.5.1.4	The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.5.1	3.3.5.1.5	The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.5.1	3.3.5.1.6	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.5.2	3.3.5.2.1	The 92 day frequency is based STI Evaluation 2492852.	Rev. 9
3.3.5.2	3.3.5.2.2	The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.5.2	3.3.5.2.3	The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.5.2	3.3.5.2.4	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.6.1	3.3.6.1.1	The Frequency is based on operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.6.1	3.3.6.1.2	The 92 day Frequency is based on reliability analyses.	Rev. 0
3.3.6.1	3.3.6.1.3	The 92 day Frequency is based on reliability analyses.	Rev. 0
3.3.6.1	3.3.6.1.4	The Frequency is based on the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.6.1	3.3.6.1.5	The 24 month Frequency is based on engineering judgment and the reliability of the components.	Rev. 0
3.3.6.1	3.3.6.1.6	The Frequency is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.6.1	3.3.6.1.7	The 48 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 48 month Frequency. This frequency is based on STI evaluation DRE 15-005.	Rev. 5
3.3.6.2	3.3.6.2.1	The Frequency is based on operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.6.2	3.3.6.2.2	The Frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.6.2	3.3.6.2.3	The Frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.6.2	3.3.6.2.4	The Frequency is based on the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.6.2	3.3.6.2.5	The Frequency is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.6.2	3.3.6.2.6	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.6.3	3.3.6.3.1	The Frequency of once every 92 days is based on the assumption of a 92 days calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.6.3	3.3.6.3.2	The Frequency of once every 24 months is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.6.3	3.3.6.3.3	The Frequency of once every 24 months is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.7.1	3.3.7.1.1	The Frequency is based upon operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.7.1	3.3.7.1.2	The Frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.7.1	3.3.7.1.3	The 92 day Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.3.7.2	3.3.7.2.1	The Frequency is based upon operating experience that demonstrates channel failure is rare.	Rev. 0
3.3.7.2	3.3.7.2.2	The Frequency of 92 days is based on a reliability analysis.	Rev. 0
3.3.7.2	3.3.7.2.3	The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift associated with the channel, except for the radiation detectors, in the setpoint analysis.	Rev. 0
3.3.7.2	3.3.7.2.4	The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift for the radiation detector in the setpoint analysis.	Rev. 0
3.3.7.2	3.3.7.2.5	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0
3.3.8.1	3.3.8.1.1	The Frequency of 18 months is based on operating experience with regard to channel operability and drift, which demonstrates that failure of more than one channel of a given Function in any 18 month interval is a rare event.	Rev. 0
3.3.8.1	3.3.8.1.2	The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.8.1	3.3.8.1.3	The 48 month frequency is based on STI Evaluation DRE 16-011.	Rev. 8
3.3.8.1	3.3.8.1.4	The 48 month frequency is based on STI Evaluation DRE 16-011.	Rev. 8
3.3.8.1	3.3.8.1.5	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.3.8.2	3.3.8.2.1	The 184 day Frequency is based on guidance provided in Generic Letter 91-09.	Rev. 0
3.3.8.2	3.3.8.2.2	The Frequency is based on the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.3.8.2	3.3.8.2.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.4.1	3.4.1.1	The 24 hour Frequency is consistent with the Surveillance Frequency for jet pump operability verification and has been shown by operating experience to be adequate to detect off normal jet pump loop flows in a timely manner.	Rev. 0
3.4.2	3.4.2.1	The 24 hour Frequency has been shown by operating experience to be timely for detecting jet pump degradation and is consistent with the Surveillance Frequency for recirculation loop operability verification.	Rev. 0
3.4.3	3.4.3.2	The 24 month Frequency ensures that each solenoid for each relief valve is tested. The 24 month Frequency was developed based on the relief valve tests required by the ASME Code. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.4.3	3.4.3.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.4.4	3.4.4.1	In conjunction with alarms and other administrative controls, a 12 hour Frequency for this Surveillance is appropriate for identifying leakage and for tracking required trends.	Rev. 0
3.4.5	3.4.5.1	The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.	Rev. 0
3.4.5	3.4.5.2	The Frequency of 31 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.	Rev. 0
3.4.5	3.4.5.3	The Frequency is based upon the assumption of an 12 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.	Rev. 0
3.4.6	3.4.6.1	The 7 day Frequency is adequate to trend changes in the iodine activity level.	Rev. 0
3.4.7	3.4.7.1	The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the SDC subsystem in the control room.	Rev. 0
3.4.7	3.4.7.2	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.4.8	3.4.8.1	The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the SDC subsystem in the control room.	Rev. 0
3.4.8	3.4.8.2	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4
3.4.9	3.4.9.1	This 30 minute Frequency is considered reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits a reasonable time for assessment and correction of minor deviations.	Rev. 0
3.4.9	3.4.9.5	The 30 minute Frequency reflects the urgency of maintaining the temperatures within limits, and also limits the time that the temperature limits could be exceeded.	Rev. 0
3.4.9	3.4.9.6	The 30 minute Frequency reflects the urgency of maintaining the temperatures within limits, and also limits the time that the temperature limits could be exceeded.	Rev. 0
3.4.9	3.4.9.7	The 12 hour Frequency is reasonable based on the rate of temperature change possible at these temperatures.	Rev. 0
3.4.10	3.4.10.1	Operating experience has shown the 12 hour Frequency to be sufficient for identifying trends and verifying operation within safety analyses assumptions.	Rev. 0
3.5.1	3.5.1.1	The 31 day Frequency is based on the gradual nature of void buildup in the ECCS piping, the procedural controls governing system operation, and operating experience.	Rev. 0
3.5.1	3.5.1.2	The 31 day Frequency of this SR was derived from the Inservice Testing Program requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience.	Rev. 0
