Millstone Power Station Unit 3
Technical Requirements Manual

(Incorporated by Reference)

SECTION PAGE No(s)	TR - TITLE	APPROVAL DATE
EP-1 thru EP-10	List of Effective Pages	Per Licensing Memo
1 page	Memo; C Schwartz to Copy Holders, re: Reissue of Unit No. 3 TRM	-
1.0-1	**1.0 Definitions**	January 31, 2011
1.0-2		January 31, 2011
	2.0 Safety Limits (No Content)	-
3/4 0-1	**3/4.0 Technical Requirement (TR) and Technical Surveillance Requirement (TSR) Applicability**	-
3/4 0-2		January 31, 2011
3/4 0-3		January 31, 2011
3/4 0-4		January 31, 2011
3/4 0-5		January 31, 2011
3/4 0-6		January 31, 2011
3/4 0-7		January 31, 2011
3/4 0-8		January 31, 2011
	3/4.1 Reactivity Control Systems	
3/4 1-1	3.1.2.1 Reactivity Control Systems, Boration Systems, Flow Path – Shutdown	January 31, 2011
3/4 1-2		January 31, 2011
3/4 1-3		January 31, 2011
3/4 1-4	3.1.2.2 Reactivity Control Systems, Boration Systems, Flow Path - Operating	January 31, 2011
3/4 1-5		January 31, 2011
3/4 1-6	3.1.2.3 Reactivity Control Systems, Boration Systems, Charging Pump - Shutdown	January 31, 2011
3/4 1-7		January 31, 2011
3/4 1-8		January 31, 2011
3/4 1-9	3.1.2.4 Reactivity Control Systems, Boration Systems, Charging Pump - Operating	January 31, 2011
3/4 1-10		January 31, 2011
3/4 1-11	3.1.2.5 Reactivity Control Systems, Boration Systems, Borated Water Source - Shutdown	January 31, 2011
3/4 1-12		January 31, 2011
3/4 1-13	3.1.2.6 Reactivity Control Systems, Boration Systems, Borated Water Sources - Operating	June 3, 2014

SECTION PAGE No(s)	TR - TITLE	APPROVAL DATE
3/4 1-14		January 31, 2011
3/4 1-15		January 31, 2011
3/4 1-16	3.1.3.3 Reactivity Control Systems, Position Indication System	January 31, 2011
3/4 1-17		January 31, 2011
	3/4.2 Power Distribution Limits (No Content)	-
	3/4.3 Instrumentation	
3/4 3-1	3.3.1 Instrumentation, Reactor Trip System Instrumentation	January 31, 2011
3/4 3-2	Table 3.3-2, “Reactor Trip System Instrumentation Response Times”	January 31, 2011
3/4 3-3	3.3.2 Instrumentation, Engineered Safety Features Actuation System Instrumentation	January 31, 2011
3/4 3-4		January 31, 2011
3/4 3-5	Table 3.3-5, “ESF RESPONSE TIMES”	November 5, 2013
3/4 3-6		January 31, 2011
3/4 3-7		November 5, 2013
3/4 3-8	3.3.2.1 Instrumentation, Engineered Safety Features Actuation System Instrumentation	November 10, 2016
3/4 3-9	Table 3.3-3, “ESFAS Instrumentation”	November 10, 2016
3/4 3-10	Table 3.3-4, “ESFAS Instrumentation Trip Setpoints”	January 31, 2011
3/4 3-11	Table 4.3-2, “ESFAS Instrumentation Technical Surveillance Requirements”	January 31, 2011
3/4 3-12	3.3.3.2 Instrumentation, Movable Incore Detectors	January 31, 2011
3/4 3-13		January 31, 2011
3/4 3-14	3.3.3.3 Instrumentation, Seismic Instrumentation	January 31, 2011
3/4 3-15	Table 3.3.3.3-1, “Seismic Monitoring Instrumentation”	January 31, 2011
3/4 3-16	Table 3.3.3.3-2, “Seismic Monitoring Instrumentation Technical Surveillance Requirements”	January 31, 2011
3/4 3-17	3.3.3.4 Instrumentation, Meteorological Instrumentation	January 31, 2011
3/4 3-18	Table 3.3.3.4-1, “Meteorological Monitoring Instrumentation”	January 31, 2011
3/4 3-19	Table 3.3.3.4-2, “Meteorological Monitoring Instrumentation Technical Surveillance Requirements”	January 31, 2011
3/4 3-20	3.3.3.6.1 Instrumentation, Accident Monitoring Instrumentation	January 31, 2011
3/4 3-21		January 31, 2011
3/4 3-22		January 31, 2011
3/4 3-23	3.3.3.7 Instrumentation, Fire Detection Instrumentation	January 31, 2011

SECTION PAGE No(s)	TR - TITLE	APPROVAL DATE
3/4 3-24		January 31, 2011
3/4 3-25		January 31, 2011
3/4 3-26		January 31, 2011
3/4 3-27	Table 3.3-11, “Fire Detection Instruments”	January 31, 2011
3/4 3-28		January 31, 2011
3/4 3-29		January 31, 2011
3/4 3-30	3.3.3.8 Instrumentation, Loose-Part Detection System	January 31, 2011
3/4 3-31	3.3.4 Instrumentation, Turbine Overspeed Protection	January 31, 2011
		January 31, 2011
	3/4.4 Reactor Coolant System	January 31, 2011
3/4 4-1	3.4.7 Reactor Coolant System, Chemistry	January 31, 2011
3/4 4-2		January 31, 2011
3/4 4-3	Table 3.4-2,“Reactor Coolant System, Chemistry Limits”	January 31, 2011
3/4 4-4	Table 4.4-3, “Reactor Coolant System, Chemistry Limits Technical Surveillance Requirements”	January 31, 2011
3/4 4-5	3.4.9.1 Reactor Coolant System, Pressure/Temperature Limits	January 31, 2011
3/4 4-6	Table 4.4-5 “Millstone Unit 3 Reactor Vessel Surveillance Capsule Withdrawal Schedule	May 5, 2016
3/4 4-7		January 31, 2011
3/4 4-8	3.4.9.2 Reactor Coolant System, Pressurizer	January 31, 2011
3/4 4-9		January 31, 2011
3/4 4-10		January 31, 2011
3/4 4-11		January 31, 2011
3/4 4-12		January 31, 2011
3/4 4-13	3.4.10 Reactor Coolant System, Structural Integrity - ASME Code Class 1, 2, 3 Components	January 31, 2011
3/4 4-14		January 31, 2011
3/4 4-15		January 31, 2011
3/4 4-16	3.4.11 Reactor Coolant System, Reactor Coolant Vents	January 31, 2011
3/4 4-17		January 31, 2011
	3/4.5 Emergency Core Cooling Systems	
3/4 5-1	3.5.1 Emergency Core Cooling Systems, Accumulators	January 31, 2011
3/4 5-2	3.5.2 Emergency Core Cooling Systems, ECCS Subsystems - T_{avg} Greater Than or Equal to 350°F	January 31, 2011
3/4 5-3		January 31, 2011
	3/4.6 Containment Systems	

