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3.4 REACTOR COOLANT SYSTEM (RCS) (continued)

1.0 USE AND APPLICATION

1.0.1 General Description

Changes to the technical specifications may result in relocating various technical specification items to the UFSAR. This maintains control of the relocated items and allows changing these requirements in accordance with the provisions of 10 CFR 50.59 without the need to process a license amendment request. Items relocated from the technical specifications and other applicable licensing requirements associated with the operation of structures, systems and components are to be included in Section 15A of the UFSAR and are maintained in the LICENSING REQUIREMENTS MANUAL (LRM). Because the information removed from the Technical Specifications is considered relocated to the UFSAR, this information is explicitly "incorporated by reference" into the UFSAR when it is placed into the LRM. For information incorporated by reference, the information must be publicly available and is subject to the update and reporting requirements of 10 CFR 50.71(e) in addition to other change controls (e.g., 10 CFR 50.59 and 10 CFR 50.54(a)).

Other information placed into the LRM by BVPS that was previously not located within the Technical Specifications is not considered part of the UFSAR and is not considered "incorporated by reference." This type of criteria in the LRM is self-imposed by the station and is included in the LRM for consistency with the other type of information included in the LRM and for the convenience of the station for the type of control offered by the LRM document. This self-imposed information is subject to the requirements of 10 CFR 50.59; however, it is not subject to the requirements of 10 CFR 50.71(e). Other self-imposed information is listed in Section A below and is not listed in UFSAR Section 15A.

A. Information Not Incorporated by Reference from the UFSAR

- Section 3.3.9, Turbine Overspeed Protection

1.0 USE AND APPLICATION

1.0.2 LRM Revisions

Modifications to the content of the LRM (including information such as the tables and reports referenced by the Technical Specifications) shall be processed in accordance with the provisions of 10 CFR 50.59 as set forth in administrative procedures.

1.0 USE AND APPLICATION

1.1 Definitions

a) The defined terms contained in the Technical Specifications (TS) Section 1.1, "Definitions" apply to the requirements contained in the Licensing Requirements Manual (LRM). In the LRM, defined terms are shown in all capital letters, consistent with their use in the Technical Specifications. Definitions specific to the LRM are defined as follows:

Term	Definition
- NOTE - Some components in the LRM have both LRM and TS functions and requirements. Such components are required by the LRM to be FUNCTIONAL, and are also required by TSs to be OPERABLE. In these cases, if a component is OPERABLE, it will be functional; however, if it is FUNCTIONAL, it may not be OPERABLE.	
FUNCTIONAL - FUNCTIONALITY	A structure, system or component (SSC), shall be FUNCTIONAL or have FUNCTIONALITY when it is capable of performing its specified function(s) as set forth in the Current License Basis. FUNCTIONALITY does not apply to specified safety functions, but does apply to the ability of non-TS SSCs to perform other specified functions that have a necessary support function.

b) The value of RATED THERMAL POWER, as defined in Technical Specification Section 1.1, is 2900 MWt.

1.0 USE AND APPLICATION

1.2 Logical Connectors

The explanation of the use of Logical Connectors contained in Technical Specification Section 1.2, "Logical Connectors" applies to the requirements contained in the LRM. Logical Connectors in the LRM are applied in the same manner as in the Technical Specifications.

1.0 USE AND APPLICATION

1.3 Completion Times

The explanation of the use of Action Completion Times contained in Technical Specification Section 1.3, "Completion Times" applies to the requirements contained in the LRM. Action Completion Times in the LRM are applied in the same manner as in the Technical Specifications.

1.0 USE AND APPLICATION

1.4 Frequency

The explanation of the use of surveillance Frequencies contained in Technical Specification Section 1.4, "Frequency" applies to the Licensing Requirement Surveillances contained in the LRM. Surveillance Frequencies in the LRM are applied in the same manner as in the Technical Specifications.

3.0 LICENSING REQUIREMENT (LR) APPLICABILITY

LR 3.0.1	LRs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LR 3.0.2.
LR 3.0.2	Upon discovery of a failure to meet an LR, the Required Actions of the associated Conditions shall be met, except as provided in LR 3.0.4. If the LR 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.
LR 3.0.3	When an LR and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, action shall be initiated immediately to communicate the situation to the Shift Manager and document the condition in accordance with the FENOC Corrective Action Program. The safety significance of the condition shall be evaluated per NOP-OP-1009 “Operability Determinations and Functionality Assessments” and appropriate corrective actions initiated, within the time frame determined by the Shift Manager that shall not exceed 48 hours from the time of entry into LR 3.0.3. The time frame for completion of the corrective actions shall be commensurate with the safety significance of the condition, consistent with the guidance of NOP-OP-1009. Where corrective measures are completed that permit operation in accordance with the LR or ACTIONS, completion of the actions required by LR 3.0.3 is not required.
LR 3.0.4	Equipment removed from service or declared inoperable/Nonfunctional to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY/FUNCTIONALITY or the OPERABILITY/FUNCTIONALITY of other equipment. This is an exception to LR 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY/FUNCTIONALITY.

3.0 LR Applicability (continued)

LR 3.0.5	Requirements are specified in the LRM that are referenced from the Technical Specifications. These requirements include the information contained in tables, reports, and figures (e.g., Instrumentation Response Times and the COLR). Although these requirements are contained in the LRM, they are utilized by, and referenced from, the Technical Specifications. The guidance in Section 3.0 of this manual for LR Applicability does not apply to the LRM requirements referenced by the Technical Specifications. The failure to meet LRM requirements referenced by the Technical Specifications shall be controlled in accordance with the applicable Technical Specifications.

3.0 LICENSING REQUIREMENT SURVEILLANCE (LRS) APPLICABILITY

LRS 3.0.1	LRS shall be met during the MODES or other specified conditions in the Applicability for individual LRs, unless otherwise stated in the LRS. Failure to meet an LRS, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LR. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LR except as provided in LRS 3.0.3. LRS do not have to be performed on inoperable/Nonfunctional equipment or variables outside specified limits.
LRS 3.0.2	The specified Frequency for each LRS is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this LRS are stated in the individual Surveillances.
LRS 3.0.3	If it is discovered that a surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LR not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater. This delay period is permitted to allow performance of the surveillance. A risk evaluation shall be performed for any surveillance delayed greater than 24 hours and the risk impact shall be managed. If the surveillance is not performed within the delay period, the LR must immediately be declared not met, and the applicable ACTION(s) must be entered. When the surveillance is performed within the delay period and the surveillance is not met, the LR must immediately be declared not met, and the applicable ACTION(s) must be entered.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 Boration Flow Paths - Shutdown

LR 3.1.1 One of the following boron injection flow paths shall be FUNCTIONAL:

a. A flow path from the boric acid storage system via a boric acid transfer pump to a charging pump to the Reactor Coolant System when the boric acid storage tank is required FUNCTIONAL in accordance with LR 3.1.7, or

b. The flow path from the refueling water storage tank (RWST) via a charging pump or a low head safety injection pump (with an open RCS vent of greater than or equal to 2.07 square inches) to the Reactor Coolant System when the RWST is required FUNCTIONAL in accordance with LR 3.1.7.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required flow path Nonfunctional.	A.1 Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.1.1	Cycle each testable power operated or automatic valve in the flow path through at least one complete cycle of full travel.	7 days

LICENSING REQUIREMENT SURVEILLANCES (continued)

SURVEILLANCE		FREQUENCY
LRS 3.1.1.2	-- **- NOTE -** Only required to be met when a flow path from the boric acid storage tanks is required FUNCTIONAL and the ambient air temperature of the Auxiliary Building is < 65°F. -- Verify the temperature of the heat traced portion of the flow path is ≥ 65°F.	 7 days
LRS 3.1.1.3	Verify each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.	31 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Boration Flow Paths - Operating

LR 3.1.2 Each of the following boron injection flow paths shall be FUNCTIONAL:

a. The flow path from the boric acid tanks via a boric acid transfer pump and one charging pump to the Reactor Coolant System, and

b. The flow path from the refueling water storage tank via one charging pump to the Reactor Coolant System.

- NOTES -

1. With any non-isolated RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR, one of the required centrifugal charging pumps may be made incapable of injecting to support the requirements of LCO 3.4.12.

2. With all non-isolated RCS cold leg temperatures > the OPPS enable temperature specified in the PTLR, one of the required centrifugal charging pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12 for up to 4 hours or until the temperature of all non-isolated RCS cold legs exceeds the OPPS enable temperature specified in the PTLR plus 25°F, whichever comes first.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Flow path from the boric acid tanks Nonfunctional.	A.1 Restore the flow path to FUNCTIONAL status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Apply LR 3.0.3.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Flow path from the refueling water storage tank Nonfunctional.	C.1	Restore the flow path to FUNCTIONAL status.	1 hour
D. Required Action and associated Completion Time of Condition C not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5.	36 hours

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.2.1	Cycle each testable power operated or automatic valve in the flow path through at least one complete cycle of full travel.	92 days
LRS 3.1.2.2	-- **- NOTE -** Only required to be met when the ambient air temperature of the Auxiliary Building is < 65°F. -- Verify the temperature of the heat traced portion of the flow path from the boric acid tanks is ≥ 65°F.	7 days
LRS 3.1.2.3	Verify each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.	31 days
LRS 3.1.2.4	Cycle each power operated (excluding automatic) valve in the flow path that is not testable during plant operation, through at least one complete cycle of full travel.	18 months during shutdown

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Charging Pump - Shutdown

LR 3.1.3 One of the following pumps shall be FUNCTIONAL as specified below:

a. A charging pump in the boron injection flow path required FUNCTIONAL in accordance with LR 3.1.1, or

b. A low head safety injection pump (with an open Reactor Coolant System vent of ≥ 2.07 square inches).

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Required pump Nonfunctional.	A.1	Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.3.1	The required charging pump shall be demonstrated FUNCTIONAL pursuant to Technical Specification Surveillance SR 3.5.2.4.	In Accordance with SR 3.5.2.4
LRS 3.1.3.2	The required low head safety injection pump shall be demonstrated FUNCTIONAL by: a. Verification of a FUNCTIONAL RWST pursuant to LRS 3.1.7.1 and LRS 3.1.7.3, b. Verification of a FUNCTIONAL low head safety injection pump pursuant to Technical Specification Surveillance SR 3.5.2.4, and c. Verification that the vent is open in accordance with Technical Specification Surveillance SR 3.4.12.3.	In Accordance with the applicable SRs or LRS

LICENSING REQUIREMENT SURVEILLANCES (continued)

	SURVEILLANCE	FREQUENCY
LRS 3.1.3.3	-- **- NOTE -** Only required to be met when the low head safety injection pump is required FUNCTIONAL in accordance with LR 3.1.3.b. -- Verify a FUNCTIONAL low head safety injection flow path from the RWST to the Reactor Coolant System.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Charging Pumps - Operating

LR 3.1.4 Two charging pumps shall be FUNCTIONAL.

- NOTES -

1. With any non-isolated RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR, one of the required centrifugal charging pumps may be made incapable of injecting to support the requirements of LCO 3.4.12.

2. With all non-isolated RCS cold leg temperatures > the OPPS enable temperature specified in the PTLR, one of the required centrifugal charging pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12 for up to 4 hours or until the temperature of all non-isolated RCS cold legs exceeds the OPPS enable temperature specified in the PTLR plus 25°F, whichever comes first.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required charging pump Nonfunctional.	A.1 Restore the charging pump to FUNCTIONAL status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.4.1	Each required charging pump shall be demonstrated FUNCTIONAL pursuant to Technical Specification Surveillance SR 3.5.2.4.	In Accordance with SR 3.5.2.4

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Boric Acid Transfer Pumps - Shutdown

LR 3.1.5 One boric acid transfer pump shall be FUNCTIONAL.

APPLICABILITY: In MODES 5 and 6 when the associated flow path from the boric acid storage system is required FUNCTIONAL in accordance with LR 3.1.1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required boric acid transfer pump Nonfunctional.	A.1 Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.5.1	The required boric acid transfer pump shall be demonstrated FUNCTIONAL by verifying, that on recirculation flow, the pump develops a discharge pressure of greater than or equal to 87 psig.	In accordance with the Inservice Testing Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Boric Acid Transfer Pumps - Operating

LR 3.1.6 One boric acid transfer pump shall be FUNCTIONAL.

APPLICABILITY: In MODES 1, 2, 3, and 4 when the associated flow path from the boric acid tanks is required FUNCTIONAL in accordance with LR 3.1.2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required boric acid transfer pump Nonfunctional.	A.1 Restore the boric acid transfer pump to FUNCTIONAL status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.6.1	The required boric acid transfer pump shall be demonstrated FUNCTIONAL by verifying, that on recirculation flow, the pump develops a discharge pressure greater than or equal to 87 psig.	In accordance with the Inservice Testing Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Borated Water Sources - Shutdown

LR 3.1.7 One of the following borated water sources shall be FUNCTIONAL:

a. A boric acid storage system with:

1. A minimum contained volume of 5000 gallons,
2. Between 7000 and 7700 ppm of boron, and
3. A minimum solution temperature of 65°F.

b. The refueling water storage tank (RWST) with:

1. A minimum contained volume of 175,000 gallons,
2. A minimum boron concentration of 2400 ppm, and
3. A minimum solution temperature of 45°F.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required borated water source Nonfunctional.	A.1 Suspend all operations involving CORE ALTERATIONS or positive reactivity changes.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.7.1	-- **- NOTE -** Only required to be met when the outside ambient air temperature is < 45°F. -- Verify the required RWST temperature.	24 hours

LICENSING REQUIREMENT SURVEILLANCES (continued)

SURVEILLANCE		FREQUENCY
LRS 3.1.7.2	Verify the required boric acid storage tank solution temperature.	7 days
LRS 3.1.7.3	The required borated water source shall be demonstrated FUNCTIONAL by: a. Verifying the boron concentration of the water, and b. Verifying the water level of the tank.	7 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Borated Water Sources - Operating

LR 3.1.8 The Boric Acid Storage System shall be FUNCTIONAL as required by LR 3.1.2 with:

a. Minimum usable volume of 11,336 gallons,

b. Between 7000 and 7700 ppm of boron, and

c. A minimum solution temperature of 65°F.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boric Acid Storage System Nonfunctional.	A.1 Restore the Storage System to FUNCTIONAL status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.8.1	The Boric Acid Storage System shall be demonstrated FUNCTIONAL by: a. Verifying the boron concentration of the water, b. Verifying the water level of the tank, and c. Verifying the boric acid storage system solution temperature.	7 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.9 Rod Position Indication System - Shutdown

LR 3.1.9 The group demand position indicators shall be FUNCTIONAL and capable of determining within ± 2 steps the demand position for each shutdown or control rod not fully inserted.

APPLICABILITY: In MODES 3, 4, and 5 with the reactor trip system breakers in the closed position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required group demand position indicator(s) Nonfunctional.	A.1 Open the reactor trip system breakers.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.9.1	Required group demand position indicator(s) shall be determined to be FUNCTIONAL by movement of the associated control rod at least 10 steps in any one direction.	Once per 31 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 Boron Dilution

LR 3.1.10 The flow rate of reactor coolant through the core shall be ≥ 3000 gpm.

- NOTE -

The addition of borated water to the RCS does not constitute a reduction in RCS boron concentration provided the boron concentration of the borated water being added is greater than the minimum required to satisfy the applicable SHUTDOWN MARGIN requirements in the Technical Specifications.

APPLICABILITY: In all MODES when a reduction in Reactor Coolant System (RCS) boron concentration is being made.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Flow rate of reactor coolant through the core < 3000 gpm.	A.1 Suspend all operations involving a reduction in boron concentration of the RCS.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.1.10.1	The flow rate of reactor coolant through the core shall be determined to be ≥ 3000 gpm by either: a. Verifying at least one reactor coolant pump is in operation, or b. Verifying that at least one RHR pump is in operation and supplying ≥ 3000 gpm through the core.	Prior to the start of and at least once per hour during a reduction in the RCS boron concentration

3.3 INSTRUMENTATION

3.3.1 Reactor Trip System Instrumentation Response Times

LR 3.3.1 Each reactor trip system instrumentation response time listed in Table 3.3.1-1 shall be maintained in the manner specified in Technical Specification (TS) 3.3.1, Reactor Trip System Instrumentation.

APPLICABILITY: As specified in TS 3.3.1.

TABLE 3.3.1-1 (Page 1 of 2)
REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

	FUNCTION	RESPONSE TIME
1.	Manual Reactor Trip	NOT APPLICABLE
2.	Power Range, Neutron Flux	≤ 0.5 second[(1)]
3.	Power Range, Neutron Flux, High Positive Rate	NOT APPLICABLE
4.	Intermediate Range, Neutron Flux	NOT APPLICABLE
5.	Source Range, Neutron Flux	NOT APPLICABLE
6.	Overtemperature ΔT	Variable[(1)(2)]
7.	Overpower ΔT	Variable[(1)(2)]
8.	a. Pressurizer Pressure - Low	≤ 2.0 seconds
	b. Pressurizer Pressure - High	≤ 2.0 seconds
9.	Pressurizer Water Level - High	NOT APPLICABLE
10.	Reactor Coolant Flow - Low	
	a. Single loop	≤ 0.75 second
	b. Two loops	≤ 0.75 second
11.	Reactor Coolant Pump (RCP) Breaker Position Trip	NOT APPLICABLE
12.	Undervoltage-RCPs	≤ 1.2 seconds
13.	Underfrequency-RCPs	≤ 0.6 second
14.	Steam Generator Water Level - Low Low	≤ 2.0 seconds
15.	Turbine Trip	
	a. Auto Stop Oil Pressure	NOT APPLICABLE
	b. Turbine Stop Valve	NOT APPLICABLE
16.	Safety Injection Input from ESFAS	NOT APPLICABLE
17.	Reactor Trip System Interlocks	NOT APPLICABLE
18.	Reactor Trip Breakers (RTBs)	NOT APPLICABLE
19.	RTB Undervoltage and Shunt Trip Mechanisms	NOT APPLICABLE
20.	Automatic Trip Logic	NOT APPLICABLE

TABLE 3.3.1-1 (Page 2 of 2)
REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

TABLE NOTATION

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(1) Neutron detectors are exempt from response time testing. Response time shall be measured from detector output or input of first electronic component in channel.

(2) Refer to Table 3.3.1-1.a for required response times.

TABLE 3.3.1-1.a (Page 1 of 1)
Combined Overtemperature Delta-T & Overpower Delta-T Response Times

This table represents the maximum allowable plant testing, electronic response time acceptance criteria based on measured RTD response time. All listed values are in seconds.

To use this table, take the slowest measured RTD response time in a loop, round up to the nearest 1/10 second, and obtain the corresponding acceptance criteria.

	Final Accept. Criteria	Final Accept. Criteria	Final Accept. Criteria		Final Accept. Criteria	Final Accept. Criteria	Final Accept. Criteria
RTD Time Response	Overtemperature $\Delta T - T_{avg}$ Input	Overpower $\Delta T - T_{avg}$ Input	Measured ΔT - ΔT Input	RTD Time Response	Overtemperature $\Delta T - T_{avg}$ Input	Overpower $\Delta T - T_{avg}$ Input	Measured ΔT - ΔT Input
2.0	2.862	2.643	9.883	4.6	2.366	2.264	7.367
2.1	2.840	2.625	9.777	4.7	2.349	2.251	7.279
2.2	2.818	2.609	9.672	4.8	2.333	2.239	7.190
2.3	2.796	2.592	9.568	4.9	2.316	2.226	7.102
2.4	2.775	2.575	9.464	5.0	2.300	2.214	7.014
2.5	2.754	2.559	9.362	5.1	2.283	2.202	6.927
2.6	2.733	2.543	9.260	5.2	2.267	2.190	6.840
2.7	2.713	2.527	9.159	5.3	2.250	2.178	6.754
2.8	2.693	2.512	9.059	5.4	2.235	2.166	6.668
2.9	2.673	2.497	8.960	5.5	2.218	2.154	6.582
3.0	2.654	2.481	8.861	5.6	2.202	2.143	6.497
3.1	2.634	2.467	8.763	5.7	2.187	2.131	6.412
3.2	2.615	2.452	8.666	5.8	2.171	2.120	6.327
3.3	2.596	2.438	8.569	5.9	2.156	2.108	6.242
3.4	2.578	2.423	8.473	6.0	2.140	2.097	6.158
3.5	2.559	2.409	8.378	6.1	2.040	1.997	6.058
3.6	2.541	2.395	8.283	6.2	1.940	1.897	5.958
3.7	2.523	2.382	8.189	6.3	1.840	1.797	5.858
3.8	2.505	2.368	8.096	6.4	1.740	1.697	5.758
3.9	2.487	2.354	8.003	6.5	1.640	1.597	5.658
4.0	2.469	2.341	7.911	6.6	1.540	1.497	5.558
4.1	2.452	2.328	7.819	6.7	1.440	1.397	5.458
4.2	2.434	2.315	7.728	6.8	1.340	1.297	5.358
4.3	2.417	2.302	7.637	6.9	1.240	1.197	5.258
4.4	2.400	2.289	7.547	7.0	1.140	1.097	5.158
4.5	2.383	2.276	7.457				

The following are the response time acceptance criteria for the pressurizer pressure and neutron flux input assumed in the safety analysis for the Overtemperature ΔT function:

Pressurizer pressure input: $\leq$ 2.0 seconds.
Neutron detector input (for f(ΔI) penalty): $\leq$ 2.0 seconds.

All of the channel time responses noted above for the Overtemperature ΔT, Overpower ΔT, and measured ΔT channels are for all portions of the channel downstream of the RTD output (i.e., includes channel electronics, trip breaker, and rod gripper release). The time responses are based on all channel setpoints (i.e., all gains and time constants) implemented as per the Licensing Requirements Manual values.

3.3 INSTRUMENTATION

3.3.2 Engineered Safety Features Response Times

LR 3.3.2 Each engineered safety feature response time listed in Table 3.3.2-1 shall be maintained in the manner specified in Technical Specification (TS) 3.3.2, Engineered Safety Feature Actuation System Instrumentation and TS 3.3.5, Loss of Power Diesel Generator Start and Bus Separation Instrumentation as applicable.

APPLICABILITY: As specified in the applicable TS.

TABLE 3.3.2-1 (Page 1 of 4)
ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION			RESPONSE TIME IN SECONDS
1.	Manual		
	a.	Safety Injection (ECCS)	Not Applicable
		Feedwater Isolation	Not Applicable
		Reactor Trip (SI)	Not Applicable
		Containment Isolation-Phase "A"	Not Applicable
		Containment Vent and Purge Isolation	Not Applicable
		Auxiliary Feedwater Pumps	Not Applicable
		Rx Plant River Water System	Not Applicable
	b.	Containment Quench Spray Pumps	Not Applicable
		Containment Quench Spray Valves	Not Applicable
		Containment Isolation-Phase "B"	Not Applicable
	c.	Containment Isolation-Phase "A"	Not Applicable
	d.	Control Room Ventilation Isolation	Not Applicable
2.	Containment Pressure-High		
	a.	Safety Injection (ECCS)	≤ 27.0(3)
	b.	Reactor Trip (from SI)	≤ 3.0
	c.	Feedwater Isolation	
		1) Feedwater Regulating Valves	≤ 10.0(6)
		2) Feedwater Bypass Valves	≤ 30.0(6)
		3) Feedwater Isolation Valves	≤ 10.0(6)
	d.	Containment Isolation-Phase "A"	≤ 22.0(8)/33.0(7)
	e.	Auxiliary Feedwater Pumps	≤ 60.0
	f.	Rx Plant River Water System	≤ 77.0(8)/110.0(7)

TABLE 3.3.2-1 (Page 2 of 4)
ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
3. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	≤ 17.0(10)/27.0(3)/27.0(4)
b. Reactor Trip (from SI)	≤ 3.0
c. Feedwater Isolation	
1) Feedwater Regulating Valves	≤ 10.0(6)
2) Feedwater Bypass Valves	≤ 30.0(6)
3) Feedwater Isolation Valves	≤ 10.0(6)
d. Containment Isolation-Phase "A"	≤ 22.0(8)
e. Auxiliary Feedwater Pumps	≤ 60.0
f. Rx Plant River Water System	≤ 77.0(8)/110.0(7)
4. Steam Line Pressure-Low	
a. Safety Injection (ECCS)	≤ 27.0(4)/37.0(5)
b. Reactor Trip (from SI)	≤ 3.0
c. Feedwater Isolation	
1) Feedwater Regulating Valves	≤ 10.0(6)
2) Feedwater Bypass Valves	≤ 30.0(6)
3) Feedwater Isolation Valves	≤ 10.0(6)
d. Containment Isolation-Phase "A"	≤ 22.0(8)/33.0(7)
e. Auxiliary Feedwater Pumps	≤ 60.0
f. Rx Plant River Water System	≤ 77.0(8)/110.0(7)
g. Steam Line Isolation	≤ 8.0(11)
5. Containment Pressure-High High	
a. Containment Quench Spray	≤ 43.9(9)
b. Containment Isolation-Phase "B"	Not Applicable
c. Control Room Ventilation Isolation (on CIB)	≤ 22.0(8)/77.0(7)
d. Recirculation Spray	Not Applicable

TABLE 3.3.2-1 (Page 3 of 4)
ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Generator Water Level-High High	
a. Turbine Trip-Reactor Trip	Not Applicable
b. Feedwater Isolation	
1) Feedwater Regulating Valves	< 10.0[6]
2) Feedwater Bypass Valves	≤ 30.0[6]
3) Feedwater Isolation Valves	≤ 10.0[6]
7. Containment Pressure-Intermediate High High	
a. Steam Line Isolation	≤ 8.0[11]
8. Steamline Pressure Rate-High Negative	
a. Steamline Isolation	≤ 8.0[11]
9. Loss of Power (TS 3.3.5)	
a. 4.16kv Emergency Bus Undervoltage (Loss of Voltage)	≤ 1.3
b. 4.16kv and 480v Emergency Bus Undervoltage (Degraded voltage)	≤ 95
10. Steam Generator Water Level-Low Low	
a. Motor-driven Auxiliary Feedwater Pumps[2]	≤ 60.0
b. Turbine-driven Auxiliary Feedwater Pump[1]	≤ 60.0
11. Undervoltage RCP	
a. Turbine-driven Auxiliary Feedwater Pump	≤ 60.0
12. Trip of Main Feedwater Pumps	
a. Motor-driven Auxiliary Feedwater Pumps	≤ 60.0

TABLE 3.3.2-1 (Page 4 of 4)
ENGINEERED SAFETY FEATURES RESPONSE TIMES

TABLE NOTATION

(1) on 2/3 any Steam Generator

(2) on 2/3 in 2/3 Steam Generators

(3) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps and Low Head Safety Injection pumps. Sequential transfer of charging pump suction from the volume control tank (VCT) to the refueling water storage tank (RWST) (RWST valves open, then VCT valves close) is **not** included.

(4) Diesel generator starting and sequence loading delays **not** included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. Sequential transfer of charging pump suction from the volume control tank (VCT) to the refueling water storage tank (RWST) (RWST valves open, then VCT valves close) is included.

(5) Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. Sequential transfer of charging pump suction from the volume control tank (VCT) to the refueling water storage tank (RWST) (RWST valves open, then VCT valves close) is included.

(6) Feedwater isolation includes signal response and valve closure time. Valve isolation times shall be limited such that when added to the actuation circuitry time the total response time does not exceed the applicable limit specified for Feedwater Isolation on Table 3.3.2-1.

(7) Diesel generator starting and sequence loading delays included.

(8) Diesel generator starting and sequence loading delays **not** included.

(9) Diesel generator starting and sequence loading delays included. This response time also includes pump total start time (pump acceleration, begin to deliver flow, etc.) and time to fill the spray piping with water. The maximum allowable isolation valve stroke time is included in the Quench Spray analysis of record. NOTE that the containment Quench Spray isolation valve [MOV-1QS-101A,B] stroke time is specified in LRM Table 3.6.1-1 "Containment Penetrations."

(10) Diesel generator starting and sequence loading delays **not** included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps and Low Head Safety Injection pumps. Sequential transfer of charging pump suction from the volume control tank (VCT) to the refueling water storage tank (RWST) (RWST valves open, then VCT valves close) is **not** included.

(11) The MSIV isolation time shall be limited to $\leq$ 5 seconds.

3.3 INSTRUMENTATION

3.3.3 Meteorological Monitoring Instrumentation

LR 3.3.3 The meteorological monitoring instrumentation channels specified in Table 3.3.3-1 shall be FUNCTIONAL.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required meteorological monitoring channels Nonfunctional.	A.1 Suspend all release of gaseous radioactive material from the radwaste gas decay tanks.	Immediately
B. One or more required meteorological monitoring channels Nonfunctional for more than 7 days.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.3.1	Perform a CHANNEL CHECK on each required meteorological monitoring instrument channel.	24 hours
LRS 3.3.3.2	Perform a CHANNEL CALIBRATION on each required meteorological monitoring instrument channel.	184 days

TABLE 3.3.3-1 (Page 1 of 1)
METEOROLOGICAL MONITORING INSTRUMENTATION

		INSTRUMENT	INSTRUMENT MINIMUM ACCURACY	REQUIRED CHANNELS
1.		WIND SPEED		
	a.	Nominal Elev. 500'	± 0.5 mph*	1
	b.	Nominal Elev. 150'	± 0.5 mph*	1
	c.	Nominal Elev. 35'	± 0.5 mph*	1
2.		WIND DIRECTION		
	a.	Nominal Elev. 500'	± 5°	1
	b.	Nominal Elev. 150'	± 5°	1
	c.	Nominal Elev. 35'	± 5°	1
3.		AIR TEMPERATURE ΔT		
	a.	ΔT Elev. 500' - 35'	± 0.1°C	1
	b.	ΔT Elev. 150' - 35'	± 0.1°C	1

*Starting speed of anemometer shall be < 1 mph.

3.3 INSTRUMENTATION

3.3.4 Axial Flux Difference (AFD) Monitor Alarm

LR 3.3.4 AFD shall be monitored and logged.

APPLICABILITY: When the AFD monitor alarm is Nonfunctional and power is > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE	FREQUENCY
LRS 3.3.4.1 Monitor and log the indicated AFD for each FUNCTIONAL channel.	Once per hour for 24 hours <u>AND</u> Once per 30 minutes thereafter

3.3 INSTRUMENTATION

3.3.5 Quadrant Power Tilt Ratio (QPTR) Monitor Alarm

LR 3.3.5 QPTR shall be verified within the limits.

APPLICABILITY: When the QPTR monitor alarm is Nonfunctional and power is > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE	FREQUENCY
LRS 3.3.5.1 Verify QPTR is within the limits.	12 hours

3.3 INSTRUMENTATION

3.3.6 Seismic Monitoring Instrumentation

LR 3.3.6 The seismic monitoring instrumentation specified in Table 3.3.6-1 shall be FUNCTIONAL.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required seismic monitoring instruments Nonfunctional.	A.1	Restore the Nonfunctional instrument(s) to FUNCTIONAL status.	30 days
B. One or more required seismic monitoring instruments Nonfunctional for more than 30 days.	B.1	Prepare and present a report to the onsite safety review committee for their review outlining the cause of the malfunction and the plans for restoring the instrument(s) to FUNCTIONAL status.	10 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Seismic event ≥ 0.01g.	C.1	Report to NRC.	1 hour
	AND		
	C.2	Restore actuated instruments to FUNCTIONAL status.	24 hours
	AND		
	C.3	Perform CHANNEL CALIBRATION on actuated instruments.	30 days
	AND		
	C.4	Retrieve and analyze data from actuated instruments to determine magnitude of vibratory ground motion and prepare and submit a special report in accordance with 10 CFR 50.4 describing the magnitude, frequency spectrum and resultant effect upon facility features important to safety.	30 days

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.6.1	Perform a CHANNEL CHECK as specified in Table 3.3.6-2.	In accordance with Table 3.3.6-2
LRS 3.3.6.2	Perform a CHANNEL OPERATIONAL TEST as specified in Table 3.3.6-2.	In accordance with Table 3.3.6-2
LRS 3.3.6.3	Perform a CHANNEL CALIBRATION as specified in Table 3.3.6-2.	In accordance with Table 3.3.6-2

TABLE 3.3.6-1 (Page 1 of 1)
SEISMIC MONITORING INSTRUMENTATION

INSTRUMENTS AND SENSOR LOCATIONS			MEASUREMENT RANGE[(a)]	REQUIRED INSTRUMENTS
1.	Triaxial Force Balance Accelerometers			
	a.	Containment Foundation (BV-XT-1ER-105A)	± 1 g	1[(b)]
	b.	Charging Floor - Containment Structure (BV-XT-1ER-105B)	± 1 g	1[(b)]
	c.	Auxiliary Building (BV-XT-1ER-105C)	± 1 g	1[(b)]
	d.	N.W. Corner of Control Room (BV-XT-1ER-105D)	± 1 g	1[(b)]
2.	Peak Recording Accelerometers			
	a.	Top of Recirculation Spray Cooler (BV-PRA-1ER-103-1)	± 1 g	1
	b.	Recirculation Spray Pump (BV-PRA-1ER-103-2)	± 1 g	1
	c.	RHR Heat Exchanger (BV-PRA-1ER-103-3)	± 1 g	1
	d.	Primary Plant CCW H.X. (BV-PRA-1ER-103-4)	± 1 g	1
3.	High Dynamic Accelerograph			
	a.	Top Floor of Auxiliary Building (BV-XR-1ER-102)	0 - 1.2 g	1
4.	Response Spectrum Analyzer			
	a.	Control Room (BV-1ER-RSA-1)	N/A	1

(a) Measurement range tolerance is ± 5% of upper range value

(b) With reactor control room indication

TABLE 3.3.6-2 (Page 1 of 1)
SEISMIC MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL OPERATIONAL TEST
1. Triaxial Force Balance Accelerometers			
a. Containment Foundation (BV-XT-1ER-105A)	M	2R	SA
b. Charging Floor - Containment Structure (BV-XT-1ER-105B)	M	2R	SA
c. Auxiliary Building (BV-XT-1ER-105C)	M	2R	SA
d. N.W. Corner of Control Room (BV-XT-1ER-105D)	M	2R	SA
2. Peak Recording Accelerometers			
a. Top of Recirculation Spray Cooler (BV-PRA-1ER-103-1)	N/A	R	N/A
b. Recirculation Spray Pump (BV-PRA-1ER-103-2)	N/A	R	N/A
c. RHR Heat Exchanger (BV-PRA-1ER-103-3)	N/A	R	N/A
d. Primary Plant CCW H.X. (BV-PRA-1ER-103-4)	N/A	R	N/A
3. High Dynamic Accelerograph			
a. Top Floor of Auxiliary Building (BV-XR-1ER-102)	M	2R	SA
4. Response Spectrum Analyzer			
a. Control Room (BV-1ER-RSA-1)	N/A	N/A	2R

M = 31 days
R = 18 months
SA = 184 days
2R = 36 months

3.3 INSTRUMENTATION

3.3.7 Movable Incore Detectors

LR 3.3.7 The movable incore detector system shall be FUNCTIONAL with:

a. At least 38 detector thimbles,

b. A minimum of 2 detector thimbles per core quadrant, and

c. Sufficient movable detectors, drive, and readout equipment to map these thimbles.

- NOTE -

Except for flux maps during the startup physics program, up to and including the first full power flux map, the movable incore detector system will remain FUNCTIONAL with ≤ 37 but ≥ 25 detector thimbles, if there is a minimum of three detector thimbles per core quadrant and an additional uncertainty is applied to the measured values of $F^N_{\Delta H}$ and $F_Q(Z)$ as specified in the COLR.

APPLICABILITY: When the movable incore detection system is used for:

a. Recalibration of the axial flux offset detection system,

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$ and $F_Q(Z)$.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Movable incore detection system Nonfunctional.	A.1 Suspend use of the system for the above applicable monitoring or calibration functions.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.7.1	The incore movable detection system shall be demonstrated FUNCTIONAL by normalizing each detector output to be used for: a. Recalibration of the excore axial flux offset detection system, or b. Monitoring the QUADRANT POWER TILT RATIO, or c. Measurement of $F^{N}_{\Delta H}$ and $F_Q(Z)$.	Within 24 hours prior to use

3.3 INSTRUMENTATION

3.3.8 Leading Edge Flow Meter

LR 3.3.8 A FUNCTIONAL Leading Edge Flow Meter (LEFM) shall be used in the performance of the daily calorimetric heat balance measurements to determine steady-state THERMAL POWER as required by Technical Specification Surveillance SR 3.3.1.2.