3.5.1	3.5.1.3	The 31 day Frequency has been found acceptable based on engineering judgment and operating experience.	Rev. 0
3.5.1	3.5.1.7	The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.5.1	3.5.1.8	The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.1	3.5.1.9	The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.1	3.5.1.10	Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.1	3.5.1.11	The Frequency of 24 months is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that the components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.1	3.5.1.12	The 31 day Frequency takes into consideration administrative controls over operation of the nitrogen system and alarm for low nitrogen pressure.	Rev. 0
3.5.2	3.5.2.1	The 12 hour Frequency of these SRs was developed considering operating experience related to suppression pool water level and CCST water level variations and instrument drift during the applicable modes. 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 suppression pool or CCST water level condition.	Rev. 0
3.5.2	3.5.2.2	The 31 day Frequency is based on the gradual nature of void buildup in the ECCS piping, the procedural controls governing system operation, and operating experience.	Rev. 0
3.5.2	3.5.2.3	The 31 day Frequency is appropriate because the valves are operated under procedural control and the probability of their being mispositioned during this time period is low.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.5.2	3.5.2.5	The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.3	3.5.3.1	The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during normal operations.	Rev. 0
3.5.3	3.5.3.2	The 31 day Frequency of this SR was derived from the Inservice Testing Program requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would affect only the IC System. This Frequency has been shown to be acceptable through operating experience.	Rev. 0
3.5.3	3.5.3.3	The 24 month Frequency is based on the need to perform the Surveillance under conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.5.3	3.5.3.4	The 60 month Frequency is based on engineering judgement, and has been shown to be acceptable through operating experience.	Rev. 0
3.6.1.1	3.6.1.1.2	The leakage test is performed every 24 months. The 24 month Frequency was developed considering it is prudent that this Surveillance be performed during a unit outage and also in view of the fact that component failures that might have affected this test are identified by other primary containment SRs.	Rev. 0
3.6.1.2	3.6.1.2.2	Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the primary containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of primary containment OPERABILITY if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the air lock.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.6.1.3	3.6.1.3.1	The 31 day Frequency is consistent with other PCIV requirements discussed in SR 3.6.1.3.2.	Rev. 0
3.6.1.3	3.6.1.3.2	Since verification of position for PCIVs outside primary containment is relatively easy, the 31 day Frequency was chosen to provide added assurance that the PCIVs are in the correct positions.	Rev. 0
3.6.1.3	3.6.1.3.4	The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity.	Rev. 0
3.6.1.3	3.6.1.3.7	The 24 month Frequency was developed considering it is prudent that this Surveillance be performed only during a unit outage since isolation of penetrations would eliminate cooling water flow and disrupt the normal operation of many critical components. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.1.3	3.6.1.3.8	The representative sample consists of an approximately equal number of EFCVs, such that each EFCV is tested at least once every 10 years (nominal). In addition, the EFCVs in the samples are representative of the various plant configurations, models, sizes, and operating environments. This ensures that any potentially common problem with a specific type or application of EFCV is detected at the earliest possible time. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The nominal 10-year interval is based on performance testing as discussed in NEDO-32977-A. Furthermore, any EFCV failures will be evaluated to determine if additional testing in that test interval is warranted to ensure overall reliability is maintained. Operating experience has demonstrated that these components are highly reliable and that failures to isolate are very infrequent. Therefore, testing of a representative sample was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.1.3	3.6.1.3.9	The Frequency of 24 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.4).	Rev. 0
3.6.1.4	3.6.1.4.1	The 12 hour Frequency of this SR was developed, based on operating experience related to trending of drywell pressure variations during the applicable modes. 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 drywell pressure condition.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.6.1.5	3.6.1.5.1	The 24 hour Frequency of the SR was developed based on operating experience related to drywell average air temperature variations and temperature instrument drift during the applicable MODES and the low probability of a DBA occurring between surveillances. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal drywell air temperature condition.	Rev. 0
3.6.1.6	3.6.1.6.1	The 24 month Frequency was based on the relief valve tests required by the ASME Code. The Frequency of 24 months ensures that each solenoid for each low set relief valve is tested. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.1.6	3.6.1.6.2	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.1.7	3.6.1.7.1	The 14 day Frequency is based on engineering judgment, is considered adequate in view of other indications of vacuum breaker status available to operations personnel, and has been shown to be acceptable through operating experience.	Rev. 0
3.6.1.7	3.6.1.7.2	The 92 day Frequency of this SR was developed based upon Inservice Testing Program requirements to perform valve testing at least once every 92 days.	Rev. 0
3.6.1.7	3.6.1.7.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. For this plant, the 24 month Frequency has been shown to be acceptable, based on operating experience, and is further justified because of other surveillances performed at shorter Frequencies that convey the proper functioning status of each vacuum breaker.	Rev. 0
3.6.1.8	3.6.1.8.1	The 14 day Frequency is based on engineering judgment, is considered adequate in view of other indications of vacuum breaker status available to operations personnel, and has been shown to be acceptable through operating experience.	Rev. 0
3.6.1.8	3.6.1.8.2	The 92 day frequency is based STI Evaluation DRE-15-004.	Rev. 9