SECTION PAGE No(s)	TR - TITLE	APPROVAL DATE
3/4 7-11		January 31, 2011
3/4 7-12		January 31, 2011
3/4 7-13	3.7.11 Plant Systems, Sealed Source Contamination	January 31, 2011
3/4 7-14		January 31, 2011
3/4 7-15	3.7.12.1 Plant Systems, Fire Suppression Systems, Fire Suppression Water System	January 31, 2011
3/4 7-16		January 31, 2011
3/4 7-17		January 31, 2011
3/4 7-18		January 31, 2011
3/4 7-19		January 31, 2011
3/4 7-20		January 31, 2011
3/4 7-21	3.7.12.2 Plant Systems, Fire Suppression Systems, Spray and/or Sprinkler Systems	January 31, 2011
3/4 7-22		January 31, 2011
3/4 7-23		January 31, 2011
3/4 7-24		January 31, 2011
3/4 7-25		January 31, 2011
3/4 7-26	3.7.12.3 Plant Systems, Fire Protection Systems, CO_2 Systems	January 31, 2011
3/4 7-27		January 31, 2011
3/4 7-28		January 31, 2011
3/4 7-29		January 31, 2011
3/4 7-30	3.7.12.4 Plant Systems, Fire Suppression Systems, Halon Systems	January 31, 2011
3/4 7-31		January 31, 2011
3/4 7-32		January 31, 2011
3/4 7-33	3.7.12.5 Plant Systems, Fire Suppression Systems, Fire Hose Stations	January 31, 2011
3/4 7-34		January 31, 2011
3/4 7-35		January 31, 2011
3/4 7-36	Table 3.7-4, “Fire Hose Stations”	January 31, 2011
3/4 7-37	3.7.12.6 Plant Systems, Fire Suppression Systems, Yard Fire Hydrants and Hydrant Hose Houses	January 31, 2011
3/4 7-38		January 31, 2011
3/4 7-39	Table 3.7-5, “Yard Fire Hydrants and Hydrant Hose Houses”	January 31, 2011
3/4 7-40	3.7.13 Plant Systems, Fire Rated Assemblies	January 31, 2011
3/4 7-41		January 31, 2011
3/4 7-42		January 31, 2011
3/4 7-43		January 31, 2011

Dominion

Memorandum

RA-02-027
FEB 26 2002

To: Millstone Unit No. 3
Technical Requirements Manual Controlled Copy Holders

From: C. Schwarz
Department: Director, Nuclear Station Operations & Maintenance

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RE-Issuance of Millstone Unit No. 3 Technical Requirements Manual

Please find attached the Millstone Unit No. 3 Technical Requirements Manual (TRM). This reissued TRM has been written in the Standard Technical Specifications format. The TRM contains the re-located requirements from Technical Specifications and certain material that warrants administrative controls (e.g., Fire Protection - Safe Shutdown Requirements) and does not contain and will not contain any clarification of a particular LCO or Surveillance. The information in the TRM will be controlled in a manner consistent with the Technical Specifications and by use of the Master Manual, License Basis Management Program, MP-03-LBM-PRG, and specifically by procedure MP-03-LBM-SAP04.

It is suggested that the TRM be maintained next to the Millstone Unit No. 3 Technical Specifications. Distribution and control of the TRM will be similar to that of the Technical Specifications.

If you have any questions concerning this manual, please call at Rick Bonner at 5230or Ravi Joshi at 2080.

cc: Nuclear Document Service
Licensing Memo File

1.0 DEFINITIONS

The defined terms appear in capitalized type throughout these TECHNICAL REQUIREMENTS. These capitalized terms are defined in Section 1.0 of the Technical Specifications.

In addition to the terms defined in the Technical Specifications, the following defined terms and acronyms appear in the TECHNICAL REQUIREMENTS. These defined terms and acronyms also appear in capitalized type throughout the TECHNICAL REQUIREMENTS.

CURRENT LICENSING BASIS

1.1 The CURRENT LICENSING BASIS (CLB) is the set of NRC requirements applicable to a specific plant, plus a licensee's docketed and currently effective written commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific DESIGN BASIS, including all modifications and additions to such commitments over the life of the facility operating license.

The set of NRC requirements applicable to a specific plant CLB include:

a. NRC regulations in 10 CFR Parts 2, 19, 20, 21, 26, 30, 40, 50, 51, 54, 55, 70, 72, 73, and 100 and appendices thereto
b. Commission orders
c. license conditions
d. exemptions
e. technical specifications (TSs)
f. plant-specific DESIGN BASIS information defined in 10 CFR 50.2 and documented in the most recent Updated Final Safety Analysis Report (UFSAR) (as required by 10 CFR 50.71)
g. licensee commitments remaining in effect that were made in docketed licensing correspondence (such as licensee responses to NRC bulletins, Licensee Event Reports, generic letters, and enforcement actions)
h. licensee commitments documented in NRC safety evaluations

DESIGN BASIS

1.2 Design bases information, defined by 10 CFR 50.2*, is documented in the UFSAR as required by 10 CFR 50.71. The DESIGN BASIS of safety-related structures, systems, and components (SSCs) is established initially during the original plant licensing and relates primarily to the accident prevention or mitigation functions of safety-related SSCs. The DESIGN BASIS of a safety-related SSC is a subset of the CLB.