APPLICABILITY: MODE 1 when steady-state THERMAL POWER is > 98.6% of RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LEFM Nonfunctional.	A.1 Restore LEFM to FUNCTIONAL status.	Prior to the next required daily calorimetric heat balance measurement
B. Required Action and associated Completion Time not met.	B.1 Reduce steady-state THERMAL POWER to ≤ 98.6% of RTP.	1 hour
	<u>AND</u>	
	B.2 Perform the calorimetric heat balance measurement using the feedwater flow venturis and Resistance Temperature Detector (RTD) indications.	In accordance with the requirements of SR 3.3.1.2
	<u>AND</u>	
	B.3 Maintain THERMAL POWER at ≤ 98.6% of RTP steady state.	Until the LEFM is restored to FUNCTIONAL status and the calorimetric heat balance measurement has been performed using the LEFM

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.8.1	The LEFM shall be demonstrated to be FUNCTIONAL by using the self-diagnostic features of the LEFM.	24 hours
LRS 3.3.8.2	The LEFM shall be demonstrated to be FUNCTIONAL by performing periodic maintenance and inspections based on the vendor's recommendation.	18 months

3.3 INSTRUMENTATION

3.3.9 Turbine Overspeed Protection

LR 3.3.9 At least one Turbine Overspeed Protection System shall be FUNCTIONAL.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all main steam isolation valves and associated bypass valves are in the closed position and all other steam flow paths to the turbine are isolated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One throttle valve or one governor valve per high pressure turbine steam line Nonfunctional and/or with one reheat stop valve or one reheat intercept valve per low pressure turbine steam line Nonfunctional.	A.1 Restore the Nonfunctional valve(s) to FUNCTIONAL status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Close at least one valve in the affected steam line(s).	6 hours
	<u>OR</u>	
	B.2 Isolate the turbine from the steam supply.	6 hours
	<u>OR</u>	
	B.3 Apply LR 3.0.3.	6 hours
C. Turbine Overspeed Protection System Nonfunctional for reasons other than Condition A.	C.1 Isolate the turbine from the steam supply.	6 hours
	<u>OR</u>	
	C.2 Apply LR 3.0.3.	6 hours

LICENSING REQUIREMENT SURVEILLANCES

	SURVEILLANCE	FREQUENCY
LRS 3.3.9.1	--- **- NOTE -** Not required to be performed until 72 hours after entering MODE 3 during station startup with any steam flow path to the turbine not isolated. --- Cycle each of the following valves through at least one complete cycle from the running position: a. Four high pressure turbine throttle valves. b. Four high pressure turbine governor valves.	6 months
LRS 3.3.9.2	--- **- NOTE -** Not required to be performed until 72 hours after entering MODE 3 during station startup with any steam flow path to the turbine not isolated. --- Directly observe the movement of each of the following valves through one complete cycle from the running position: a. Four high pressure turbine throttle valves. b. Four high pressure turbine governor valves.	6 months
LRS 3.3.9.3	--- **- NOTE -** Not required to be performed until 72 hours after entering MODE 3 during station startup with any steam flow path to the turbine not isolated. --- Cycle each of the following valves through at least one complete cycle from the running position: a. Four low pressure turbine reheat stop valves. b. Four low pressure turbine reheat intercept valves.	18 months

LICENSING REQUIREMENT SURVEILLANCES (continued)

SURVEILLANCE		FREQUENCY
LRS 3.3.9.4	--- **- NOTE -** Not required to be performed until 72 hours after entering MODE 3 during station startup with any steam flow path to the turbine not isolated. --- Directly observe the movement of each of the following valves through one complete cycle from the running position: a. Four low pressure turbine reheat stop valves. b. Four low pressure turbine reheat intercept valves.	18 months
LRS 3.3.9.5	Perform a CHANNEL CALIBRATION on the turbine overspeed protection systems.	18 months
LRS 3.3.9.6	Disassemble at least one of each of the high pressure turbine throttle valves and high pressure turbine governor valves and perform a visual and surface inspection of valve seats, disks, and stems and verify no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion are found, all other valves of that type shall be inspected unless the nature of the problem can be directly attributed to a service condition specific to that valve.	40 months OR ------------------------ **- NOTE -** Only applicable to reheat stop and intercept valves provided there is no indication of operational distress. ------------------------ 60 months

3.3 INSTRUMENTATION

3.3.10 RTS, ESFAS, and Loss of Power Trip Setpoints

LR 3.3.10.1 Each Reactor Trip System Instrumentation Trip Setpoint listed in Table 3.3.10-1 shall be maintained in the manner specified in Technical Specification (TS) 3.3.1, Reactor Trip System Instrumentation.

LR 3.3.10.2 Each Engineered Safety Features Actuation System Instrumentation Trip Setpoint listed in Table 3.3.10-2 shall be maintained in the manner specified in TS 3.3.2, Engineered Safety Feature Actuation System Instrumentation.

LR 3.3.10.3 Each Loss of Power Instrumentation Trip Setpoint listed in Table 3.3.10-3 shall be maintained in the manner specified in TS 3.3.5, Loss of Power Diesel Generator Start and Bus Separation Instrumentation.

APPLICABILITY: As specified in the applicable TS.

TABLE 3.3.10-1 (Page 1 of 2)
REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTION	NOMINAL TRIP SETPOINT[a]
1.	Manual Reactor Trip	N.A.
2.	Power Range, Neutron Flux	
	a. High Setpoint	109% of RATED THERMAL POWER
	b. Low Setpoint	25% of RATED THERMAL POWER
3.	Power Range, Neutron Flux, High Positive Rate	5% of RATED THERMAL POWER with a time constant ≥ 2 seconds
4.	Intermediate Range, Neutron Flux	25% of RATED THERMAL POWER
5.	Source Range, Neutron Flux	10^5 counts per second
6.	Overtemperature ΔT	See Technical Specification Table Notation 1 on Table 3.3.1-1
7.	Overpower ΔT	See Technical Specification Table Notation 2 on Table 3.3.1-1
8.	Pressurizer	
	a. Pressure-Low	1945 psig
	b. Pressure-High	2385 psig
9.	Pressurizer Water Level-High	92% of instrument span
10.	Reactor Coolant Flow-Low	90.2% of indicated loop flow
11.	Reactor Coolant Pump (RCP) Breaker Position Trip	N.A.
12.	Undervoltage - RCPs	3120 V
13.	Underfrequency - RCPs	57.5 Hz
14.	Steam Generator Water Level-Low Low	19.6% of narrow range instrument span[b]

(a) The Unit 1 Setpoint Methodology used to establish the Reactor Trip System Setpoints is defined in WCAP-11419.

(b) The predefined as-found acceptance criteria band, and the as-left setpoint tolerance band is ± 0.5% span.

TABLE 3.3.10-1 (Page 2 of 2)
REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

	FUNCTION	NOMINAL[c] TRIP SETPOINT[a]
15.	Turbine Trip	
	a. Auto stop oil pressure	47.6 psig
	b. Turbine Stop Valve Closure	≥ 1% open
16.	Safety Injection Input from ESFAS	N.A.
17.	Reactor Trip System Interlocks	
	a. Intermediate Range Neutron Flux, P-6	1×10^{-10} Amps
	b. Low Power Reactor Trips Block, P7	N.A.
	c. Power Range Neutron Flux, P-8	30% RATED THERMAL POWER
	d. Power Range Neutron Flux, P-9	49% RATED THERMAL POWER
	e. Power Range Neutron Flux, P-10	10% RATED THERMAL POWER
	f. Turbine First Stage Pressure, P-13	10% of RATED THERMAL POWER Turbine First Stage Pressure Equivalent
18.	Reactor Trip Breakers (RTBs)	N.A.
19.	RTB Undervoltage and Shunt Trip Mechanisms	N.A.
20.	Automatic Trip Logic	N.A.

(a) The Unit 1 Setpoint Methodology used to establish the Reactor Trip System Setpoints is defined in WCAP-11419.

(c) With the exception of Functional Unit number 15.b.

TABLE 3.3.10-2 (Page 1 of 3)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTION	NOMINAL TRIP SETPOINT[(a)]
1. SAFETY INJECTION AND FEEDWATER ISOLATION	
a. Manual Initiation	N.A.
b. Automatic Actuation Logic	N.A.
c. Containment Pressure - High	5.0 psig[(b)]
d. Pressurizer Pressure - Low	1845 psig
e. Steamline Pressure - Low	500 psig[(c)]
2. CONTAINMENT SPRAY SYSTEMS	
a. Quench Spray	
1. Manual Initiation	N.A.
2. Automatic Actuation Logic and Actuation Relays	N.A.
3. Containment Pressure-High High	11.1 psig[(b)]
b. Recirculation Spray	
1. Automatic Actuation Logic and Actuation Relays	N.A.
2. Refueling Water Storage Tank (RWST) Level Low Coincident with Containment Pressure-High High	27 feet 7.5 inches[(e)] 11.1 psig[(b)]
3. CONTAINMENT ISOLATION	
a. Phase "A" Isolation	
1. Manual Initiation	N.A.
2. Automatic Actuation Logic and Actuation Relays	N.A.
3. Safety Injection	See Function 1. above for all Safety Injection Trip Setpoints.

(a) The Unit 1 Setpoint Methodology used to establish the Engineered Safety Feature Actuation System Setpoints is defined in WCAP-11419.

(b) The predefined as-found acceptance band, and the as-left setpoint tolerance is ± 0.33 psig.

(c) Time constants utilized in the lead-lag controllers for Steam Line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

(e) The predefined as-found acceptance band, and the as-left setpoint tolerance is ± 3.5 inches.

TABLE 3.3.10-2 (Page 2 of 3)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTION	NOMINAL TRIP SETPOINT[a]
3. CONTAINMENT ISOLATION	
b. Phase "B" Isolation	
1. Manual Initiation	N.A.
2. Automatic Actuation Logic and Actuation Relays	N.A.
3. Containment Pressure-High High	11.1 psig[b]
4. STEAM LINE ISOLATION	
a. N.A. for Unit 1	
b. Automatic Actuation Logic and Actuation Relays	N.A.
c. Containment Pressure-Intermediate High High	7.0 psig[b]
d. Steamline Pressure	
1. Low	500 psig[c]
2. Negative Rate - High	100 psi with a time constant ≥ 50 seconds
5. TURBINE TRIP & FEEDWATER ISOLATION	
a. Automatic Actuation Logic and Actuation Relays	N.A.
b. Steam Generator Water Level-High High, P-14	89.7% of narrow range instrument span[d]
c. Safety Injection	See Function 1 above for all Safety Injection Trip Setpoints.

(a) The Unit 1 Setpoint Methodology used to establish the Engineered Safety Feature Actuation System Setpoints is defined in WCAP-11419.

(b) The predefined as-found acceptance band, and the as-left setpoint tolerance is ± 0.33 psig.

(c) Time constants utilized in the lead-lag controllers for Steam Line Pressure-Low are $\tau_1 \geq 50$ seconds and $\tau_2 \leq 5$ seconds. CHANNEL CALIBRATION shall ensure that these time constants are adjusted to these values.

(d) The predefined as-found acceptance criteria band, and the as-left setpoint tolerance band is ± 0.5% span.

TABLE 3.3.10-2 (Page 3 of 3)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

	FUNCTION	NOMINAL TRIP SETPOINT[(a)]
6.	AUXILIARY FEEDWATER	
	a. Automatic Actuation Logic and Actuation Relays	N.A.
	b. Steam Generator Water Level-Low-Low	19.6% of narrow range instrument span[(d)]
	c. Safety Injection (Start All Auxiliary Feedwater Pumps)	See Function 1 above for all Safety Injection Trip Setpoints.
	d. Undervoltage - RCP (Start Turbine Driven Pump)	3120 V
	e. Trip of Main Feedwater Pumps (Start Motor Driven Pumps)	N.A.
7.	AUTOMATIC SWITCHOVER TO CONTAINMENT SUMP	
	a. Automatic Actuation Logic	N.A.
	b. Refueling Water Storage Tank Level - Extreme Low	14 feet 1/2 inch[(e)]
	Coincident with Safety Injection Signal	See Function 1 above for all Safety Injection Trip Setpoints.
8.	ESF INTERLOCKS	
	a. Reactor Trip, P-4	N.A.
	b. Pressurizer Pressure, P-11	2000 psig
	c. Low-Low T_{avg}, P-12	541°F

(a) The Unit 1 Setpoint Methodology used to establish the Engineered Safety Feature Actuation System Setpoints is defined in WCAP-11419.

(d) The predefined as-found acceptance criteria band, and the as-left setpoint tolerance band is ± 0.5% span.

(e) The predefined as-found acceptance band, and the as-left setpoint tolerance is ± 3.5 inches.

TABLE 3.3.10-3 (Page 1 of 1)
LOSS OF POWER
DIESEL GENERATOR START AND BUS SEPARATION
INSTRUMENTATION TRIP SETPOINTS

FUNCTION	NOMINAL TRIP SETPOINT[a]
LOSS OF VOLTAGE	
1. 4160V Emergency Bus DG Start	3120 V with a < 0.9 second time delay (includes auxiliary relay times)
2. 4160V Emergency Bus Separation	3120 V with a 1 ± 0.1 second time delay
DEGRADED VOLTAGE	
3. 4160V Emergency Bus Separation	3897.9 V with a 90 ± 5 second time delay
4. 480V Emergency Bus Separation	449.8 V with a 90 ± 5 second time delay

(a) The Unit 1 Setpoint Methodology used to establish the Engineered Safety Feature Actuation System Setpoints is defined in WCAP-11419.

3.3 INSTRUMENTATION

3.3.11 Fuel Storage Pool Area Radiation Monitor

LR 3.3.11 The Fuel Storage Pool Area Radiation Monitor (RM-207) shall be FUNCTIONAL with:

a. Setpoint of ≤ 15 mR/hr above background, and

b. Measurement range of 10^{-1} - 10^{4} mR/hr.

APPLICABILITY: With fuel in the storage pool or building.

ACTION

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Setpoint not within limit.	A.1 Adjust the setpoint to within the limit. OR A.2 Declare the monitor Nonfunctional.	4 hours 4 hours
B. Required monitor Nonfunctional.	B.1 Perform area surveys of the monitored area with portable monitoring instrumentation.	Once per 24 hours

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.11.1	Perform a CHANNEL CHECK.	12 hours
LRS 3.3.11.2	Perform a CHANNEL OPERATIONAL TEST.	31 days
LRS 3.3.11.3	Perform a CHANNEL CALIBRATION.	18 months

3.3 INSTRUMENTATION

3.3.12 Explosive Gas Monitoring Instrumentation

LR 3.3.12 Two channels of the Waste Gas Decay Tanks Oxygen Monitor (O_2 - AS-GW-110-1,2) shall be OPERABLE with Alarm/Trip Setpoints set to ensure the limits of LR 3.7.6 are not exceeded.

- NOTE -

The requirements of LR 3.3.12 are part of the Technical Specification 5.5.8, “Explosive Gas and Storage Tank Radioactivity Monitoring Program.”

APPLICABILITY: During waste gas decay tank filling operation.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels with Alarm/Trip setpoint less conservative than required.	A.1 Declare the affected channel(s) inoperable.	Immediately
B. One required channel inoperable.	B.1 Take and analyze grab samples.	Once per 24 hours
	<u>AND</u>	
	B.2 Restore inoperable channel to OPERABLE status.	30 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two required channels inoperable.	C.1 Take and analyze grab samples. AND C.2 Restore inoperable channels to OPERABLE status.	Once per 4 hours during degassing operations AND Once per 24 hours during other operations 30 days
D. Required Action and associated Completion Time not met.	D.1 Prepare and submit a Special Report in accordance with 10 CFR 50.4 to explain why the inoperability was not corrected in a timely manner.	30 days

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.12.1	Perform CHANNEL CHECK.	24 hours
LRS 3.3.12.2	Perform CHANNEL OPERATIONAL TEST.	31 days
LRS 3.3.12.3	-- **- NOTE -** The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal: 1. One volume percent oxygen, balance nitrogen, and 2. Four volume percent oxygen, balance nitrogen. -- Perform CHANNEL CALIBRATION.	92 days

3.3 INSTRUMENTATION

3.3.13 Containment Hydrogen Analyzers

LR 3.3.13 Two separate and independent wide-range containment hydrogen analyzers shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One wide-range hydrogen analyzer Nonfunctional.	A.1 Restore the Nonfunctional analyzer to FUNCTIONAL status.	30 days
B. Two wide-range hydrogen analyzers Nonfunctional.	B.1 Restore at least one wide-range hydrogen analyzer to FUNCTIONAL status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.13.1	Perform a CHANNEL CALIBRATION using sample gases containing: 1. One volume percent hydrogen, balance nitrogen, and 2. Four volume percent hydrogen, balance nitrogen.	46 days on a STAGGERED TEST BASIS

3.3 INSTRUMENTATION

3.3.14 Control Room Isolation Radiation Monitors

LR 3.3.14 Two Control Room Isolation Radiation Monitors (RM-RM-218 A & B) shall be FUNCTIONAL with:

a. Setpoint of ≤ 0.47 mR/hr above background, and

b. Measurement range of 10^{-2} - 10^{3} mR/hr.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Setpoint not within limit.	A.1 Adjust the setpoint to within the limit. <u>OR</u> A.2 Declare the radiation monitor Nonfunctional.	4 hours 4 hours
B. One radiation monitor Nonfunctional.	B.1 Verify the corresponding Unit 2 control room radiation monitor (same train) is FUNCTIONAL.	1 hour <u>AND</u> Once per 31 days thereafter
C. Required Action and Associated Completion Time of Condition B not met.	C.1 Restore the Nonfunctional Unit 1 or required Unit 2 radiation monitor to FUNCTIONAL status. <u>OR</u> C.2 Isolate the combined control room by closing all series normal air intake and exhaust isolation dampers for both Unit 1 and Unit 2.	7 days 7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Two Unit 1 radiation monitors Nonfunctional.	D.1	Verify both the corresponding Unit 2 control room radiation monitors are FUNCTIONAL.	1 hour AND Once per 31 days thereafter
E. Required Action and Associated Completion Time of Condition D not met with one Unit 2 control room radiation monitor Nonfunctional.	E.1	Restore the Nonfunctional Unit 1 or Unit 2 monitor(s) to FUNCTIONAL status.	7 days
	OR		
	E.2	Isolate the combined control room by closing all series normal air intake and exhaust isolation dampers for both Unit 1 and Unit 2.	7 days
F. Required Action and Associated Completion Time of Condition D not met with two Unit 2 control room radiation monitors Nonfunctional.	F.1	Isolate the combined control room by closing all series normal air intake and exhaust isolation dampers for both Unit 1 and Unit 2.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.14.1	Perform a CHANNEL CHECK.	12 hours
LRS 3.3.14.2	-------------------------------- **- NOTE -** Control Room intake and exhaust isolation dampers are not actuated. -------------------------------- Perform a CHANNEL OPERATIONAL TEST.	92 days
LRS 3.3.14.3	Perform a CHANNEL CALIBRATION.	18 months

3.3 INSTRUMENTATION

3.3.15 Containment Area Radiation Alarm

LR 3.3.15 Two channels of Containment Area Radiation Alarms (RM-RM-219A & B) shall be FUNCTIONAL with:

a. Setpoints of $\leq 1.5 \times 10^4$ R/hr above background, and

b. Measurement range of 1 - 10^7 R/hr.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Setpoint(s) not within limit.	A.1 Adjust the setpoint(s) to within the limit.	4 hours
	OR	
	A.2 Declare the radiation monitor alarm Nonfunctional.	4 hours
B. One or more alarm channels Nonfunctional.	B.1 Restore the Nonfunctional alarm channel(s) to FUNCTIONAL status.	72 hours
	OR	
	B.2.1 Initiate the preplanned alternate method of monitoring the appropriate parameter(s).	72 hours
	AND	
	B.2.2 Restore the alarm channel(s) to FUNCTIONAL status.	30 days
	OR	
	B.2.3 Explain why the Nonfunctionality was not corrected in a timely manner.	In the next Annual Radioactive Effluent Release Report

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.15.1	Perform a CHANNEL CHECK.	12 hours
LRS 3.3.15.2	Perform a CHANNEL OPERATIONAL TEST.	31 days
LRS 3.3.15.3	Perform a CHANNEL CALIBRATION.	18 months

3.3 INSTRUMENTATION

3.3.16 Accident Monitoring Instrumentation

LR 3.3.16 The Accident Monitoring instrumentation for each Function in Table 3.3.16-1 shall be OPERABLE/FUNCTIONAL.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES -

1. Separate Condition entry is allowed for each Function.

2. For Functions 2 and 3 refer to LCO 3.4.11, Pressurizer Power Operated Relief Valves, for the appropriate ACTIONS in lieu of the LR 3.3.16 ACTIONS below.

CONDITION	REQUIRED ACTION	COMPLETION TIME
- NOTE - Not applicable to Function 1. A. One or more Functions with one required channel Nonfunctional.	A.1 Restore the Nonfunctional channel(s) to FUNCTIONAL status.	30 days
B. One or more Functions with two required channels Nonfunctional. <u>OR</u> One Function 1 channel Nonfunctional.	B.1 Restore at least one channel to FUNCTIONAL status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.16.1	Perform a CHANNEL CHECK.	31 days
LRS 3.3.16.2	Perform a CHANNEL CALIBRATION.	18 months

Table 3.3.16-1 (page 1 of 1)
Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS
1.	Reactor Coolant System Subcooling Margin Monitor	1
2.	PORV Limit Switch Position Indicator	1 per valve
3.	PORV Block Valve Limit Switch Position Indicator	1 per valve
4.	Safety Valve Acoustical Detector Position Indicator	2 per valve[(1)]

(1) One Detector Active, Second Detector Passive

3.3 INSTRUMENTATION

3.3.17 Containment Purge & Exhaust Isolation Radiation Monitors

LR 3.3.17 Two Containment Purge & Exhaust Isolation Radiation Monitors (RM-VS-104 A & B) shall be FUNCTIONAL with:

a. Setpoint of $\leq 1.6 \times 10^3$ cpm above background, and

b. Measurement range of $10 - 10^6$ cpm.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Setpoint not within limit.	A.1 Adjust the setpoint to within the limit. OR A.2 Declare the monitor Nonfunctional.	4 hours 4 hours
B. One or more monitors Nonfunctional.	B.1 Close the containment purge and exhaust penetrations.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.3.17.1	Perform a CHANNEL CHECK.	12 hours
LRS 3.3.17.2	Perform a CHANNEL OPERATIONAL TEST.	31 days
LRS 3.3.17.3	Perform a CHANNEL CALIBRATION.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Loop Isolation Valves - Shutdown

LR 3.4.1 The loop isolation valves in an isolated RCS loop shall have power removed from the associated loop isolation valve operators.

- NOTE -

Power may be restored to the associated RCS isolated loop isolation valve operator(s) provided the requirements of Technical Specification Surveillance 3.4.18.2 have been satisfied.

APPLICABILITY: In MODES 5 and 6 when an RCS loop has been isolated.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Remove power from the isolated loop isolation valve operators.	1 hour

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.4.1.1	Verify that power is removed from the RCS isolated loop isolation valve operators.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Chemistry

LR 3.4.2 The RCS chemistry shall be maintained within the limits specified in Table 3.4.2-1.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ------------------------------------ **- NOTE -** Only applicable in MODES 1, 2, 3, and 4. ------------------------------------ One or more chemistry parameters in excess of its Steady State Limit but within its Transient Limit.	A.1 Restore the Parameter to within its Steady State Limit.	24 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Apply LR 3.0.3.	Immediately
C. ------------------------------------ **- NOTE -** Only applicable in MODES 1, 2, 3, and 4. ------------------------------------ One or more chemistry parameters in excess of its Transient Limit.	C.1 Apply LR 3.0.3.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ------------------------------------ **- NOTE -** Not applicable in MODES 1, 2, 3, and 4. ------------------------------------ Concentration of either chloride or fluoride in the RCS in excess of its Steady State Limit for more than 24 hours or in excess of its Transient Limit.	D.1 Reduce the pressurizer pressure to ≤ 500 psig, if applicable, and perform an analysis to determine the effects of the out-of-limit condition on the structural integrity of the RCS; determine that the RCS remains acceptable for continued operations.	Prior to increasing the pressurizer pressure above 500 psig or prior to proceeding to MODE 4
E. ------------------------------------ **- NOTE -** Not applicable in MODES 1, 2, 3, 4, 5 and 6. ------------------------------------ Unable to determine limits of chloride or fluoride in the RCS due to the inability to sample the RCS.	E.1 ------------------------------------ **- NOTE -** Required Action E.1 is only applicable when the ability to sample the RCS is restored. ------------------------------------ Initiate action to perform LRS 3.4.2.1.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.4.2.1	The RCS chemistry shall be determined to be within the limits specified in Table 3.4.2-1 by analysis.	72 hours

TABLE 3.4.2-1 (Page 1 of 1)
REACTOR COOLANT SYSTEM CHEMISTRY LIMITS

PARAMETER	STEADY-STATE LIMIT	TRANSIENT LIMIT
DISSOLVED OXYGEN	≤ 0.10 ppm*	≤ 1.00 ppm*
CHLORIDE	≤ 0.15 ppm	≤ 1.50 ppm
FLUORIDE	≤ 0.15 ppm	≤ 1.50 ppm

* Limit not applicable with $T_{avg} \leq 250°F$.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Pressurizer

LR 3.4.3 The pressurizer temperature shall be limited to:

a. A maximum heatup of 100°F in any one hour period,

b. A maximum cooldown of 200°F in any one hour period,

c. A maximum normal spray water differential temperature of 320°F, and

d. A maximum auxiliary spray water differential temperature of 320°F.

APPLICABILITY: At all times.

ACTIONS

- NOTE -

Separate condition entry is allowed for each pressurizer temperature limit.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Pressurizer heatup-rate limit exceeded, OR	A.1 ---------------------------------- **- NOTE -** Required Action A.1 is only applicable to pressurizer heatup rate and cooldown rate limit(s). ---------------------------------- Restore rate to within the limit(s). AND	 30 minutes

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Pressurizer cooldown-rate limit exceeded,	A.2	---------------------------------- **- NOTE -** Required Action A.2 is only applicable to pressurizer normal and auxiliary spray water differential temperature limit(s). ---------------------------------- Restore differential temperature to within the limit(s).	30 minutes
<u>OR</u>	<u>AND</u>		
Pressurizer normal spray water differential temperature limit exceeded,	A.3	Perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer.	72 hours
<u>OR</u>	<u>AND</u>		
Pressurizer auxiliary spray water differential temperature limit exceeded by more than 60°F.	A.4	Determine that the pressurizer remains acceptable for continued operation.	72 hours
B. Pressurizer auxiliary spray water differential temperature limit exceeded by less than or equal to 60°F.	B.1	Restore differential temperature to within the limit(s).	30 minutes
	<u>AND</u>		
	B.2	Notify Design Engineering to include the event in Cycle Counting.	36 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Reduce the pressurizer pressure to less than 500 psig.	36 hours

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.4.3.1	The pressurizer temperatures shall be determined to be within the limits.	Once per 30 minutes during system heatup or cooldown
LRS 3.4.3.2	The normal spray water temperature differential shall be determined to be within the limit.	Once per 30 minutes during system heatup or cooldown
LRS 3.4.3.3	The auxiliary spray water temperature differential shall be determined to be within the limit.	Once per 30 minutes during auxiliary spray operation

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 DELETED

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Vents

LR 3.4.5 All power operated RCS vent valves shall be FUNCTIONAL and closed for each vent path from the following locations:

a. Reactor Vessel Head

b. Pressurizer Steam Space

- NOTES -

1. For purposes of this LR, a Nonfunctional vent valve is defined as: a valve which exhibits leakage in excess of LCO 3.4.13, "RCS Operational LEAKAGE," limits, or cannot be opened and closed on demand.

2. The vent valves may be operated for required venting operations and leak testing in MODES 3 and 4.

3. A FUNCTIONAL RCS vent valve may be opened in MODES 1 and 2 under administrative control provided the redundant in series valves are maintained closed.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------------------------------- **- NOTE -** Separate Condition entry is allowed for each location. ---------------------------------- One or more locations with one vent path Nonfunctional.	A.1 ---------------------------------- **- NOTE -** Power operation may continue and entry into MODES 1-4 is not restricted until the next scheduled outage, at which time all RCS vent valves shall be FUNCTIONAL prior to entry into MODE 1. ---------------------------------- Maintain the Nonfunctional valve(s) closed with power removed or with the manual isolation valve closed.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. All vent paths from one of the above locations Nonfunctional.	B.1 Maintain the Nonfunctional valves closed with power removed or with the manual isolation valves closed.	Immediately
	<u>AND</u>	
	B.2.1 Restore at least one of the Nonfunctional vent paths to FUNCTIONAL status.	30 days
	<u>OR</u>	
	B.2.2 Apply LR 3.0.3.	30 days
C. Three vent paths from the above locations Nonfunctional.	C.1 Maintain the Nonfunctional valves closed with power removed or with the manual isolation valves closed.	Immediately
	<u>AND</u>	
	C.2.1 Restore at least one of the Nonfunctional vent paths to FUNCTIONAL status.	21 days
	<u>OR</u>	
	C.2.2 Apply LR 3.0.3.	21 days
D. All vent paths from both of the above locations Nonfunctional.	D.1 Maintain the Nonfunctional valves closed with power removed or close the manual isolation valves.	Immediately
	<u>AND</u>	
	D.2.1 Restore at least one vent path from one of the above locations to FUNCTIONAL status.	72 hours
	<u>OR</u>	
	D.2.2 Apply LR 3.0.3.	72 hours

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.4.5.1	Each RCS vent path shall be demonstrated FUNCTIONAL by: a. Verifying all manual isolation valves in each vent path are locked or sealed in the open position. b. Cycling each valve in the vent path through at least one complete cycle of full travel from the control room. c. Verifying flow through the RCS vent path to the Pressurizer Relief Tank.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 Pressurizer Safety Valve Lift Involving Liquid Water Discharge

LR 3.4.6 The OPERABILITY of pressurizer safety valve(s) shall be evaluated after having discharged liquid water from a water solid pressurizer to mitigate an overpressure event.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > the enable temperature specified in the PTLR.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
-- **- NOTE -** Required Action A.3 shall be completed whenever this Condition is entered. --		
A. One or more pressurizer safety valve(s) having discharged liquid water from a water solid pressurizer to mitigate an overpressure event.	A.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	A.2 Be in MODE 4 with any RCS cold leg temperature ≤ the enable temperature specified in the PTLR with RCS overpressure protection provided in accordance with the requirements of Technical Specification 3.4.12.	24 hours
	<u>AND</u>	
	A.3 Initiate action to evaluate the OPERABILITY of the affected valve(s).	30 hours

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.4.6.1	No additional requirements other than the applicable requirements of the Inservice Testing Program.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Pressure Isolation Valves

LR 3.4.7 Each Pressure Isolation Valve listed in Table 3.4.7-1 shall be maintained OPERABLE in accordance with the requirements of Technical Specification (TS) 3.4.14, "RCS Pressure Isolation Valves (PIV) Leakage."

APPLICABILITY: As specified in TS 3.4.14.

TABLE 3.4.7-1 (Page 1 of 1)
RCS PRESSURE ISOLATION VALVES

SYSTEM	VALVE NO.	NOTES
Loop 1, Cold leg, LHSI	SI-23	(1)(2)
	SI-12	(1)(2)
Loop 2, Cold leg, LHSI	SI-24	(1)(2)
	SI-11	(1)(2)
Loop 3, Cold leg, LHSI	SI-25	(1)(2)
	SI-10	(1)(2)
Loop 1, Hot leg, LHSI	SI-15	(1)
Loop 2, Hot leg, LHSI	SI-16	(1)
Loop 3, Hot leg, LHSI	SI-17	(1)
Common, Hot leg, LHSI	SI-13	
	SI-14	
Loop 1, Cold leg, SIACC	SI-48	(1)
	SI-51	(1)
Loop 2, Cold leg, SIACC	SI-49	(1)
	SI-52	(1)(2)
Loop 3, Cold leg, SIACC	SI-50	(1)
	SI-53	(1)(2)
Loop 1, Hot leg, RHS	MOV-RH-700	(1)
	MOV-RH-701	(1)
Loop 2, Cold leg, RHS	MOV-RH-720A	(1)
Loop 3, Cold leg, RHS	MOV-RH-720B	(1)

NOTES:

1. Minimum test differential pressures shall not be less than 150 psid.

2. Valve requires additional verification of leakage within the limit prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months as specified in SR 3.4.14.1.

3.6 CONTAINMENT

3.6.1 Containment Isolation Valves

LR 3.6.1 Each containment isolation valve listed in Table 3.6.1-1 shall be maintained in the manner specified in Technical Specification (TS) 3.6.3.

APPLICABILITY: As specified in TS 3.6.3.

TABLE 3.6.1-1 (Page 1 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
1	CCR to RHS Hx 1A & RHS Pump 1A Seal Cooler	(1)MOV-1CC-112A2 RV-1CC-261	N/A N/A	1CCR-247	N/A
2	CCR from RHS Hx 1B & RHS Pump 1B Seal Cooler	(1)MOV-1CC-112B3 RV-1CC-262	N/A N/A	1CCR-252	N/A
3	Does not exist				
4	CCR from RHS Hx 1A & RHS Pump 1A Seal Cooler	(1)MOV-1CC-112A3 RV-1CC-264	N/A N/A	1CCR-251	N/A
5	CCR to RHS Hx 1B & RHS Pump 1B Seal Cooler	(1)MOV-1CC-112B2 RV-1CC-263	N/A N/A	1CCR-248	N/A
6	Spare				
7	High Head SI to Hot Legs	(2)(8)1SI-83	N/A	(2)(8)MOV-1SI-869A	N/A
8	CCR from RCP 1B & 1C Thermal Barriers	(B)TV-1CC-107D1 RV-1CC-265	< 60 N/A	(B)TV-1CC-107D2	< 60
9	CCR from Shroud Coolers	(B)TV-1CC-111D1 RV-1CC-266	< 60 N/A	(B)TV-1CC-111D2	< 60
10	Spare				
11	Air Recirc. Cooling Water-Out	(B)TV-1CC-110D RV-1CC-267	< 60 N/A	(B)TV-1CC-110F2 (B)TV-1CC-110F1	< 60 < 60
12	Spare				

TABLE 3.6.1-1 (Page 2 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
13	Deluge System to CNMT Hose Reels	1FP-827	N/A	(A)TV-1FP-107	15
14	Air Recirc. Cooling Water-In	(B)TV-1CC-110E3 RV-1CC-268	< 60 N/A	(B)TV-1CC-110E2	< 60
15	Coolant System Charging	(2)(8)1CH-31	N/A	(2)(8)MOV-1CH-289	15
16	CCR to Shroud Coolers	(B)TV-1CC-111A2 RV-1CC-269	< 60 N/A	(B)TV-1CC-111A1	< 60
17	CCR to RCP 1B	(B)TV-1CC-103B1 RV-1CC-270	< 60 N/A	(B)TV-1CC-103B	< 60
18	CCR to RCP 1C	(B)TV-1CC-103C1 RV-1CC-271	< 60 N/A	(B)TV-1CC-103C	< 60
19	RCP's Seal Water Return	(A)MOV-1CH-378 1CH-369	< 60 N/A	(A)MOV-1CH-381	< 60
20	SI Accum. Makeup	1SI-42	N/A	1SI-41	N/A
21	Spare				
22	Spare				
23	Spare				
24	RHS to RWST	1RH-14 1RH-16	N/A N/A	1RH-15	N/A

TABLE 3.6.1-1 (Page 3 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
25	CCR from RCP 1B & 1C Motors	(B)TV-1CC-105D1 RV-1CC-272	< 60 N/A	(B)TV-1CC-105D2	< 60
26	CCR from RCP 1A Thermal Barrier	(B)TV-1CC-107E1 RV-1CC-273	< 60 N/A	(B)TV-1CC-107E2	< 60
27	CCR from RCP 1A Motor	(B)TV-1CC-105E1 RV-1CC-274	< 60 N/A	(B)TV-1CC-105E2	< 60
28	RCS Letdown	(A)TV-1CH-200A (A)TV-1CH-200B (A)TV-1CH-200C (1)MOV-1CH-142 RV-1CH-203	< 60 < 60 < 60 N/A N/A	(A)TV-1CH-204	< 60
29	Primary Drain Transfer Pump #1 Discharge	(A)TV-1DG-108A RV-1DG-102	< 60 N/A	(A)TV-1DG-108B	< 60
30	Spare				
31	Deluge System to Cable Penetration Area	1FP-804	N/A	(A)TV-1FP-105	15
32	Deluge System to RHR Area	1FP-800	N/A	(A)TV-1FP-106	15
33	High Head SI to Hot Legs	(2)(8)1SI-84	N/A	(2)(8)MOV-1SI-869B	N/A
34	Spare				

TABLE 3.6.1-1 (Page 4 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
35	Seal Injection Water RCP 1A	(2)(8)1CH-181	N/A	(2)(8)MOV-1CH-308A	N/A
36	Seal Injection Water RCP 1B	(2)(8)1CH-182	N/A	(2)(8)MOV-1CH-308B	N/A
37	Seal Injection Water RCP 1C	(2)(8)1CH-183	N/A	(2)(8)MOV-1CH-308C	N/A
38	Containment Sump Pump Discharge	(A)TV-1DA-100A RV-1DA-101	< 60 N/A	(A)TV-1DA-100B	< 60
39	Steam Generator 1A Blowdown	Closed System	N/A	(2)(A)TV-1BD-100A	< 60
40	Steam Generator 1B Blowdown	Closed System	N/A	(2)(A)TV-1BD-100B	< 60
41	Steam Generator 1C Blowdown	Closed System	N/A	(2)(A)TV-1BD-100C	< 60
42	Compressed Air to Containment	1SA-15	N/A	1SA-14	N/A
43	Air Activity Monitor Return to Containment	(A)TV-1CV-102-1	< 60	(A)TV-1CV-102	< 60
44	Containment to Air Activity Monitor			(A)TV-1CV-101A (A)TV-1CV-101B	< 60 < 60
45	Primary Grade Water to PRT	1RC-72	N/A	(A)TV-1RC-519	< 60
46	Charging Fill Header	(2)(8)1CH-170	N/A	(2)(1)(8)FCV-1CH-160	N/A
47	Instrument Air	1IA-91	N/A	1IA-90 (B)TV-1IA-400	N/A < 60