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.6.1.8	3.6.1.8.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency has been shown to be acceptable, based on operating experience, and is further justified because of other surveillances performed at shorter Frequencies that convey the proper functioning status of each vacuum breaker.	Rev. 0
3.6.2.1	3.6.2.1.1	The 24 hour Frequency has been shown, based on operating experience, to be acceptable. When heat is being added to the suppression pool by testing, however, it is necessary to monitor suppression pool temperature more frequently.	Rev. 0
3.6.2.2	3.6.2.2.1	The 24 hour Frequency has been shown to be acceptable based on operating experience. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool water level condition.	Rev. 0
3.6.2.3	3.6.2.3.1	The Frequency of 31 days is justified because the valves are operated under procedural control, improper valve position would affect only a single subsystem, the probability of an event requiring initiation of the system is low, and the system is a manually initiated system. This Frequency has been shown to be acceptable based on operating experience.	Rev. 0
3.6.2.3	3.6.2.3.3	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4
3.6.2.4	3.6.2.4.1	The Frequency of 31 days is justified because the valves are operated under procedural control, improper valve position would affect only a single subsystem, the probability of an event requiring initiation of the system is low, and the system is a manually initiated system. This Frequency has been shown to be acceptable based on operating experience.	Rev. 0
3.6.2.4	3.6.2.4.2	The 10 year Frequency is adequate to detect degradation in performance due to the passive nozzle design and has been shown to be acceptable through operating experience.	Rev. 0
3.6.2.4	3.6.2.4.3	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.6.2.5	3.6.2.5.1	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.	Rev. 0
3.6.3.1	3.6.3.1.1	The 7 day Frequency is based on the slow rate at which oxygen concentration can change and on other indications of abnormal conditions (which could lead to more frequent checking by operators in accordance with plant procedures). Also, this Frequency has been shown to be acceptable through operating experience.	Rev. 0
3.6.4.1	3.6.4.1.1	The 24 hour Frequency of this SR was developed based on operating experience related to secondary containment vacuum variations during the applicable modes and the low probability of a DBA occurring. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal secondary containment vacuum condition.	Rev. 0
3.6.4.1	3.6.4.1.2	The 31 day Frequency has been shown to be adequate, based on operating experience, and is considered adequate in view of the other indications of door status that are available to the operator.	Rev. 0
3.6.4.1	3.6.4.1.3	The SGT subsystem used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.4.3, either SGT subsystem will perform this test. Operating experience has shown the secondary containment boundary usually passes the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.4.1	3.6.4.1.4	The 24 month Frequency is considered adequate in view of the existing administrative controls on equipment hatches.	Rev. 0
3.6.4.2	3.6.4.2.1	Since these SCIVs are readily accessible to personnel during normal operation and verification of their position is relatively easy, the 31 day Frequency was chosen to provide added assurance that the SCIVs are in the correct positions.	Rev. 0
3.6.4.2	3.6.4.2.2	The 92 day frequency is based on operating experience.	Rev. 0
3.6.4.2	3.6.4.2.3	While this Surveillance can be performed with the reactor at power, operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.6.4.3	3.6.4.3.1	The 92 day frequency is based STI Evaluation DRE-15-002.	Rev. 9