* NRC Regulatory Guide 1.186, "Guidance and Examples for Identifying 10 CFR 50.2 Design Bases," endorses Appendix B to Nuclear Energy Institute (NEI) document NEI 97-04, "Guidance and Examples for Identifying 10 CFR 50.2 Design Bases."

FUNCTIONAL – FUNCTIONALITY

1.3 FUNCTIONALITY is an attribute of SSCs that is not controlled by TSs. An SSC is FUNCTIONAL or has FUNCTIONALITY when it is capable of performing its SPECIFIED FUNCTION, as set forth in the CLB. 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.

SPECIFIED FUNCTION/SPECIFIED SAFETY FUNCTION

1.4 The SPECIFIED FUNCTION(S) of the system, subsystem, train, component or device (hereafter referred to as system) is that SPECIFIED SAFETY FUNCTION(S) in the CLB for the facility. In addition to providing the SPECIFIED SAFETY FUNCTION, a system is expected to perform as designed, tested and maintained. When system capability is degraded to a point where it cannot perform with reasonable expectation or reliability, the system should be judged inoperable/nonfunctional, even if at this instantaneous point in time the system could provide the SPECIFIED SAFETY FUNCTION.

TECHNICAL REQUIREMENT

1.5 A TECHNICAL REQUIREMENT represents the lowest functional capability or performance level allowed for the specified equipment or parameter.

TECHNICAL SURVEILLANCE REQUIREMENT

1.6 TECHNICAL SURVEILLANCE REQUIREMENTS are requirements related to test, calibration, or inspection to verify that the associated TECHNICAL REQUIREMENTS are met.

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

For the purpose of the TRs, the Technical Requirements Manual (TRM) terms specified below are considered similar to the listed Technical Specification terms:

Technical Specification Term	Technical Requirements Manual Term
Technical Specifications (TS)	Technical Requirements Manual (TRM)
Limiting Condition for Operation (LCO)	TECHNICAL REQUIREMENT (TR)
Surveillance Requirement (SR)	TECHNICAL SURVEILLANCE REQUIREMENT (TSR)
Specification	Requirement

TECHNICAL REQUIREMENTS

TR 3.0.1 Compliance with the TR contained in the succeeding requirements is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the TR, the associated ACTION requirements shall be met, except as provided in TR 3.0.5.

TR 3.0.2 Noncompliance with a requirement shall exist when the requirements of the TR and associated ACTION requirements are not met within the specified time intervals, except as provided in TR 3.0.5. If the TR is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

TR 3.0.3 When a TR is not met, except as provided in the associated ACTION requirements, the unit shall be placed in a safe condition as determined by the Operational Decision Making process. Corrective action shall be initiated in accordance with the corrective action program.

TR 3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the TR are not met and the associated ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ACTION requirements when conformance to them permit continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements or that is part of a shutdown of the unit. Exceptions to these requirements are stated in the individual TRs.

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TECHNICAL REQUIREMENTS

TR 3.0.5 Equipment removed from service or declared nonfunctional to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its FUNCTIONALITY or the FUNCTIONALITY of other equipment. This is an exception to TR 3.0.1 and 3.0.2 for the system returned to service under administrative controls to perform the testing required to demonstrate FUNCTIONALITY.

TECHNICAL SURVEILLANCE REQUIREMENTS

TSR 4.0.1 TSRs shall be met during the OPERATIONAL MODES or other conditions specified for individual TRs unless otherwise stated in an individual TSR. Failure to meet a TSR, whether such failure is experienced during the performance of the TSR or between performances of the TSR, shall be failure to meet the TR. Failure to perform a TSR within the specified surveillance interval shall be failure to meet the TR except as provided in TSR 4.0.3. TSRs do not have to be performed on nonfunctional equipment or variables outside specified limits.

TSR 4.0.2 Each TSR shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.

TSR 4.0.3 If it is discovered that a TSR was not performed within its specified surveillance interval, then compliance with the requirement to declare the TR 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 TSR. A risk evaluation shall be performed for any TSR delayed greater than 24 hours and the risk impact shall be managed.

If the TSR is not performed within the delay period, the TR must immediately be declared not met, and the applicable ACTION(s) must be entered.

When the TSR is performed within the delay period and the TSR is not met, the TR must immediately be declared not met, and the applicable ACTION(s) must be entered.

TSR 4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the TSR(s) associated with the TR has been performed within the stated surveillance interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements or that is part of a shutdown of the unit.

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TECHNICAL SURVEILLANCE REQUIREMENTS

If the TSR is not performed within the delay period, the TR must immediately be declared not met, and the applicable ACTION(s) must be entered.

When the TSR is performed within the delay period and the TSR is not met, the TR must immediately be declared not met, and the applicable ACTION(s) must be entered.

TSR 4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the TSR(s) associated with the TR have been performed within the stated TSR interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements or that is part of a shutdown of the unit.

BASES:

TR 3.0.1 through 3.0.4 establish the general requirements applicable to TRs.

TR 3.0.1 establishes the Applicability statement within each individual TR as the requirement for when (i.e., in which OPERATIONAL MODES or other specified conditions) conformance to the TRs is required for safe operation of the facility. The ACTION requirements establish those remedial measures that must be taken within specified time limits when the requirements of a TR are not met.

There are two basic types of ACTION requirements. The first specifies the remedial measures that permit continued operation of the facility that is not further restricted by the time limits of the ACTION requirements. In this case, conformance to the ACTION requirements provides an acceptable level of safety for unlimited continued operation as long as the ACTION requirements continue to be met. The second type of ACTION requirement specifies a time limit in which conformance to the conditions of the TR must be met. This time limit is the allowable outage time to restore a nonfunctional system or component to FUNCTIONAL status or for restoring parameters within specified limits. If these ACTIONS are not completed within the allowable outage time limits, the unit shall be placed in a safe condition as determined by the Operational Decision Making process and corrective action shall be initiated in accordance with the corrective action program. It is not intended that ACTION requirements be used as an operational convenience that permits (routine) voluntary removal of a system(s) or component(s) from service in lieu of other alternatives that would not result in redundant systems or components being nonfunctional.