TABLE 3.6.1-1 (Page 5 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
48	Primary Vent Header	(A)TV-1DG-109A2	< 60	(A)TV-1DG-109A1	< 60
49	Nitrogen Supply to PRT	1RC-68	N/A	(A)TV-1RC-101	< 60
50	Spare				
51	Spare				
52	Spare				
53	Nitrogen Supply to SI Accumulators	(A)TV-1SI-101-2	5	(A)TV-1SI-101-1	5
54	Spare				
55-1	SI Accumulator Sample	(A)TV-1SS-109A1 RV-1SS-605	< 60 N/A	(A)TV-1SS-109A2	< 60
55-2	CNMT Leakage Monitoring Open Taps			(12)1CV-60 and Associated Cap	N/A
55-3	Spare				
55-4	PRT Gas Sample	(A)TV-1SS-111A1	< 60	(A)TV-1SS-111A2	< 60
56-1	Pressurizer Liquid Sample	(A)TV-1SS-100A1 RV-1SS-608	< 60 N/A	(A)TV-1SS-100A2	< 60
56-2	RCS Cold Leg Sample	(A)TV-1SS-102A1 RV-1SS-606	< 60 N/A	(A)TV-1SS-102A2	< 60

TABLE 3.6.1-1 (Page 6 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
56-3	RCS Hot Leg Samples	(A)TV-1SS-105A1 RV-1SS-609	< 60 N/A	(A)TV-1SS-105A2	< 60
56-4	STM GEN 1A Blowdown Sample	Closed System	N/A	(2)(A)TV-1SS-117A	< 60
57-1	CNMT Leakage Monitoring Open Taps			(12)1CV-58 and Associated Cap	N/A
57-2	CNMT Leakage Monitoring Open Taps			(12)1CV-57 and Associated Cap	N/A
57-3	Spare				
57-4	Spare				
58	CCR to RCP 1A	(B)TV-1CC-103A1 RV-1CC-275	< 60 N/A	(B)TV-1CC-103A	< 60
59	Spare				
60	Low Head SI to Hot Legs	(2)(8)1SI-13	N/A	(2)(8)MOV-1SI-890A	N/A
61	Low Head SI to Cold Legs	(2)(8)1SI-10 (2)(8)1SI-11 (2)(8)1SI-12	N/A N/A N/A	(2)(8)MOV-1SI-890C	N/A
62	Low Head SI to Hot Legs	(2)(8)1SI-14	N/A	(2)(8)MOV-1SI-890B	N/A
63	QSP Discharge 360° Header	1QS-4	N/A	(B)MOV-1QS-101B	75(4)
64	QSP Discharge 360° Header	1QS-3	N/A	(B)MOV-1QS-101A	75(4)

TABLE 3.6.1-1 (Page 7 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
65	Fuel Transfer Tube	(7)Flange	N/A	(6)1FH-1	N/A
66	Outside RSP 2A Suction from CNMT			(B)(2)MOV-1RS-155A	75(4)
67	Outside RSP 2B Suction from CNMT			(B)(2)MOV-1RS-155B	75(4)
68	Low Head SI Pump 1A Suction from CNMT Sump			(9)(2)(8)MOV-1SI-860A	N/A
69	Low Head SI Pump 1B Suction from CNMT Sump			(9)(2)(8)MOV-1SI-860B	N/A
70	Outside RSP 2B Discharge	1RS-101	N/A	(B)(2)MOV-1RS-156B	75(4)
71	Outside RSP 2A Discharge	1RS-100	N/A	(B)(2)MOV-1RS-156A	75(4)
72	Spare				
73	Main Steam Loop 1A Bypass	Closed System	N/A	(14)(2)MOV-1MS-101A	N/A
	Main Steam Loop 1A	Closed System	N/A	(2)TV-1MS-101A	5(10)
	Main Steam Line Drain	Closed System	N/A	(2)TV-1MS-111A	10
	Main Steam to Aux. Feed Pump	Closed System	N/A	(2)MOV-1MS-105	N/A
	Main Steam Atmospheric Dump	Closed System	N/A	(6)PCV-1MS-101A	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-101A	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-102A	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-103A	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-104A	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-105A	N/A
	Main Steam Residual Heat Release	Closed System	N/A	(6)HCV-MS-104	N/A

TABLE 3.6.1-1 (Page 8 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
74	Main Steam Loop 1B Bypass	Closed System	N/A	(14)(2)MOV-1MS-101B	N/A
	Main Steam Loop 1B	Closed System	N/A	(2)TV-1MS-101B	5(10)
	Main Steam Line Drain	Closed System	N/A	(2)TV-1MS-111B	10
	Main Steam to Aux. Feed Pump	Closed System	N/A	(2)MOV-1MS-105	N/A
	Main Steam Atmospheric Dump	Closed System	N/A	(6)PCV-1MS-101B	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-101B	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-102B	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-103B	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-104B	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-105B	N/A
	Main Steam Residual Heat Release	Closed System	N/A	(6)HCV-MS-104	N/A
75	Main Steam Loop 1C Bypass	Closed System	N/A	(14)(2)MOV-1MS-101C	N/A
	Main Steam Loop 1C	Closed System	N/A	(2)TV-1MS-101C	5(10)
	Main Steam Line Drain	Closed System	N/A	(2)TV-1MS-111C	10
	Main Steam to Aux. Feed Pump	Closed System	N/A	(2)MOV-1MS-105	N/A
	Main Steam Atmospheric Dump	Closed System	N/A	(6)PCV-1MS-101C	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-101C	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-102C	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-103C	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-104C	N/A
	Main Steam Safety Valve	Closed System	N/A	(6)SV-MS-105C	N/A
	Main Steam Residual Heat Release	Closed System	N/A	(6)HCV-MS-104	N/A
76	FW Loop 1A	Closed System	N/A	(2)HYV-1FW-100A	10(15)
	Auxiliary Feedwater Loop 1A	Closed System	N/A	(2)FW-42	N/A

TABLE 3.6.1-1 (Page 9 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
77	FW Loop 1B	Closed System	N/A	(2)HYV-1FW-100B	10(15)
	Auxiliary Feedwater Loop 1B	Closed System	N/A	(2)FW-43	N/A
78	FW Loop 1C	Closed System	N/A	(2)HYV-1FW-100C	10(15)
	Auxiliary Feedwater Loop 1C	Closed System	N/A	(2)FW-44	N/A
79	RW to 1A RSP Hx	Closed System	N/A	(2)MOV-1RW-104A	N/A
80	RW to 1C RSP Hx	Closed System	N/A	(2)MOV-1RW-104C	N/A
81	RW to 1B RSP Hx	Closed System	N/A	(2)MOV-1RW-104B	N/A
82	RW to 1D RSP Hx	Closed System	N/A	(2)MOV-1RW-104D	N/A
83	RW from 1A RSP Hx	Closed System	N/A	(2)MOV-1RW-105A	N/A
				(2)1RW-615	N/A
				(2)RV-1RW-101A	N/A
84	RW from 1C RSP Hx	Closed System	N/A	(2)MOV-1RW-105C	N/A
				(2)1RW-627	N/A
				(2)RV-1RW-101C	N/A
85	RW from 1B RSP Hx	Closed System	N/A	(2)MOV-1RW-105B	N/A
				(2)1RW-621	N/A
				(2)RV-1RW-101B	N/A
86	RW from 1D RSP Hx	Closed System	N/A	(2)MOV-1RW-105D	N/A
				(2)1RW-633	N/A
				(2)RV-1RW-101D	N/A

TABLE 3.6.1-1 (Page 10 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
87	H2 Discharge to CNMT		N/A	1HY-111 1HY-197	N/A N/A
88	H2 Discharge to CNMT		N/A	1HY-110 1HY-196	N/A N/A
89	Main Condenser Ejector Vent	1AS-278	N/A	(B)TV-1SV-100A	< 60
90	CNMT Purge Exhaust	(11)VS-D-5-3B	(5)8	(11)VS-D-5-3A	(5)8
91	CNMT Purge Supply	(11)VS-D-5-5B	(5)11	(11)VS-D-5-5A (11)VS-D-5-6	(5)8 N/A
92	CNMT Vacuum Pump 1B & H2 Recomb. Suction			(A)TV-1CV-150C (A)TV-1CV-150D 1HY-102 1HY-104	< 5 < 5 N/A N/A
93	CNMT Vacuum Pump 1A & H2 Recomb. Suction			(A)TV-1CV-150A (A)TV-1CV-150B 1HY-101 1HY-103	< 5 < 5 N/A N/A
94	CNMT Vacuum Ejector Suction	(11)HCV-1CV-151	N/A	(11)HCV-1CV-151-1	N/A
95	RVLIS (3 lines)			(2)(13)	N/A
95-64	H2 Analyzer - CNMT Dome	SOV-1HY-102B1	N/A	SOV-1HY-102B2	N/A

TABLE 3.6.1-1 (Page 11 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
95-69	H2 Analyzer - PRZR Cubicle	SOV-1HY-103B1	N/A	SOV-1HY-103B2	N/A
95-72	H2 Analyzer Discharge	SOV-1HY-104B1	N/A	SOV-1HY-104B2	N/A
96	High Head SI to Cold Legs	(2)(8)1SI-95	N/A	(2)(8)MOV-1SI-836	N/A
97-1	RHR Inlet Sample	(A)TV-1SS-104A1 RV-1SS-610	< 60 N/A	(A)TV-1SS-104A2	< 60
97-2	RHR Outlet Sample	(A)TV-1SS-103A1 RV-1SS-607	< 60 N/A	(A)TV-1SS-103A2	< 60
97-3	CNMT Leakage Monitoring Open Taps			(12)1CV-59 and Associated Cap	N/A
97-4	Steam Generator 1C Blowdown Sample	Closed System	N/A	(2)(A)TV-1SS-117C	< 60
98-1	Spare				
98-2	Spare				
98-3	Spare				
98-4	Spare				
99	Spare				
100	Spare				

TABLE 3.6.1-1 (Page 12 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
101	Spare				
102	Spare				
103	Purification Pump Discharge to Refueling Cavity	1PC-38	N/A	1PC-37	N/A
104	Refueling Cavity to Purification Pump Suction	1PC-9	N/A	1PC-10	N/A
105-1	Steam Generator 1B Blowdown Sample	Closed System	N/A	(2)(A)TV-1SS-117B	< 60
105-2	PRZR Vapor Sample	(A)TV-1SS-112A1 RV-1SS-611	< 60 N/A	(A)TV-1SS-112A2	< 60
105-3	Spare				
105-4	Spare				
106	SI Accumulator Test Line	(A)MOV-1SI-842	< 60	(A)TV-1SI-889	< 60
107	Spare				
108	Spare				
109	RVLIS (3 lines)			(2)(13)	N/A

TABLE 3.6.1-1 (Page 13 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
109-44	Inlet Flow Sample - CNMT Dome	SOV-1HY-102A1	N/A	SOV-1HY-102A2	N/A
109-49	Inlet Flow Sample - PRZR Cubicle	SOV-1HY-103A1	N/A	SOV-1HY-103A2	N/A
109-52	Flow Sample Discharge	SOV-1HY-104A1	N/A	SOV-1HY-104A2	N/A
110-1	PRZR Dead Weight Calibrator		N/A	1RC-277 1RC-278	N/A N/A
110-2	Spare				
110-3	Spare				
110-4	Spare				
111	Spare	(7)Flange	N/A	(7)Flange	N/A
112	Spare	(7)Flange	N/A	(7)Flange	N/A
113	BIT to Cold Legs	(2)(8)1SI-94	N/A	(2)(8)MOV-1SI-867C (2)(8)MOV-1SI-867D	(4)15 (4)15

TABLE 3.6.1-1 (Page 14 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)
Primary Containment Airlock PH-P-1					
	Equalization Valve	(1)(3)1VS-169	N/A		
	Equalization Valve	(1)(3)1VS-170	N/A		
	Equalization Valve			(1)(3)1VS-167	N/A
	Equalization Valve			(1)(3)1VS-168	N/A
Emergency Containment Airlock PH-P-2					
	Equalization Valve	(1)(7)1VS-184	N/A		
	Equalization Valve			(1)(7)1VS-183	N/A

NOTES:

(A) Containment Isolation Phase A
(B) Containment Isolation Phase B

(1) May be opened on an intermittent basis under administrative control.

(2) Not subject to Type C leakage tests.

(3) Tested individually by Type C Test. Leakage rates added to Air Lock Type B Test.

(4) Maximum opening time.

(5) When required by LR 3.9.4.

TABLE 3.6.1-1 (Page 15 of 15)
CONTAINMENT PENETRATIONS

PENT. No.	IDENTIFICATION DESCRIPTION	INSIDE VALVE	MAXIMUM STROKE TIME (SEC)	OUTSIDE VALVE	MAXIMUM STROKE TIME (SEC)

NOTES (Continued):

(6) Not subject to the requirements of Technical Specifications 3.6.1 and 3.6.3. Listed for information only.

(7) Tested under Type "B" testing.

(8) Subject to testing as per Technical Specification Amendment 65.

(9) Auto open on Safety Injection recirculation signal.

(10) Valve isolation time required by Technical Specification SR 3.7.2.1.

(11) Valve will be locked shut in Modes 1, 2, 3 and 4.

(12) Valve and associated cap replaced isolation function provided by TV-1LM-100A1 and TV-1LM-100A2.

(13) Isolation is provided by bellows operated hydraulic isolators.

(14) Only one main steam bypass valve is permitted to be open at a time in Modes 1, 2, and 3.

(15) Feedwater isolation time specified includes signal processing time and valve closure time. Valve closure times shall be limited such that when added to the signal processing time the total isolation time specified on Table 3.6.1-1 is not exceeded. Valve closure time required within limit by Technical Specification SR 3.7.3.1.

3.6 CONTAINMENT

3.6.2 Containment Sump

LR 3.6.2 The containment does not have loose debris present that could be transported to the containment sump and cause restriction of the Emergency Core Cooling System pump suctions during LOCA conditions.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Apply the provisions of LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

	SURVEILLANCE	FREQUENCY
LRS 3.6.2.1	---------- **- NOTE -** Only required to be performed if LRS 3.6.2.2 is not met for each containment entry. ---------- Verify by visual inspection of all accessible areas of the containment that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the Emergency Core Cooling System pump suctions during LOCA conditions.	Prior to establishing containment OPERABILITY per Technical Specification 3.6.1
LRS 3.6.2.2	Verify by visual inspection of the areas affected within containment that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the Emergency Core Cooling System pump suctions during LOCA conditions.	At the completion of each containment entry

3.7 PLANT SYSTEMS

3.7.1 Steam Generator Pressure/Temperature Limitation

LR 3.7.1 The pressure of the primary and secondary coolants in each steam generator shall be ≤ 200 psig.

APPLICABILITY: Whenever the temperature of the primary or secondary coolant in the associated steam generator is ≤ 70°F and the primary or secondary systems of the associated steam generator are capable of being pressurized.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Reduce the steam generator pressure of the applicable side to ≤ 200 psig.	30 minutes
	<u>AND</u>	
	A.2 Perform an analysis to determine the effect of the overpressurization on the structural integrity of the steam generator. Determine that the steam generator remains acceptable for continued operation.	Prior to increasing its temperatures above 200°F

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.1.1	Verify the pressure in each side of the steam generator is ≤ 200 psig.	Once per hour

3.7 PLANT SYSTEMS

3.7.2 Flood Protection

LR 3.7.2 Flood protection shall be provided for all safety related systems, components and structures when the water level of the Ohio River exceeds 695 Mean Sea Level at the intake structure.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Water level at the intake structure above elevation 695 Mean Sea Level.	A.1 Install and seal the flood doors in the intake structure.	8 hours
B. ----------------------------------- **- NOTE -** Only applicable in MODES 1, 2, 3, and 4. ----------------------------------- Water level at the intake structure above elevation 695 Mean Sea Level.	B.1 Confirm the actual Ohio River level is ≤ 700 Mean Sea Level. <u>AND</u> B.2 Verify the forecasted peak Ohio River level is ≤ 700 Mean Sea Level.	Immediately 2 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODES 1, 2, 3, and 4.	C.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.2.1	When the water level is < elevation 690 Mean Sea Level, verify water level at the intake structure.	24 hours
LRS 3.7.2.2	When the water level is ≥ elevation 690 Mean Sea Level, verify water level at the intake structure.	2 hours

3.7 PLANT SYSTEMS

3.7.3 Sealed Source Contamination

LR 3.7.3 Each sealed source containing radioactive material either in excess of 100 microcuries of beta and/or gamma-emitting material or 5 microcuries of alpha-emitting material shall be free of ≥ 0.005 microcuries of removable contamination.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Sealed source removable contamination in excess of the limit.	A.1 Withdraw the sealed source from use.	Immediately
	AND	
	A.2.1 Initiate action to decontaminate and repair the sealed source.	Immediately
	OR	
	A.2.2 Initiate action to dispose of the sealed source in accordance with Commission Regulations.	Immediately
B. Sealed source or fission detector leakage tests reveal the presence of ≥ 0.005 microcuries of removable contamination.	B.1 Prepare and submit a Special Report in accordance with 10 CFR 50.4.	On an annual basis

LICENSING REQUIREMENT SURVEILLANCES

- 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 an Agreement State.
2. The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample.
3. Startup sources and fission detectors previously subjected to core flux are excluded from the following test requirements.

SURVEILLANCE		FREQUENCY
LRS 3.7.3.1	For sealed sources in use containing radioactive materials with a half-life > 30 days (excluding Hydrogen 3) and in any form other than gas, verify removable contamination within the limit.	6 months
LRS 3.7.3.2	For stored sealed sources and fission detectors not in use, verify removable contamination within the limit.	Prior to use or transfer to another licensee unless tested within the previous 6 months
LRS 3.7.3.3	For sealed sources and fission detectors transferred without a certificate indicating the last test date, verify removable contamination within the limit.	Prior to use
LRS 3.7.3.4	For sealed startup sources and fission detectors, verify removable contamination within the limit.	31 days prior to being installed in the core or exposed to core flux <u>AND</u> Following repair or maintenance to the source

3.7 PLANT SYSTEMS

3.7.4 Snubbers

LR 3.7.4 All snubbers shall be FUNCTIONAL.

- NOTE -

Snubbers excluded from this LR are those installed on non-safety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

APPLICABILITY: MODES 1, 2, 3, and 4,
MODES 5 and 6 for snubbers located on systems required OPERABLE/ FUNCTIONAL in those MODES.

- NOTE -

The systems required in MODES 5 and 6 are defined as those portions or subsystems required to prevent releases in excess of 10 CFR 50.67 limits.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required snubbers Nonfunctional.	A.1 Replace or restore the Nonfunctional snubber(s) to FUNCTIONAL status.	In accordance with Table 3.7.4-1.
	<u>AND</u>	
	A.2.1 Perform an engineering evaluation per Paragraph ISTD-1800 of the ASME OM Code on the supported component.	In accordance with Table 3.7.4-1.
	<u>OR</u>	

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	A.2.2	Declare the supported system inoperable/ Nonfunctional (as applicable) and follow the appropriate ACTIONS for that system.	In accordance with Table 3.7.4-1.

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.4.1	Each snubber shall be demonstrated FUNCTIONAL in accordance with Subsection ISTD, “Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants,” ASME OM Code 2004 Edition up to and including the 2006 Addenda. Preservice and inservice examinations of snubbers shall be performed in accordance with ASME OM Code Subsection ISTD-4000. (Reference: Paragraph (b)(3)(v)(B) of 10 CFR 50.55a, “Codes and Standards.”)	In accordance with Subsection ISTD of the ASME OM Code 2004 Edition up to and including the 2006 Addenda. Inservice examination frequency may be extended in accordance with Code Case OMN-13, Rev. 0 (2004 Edition).

TABLE 3.7.4-1 (Page 1 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
CC-HSS-001A	6" CCR Supply line to RC-P-1B	Between TV-CC-103B1 & TV-CC-105B/CCR-290	Yes	12
CC-HSS-001B	6" CCR Supply line to RC-P-1B	Between TV-CC-103B1 & TV-CC-105B/CCR-290	Yes	12
CC-HSS-021A	4" CCR Supply line to RCP motor	Between TV-CC-105A & RC-P-1A	Yes	12
CC-HSS-021B	4" CCR Supply line to RCP motor	Between TV-CC-105A & RC-P-1A	Yes	12
CC-HSS-401	Suction to CCR pump 1C	Between CCR-309 & CCR-3	Yes	72
CC-HSS-402	Suction to CCR pump 1B	Between CCR-309 & CCR-1	Yes	72
CC-HSS-403	Suction to CCR pump 1A	Between CCR-309 & CCR-2	Yes	72
CC-HSS-404	CCR Discharge header	Between CCR pumps & CCR Hx's	Yes	12
CC-HSS-405	CCR Supply line to Non-regen. Hx	Between TV-CC-130 & CH-E-2	Yes	12
CC-HSS-406A	18" CCR Supply header to RHR	Between MOV-CC-112A2 & RH-E-1A	Yes	72
CC-HSS-406B	18" CCR Supply header to RHR	Between MOV-CC-112A2 & RH-E-1A	Yes	72
CC-HSS-407A	18" CCR Supply header to RHR	Between MOV-CC-112B2 & RH-E-1B	Yes	72
CC-HSS-407B	18" CCR Supply header to RHR	Between MOV-CC-112B2 & RH-E-1B	Yes	72
CC-HSS-408	18" CCR Supply header to RHR	Between MOV-CC-112B2 & RH-E-1B	Yes	72
CC-PSSP-300A	24" CCR Supply header to RHR	Between CCR-18 & CCR-247	Yes	12
CC-PSSP-300B	24" CCR Supply header to RHR	Between CCR-18 & CCR-247	Yes	12
CC-PSSP-301	24" CCR Supply header to RHR	Between CCR-18 & CCR-247/248	Yes	12
FC-HSS-201	Fuel Pool pump discharge to Hx	Between PC-110 & FC-E-1A	Yes	72

TABLE 3.7.4-1 (Page 2 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	**Plant Location**	**System Boundaries**	**LCO 3.0.8 Applies**	**Completion Time**
FC-HSS-5A	Fuel Pool pump discharge to Hx	Between PC-111 & FC-E-1B	Yes	72
PS-243-VS-1	Charging line to Loop 1	Valve support to MOV-RC-556A	Yes	72
PS-244-VS-1	Charging line to Loop 2	Valve support to MOV-RC-556B	Yes	72
PS-245-VS-1	Charging line to Loop 3	Valve support to MOV-RC-556C	Yes	72
QS-HSS-202	From QS-P-1B to Cnmt spray headers	Between MOV-QS-103B & MOV-QS-101B	No	
QS-HSS-205A	From QS-P-1A to Cnmt spray headers	Between MOV-QS-103A & MOV-QS-101A	No	
QS-HSS-205B	From QS-P-1A to Cnmt spray headers	Between MOV-QS-103A & MOV-QS-101A	No	
RC-HC-10B	Upper S/G Restraint	S/G RC-E-1B	No	
RC-HC-10C	Upper S/G Restraint	S/G RC-E-1C	No	
RC-HC-11A	Upper S/G Restraint	S/G RC-E-1A	No	
RC-HC-12C	Upper S/G Restraint	S/G RC-E-1C	No	
RC-HC-9A	Upper S/G Restraint	S/G RC-E-1A	No	
RC-HC-9B	Upper S/G Restraint	S/G RC-E-1B	No	
RC-HSS-1	4" PZR Spray line	Between Loop3 cold leg & PCV-RC-455B.	Yes	12
RC-HSS-101	8" Bypass line for Loop1	Valve support to MOV-RC-585	No	
RC-HSS-102	8" Bypass line for Loop1	Valve support to MOV-RC-585	No	
RC-HSS-103	8" Bypass line for Loop2	Valve support to MOV-RC-586	No	
RC-HSS-104	8" Bypass line for Loop2	Valve support to MOV-RC-586	No	
RC-HSS-105	8" Bypass line for Loop3	Valve support to MOV-RC-587	No	

TABLE 3.7.4-1 (Page 3 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
RC-HSS-106	8" Bypass line for Loop3	Valve support to MOV-RC-587	No	
RC-HSS-119	12" Line from PZR to PRT	Upstream of PRT in PRT Cub.	No	
RC-HSS-126	PZR Code Safety Valve discharge line	Downstream of RV-RC-551C	No	
RC-HSS-127	PZR Relief line from PORV	Downstream of PCV-RC-455D	No	
RC-HSS-130	8" Bypass line for Loop3	Support for vent RC-241	No	
RC-HSS-131	8" Bypass line for Loop3	Support for vent RC-241	No	
RC-HSS-2	4" PZR Spray line	Between Loop3 cold leg & PCV-RC-455B.	Yes	12
RC-HSS-23	4" PZR Spray line	Between PCV-RC-455A/B & PZR	Yes	12
RC-HSS-3	4" PZR Spray line	Between Loop3 cold leg & PCV-RC-455B.	Yes	12
RC-HSS-302	PZR Relief line to PORV	Between MOV-RC-536 & PCV-RC-456	No	
RC-HSS-303A	PZR Relief line from PORV	Downstream of PCV-RC-456	No	
RC-HSS-303B	PZR Relief line from PORV	Downstream of PCV-RC-456	No	
RC-HSS-4	4" PZR Spray line	Between Loop3 cold leg & PCV-RC-455B.	Yes	12
RC-HSS-41A	PZR Relief line to PORV	Between PZR & MOV-RC-537	No	
RC-HSS-42A-A	PZR Relief line to PORV	Between PZR & MOV-RC-536	No	
RC-HSS-42A-B	PZR Relief line to PORV	Between PZR & MOV-RC-536	No	
RC-HSS-44A	PZR Relief line from PORV	Downstream of PCV-RC-456	No	
RC-PSSP-115	12" Line from PZR to PRT	Downstream of PZR in PZR Cub.	No	
RC-PSSP-116	12" Line from PZR to PRT	Downstream of PZR in PZR Cub.	No	

TABLE 3.7.4-1 (Page 4 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	**Plant Location**	**System Boundaries**	**LCO 3.0.8 Applies**	**Completion Time**
RC-PSSP-122A	PZR Relief line to PORV	Between PZR & MOV-RC-537	No	
RC-PSSP-122B	PZR Relief line to PORV	Between PZR & MOV-RC-537	No	
RC-PSSP-128	12" Line from PZR to PRT	Upstream of PRT in PRT Cub.	No	
RC-PSSP-129	12" Line from PZR to PRT	Upstream of PRT in PRT Cub.	No	
RC-PSSP-20	12" Line from PZR to PRT	Upstream of PRT in PRT Cub.	No	
RC-PSSP-24A	PZR Code Safety Valve discharge line	Downstream of RV-RC-551A	No	
RC-PSSP-24B	PZR Code Safety Valve discharge line	Downstream of RV-RC-551A	No	
RC-PSSP-25A	PZR Code Safety Valve discharge line	Downstream of RV-RC-551B	No	
RC-PSSP-25B	PZR Code Safety Valve discharge line	Downstream of RV-RC-551B	No	
RC-PSSP-301	PZR Relief line to PORV	Between MOV-RC-535 & PCV-RC-455C	No	
RH-HSS-101	Downstream of RHR Hx's	Between MOV-RH-758 & MOV-RH-720A/B	Yes	12
RH-HSS-102	Downstream of RHR Hx's	Between MOV-RH-758 & MOV-RH-720A/B	Yes	12
RH-HSS-105	Downstream of MOV-RH-701	Between MOV-RH-701 & RHR Pumps	No	
RH-HSS-106	Upstream of MOV-RH-700	Between Loop1 Hot Leg & MOV-RH-700	No	
RH-HSS-107	Downstream of MOV-RH-701	Between MOV-RH-701 & RHR Pumps	No	
RH-HSS-108	Downstream of MOV-RH-701	Between MOV-RH-701 & RHR Pumps	No	
RH-HSS-109	Upstream of MOV-RH-700	Between Loop1 Hot Leg & MOV-RH-700	No	

TABLE 3.7.4-1 (Page 5 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
RH-HSS-110	Upstream of MOV-RH-700	Between Loop1 Hot Leg & MOV-RH-700	No	
RH-HSS-111	Downstream of MOV-RH-701	Between MOV-RH-701 & RHR Pumps	No	
RH-HSS-112	Upstream of MOV-RH-700	Between Loop1 Hot Leg & MOV-RH-700	No	
RH-HSS-113	Suction line to RHR Pump 1A	Between MOV-RH-701 & RH-P-1A	No	
RH-HSS-114	Suction line to RHR Pump 1B	Between MOV-RH-701 & RH-P-1B	No	
RH-HSS-121	At MOV-RH-720A	Upstream of MOV-RH-720A	Yes	72
RH-HSS-122	At MOV-RH-720A	Upstream of MOV-RH-720A	Yes	72
RH-HSS-123	At MOV-RH-720A	Downstream of MOV-RH-720A	Yes	72
RH-HSS-124	At MOV-RH-720A	Downstream of MOV-RH-720A	Yes	72
RH-HSS-203	6" line to QS-TK-1	Between containment penetration & RH-15	Yes	12
RH-HSS-204A	6" line to QS-TK-1	Between containment penetration & RH-15	Yes	12
RH-HSS-204B	6" line to QS-TK-1	Between containment penetration & RH-15	Yes	12
RH-HSS-402	6" line to QS-TK-1	Between RH-14 & containment penetration	Yes	12
RH-HSS-403	6" line to QS-TK-1	Between RH-14 & containment penetration	Yes	12
RS-HSS-201	10" Supply line to RS Hx 1A	Between RS-P-1A & RS-E-1A	No	
RS-HSS-202	10" Supply line to RS Hx 1A	Between RS-P-1A & RS-E-1A	No	
RS-HSS-209A	10" Supply line to RS Hx 1D	Between RS-P-2B & MOV-RS-156B	No	
RS-HSS-210A	10" Supply line to RS Hx 1C	Between RS-P-2A & MOV-RS-156A	No	
RS-HSS-219	From RS Hx 1D to Cnmt spray header	Between RS-E-1D & Cnmt spray header	No	

TABLE 3.7.4-1 (Page 6 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
RS-HSS-220	From RS Hx 1D to Cnmt spray header	Between RS-E-1D & Cnmt spray header	No	
RS-HSS-221	From RS Hx 1D to Cnmt spray header	Between RS-E-1D & Cnmt spray header	No	
RS-HSS-229	10" Supply line to RS Hx 1B	Between RS-P-1B & RS-E-1B	No	
RS-HSS-234	4" Cross connect for RS-P-1A & 1B	Between RS-102 & RS-103	No	
RS-HSS-237	10" Supply line to RS Hx 1A	Between RS-P-1A & RS-E-1A	No	
RS-HSS-238	10" Supply line to RS Hx 1A	Between RS-P-1A & RS-E-1A	No	
SHP-HSS-201	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-202	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-203	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-204	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-205	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-206	32" MS line from Stm Gen 1A	Between RC-E-1A & Cnmt Pen #73	No	
SHP-HSS-207	32" MS line from Stm Gen 1B	Between RC-E-1B & Cnmt Pen #74	No	
SHP-HSS-208	32" MS line from Stm Gen 1B	Between RC-E-1B & Cnmt Pen #74	No	
SHP-HSS-209	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SHP-HSS-210	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SHP-HSS-211	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SHP-HSS-212	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SHP-HSS-213	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	

TABLE 3.7.4-1 (Page 7 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	**Plant Location**	**System Boundaries**	**LCO 3.0.8 Applies**	**Completion Time**
SHP-HSS-214	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SHP-HSS-214A	32" MS line from Stm Gen 1C	Between RC-E-1C & Cnmt Pen #75	No	
SI-HSS-114A	SI-TK-1C discharge	Between SI-50 & SI-53	No	
SI-HSS-114B	SI-TK-1C discharge	Between SI-50 & SI-53	No	
SI-HSS-212A	Low Head SI to Cold Legs	Between MOV-SI-864A/B & MOV-SI-890C	No	
SI-HSS-212B	Low Head SI to Cold Legs	Between MOV-SI-864A/B & MOV-SI-890C	No	
SI-HSS-409	Low Head SI to Loop2 cold leg	Between MOV-SI-890C & SI-11	Yes	12
SI-HSS-410	Low Head SI to Loop1 cold leg	Between MOV-SI-890C & SI-12	Yes	12
SI-HSS-411	Low Head SI to Loop1 cold leg	Between MOV-SI-890C & SI-12	Yes	12
SI-HSS-412	Low Head SI to Loop1 cold leg	Between SI-12 & SI-23	Yes	72
SI-HSS-413	Low Head SI to Loop1 cold leg	Between SI-12 & SI-23	Yes	72
SI-HSS-414	Low Head SI to Loop1 cold leg	Between SI-12 & SI-23	Yes	72
SI-HSS-415	Low Head SI to Loop1 cold leg	Between SI-12 & SI-23	Yes	72
SI-HSS-416	Low Head SI to Loop2 cold leg	Between SI-11 & SI-24	Yes	72
SI-HSS-417	Low Head SI to Loop2 cold leg	Between SI-11 & SI-24	Yes	72
SI-HSS-418	Low Head SI to Loop2 cold leg	Between SI-11 & SI-24	Yes	72
SI-HSS-419	Low Head SI to Loop2 cold leg	Between SI-11 & SI-24	Yes	72
SI-HSS-420	Low Head SI to Loop3 cold leg	Between SI-10 & SI-25	Yes	12

TABLE 3.7.4-1 (Page 8 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
SI-HSS-421	Low Head SI to Loop3 cold leg	Between SI-10 & SI-25	Yes	12
SI-HSS-422	Low Head SI to Loop3 cold leg	Between SI-10 & SI-25	Yes	12
SI-HSS-423	Low Head SI to Loop3 cold leg	Between SI-10 & SI-25	Yes	12
SI-HSS-511	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-512	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-512A	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-514	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-515	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-516A	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-516B	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	72
SI-HSS-517	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	72
SI-HSS-518	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	72
SI-HSS-519	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	72
SI-HSS-520	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	72
SI-HSS-521	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	72
SI-HSS-522	From SI-P-1A to Charging Pumps	Between MOV-SI-863A & CH-146/147/148	Yes	12
SI-HSS-523A	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	12
SI-HSS-523B	From SI-P-1B to Charging Pumps	Between MOV-SI-863B & CH-19, 20, 21	Yes	12
SI-PSSP-002	From RS pump to Charging pumps	Between RS-P-2B & RS-159	No	

TABLE 3.7.4-1 (Page 9 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	**Plant Location**	**System Boundaries**	**LCO 3.0.8 Applies**	**Completion Time**
SI-PSSP-003	From RS pump to Charging pumps	Between RS-P-2B & RS-159	No	
SI-PSSP-009	From RS pump to Charging pumps	Between RS-P-2A & RS-157	No	
SI-PSSP-010	From RS pump to Charging pumps	Between RS-P-2A & RS-157	No	
SI-PSSP-033A	From SI-P-1B to Charging Pumps	Between SI-7 & MOV-SI-863B	No	
SI-PSSP-036A	From SI-P-1A to Charging Pumps	Between SI-6 & MOV-SI-863A	No	
SI-PSSP-060D	Low Head SI Pump discharge line	Between SI-P-1A & SI-6	No	
SI-PSSP-067C	Low Head SI Pump discharge line	Between SI-P-1B & SI-7	No	
SI-PSSP-337	Low Head SI to Loop1 cold leg	Between MOV-SI-890C & SI-12	Yes	12
VS-357-1	Drain line from Loop 1	Valve support to MOV-RC-557A	Yes	72
VS-358-1	Drain line from Loop 2	Valve support to MOV-RC-557B	Yes	72
VS-359-1	Drain line from Loop 3	Valve support to MOV-RC-557C	Yes	72
WFPD-HSS-201	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-202	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-203	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-204	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-205	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-206	16" FW supply line to Stm Gen 1A	Between Penetration X-76 & RC-E-1A	No	
WFPD-HSS-207	16" FW supply line to Stm Gen 1B	Between Penetration X-77 & RC-E-1B	No	

TABLE 3.7.4-1 (Page 10 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
WFPD-HSS-208	16" FW supply line to Stm Gen 1B	Between Penetration X-77 & RC-E-1B	No	
WFPD-HSS-208A	16" FW supply line to Stm Gen 1B	Between Penetration X-77 & RC-E-1B	No	
WFPD-HSS-209	16" FW supply line to Stm Gen 1C	Between Penetration X-78 & RC-E-1C	No	
WFPD-HSS-210	16" FW supply line to Stm Gen 1C	Between Penetration X-78 & RC-E-1C	No	
WFPD-HSS-211	16" FW supply line to Stm Gen 1C	Between Penetration X-78 & RC-E-1C	No	
WFPD-HSS-212	16" FW supply line to Stm Gen 1C	Between Penetration X-78 & RC-E-1C	No	
WFPD-HSS-212A	16" FW supply line to Stm Gen 1C	Between Penetration X-78 & RC-E-1C	No	
WFPD-HSS-228	16" FW supply line to Stm Gen 1A	Between FW-25 & FW-156A	No	
WFPD-HSS-229	16" FW supply line to Stm Gen 1B	Between FW-26 & FW-156B	No	
WFPD-HSS-230	16" FW supply line to Stm Gen 1C	Between FW-27 & FW-156C	No	
WFPD-HSS-231	16" FW supply line to Stm Gen 1C	Between FW-27 & FW-156C	No	
WFPD-HSS-232	16" FW supply line to Stm Gen 1B	Between FW-26 & FW-156B	No	
WFPD-HSS-233	16" FW supply line to Stm Gen 1A	Between FW-25 & FW-156A	No	
WGCB-H-47A	S/G Blowdown from S/G 1A	Between TV-BD-101A2 & BD-1	No	
WGCB-PSSP-101	S/G Blowdown from S/G 1C	Between TV-BD-101C2 & BD-3	No	
WGCB-PSSP-200A	S/G Blowdown from S/G 1B	Valve support to TV-BD-101B2	No	
WGCB-PSSP-200B	S/G Blowdown from S/G 1B	Valve support to TV-BD-101B2	No	
WGCB-PSSP-200C	S/G Blowdown from S/G 1B	Valve support to TV-BD-101B1	No	
WGCB-PSSP-200D	S/G Blowdown from S/G 1B	Valve support to TV-BD-101B1	No	

TABLE 3.7.4-1 (Page 11 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
WGCB-PSSP-46E	S/G Blowdown from S/G 1A	Valve support to TV-BD-101A1	No	
WGCB-PSSP-46F	S/G Blowdown from S/G 1A	Valve support to TV-BD-101A1	No	
WGCB-PSSP-46G	S/G Blowdown from S/G 1A	Valve support to TV-BD-101A2	No	
WGCB-PSSP-46H	S/G Blowdown from S/G 1A	Valve support to TV-BD-101A2	No	
WGCB-PSSP-55E	S/G Blowdown from S/G 1C	Valve support to TV-BD-101C1	No	
WGCB-PSSP-55F	S/G Blowdown from S/G 1C	Valve support to TV-BD-101C1	No	
WGCB-PSSP-55G	S/G Blowdown from S/G 1C	Valve support to TV-BD-101C2	No	
WGCB-PSSP-55H	S/G Blowdown from S/G 1C	Valve support to TV-BD-101C2	No	
WR-HSS-300	"B" RW supply header to RS Hx's	Between RW-109 & MOV-RW-104B/D	Yes	12
WR-HSS-301	"B" RW supply header to RS Hx's	Between MOV-RW-103C/D & RW-109	Yes	12
WR-HSS-302	"B" RW supply header to RS Hx's	Between MOV-RW-103C/D & RW-109	Yes	12
WR-HSS-303A	"B" RW supply header to RS Hx's	Between MOV-RW-103C/D & RW-109	Yes	12
WR-HSS-303B	"B" RW supply header to RS Hx's	Between MOV-RW-103C/D & RW-109	Yes	12
WR-HSS-304A	30" RW return line in Safegds 722' el	Next to REJ-RW-26R1	Yes	12
WR-HSS-304B	30" RW return line in Safegds 722' el	Next to REJ-RW-26R1	Yes	12
WR-HSS-306	24" RW return line from RS Hx's	Between Hx's & RW-197/198	Yes	12
WR-HSS-307	24" RW return line from RS Hx's	Just upstream of RW-197/198	Yes	12
WR-HSS-308	"A" RW supply header to RS Hx	Between RW-108 & MOV-RW-104A/C	Yes	12

TABLE 3.7.4-1 (Page 12 of 12)
SNUBBERS AND ASSOCIATED COMPLETION TIMES (HOURS)

Functional Location	Plant Location	System Boundaries	LCO 3.0.8 Applies	Completion Time
WR-HSS-309	"A" RW supply header to RS Hx	Between RW-108 & MOV-RW-104A/C	Yes	12
WR-HSS-311	"B" RW supply header to CCR Hx's	Between MOV-RW-114B & RW-184/187	Yes	12
WR-HSS-312	"B" RW supply header to CCR Hx's	Between MOV-RW-114B & RW-184/187	Yes	12
WR-HSS-313	"A" RW supply header to CCR Hx's	Between MOV-RW-114A & MOV-RW-106A	Yes	12
WR-HSS-316	24" RW return line from RS Hx's	Just downstream of RW-197/198	Yes	12

3.7 PLANT SYSTEMS

3.7.5 Auxiliary River Water System (ARWS)

LR 3.7.5 At least one of the two auxiliary river water subsystems shall be FUNCTIONAL.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ARWS subsystem Nonfunctional.	A.1 Restore at least one subsystem to FUNCTIONAL status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.5.1	Verify that the required ARWS pump develops at least 60 psig discharge pressure, while pumping through its test flow line.	92 days
LRS 3.7.5.2	Start the required ARWS pump, shut down one Reactor Plant River Water System Pump, and verify that the ARWS subsystem provides at least 8000 gpm cooling water to that portion of the Reactor Plant River Water System under test for at least 2 hours.	18 months on a STAGGERED TEST BASIS

3.7 PLANT SYSTEMS

3.7.6 Explosive Gas Mixture

LR 3.7.6 The concentration of oxygen in the waste gas holdup system shall be limited to ≤ 2% by volume whenever the hydrogen concentration is > 4% by volume.