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.6.4.3	3.6.4.3.3	While this Surveillance can be performed with the reactor at power, operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was found to be acceptable from a reliability standpoint.	Rev. 0
3.7.1	3.7.1.1	The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.	Rev. 0
3.7.2	3.7.2.1	The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.	Rev. 0
3.7.2	3.7.2.2	Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based at the refueling cycle. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.	Rev. 0
3.7.3	3.7.3.1	The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable modes.	Rev. 0
3.7.3	3.7.3.2	The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable modes.	Rev. 0
3.7.4	3.7.4.1	As the environmental and normal operating conditions of this system are not severe, testing the system once every month provides an adequate check on this system. Furthermore, the 31 day Frequency is based on the known reliability of the equipment.	Rev. 0
3.7.4	3.7.4.3	Operating experience has shown that these components normally pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was found to be acceptable from a reliability standpoint.	Rev. 0
3.7.5	3.7.5.1	The 24 month Frequency is appropriate since significant degradation of the Control Room Emergency Ventilation AC System is not expected over this time period.	Rev. 0
3.7.6	3.7.6.1	The 31 day Frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable, based on operating experience.	Rev. 0
3.7.7	3.7.7.1	The 92 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions. Operating experience has shown that these components usually pass the SR when performed at the 92 day Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.7.7	3.7.7.2	The 24 month Frequency is based on the need to perform this Surveillance under conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.7.7	3.7.7.3	The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 0
3.7.8	3.7.8.1	The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pool is normally stable, and all water level changes are controlled by unit procedures.	Rev. 0
3.8.1	3.8.1.1	The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.	Rev. 0
3.8.1	3.8.1.2	The 31 day Frequency is consistent with Regulatory Guide 1.9. This frequency provides adequate assurance of DG operability, while minimizing degradation resulting from testing.	Rev. 0
3.8.1	3.8.1.3	The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9.	Rev. 0
3.8.1	3.8.1.4	The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.	Rev. 0
3.8.1	3.8.1.5	The Surveillance Frequencies are established by Regulatory Guide 1.137.	Rev. 0
3.8.1	3.8.1.6	The Frequency for this SR is consistent with the Frequency for testing the DGs in SR 3.8.1.3.	Rev. 0
3.8.1	3.8.1.7	The Surveillance Frequencies are established by Regulatory Guide 1.137.	Rev. 0
3.8.1	3.8.1.8	The 184 day Frequency for SR 3.8.1.8 is a reduction in cold testing consistent with Generic Letter 84-15. These Frequencies provide adequate assurance of DG operability, while minimizing degradation resulting from testing.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.8.1	3.8.1.9	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.10	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.11	The 24 month Frequency takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.	Rev. 0
3.8.1	3.8.1.12	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.13	The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths.	Rev. 0
3.8.1	3.8.1.14	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.15	The 24 month Frequency takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.	Rev. 0
3.8.1	3.8.1.16	The 24 month Frequency takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths.	Rev. 0
3.8.1	3.8.1.17	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.18	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.19	The frequency of 24 months on a STAGGERED TEST BASIS is based upon STI Evaluation DRE 14-03.	Rev. 3
3.8.1	3.8.1.20	The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.9.	Rev. 0
3.8.3	3.8.3.2	The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.	Rev. 0
3.8.4	3.8.4.1	The 7 day Frequency is conservative when compared with manufacturers recommendations and IEEE-450.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[(a)]
3.8.4	3.8.4.2	The 24 month Frequency for the Surveillance is based on engineering judgment. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.	Rev. 2
3.8.4	3.8.4.3	The 24 month Frequency for the Surveillance is acceptable based on the administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.	Rev. 0
3.8.4	3.8.4.4	The Frequency of 24 months is acceptable, given unit conditions required to perform the test and the other requirements existing to ensure adequate battery performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.	Rev. 0
3.8.6	3.8.6.1	The Frequency for battery float current verification every 7 days is consistent with IEEE-450.	Rev. 0
3.8.6	3.8.6.2	The Frequency for cell voltage verification every 31 days for pilot cell is consistent with IEEE-450.	Rev. 0
3.8.6	3.8.6.3	The Frequency for connected cell electrolyte level verification every 31 days is consistent with IEEE-450.	Rev. 0
3.8.6	3.8.6.4	The Frequency for cell temperature verification every 31 days for pilot cell is consistent with IEEE-450.	Rev. 0
3.8.6	3.8.6.5	The Frequency for cell voltage verification every 92 days for connected cells is consistent with IEEE-450.	Rev. 0
3.8.6	3.8.6.6	The Frequency for this test is normally 60 months consistent with recommendations in IEEE-450.	Rev. 0
3.8.7	3.8.7.1	The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, redundant power supplies available to the essential service and instrument 120 VAC buses, and other indications available in the control room that alert the operator to bus and subsystem malfunctions.	Rev. 0
3.8.8	3.8.8.1	The 7 day Frequency takes into account the redundant capability of the electrical power distribution subsystems, as well as other indications available in the control room that alert the operator to subsystem malfunctions.	Rev. 0
3.9.1	3.9.1.1	The 30 day Frequency is based STI Evaluation DRE 15-001.	Rev. 6
3.9.2	3.9.2.1	The Frequency of 12 hours is sufficient in view of other administrative controls utilized during refueling operations to ensure safe operation.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.9.2	3.9.2.2	The 30 day Frequency is based STI Evaluation DRE 15-001.	Rev. 6
3.9.3	3.9.3.1	The 12 hour Frequency takes into consideration the procedural controls on control rod movement during refueling as well as the redundant functions of the refueling interlocks.	Rev. 0
3.9.5	3.9.5.1	The 7 day Frequency takes into consideration equipment reliability, procedural controls over the scram accumulators, and control room alarms and indicating lights that indicate low accumulator charge pressures.	Rev. 0
3.9.5	3.9.5.2	The 7 day Frequency takes into consideration equipment reliability, procedural controls over the scram accumulators, and control room alarms and indicating lights that indicate low accumulator charge pressures.	Rev. 0
3.9.6	3.9.6.1	The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls on valve positions, which make significant unplanned level changes unlikely.	Rev. 0
3.9.7	3.9.7.1	The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls on valve positions, which make significant unplanned level changes unlikely.	Rev. 0
3.9.8	3.9.8.1	The 12 hour Frequency is sufficient in view of other visual and audible indications available to the operator for monitoring the SDC subsystem in the control room.	Rev. 0
3.9.8	3.9.8.2	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4
3.9.9	3.9.9.1	The 12 hour Frequency is sufficient in view of other visual and audible indications available to the operator for monitoring the SDC subsystem in the control room.	Rev. 0
3.9.9	3.9.9.2	The 31 day frequency is based upon the gradual nature of void buildup, the procedural controls governing system operation, and operating experience.	Rev. 4
3.10.1	3.10.1.1	The Surveillance is performed at a 12 hour Frequency to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.	Rev. 0
3.10.1	3.10.1.2	The Surveillance is performed at a 24 hour Frequency to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.10.2	3.10.2.2	The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawal, the protection afforded by the LCOs involved, and hardwire interlocks that preclude additional control rod withdrawals.	Rev. 0
3.10.2	3.10.2.3	The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawal, the protection afforded by the LCOs involved, and hardwire interlocks that preclude additional control rod withdrawals.	Rev. 0
3.10.3	3.10.3.2	The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardwire interlocks to preclude an additional control rod withdrawal.	Rev. 0
3.10.3	3.10.3.3	The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardwire interlocks to preclude an additional control rod withdrawal.	Rev. 0
3.10.3	3.10.3.4	The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardwire interlocks to preclude an additional control rod withdrawal.	Rev. 0
3.10.4	3.10.4.1	The 24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardwire interlock to block an additional control rod withdrawal.	Rev. 0
3.10.4	3.10.4.2	The 24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardwire interlock to block an additional control rod withdrawal.	Rev. 0
3.10.4	3.10.4.3	The 24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardwire interlock to block an additional control rod withdrawal.	Rev. 0
3.10.4	3.10.4.5	The 24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardwire interlock to block an additional control rod withdrawal.	Rev. 0
3.10.5	3.10.5.1	The 24 hour Frequency is acceptable, given the administrative controls on fuel assembly and control rod removal, and takes into account other indications of control rod status available in the control room.	Rev. 0
3.10.5	3.10.5.2	The 24 hour Frequency is acceptable, given the administrative controls on fuel assembly and control rod removal, and takes into account other indications of control rod status available in the control room.	Rev. 0