The specified time limits of the ACTION requirements are applicable from the point in time it is identified that a TR is not met. The time limits of the ACTION requirements are also applicable when a system or component is removed from service for surveillance testing

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES:

or investigation of operational problems. Individual TRs may include a specified time limit for the completion of a TSR when equipment is removed from service. In this case, the allowable outage time limits of the ACTION requirements are applicable when this limit expires if the surveillance has not been completed. If placing the unit in a safe condition, as determined by the Operational Decision Making process, results in a change in OPERATIONAL MODE, the plant may have entered a MODE in which a new TR becomes applicable. In this case, the time limits of the ACTION requirements would apply from the point in time that the new TR becomes applicable if the requirements of the TR are not met.

TR 3.0.2 establishes that noncompliance with a TR exists when the requirements of the TR are not met and the associated ACTION requirements have not been implemented within the specified time interval. The purpose of this TR is to clarify that (1) implementation of the ACTION requirements within the specified time interval constitutes compliance with a TR and (2) completion of the remedial measures of the ACTION requirements is not required when compliance with a TR is restored within the time interval specified in the associated ACTION requirements.

TR 3.0.3 establishes the ACTION requirements that must be implemented when a TR is not met and the condition is not specifically addressed by the associated ACTION requirements. The purpose of this specification is to delineate the ACTIONS when plant operation cannot be maintained within the limits for safe operation defined by the TR and its ACTION requirements. 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 nonfunctional.

TR 3.0.4 establishes limitations on MODE changes when a TR is not met. It precludes placing the facility in a higher MODE of operation when the requirements for a TR are not met and continued noncompliance to these conditions would result in a shutdown to comply with the ACTION requirements if a change in MODES were permitted. The purpose of this TR is to ensure that facility operation is not initiated or that higher MODES of operation are not entered when corrective action is being taken to obtain compliance with a TR by restoring equipment to FUNCTIONAL status or parameters to specified limits. Compliance with ACTION requirements that permit continued operation of the facility for an unlimited period of time provides an acceptable level of safety for continued operation without regard to the status of the plant before or after a MODE change. Therefore, in this case, entry into an OPERATIONAL MODE or other specified condition may be made in accordance with the provisions of the ACTION requirements. The provisions of this TR should not, however, be interpreted as endorsing the failure to exercise good practice in restoring systems or components to FUNCTIONAL status before plant STARTUP.

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES:

When a shutdown is required to comply with ACTION requirements or as determined by the Operational Decision Making process, the provisions of TR 3.0.4 do not apply because they would delay placing the facility in a lower MODE of operation.

TR 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared nonfunctional to comply with ACTIONS. The sole purpose of this TR is to provide an exception to TR 3.0.1 and 3.0.2 (e.g., to not comply with the applicable required ACTION(s) to allow the performance of required testing to demonstrate either:

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

b. The 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 FUNCTIONALITY. This TR does not provide time to perform any other preventative or corrective maintenance.

An example of demonstrating the FUNCTIONALITY of other equipment is taking a nonfunctional channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of required testing on another channel in the other trip system. A similar example of demonstrating the FUNCTIONALITY of other equipment is taking a 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 required testing on another channel in the same trip system.

TSR 4.0.1 through 4.0.4 establish the general requirements applicable to TSRs.

TSR 4.0.1 establishes the requirement that TSRs must be met during the OPERATIONAL MODES or other conditions for which the requirements of the TR apply unless otherwise stated in an individual TSR. The purpose of this requirement is to ensure that TSRs are performed to verify the 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 TR are applicable. Failure to meet a TSR within the specified surveillance interval, in accordance with TSR 4.0.2, constitutes a failure to meet a TR.

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

a. The systems or components are known to be nonfunctional, although still meeting the TSR(s) or

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

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES:

TSR requirements do not have to be performed when the facility is in an OPERATIONAL MODE or other specified conditions for which the requirements of the associated TR do not apply unless otherwise specified. The TSRs associated with a Special Test Exception are only applicable when the Special Test Exception is used as an allowable exception to the requirements of a TR.

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

TSRs, including TSRs invoked by ACTION requirements, do not have to be performed on nonfunctional equipment because the ACTIONS define the remedial measures that apply. TSRs have to be met and performed in accordance with TSR 4.0.2, prior to returning equipment to FUNCTIONAL status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment FUNCTIONAL. This includes ensuring applicable TSRs are not failed and their most recent performance is in accordance with TSR 4.0.2. 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 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.

TSR 4.0.2 establishes the limit for which the specified time interval for TSRs may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance, e.g., transient conditions or other ongoing surveillance or maintenance activities. It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified typically with an 18-month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for TSRs that are not performed during refueling outages. The limitation of TSR 4.0.2 is based on engineering judgment and the recognition that the most probable result of any particular TSR being performed is the verification of conformance with the TSR requirements. This provision is sufficient to ensure that the reliability ensured through surveillance activities is not significantly degraded beyond that obtained from the specified surveillance interval.

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES:

TSR 4.0.3 establishes the flexibility to defer declaring affected equipment nonfunctional or an affected variable outside the specified limits when a TSR has not been completed within the specified surveillance interval. A delay period of up to 24 hours or up to the limit of the specified surveillance interval, whichever is greater, applies from the point in time that it is discovered that the TSR has not been performed in accordance with TSR 4.0.2, and not at the time that the specified surveillance interval was not met.

This delay period provides adequate time to complete TSRs that have been missed. This delay period permits the completion of a TSR before complying with ACTION requirements or other remedial measures that might preclude completion of the TSR.

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

When a TSR with a surveillance interval based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations, (e.g., prior to entering MODE 1 after each fuel loading, or in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, etc.) is discovered to not have been performed when specified, TSR 4.0.3 allows for the full delay period of up to the specified surveillance interval to perform the surveillance. However, since there is not a time interval specified, the missed TSR should be performed at the first reasonable opportunity.