- NOTE -

The requirements of LR 3.7.6 are part of the Technical Specification 5.5.8, "Explosive Gas and Storage Tank Radioactivity Monitoring Program."

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of oxygen in the waste gas holdup system > 2% by volume but ≤ 4% by volume.	A.1 Suspend all additions of waste gases to the gaseous waste decay tank.	Immediately
	<u>AND</u>	
	A.2 Reduce the concentration of oxygen to ≤ 2% by volume.	48 hours
B. Concentration of oxygen in the waste gas holdup system > 4% by volume and the hydrogen concentration > 4% by volume.	B.1 Suspend all additions of waste gases to the affected tank.	Immediately
	<u>AND</u>	
	B.2 Reduce the concentration of oxygen to ≤ 4% by volume.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.6.1	The concentrations of oxygen in the waste gas holdup system shall be determined to be within the above limits by continuously monitoring the waste gases in the waste gas holdup system with the oxygen monitors required OPERABLE by LR 3.3.12 or monitoring in conjunction with its associated ACTIONS.	In accordance with LR 3.3.12

3.7 PLANT SYSTEMS

3.7.7 Supplemental Leak Collection and Release System (SLCRS)

LR 3.7.7 Two SLCRS exhaust air filter trains shall be FUNCTIONAL.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SLCRS exhaust air filter train Nonfunctional.	A.1 Restore the Nonfunctional train to FUNCTIONAL status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.7.7.1	Initiate, from the control room, flow through the HEPA filter and charcoal adsorber train and verify that the train operates for at least 15 minutes.	15.5 days on a STAGGERED TEST BASIS

LICENSING REQUIREMENT SURVEILLANCES (continued)

SURVEILLANCE		FREQUENCY
LRS 3.7.7.2	Each SLCRS exhaust air filter train shall be demonstrated FUNCTIONAL: a. By verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 36,000 cfm ± 10%. b. By verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 36,000 cfm ± 10%. c. By subjecting the carbon contained in at least one test canister or at least two carbon samples removed from one of the charcoal adsorbers to a laboratory carbon sample analysis and verifying a removal efficiency of ≥ 90% for radioactive methyl iodide at an air flow velocity of 0.9 ft/sec with an inlet methyl iodide concentration of 1.75 mg/m^3, ≥ 95% relative humidity, and 30°C; other test conditions including test parameter tolerances shall be in accordance with ASTM D3803-1989. The carbon samples not obtained from test canisters shall be prepared by either: 1) Emptying one entire bed from a removed adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, or 2) Emptying a longitudinal sample from an adsorber tray, mixing the adsorbent thoroughly, and obtaining samples at least two inches in diameter and with a length equal to the thickness of the bed, d. By verifying a system flow rate of 36,000 cfm ± 10% during system operation.	18 months or after every 720 hours of system operation <u>AND</u> After each complete or partial replacement of a HEPA filter or charcoal adsorber bank <u>AND</u> After any structural maintenance on the HEPA filter or charcoal adsorber housings <u>AND</u> Following painting, fire or chemical release in any ventilation zone communicating with the system

LICENSING REQUIREMENT SURVEILLANCES (continued)

SURVEILLANCE		FREQUENCY
LRS 3.7.7.3	Each SLCRS exhaust air filter train shall be demonstrated FUNCTIONAL:	
	a. By verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 6 inches Water Gauge while operating the ventilation system at a flow rate of 36,000 cfm ± 10%.	18 months
	b. By verifying that the SLCRS flow is diverted through the filter train on a Containment Isolation - Phase "A" signal.	18 months on a STAGGERED TEST BASIS
LRS 3.7.7.4	Verify that the air flow distribution to each HEPA filter and charcoal adsorber is within ± 20% of the averaged flow per unit.	After initial installation <u>AND</u> After any maintenance affecting the flow distribution

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 125V D.C. Battery Bank Maintenance Requirements

LR 3.8.1 The 125V D.C. battery banks (1-1, 1-2, 1-3, & 1-4) shall be maintained in accordance with LRS 3.8.1.1 and LRS 3.8.1.2.

APPLICABILITY: When the battery bank(s) are required to be OPERABLE in accordance with the Technical Specifications.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.8.1.1	Verify no visible corrosion at either terminals or connectors, or the connection resistance of these items are within design specifications.	Once per 92 days <u>AND</u> Within 7 days after a battery discharge with battery terminal voltage below 110V, or battery overcharge with battery terminal voltage above 150V
LRS 3.8.1.2	Verify the following: a. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration, b. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material, and c. The resistance of cell-to-cell and terminal connections are within design specifications.	18 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 Emergency Diesel Generator (EDG) 2000 Hour Rating Limit

LR 3.8.2 The auto-connected loads to each EDG shall not exceed the 2000 hour rating limit of 2,850 kw.

APPLICABILITY: When the EDG is required to be OPERABLE in accordance with the Technical Specifications.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Apply LR 3.0.3.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.8.2.1	Verify that the auto-connected loads to each EDG do not exceed the 2000 hour rating.	18 months during shutdown

3.9 REFUELING OPERATIONS

3.9.1 Crane Travel - Spent Fuel Storage Pool Building

LR 3.9.1 Loads in excess of 2450 pounds shall be prohibited from travel over fuel assemblies in the storage pool except when single failure proof crane (1CR-15) and single failure proof rigging are being utilized for load movement.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LR not met.	A.1 Place the crane load in a safe condition.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.9.1.1	-- **- NOTE -** Not required to be met when utilizing single failure proof crane (1CR-15) and single failure proof rigging for load movement. -- Crane interlocks and physical stops which prevent crane travel with loads in excess of 2450 pounds over fuel assemblies shall be demonstrated FUNCTIONAL.	30 days prior to crane use whenever the crane has been idle for more than 30 days

3.9 REFUELING OPERATIONS

3.9.2 Manipulator Crane

LR 3.9.2 The manipulator crane and auxiliary hoist shall be used for movement of control rods or fuel assemblies and shall be FUNCTIONAL with:

a. The manipulator crane used for movement of fuel assemblies having:

   1. A minimum capacity of 3250 pounds, and

   2. An overload cut off limit $\leq$ 2850 pounds.

b. The auxiliary hoist used for movement of control rods having:

   1. A minimum capacity of 700 pounds, and

   2. A load indicator which shall be used to prevent lifting loads in excess of 600 pounds.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements for crane and/or hoist FUNCTIONALITY not met.	A.1 Suspend use of any Nonfunctional manipulator crane and/or auxiliary hoist from operations involving the movement of control rods and fuel assemblies within the reactor pressure vessel.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.9.2.1	Each manipulator crane used for movement of fuel assemblies within the reactor pressure vessel shall be demonstrated FUNCTIONAL by performing a load test of at least 3250 pounds and demonstrating an automatic load cut off when the crane load exceeds 2850 pounds.	Within 30 days prior to manipulator crane use when crane has been idle for more than 30 days
LRS 3.9.2.2	Each auxiliary hoist and associated load indicator used for movement of control rods within the reactor pressure vessel shall be demonstrated FUNCTIONAL by performing a load test of at least 700 pounds.	Within 30 days prior to auxiliary hoist use when the hoist has been idle for more than 30 days

3.9 REFUELING OPERATIONS

3.9.3 Decay Time

LR 3.9.3 The reactor shall be subcritical for at least 100 hours.

APPLICABILITY: During movement of irradiated fuel assemblies in the reactor pressure vessel.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor subcritical for less than 100 hours.	A.1 Suspend all operations involving movement of irradiated fuel assemblies in the reactor pressure vessel.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.9.3.1	The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality.	Prior to movement of irradiated fuel assemblies in the reactor pressure vessel

3.9 REFUELING OPERATIONS

3.9.4 Containment Purge and Exhaust Isolation System

LR 3.9.4 The Containment Purge and Exhaust isolation system shall be FUNCTIONAL.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment Purge and Exhaust isolation system Nonfunctional.	A.1 Close each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere.	Immediately

LICENSING REQUIREMENT SURVEILLANCES

SURVEILLANCE		FREQUENCY
LRS 3.9.4.1	The Containment Purge and Exhaust isolation system shall be demonstrated FUNCTIONAL by verifying that containment Purge and Exhaust isolation occurs on manual initiation and on a high-high radiation signal from each of the containment radiation monitoring instrumentation channels and the isolation time of each system isolation valve is within limits.	7 days

5.0 ADMINISTRATIVE CONTROLS

5.1 Core Operating Limits Report

This Core Operating Limits Report provides the cycle specific parameter limits developed in accordance with the NRC approved methodologies specified in Technical Specification Administrative Control 5.6.3.

5.1.1 SL 2.1.1 Reactor Core Safety Limits

See Figure 5.1-1.

5.1.2 SHUTDOWN MARGIN (SDM)

a. In MODES 1, 2, 3, and 4, SHUTDOWN MARGIN shall be ≥ 1.77% Δk/k.(1)

b. Prior to manually blocking the Low Pressurizer Pressure Safety Injection Signal, the Reactor Coolant System shall be borated to ≥ the MODE 5 boron concentration and shall remain ≥ this boron concentration at all times when this signal is blocked.

c. In MODE 5, SHUTDOWN MARGIN shall be ≥ 1.0% Δk/k.

5.1.3 LCO 3.1.3 Moderator Temperature Coefficient (MTC)

a. Upper Limit - MTC shall be maintained within the acceptable operation limit specified in Technical Specification Figure 3.1.3-1.

b. Lower Limit - MTC shall be maintained less negative than - 4.4 x 10^{-4} Δk/k/°F at RATED THERMAL POWER.

c. 300 ppm Surveillance Limit: (- 37 pcm/°F)

d. The revised predicted near-EOL 300 ppm MTC shall be calculated using Figure 5.1-5 and the following algorithm from Reference 11 :

Revised Predicted MTC = Predicted MTC* + AFD Correction** + Predictive Correction***

where,

* Predicted MTC is calculated from Figure 5.1-5 at the burnup corresponding to the measurement of 300 ppm at RTP conditions,

** AFD Correction is the more negative value of :

{0 pcm/°F or (ΔAFD * AFD Sensitivity)}

where: ΔAFD is the measured AFD minus the predicted AFD from an incore flux map taken at or near the burnup corresponding to 300 ppm.

and

AFD Sensitivity = 0.10 pcm/°F / ΔAFD

***Predictive Correction is -3 pcm/°F.

---

(1) The MODE 1 and MODE 2 with k_{eff} ≥ 1.0 SDM requirements are included to address SDM requirements (e.g., MODE 1 Required Actions to verify SDM) that are not within the applicability of LCO 3.1.1, SHUTDOWN MARGIN (SDM).

5.1 Core Operating Limits Report

If the revised predicted MTC is less negative than the SR 3.1.3.2 limit (COLR 5.1.3.c) and all of the benchmark data contained in the surveillance procedure are met, then an MTC measurement, in accordance with SR 3.1.3.2, is not required.

e. 60 ppm Surveillance Limit: (- 42.5 pcm/°F)

5.1.4 LCO 3.1.5 Shutdown Bank Insertion Limits

The Shutdown Banks shall be withdrawn to at least 225 steps.(2)

5.1.5 LCO 3.1.6 Control Bank Insertion Limits

a. Control Banks A and B shall be withdrawn to at least 225 steps.(2)

b. Control Banks C and D shall be limited in physical insertion as shown in Figure 5.1-2.(2)

c. Sequence Limits - The sequence of withdrawal shall be A, B, C and D bank, in that order.

d. Overlap Limits(2) - Overlap shall be such that step 129 on banks A, B, and C corresponds to step 1 on the following bank. When C bank is fully withdrawn, these limits are verified by confirming D bank is withdrawn at least to a position equal to the all-rods-out position minus 128 steps.

5.1.6 LCO 3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$)

The Heat Flux Hot Channel Factor - $F_Q(Z)$ limit is defined by:

$$F_Q(Z) \le \left[\frac{CFQ}{P}\right] * K(Z) \qquad \text{for } P > 0.5$$

$$F_Q(Z) \le \left[\frac{CFQ}{0.5}\right] * K(Z) \qquad \text{for } P \le 0.5$$

Where: CFQ = 2.40 $\qquad P = \dfrac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$

K(Z) = the function obtained from Figure 5.1-3.

$$F_Q^C(Z) = F_Q^M(Z) * 1.0815^{\$}$$

$$F_Q^W(Z) = [F_{XY}(Z)]_{Surv}^M * \frac{[T(Z)]^{COLR}}{P} * A_{XY}(Z) * [R_j]^{COLR} \times 1.0815^{\$} \text{ for } P > 0.5$$

$$F_Q^W(Z) = [F_{XY}(Z)]_{Surv}^M * \frac{[T(Z)]^{COLR}}{0.5} * A_{XY}(Z) * [R_j]^{COLR} \times 1.0815^{\$} \text{ for } P \le 0.5$$

(2) As indicated by the group demand counter

$ An additional uncertainty is to be applied if the number of measured thimbles for the moveable incore detector system is less than 75% of the total number of thimbles. If there are less than 75% of the total number of thimbles and at least 50% of the total number of thimbles measured, an additional uncertainty of (0.01)*(3-T/12.5) is added to the measurement uncertainty, 1.05, where T is the total number of measured thimbles. This adjusted measurement uncertainty is then multiplied by 1.03 to obtain the total uncertainty to be applied. At least three measured thimbles per core quadrant are also required.

5.1 Core Operating Limits Report

$[F_{XY}(Z)]^{M}_{Surv}$ is the measured planar radial peaking factor and is equal to the value of $F^{M}_{Q}(Z)/P^{M}(Z)$, where $P^{M}(Z)$ is the measured core average axial power shape.

The T(Z) values in Tables 5.1-1 and 5.1-2 were generated assuming that they will be used for a full power surveillance, applicable to RAOC Operating Space (ROS) #1 and #2, respectively. The R_j values in Table 5.1-3 and 5.1-4 were generated to account for the increase in F_Q between surveillances, applicable to ROS #1 and #2, respectively. The $A_{XY}(Z)$ factors adjust the surveillance to the reference conditions assumed in generating the T(Z) factors. $A_{XY}(Z)$ may be assumed to equal 1.0 or may be determined for specific surveillance conditions using the approved methods listed in TS 5.6.3.

Either ROS1 or ROS2 may be implemented at any time during operation.

If ROS1 is implemented and entering LCO 3.2.1 Condition B for $F^{W}_{Q}(Z)$ not within limits, EITHER take Action B.1.1 and implement ROS2, OR take Action B.2.1 by using Table 5.1-5 to determine required THERMAL POWER and AFD limits based on Required $F^{W}_{Q}(Z)$ margin improvement.

If ROS2 is implemented and entering LCO 3.2.1 Condition B for $F^{W}_{Q}(Z)$ not within limits, take Action B.2.1 by using Table 5.1-5 to determine required THERMAL POWER and AFD limits based on Required $F^{W}_{Q}(Z)$ margin improvement.

5.1.7 LCO 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^{N}_{\Delta H}$)

$F^{N}_{\Delta H} \leq CF_{\Delta H} * (1 + PF_{\Delta H} (1-P))$ $

Where: $CF_{\Delta H}$ = Value listed in Table 5.1-6

$PF_{\Delta H}$ = 0.3

$$P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$$

5.1.8 LCO 3.2.3 Axial Flux Difference (AFD)

The AFD acceptable operation limits for both ROS1 and ROS2 are provided in Figure 5.1-4.

$ An additional uncertainty is to be applied if the number of measured thimbles for the moveable incore detector system is less than 75% of the total number of thimbles. If there are less than 75% of the total number of thimbles and at least 50% of the total number of thimbles measured, an additional uncertainty of (0.01)*(3-T/12.5) is added to the standard uncertainty on $F^{N}\Delta H$ of 1.04, where T is the total number of measured thimbles. At least three measured thimbles per core quadrant are also required.

5.1 Core Operating Limits Report

5.1.9 LCO 3.3.1 Reactor Trip System Instrumentation - Overtemperature and Overpower ΔT Parameter Values from Table Notations 1 and 2

a. Overtemperature ΔT Setpoint Parameter Values:

Parameter	Value
Overtemperature ΔT reactor trip setpoint	$K1 \leq 1.242$
Overtemperature ΔT reactor trip setpoint Tavg coefficient	$K2 \geq 0.0183/°F$
Overtemperature ΔT reactor trip setpoint pressure coefficient	$K3 \geq 0.001/psia$
Tavg at RATED THERMAL POWER	$T' \leq 577.9°F$ (1)
Nominal pressurizer pressure	$P' \geq 2250$ psia
Measured reactor vessel average temperature lead/lag time constants	$\tau_1 \geq 30$ secs $\tau_2 \leq 4$ secs
Measured reactor vessel ΔT lag time constant	$\tau_4 \leq 6$ secs
Measured reactor vessel average temperature lag time constant	$\tau_5 \leq 2$ secs

f (ΔI) is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

(i) For $q_t - q_b$ between -37% and +15%, f(ΔI) = 0 (where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER).

(ii) For each percent that the magnitude of $(q_t - q_b)$ exceeds -37%, the ΔT trip setpoint shall be automatically reduced by 2.52% of its value at RATED THERMAL POWER.

(iii) For each percent that the magnitude of $(q_t - q_b)$ exceeds +15%, the ΔT trip setpoint shall be automatically reduced by 1.47% of its value at RATED THERMAL POWER.

(1) T' represents the cycle-specific Full Power Tavg value used in core design.

5.1 Core Operating Limits Report

b. Overpower ΔT Setpoint Parameter Values:

Parameter	Value
Overpower ΔT reactor trip setpoint	K4 ≤ 1.085
Overpower ΔT reactor trip setpoint Tavg rate/lag coefficient	K5 ≥ 0.02/°F for increasing average temperature K5 = 0/°F for decreasing average temperature
Overpower ΔT reactor trip setpoint Tavg heatup coefficient	K6 ≥ 0.0021/°F for T > T" K6 = 0/°F for T ≤ T"
Tavg at RATED THERMAL POWER	T" ≤ 577.9°F[(1)]
Measured reactor vessel average temperature rate/lag time constant	τ_3 ≥ 10 secs
Measured reactor vessel ΔT lag time constant	τ_4 ≤ 6 secs
Measured reactor vessel average temperature lag time constant	τ_5 ≤ 2 secs

(1) T" represents the cycle-specific Full Power Tavg value used in core design.

5.1 Core Operating Limits Report

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

Parameter	Indicated Value
Reactor Coolant System Tavg	Tavg ≤ 581.5°F(1)
Pressurizer Pressure	Pressure ≥ 2218 psia(2)
Reactor Coolant System Total Flow Rate	Flow ≥ Value listed in Table 5.1-6(3)

5.1.11 LCO 3.9.1 Boron Concentration (MODE 6)

The boron concentration of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained ≥ 2400 ppm. This value includes a 50 ppm conservative allowance for uncertainties.

(1) The Reactor Coolant System (RCS) indicated T_{avg} value is determined by adding the appropriate allowances for rod control operation and verification via control board indication (3.6°F) to the cycle specific full power T_{avg} used in the core design.

(2) The pressurizer pressure value includes allowances for pressurizer pressure control operation and verification via control board indication.

(3) The RCS total flow rate includes allowances for normalization of the cold leg elbow taps with a beginning of cycle precision RCS flow calorimetric measurement and verification on a periodic basis via control board indication.

5.1 Core Operating Limits Report

5.1.12 References

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," July 1985 (Westinghouse Proprietary).

2. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature ΔT Trip Functions," September 1986.

3. WCAP-12945-P-A, Volume 1 (Revision 2) and Volumes 2 through 5 (Revision 1), "Code Qualification Document for Best Estimate LOCA Analysis," March 1998 (Westinghouse Proprietary).

4. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control-F_Q Surveillance Technical Specification," February 1994.

5. WCAP-14565-P-A, "VIPRE-01 Modeling and Qualification for Pressurized Water Reactor Non-LOCA Thermal-Hydraulic Safety Analysis," October 1999.

6. WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).

7. WCAP-15025-P-A, "Modified WRB-2 Correlation, WRB-2M, for Predicting Critical Heat Flux in 17x17 Rod Bundles with Modified LPD Mixing Vane Grids," April 1999.

8. Caldon, Inc. Engineering Report-80P, "Improving Thermal Power Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM√™ System," Revision 0, March 1997.

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10. WCAP-16009-P-A, "Realistic Large Break LOCA Evaluation Methodology Using Automated Statistical Treatment of Uncertainty Method (ASTRUM)," Revision 0, January 2005.

11. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997 (Westinghouse Proprietary).

12. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON," August 2004.

13. WCAP-16045-P-A, Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," August 2007.

14. WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006.

15. WCAP-17661-P-A, Revision 1, "Improved RAOC and CAOC F_Q Surveillance Technical Specifications", February 2019

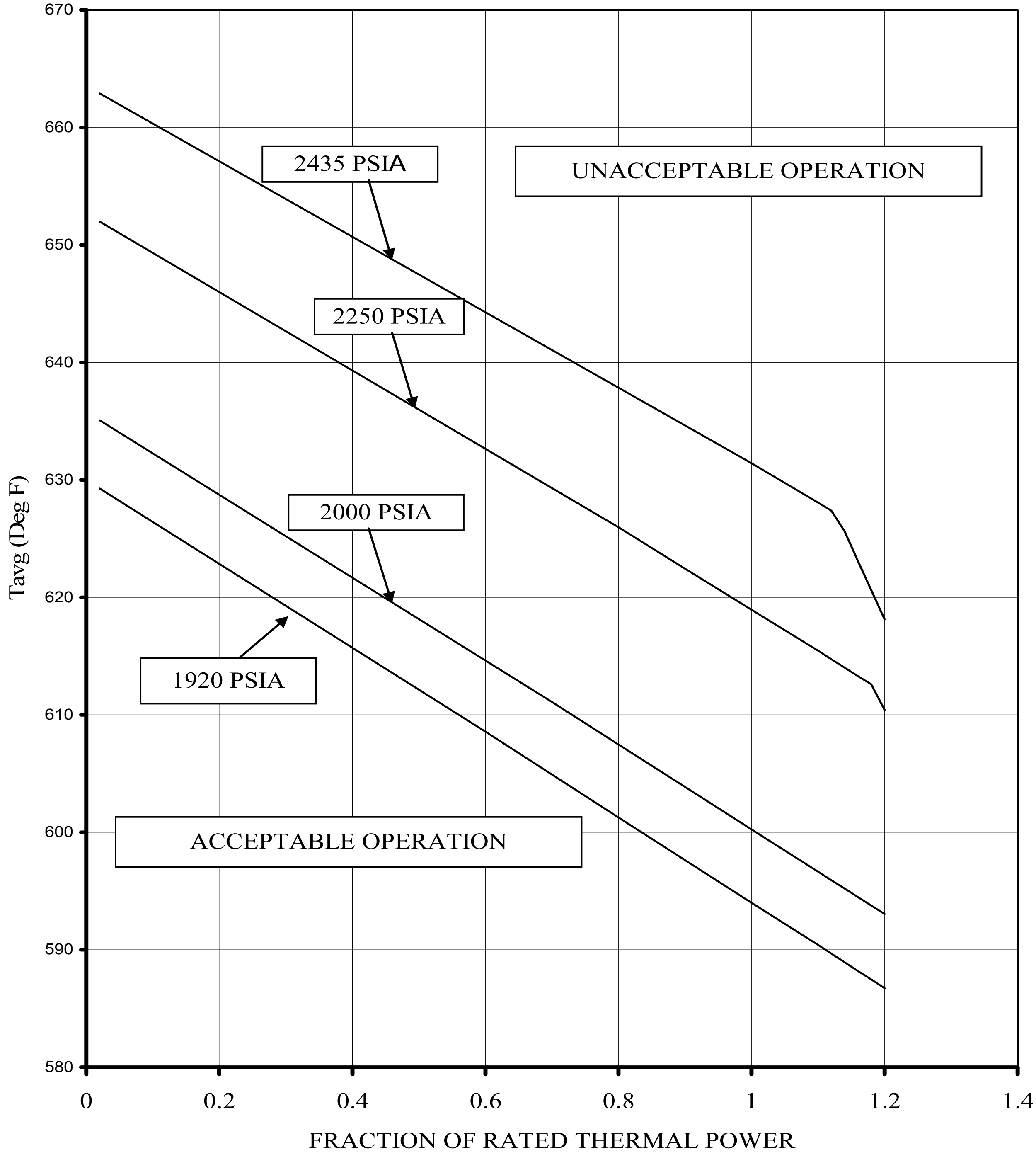


Figure 5.1-1 (Page 1 of 1)

REACTOR CORE SAFETY LIMIT
THREE LOOP OPERATION
(Technical Specification Safety Limit 2.1.1)

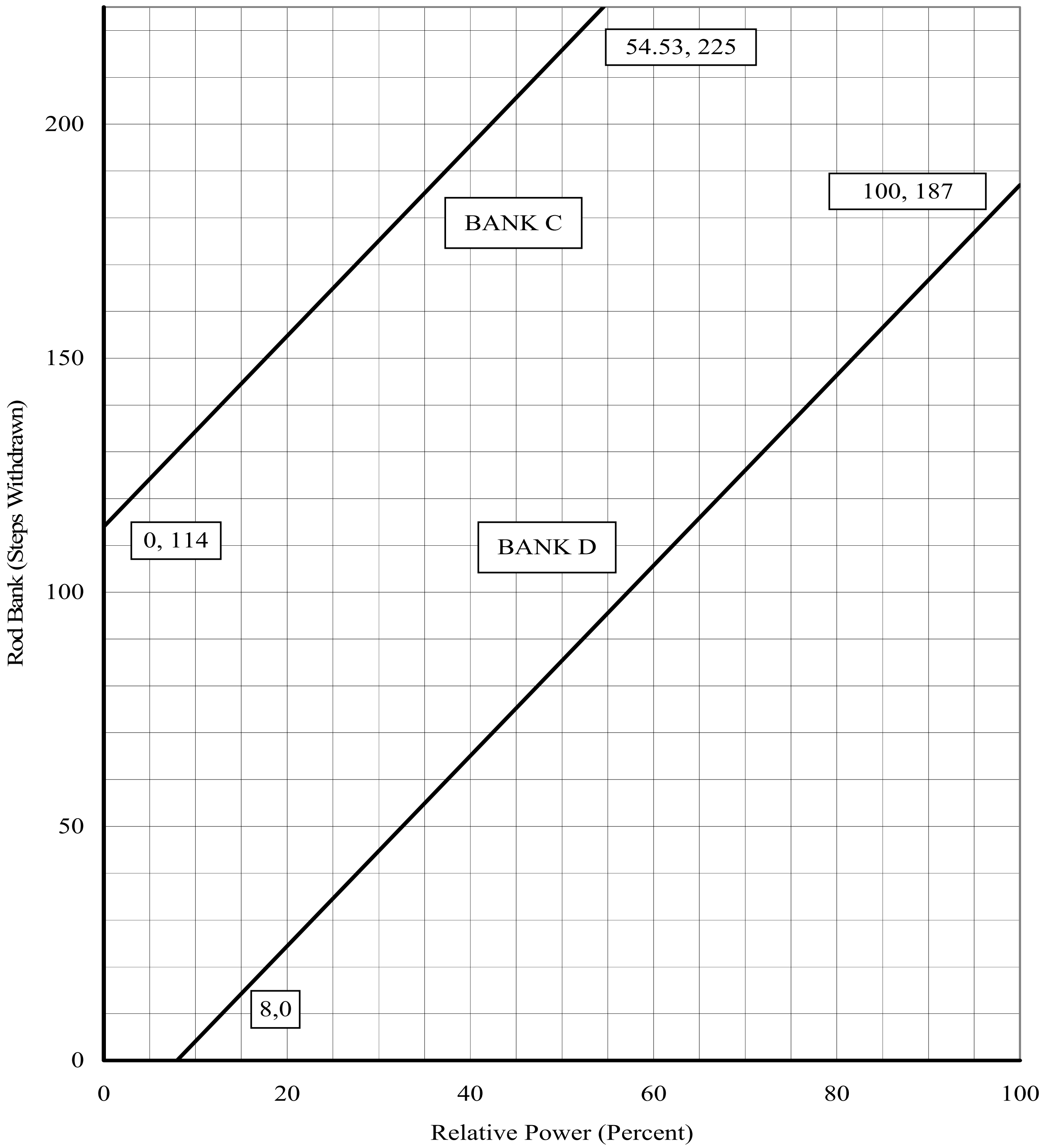


Figure 5.1-2 (Page 1 of 1)

CONTROL ROD INSERTION LIMITS

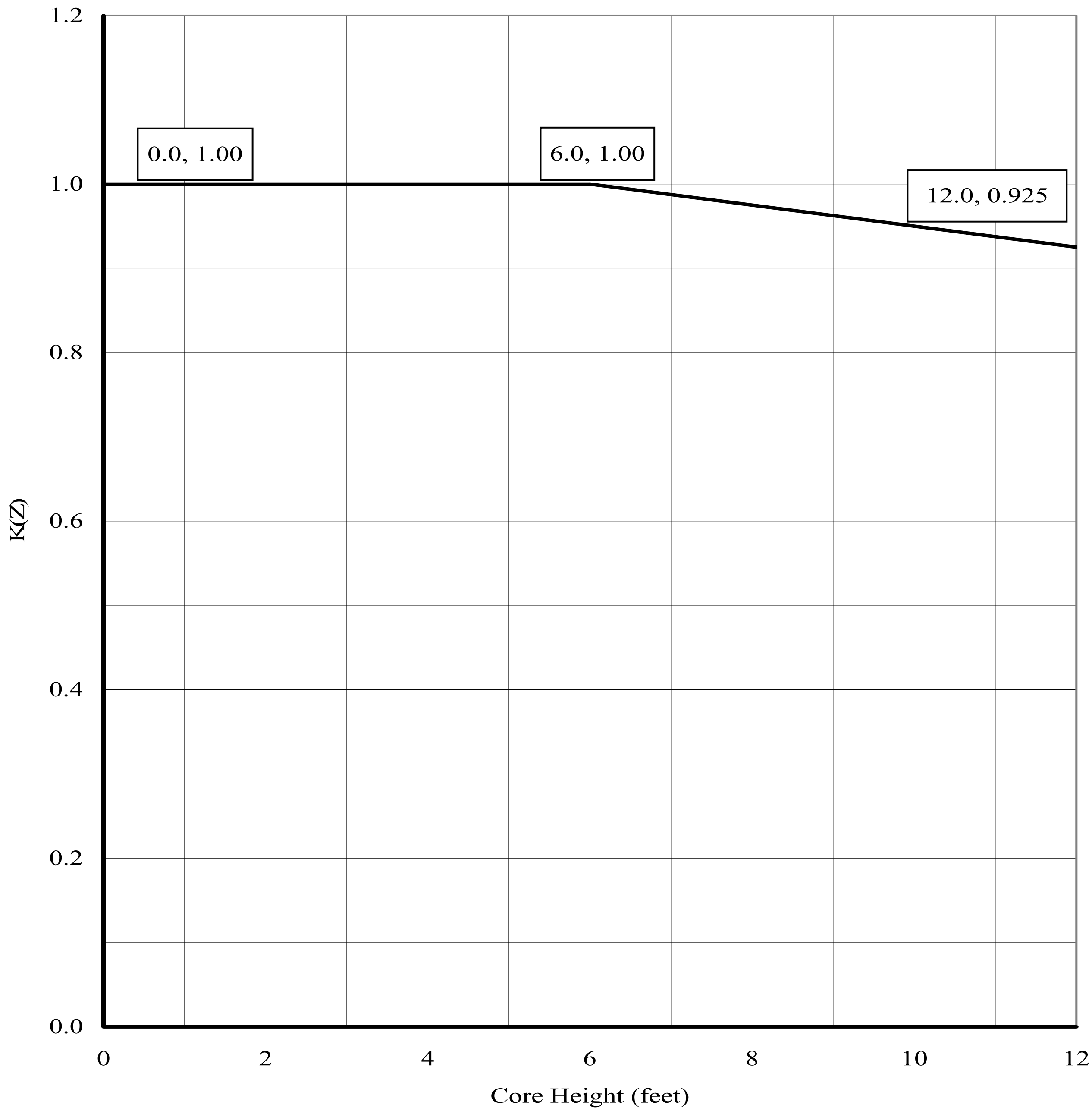
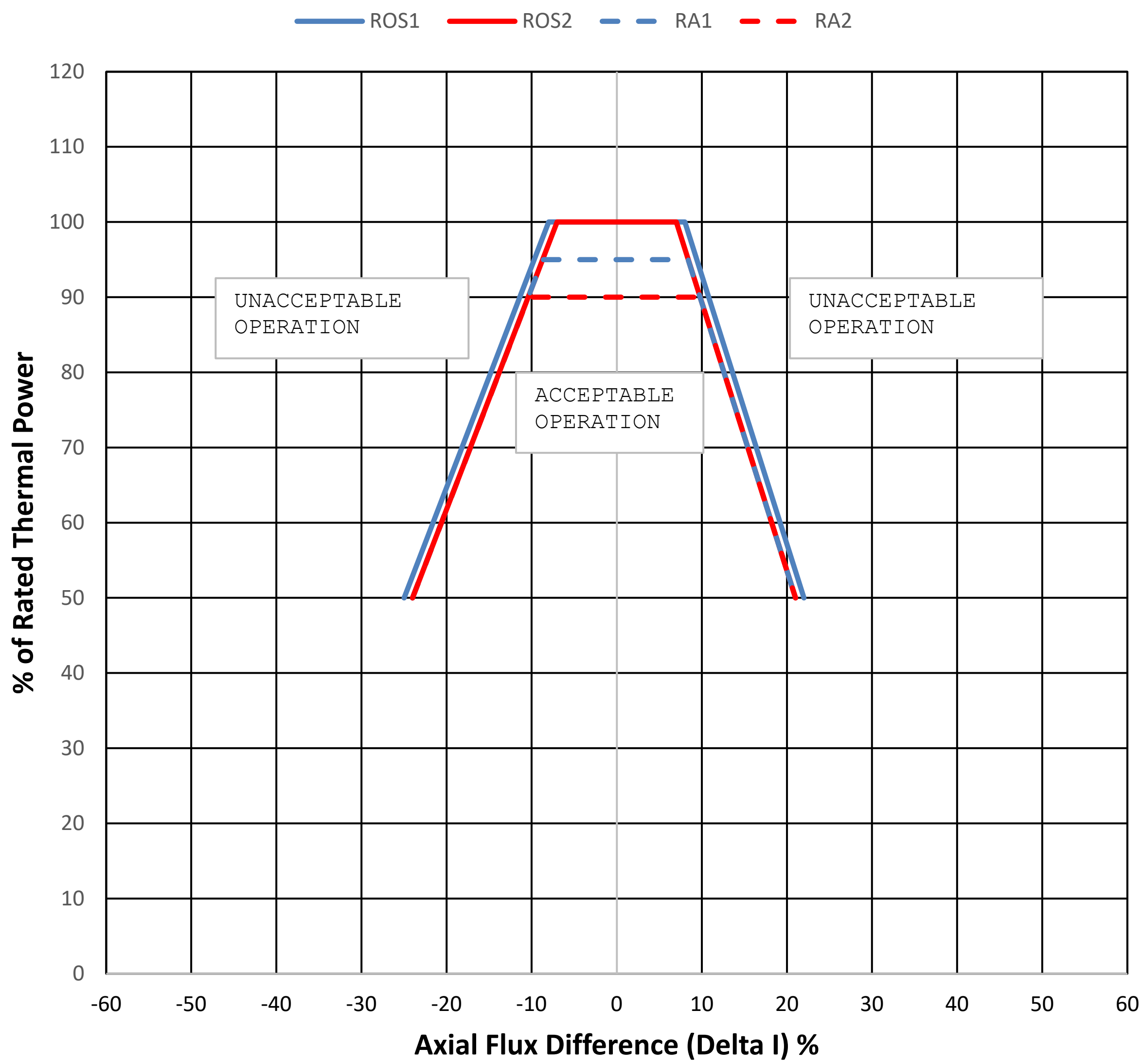