TABLE 2

Surveillance Requirement Bases

TS Section	SR	Bases Description	Status[a]
3.10.5	3.10.5.3	The 24 hour Frequency is acceptable, given the administrative controls on fuel assembly and control rod removal, and takes into account other indications of control rod status available in the control room.	Rev. 0
3.10.7	3.10.7.4	The 12 hour Frequency is intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.	Rev. 0
3.10.7	3.10.7.6	The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.	Rev. 0

TABLE 2

Surveillance Requirement Bases

Table 2 Notes:

(a) Surveillance frequencies beyond Revision 0 have been evaluated in accordance with Technical Specifications Section 5.5.15, “Surveillance Frequency Control Program.” Surveillance frequencies at Revision 0 reflect the licensing basis prior to SFCP implementation.

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)

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)

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.

BASES

TLCO 3.0.g NRC Regulatory Issue Summary (RIS) 2005-07, "Compensatory Measures to Satisfy the Fire Protection Program Requirements," informs licensees that alternate compensatory measures may be used for a degraded or inoperable fire protection feature under certain circumstances. For plants that have adopted the standard fire protection license condition given in Generic Letter 86-10 and removed fire protection from the Technical Specifications in accordance with Generic Letter 88-12, the guidance in RIS 2005-07 apply. DRE has adopted the Standard Fire Protection License Condition per G.L. 86-10 and has removed fire protection conditions from the Technical Specifications and placed them in the TRM. Such alternative compensatory measures may consist of administrative controls, operator briefings, temporary procedures, interim shutdown strategies, manual actions, temporary detection, other engineered controls or a combination of such actions. A technical evaluation must demonstrate that the alternative compensatory measures would not adversely impact the ability to achieve and maintain safe shutdown in the event of fire. The evaluation of the alternate compensatory measure should incorporate risk insights regarding the location, quantity and type of combustible material in the fire area; the presence of ignition sources and their likelihood of occurrence; the automatic fire suppression and fire detection capability in the fire area; the manual fire suppression capability in the fire area; and the human error probability where applicable.