TSR 4.0.3 provides a time limit for, and allowances for the performance of, TSRs that become applicable as a consequence of MODE changes imposed by ACTION requirements.

Failure to comply with specified surveillance intervals for the TSRs is expected to be an infrequent occurrence. Use of the delay period established by TSR 4.0.3 is a flexibility that is not intended to be used as an operational convenience to extend TSR intervals. While up to 24 hours or the limit of the specified surveillance interval is provided to perform the missed TSR, it is expected that the missed TSR will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the TSR as well as any plant configuration changes required) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the TSR. This risk impact should be managed through the program in place to implement 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182,

3/4.0 TECHNICAL REQUIREMENT (TR) AND TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

BASES:

"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 TSR should be treated as an emergent condition as discussed in the regulatory guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed TSRs will be placed in the licensee's Corrective Action Program.

If a TSR is not completed within the allowed delay period, then the equipment is considered nonfunctional or the variable is considered outside the specified limits and the entry into the ACTION requirements for the applicable TR begins immediately upon expiration of the delay period. If a TSR is failed within the delay period, then the equipment is nonfunctional, or the variable is outside the specified limits and entry into the ACTION requirements for the applicable TR begins immediately upon the failure of the TSR.

Completion of the TSR within the delay period allowed by this TSR, or within the Allowed Outage Time of the applicable ACTIONS, restores compliance with TSR 4.0.1.

TSR 4.0.4 establishes the requirement that all applicable TSRs must be met before entry into an OPERATIONAL MODE or other condition of operation specified in the Applicability statement. The purpose of this TSR is to ensure that system and component FUNCTIONALITY requirements or parameter limits are met before entry into a MODE or condition for which these systems and components ensure safe operation of the facility. This provision applies to changes in OPERATIONAL MODES or other specified conditions associated with plant shutdown as well as STARTUP.

Under the provisions of this TSR, the applicable TSRs must be performed within the specified surveillance interval to ensure that the TRs are met during initial plant STARTUP or following a plant outage.

When a shutdown is required to comply with ACTION requirements or as determined by the Operational Decision Making process, the provisions of TSR 4.0.4 do not apply because this would delay placing the facility in a lower MODE of operation.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

FLOW PATH – SHUTDOWN

TECHNICAL REQUIREMENT

3.1.2.1 As a minimum, one of the following boron injection flow paths shall be FUNCTIONAL and capable of being powered from a FUNCTIONAL emergency power source:

a. A flow path from the boric acid storage system via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System if the boric acid storage system in TECHNICAL REQUIREMENT 3.1.2.5a (for MODE 5 or 6) or TECHNICAL REQUIREMENT 3.1.2.6a (for MODE 4) is FUNCTIONAL, or

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System if the refueling water storage tank in TECHNICAL REQUIREMENT 3.1.2.5b (for MODE 5 or 6) or TECHNICAL REQUIREMENT 3.1.2.6b (for MODE 4) is FUNCTIONAL.

APPLICABILITY:

MODES 4, 5, and 6.

ACTION:

a. With none of the above boron injection flow paths FUNCTIONAL or capable of being powered from a FUNCTIONAL emergency power source in MODE 4, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4).

b. With none of the above boron injection flow paths FUNCTIONAL or capable of being powered from a FUNCTIONAL emergency power source in MODES 5 or 6, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could cause introduction of coolant into the RCS with boron concentration less than required to meet Technical Specification (TS) 3.1.1.1.2 in MODE 5, TS 3.1.1.2 in MODE 5 with RCS loops not filled, or TS 3.9.1.1 in MODE 6.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

FLOW PATH – SHUTDOWN

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.1 At least one of the above required flow paths shall be demonstrated FUNCTIONAL as applicable:

a. At least once per 7 days by verifying that the Boric Acid Transfer Pump Room temperature and the boric acid storage tank solution temperature are greater than or equal to 67°F when a flow path from the boric acid tanks is used, and

b. At least once per 31 days by verifying that 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.

BASES:

The Boron Injection System ensures that negative reactivity control is available during each MODE of facility operation. The components required to perform this function include: (1) borated water source, (2) charging pump, (3) boric acid transfer pump, and (4) an emergency power supply from an OPERABLE diesel generator.

With the plant in MODE 4, one boron injection flowpath is acceptable without single failure consideration for emergency boration requirements on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the FUNCTIONAL charging pump, and the fact that the plant is administratively borated to at least MODE 5 requirements prior to cooldown to MODE 4. Also, the primary grade water addition path to the charging pumps is surveilled to be locked closed to prevent a direct dilution accident in MODE 4.

With the plant in MODES 5 and 6, one boron injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the FUNCTIONAL charging pump, and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity additions in the event the single boron injection system becomes nonfunctional. The MODES 5 and 6 ACTION requirement to suspend positive reactivity additions does not preclude completion of ACTIONS to establish a safe, conservative plant condition, or to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN (SDM).

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

FLOW PATH – SHUTDOWN

BASES (Continued):

The FUNCTIONALITY of one Boron Injection System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

Paragraph (a)(4) of 10 CFR 50.65 "Maintenance Rule" requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities, including out of service Structures, Systems, and Components (SSCs). Management of risk involves consideration of incremental and aggregate impacts. The incremental risk increase is predominantly assessed using quantitative PRA methods, which measure the effect on core damage frequency and large early release frequency associated with the plant configuration. The risk increase is then managed in accordance with action thresholds defined by NUMARC 93-01. The aggregate impact is controlled by meeting Maintenance Rule requirements for establishing and meeting SSC performance criteria. These requirements include consideration of the risk significance of SSCs in establishing performance goals. Significant risk impacts are documented in the corrective action program and assessed as appropriate.

The required boration flow path ensures boration capability during normal and abnormal (i.e., emergency boration) plant conditions. The boration flow path is not credited in any FSAR Chapter 15 accident analysis as a primary success path.