Figure 5.1-3 (Page 1 of 1)

$F_Q T$ NORMALIZED OPERATING ENVELOPE, K(Z)



ROS1
(-25%,50%)(-8%,100%)
(8%,100%)(22%,50%)
RA1
(-24%,50%)(-8.7%,95%)
(8.4%,95%)(21%,50%)

ROS2
(-24%,50%)(-7%,100%)
(7%,100%)(21%,50%)
RA2
(-24%,50%)(-10.4%,90%)
(9.8%,90%)(21%,50%)

Figure 5.1-4 (Page 1 of 1)

AXIAL FLUX DIFFERENCE LIMITS AS A FUNCTION OF

PERCENT OF RATED THERMAL POWER FOR RAOC

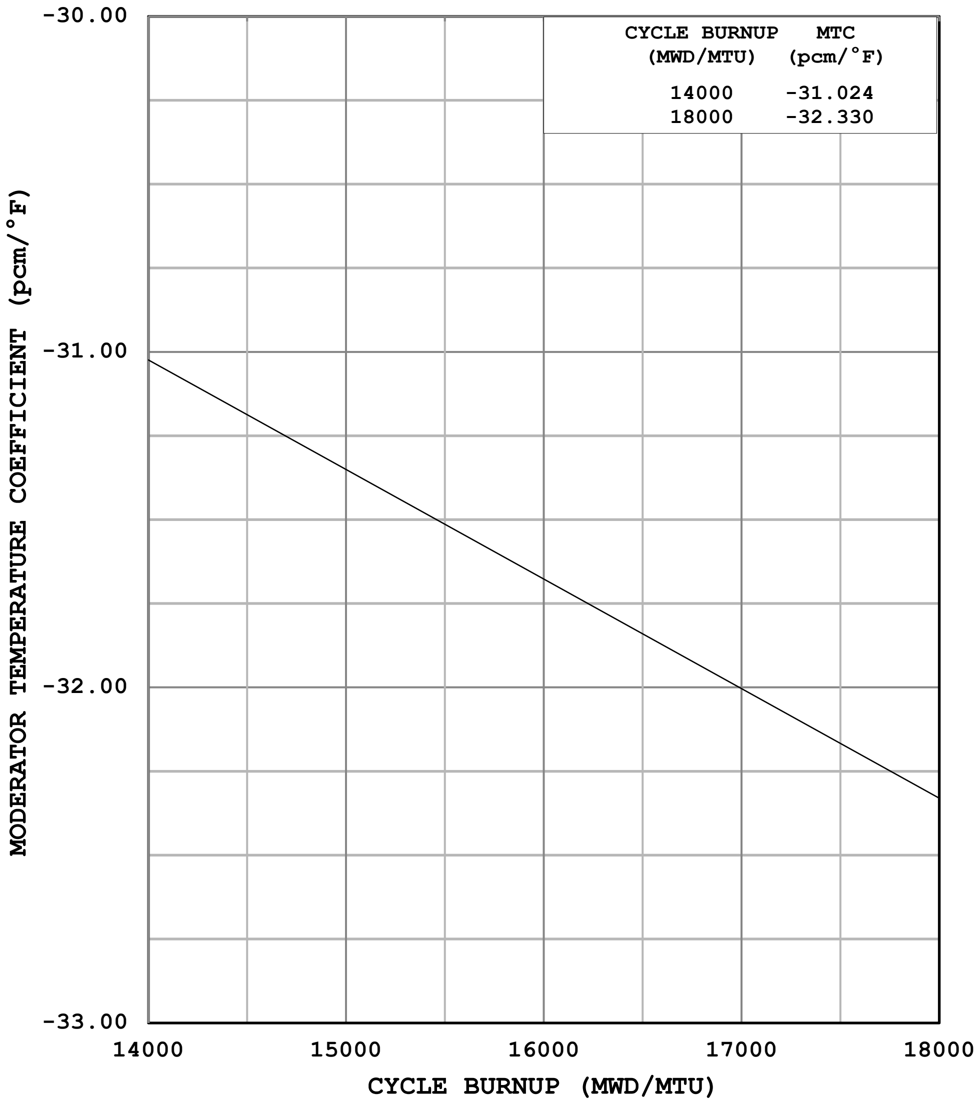


Figure 5.1-5 (Page 1 of 1)

HOT FULL POWER PREDICTED

MODERATOR TEMPERATURE COEFFICIENT

AS A FUNCTION OF CYCLE BURNUP

WHEN 300 PPM IS ACHIEVED

Table 5.1-1 (Page 1 of 1)
F_Q Surveillance T(Z) Function versus Burnup at 100% RTP for ROS1

Axial Point	Elevation (feet)	150 (MWD/MTU)	1000 (MWD/MTU)	2000 (MWD/MTU)	3000 (MWD/MTU)	4000 (MWD/MTU)	6000 (MWD/MTU)	8000 (MWD/MTU)	10000 (MWD/MTU)	12000 (MWD/MTU)	14000 (MWD/MTU)	16000 (MWD/MTU)	17000 (MWD/MTU)
1*	12.0720	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2*	11.8708	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3*	11.6696	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4*	11.4684	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5*	11.2672	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6*	11.0660	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7*	10.8648	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	10.6636	1.1282	1.1190	1.0856	1.0814	1.0850	1.1109	1.1401	1.1410	1.1777	1.2000	1.2103	1.2036
9	10.4624	1.2083	1.2070	1.1794	1.1768	1.1820	1.2037	1.2311	1.2300	1.2606	1.2780	1.2832	1.2739
10	10.2612	1.2233	1.2280	1.2094	1.2087	1.2140	1.2327	1.2575	1.2550	1.2798	1.2930	1.2947	1.2863
11	10.0600	1.1845	1.1850	1.1754	1.1771	1.1840	1.1990	1.2215	1.2210	1.2394	1.2490	1.2505	1.2468
12	9.8588	1.2045	1.2020	1.1942	1.1975	1.2020	1.2152	1.2320	1.2380	1.2429	1.2490	1.2478	1.2476
13	9.6576	1.2797	1.2790	1.2701	1.2732	1.2770	1.2850	1.2905	1.3000	1.2939	1.2970	1.2944	1.2908
14	9.4564	1.2901	1.2920	1.2854	1.2892	1.2930	1.2955	1.3032	1.3060	1.2973	1.2980	1.2998	1.2921
15	9.2552	1.2372	1.2410	1.2385	1.2434	1.2480	1.2484	1.2590	1.2600	1.2491	1.2580	1.2565	1.2550
16	9.0540	1.2124	1.2190	1.2203	1.2258	1.2290	1.2369	1.2420	1.2450	1.2238	1.2360	1.2385	1.2365
17	8.8528	1.2769	1.2840	1.2935	1.2987	1.2940	1.3081	1.3078	1.3040	1.2767	1.2820	1.2861	1.2846
18	8.6516	1.3283	1.3350	1.3467	1.3515	1.3420	1.3594	1.3536	1.3450	1.3139	1.3130	1.3204	1.3181
19	8.4504	1.3072	1.3170	1.3285	1.3338	1.3210	1.3423	1.3347	1.3240	1.2975	1.2930	1.3046	1.3006
20	8.2492	1.2600	1.2720	1.2842	1.2902	1.2730	1.3002	1.2897	1.2780	1.2563	1.2530	1.2662	1.2674
21	8.0480	1.3141	1.3270	1.3398	1.3450	1.3250	1.3517	1.3387	1.3220	1.2994	1.2940	1.3073	1.3085
22	7.8468	1.3606	1.3750	1.3875	1.3920	1.3690	1.3952	1.3780	1.3560	1.3329	1.3270	1.3401	1.3429
23	7.6456	1.3307	1.3470	1.3595	1.3642	1.3430	1.3674	1.3494	1.3260	1.3047	1.3010	1.3155	1.3207
24	7.4444	1.2659	1.2830	1.2961	1.3014	1.2840	1.3060	1.2890	1.2670	1.2478	1.2480	1.2644	1.2721
25	7.2432	1.2805	1.2990	1.3121	1.3170	1.3010	1.3193	1.2998	1.2740	1.2543	1.2560	1.2731	1.2824
26	7.0420	1.3376	1.3570	1.3710	1.3749	1.3590	1.3718	1.3487	1.3180	1.2937	1.2970	1.3133	1.3236
27	6.8408	1.3393	1.3590	1.3744	1.3780	1.3640	1.3721	1.3485	1.3150	1.2898	1.2960	1.3124	1.3232
28	6.6396	1.2722	1.2930	1.3088	1.3132	1.3020	1.3085	1.2877	1.2550	1.2373	1.2440	1.2608	1.2722
29	6.4384	1.2456	1.2670	1.2835	1.2879	1.2800	1.2823	1.2625	1.2280	1.2167	1.2210	1.2383	1.2497
30	6.2372	1.2998	1.3180	1.3358	1.3389	1.3320	1.3279	1.3055	1.2680	1.2572	1.2570	1.2723	1.2828
31	6.0360	1.3064	1.3180	1.3344	1.3396	1.3320	1.3229	1.3004	1.2680	1.2548	1.2510	1.2657	1.2755
32	5.8348	1.2495	1.2590	1.2728	1.2790	1.2770	1.2585	1.2399	1.2150	1.2026	1.1980	1.2124	1.2220
33	5.6336	1.2034	1.2110	1.2239	1.2309	1.2330	1.2151	1.1912	1.1720	1.1622	1.1570	1.1696	1.1787
34	5.4324	1.2522	1.2570	1.2719	1.2799	1.2820	1.2637	1.2355	1.2110	1.1945	1.1900	1.1933	1.2005
35	5.2312	1.2810	1.2840	1.3056	1.3099	1.3110	1.2943	1.2642	1.2370	1.2203	1.2170	1.2172	1.2226
36	5.0300	1.2649	1.2700	1.2954	1.2996	1.3000	1.2842	1.2562	1.2300	1.2117	1.2100	1.2095	1.2139
37	4.8288	1.2479	1.2610	1.2843	1.2905	1.2870	1.2764	1.2495	1.2250	1.2054	1.2050	1.2035	1.2045
38	4.6276	1.2455	1.2620	1.2863	1.2913	1.2880	1.2789	1.2520	1.2280	1.2077	1.2070	1.2046	1.2042
39	4.4264	1.2551	1.2710	1.2955	1.3007	1.2990	1.2897	1.2630	1.2390	1.2185	1.2160	1.2120	1.2093
40	4.2252	1.2401	1.2550	1.2779	1.2847	1.2850	1.2757	1.2509	1.2290	1.2093	1.2060	1.2006	1.1981
41	4.0240	1.1813	1.1950	1.2173	1.2260	1.2280	1.2205	1.2002	1.1830	1.1660	1.1640	1.1583	1.1590
42	3.8228	1.1790	1.1930	1.2142	1.2230	1.2260	1.2187	1.2004	1.1860	1.1724	1.1650	1.1585	1.1611
43	3.6216	1.2289	1.2430	1.2647	1.2715	1.2750	1.2665	1.2480	1.2360	1.2232	1.2100	1.1983	1.2010
44	3.4204	1.2359	1.2500	1.2722	1.2761	1.2800	1.2763	1.2608	1.2520	1.2392	1.2240	1.2111	1.2112
45	3.2192	1.2166	1.2310	1.2527	1.2539	1.2590	1.2625	1.2520	1.2450	1.2352	1.2190	1.2085	1.2038
46	3.0180	1.2103	1.2240	1.2431	1.2394	1.2440	1.2550	1.2497	1.2450	1.2354	1.2260	1.2130	1.2114
47	2.8168	1.2186	1.2350	1.2466	1.2453	1.2510	1.2638	1.2621	1.2600	1.2523	1.2530	1.2364	1.2372
48	2.6156	1.2396	1.2580	1.2562	1.2600	1.2660	1.2840	1.2853	1.2850	1.2803	1.2840	1.2670	1.2684
49	2.4144	1.2274	1.2440	1.2333	1.2391	1.2450	1.2672	1.2744	1.2780	1.2790	1.2850	1.2701	1.2735
50	2.2132	1.1813	1.1950	1.1801	1.1841	1.1910	1.2168	1.2315	1.2390	1.2473	1.2570	1.2521	1.2580
51	2.0120	1.2108	1.2210	1.1986	1.2010	1.2060	1.2353	1.2559	1.2650	1.2795	1.2920	1.2837	1.2914
52	1.8108	1.2666	1.2730	1.2410	1.2418	1.2440	1.2743	1.2999	1.3100	1.3300	1.3450	1.3384	1.3477
53	1.6096	1.2655	1.2670	1.2266	1.2255	1.2240	1.2560	1.2871	1.3000	1.3273	1.3470	1.3454	1.3574
54	1.4084	1.2354	1.2310	1.1841	1.1806	1.1770	1.2086	1.2445	1.2610	1.2948	1.3190	1.3245	1.3395
55*	1.2072	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
56*	1.0060	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
57*	0.8048	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
58*	0.6036	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
59*	0.4024	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
60*	0.2012	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
61*	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

* Top and Bottom 10% Excluded

Table 5.1-2 (Page 1 of 1)
F_Q Surveillance T(Z) Function versus Burnup at 100% RTP for ROS2

Axial Point	Elevation (feet)	150 (MWD/MTU)	1000 (MWD/MTU)	2000 (MWD/MTU)	3000 (MWD/MTU)	4000 (MWD/MTU)	6000 (MWD/MTU)	8000 (MWD/MTU)	10000 (MWD/MTU)	12000 (MWD/MTU)	14000 (MWD/MTU)	16000 (MWD/MTU)	17000 (MWD/MTU)
1*	12.0720	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2*	11.8708	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
3*	11.6696	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
4*	11.4684	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5*	11.2672	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6*	11.0660	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
7*	10.8648	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
8	10.6636	1.1192	1.0930	1.0821	1.0670	1.0700	1.0852	1.1209	1.1380	1.1579	1.1750	1.1798	1.1851
9	10.4624	1.2002	1.1770	1.1717	1.1583	1.1620	1.1800	1.2064	1.2280	1.2378	1.2510	1.2470	1.2545
10	10.2612	1.2166	1.2000	1.1984	1.1878	1.1920	1.2120	1.2279	1.2550	1.2608	1.2650	1.2540	1.2618
11	10.0600	1.1725	1.1610	1.1623	1.1554	1.1610	1.1819	1.1947	1.2210	1.2245	1.2260	1.2108	1.2228
12	9.8588	1.1817	1.1820	1.1773	1.1732	1.1800	1.1996	1.2157	1.2310	1.2313	1.2300	1.2205	1.2267
13	9.6576	1.2543	1.2540	1.2444	1.2468	1.2530	1.2729	1.2818	1.2860	1.2816	1.2840	1.2752	1.2801
14	9.4564	1.2617	1.2650	1.2579	1.2612	1.2670	1.2846	1.2904	1.2860	1.2858	1.2870	1.2812	1.2868
15	9.2552	1.2151	1.2180	1.2155	1.2203	1.2250	1.2450	1.2433	1.2330	1.2409	1.2390	1.2375	1.2443
16	9.0540	1.1909	1.1970	1.2044	1.2076	1.2070	1.2253	1.2267	1.2130	1.2153	1.2120	1.2185	1.2263
17	8.8528	1.2553	1.2620	1.2830	1.2878	1.2720	1.2866	1.2960	1.2690	1.2609	1.2580	1.2677	1.2718
18	8.6516	1.3063	1.3130	1.3386	1.3435	1.3240	1.3316	1.3441	1.3060	1.2892	1.2900	1.3018	1.3038
19	8.4504	1.2855	1.2950	1.3217	1.3270	1.3080	1.3102	1.3267	1.2820	1.2659	1.2720	1.2829	1.2886
20	8.2492	1.2393	1.2510	1.2789	1.2849	1.2670	1.2629	1.2854	1.2360	1.2240	1.2330	1.2484	1.2552
21	8.0480	1.2930	1.3060	1.3355	1.3408	1.3220	1.3115	1.3336	1.2810	1.2650	1.2750	1.2882	1.2955
22	7.8468	1.3393	1.3530	1.3842	1.3887	1.3680	1.3504	1.3740	1.3170	1.2974	1.3090	1.3216	1.3294
23	7.6456	1.3108	1.3260	1.3573	1.3621	1.3430	1.3224	1.3466	1.2900	1.2708	1.2840	1.2986	1.3074
24	7.4444	1.2479	1.2640	1.2950	1.3003	1.2840	1.2654	1.2874	1.2340	1.2188	1.2330	1.2493	1.2593
25	7.2432	1.2634	1.2810	1.3119	1.3168	1.3010	1.2817	1.2993	1.2420	1.2308	1.2430	1.2593	1.2698
26	7.0420	1.3217	1.3410	1.3709	1.3748	1.3590	1.3368	1.3486	1.2850	1.2761	1.2850	1.3005	1.3109
27	6.8408	1.3257	1.3450	1.3743	1.3779	1.3640	1.3420	1.3485	1.2820	1.2788	1.2850	1.3011	1.3116
28	6.6396	1.2615	1.2820	1.3088	1.3131	1.3020	1.2846	1.2877	1.2320	1.2285	1.2340	1.2514	1.2625
29	6.4384	1.2376	1.2580	1.2834	1.2878	1.2800	1.2638	1.2625	1.2140	1.2096	1.2130	1.2307	1.2418
30	6.2372	1.2911	1.3130	1.3359	1.3391	1.3320	1.3143	1.3055	1.2610	1.2515	1.2510	1.2662	1.2765
31	6.0360	1.2940	1.3180	1.3328	1.3372	1.3310	1.3148	1.3004	1.2630	1.2508	1.2470	1.2613	1.2710
32	5.8348	1.2351	1.2590	1.2714	1.2761	1.2750	1.2566	1.2398	1.2130	1.2005	1.1960	1.2099	1.2194
33	5.6336	1.1874	1.2110	1.2241	1.2310	1.2310	1.2119	1.1942	1.1720	1.1617	1.1560	1.1689	1.1779
34	5.4324	1.2332	1.2570	1.2705	1.2801	1.2800	1.2607	1.2328	1.2110	1.1945	1.1870	1.1924	1.1995
35	5.2312	1.2592	1.2830	1.2981	1.3089	1.3110	1.2905	1.2591	1.2370	1.2203	1.2120	1.2120	1.2173
36	5.0300	1.2413	1.2650	1.2859	1.2947	1.3000	1.2799	1.2497	1.2260	1.2115	1.2040	1.2033	1.2078
37	4.8288	1.2259	1.2500	1.2730	1.2823	1.2870	1.2687	1.2424	1.2160	1.2040	1.1980	1.1938	1.1973
38	4.6276	1.2273	1.2510	1.2733	1.2824	1.2870	1.2696	1.2442	1.2170	1.2047	1.1990	1.1936	1.1956
39	4.4264	1.2359	1.2590	1.2804	1.2893	1.2950	1.2774	1.2541	1.2280	1.2128	1.2070	1.1987	1.1993
40	4.2252	1.2185	1.2400	1.2628	1.2718	1.2760	1.2609	1.2412	1.2170	1.2010	1.1960	1.1855	1.1873
41	4.0240	1.1608	1.1800	1.2049	1.2149	1.2150	1.2035	1.1901	1.1700	1.1553	1.1530	1.1416	1.1477
42	3.8228	1.1630	1.1790	1.2029	1.2129	1.2080	1.2013	1.1897	1.1710	1.1600	1.1540	1.1424	1.1489
43	3.6216	1.2161	1.2300	1.2524	1.2620	1.2530	1.2508	1.2348	1.2160	1.2095	1.1960	1.1848	1.1873
44	3.4204	1.2264	1.2370	1.2582	1.2675	1.2580	1.2599	1.2443	1.2270	1.2246	1.2090	1.1975	1.1969
45	3.2192	1.2113	1.2170	1.2370	1.2464	1.2380	1.2448	1.2345	1.2190	1.2200	1.2060	1.1916	1.1872
46	3.0180	1.2043	1.2100	1.2246	1.2315	1.2230	1.2368	1.2313	1.2180	1.2198	1.2130	1.1963	1.1958
47	2.8168	1.2154	1.2200	1.2290	1.2291	1.2300	1.2466	1.2437	1.2320	1.2352	1.2370	1.2178	1.2236
48	2.6156	1.2400	1.2430	1.2383	1.2396	1.2460	1.2686	1.2672	1.2570	1.2609	1.2650	1.2457	1.2537
49	2.4144	1.2272	1.2270	1.2169	1.2209	1.2250	1.2537	1.2556	1.2510	1.2578	1.2650	1.2495	1.2575
50	2.2132	1.1813	1.1780	1.1653	1.1676	1.1730	1.2057	1.2121	1.2140	1.2250	1.2370	1.2335	1.2411
51	2.0120	1.2107	1.2030	1.1848	1.1848	1.1890	1.2259	1.2350	1.2410	1.2549	1.2700	1.2660	1.2730
52	1.8108	1.2665	1.2530	1.2280	1.2247	1.2280	1.2666	1.2772	1.2860	1.3027	1.3210	1.3209	1.3277
53	1.6096	1.2654	1.2460	1.2150	1.2085	1.2100	1.2503	1.2637	1.2770	1.2986	1.3230	1.3285	1.3365
54	1.4084	1.2352	1.2110	1.1741	1.1644	1.1640	1.2048	1.2210	1.2380	1.2655	1.2960	1.3084	1.3184
55*	1.2072	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
56*	1.0060	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
57*	0.8048	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
58*	0.6036	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
59*	0.4024	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
60*	0.2012	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
61*	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Note: Top and Bottom 10% Excluded

Table 5.1-3 (Page 1 of 1)
F_Q Surveillance R_j Factor versus Burnup at 100% RTP for ROS1

Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier	Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier	Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier
≤150	1.015	6796	1.000	13441	1.002
345	1.018	6991	1.000	13637	1.003
541	1.019	7187	1.000	13832	1.003
736	1.019	7382	1.000	14028	1.004
932	1.019	7578	1.000	14223	1.005
1127	1.020	7773	1.000	14419	1.005
1323	1.018	7968	1.000	14614	1.006
1518	1.015	8164	1.000	14810	1.006
1714	1.012	8359	1.000	15005	1.005
1909	1.009	8555	1.000	15200	1.005
2105	1.006	8750	1.000	15396	1.005
2300	1.004	8946	1.000	15591	1.005
2496	1.003	9141	1.000	15787	1.005
2691	1.000	9337	1.000	15982	1.005
2886	1.000	9532	1.000	16178	1.005
3082	1.000	9728	1.000	16373	1.005
3277	1.001	9923	1.000	16569	1.005
3473	1.018	10119	1.000	16764	1.004
3668	1.028	10314	1.000	16960	1.004
3864	1.031	10509	1.000	17155	1.004
4059	1.033	10705	1.000	17351	1.004
4255	1.034	10900	1.004	17546	1.004
4450	1.034	11096	1.006	≥17741	1.004
4646	1.033	11291	1.006		
4841	1.031	11487	1.008		
5037	1.015	11682	1.007		
5232	1.011	11878	1.006		
5427	1.008	12073	1.006		
5623	1.006	12269	1.005		
5818	1.004	12464	1.004		
6014	1.002	12660	1.003		
6209	1.001	12855	1.003		
6405	1.000	13050	1.000		
6600	1.000	13246	1.000		

Note: The Burnup Dependent Transient F_Q Margin Decrease Factor R_j, to be applied to $F_Q(Z)$ in accordance with Technical Specification Surveillance Requirement (SR) 3.2.1.2, is the maximum factor by which $F_Q(Z)$ is expected to increase over a 39 Effective Full Power Day (EFPD) interval (surveillance interval of 31 EFPD plus the maximum allowable extension not to exceed 25% of the surveillance interval per Technical Specification SR 3.0.2) starting from the burnup at which the $F_Q(Z)$ was determined. Values may be interpolated to the surveillance cycle burnup.

Table 5.1-4 (Page 1 of 1)
F_Q Surveillance R_j Factor versus Burnup at 100% RTP for ROS2

Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier	Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier	Cycle Burnup (MWD/MTU)	Rj Penalty Multiplier
≤150	1.027	6796	1.016	13441	1.001
345	1.032	6991	1.014	13637	1.000
541	1.035	7187	1.001	13832	1.000
736	1.036	7382	1.000	14028	1.000
932	1.035	7578	1.000	14223	1.000
1127	1.033	7773	1.000	14419	1.000
1323	1.029	7968	1.000	14614	1.000
1518	1.020	8164	1.000	14810	1.000
1714	1.014	8359	1.000	15005	1.001
1909	1.009	8555	1.000	15200	1.004
2105	1.006	8750	1.000	15396	1.008
2300	1.003	8946	1.000	15591	1.010
2496	1.001	9141	1.000	15787	1.011
2691	1.000	9337	1.000	15982	1.013
2886	1.000	9532	1.000	16178	1.013
3082	1.000	9728	1.000	16373	1.014
3277	1.000	9923	1.000	16569	1.014
3473	1.000	10119	1.000	16764	1.013
3668	1.000	10314	1.003	16960	1.012
3864	1.001	10509	1.006	17155	1.012
4059	1.002	10705	1.007	17351	1.012
4255	1.003	10900	1.007	17546	1.012
4450	1.004	11096	1.007	≥17741	1.012
4646	1.006	11291	1.007		
4841	1.007	11487	1.010		
5037	1.009	11682	1.009		
5232	1.011	11878	1.009		
5427	1.012	12073	1.008		
5623	1.024	12269	1.008		
5818	1.024	12464	1.007		
6014	1.023	12660	1.006		
6209	1.022	12855	1.005		
6405	1.020	13050	1.002		
6600	1.018	13246	1.001		

Note: The Burnup Dependent Transient F_Q Margin Decrease Factor R_j, to be applied to $F_Q(Z)$ in accordance with Technical Specification Surveillance Requirement (SR) 3.2.1.2, is the maximum factor by which $F_Q(Z)$ is expected to increase over a 39 Effective Full Power Day (EFPD) interval (surveillance interval of 31 EFPD plus the maximum allowable extension not to exceed 25% of the surveillance interval per Technical Specification SR 3.0.2) starting from the burnup at which the $F_Q(Z)$ was determined. Values may be interpolated to the surveillance cycle burnup.

Table 5.1-5 (Page 1 of 1)
Required Thermal Power Limits and AFD Reductions

	Required Action B.2.1 Space	AFD Reduction	Power Reduction	Percent Margin
ROS1	RA1 RA2 < 50% RTP	1.00% 1.00%	5% 10%	1.58% 4.69%
ROS2	RA1 RA2 < 50% RTP	0.00% 0.00%	5% 10%	0.67% 4.07%

Table 5.1-6 (Page 1 of 1)
$F_{\Delta H}$ limit versus Minimum Measured Flow

Minimum Measured Flow (gpm)	$F_{\Delta H}$ Limit (-)
279,731	1.62
278,348	1.61
277,499	1.60

5.0 ADMINISTRATIVE CONTROLS

5.2 Pressure and Temperature Limits Report

BVPS-1 Technical Specification to PTLR Cross-Reference			
Technical Specification	PTLR		
	Section	Figure	Table
3.4.3	5.2.1.1	5.2-1 5.2-2	N/A
3.4.6	N/A	N/A	5.2-3
3.4.7	N/A	N/A	5.2-3
3.4.10	N/A	N/A	5.2-3
3.4.12	5.2.1.2 5.2.1.3	N/A	5.2-3
3.5.2	N/A	N/A	5.2-3

BVPS-1 Licensing Requirement to PTLR Cross-Reference			
Licensing Requirement	PTLR		
	Section	Figure	Table
LR 3.1.2	N/A	N/A	5.2-3
LR 3.1.4	N/A	N/A	5.2-3
LR 3.4.6	N/A	N/A	5.2-3

5.2 Pressure and Temperature Limits Report

5.2 Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)

The PTLR for Unit 1 has been prepared in accordance with the requirements of Technical Specification 5.6.4. Revisions to the PTLR shall be provided to the NRC after issuance.

The Technical Specifications (TS) and Licensing Requirements (LR) addressed, or made reference to, in this report are listed below:

1. LCO 3.4.3 Reactor Coolant System Pressure and Temperature (P/T) Limits,
2. LCO 3.4.6 RCS Loops - MODE 4,
3. LCO 3.4.7 RCS Loops - MODE 5, Loops Filled,
4. LCO 3.4.10 Pressurizer Safety Valves,
5. LCO 3.4.12 Overpressure Protection System (OPPS),
6. LCO 3.5.2 ECCS - Operating,
7. LR 3.1.2 Boration Flow Paths - Operating,
8. LR 3.1.4 Charging Pump - Operating, and
9. LR 3.4.6 Pressurizer Safety Valve Lift Involving Liquid Water Discharge.

5.2.1 Operating Limits

The PTLR limits for Beaver Valley Power Station (BVPS) Unit 1 have been prepared in accordance with the requirements of Technical Specification 5.6.4, using the methodology contained in Reference 1.

5.2.1.1 RCS Pressure and Temperature (P/T) Limits (LCO 3.4.3)

The RCS temperature rate-of-change limits are defined as:

a. A maximum heatup of 100°F in any one hour period (Reference 2).

b. A maximum cooldown of 100°F in any one hour period (Reference 2), and

c. A maximum temperature change of less than or equal to 5°F in any one hour period during inservice hydrostatic testing operations above system design pressure. This rate-of-change limit ensures that thermal gradient stress resulting from temperature change is not induced in the reactor vessel during inservice hydrostatic testing operations above system design pressure.

5.2 Pressure and Temperature Limits Report

The RCS P/T limits for heatup, leak testing, and criticality are specified by Figure 5.2-1 and Table 5.2-1. The RCS P/T limits for cooldown are shown in Figure 5.2-2 and Table 5.2-2. These limits are defined in Reference 2. Consistent with the methodology described in Reference 1, the RCS P/T limits for heatup and cooldown shown in Figures 5.2-1 and 5.2-2 are provided without margins for instrument error. The criticality limit curve specifies pressure-temperature limits for core operation to provide additional margin during actual power production as specified in 10 CFR 50, Appendix G (Reference 5). The heatup and cooldown curves also include the effect of the reactor vessel flange.

The P/T limits for core operation (except for low power physics testing) are that the reactor vessel must be at a temperature equal to or higher than the minimum temperature required for the inservice hydrostatic test, and at least 40°F higher than the minimum permissible temperature in the corresponding P/T curve for heatup and cooldown.

Pressure-temperature limit curves shown in Figure 5.2-3 were developed for the limiting ferritic steel component within an isolated reactor coolant loop. The limiting component is the steam generator channel head to tubesheet region. This figure provides the ASME III, Appendix G limiting curve which is used to define operational bounds, such that when operating with an isolated loop the analyzed pressure-temperature limits are known. The temperature range provided bounds the expected operating range for an isolated loop and Code Case N-640.

- NOTE -

Pressure limits are considered to be met for pressures that are below 0 psig (i.e., up to and including full vacuum conditions) since the resulting P/T combination is located in the region to the right and below the operating limits provided in Figures 5.2-1, 5.2-2, and 5.2-3.

Figures 5.2-1 and 5.2-2 and Tables 5.2-1 and 5.2-2 are based upon analysis of all applicable surveillance capsules per Reference 2. Reference 2 provides an updated surveillance capsule credibility evaluation, updated Position 2.1 chemistry factor values, and an updated fluence evaluation. Therefore, the development of the P/T limit curves (Reference 2) utilized the revised information. Taking into account the updated surveillance data credibility evaluation, the Position 2.1 chemistry factor values, and the fluence analysis summarized in Reference 2, the limiting material for the current BVPS-1 P/T limits continues to be the lower shell plate B6903-1 at 50 EFPY.

5.2 Pressure and Temperature Limits Report

Using the fluence analysis provided in Section 2 of Reference 2, the neutron fluence value for lower shell plate B6903-1 at 50 EFPY is determined to be 5.89 x 10^{19} n/cm^2 (E > 1.0 MeV). Using this updated fluence value along with the updated Position 2.1 chemistry factor value (Table 5.2-4) for this material, the limiting 1/4T and 3/4T adjusted reference temperature (ART) values are 244.0°F and 208.8°F, respectively, at 50 EFPY. Note that for conservatism, P/T limit curves were developed using 1/4T and 3/4T ART values of 244.5°F and 209.5°F, respectively (Reference 2).

5.2.1.2 Overpressure Protection System (OPPS) Setpoints (LCO 3.4.12)

The power operated relief valves (PORVs) shall each have a nominal maximum lift setting and enable temperature in accordance with Table 5.2-3. The lift setting provided does not impose any reactor coolant pump restrictions.

The PORV setpoint is based on P/T limits which were established in accordance with 10 CFR 50, Appendix G without allowance for instrumentation error and in accordance with the methodology described in WCAP-14040-A, Revision 4 (Reference 1). The PORV lift setting (Reference 10) shown in Table 5.2-3 accounts for appropriate instrument error.

5.2.1.3 OPPS Enable Temperature (LCO 3.4.12)

Two different temperatures are used to determine the OPPS enable temperature, they are the arming temperature and the calculated enable temperature. The arming temperature (when the OPPS rendered operable) is established per ASME Section XI, Appendix G. Based on this method, the arming temperature (Reference 10) is 347°F with uncertainty for 50 EFPY.

The calculated enable temperature is based on either a RCS temperature of less than 200°F or materials concerns (reactor vessel metal temperature less than RT_{NDT} + 50°F), whichever is greater. The calculated enable temperature (Reference 10) is 345ºF with uncertainty for 50 EFPY.

As the arming temperature is higher and, therefore, more conservative than the calculated enable temperature, the OPPS enable temperature, as shown in Table 5.2-3, is set to equal the arming temperature.

5.2 Pressure and Temperature Limits Report

The calculation method governing the heatup and cooldown of the RCS requires the arming of the OPPS at and below the OPPS enable temperature specified in Table 5.2-3, and disarming of the OPPS above this temperature. The OPPS is required to be enabled, i.e., OPERABLE, when any RCS cold leg temperature is less than or equal to this temperature.

From a plant operations viewpoint the terms “armed” and “enabled” are synonymous when it comes to activating the OPPS. As stated in the applicable operating procedure, the OPPS is activated (armed/enabled) manually before entering the applicability of LCO 3.4.12. This is accomplished by placing two keylock switches (one in each train) into their “automatic” position. Once OPPS is activated (armed/enabled) reactor coolant system pressure transmitters will signal a rise in system pressure above the OPPS setpoint. This will initiate an alarm in the control room and open the OPPS PORVs.

5.2.1.4 Reactor Vessel Boltup Temperature (LCO 3.4.3)

The minimum boltup temperature for the Reactor Vessel Flange shall be ≥ 60°F. Boltup is a condition in which the reactor vessel head is installed with tension applied to any stud, and with the RCS vented to atmosphere.