The use of an alternate compensatory measure(s) shall be entered into the Corrective Action Program. The evaluation must be maintained as a plant record subject to subsequent inspection. This technical evaluation should be performed consistent with Exelon standard administrative controls involving engineering technical evaluations and fire protection program reviews. The fire protection program review consists of a regulatory and technical evaluation of the change in accordance with Exelon procedures. The evaluation shall determine whether the proposed alternative compensatory measures are adequate compared to the existing required compensatory measures. The evaluation must demonstrate that the alternative compensatory measures would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire and that compliance with the General Design Criteria (10 CFR 50 Appendix A, Criterion 3) and 10CFR 50.48(a) is met. Also NRC Information Notice 97-48 and NRC Regulatory Issue Summary 2005-20 guidance should be considered when selecting alternate compensatory measures.

Alternate compensatory measures may be used in lieu of the prescribed compensatory measures for degraded or inoperable fire protection features addressed by specified TRM sections. Such alternative compensatory measures may consist of administrative controls, operator briefings, interim shutdown strategies, temporary procedures, manual actions temporary detection, other engineered controls or a combination of such actions. A technical engineering evaluation must demonstrate that the alternative compensatory measures would not adversely impact the ability to achieve and maintain safe shutdown in the event of fire. The use of an alternate compensatory measure(s) shall be entered into the Corrective Action Program. The evaluation must be maintained as a plant record subject to subsequent inspection. The applicable TRM compensatory measure must be met until such time as an Alternative Compensatory Measure is approved.

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

BACKGROUND

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

c. No potential sources of air and oxygen may be present other than radiolysis of reactor coolant.

(continued)

BASES (continued)

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 standard cubic feet of nitrogen for NCAD. This is consistent with Section 4.5.1 of the NRC’s Safety Evaluation for Extended Power Uprate.

APPLICABLE SAFETY ANALYSIS

NCAD is a manually operated system, as directed by plant procedures, if elevated hydrogen concentrations reach specified levels. Following a postulated LOCA, both oxygen and hydrogen may be produced by the radiolytic decomposition of primary coolant and suppression pool water. Decomposition would occur due to the absorption of gamma and beta energy released by fission products into reactor coolant and suppression pool water. Radiolysis is the only significant reaction mechanism whereby oxygen, the limiting combustion reactant, is produced within the containment. Therefore, radiolysis is the primary focus relative to combustible gas control for containments with inerted atmospheres.

Several analyses and experiments have been conducted to quantify the post LOCA resultant hydrogen concentration in containment. Both inerted and noninerted containment atmospheres were evaluated covering both short term and long term hydrogen generation. For reference purposes a 0.1% metal-water reaction is equivalent to about three pound-moles and would result in a hydrogen volumetric concentration of approximately 0.4% in the primary containment. Metal-water reactions in excess of approximately 1% would result in a flammable mixture of hydrogen in air of 4% by volume.

(continued)

BASES (continued)

The time required to reach the 5-percent oxygen limit following the LOCA, based on 1-percent per day containment leakage is 19 hours for EPU reactor power with GE-14 fuel. This reduction in time required for NCAD system initiation does not affect the ability of the operators to respond. Therefore, the NCAD retains its capability of meeting its design basis function of controlling oxygen concentration following the postulated LOCA.

Evaluation of the nitrogen requirements to maintain the containment atmosphere below the 5 percent flammability limit for 7 days post-LOCA shows that the minimum stored volume increases to 141,000 scf for EPU reactor power. The NCAD system has a minimum stored nitrogen capacity of 200,000 scf, which is sufficient to accommodate 7 days of post-LOCA operation. Additionally, calculations indicate that the containment pressure buildup as a result of NCAD system operation shows that the operating pressure limit of 31 psig (50 percent of the design pressure) is not reached until 32 days after the LOCA. This satisfies the minimum 30-day acceptance limit for containment pressure buildup.

LCO

The OPERABILITY of the NCAD system is to provide a redundant path, single failure proof means of reinerting the containment following a LOCA. The NCAD system must be capable of being initiated 19 hours after the accident, and provide a maximum required flow rate of approximately 29 scfm of nitrogen against a maximum containment backpressure of 31 psig, which is half of the containment design pressure.

In addition to the normal inerting and makeup pathways, two bypass lines are provided for each unit. These bypass lines are routed from the discharge of the makeup line atmospheric vaporizer, located outside, to the downstream side of the pressure regulating stations in the normal inerting and makeup pathways, located within the Reactor Building. These lines provide the capability of inerting the Containment post-LOCA.

The NCAD system nitrogen flow is initiated through either or both of the bypass lines by opening the manual isolation valve located outside in the vicinity of the Nitrogen Supply system equipment, and opening the Containment isolation valves from the control room.

The NCAD system consists of two storage tanks, associated piping and valves to provide nitrogen to the primary containment in order to control combustible gases. The nitrogen storage system consists of two tanks, piping and valves. Each tank is capable of supplying the required volume of nitrogen, 200,000 standard cubic feet, needed for OPERABILITY of the NCAD system. Therefore, only one storage tank is required for the system to perform its intended safety function.

(continued)

BASES (continued)

APPLICABILITY

The NCAD system must be available when primary containment is inerted, except as allowed by the relaxations during startup and shutdown addressed below. The primary containment must be inert in MODE 1, since this is the condition with the highest probability of an event that could produce hydrogen and oxygen.