REFERENCE:

1. CR M3-00-2659.
2. License Amendment No. 230.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

FLOW PATH - OPERATING

TECHNICAL REQUIREMENT

3.1.2.2 At least two of the following three boron injection flow paths shall be FUNCTIONAL:

a. The flow path from the boric acid storage system via a boric acid transfer pump and a charging pump to the Reactor Coolant System (RCS), and

b. Two flow paths from the refueling water storage tank via charging pumps to the RCS.

APPLICABILITY:

MODES 1, 2, and 3.

ACTION:

1. With only one of the above required boron injection flow paths to the RCS FUNCTIONAL, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4).

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.2 At least two of the above required flow paths shall be demonstrated FUNCTIONAL as applicable:

a. At least once per 7 days by verifying that the Boric Acid Transfer Pump Room temperature and the boric acid storage tank solution temperature are greater than or equal to 67°F when it is a required water source;

b. At least once per 31 days by verifying that 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;

c. At least once per 24 months by verifying that each automatic valve in the flow path actuates to its correct position on a Safety Injection test signal; and

d. At least once per 24 months by verifying that the flow path required by TECHNICAL REQUIREMENT 3.1.2.2a delivers at least 33 gpm to the RCS.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

FLOW PATH - OPERATING

BASES:

The Boron Injection System ensures that negative reactivity control is available during each MODE of facility operation. The components required to perform this function include: (1) borated water sources, (2) charging pumps, (3) separate flow paths, and (4) boric acid transfer pumps.

With the plant in MODES 1, 2, and 3, a minimum of two boron injection flow paths are required to ensure single FUNCTIONAL capability in the event an assumed failure renders one of the flow paths nonfunctional. The boration capability of either flow path is sufficient to provide a SHUTDOWN MARGIN from expected operating conditions equivalent to that required in MODE 5 with RCS Loops Filled after xenon decay, assuming the most reactive control rod is not inserted into the core, and cooldown to 200°F.

Paragraph (a)(4) of 10 CFR 50.65 "Maintenance Rule" requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities, including out of service Structures, Systems, and Components (SSCs). Management of risk involves consideration of incremental and aggregate impacts. The incremental risk increase is predominantly assessed using quantitative PRA methods, which measure the effect on core damage frequency and large early release frequency associated with the plant configuration. The risk increase is then managed in accordance with action thresholds defined by NUMARC 93-01. The aggregate impact is controlled by meeting Maintenance Rule requirements for establishing and meeting SSC performance criteria. These requirements include consideration of the risk significance of SSCs in establishing performance goals. Significant risk impacts are documented in the corrective action program and assessed as appropriate.

The required boration flow paths ensure boration capability during normal and abnormal (i.e., emergency boration) plant conditions. The boration flow paths are not credited in any FSAR Chapter 15 accident analysis as a primary success path.

REFERENCE:

1. CR M3-00-2659.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

CHARGING PUMP - SHUTDOWN

TECHNICAL REQUIREMENT

3.1.2.3 One charging pump in the boron injection flow path required by TECHNICAL REQUIREMENT 3.1.2.1 shall be FUNCTIONAL and capable of being powered from a FUNCTIONAL emergency power source.

APPLICABILITY:

MODES 4, 5, and 6.

ACTION:

a. With no charging pump FUNCTIONAL or capable of being powered from a FUNCTIONAL emergency power source in MODE 4, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4).

b. With no charging pump FUNCTIONAL or capable of being powered from a FUNCTIONAL emergency power source in MODES 5 and 6, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could cause introduction of coolant into the RCS with boron concentration less than required to meet Technical Specification (TS) 3.1.1.1.2 in MODE 5, TS 3.1.1.2 in MODE 5 with RCS loops not filled, or TS 3.9.1.1 in MODE 6.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.3 The above required charging pump shall be demonstrated FUNCTIONAL by verifying that its developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Technical Specification 4.0.5.

BASES:

With the plant in MODE 4, one charging pump is acceptable without single failure consideration for emergency boration requirements on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the FUNCTIONAL charging pump, and the fact that the plant is administratively borated to at least MODE 5 requirements prior to cooldown to MODE 4.

BASES (Continued):

With the plant in MODES 5 and 6, one charging pump is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor, the emergency power supply requirement for the FUNCTIONAL charging pump, and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity additions in the event the single charging pump becomes nonfunctional. The MODES 5 and 6 ACTION requirement to suspend positive reactivity additions does not preclude completion of ACTIONS to establish a safe, conservative plant condition, or to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN (SDM).

The FUNCTIONALITY of one charging pump during REFUELING ensures that this pump is available for reactivity control while in MODE 6.

With the plant in MODE 4, two charging pumps may be FUNCTIONAL when all RCS cold leg temperatures are > 226°F. In this condition, cold overpressure protection requirements are not applicable.

The limitation for a maximum of one centrifugal charging pump to be FUNCTIONAL, when cold overpressure protection is in service, provides assurance that a mass addition pressure transient can be relieved by operation of a single PORV or RHR suction relief valve.

In MODES 4, 5, and 6, one train of 4 heaters, powered from class 1E power supplies, is required to support charging pump FUNCTIONALITY during cold weather conditions. These heaters are required whenever outside temperature is less than or equal to 17°F. With less than 4 FUNCTIONAL heaters in the train, the corresponding train of charging is nonfunctional. Four FUNCTIONAL heaters in one train will maintain area temperature above 32°F.

Paragraph (a)(4) of 10 CFR 50.65 "Maintenance Rule" requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities, including out of service Structures, Systems, and Components (SSCs). Management of risk involves consideration of incremental and aggregate impacts. The incremental risk increase is predominantly assessed using quantitative PRA methods, which measure the effect on core damage frequency and large early release frequency associated with the plant configuration. The risk increase is then managed in accordance with action thresholds defined by NUMARC 93-01. The aggregate impact is controlled by meeting Maintenance Rule requirements for establishing and meeting SSC performance criteria. These requirements include consideration of the risk significance of SSCs in establishing performance goals. Significant risk impacts are documented in the corrective action program and assessed as appropriate.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

CHARGING PUMP - SHUTDOWN

REFERENCE:

1. CR M3-00-2659.
2. License Amendment No. 230.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

CHARGING PUMP - OPERATING

TECHNICAL REQUIREMENT

3.1.2.4 At least two charging pumps shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2 and 3.

ACTION:

With only one charging pump FUNCTIONAL, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4).