5.2.2 Reactor Vessel Material Surveillance Program

The reactor vessel material irradiation surveillance specimens shall be removed and analyzed to determine changes in material properties. The capsule withdrawal schedule is provided in Table 4.5-3 of the UFSAR. Also, the results of these analyses shall be used to update Figures 5.2-1 and 5.2-2, and Tables 5.2-1 and 5.2-2 in this report. The time of specimen withdrawal may be modified to coincide with those refueling outages nearest the withdrawal schedule.

The pressure vessel material surveillance program (References 3 and 4) is in compliance with Appendix H to 10 CFR 50, “Reactor Vessel Radiation Surveillance Program.” The material test requirements and the acceptance standards utilize the reference nil-ductility temperature, RT_{NDT}, which is determined in accordance with ASME, Section III, NB-2331. The empirical relationship between RT_{NDT} and the fracture toughness of the reactor vessel steel is developed in accordance with Appendix G, “Protection Against Non-Ductile Failure,” to Section XI of the ASME Boiler and Pressure Vessel Code. The surveillance capsule removal schedule meets the requirements of ASTM E 185-82.

Reference 8 is an NRC commitment made by FENOC to use only the calculated vessel fluence values when performing future capsule surveillance evaluations for BVPS Unit 1. This commitment is a condition of license Amendment 256 and will remain in effect until the NRC staff approves an alternate methodology to perform these evaluations. Best-estimate values generated using the FERRET Code may be provided for information only.

5.2 Pressure and Temperature Limits Report

5.2.3 Supplemental Data Tables

The following tables provide supplemental information on reactor vessel material properties and are provided to be consistent with Generic Letter 96-03. Some of the material property values shown were used as inputs to the P/T limits.

Table 5.2-4 shows the calculation of the surveillance material chemistry factors using surveillance capsule data.

Table 5.2-4a shows the Calculation of Chemistry Factors based on St. Lucie Unit 1, Millstone Unit 2, and Fort Calhoun Surveillance Capsule Data.

Table 5.2-4b shows the St. Lucie Unit 1, Millstone Unit 2, and Fort Calhoun Surveillance Weld Data.

Table 5.2-5, taken from Reference 2, provides the reactor vessel beltline material property table.

Table 5.2-6, taken from Reference 2, shows the reactor vessel extended beltline material properties.

Table 5.2-7, taken from Reference 2, provides a summary of the Adjusted Reference Temperature (ARTs) for 50 EFPY.

Table 5.2-8, taken from Reference 2, shows the calculation of ARTs for 50 EFPY.

Table 5.2-9, taken from Reference 2, provides RT_{PTS} values for the beltline materials at 50 EFPY.

Table 5.2-10, taken from Reference 2, provides RT_{PTS} values for the extended beltline materials at 50 EFPY.

Table 5.2-11, provides Reactor Vessel Toughness Data (Unirradiated)

5.2 Pressure and Temperature Limits Report

5.2.4 References

1. WCAP-14040-A, Revision 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves," J. D. Andrachek, et al., May 2004.

2. WCAP-18102-NP, Revision 1, "Beaver Valley Unit 1 Heatup and Cooldown Limit Curves for Normal Operation," B.E. Mays, et al., February 2018.

3. WCAP-17896-NP, Revision 0, "Analysis of Capsule X from the FirstEnergy Nuclear Operating Company Beaver Valley Unit 1 Reactor Vessel Radiation Surveillance Program," E.J. Long and E.T. Hayes, September 2014.

4. WCAP-8457, "Duquesne Light Company, Beaver Valley Unit No. 1 Reactor Vessel Radiation Surveillance Program," J. A. Davidson, October 1974.

5. 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements," Federal Register, Volume 60, No. 243, December 19, 1995.

6. 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," Federal Register, Volume 60, No. 243, December 19, 1995. (PTS Rule)

7. Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," U.S. Nuclear Regulatory Commission, May 1988.

8. FirstEnergy Nuclear Operating Company letter L-01-157, "Supplement to License Amendment Requests Nos. 295 and 167," dated December 21, 2001.

9. WCAP-15571, Supplement 1, Revision 2, "Analysis of Capsule Y from Beaver Valley Unit 1 Reactor Vessel Radiation Surveillance Program," A. E. Freed, September 2011.

10. LTR-SCS-16-58 Rev. 0, LTOPS Setpoint Evaluation for 50 EFPY for Beaver Valley Unit 1, June 2017.

11. NUREG-0800, BTP 5-2 and 5-3, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," March 2007.

MATERIAL PROPERTY BASIS

LIMITING MATERIAL: Lower Shell Plate B6903-1 using Regulatory Guide 1.99 Position 1.1 data

LIMITING ART VALUES AT 50 EFPY: 1/4T, 244.5°F (Axial Flaw)
3/4T, 209.5°F (Axial Flaw)

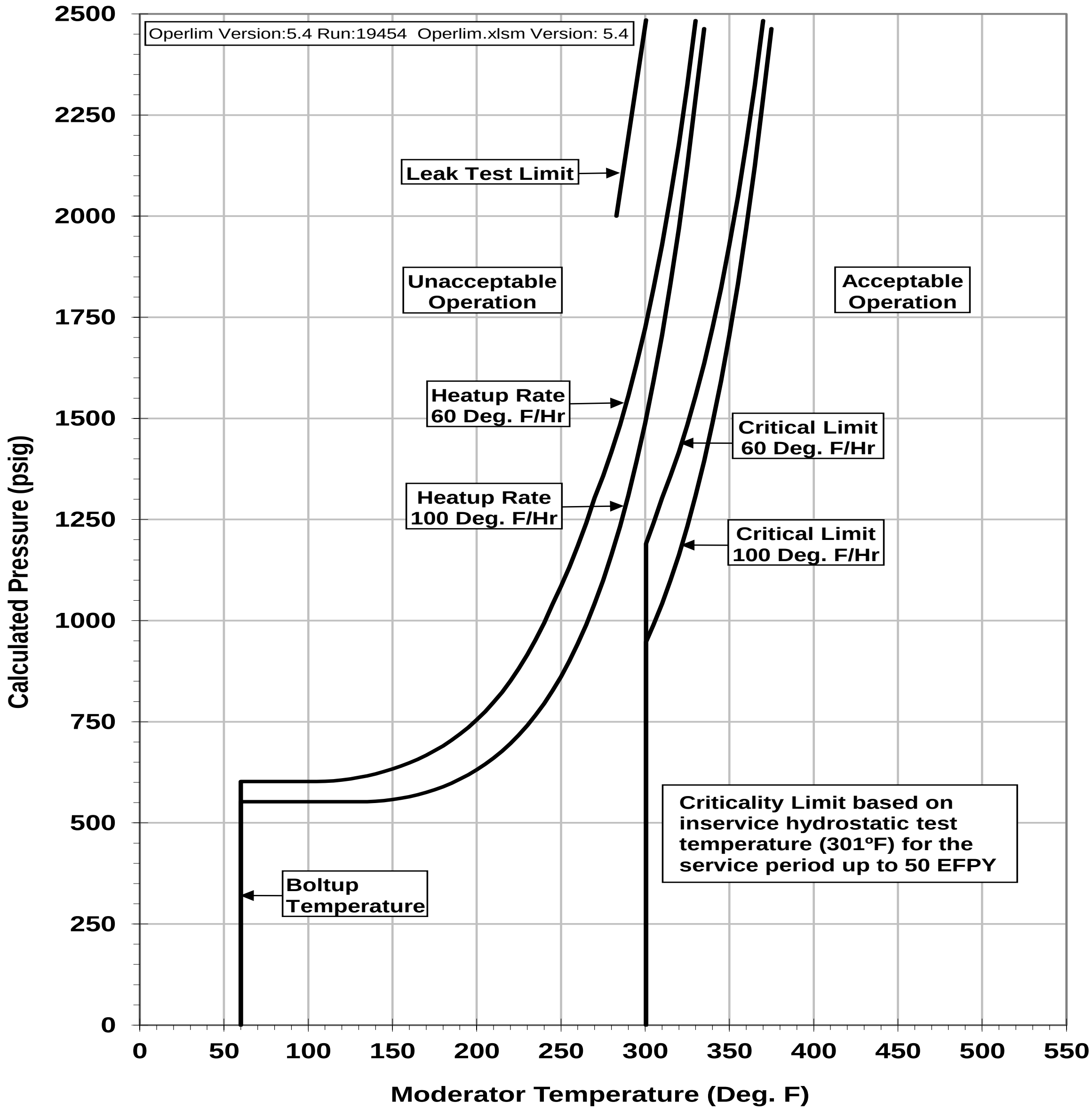


Figure 5.2-1 (Page 1 of 1)
Reactor Coolant System Heatup
Limitations Applicable for 50 EFPY (LCO 3.4.3)

MATERIAL PROPERTY BASIS

LIMITING MATERIAL: Lower Shell Plate B6903-1 using Regulatory Guide 1.99 Position 1.1 data

LIMITING ART VALUES AT 50 EFPY: 1/4T, 244.5°F (Axial Flaw)
3/4T, 209.5°F (Axial Flaw)

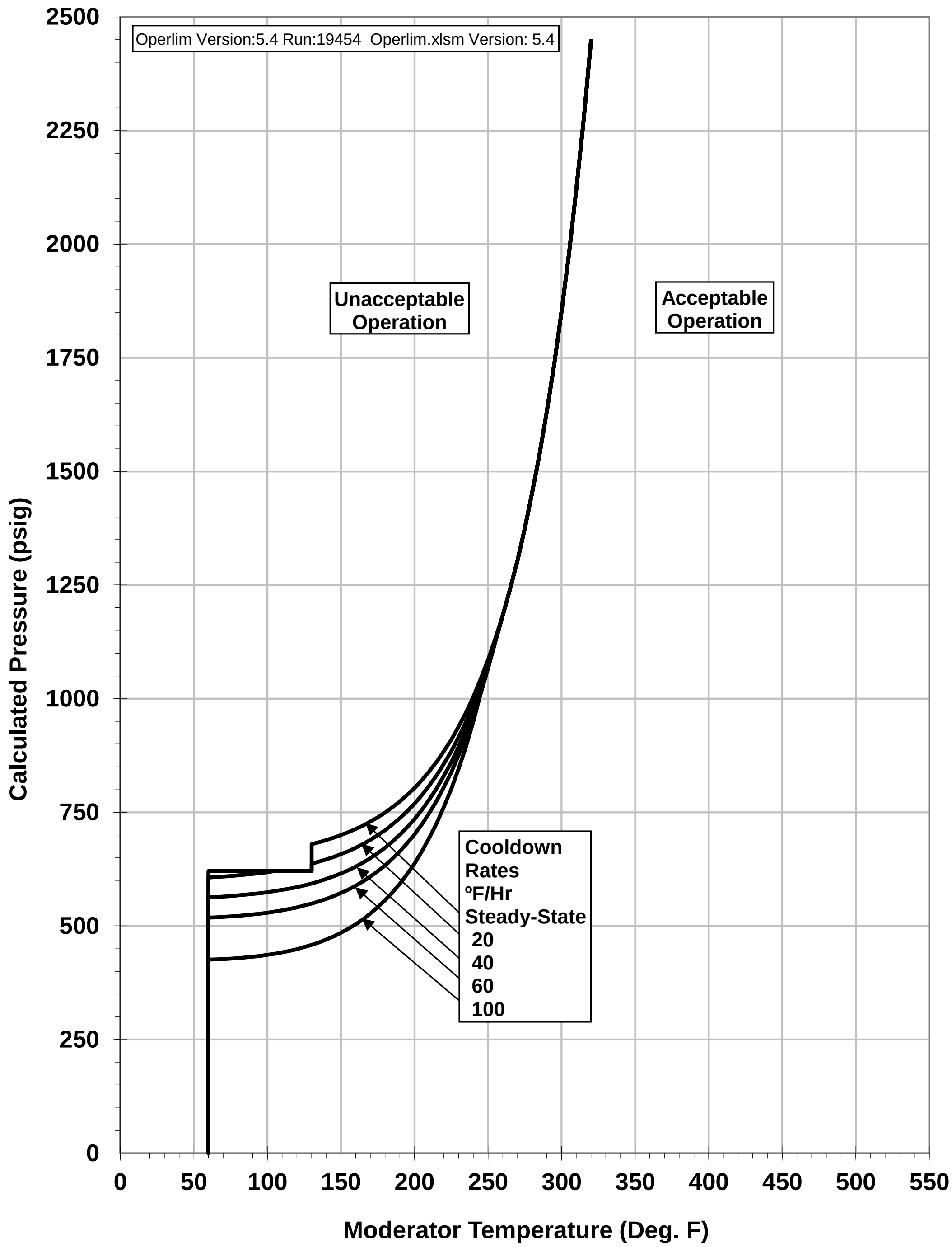


Figure 5.2-2 (Page 1 of 1)
Reactor Coolant System Cooldown
Limitations Applicable for 50 EFPY (LCO 3.4.3)

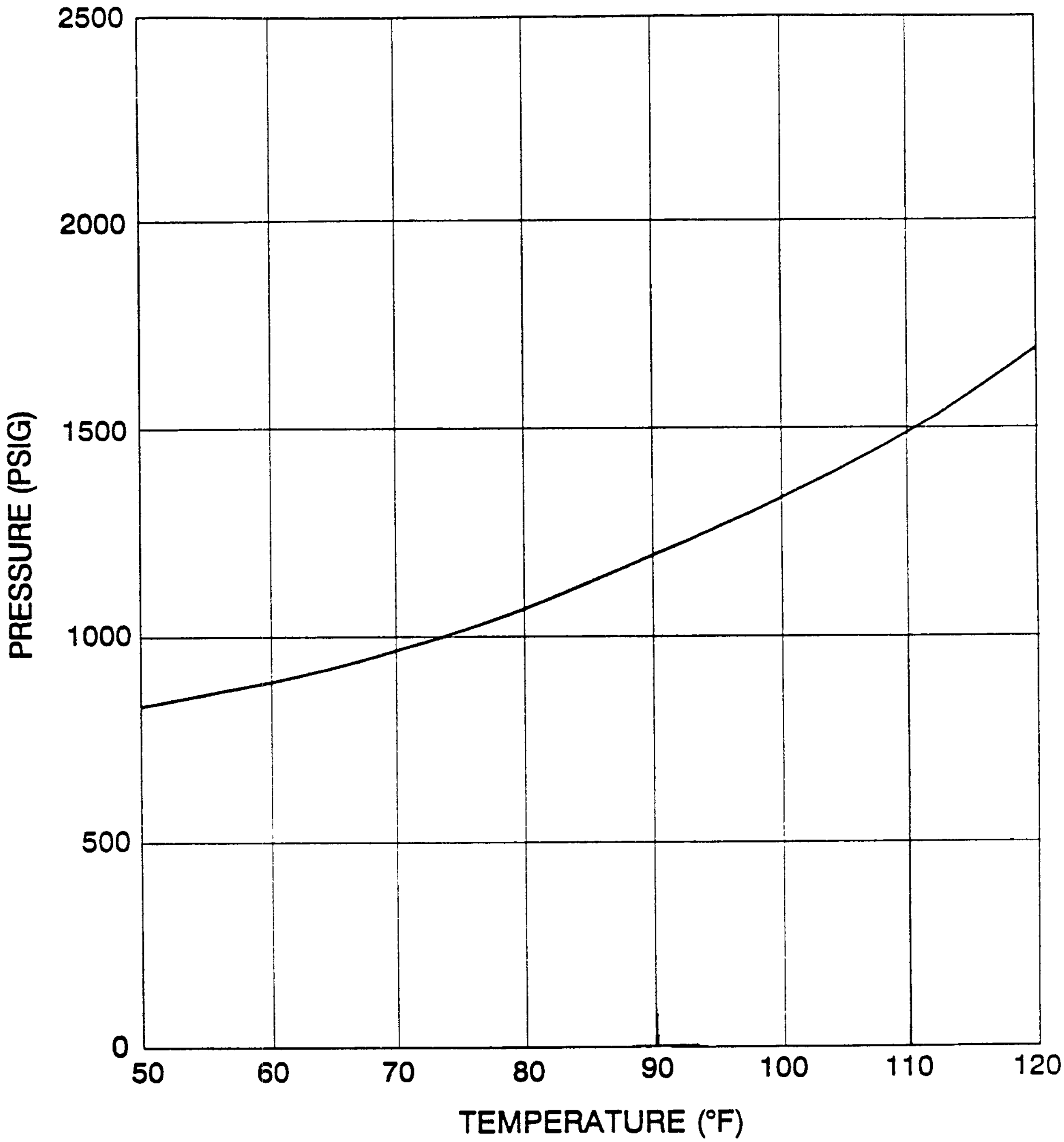


Figure 5.2-3 (Page 1 of 1)
Isolated Loop Pressure - Temperature Limit Curve (LCO 3.4.3)

Table 5.2-1 (Page 1 of 2)
Heatup Curve Data Points for 50 EFPY (LCO 3.4.3)

60°F/hr Heatup		**60°F/hr Criticality**		**100°F/hr Heatup**		**100°F/hr Criticality**	
T (°F)	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**
60	0	301	0	60	0	301	0
60	602	301	1190	60	552	301	947
65	602	305	1241	65	552	305	990
70	602	310	1303	70	552	310	1042
75	602	315	1358	75	552	315	1099
80	602	320	1417	80	552	320	1162
85	602	325	1483	85	552	325	1232
90	602	330	1555	90	552	330	1310
95	602	335	1636	95	552	335	1395
100	602	340	1724	100	552	340	1488
105	602	345	1821	105	552	345	1592
110	603	350	1929	110	552	350	1706
115	604	355	2048	115	552	355	1832
120	606	360	2179	120	552	360	1971
125	609	365	2324	125	552	365	2124
130	612	370	2483	130	552	370	2292
135	616			135	552	375	2464
140	621			140	553		
145	627			145	555		
150	633			150	557		
155	640			155	561		
160	648			160	565		
165	657			165	570		
170	667			170	575		
175	678			175	582		
180	691			180	590		
185	704			185	598		
190	719			190	608		
195	736			195	619		
200	755			200	631		
205	775			205	645		
210	798			210	660		
215	823			215	677		
220	851			220	696		
225	882			225	717		

Table 5.2-1 (Page 2 of 2)
Heatup Curve Data Points for 50 EFPY (LCO 3.4.3)

60°F/hr Heatup		**60°F/hr Criticality**		**100°F/hr Heatup**		**100°F/hr Criticality**	
T (°F)	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**
230	915			230	741		
235	953			235	766		
240	994			240	795		
245	1040			245	827		
250	1085			250	861		
255	1132			255	900		
260	1184			260	943		
265	1241			265	990		
270	1303			270	1042		
275	1358			275	1099		
280	1417			280	1162		
285	1483			285	1232		
290	1555			290	1310		
295	1636			295	1395		
300	1724			300	1488		
305	1821			305	1592		
310	1929			310	1706		
315	2048			315	1832		
320	2179			320	1971		
325	2324			325	2124		
330	2483			330	2292		
				335	2464		

Leak Test Limit	
T (°F)	**P (psig)**
283	2000
301	2485

Table 5.2-2 (Page 1 of 2)
Cooldown Curve Data Points for 50 EFPY (LCO 3.4.3)

Steady State		**20°F/hr**		**40°F/hr**		**60°F/hr**		**100°F/hr**	
T (°F)	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**
60	0	60	0	60	0	60	0	60	0
60	621	60	607	60	563	60	518	60	426
65	621	65	608	65	564	65	519	65	426
70	621	70	609	70	565	70	520	70	427
75	621	75	610	75	566	75	521	75	428
80	621	80	611	80	567	80	522	80	429
85	621	85	613	85	569	85	523	85	431
90	621	90	614	90	570	90	525	90	432
95	621	95	616	95	572	95	527	95	434
100	621	100	618	100	574	100	529	100	436
105	621	105	621	105	576	105	531	105	439
110	621	110	621	110	579	110	534	110	442
115	621	115	621	115	582	115	537	115	445
120	621	120	621	120	585	120	541	120	449
125	621	125	621	125	589	125	545	125	453
130	621	130	621	130	593	130	549	130	458
130	680	130	637	135	598	135	554	135	464
135	684	135	641	140	603	140	559	140	470
140	689	140	646	145	609	145	566	145	477
145	694	145	652	150	615	150	572	150	485
150	700	150	658	155	623	155	580	155	494
155	706	155	665	160	630	160	588	160	504
160	713	160	672	165	639	165	598	165	515
165	721	165	680	170	649	170	609	170	527
170	729	170	689	175	660	175	620	175	541
175	739	175	700	180	672	180	633	180	556
180	749	180	711	185	685	185	648	185	573
185	761	185	723	190	700	190	664	190	593
190	774	190	737	195	717	195	682	195	614
195	788	195	752	200	735	200	702	200	637
200	803	200	769	205	755	205	724	205	664
205	821	205	788	210	778	210	748	210	693
210	840	210	808	215	802	215	775	215	725
215	861	215	831	220	830	220	805	220	761
220	884	220	856	225	860	225	838	225	801
225	910	225	884	230	894	230	875	230	846
230	938	230	915	235	931	235	916	235	895
235	970	235	949	240	973	240	961	240	949
240	1004	240	987	245	1018	245	1011	245	1010
245	1043	245	1029	250	1069	250	1067	250	1067
250	1085	250	1075	255	1125	255	1125	255	1125

Table 5.2-2 (Page 2 of 2)
Cooldown Curve Data Points for 50 EFPY (LCO 3.4.3)

Steady State		**20°F/hr**		**40°F/hr**		**60°F/hr**		**100°F/hr**	
T (°F)	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**	**T (°F)**	**P (psig)**
255	1132	255	1127	260	1183	260	1183	260	1183
260	1184	260	1183	265	1241	265	1241	265	1241
265	1241	265	1241	270	1305	270	1305	270	1305
270	1305	270	1305	275	1375	275	1375	275	1375
275	1375	275	1375	280	1452	280	1452	280	1452
280	1452	280	1452	285	1537	285	1537	285	1537
285	1537	285	1537	290	1632	290	1632	290	1632
290	1632	290	1632	295	1736	295	1736	295	1736
295	1736	295	1736	300	1851	300	1851	300	1851
300	1851	300	1851	305	1979	305	1979	305	1979
305	1979	305	1979	310	2120	310	2120	310	2120
310	2120	310	2120	315	2275	315	2275	315	2275
315	2275	315	2275	320	2448	320	2448	320	2448
320	2448	320	2448						

Table 5.2-3 (Page 1 of 1)

Overpressure Protection System (OPPS) Setpoints (LCO 3.4.12)

FUNCTION	SETPOINT
OPPS Enable Temperature	347°F
PORV Setpoint	≤ 397 psig

Table 5.2-4 (Page 1 of 1)
Calculation of Chemistry Factors Using Surveillance Capsule Data

Material	Capsule	Capsule f(a)	FF(b)	ΔRT_{NDT}(c)	FF * ΔRT_{NDT}	FF^2
Lower Shell Plate B6903-1(d) (Longitudinal)	V	0.297	0.6677	127.9	85.40	0.446
	U	0.618	0.8652	118.3	102.35	0.749
	W	0.952	0.9862	147.7	145.66	0.973
	Y	2.10	1.2018	141.7	170.30	1.444
	X	4.99	1.4020	175.8	246.46	1.965
Lower Shell Plate B6903-1(d) (Transverse)	V	0.297	0.6677	138.0	92.14	0.446
	U	0.618	0.8652	132.1	114.29	0.749
	W	0.952	0.9862	180.2	177.72	0.973
	Y	2.10	1.2018	166.9	200.58	1.444
	X	4.99	1.4020	179.0	250.95	1.965
				SUM:	1585.86	11.154
	CF = Σ(FF * ΔRT_{NDT}) ÷ Σ(FF^2) = (1585.86) ÷ (11.154) = **142.2°F(e)**					
Beaver Valley Unit 1 Surveillance Weld Metal(d) (Heat # 305424)	V	0.297	0.6677	169.4 (159.8)	113.10	0.446
	U	0.618	0.8652	174.8 (164.9)	151.23	0.749
	W	0.952	0.9862	197.5 (186.3)	194.76	0.973
	Y	2.10	1.2018	189.2 (178.5)	227.40	1.444
	X	4.99	1.4020	252.1 (237.8)	353.39	1.965
				SUM:	1039.87	5.577
	CF = Σ(FF * ΔRT_{NDT}) ÷ Σ(FF^2) = (1039.87) ÷ (5.577) = **186.5°F(e)**					

Notes:

(a) f = Calculated surveillance capsule neutron fluence (x 10^{19} n/cm^2, E > 1.0 MeV). The surveillance capsule fluence results are contained in Table 4-1 of Reference 2.

(b) FF = fluence factor = $f^{(0.28 - 0.1 * \log f)}$.

(c) ΔRT_{NDT} values are the measured 30 ft-lb shift values. The Beaver Valley Unit 1 ΔRT_{NDT} values for the surveillance weld data are adjusted by a ratio of 1.06. Pre-adjusted values are listed in parentheses, and were taken from Table 4-1 of Reference 2.

NOTE: Per Regulatory Guide 1.99, Revision 2 (Reference 7), section 2.1 “Radiation Embrittlement of Reactor Vessel Materials,” the vessel weld chemistry factor is divided by the surveillance weld chemistry factor to obtain a ratio factor to multiply the ΔRT_{NDT} values by to obtain adjusted ΔRT_{NDT} values. In Table 5-2 of Reference 2, the ratio is determined to be 1.06 or (191.7/181.6).

(d) The plate and weld surveillance data is deemed non-credible per Appendix D of Reference 2.

(e) Position 2.1 chemistry factor values are summarized in Table 5-4 of Reference 2.

Table 5.2-4a (Page 1 of 2)

Calculation of Chemistry Factors[(a)]
(Based on St. Lucie Unit 1, Millstone Unit 2, and Fort Calhoun Surveillance Capsule Data)

Material	Capsule	Capsule f[(b)]	FF[(c)]	ΔRT_{NDT}[(d)]	FF *ΔRT_{NDT}	FF^2
Weld Metal Heat # 90136[(e)] (St. Lucie Unit 1)	97°	0.5174	0.8160	82.6 (72.34)	67.44	0.666
	104°	0.7885	0.9333	81.1 (67.4)	75.68	0.871
	284°	1.243	1.0606	83.8 (68.0)	88.85	1.125
Weld Metal Heat # 90136[(e)] (Millstone Unit 2)	97°	0.324	0.6902	67.5 (65.93)	46.61	0.476
	104°	0.949	0.9853	57.0 (52.12)	56.18	0.971
	83°	1.74	1.1523	61.4 (56.09)	70.74	1.328
				SUM:	405.50	5.437
	CF = Σ(FF * ΔRT_{NDT}) ÷ Σ(FF^2) = (405.50) ÷ (5.437) = **74.6°F**[(g)]					
Weld Metal Heat # 305414[(f)] (Fort Calhoun Unit 1)	W-225	0.488	0.800	197.30 (210)	157.83	0.640
	W-265	0.847	0.953	218.30 (225)	208.13	0.909
	W-275	1.54	1.119	215.90 (219)	241.68	1.253
	SUM:				607.64	2.802
	CF = Σ(FF * ΔRT_{NDT}) ÷ Σ(FF^2) = (607.64) ÷ (2.802) = **216.9°F**[(g)]					

Notes for Table 5.2-4a are on the following page.

Table 5.2-4a (Page 2 of 2)

Calculation of Chemistry Factors[(a)]
(Based on St. Lucie Unit 1, Millstone Unit 2, and Fort Calhoun Surveillance Capsule Data)

Notes:

(a) Use of St. Lucie and Fort Calhoun Surveillance Capsule Data approved by NRC letter dated February 20, 2002, "BEAVER VALLEY POWER STATION, UNIT 1–ISSUANCE OF AMENDMENT RE: AMENDED PRESSURE-TEMPERATURE LIMITS (TAC NO. MB2301)." As a result of the unclear identification of the Millstone Unit 2 surveillance weld heat number, the Millstone Unit 2 data was not originally incorporated into Beaver Valley Unit 1 chemistry factor calculations. Since the Millstone Unit 2 surveillance weld contains specimens made of Heat # 90136, the use of this data is appropriate. See Appendix D of Reference 2 for more details.

(b) f = calculated surveillance capsule fluence values (x 10^{19} n/cm^2, E > 1.0 MeV). The surveillance capsule fluence results for St. Lucie Unit 1 and Millstone Unit 2 are contained in Table 4-2 of Reference 2. The surveillance capsule fluence results for Fort Calhoun Unit 1 are contained in Table D-5 of Reference 3.

(c) FF = fluence factor = $f^{(0.28 - 0.1 * \log f)}$.

(d) ΔRT_{NDT} values are the measured 30 ft-lb. shift values. ΔRT_{NDT} values for the surveillance weld data are adjusted first by the difference in operating temperature then using the ratio procedure to account for differences in the surveillance weld chemistry and the beltline weld chemistry. Pre-adjusted values are listed in parentheses, and were taken from Tables 4-2 of Reference 2 and Table A-5 of Reference 9. The temperature adjustments for each capsule were calculated from the data in Table 5.2-4b and the average plant irradiation temperature for BV-1. The St. Lucie Unit 1 ΔRT_{NDT} values for the weld data are adjusted by a ratio of 1.17. The Millstone Unit 2 and Fort Calhoun ΔRT_{NDT} values were not adjusted since the ratio was less than 1.00; therefore, a conservative value of 1.00 was used.

(e) The St. Lucie Unit 1 and Millstone Unit 2 surveillance data is deemed credible per Appendix D of Reference 2; however, a full margin term should be utilized for conservatism when this data is applied as a result of the unclear identification of the Millstone Unit 2 weld specimen heat numbers. See Appendix D of Reference 2 for more details.

(f) The Fort Calhoun Unit 1 surveillance data is deemed non-credible per Appendix D of Reference 3.

(g) Position 2.1 chemistry factor values are summarized in Table 5-4 of Reference 2.

Table 5.2-4b (Page 1 of 1)

St. Lucie Unit 1, Millstone Unit 2, and Fort Calhoun Surveillance Weld Data[a][b]

Material	Capsule	Cu (wt. %)	Ni (wt. %)	Irradiated Temperature[c] (°F)	Capsule f[d] ($x10^{19}$ n/cm^2, E > 1.0 MeV)	ΔRT_{NDT}[e] (°F)
Weld Metal Heat # 90136 (St. Lucie Unit 1)	97°	0.23	0.07	541	0.5174	72.34
	104°	0.23	0.07	544.6	0.7885	67.4
	284°	0.23	0.07	546.3	1.243	68.0
Weld Metal Heat # 90136 (Millstone Unit 2)	97°	0.30	0.06	544.3	0.324	65.93
	104°	0.30	0.06	547.6	0.949	52.12
	83°	0.30	0.06	548.0	1.74	56.09
Weld Metal Heat # 305414 (Fort Calhoun Unit 1)	W-225	0.35	0.60	530	0.488	210
	W-265	0.35	0.60	536	0.847	225
	W-275	0.35	0.60	539.6	1.54	219

Notes:

(a) Use of St. Lucie and Fort Calhoun Surveillance Capsule Data approved by NRC letter dated February 20, 2002, “BEAVER VALLEY POWER STATION, UNIT 1 – ISSUANCE OF AMENDMENT RE: AMENDED PRESSURE-TEMPERATURE LIMITS (TAC NO. MB2301).” As a result of the unclear identification of the Millstone Unit 2 surveillance weld heat number, the Millstone Unit 2 data was not originally incorporated into Beaver Valley Unit 1 chemistry factor calculations. Since the Millstone Unit 2 surveillance weld contains specimens made of Heat # 90136, the use of this data is appropriate. See Appendix D of Reference 2 for more details.

(b) Data contained in this table was obtained from Reference 2, unless otherwise noted.

(c) Irradiated temperatures are the average inlet temperatures over the specific cycles corresponding to the operating time experienced by each of the respective capsules.

(d) f = calculated surveillance capsule fluence values.

(e) ΔRT_{NDT} values are the measured 30 ft-lb shift values from Table 4-2 of Reference 2 and Table D-5 of Reference 3.

Table 5.2-5 (Page 1 of 1)

Reactor Vessel Beltline Material Properties

Material Description	Cu (wt. %)	Ni (wt. %)	Position 1.1 Chemistry Factor (°F)	Initial RT_{NDT}[(a)] (°F)
Intermediate Shell Plate B6607-1	0.14	0.62	100.5	26.8
Intermediate Shell Plate B6607-2	0.14	0.62	100.5	53.6
Lower Shell Plate B6903-1	0.21	0.54	147.2	13.1
Lower Shell Plate B7203-2	0.14	0.57	98.7	0.4
Intermediate to Lower Shell Weld Seam (Heat # 90136) 11-714	0.27	0.07	124.3	-56
Intermediate Longitudinal Shell Weld Seams (Heat # 305424) 19-714 A&B	0.28	0.63	191.7	-56
Lower Longitudinal Weld Seams (Heat # 305414) 20-714 A&B	0.34	0.61	210.5	-56
Surveillance Weld (Heat # 305424)	0.26	0.61	181.6	---

Note:

(a) The initial RT_{NDT} values for the plates are based on measured data while the weld values are generic.

Table 5.2-6 (Page 1 of 2)

Reactor Vessel Extended Beltline Material Properties[(a)]

Material Description	Material ID	Heat Number (Lot Number)	Wt % Cu	Wt % Ni	Initial RT_{NDT}[(c)] (°F)
Upper Shell Forging	B6604	123V339VA1	0.12[(b)]	0.68	40
Upper to Intermediate Shell Girth Weld	10-714	305414 (3951 & 3958)	0.34	0.61	-56 (Gen)
		AOFJ	0.03	0.93	10 (Gen)
		FOIJ	0.03	0.94	10 (Gen)
		EODJ	0.02	1.04	10 (Gen)
		HOCJ	0.02	0.93	10 (Gen)
Inlet Nozzles	B6608-1	95443-1	0.10	0.82	48.5
	B6608-2	95460-1	0.10	0.82	-15.2
	B6608-3	95712-1	0.08	0.79	11.4
Inlet Nozzle Welds	1-717B 1-717D 1-717F	EODJ	0.02	1.04	10 (Gen)
		FOIJ	0.03	0.94	10 (Gen)
		HOCJ	0.02	0.93	10 (Gen)
		DBIJ	0.02	0.97	10 (Gen)
		EOEJ	0.01	1.03	10 (Gen)
		ICJJ	0.03	0.99	10 (Gen)
		JACJ	0.04	0.97	10 (Gen)
Outlet Nozzles	B6605-1	95415-1	0.13[(d)]	0.77	-26.2
	B6605-2	95415-2	0.13[(d)]	0.77	3.3
	B6605-3	95444-1	0.09	0.79	10.1
Outlet Nozzle Welds	1-717A 1-717C 1-717E	ICJJ	0.03	0.99	10 (Gen)
		IOBJ	0.02	0.97	10 (Gen)
		JACJ	0.04	0.97	10 (Gen)
		HOCJ	0.02	0.93	10 (Gen)
		EODJ	0.02	1.04	10 (Gen)
		FOIJ	0.03	0.94	10 (Gen)

Notes for Table 5.2-6 are on the following page.

Table 5.2-6 (Page 2 of 2)

Reactor Vessel Extended Beltline Material Properties[a]

Notes:

(a) Data obtained from Table 3-2 of Reference 2.

(b) The Cu wt % was not available from the CMTR so in accordance with Regulatory Guide 1.99, Revision 2, a standard deviation analysis (average + standard deviation) was done to determine the value based on Westinghouse 508 Class 2 Shell Forgings (55 data points).

(c) The initial RT_{NDT} value for the upper shell forging, inlet nozzle forgings, and outlet nozzle forgings are based on measured values. The generic initial RT_{NDT} values for the weld materials were determined in accordance with NUREG-0800 [Reference 11] and 10 CFR 50.61 [Reference 6].

(d) The Cu wt % was not available from the CMTR, so in accordance with Regulatory Guide 1.99, Revision 2, a standard deviation analysis (average + standard deviation) was done to determine the value based on Westinghouse 508 Class 2 Nozzle Forgings (178 data points).

Table 5.2-7 (Page 1 of 1)

Summary of Adjusted Reference Temperatures (ARTs) for 50 EFPY[e]

Material Description	50 EFPY	
	1/4T ART[a] (ºF)	3/4T ART[a] (ºF)
Intermediate Shell Plate B6607-1	195.2	171.2
Intermediate Shell Plate B6607-2	222.0	198.0
Lower Shell Plate B7203-2	166.4	142.8
Lower Shell Plate B6903-1	244.0[f]	208.8[f]
- Using S/C Data[b]	237.3	203.3
Intermediate Shell Longitudinal Weld 19-714A/B	182.4	133.5
- Using S/C Data[b]	177.7	130.2
Intermediate to Lower Shell Circ. Weld 11-714	175.7	146.0
- Using S/C Data [c]	109.3	91.4
Lower Shell Longitudinal Weld 20-714A/B	199.9	146.2
- Using S/C Data[d]	205.6	150.3
Upper Shell Forging B6604	139.4	119.2
Upper Shell to Intermediate Shell Girth Weld 10-714 (Heat # 305414)	172.9	122.5
-Using S/C Data[d]	177.9	125.9
Upper Shell to Intermediate Shell Girth Weld 10-714 (Heat #'s AOFJ and FOIJ)	88.4	44.0
Upper Shell to Intermediate Shell Girth Weld 10-714 (Heat #'s EODJ and HOCJ)	44.0	44.0
Inlet and Outlet Nozzle Welds (All Heat #'s)	44.0	44.0

Notes:

(a) ART = I + ΔRT_{NDT} + M.
(b) Based on Beaver Valley Unit 1 surveillance data. (Data not credible. ART calculated with a full σ_{Δ}.)
(c) Based on St. Lucie Unit 1 and Millstone Unit 2 surveillance data. (Data credible. ART calculated with a full σ_{Δ} per Appendix D of Reference 2.)
(d) Based on Fort Calhoun Unit 1 surveillance data. (Data not credible. ART calculated with a full σ_{Δ}.)
(e) Data obtained from Tables 7-2 and 7-3 of Reference 2. Nozzle ART values are excluded from this table, as these values are calculated using surface fluence values. See Reference 2 for nozzle ART values.
(f) For the purposes of P/T limit curve development, a 1/4T ART value of 244.5°F and a 3/4T ART value of 209.5°F were used for conservatism.