Inerting the primary containment is an operational problem because it prevents containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the plant startup and de-inerted as soon as possible in the plant shutdown. As long as reactor power is < 15% RTP, the potential for an event that generates significant hydrogen and oxygen is low and the primary containment need not be inert. Furthermore, the probability of an event that generates hydrogen occurring within the first 24 hours of a startup, or within the last 24 hours before a shutdown, is low enough that these "windows," when the primary containment is not inerted, are also justified. The 24 hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting

Reference:
UFSAR 6.2.1.3.7
UFSAR 6.2.5.3.3
Dresden Amendments to Technical Specification 191/185

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 recently 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 operability evaluation is performed to determine operability of the attached system or component. 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 an adverse significant effect or degradation introduced by the inoperability of the snubber.

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.

The operability of this system is determined by the availability of each of these components in the system as defined by TLCO 3.7.i. The distribution piping and associated valves, TLCO 3.7.i.4, are included in this system, however, the operability of the Fire Water Supply system is not dependent on all of the sectionalizing, control and isolation valves being available for the sprinkler systems or hose standpipe risers. Isolating a portion of the system via these associated valves will only INOP the system to which it is feeding (i.e. hydrant, stand pipe feed, sprinkler system feed). This would not affect the operability of the Fire Water Supply system. Only actions or events that would isolate or inhibit the output flow of both system pumps would render the fire water supply system INOP.

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 suppress 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.

Dresden Fixed Water Spray systems are designed to provide fire control or exposure protection. Water spray systems typically provide protection for areas containing significant amounts of combustible materials.

The water spray system is equipped with nozzles for specific water discharge and distribution in a directional spray pattern to confine and suppress a potential fire.

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.

3.0.g allows the implementation of a different compensatory measure or combination of measures (e.g., additional administrative controls, operator briefings, temporary procedures, interim shutdown strategies, operator manual actions, temporary fire barriers, temporary detection or suppression systems). The impact of the proposed alternate compensatory measure and its adequacy compared to the other TRM REQUIRED ACTIONS must be documented in a technical evaluation. The evaluation must demonstrate that the alternate compensatory measure would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The Surveillance Requirements provide assurance that the minimum OPERABILITY requirements of the Water Suppression Systems are met.

BASES

(Continued),

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 3.7.j.5 & TSR 3.7.j.7
Visual inspections of the sprinkler system verify that the spray pattern is not obstructed. Obstructions are foreign material (ie scaffolding, structural members, ladders, tools or equipment) within the spray pattern of the sprinkler system that may impede heat flow or water distribution in a manner that will materially affect the ability for the sprinkler system to control or suppress a fire.

TSR 3.7.j.8
The transformer deluge flow surveillances are performed to verify that the open head spray nozzles' layout, and discharge patterns are adequate to provide complete coverage of exposed surfaces. Nozzles are verified to be unclogged by ensuring that the spray pattern is uniform from each nozzle type and the water spray impinges the external surfaces of the transformer. In the event that nozzles are clogged, the system may be considered OPERABLE but degraded if the discharge pattern of the remaining nozzles contemplates essentially complete impingement on the exterior surface of the transformer, except underneath surfaces which in lieu there of may be protected by horizontal projection.

References: 1. NFPA 13 - 1976
2. NFPA 15 - 1973
3. Fire Protection Report and Fire Protection Program Documentation Package

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.

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.

3.0.g allows the implementation of a different compensatory measure or combination of measures (e.g., additional administrative controls, operator briefings, temporary procedures, interim shutdown strategies, operator manual actions, temporary fire barriers, temporary detection or suppression systems). The impact of the proposed alternate compensatory measure and its adequacy compared to the other TRM REQUIRED ACTIONS must be documented in a technical evaluation. The evaluation must demonstrate that the alternate compensatory measure would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

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.

3.0.g allows the implementation of a different compensatory measure or combination of measures (e.g., additional administrative controls, operator briefings, temporary procedures, interim shutdown strategies, operator manual actions, temporary fire barriers, temporary detection or suppression systems). The impact of the proposed alternate compensatory measure and its adequacy compared to the other TRM REQUIRED ACTIONS must be documented in a technical evaluation. The evaluation must demonstrate that the alternate compensatory measure would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

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. Automatic closure devices on Fire Doors are required to ensure that fire doors close and latch from the open position, as defined in the fire door inspection procedure. Failure to automatically close and latch the door from the open position, as defined in the fire door inspection procedure, will cause the fire door to be INOPERABLE. Where applicable, a fire door that is inoperable due to failed closure device can be made OPERABLE as a fire barrier if the door is closed and locked or suitably secured.

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.