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.4 At least two charging pumps shall be demonstrated FUNCTIONAL by verifying that each pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Technical Specification 4.0.5.

BASES:

With the plant in MODES 1, 2, or 3, a minimum of two charging pumps are required to ensure single FUNCTIONAL capability in the event an assumed failure renders one of the charging pumps nonfunctional.

In MODES 1, 2, and 3, two trains of 4 heaters each, powered from class 1E power supplies, are required to support charging pump FUNCTIONALITY during cold weather conditions. These heaters are required whenever outside temperature is less than or equal to 17°F. With less than 4 FUNCTIONAL heaters in either train, the corresponding train of charging is nonfunctional. Four FUNCTIONAL heaters in one train will maintain area temperature above 32°F.

Paragraph (a)(4) of 10 CFR 50.65 "Maintenance Rule" requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities, including out of service Structures, Systems, and Components (SSCs). Management of risk involves consideration of incremental and aggregate impacts. The incremental risk increase is predominantly assessed using quantitative PRA methods, which measure the effect on core damage frequency and large early release frequency associated with the plant configuration. The risk increase is then managed in accordance with action thresholds defined by NUMARC 93-01. The aggregate impact is controlled by meeting Maintenance Rule requirements for establishing and meeting SSC performance criteria.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

CHARGING PUMP - OPERATING

BASES (Continued):

These requirements include consideration of the risk significance of SSCs in establishing performance goals. Significant risk impacts are documented in the corrective action program and assessed as appropriate.

REFERENCE:

1. CR M3-00-2659.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

BORATED WATER SOURCE - SHUTDOWN

TECHNICAL REQUIREMENT

3.1.2.5 As a minimum, one of the following borated water sources shall be FUNCTIONAL as required by TECHNICAL REQUIREMENT 3.1.2.1 (for MODES 5 and 6).

a. A Boric Acid Storage System with:

1. A minimum indicated borated water volume of 5924 gallons when crediting one tank or 7748 gallons when crediting both boric acid storage tanks,
2. A boron concentration between 6600 and 7175 ppm, and
3. A minimum solution temperature of 67°F.

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

1. A minimum indicated borated water volume of 250,000 gallons,
2. A minimum boron concentration of 2700 ppm, and
3. A minimum solution temperature of 40°F.

APPLICABILITY:

MODES 5 and 6.

ACTION:

With no borated water source FUNCTIONAL, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could cause introduction of coolant into the RCS with boron concentration less than required to meet Technical Specification (TS) 3.1.1.1.2 in MODE 5, TS 3.1.1.2 in MODE 5 with RCS loops not filled, or TS 3.9.1.1 in MODE 6.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.5 The above required borated water source shall be demonstrated FUNCTIONAL as applicable:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

BORATED WATER SOURCE - SHUTDOWN

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying the required borated water volume, and
3. Verifying the Boric Acid Transfer Pump Room temperature and the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water and the outside air temperature is less than 35°F.

BASES:

The boration capability of one of the water sources is sufficient to provide a SHUTDOWN MARGIN (SDM) required in MODE 5 with RCS Loops Filled after xenon decay and cooldown from 200°F to 68°F. The final RCS boron concentration assumes that the most reactive control rod is not inserted into the core. This condition requires either a usable volume of 4100 gallons of 6600 ppm borated water from the boric acid storage tanks or a usable volume of 109,000 gallons of 2700 ppm borated water from the RWST.

For the boric acid storage tanks, indicated water volume is equivalent to usable plus unusable water volumes. The unusable volume in each boric acid storage tank is 1,824 gallons and includes instrument inaccuracy, vortexing, level tap location and suction location. Therefore, the indicated volume requirement is 5924 (4100 + 1824) gallons when crediting a single boric acid storage tank or 7748 (4100 + 1824 + 1824) gallons when crediting both boric acid storage tanks.

For the refueling water storage tank (RWST), the indicated water volume is equal to the usable plus unusable water volumes. The unusable volume in the RWST is 141,000 gallons. The development of the unusable volume in the RWST considered instrument inaccuracy, vortexing and minimum net positive suction head requirements. Therefore, the indicated volume requirement is 250,000 gallons (i.e., 141,000 gallons unusable + 109,000 gallons usable), when crediting the RWST.

The minimum RWST solution temperature for MODES 5 and 6 is based on analysis assumptions in addition to freeze protection considerations.

The ACTION requirement to suspend positive reactivity additions does not preclude completion of actions to establish a safe, conservative plant condition.

REFERENCE:

1. CR M3-00-2659.
2. License Amendment No. 230.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

BORATED WATER SOURCES - OPERATING

TECHNICAL REQUIREMENT

3.1.2.6 As a minimum the following borated water source(s) shall be FUNCTIONAL as required by TECHNICAL REQUIREMENT 3.1.2.2 or TECHNICAL REQUIREMENT 3.1.2.1 (MODE 4).

a. Boric Acid Storage System with:

1. A minimum indicated borated water volume of 32,000 gallons,
2. A boron concentration between 6600 and 7175 ppm, and
3. A minimum solution temperature of 67°F.

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

1. A minimum indicated borated water volume of 1,166,000 gallons,
2. A boron concentration between 2700 ppm and 2900 ppm,
3. A minimum solution temperature of 42°F and (NOTE)
4. A maximum solution temperature of 73°F. (NOTE)

APPLICABILITY:

MODES 1, 2, 3, and 4

ACTION:

a. With the Boric Acid Storage System nonfunctional, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4)

b. With the RWST nonfunctional, manage the risk impact in accordance with the requirements of 10 CFR 50.65(a)(4)

NOTE: The minimum and maximum solution temperatures for the RWST in MODES 1, 2, 3 and 4 are based on the following:

The 42°F minimum and 73°F maximum solution temperature values identified within the TRM include an operational margin of 2°F (e.g., measurement uncertainties, analytical uncertainties, and design uncertainties) from values used in accident analysis/piping stress analysis. Accident analysis/piping stress analysis used 40°F and 75°F for the minimum and maximum RWST solution temperature.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

BORATED WATER SOURCES - OPERATING

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.2.6 Each borated water source shall be demonstrated FUNCTIONAL as applicable:

a. At least once per 7 days by:

1. Verifying the boron concentration in the water,
2. Verifying the required borated water volume of the water source, and
3. Verifying the Boric Acid Transfer Pump Room temperature and the boric acid storage tank solution temperature.

b. At least once per 24 hours by verifying the RWST temperature.