Table 5.2-8 (Page 1 of 1)

Calculation of Adjusted Reference Temperatures (ARTs) for 50 EFPY[c]

Parameter	VALUES	
Operating Time	50 EFPY	
Material	Plate B6903-1	Plate B6903-1
Location	Lower Shell Plate 1/4T ART(ºF)	Lower Shell Plate 3/4T ART(ºF)
Chemistry Factor, CF (ºF)	147.2	147.2
Fluence (f), n/cm^2 (E>1.0 Mev)	3.672×10^{19}	1.427×10^{19}
Fluence Factor, FF	1.3374	1.0987
ΔRT_{NDT} = CF x FF(ºF)	196.9[b]	161.7[b]
Initial RT_{NDT}, I(ºF)[a]	13.1	13.1
Margin, M(ºF)	34[b]	34[b]
ART = I+(CF*FF)+M, ºF per RG 1.99, Revision 2	244.0[d]	208.8[d]

Notes:

(a) Initial RT_{NDT} values are measured values for plate material.

(b) Based on Regulatory Guide 1.99, Revision 2 Position 1.1.
(Surveillance data not credible. ART calculated with a full σ_{Δ}.)

(c) Data obtained from Tables 7-2 and 7-3 of Reference 2.

(d) For the purposes of P/T limit curve development, a 1/4T ART value of 244.5°F and a 3/4T ART value of 209.5°F were used for conservatism.

Table 5.2-9 (Page 1 of 2)

RT_{PTS} Calculation for Beltline Region Materials at Life Extension (50 EFPY)[a]

Material Description	Material ID	Heat Number	Surface Fluence ($x10^{19}$ n/cm^2)	Fluence Factor, FF[b]	Chemistry Factor (°F)	Initial RT_{NDT}[c] (°F)	ΔRT_{PTS}[d] (°F)	σ_U (°F)	σ_Δ (°F)	Margin[e] (°F)	RT_{PTS}[f] (°F)
Intermediate Shell Plate	B6607-1	C4381-1	5.88	1.4330	100.5	26.8	144.0	0	17	34	204.8
Intermediate Shell Plate	B6607-2	C4381-2	5.88	1.4330	100.5	53.6	144.0	0	17	34	231.6
Lower Shell Plate	B6903-1	C6317-1	5.89	1.4333	147.2	13.1	211.0	0	17	34	258.1
→ Using non-credible surveillance data[g]			5.89	1.4333	142.2	13.1	203.8	0	17[g]	34	250.9
Lower Shell Plate	B7203-2	C6293-2	5.89	1.4333	98.7	0.4	141.5	0	17	34	175.9
Intermediate to Lower Shell Girth Weld	11-714	90136	5.88	1.4330	124.3	-56	178.1	17	28	65.5	187.6
→ Using credible surveillance data[h]			5.88	1.4330	74.6	-56	106.9	17	28[h]	65.5	116.4
Intermediate Shell Longitudinal Weld	19-714 A&B	305424	1.13	1.0341	191.7	-56	198.2	17	28	65.5	207.8
→ Using non-credible surveillance data[g]			1.13	1.0341	186.5	-56	192.9	17	28[g]	65.5	202.4
Lower Shell Longitudinal Weld	20-714 A&B	305414	1.14	1.0366	210.5	-56	218.2	17	28	65.5	227.7
→ Using non-credible surveillance data[i]			1.14	1.0366	216.9	-56	224.8	17	28[i]	65.5	234.4

Notes:

(a) Data obtained from Table E-1 of Reference 2.

(b) FF = fluence factor = $f^{(0.28 - 0.10 \log (f))}$.

(c) Initial RT_{NDT} values are measured values with the exception of the vessel welds.

(d) ΔRT_{PTS} = CF * FF.

(e) $M = 2 * (\sigma_U^2 + \sigma_\Delta^2)^{1/2}$.

(f) RT_{PTS} = Initial RT_{NDT} + ΔRT_{PTS} + Margin.

Table 5.2-9 (Page 2 of 2)

RT_{PTS} Calculation for Beltline Region Materials at Life Extension (50 EFPY)[a]

Notes continued:

(g) The BVPS-1 surveillance weld metal is the same weld heat as the BVPS-1 intermediate shell longitudinal welds (Heat #305424). The BVPS-1 surveillance weld data is non-credible; therefore, the higher σ_{Δ} term of 28°F was utilized for BVPS-1 weld heat 305424. The BVPS-1 surveillance plate material is representative of the BVPS-1 lower shell plate B6903-1. The surveillance plate material is non-credible; therefore, the higher σ_{Δ} term of 17°F was utilized for BVPS-1 plate B6903-1. These credibility evaluation conclusions are contained in Appendix D of Reference 2.

(h) The St. Lucie Unit 1 and Millstone Unit 2 surveillance weld metal is the same weld heat as the BVPS-1 intermediate to lower shell girth weld (Heat #90136). The St. Lucie Unit 1 surveillance weld data is credible; however, the full σ_{Δ} term of 28°F was utilized for BVPS-1 weld Heat #90136 for conservatism. Additional details and the credibility evaluation conclusions are contained in Appendix D of Reference 2.

(i) The Fort Calhoun surveillance weld metal is the same weld heat as the BVPS-1 lower shell longitudinal welds (Heat #305414). The Fort Calhoun surveillance weld data is non-credible; therefore, the higher σ_{Δ} term of 28°F was utilized for BVPS-1 weld Heat #305414. This credibility evaluation conclusion is contained in Appendix D of Reference 3 and confirmed in Reference 2.

Table 5.2-10 (Page 1 of 2)

RT_{PTS} Calculation for Extended Beltline Region Materials at Life Extension (50 EFPY)[(a)]

Material Description	Material ID	Heat Number (Lot Number)	Surface Fluence ($x10^{19}$ n/cm^2)	Fluence Factor, FF[(b)]	Chemistry Factor (°F)	Initial RT_{NDT}[(c)] (°F)	ΔRT_{PTS}[(d)] (°F)	σ_U (°F)	σ_Δ (°F)	Margin[(e)] (°F)	RT_{PTS}[(f)] (°F)
Upper Shell Forging	B6604	123V339VA1	0.718	0.9071	84.2	40	76.4	0	17	34	150.4
Upper to Intermediate Shell Girth Weld	10-714	305414 (3951 & 3958)	0.718	0.9071	210.5	-56	190.9	17	28	65.5	200.5
→ Using non-credible surveillance data[(g)]			0.718	0.9071	216.9	-56	196.7	17	28[(g)]	65.5	206.3
Upper to Intermediate Shell Girth Weld	10-714	AOFJ	0.718	0.9071	41.0	10	37.2	17	18.6	50.4	97.6
		FOIJ	0.718	0.9071	41.0	10	37.2	17	18.6	50.4	97.6
		EODJ	0.718	0.9071	27.0	10	24.5	17	12.2	41.9	76.4
		HOCJ	0.718	0.9071	27.0	10	24.5	17	12.2	41.9	76.4
Inlet Nozzles	B6608-1	95443-1	0.0210	0.1773	67.0	48.5	11.9	0	5.9	11.9	72.3
	B6608-2	95460-1	0.0210	0.1773	67.0	-15.2	11.9	0	5.9	11.9	8.6
	B6608-3	95712-1	0.0210	0.1773	51.0	11.4	9.0	0	4.5	9.0	29.5
Inlet Nozzle Welds	1-717 B 1-717 D 1-717 F	EODJ	0.0210	0.1773	27.0	10	4.8	17	2.4	34.3	49.1
		FOIJ	0.0210	0.1773	41.0	10	7.3	17	3.6	34.8	52.0
		HOCJ	0.0210	0.1773	27.0	10	4.8	17	2.4	34.3	49.1
		DBIJ	0.0210	0.1773	27.0	10	4.8	17	2.4	34.3	49.1
		EOEJ	0.0210	0.1773	20.0	10	3.5	17	1.8	34.2	47.7
		ICJJ	0.0210	0.1773	41.0	10	7.3	17	3.6	34.8	52.0
		JACJ	0.0210	0.1773	54.0	10	9.6	17	4.8	35.3	54.9
Outlet Nozzles	B6605-1	95415-1	0.0161	0.1501	95.3	-26.2	14.3	0	7.2	14.3	2.4
	B6605-2	95415-2	0.0161	0.1501	95.3	3.3	14.3	0	7.2	14.3	31.9
	B6605-3	95444-1	0.0161	0.1501	58.0	10.1	8.7	0	4.4	8.7	27.5
Outlet Nozzle Welds	1-717 A 1-717 C 1-717 E	ICJJ	0.0161	0.1501	41.0	10	6.2	17	3.1	34.6	50.7
		IOBJ	0.0161	0.1501	27.0	10	4.1	17	2.0	34.2	48.3
		JACJ	0.0161	0.1501	54.0	10	8.1	17	4.1	35.0	53.1
		HOCJ	0.0161	0.1501	27.0	10	4.1	17	2.0	34.2	48.3
		EODJ	0.0161	0.1501	27.0	10	4.1	17	2.0	34.2	48.3
		FOIJ	0.0161	0.1501	41.0	10	6.2	17	3.1	34.6	50.7

Notes:

(a) Data obtained from Table E-1 of Reference 2.

Table 5.2-10 (Page 2 of 2)

RT_{PTS} Calculation for Extended Beltline Region Materials at Life Extension (50 EFPY)[(a)]

Notes continued:

(b) FF = fluence factor = $f^{(0.28 - 0.10 \log (f))}$.

(c) Initial RT_{NDT} value for the upper shell forging, inlet nozzle forgings, and outlet nozzles are based on measured values. All other values are generic.

(d) ΔRT_{PTS} = CF * FF.

(e) $M = 2 * (\sigma_U^2 + \sigma_\Delta^2)^{1/2}$. However, σ_Δ need not exceed $0.5 * \Delta RT_{NDT}$.

(f) RT_{PTS} = Initial RT_{NDT} + ΔRT_{PTS} + Margin.

(g) The Fort Calhoun surveillance weld metal is the same weld heat as the BVPS-1 upper to intermediate shell girth weld (Heat #305414). The Fort Calhoun surveillance weld data is non-credible; therefore, the higher σ_Δ term of 28°F was utilized for BVPS-1 weld Heat #305414. This credibility evaluation conclusion is contained in Appendix D of Reference 3 and confirmed in Reference 2.

Table 5.2-11 (Page 1 of 1)

Reactor Vessel Toughness Data (Unirradiated)

COMPONENT	HEAT NO.	CODE NO.	MATERIAL TYPE	Cu (%)	Ni (%)	P (%)	T_{NDT} (°F)	RT_{NDT} (°F)	UPPER SHELF ENERGY (FT-LB)	
									MWD	NMWD
Closure Head Dome	C6213-1B	B6610	A533B CL. 1	.15	---	.010	-40	0*	121	---
Closure Head Seg.	A5518-2	B6611	A533B CL. 1	.14	---	.015	-20	-20*	131	---
Closure Head Flange	ZV3758	---	A508 CL. 2	.08	---	.007	60*	60*	>100	---
Vessel Flange	ZV-3661	FV-2961	A508 CL. 2	.12	---	.010	-54.7**	10**	166	---
Inlet Nozzle	9-5443-1	B6608-1	A508 CL. 2	.10	.82	.008	35.8**	48.5**	82.5	---
Inlet Nozzle	9-5460-1	B6608-2	A508 CL. 2	.10	.82	.010	-18.3**	-15.2**	94	---
Inlet Nozzle	9-5712-1	B6608-3	A508 CL. 2	.08	.79	.007	-2.5**	11.4**	97	---
Outlet Nozzle	9-5415-1	B6605-1	A508 CL. 2	.13	.77	.008	-26.2**	-26.2**	93	---
Outlet Nozzle	9-5415-2	B6605-2	A508 CL. 2	.13	.77	.007	3.0**	3.3**	112.5	---
Outlet Nozzle	9-5444-1	B6605-3	A508 CL. 2	.09	.79	.007	10.1**	10.1**	103	---
Upper Shell	123V339VA1	---	A508 CL. 2	.12	.68	.010	40	40*	155	101
Inter Shell	C4381-2	B6607-2	A533B CL. 1	.14	.62	.015	-10	53.6	123	83
Inter Shell	C4381-1	B6607-1	A533B CL. 1	.14	.62	.015	-10	26.8	128.5	94
Lower Shell	C6317-1	B6903-1	A533B CL. 1	.21	.54	.010	-50	13.1	134	83
Lower Shell	C6293-2	B7203-2	A533B CL. 1	.14	.57	.015	-20	0.4	129.5	85
Trans Ring	123V223	---	A508 CL. 2	---	---	---	30	30*	143	---
Bottom Hd Seg	C4423-3	B6618	A533B CL. 1	.13	---	.008	-30	-29*	124	---
Bottom Hd Dome	C4482-1	B6619	A533B CL. 1	.13	---	.015	-50	-33*	125.5	---
Inter to Lower Shell Weld	90136	---	---	.27	.07	---	---	-56	---	> 100
Inter Shell Long. Weld	305424	---	---	.28	.63	---	---	-56	---	> 100
Lower Shell Long. Weld	305414	---	---	.34	.61	---	---	-56	---	> 100
Weld HAZ				---	---	---	-40	-40	---	136.5

*Estimated Per NRC Standard Review Plan Branch Technical Position MTEB 5-2
** Estimated Per BWRVIP-173-A, Alternate Approach 2
MWD – Major Working Direction
NMWD – Normal to Major Working Direction
Note: For evaluation of Inservice Reactor Vessel Irradiation damage assessments, the best estimate chemistry values reported in the latest response to Generic Letter 92-01 or equivalent document are applicable.

5.0 ADMINISTRATIVE CONTROLS

5.3 Procedure Review and Approval

Each procedure or revision thereto of Technical Specification 5.4.1 shall be reviewed and approved, as described below, prior to implementation.

Each procedure or revision thereto shall be reviewed by an Independent Qualified Reviewer (IQR), who is knowledgeable in the functional area affected. This IQR is not the individual who prepared the procedure or associated procedure revision. The IQR shall ensure that cross disciplinary reviews of new procedures and procedure revisions are completed prior to approval of the procedure.

The responsible IQR shall ensure each procedure or revision thereto includes a determination of whether a procedure requires a 10 CFR 50.59 and/or 10 CFR 72.48 evaluation. If a procedure or revision thereto requires a 10 CFR 50.59 and/or 10 CFR 72.48 evaluation, the Responsible Discipline Manager or his designee shall ensure that the procedure, with the associated 10 CFR 50.59 and/or 10 CFR 72.48 evaluation, is forwarded to the Plant Operations Review Committee for review. Pursuant to 10 CFR 50.59 and 10 CFR 72.48, NRC approval of items involving license amendments shall be obtained prior to approval of the procedure or revision thereto for implementation. Final procedure approval shall be by the Responsible Discipline Manager or his designee, as specified in administrative procedures.

IQRs shall meet the applicable qualifications as delineated in plant procedures.

Temporary changes to procedures will be approved as described in the FENOC QAPM, Regulatory Guide 1.33 conformance description.

5.0 ADMINISTRATIVE CONTROLS

5.4 Record Retention

The following records shall be retained for at least five (5) years:

1. Records and logs of facility operation covering the time interval at each power level.
2. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
3. All reportable events of the type described in 10 CFR 50.73.
4. Records of surveillance activities, inspections and calibrations required by the Technical Specifications.
5. Records of reactor tests and experiments.
6. Records of changes made to operating procedures.
7. Records of radioactive shipments.
8. Records of sealed source leak tests and results.
9. Records of annual physical inventory of all sealed source material of record.

The following records shall be retained for the duration of the Facility Operating License:

1. Records and drawing changes reflecting facility design modifications made to systems and equipment described in the Final Safety Analysis Report.
2. Records of new irradiated fuel inventory, fuel transfers and assembly burnup histories.
3. Records of facility radiation and contamination surveys.
4. Records of radiation exposure for all individuals entering radiation control areas.
5. Records of gaseous and liquid radioactive material released to the environs.
6. Records of transient or operational cycles for those facility components designed for a limited number of transients or cycles.
7. Records of training and qualification for current numbers of the plant staff.
8. Records of in-service inspections performed pursuant to the Technical Specifications.

5.4 Record Retention

9. Records of Quality Assurance activities required by the QA Manual.

10. Records of reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10 CFR 50.59 and 10 CFR 72.48.

11. Records of meetings of the onsite review committee and the independent review board.

12. Records of the service lives of all hydraulic and mechanical snubbers including the date at which the service life commences and associated installation and maintenance records.

13. Records of analyses required by the Radiological Environmental Monitoring Program.

14. Records of reviews performed for changes made to the Offsite Dose Calculation Manual and the Process Control Program.

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B 3.0 LICENSING REQUIREMENT (LR) APPLICABILITY

BASES

LRs

LR 3.0.1 through LR 3.0.3 establish the general requirements applicable to all LRs and apply at all times, unless otherwise stated.

LR 3.0.1

LR 3.0.1 establishes the Applicability statement within each individual LR as the requirement for when the LR is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each LR).

LR 3.0.2

LR 3.0.2 establishes that upon discovery of a failure to meet an LR, 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 an LR are not met. This Specification establishes that:

a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and

b. Completion of the Required Actions is not required when an LCO 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 LR must be met. This time limit is the Completion Time to restore an inoperable/Nonfunctional system or component to OPERABLE/FUNCTIONAL status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, entry into LR 3.0.3 may be required, or a shutdown may be required to place the unit in a MODE or condition in which the LR 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 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 an LR is met or is no longer applicable, unless otherwise stated in the individual LR.

BASES

LR 3.0.2 (continued)

The nature of some Required Actions in some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions no longer exist. The individual LR's ACTIONS specify the Required Actions where this is the case.

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/Nonfunctional, alternatives should be used instead. Doing so limits the time both subsystems/trains of a required function are inoperable/Nonfunctional and limits the time conditions exist which may result in LR 3.0.3 being entered. Individual LRs may specify a time limit for performing an LRS 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 LR becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new LR becomes applicable, and the ACTIONS Condition(s) are entered.

LR 3.0.3

LR 3.0.3 establishes the actions that must be implemented when an LR is not met and:

a. The ACTIONS require that LR 3.0.3 be entered;

b. An associated Required Action and Completion Time is not met and no other Condition applies; or

c. 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.

BASES

LR 3.0.3 (continued)

This LR delineates the actions required when directed by the associated ACTIONS, or when operation cannot be maintained within the prescribed limits as defined by the LR and its ACTIONS. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or components from service in lieu of other alternatives that would not result in redundant systems or components being inoperable/Nonfunctional.

Upon entering LR 3.0.3, Action must be initiated to immediately communicate the situation to the Shift Manager and document the condition in accordance with the FENOC Corrective Action Program. Entry into LR 3.0.3 may result in the Unit being outside of its design/licensing bases and therefore potentially reportable per 10 CFR 50.72 and/or 50.73. The safety significance of the condition is required to be evaluated per NOP-OP-1009 “Operability Determinations and Functionality Assessments” (consistent with the guidance of NRC Regulatory Issue Summary 2005-20 (Revision 1), and as required by Appendix B of 10 CFR 50) and appropriate corrective actions are required to be initiated, within the time frame determined by the Shift Manager that shall not exceed 48 hours from the time of entry into LR 3.0.3. The time frame for completion of the corrective actions shall be commensurate with the safety significance of the condition, consistent with the guidance of NOP-OP-1009.

The actions required by LR 3.0.3 may be terminated and LR 3.0.3 exited if any of the following occurs:

a. The LR is now met,

b. The LR is no longer applicable,

c. A Condition exists for which the Required Actions have now been performed, or

d. 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 LR 3.0.3 is exited.

LR 3.0.4

LR 3.0.4 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable/Nonfunctional to comply with ACTIONS. The sole purpose of this LR is to provide an exception to LR 3.0.2 (e.g., to not comply with the applicable ACTIONS) to allow the performance of required testing to demonstrate either:

BASES

LR 3.0.4 (continued)

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

b. The OPERABILITY/FUNCTIONALITY 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/FUNCTIONALITY. If the OPERABILITY/ FUNCTIONALITY of the affected equipment can not be demonstrated, the administrative controls will also ensure the equipment/plant is restored to the required condition in a timely manner. This LR does not provide time to perform any other preventive or corrective maintenance. Minor corrections such as adjustments of limit switches to correct position indication anomalies are considered within the scope of this LR.

An example of demonstrating the OPERABILITY/FUNCTIONALITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with ACTIONS and must be reopened to perform the surveillance requirements.

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

LR 3.0.5

The purpose of LR 3.0.5 is to provide guidance that clarifies the appropriate action when LRM requirements specified in the Technical Specifications such as those listed in the Tables containing Instrumentation Response Times or in the COLR are not met. The guidance of this LR is intended to prevent potential confusion or misapplication of the provisions in the LRM to the requirements governed by Technical Specifications.

B 3.0 LICENSING REQUIREMENT SURVEILLANCE (LRS) APPLICABILITY

BASES

LRSs

LRS 3.0.1 through LRS 3.0.3 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.

LRS 3.0.1

LRS 3.0.1 establishes the requirement that surveillances must be met during the MODES or other conditions in the Applicability for which the requirements of the LR apply unless otherwise stated in an individual LRS. The purpose of this LRS is to ensure that surveillances are performed to verify the OPERABILITY/FUNCTIONALITY of systems and components and that parameters are within specified limits to ensure safe operation of the facility when the plant is in a MODE or other specified condition for which the associated LRs are applicable. Failure to meet a LRS within the specified Frequency, in accordance with LRS 3.0.2, constitutes a failure to meet a LR.

Surveillances may be performed by means of any series of sequential, overlapping, or total steps provided the entire Surveillance is performed within the specified Frequency. Additionally, the definition related to instrument testing (e.g., CHANNEL CALIBRATION) specify that these tests are performed by means of any series of sequential, overlapping, or total steps.

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

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

b. The requirements of the LRS(s) are known not to be met between required performance of LRSs.

LRSs do not have to be performed when the facility is in a MODE or other specified condition for which the requirements of the associated LR are not applicable unless otherwise specified. The LRSs associated with a Test Exception are only applicable when the Test Exception is used as an allowable exception to the requirements of an LR.

Unplanned events may satisfy the requirements (including applicable acceptance criteria) for a given LRS. In this case, the unplanned event may be credited as fulfilling the performance of the LRS. This allowance includes those LRSs whose performance is normally precluded in a given MODE or other specified condition.

BASES

LRS 3.0.1 (continued)

Surveillances, including surveillances invoked by Required Actions, do not have to be performed on inoperable/Nonfunctional equipment because the ACTIONS define the remedial measures that apply. Surveillances have to be met and performed in accordance with LRS 3.0.2, prior to returning equipment to OPERABLE/FUNCTIONAL status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE/FUNCTIONAL. This includes ensuring applicable LRSs are not failed and their most recent performance is in accordance with LRS 3.0.2. Post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE/FUNCTIONAL 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.

An example of this process is Auxiliary Feedwater (AFW) pump turbine maintenance during refueling that requires testing at steam pressures of greater than 600 psig. If other appropriate testing is satisfactorily completed, the AFW System can be considered OPERABLE. This allows startup and other necessary testing to proceed until the plant reaches the steam pressure required to perform the testing.

LRS 3.0.2

LRS 3.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per . . ." interval.

LRS 3.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the LRS. The exceptions to LRS 3.0.2 are those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply.

BASES

LRS 3.0.2 (continued)

These exceptions are stated in the individual LRs or LRS. The requirements of regulations take precedence over the LRs. The LRs cannot in and of themselves extend a test interval specified in the regulations.

As stated in LRS 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per ..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable/Nonfunctional equipment in an alternative manner.

The provisions of LRS 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

LRS 3.0.3

LRS 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable/Nonfunctional or an affected variable outside the specified limits when a surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is greater, applies from the point in time that it is discovered that the surveillance has not been performed in accordance with LRS 3.0.2, and not at the time that the specified Frequency was not met.

This delay period provides adequate time to complete surveillances that have been missed. This delay period permits the completion of a surveillance before complying with Required Actions or other remedial measures that might preclude completion of the surveillance.

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

BASES

LRS 3.0.3 (continued)

When a surveillance with a Frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to being placed into use, or in accordance with 10 CFR 50.4, etc.) is discovered to not have been performed when specified, LRS 3.0.3 allows the full delay period of up to the specified Frequency to perform the surveillance. However, since there is not a time interval specified, the missed surveillance should be performed at the first reasonable opportunity.

LRS 3.0.3 provides a time limit for, and allowances for the performance of, surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for LRSs is expected to be an infrequent occurrence. Use of the delay period established by LRS 3.0.3 is a flexibility which is not intended to be used as an operational convenience to extend surveillance intervals. While up to 24 hours or the limit of the specified surveillance interval is provided to perform the missed surveillance, it is expected that the missed surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the surveillance as well as any plant configuration changes required or shutting the plant down to perform the surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the surveillance. This risk impact should be managed through the program in place to implement 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants.” This Regulatory Guide addresses consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management action up to and including plant shutdown. The missed surveillance should be treated as an emergent condition as discussed in the Regulatory Guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. Missed surveillances for important components should be analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed surveillances will be placed in the Corrective Action Program.

BASES

LRS 3.0.3 (continued)

If a surveillance is not completed within the allowed delay period, then the equipment is considered inoperable/Nonfunctional or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LR Action Condition begins immediately upon expiration of the delay period. If a surveillance is failed within the delay period, then the equipment is inoperable/Nonfunctional, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LR Action Condition begin immediately upon the failure of the surveillance.

Completion of the surveillance within the delay period allowed by this Specification, or within the Allowed Outage Time of the applicable ACTIONS, restores compliance with LRS 3.0.1.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.1 - B 3.1.8 Boration Systems

BASES

BACKGROUND

The boron injection system ensures that negative reactivity control is available during each MODE of facility operation.

With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems Nonfunctional. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

With the RCS average temperature less than 200°F, a low head safety injection pump may be used in lieu of the FUNCTIONAL charging pump with a minimum RCS vent of 2.07 square inches open to the pressurizer relief tank (PRT) or containment atmosphere. This will provide latitude for maintenance and ISI examinations on the charging system for repair or corrective action and will ensure that boration and makeup are available when the charging pumps are out-of-service. The requirement for an RCS vent ensures that the RCS pressure will not exceed the shutoff head of the low head safety injection pumps.

MOV-1SI-890C is the low head safety injection pump discharge isolation valve to the RCS coldlegs, the valve must be closed prior to reducing RCS pressure below the RWST head pressure to prevent draining into the RCS. Emergency backup power is not required since this valve is outside containment and can be manually operated if required, this will allow the associated diesel generator to be taken out of service for maintenance and testing.

The Technical Specification limitations for a maximum of one centrifugal charging pump to be OPERABLE and the surveillance requirement to verify all charging pumps except the required OPERABLE pump to be inoperable less than or equal to the enable temperature set forth in the PTLR provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV. Substituting a low head safety injection pump for a charging pump in MODES 5 and 6 will not increase the probability of an overpressure event since the shutoff head of the low head safety injection pumps is less than or equal to the setpoint of the overpressure protection system.

BASES

BACKGROUND (continued)

The boration capability of the boric acid storage system is sufficient to provide a SHUTDOWN MARGIN from all operating conditions of 1.0% Δk/k after xenon decay and cooldown to 200°F. The maximum boration capability requirements occur at BOL from full power peak xenon conditions and requires 11,336 gallons of 7000 ppm borated water from the boric acid storage tanks.

With the RCS temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes Nonfunctional.

The boration capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1% Δk/k after xenon decay and cooldown from 200°F to 140°F. This condition requires either 5000 gallons of 7000 ppm borated water from the boric acid storage tanks or 175,000 gallons of 2400 ppm borated water from the refueling water storage tank.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.9 Rod Position Indication - Shutdown

BASES

BACKGROUND	The LR applies to the Unit 1 group demand position indication. The rod position indication system provides indication of rod position in the control room which is used to verify that the rods are correctly positioned. In operating MODES (1 and 2), this indication is used to verify rod insertion and alignment limits which are initial conditions of Design Basis Accidents (DBAs) are met and to verify that the rods are fully inserted following a reactor trip. The requirements for Rod Position Indication in Modes 1 and 2 are specified in the Technical Specifications. In the shutdown MODES addressed by this LR, rod position indication only provides information to verify rod position, and is not relied on to verify the initial conditions of DBAs are met or to verify rod insertion after a reactor trip.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.10 Boron Dilution

BASES

BACKGROUND	A minimum flow rate of at least 3000 GPM provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3000 GPM will circulate an equivalent Reactor Coolant System volume of 9370 cubic feet in approximately 30 minutes. The reactivity change rate associated with boron reductions will, therefore, be within the capability for operator recognition and control.

B 3.3 INSTRUMENTATION

B 3.3.3 Meteorological Monitoring Instrumentation

BASES

BACKGROUND	The FUNCTIONALITY of the meteorological instrumentation ensures that sufficient meteorological data is available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public and is consistent with the recommendations of Regulatory Guide 1.23, "Onsite Meteorological Programs."

B 3.3 INSTRUMENTATION

B 3.3.4 Axial Flux Difference (AFD) Monitor Alarm

BASES

BACKGROUND	Surveillance of the AFD verifies that the AFD, as indicated by the Nuclear Instrumentation System (NIS) excore channels, is within its limits. During operation above 50% RATED THERMAL POWER, when the AFD monitor alarm is Nonfunctional, additional surveillance criteria is required by the Licensing Requirements Manual beyond the surveillance criteria required by the Technical Specifications to detect operation outside of the limits.

B 3.3 INSTRUMENTATION

B 3.3.5 Quadrant Power Tilt Ratio (QPTR) Monitor Alarm

BASES

BACKGROUND	Surveillance of the QPTR verifies that the QPTR, as indicated by the Nuclear Instrumentation System (NIS) excore channels, is within its limits. During operation above 50% RATED THERMAL POWER, when the QPTR monitor alarm is Nonfunctional, additional surveillance criteria is required by the Licensing Requirements Manual beyond the surveillance criteria required by the Technical Specifications to detect any relatively slow changes in QPTR. For those causes of core power tilt that occur quickly (e.g., a dropped rod), there are other indications of abnormality that prompt a verification of core power tilt.

B 3.3 INSTRUMENTATION

B 3.3.6 Seismic Monitoring Instrumentation

BASES

BACKGROUND	The FUNCTIONALITY of the seismic monitoring instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility and is consistent with the recommendations of Regulatory Guide 1.12, "Instrumentation for Earthquakes." The measurement ranges provided in Table 3.3.6-1 include the measurement tolerance provided within Regulatory Guide 1.12 by reference to ANSI N18.5.

B 3.3 INSTRUMENTATION

B 3.3.7 Movable Incore Detectors

BASES

BACKGROUND	The FUNCTIONALITY of the movable incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The FUNCTIONALITY of this system is demonstrated by irradiating each detector used and determining the acceptability of its voltage curve. Guidance for changing incore detector requirements can be found in the NRC SER for License Amendments 233 and 115, dated September 7, 2000. For the purpose of measuring $F_Q(Z)$ or $F^N_{\Delta H}$, a full incore flux map is used. Quarter-core flux maps, as defined in WCAP-8648, June 1976, may be used in recalibration of the excore neutron flux detection system, and full incore flux maps or symmetric incore thimbles may be used for monitoring the Quadrant Power Tilt Ratio when one Power Range Channel is inoperable.

B 3.3 INSTRUMENTATION

B 3.3.8 Leading Edge Flow Meter

BASES

BACKGROUND

The Leading Edge Flow Meter (LEFM) is the preferred method of obtaining the daily calorimetric heat balance measurements. A properly operating LEFM provides superior measurement accuracy, and more reliable assurance that the reactor is being operated at a power level that is within the assumptions of the design basis accident analyses.

The LEFM system provides measurements of feedwater mass flow and temperature yielding a total power measurement uncertainty of better than ±0.6% RTP at full power. This is more accurate than the venturi-based flow instrumentation. However, the accuracy of the LEFM is only valid while the instrument is performing as designed. The on-line verification and self-diagnostic features of the LEFM provides the ability to assure that the instrument is performing as designed.

The Applicability Statement applies when performing calorimetric power measurements during MODE 1 operations at steady-state conditions above 98.6% of RTP. The Operating License limits the maximum steady state power to 100% of RTP, when calorimetric heat balance measurements are made daily using the LEFM.

If the LEFM is not FUNCTIONAL during the interval between required calorimetric heat balance measurements, plant operation may continue at ≤ 100% of RTP steady-state, using the existing Nuclear Instrumentation System (NIS) indication until the next required performance of the daily power calorimetric surveillance is due.

If the LEFM remains Nonfunctional at the time that the next required calorimetric heat balance measurement is due, plant operation may continue at ≤ 98.6% of RTP steady-state, by making calorimetric measurements using feedwater flow venturis and Resistance Temperature Detector (RTD) indications. The requirement to reduce power within one hour is based upon comparison to similar action statements in the technical specifications. The increase in likelihood that the NIS will need renormalizing after 25 hours compared to after 24 hours is considered negligible (or after 31 hours compared to after 30 hours if Technical Specification SR 3.0.2 is applied).

It is preferable that the daily heat balance calculations be made using the subroutine on the in-plant process computer (IPC). If the IPC is unavailable, a manual calculation that accounts for steam generator blowdown is acceptable, and may be performed in lieu of using the IPC.

BASES

BACKGROUND (continued)

This surveillance is performed every 24 hours when power is above 50%. The NIS excore power range channel indications are renormalized if they are not found to be within ±2% of the calorimetric measurement. This ±2% requirement for renormalization is distinct from the allowance for calorimetric uncertainty, and these allowances are handled as independent contributions to determine the maximum power assumed in design basis accident analyses.

The plant may then be run for the next 24-hour period using this normalized NIS indication. Although calorimetric power indication may be monitored continuously, it is not required to be consulted again until the required daily calorimetric comparisons of NIS indication are performed.

The surveillance requirement to perform planned maintenance and inspections every 18 months is based upon the manufacturer's recommendations, and is consistent with the surveillance intervals specified for similar electronic apparatus.

Additional guidance for determining steady-state THERMAL POWER is taken from NEI POSITION STATEMENT, "Guidance to Licensees on Complying with the Licensed Power Limit," dated June 12, 2008 [ML081750537], endorsed by the NRC in Regulatory Issue Summary 2007-21, Revision 1, "Adherence to Licensed Power Limits," dated February 9, 2009 [ML082690105], and is described in the BVPS Operating Manual.

B 3.3 INSTRUMENTATION

B 3.3.9 Turbine Overspeed Protection

BASES

BACKGROUND	This LR is provided to ensure that the turbine overspeed protection instrumentation and the turbine speed control valves are FUNCTIONAL and will protect the turbine from excessive overspeed. Protection from turbine excessive overspeed is required since excessive overspeed of the turbine could generate potentially damaging missiles which could impact and damage safety related components, equipment or structures. Surveillance test intervals for the turbine speed control valves are assumed in a turbine overspeed calculation discussed in the Beaver Valley Power Station Unit No. 1 Updated Final Safety Analysis Report. The LRS Note allows for entry into the applicability of LR 3.9 without LRS 3.3.9.1, 3.3.9.2, 3.3.9.3, and 3.3.9.4 being performed for up to 72 hours after entry into MODE 3 during station startup under certain conditions. These conditions are after any steam flow path, i.e., one main steam isolation valve, one main steam bypass valve or any other steam flow path, to the turbine is not isolated during station startup. The 72 hour delay will permit entry into MODE 3 during station startup to establish steam conditions for valve testing. Testing the valves under steam conditions is more representative of plant conditions than testing when steam is isolated. The valves may be considered FUNCTIONAL prior to entry into MODE 3 during station startup provided testing has been satisfactorily completed to the extent possible and the valves are not otherwise believed to be incapable of performing their function.

B 3.3 INSTRUMENTATION

B 3.3.11 Fuel Storage Pool Area Radiation Monitor

BASES

BACKGROUND	The Fuel Storage Pool Area Radiation Monitor functions to assure personnel safety around the fuel storage pool. The FUNCTIONALITY of this radiation monitor ensures that the radiation levels are continually measured when fuel is present in the pool or in the building and that the alarm is initiated when the radiation level exceeds the monitor setpoint. Unit 1 currently has an exemption to the requirements of 10 CFR 70.24, “Criticality Accident Requirements” for a criticality monitor. In order to meet the requirements for the exemption to 10 CFR 70.24, the Unit 1 Fuel Storage Pool Area Radiation Monitor is required FUNCTIONAL. As Unit 2 no longer has an exemption to 10 CFR 70.24, Unit 2 must meet the requirements of 10 CFR 50.68, “Criticality Accident Requirements”. The Unit 2 Fuel Storage Pool Area Radiation Monitor is required FUNCTIONAL to meet the criteria set forth in 10 CFR 50.68.