3.0.g allows the implementation of a different compensatory measure or combination of measures (e.g., additional administrative controls, operator briefings, temporary procedures, interim shutdown strategies, operator manual actions, temporary fire barriers, temporary detection or suppression systems). The impact of the proposed alternate compensatory measure and its adequacy compared to the other TRM REQUIRED ACTIONS must be documented in a technical evaluation. The evaluation must demonstrate that the alternate compensatory measure would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

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 the event of the CCSW System vault being declared inoperable, actions should be taken to address the cause of the inoperability. If no actions can be taken to address the inoperability of the vault, entry into LCO 3.7.1 Condition B should be evaluated. An example of an action is verifying all associated surveillance requirements are met. Additional actions can be taken to address the cause of the inoperability such as plugging the floor drain and removing equipment drainage manually every 12 hours, restoring the flood protection capability of the vault door, or initiating repairs to vault penetrations seals.

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 3.7 PLANT SYSTEMS

B 3.7.p Natural Gas Line Supply System

BASES

BACKGROUND	Dresden Gas Line Explosion Risk Assessment, Evaluation No. 2015-02412, Revision 001 provides the basis for using natural gas as the Heating Boiler fuel. Evaluation No. 2015-02412, Revision 01, defines limitations on system operation to ensure compliance with the analysis. The purpose of the ventilation system is to provide sufficient airflow throughout the boiler house to provide both dilution and mixing, should a natural gas leak occur. This is necessary because it increases the probability of a methane detector sensing 10% of the Lower Explosive Limit (LEL) for Natural Gas and it delays the buildup of an explosive concentration. The Methane Detectors are arranged in two strings of eight detectors with one detector from each string located within a specified zone. In order to cause a trip, the logic of "one out of eight taken twice" must be satisfied. To be considered OPERABLE, a detector must be capable of nominally detecting 10% of the LEL and providing a signal upon detection.
APPLICABLE SAFETY ANALYSIS	The analytical methods and assumptions used in the evaluation of the Natural Gas Line Supply System are included in Reference 1. To meet the assumptions of Reference 2, the ventilation system must be operating by having power and providing circulating air within the boiler house. Additionally, the methane detectors must all be capable of detecting 10% LEL.
TLCO	In order to meet the initial assumptions for Reference 2, all 16 methane detectors and one boiler house ventilation fan is required to be OPERABLE.

(Continued)

Therefore, the TLCO requires all 16 methane detectors and one Ventilation fan OPERABLE.

APPLICAILITY

The Boiler House Ventilation and Detection systems are required when Natural Gas is being admitted to the 2/3 Heating Boilers by opening of isolations within the vault at the west end of the building. The applicability is based upon the assumptions contained in Reference 2.

ACTIONS

The actions are modified by a note that allows for separate entries into the CONDITION for methane detectors. This allowance is based upon the ability of adjacent detectors to automatically isolate natural gas upon detection of the nominal 10% LEL as described in Reference 2.

A.1 and A.2

A 48 hour completion time to restore boiler house ventilation is based upon the expected repair duration assumed in Reference 2. For Boiler Ventilation, it was determined that a 48 hour repair would not significantly impact the damage frequency estimates.

B.1 and B.2

Caution should be used when simultaneously disabling multiple detectors to ensure leak detection coverage is maintained throughout the boiler house.

A 24 hour completion time to restore an inoperable detector is acceptable based upon the expected repair duration assumed in Reference 2. Additional detectors must be monitored for loss of zone coverage or more widespread degradation via loss of two detectors in adjacent zones.

B.3

A repair exceeding 24 hours may be evaluated and found acceptable provided that the increase in risk does not exceed the acceptance criteria of one detector out of service for 108 days or one additional detector for one day per detector per

(Continued)

year. See Reference 2 for further clarification.

C.1

If the ability to detect methane in any zone of the heating boiler house is no longer available, natural gas must be isolated at the vault outside of the boiler house. Reduction in redundancy between adjacent zones also requires isolation of natural gas at the vault outside the boiler house. Zones are shown in Table 1. The ventilation fans are necessary to ensure appropriate mixing and dispersal of methane for detection. Isolation is completed with the valves in the vault at the west end of the 2/3 Boiler House.

SURVEILLANCE REQUIREMENTS

3.7.p.1

Reference 2 assumes that an operator verifies ventilation system operation an average of every 8 hours.

3.7.p.2

The verification of the logic system prior to operation for a heating season is an assumption of Reference 2.

3.7.p.3

Reference 2 assumes that the pressure switches provide an isolation signal to the trip valves.

REFERENCES

1. Calculation DRE 12-0036, Revision 02
2. Dresden Gas Line Explosion Risk Assessment, Evaluation No. 2015-02412, Revision 01

(Continued)

Table 1: Methane Detector Zones			
Zone Number	**Detector 1 XT**	**Detector 2 XE**	**Adjacent Zones**
1	2/3-5741-0101	2/3-5741-0119	2
2	2/3-5741-0102	2/3-5741-0120	1, 3, 5
3	2/3-5741-0115	2/3-5741-0105	2, 4, 5, 6
4	2/3-5741-0116	2/3-5741-0106	3, 7, 8
5	2/3-5741-0117	2/3-5741-0107	3, 6
6	2/3-5741-0103	2/3-5741-0121	3, 5
7	2/3-5741-0118	2/3-5741-0108	4, 8
8	2/3-5741-0104	2/3-5741-0122	4, 7

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.

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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 $\geq$ 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.