B 3.3 INSTRUMENTATION

B 3.3.12 Explosive Gas Monitoring Instrumentation

BASES

BACKGROUND	This instrumentation includes provisions for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the waste gas holdup system. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

B 3.3 INSTRUMENTATION

B 3.3.13 Containment Hydrogen Analyzers

BASES

BACKGROUND	This LR is provided to ensure that the containment hydrogen analyzers are FUNCTIONAL and capable of measuring the hydrogen concentration in the containment atmosphere during a beyond design basis accident (BDBA). 10 CFR 50.44 for combustible gas control in containment was revised, effective October 16, 2003. The revised 10 CFR 50.44 no longer defines a design-basis LOCA hydrogen release and eliminated the requirements for hydrogen control systems to mitigate such a release. With the elimination of the design-basis LOCA hydrogen release, the hydrogen analyzers are no longer required to mitigate a design-basis accident and were removed from the Technical Specifications by License Amendments 259 (Unit 1) and 142 (Unit 2). However, the hydrogen analyzers are required to diagnose the course of a BDBA and implement severe accident management strategies for hydrogen control. Maintaining requirements within the LRM for a hydrogen monitoring system capable of diagnosing BDBAs (as described in BVPS Letter to the NRC L-04-012, dated January 28, 2004) is an NRC commitment.

B 3.3 INSTRUMENTATION

B 3.3.14 Control Room Isolation Radiation Monitors

BASES

BACKGROUND	The Control Room Isolation Radiation Monitors provide a backup function to isolate the control room. The primary means for automatic control room isolation is the containment phase B isolation signal. The OPERABILITY requirements for the containment phase B isolation signal are specified in the technical specifications. The FUNCTIONALITY of these radiation monitors ensure that the radiation level in the control room is continually measured (in MODES 1, 2, 3, and 4) and that the automatic function of the monitors is initiated when the radiation level exceeds the monitor setpoint.

B 3.3 INSTRUMENTATION

B 3.3.15 Containment Area Radiation Alarm

BASES

BACKGROUND	This LR only addresses the alarm function of the containment area radiation monitors. The indication provided by these monitors is addressed in the Post Accident Monitoring Instrumentation Technical Specification. The Containment Area Radiation Alarm provides a warning of high radiation in the containment. The FUNCTIONALITY of these radiation monitors ensures that the radiation level in the containment is continually measured (in MODES 1, 2, 3, and 4) and that the alarm is initiated when the radiation level exceeds the monitor setpoint.

B 3.3 INSTRUMENTATION

B 3.3.16 Accident Monitoring Instrumentation

BASES

BACKGROUND	The OPERABILITY/FUNCTIONALITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."

B 3.3 INSTRUMENTATION

B 3.3.17 Containment Purge and Exhaust Isolation Radiation Monitors

BASES

BACKGROUND	The Unit 1 Containment Purge and Exhaust Isolation Radiation Monitors provide a backup function to automatically isolate the containment purge and exhaust system penetration flow paths on high radiation to limit the release of radioactive material from the containment to the environment. The requirements of this LR are applicable during movement of recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours). The primary means of limiting the release of radioactive material from the Unit 1 containment exhaust to the environment is filtration of the containment exhaust by the Supplemental Leak Collection and Release System (SLCRS). The OPERABILITY requirements for the SLCRS to filter containment exhaust are specified in the Unit 1 Technical Specifications. The FUNCTIONALITY of these radiation monitors ensure that the radiation level in the Purge and Exhaust system is continually measured (during movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies) and that the backup function to SLCRS filtration (i.e., the automatic isolation function of the radiation monitors) is initiated when the radiation level exceeds the setpoint.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.1 Loop Isolation Valves - Shutdown

BASES

BACKGROUND

LR 3.4.1 ensures that power is removed from isolated loop isolation valve operators when closed to perform maintenance in MODES 5 or 6 to prevent an inadvertent loop startup.

LR 3.4.1 is applicable whenever an RCS loop has been isolated in MODES 5 and 6 with fuel in the reactor vessel. LR 3.4.1 is not applicable when there is no fuel in the reactor vessel.

An RCS loop is considered isolated in MODES 5 and 6 whenever the hot and cold leg isolation valves on one RCS loop are both in a fully closed position at the same time. One isolation valve may be stroked for testing in MODES 5 and 6 and the loop will not be considered isolated when either the hot leg or cold leg loop isolation valve remains open.

If power is inadvertently restored to one or more loop isolation valve operators, the potential exists for accidental isolation of a loop with a subsequent inadvertent startup of the isolated loop. The loop isolation valves have motor operators. Therefore, these valves will maintain their last position when power is removed from the valve operator. With power applied to the valve operators, only administrative controls prevent the valve from being operated. Although operating procedures make the occurrence of this event unlikely, the prudent action is to remove power from the loop isolation valve operators. The completion time of 1 hour to remove power from the loop isolation valve operators is sufficient considering the complexity of the task.

LRS 3.4.1.1 is performed at least once per 7 days to ensure that the RCS loop isolation valves have power removed from the loop isolation valve operators. The frequency of 7 days which ensures that the power is removed from loop isolation valve operators, is based on engineering judgment, and has proven to be acceptable. Operating experience has shown that the failure rate is so low that the 7 day frequency is justified.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.2 Chemistry

BASES

BACKGROUND	The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits. 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 (RCS)

B 3.4.3 Pressurizer

BASES

BACKGROUND

The limitations imposed on the pressurizer heatup and cooldown rates and spray water differential temperature are provided to assure that the pressurizer is operated within the design criteria assumed for the fatigue analysis performed in accordance with the ASME Code requirements.

The heatup and cooldown rate limits of LR 3.4.3.a and LR 3.4.3.b are specified in UFSAR Table 4.1-10.

The maximum pressurizer spray differential temperature limits of LR 3.4.3.c, LR 3.4.3.d and the Condition B Required Actions are defined by the analysis performed in WCAP-15351.

The analysis of WCAP-15351 includes initiation of normal spray, where the stagnant water prior to establishing flow would be at containment ambient conditions. Once flow is established, the analysis considers a maximum normal spray differential temperature of 320°F as determined from the cold leg to the pressurizer steam space.

The analysis of WCAP-15351 includes several cases of auxiliary spray flow such as drawing flow from the RWST and flow during initial plant heatup. These cases qualify a limited number of occurrences for a differential temperature of up to 380°F. If a differential temperature of 320°F is exceeded, as determined from the charging side outlet of the regenerative heat exchanger to the pressurizer steam space, the event must be tracked in the cycle counting program.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.4 DELETED

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.5 Reactor Coolant System Vents

BASES

BACKGROUND	Reactor Coolant System Vents are provided to exhaust noncondensible gases and/or steam from the primary system that could inhibit natural circulation core cooling. The FUNCTIONALITY of at least one reactor coolant system vent path from the reactor vessel head and the pressurizer steam space, ensures the capability exists to perform this function. The valve redundancy of the reactor coolant system vent paths serves to minimize the probability of inadvertent or irreversible actuation while ensuring that a single failure of a vent valve, power supply or control system does not prevent isolation of the vent path. The function, capabilities, and testing requirements of the reactor coolant system vent systems are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980. These specifications, including timeframes for the action statements, were previously included in plant technical specifications based on a "model" provided in Generic Letter 83-37, "NUREG-0737 Technical Specifications." RCS vents are not modeled in the plant-specific probabilistic safety assessment and are not credited in the Chapter 14 accident analyses, but may be used for alternate shutdown capability. The administrative control specified in LR Note 3 consists of maintaining positive control of the RCS vent valve control switch key(s) associated with the series vent valves required to be maintained closed along with heightened operator awareness of the FUNCTIONAL RCS vent valve being in the open position.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 Pressurizer Safety Valve Lift Involving Liquid Discharge

BASES

BACKGROUND	The purpose of this LR is to provide assurance that the safety valves are properly maintained. The LR requires the unit be removed from the MODES where the safety valves are required OPERABLE after valve operation involving liquid discharge. This requirement is to ensure a safety valve that has discharged liquid is evaluated and repaired if necessary. Although valve operation with liquid discharge does not immediately imply a safety valve is inoperable, the LR requirement is a prudent precaution that provides additional assurance, beyond the inservice testing and inspection requirements, that the valves are evaluated for operability after a liquid discharge.

B 3.6 CONTAINMENT

B 3.6.1 Containment Isolation Valves

BASES

BACKGROUND

There are two types of 'administrative controls' applicable to the Containment Isolation Valves listed in Table 3.6.1-1 of this Licensing Requirements Manual (LRM). The administrative controls which apply when any locked or sealed closed Containment Isolation Valves are opened or when a penetration flow path isolated to comply with Technical Specification action requirements for an inoperable containment isolation valve is unisolated are defined in the Technical Specification Bases 3.6.3. The administrative controls for Containment Isolation Valves which have Note (1) shown in Table 3.6.1-1 of this LRM are the procedures that govern the operation of these valves.

Note (1) was used for the MOVs in Penetrations 1, 2, 4 & 5 in the original BV-1 Technical Specifications and for several other Containment Isolation Valve (CIV) MOVs in Amendment No. 1 of the BV-1 Technical Specifications where it was justified to allow the specified valves to be opened on an intermittent basis under administrative controls. The NRC Safety Evaluation for Amendment No. 1 described the function of these valves as "required to be opened on an intermittent basis to perform essential operating functions" in Modes 1-4. The term 'administrative controls' was not explicitly defined or described in either the original Technical Specification or Amendment 1 correspondence. It has been inferred since Amendment No. 1 that the 'administrative controls' were these valves' normal/emergency procedures and the plant's normal/emergency operating controls because the 'administrative controls' were not described/defined and the documented basis discussed their essential operating functions. A review/revision of Table 3.6.1-1 was completed in 1997 to ensure that the use of Note (1) was correctly applied throughout the Table in accordance with the above basis. Some previous changes to the CIV Table had not always followed this understanding because the literal wording seemed to also fit other applications. [Note (1) only applies to those valves specified in the original or Amendment No. 1 to the BV-1 Technical Specifications. Note (1) does not apply to CIVs which are operated pursuant to other defined administrative controls such as for normally locked or sealed closed CIVs.]

Amendment No. 185 to the BV-1 Technical Specifications added criteria to Technical Specifications allowing a locked or sealed closed CIV to be opened without declaring the CIV inoperable, in accordance with Generic Letter 91-08. Locked or sealed closed CIVs may only be opened, without entering the LCO, if the administrative controls defined in Technical

BASES

BACKGROUND (continued)

Specification Bases 3.6.3 is followed, in accordance with Technical Specification 3.6.3. [The explicitly defined 'administrative controls' which allow opening of locked or sealed closed CIVs are not the same 'administrative controls' for opening CIVs per Note (1).]

Amendment No. 261 to the BV-1 Technical Specifications allowed penetration flow paths isolated to comply with action requirements for inoperable containment isolation valves to be unisolated on an intermittent basis under administrative controls. The administrative controls to be used when unisolating these penetrations are also those defined in the Technical Specification Bases 3.6.3.

CIVs with an automatic closure feature upon generation of a containment isolation signal or which meet General Design Criteria 57 may be opened without entering the Technical Specification only if the valve remains OPERABLE.

B 3.6 CONTAINMENT

B 3.6.2 Containment Sump

BASES

BACKGROUND	The purpose of this LR is to assure good housekeeping practice is applied when maintenance or inspections are performed within containment. The requirements of this LR provide assurance that debris such as rags, trash, and clothing (i.e., items with the potential to clog the containment sump following a Loss of Coolant Accident (LOCA)) are removed from the containment building. The presence of debris in the containment sump following a LOCA could interfere with the operation of the Emergency Core Cooling System pumps needed to mitigate the LOCA. The requirements of this LR include the performance of a visual inspection following containment entries for maintenance or inspection.

B 3.7 PLANT SYSTEMS

B 3.7.1 Steam Generator Pressure/Temperature Limitation

BASES

BACKGROUND	Licensing Requirement 3.7.1 is applicable to each steam generator individually. The Applicability specifies the threshold conditions during which a steam generator could be pressurized such that the maximum allowable fracture toughness stress limit could be exceeded. The limitation on steam generator pressure and temperature ensures that the pressure induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on steam generator average impact values taken at 10°F and are sufficient to prevent brittle fracture. The applicability is limited to whenever the temperature of the primary or secondary coolant of the associated steam generator is ≤ 70°F and the primary or secondary systems are capable of being pressurized. For the purpose of this LR, the primary system is considered no longer capable of being pressurized following depressurization to atmospheric conditions with a vent path established and all flowpaths to the generator have been isolated. The secondary side is considered no longer capable of being pressurized following depressurization to atmospheric conditions and a vent path via an open atmospheric steam dump valve/residual heat release valve and associated isolation valve, or removal of a steam generator manway or safety valve.

B 3.7 PLANT SYSTEMS

B 3.7.2 Flood Protection

BASES

BACKGROUND	The limitation on flood level ensures that facility operation will be terminated in the event of flood conditions. The limit of elevation 695 Mean Sea Level was selected on an arbitrary basis as an appropriate flood level at which to evaluate further plant operation and initiate flood protection measures for safety related equipment. The LR limit on Ohio River elevation of 700 Mean Sea Level (actual or projected) ensures that appropriate actions are initiated per LR 3.0.3 prior to reaching an Ohio River elevation of 705 Mean Sea Level. The Ohio River elevation of 705 Mean Sea Level is the standard project flood design level for plant operation. Ohio River elevation at the intake structure can be obtained from a level instrument at the intake structure, the Unit 1 plant computer, the elevation scale on the outside of the intake structure, or by using the Montgomery Lock and Dam tailwater level. The National Weather Service (NWS) website contains an Ohio River at Montgomery Lock and Dam trend of downstream pool level referred to as “tailwater.” Tailwater level is the height of the river above a reference elevation (gage zero). The Montgomery Lock and Dam tailwater reference elevation is 652.5 feet. The elevation scale on the outside of the intake structure is approximately equal to the tailwater level plus the reference elevation (652.5 feet). The Montgomery Lock and Dam tailwater level may also be obtained by contacting the US Army Corps of Engineers or the Montgomery Lock and Dam. Telephone numbers may be obtained from the Emergency Notification Call List in the Emergency Preparedness implementing procedures.

B 3.7 PLANT SYSTEMS

B 3.7.3 Sealed Source Contamination

BASES

BACKGROUND	The limitations on sealed source contamination ensure that the total body or individual organ irradiation does not exceed allowable limits in the event of ingestion or inhalation of the source material. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. Leakage of sources excluded from the requirements of this LR represent less than one maximum permissible body burden for total body irradiation if the source material is inhaled or ingested. Sealed sources 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 3.7.4 Snubbers

BASES

BACKGROUND

All snubbers are required FUNCTIONAL to ensure that the structural integrity of the reactor coolant system and all other safety-related systems is maintained during and following a seismic or other similar event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

Snubbers are to be demonstrated and maintained FUNCTIONAL through periodic visual examination, functional testing and service life monitoring. All three aspects are now to be performed in accordance with the requirements set forth in the ASME OM Code 2004 Edition up to and including the 2006 Addenda, Subsection ISTD, “Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Power Plants.”

In August 2014, the NRC approved the use of ASME OM Code Case OMN-13, Rev. 0 (2004 Edition), in Regulatory Guide 1.192, Rev. 1. OMN-13 allows for a maximum visual inspection interval of 10 years, if certain conditions are met.

During the 1980’s, snubber surveillance requirements were identified in three documents: Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code, a plant’s Technical Specifications and Part 4 of the ASME Operation and Maintenance (OM) Code. The three documents were similar in purpose and concept - demonstrate and ensure snubber functional integrity through periodic visual examination, sample testing and service life monitoring. However, they varied enough in details to cause much confusion among utilities as to the proper requirements and course of action often resulting in redundant efforts and sometimes missed requirements.

Seeing a need for better clarity and standardization, industry leaders initiated an effort to consolidate the surveillance requirements of the three documents into one comprehensive, single source document. The result of this effort was the publication in 1990 of the ASME OM Code, Subsection ISTD, “Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants.” In 1999, the NRC endorsed the use of ISTD requirements in lieu of the snubber surveillance requirements identified in Section XI or a plant’s Technical Specifications or licensee controlled documents [10 CFR 50.55a(b)(3)(v)].

BASES

BACKGROUND (continued)

When a snubber is found Nonfunctional, an engineering evaluation is performed, in addition to the determination of the snubber mode of failure, in order to determine if any safety-related component or system has been adversely affected by the Nonfunctionality of the snubber. The engineering evaluation shall determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

LCO 3.0.8 specifies two Completion Times to restore a Nonfunctional snubber, depending on the type of system being supported. The requirements are specified in LCO 3.0.8 and its Bases. Table 3.7.4-1 provides information that ensures the Completion Times specified by LCO 3.0.8 are assigned to the appropriate snubber. Table 3.7.4-1 identifies which snubbers provide support to safety related piping and the appropriate Completion Time of 12 or 72 hours. The table contains the identification of the snubber, its system boundary, if LCO 3.0.8 applies, and the applicable Completion Time to restore the snubber to FUNCTIONAL. An entry of “No” in the LCO 3.0.8 Applicability column means that the supported system’s Completion Time applies.

LCO 3.0.8 is not applicable to snubbers whose function is to arrest a water hammer event. The LCO for the system is applicable for water hammer snubbers. Table B 3.7.4-1 identifies water hammer snubbers and provides the basis for the Completion Time assignment.

Tables 3.7.4-1 and B 3.7.4-1 are aids that eliminate the need to perform an immediate, event driven assessment when a snubber is Nonfunctional.

BASES

TABLE B 3.7.4-1 (Page 1 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
CC-HSS-001A	No		Single train to B RPC
CC-HSS-001B	No		Single train to B RPC
CC-HSS-021A	No		Single train to A RPC
CC-HSS-021B	No		Single train to A RPC
CC-HSS-401	No		Redundant trains
CC-HSS-402	No		Redundant trains
CC-HSS-403	No		Redundant trains
CC-HSS-404	No		Common pipe from CC pumps to CC Hx
CC-HSS-405	No		Single train
CC-HSS-406A	No		Redundant train to A Hx
CC-HSS-406B	No		Redundant train to A Hx
CC-HSS-407A	No		Redundant train to B Hx
CC-HSS-407B	No		Redundant train to B Hx
CC-HSS-408	No		Redundant train to B Hx
CC-PSSP-300A	No		Common piping to RH Hx's
CC-PSSP-300B	No		Common piping to RH Hx's
CC-PSSP-301	No		Common piping to RH Hx's
FC-HSS-201	No		Redundant train to A Hx

BASES

TABLE B 3.7.4-1 (Page 2 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
FC-HSS-5A	No		Redundant train to B Hx
PS-243-VS-1	No		Redundant trains of charging system
PS-244-VS-1	No		Redundant trains of charging system
PS-245-VS-1	No		Redundant trains of charging system
QS-HSS-202	Yes	QS Pump Start waterhammer	
QS-HSS-205A	Yes	QS Pump Start waterhammer	
QS-HSS-205B	Yes	QS Pump Start waterhammer	
RC-HC-10B	Yes	Line break waterhammer	
RC-HC-10C	Yes	Line break waterhammer	
RC-HC-11A	Yes	Line break waterhammer	
RC-HC-12C	Yes	Line break waterhammer	
RC-HC-9A	Yes	Line break waterhammer	
RC-HC-9B	Yes	Line break waterhammer	
RC-HSS-1	No		Single train Pressurizer spray
RC-HSS-101	Yes	Line break waterhammer	
RC-HSS-102	Yes	Line break waterhammer	
RC-HSS-103	Yes	Line break waterhammer	
RC-HSS-104	Yes	Line break waterhammer	
RC-HSS-105	Yes	Line break waterhammer	

BASES

TABLE B 3.7.4-1 (Page 3 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
RC-HSS-106	Yes	Line break waterhammer	
RC-HSS-119	Yes	PORV and Safety Valve discharge	
RC-HSS-126	Yes	PORV and Safety Valve discharge	
RC-HSS-127	Yes	PORV and Safety Valve discharge	
RC-HSS-130	Yes	Line break waterhammer	
RC-HSS-131	Yes	Line break waterhammer	
RC-HSS-2	No		Single train Pressurizer spray
RC-HSS-23	No		Single train Pressurizer spray
RC-HSS-3	No		Single train Pressurizer spray
RC-HSS-302	Yes	PORV and Safety Valve discharge	
RC-HSS-303A	Yes	PORV and Safety Valve discharge	
RC-HSS-303B	Yes	PORV and Safety Valve discharge	
RC-HSS-4	No		Single train Pressurizer spray
RC-HSS-41A	Yes	PORV and Safety Valve discharge	
RC-HSS-42A-A	Yes	PORV and Safety Valve discharge	
RC-HSS-42A-B	Yes	PORV and Safety Valve discharge	
RC-HSS-44A	Yes	PORV and Safety Valve discharge	
RC-PSSP-115	Yes	PORV and Safety Valve discharge	
RC-PSSP-116	Yes	PORV and Safety Valve discharge	

TABLE B 3.7.4-1 (Page 4 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	**Waterhammer**	**Type of Waterhammer**	**Completion Time Basis**
RC-PSSP-122A	Yes	PORV and Safety Valve discharge	
RC-PSSP-122B	Yes	PORV and Safety Valve discharge	
RC-PSSP-128	Yes	PORV and Safety Valve discharge	
RC-PSSP-129	Yes	PORV and Safety Valve discharge	
RC-PSSP-20	Yes	PORV and Safety Valve discharge	
RC-PSSP-24A	Yes	PORV and Safety Valve discharge	
RC-PSSP-24B	Yes	PORV and Safety Valve discharge	
RC-PSSP-25A	Yes	PORV and Safety Valve discharge	
RC-PSSP-25B	Yes	PORV and Safety Valve discharge	
RC-PSSP-301	Yes	PORV and Safety Valve discharge	
RH-HSS-101	No		Common RH return piping
RH-HSS-102	No		Common RH return piping
RH-HSS-105	Yes	Line break waterhammer	
RH-HSS-106	Yes	Line break waterhammer	
RH-HSS-107	Yes	Line break waterhammer	
RH-HSS-108	Yes	Line break waterhammer	
RH-HSS-109	Yes	Line break waterhammer	

TABLE B 3.7.4-1 (Page 5 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	**Waterhammer**	**Type of Waterhammer**	**Completion Time Basis**
RH-HSS-110	Yes	Line break waterhammer	
RH-HSS-111	Yes	Line break waterhammer	
RH-HSS-112	Yes	Line break waterhammer	
RH-HSS-113	Yes	Line break waterhammer	
RH-HSS-114	Yes	Line break waterhammer	
RH-HSS-121	No		Redundant train RH-720B
RH-HSS-122	No		Redundant train RH-720B
RH-HSS-123	No		Redundant train RH-720B
RH-HSS-124	No		Redundant train RH-720B
RH-HSS-203	No		Single train from RH to RWST
RH-HSS-204A	No		Single train from RH to RWST
RH-HSS-204B	No		Single train from RH to RWST
RH-HSS-402	No		Single train from RH to RWST
RH-HSS-403	No		Single train from RH to RWST
RS-HSS-201	Yes	RS Pump start waterhammer	
RS-HSS-202	Yes	RS Pump start waterhammer	
RS-HSS-209A	Yes	RS Pump start waterhammer	
RS-HSS-210A	Yes	RS Pump start waterhammer	
RS-HSS-219	Yes	RS Pump start waterhammer	

TABLE B 3.7.4-1 (Page 6 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
RS-HSS-220	Yes	RS Pump start waterhammer	
RS-HSS-221	Yes	RS Pump start waterhammer	
RS-HSS-229	Yes	RS Pump start waterhammer	
RS-HSS-234	Yes	RS Pump start waterhammer	
RS-HSS-237	Yes	RS Pump start waterhammer	
RS-HSS-238	Yes	RS Pump start waterhammer	
SHP-HSS-201	Yes	Main Steam Line break	
SHP-HSS-202	Yes	Main Steam Line break	
SHP-HSS-203	Yes	Main Steam Line break	
SHP-HSS-204	Yes	Main Steam Line break	
SHP-HSS-205	Yes	Main Steam Line break	
SHP-HSS-206	Yes	Main Steam Line break	
SHP-HSS-207	Yes	Main Steam Line break	
SHP-HSS-208	Yes	Main Steam Line break	
SHP-HSS-209	Yes	Main Steam Line break	
SHP-HSS-210	Yes	Main Steam Line break	
SHP-HSS-211	Yes	Main Steam Line break	
SHP-HSS-212	Yes	Main Steam Line break	
SHP-HSS-213	Yes	Main Steam Line break	

BASES

TABLE B 3.7.4-1 (Page 7 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	**Waterhammer**	**Type of Waterhammer**	**Completion Time Basis**
SHP-HSS-214	Yes	Main Steam Line break	
SHP-HSS-214A	Yes	Main Steam Line break	
SI-HSS-114A	Yes	Line break waterhammer	
SI-HSS-114B	Yes	Line break waterhammer	
SI-HSS-212A	Yes	SI Pump start waterhammer	
SI-HSS-212B	Yes	SI Pump start waterhammer	
SI-HSS-409	No		Common portion of SI trains
SI-HSS-410	No		Common portion of SI trains
SI-HSS-411	No		Common portion of SI trains
SI-HSS-412	No		Single train portion of SI
SI-HSS-413	No		Single train portion of SI
SI-HSS-414	No		Single train portion of SI
SI-HSS-415	No		Single train portion of SI
SI-HSS-416	No		Single train portion of SI
SI-HSS-417	No		Single train portion of SI
SI-HSS-418	No		Single train portion of SI
SI-HSS-419	No		Single train portion of SI
SI-HSS-420	No		Common portion of SI trains

TABLE B 3.7.4-1 (Page 8 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
SI-HSS-421	No		Common portion of SI trains
SI-HSS-422	No		Common portion of SI trains
SI-HSS-423	No		Common portion of SI trains
SI-HSS-511	No		Redundant flow paths LH to HH pumps
SI-HSS-512	No		Redundant flow paths LH to HH pumps
SI-HSS-512A	No		Redundant flow paths LH to HH pumps
SI-HSS-514	No		Redundant flow paths LH to HH pumps
SI-HSS-515	No		Redundant flow paths LH to HH pumps
SI-HSS-516A	No		Redundant flow paths LH to HH pumps
SI-HSS-516B	No		Redundant flow paths LH to HH pumps
SI-HSS-517	No		Redundant flow paths LH to HH pumps
SI-HSS-518	No		Redundant flow paths LH to HH pumps
SI-HSS-519	No		Redundant flow paths LH to HH pumps
SI-HSS-520	No		Redundant flow paths LH to HH pumps
SI-HSS-521	No		Redundant flow paths LH to HH pumps
SI-HSS-522	No		Common pipe for HH suction headers
SI-HSS-523A	No		Common pipe for HH suction headers
SI-HSS-523B	No		Common pipe for HH suction headers
SI-PSSP-002	Yes	RS Pump start waterhammer	

TABLE B 3.7.4-1 (Page 9 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
SI-PSSP-003	Yes	RS Pump start waterhammer	
SI-PSSP-009	Yes	RS Pump start waterhammer	
SI-PSSP-010	Yes	RS Pump start waterhammer	
SI-PSSP-033A	Yes	SI Pump start waterhammer	
SI-PSSP-036A	Yes	SI Pump start waterhammer	
SI-PSSP-060D	Yes	SI Pump start waterhammer	
SI-PSSP-067C	Yes	SI Pump start waterhammer	
SI-PSSP-337	No		Common portion of SI trains
VS-357-1	No		Redundant trains of drain system
VS-358-1	No		Redundant trains of drain system
VS-359-1	No		Redundant trains of drain system
WFPD-HSS-201	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-202	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-203	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-204	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-205	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-206	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-207	Yes	Feedwater waterhammer events (1)	

TABLE B 3.7.4-1 (Page 10 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	**Waterhammer**	**Type of Waterhammer**	**Completion Time Basis**
WFPD-HSS-208	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-208A	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-209	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-210	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-211	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-212	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-212A	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-228	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-229	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-230	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-231	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-232	Yes	Feedwater waterhammer events (1)	
WFPD-HSS-233	Yes	Feedwater waterhammer events (1)	
WGCB-H-47A	Yes	S/G blowdown waterhammer	
WGCB-PSSP-101	Yes	S/G blowdown waterhammer	
WGCB-PSSP-200A	Yes	S/G blowdown waterhammer	
WGCB-PSSP-200B	Yes	S/G blowdown waterhammer	
WGCB-PSSP-200C	Yes	S/G blowdown waterhammer	
WGCB-PSSP-200D	Yes	S/G blowdown waterhammer	

TABLE B 3.7.4-1 (Page 11 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	**Waterhammer**	**Type of Waterhammer**	**Completion Time Basis**
WGCB-PSSP-46E	Yes	S/G blowdown waterhammer	
WGCB-PSSP-46F	Yes	S/G blowdown waterhammer	
WGCB-PSSP-46G	Yes	S/G blowdown waterhammer	
WGCB-PSSP-46H	Yes	S/G blowdown waterhammer	
WGCB-PSSP-55E	Yes	S/G blowdown waterhammer	
WGCB-PSSP-55F	Yes	S/G blowdown waterhammer	
WGCB-PSSP-55G	Yes	S/G blowdown waterhammer	
WGCB-PSSP-55H	Yes	S/G blowdown waterhammer	
WR-HSS-300	No		Common pipe to/from RSS Hx's
WR-HSS-301	No		Common pipe to/from RSS Hx's
WR-HSS-302	No		Common pipe to/from RSS Hx's
WR-HSS-303A	No		Common supply pipe to CC Hx's
WR-HSS-303B	No		Common supply pipe to CC Hx's
WR-HSS-304A	No		Common return pipe from CC Hx's
WR-HSS-304B	No		Common return pipe from CC Hx's
WR-HSS-306	No		Common pipe to/from RSS Hx's
WR-HSS-307	No		Common pipe to/from RSS Hx's
WR-HSS-308	No		Common pipe to/from RSS Hx's

BASES

TABLE B 3.7.4-1 (Page 12 of 12)
BASIS FOR SNUBBERS COMPLETION TIME

Functional Location	Waterhammer	Type of Waterhammer	Completion Time Basis
WR-HSS-309	No		Common pipe to/from RSS Hx's
WR-HSS-311	No		Common supply pipe to CC Hx's
WR-HSS-312	No		Common supply pipe to CC Hx's
WR-HSS-313	No		Common supply pipe to CC Hx's
WR-HSS-316	No		Common pipe to/from RSS Hx's

(1) Events include: feedwater line break, pump trip, valve closure, and check valve slam.

B 3.7 PLANT SYSTEMS

B 3.7.5 Auxiliary River Water System (ARWS)

BASES

BACKGROUND	The FUNCTIONALITY of the ARWS ensures that sufficient cooling capacity is available to bring the reactor to a cold shutdown condition in the event that a barge explosion at the station's intake structure or any other extremely remote event would render all of the normal River Water System supply pumps Nonfunctional. The scenario of a postulated gasoline barge impact with the intake structure and coincident explosion disabling the Reactor Plant River Water System (RPRWS) is a low probability event. Nonetheless, the ARWS provides defense in-depth in assuring shutdown cooling capability. The requirement to operate the ARWS is not coincident with a postulated Design Basis Accident, but only for the postulated gasoline barge impact event. Although the ARWS is a manually operated non-safety system which is not required to meet single active failure criteria, the system is designed with redundant pumps and valves on a header to accommodate a single active failure on start-up. This design criteria provides a defense in-depth in order to ensure the system can adequately mitigate the consequences of the postulated event. An ARWS pump can be manually started on the emergency bus during loss of offsite power after the diesel loading sequence is complete. If there is a delay in starting the ARWS, the auxiliary feedwater system is available to remove reactor core decay heat for a short term period. The requirements for subsystem FUNCTIONALITY are similar to those of the RPRWS except that one subsystem is required to be FUNCTIONAL in the MODES noted. The LR reflects the low risk of the postulated event compared to more stringent requirements associated with safety related systems. The ACTION statement takes into account the low probability of both trains of RPRWS being disabled as a result of the postulated site scenario coincident with one of the ARWS subsystems being FUNCTIONAL. The STAGGERED TEST BASIS for LRS 3.7.5.2 ensures that each ARWS pump is periodically full flow tested.

B 3.7 PLANT SYSTEMS

B 3.7.6 Explosive Gas Mixture

BASES

BACKGROUND	This LR is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas holdup system is maintained below the flammability limits of hydrogen and oxygen. Isolation of the affected tank for purposes of purging and/or discharge permits the flammable gas concentrations of the tank to be reduced below the lower explosive limit in a hydrogen rich system. 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 3.7.7 Supplemental Leak Collection and Release System (SLCRS)

BASES

BACKGROUND	The FUNCTIONALITY of the SLCRS provides for the filtering of postulated radioactive effluents resulting from leakage of loss of coolant accident (LOCA) activity from systems outside of the Reactor Containment building, such as Engineered Safeguards Features (ESF) equipment, prior to their release to the environment. This system also collects potential leakage of LOCA activity from the Reactor Containment building penetrations into the contiguous areas ventilated by the SLCRS except for the Main Steam Valve Room and Emergency Air Lock. No credit for SLCRS operation was taken in the DBA LOCA analysis for collection and filtration of Reactor Containment building leakage and ESF leakage effluents even though an unquantifiable amount of contiguous area penetration leakage and ESF leakage effluents would in fact be collected and filtered.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 125V D.C. Battery Banks Maintenance Requirements

BASES

BACKGROUND	The provisions of this LR require periodical maintenance/inspections to be performed on the specified 125V DC battery banks. The LR includes requirements for more routine battery maintenance than required in the Technical Specifications. As such, this LR supplements the requirements of the Technical Specifications to assure the performance of routine battery maintenance.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 Emergency DG 2000 Hour Rating Limit

BASES

BACKGROUND	The provisions of this LR require a periodical verification that the Emergency Diesel Generator (EDG) 2000 hour rating limit continues to be met. The verification required by this LR supplements the other EDG requirements in the Technical Specification.

B 3.9 REFUELING OPERATIONS

B 3.9.1 Crane Travel - Spent Fuel Storage Pool Building

BASES

BACKGROUND

The restriction on movement of loads in excess of the normal weight of a fuel assembly and control rod assembly and associated handling tool over other fuel assemblies ensures that no more than the contents of those fuel assembly rods assumed in the fuel handling accident described in Chapter 14 of the BVPS Unit 1 UFSAR will be ruptured. This assumption is consistent with the activity release assumed in the accident analyses.

Single Failure Proof Crane 1CR-15 travels from the Decontamination Building into the Fuel Building over the cask pit. It cannot physically travel over the spent fuel racks in the storage pool. The yoke assembly and associated rigging used for movement of dry cask components with 1CR-15 are single failure proof. Drops of heavy loads for lifts by crane 1CR-15 over the cask pit are not postulated due to 1CR-15 being a single failure proof crane and use of single failure proof rigging.

The frequency of LRS 3.9.1.1 FUNCTIONALITY demonstration is based on the inspection frequency specified in ANSI B30.2-1976, paragraph 2-2.1.4.a for a crane other than a standby crane that has been idle for a period of one month or more, but less than one year.

B 3.9 REFUELING OPERATIONS

B 3.9.2 Manipulator Crane

BASES

BACKGROUND	The FUNCTIONALITY requirements for the manipulator cranes ensure that: 1) manipulator cranes will be used for movement of control rods and fuel assemblies; 2) each crane has sufficient load capacity to lift a control rod or fuel assembly; and 3) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

B 3.9 REFUELING OPERATIONS

B 3.9.3 Decay Time

BASES

BACKGROUND

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short lived fission products. This decay time is consistent with the assumptions used in the radiological accident analyses.

Also, in order to meet the thermal-hydraulic design calculation assumptions for the fuel storage pool, movement of irradiated fuel assemblies from the reactor vessel to the fuel pool requires a minimum subcritical decay time of 100 hours. This requirement is based on cooling water inlet temperature to the fuel storage pool heat exchanger as described in a BVPS letter to the NRC (L-01-113), dated October 29, 2001. After 100 hours, in order to maintain the fuel pool heat load within the assumptions of the analysis, irradiated fuel assembly movement from the vessel to the fuel pool is limited to a rate equivalent to six assemblies per hour.

B 3.9 REFUELING OPERATIONS

B 3.9.4 Containment Purge and Exhaust Isolation System

BASES

BACKGROUND	The Unit 1 Containment Purge and Exhaust Isolation System provides a backup function to limit the leakage of radioactive material from within containment to the environment. The primary means of limiting the leakage of radioactive material from containment is filtration by the Supplemental Leak Collection and Release System (SLCRS). The Unit 1 Technical Specifications contain the appropriate requirements for SLCRS. The LR is applicable during movement of recently irradiated fuel assemblies and during movement of fuel assemblies over recently irradiated fuel assemblies because there is a potential for the limiting fuel handling accident (FHA) to occur. Therefore, the requirements of this Specification may be required to limit leakage of radioactive material within the containment to the environment. A FHA which does not involve recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) will result in radiation exposures that are within the guideline values specified in 10 CFR 50.67 without any reliance on the requirements of this Specification to limit leakage to the environment. The 100 hour limit is based on the current radiological analysis for a FHA which assumes a decay time of 100 hours. LR 3.9.3 prohibits irradiated fuel movement unless 100 hours of decay has occurred. Therefore, this LR will not be applicable unless the decay time in LR 3.9.3 and the time assumed in the radiological analysis for a FHA are reduced to below 100 hours.