BASES:

The initial RCS boron concentration is based on a minimum expected hot full power or hot zero power condition (peak xenon). The final RCS boron concentration assumes that the most reactive control rod is not inserted into the core. This set of conditions requires a minimum usable volume of 28,352 gallons of 6600 ppm borated water from the boric acid storage tanks or a usable volume of 1,025,000 gallons of 2700 ppm borated water from the refueling water storage tank (RWST). The Westinghouse BORDER (Boron Design Review) Methodology in WCAP-14441 requires these volumes be maintained in MODE 4 as well. A minimum RWST volume of 1,166,000 gallons is specified to be consistent with ECCS requirements.

For the boric acid storage tanks, indicated water volume is equivalent to usable plus unusable water volumes. The unusable volume in each boric acid storage tank is 1,824 gallons and includes instrument inaccuracy, vortexing, level tap location and suction location. Both boric acid storage tanks are required to attain the required usable volume due to tank volume limitations. Therefore, the combined total indicated volume requirement is 32,000 (28,352+1824+1824) gallons from both boric acid storage tanks.

For the refueling water storage tank (RWST), the indicated water volume is equal to the usable plus unusable water volumes. The unusable volume in the RWST is 141,000 gallons. The development of the unusable volume in the RWST considered instrument inaccuracy, vortexing and minimum net positive suction head requirements. Therefore, the indicated volume requirement is 1,166,000 gallons (i.e., 141,000 gallons unusable + 1,025,000 gallons usable), when crediting the RWST.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.2 BORATION SYSTEMS

BORATED WATER SOURCES - OPERATING

BASES (Continued):

Paragraph (a)(4) of 10 CFR 50.65 "Maintenance Rule" requires that licensees assess and manage the increase in risk that may result from proposed maintenance activities, including out of service Structures, Systems, and Components (SSCs). Management of risk involves consideration of incremental and aggregate impacts. The incremental risk increase is predominantly assessed using quantitative PRA methods, which measure the effect on core damage frequency and large early release frequency associated with the plant configuration. The risk increase is then managed in accordance with action thresholds defined by NUMARC 93-01. The aggregate impact is controlled by meeting Maintenance Rule requirements for establishing and meeting SSC performance criteria. These requirements include consideration of the risk significance of SSCs in establishing performance goals. Significant risk impacts are documented in the corrective action program and assessed as appropriate.

The minimum/maximum RWST solution temperatures for MODES 1, 2, 3, and 4 are based on analysis assumptions in addition to freeze protection considerations.

REFERENCE:

1. CR M3-00-2659.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 POSITION INDICATION SYSTEM

TECHNICAL REQUIREMENT

3.1.3.3 One digital rod position indicator (excluding demand position indication) shall be FUNCTIONAL and capable of determining the control rod position within $\pm$ 12 steps for each shutdown or control rod not fully inserted.

APPLICABILITY:

MODES 3 * **, 4 * **, and 5 * **.

ACTION:

With less than the above required position indicator(s) FUNCTIONAL, immediately open the Reactor Trip System breakers.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.1.3.3.a Verify required digital rod position indicator indicates rods on the bottom, prior to closing the reactor trip breakers after each removal of the reactor vessel head.

4.1.3.3.b Perform Technical Specification Surveillance Requirement 4.1.3.2.2 within 4 hours after rod(s) are withdrawn, at least once per 24 months.

BASES:

For TECHNICAL REQUIREMENT 3.1.3.3, the ACTION states to immediately open the reactor trip breakers if the TECHNICAL REQUIREMENT is not satisfied, however, it is appropriate to select Data A and Data B individually, to verify satisfactory rod position indication is not available before opening the reactor trip breakers.

* With the Reactor Trip System breakers in the closed position, and the control rod drive system is capable of rod withdrawal.

** See Special Test Exceptions TECHNICAL REQUIREMENT 3.10.5.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.3 POSITION INDICATION SYSTEM

BASES (Continued):

TECHNICAL SURVEILLANCE REQUIREMENT (TSR) 4.1.3.3.a provides verification that the required digital rod position indicator indicates that each rod is on the bottom, prior to closing the reactor trip breakers after each removal of the reactor vessel head, providing reasonable assurance that the required digital rod position indicator is accurately indicating rod positions prior to placing the Rod Control System in a condition capable of rod withdrawal.

TSR 4.1.3.3.b requires that digital rod position indication over the full-range of travel be verified by directing performance of Technical Specification Surveillance Requirement 4.1.3.2.2. Since digital rod position indication in accordance with Surveillance Requirement 4.1.3.2.2 can only be completely demonstrated after the rods have been fully withdrawn, a time of 4 hours after the associated rod(s) are withdrawn is allowed for performance of this TECHNICAL REQUIREMENT. Until verification of the required digital rod position indicator subsystem is completed, operator verification that the digital rod position indication for each rod is within limits provides reasonable assurance that the required digital rod position indicator subsystem is accurately indicating rod positions. The 4 hours is an acceptable time to perform the surveillance.

REFERENCE:

1. Millstone Power Station, Unit No. 3, Technical Specification Change Request 3-10-01, Relocation of Technical Specifications Related to Position Indication System - Shutdown, (B18469) dated September 26, 2001.

2. Millstone Nuclear Power Station, Unit No. 3 - Issuance of Amendment RE: Relocating Control Rod Position Indication Requirements to the Technical Requirements Manual (TAC No. MB3019), dated July 30, 2002. (Amendment No. 207, see letter A15735.)

3. Condition Report 01-06356.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.1 In accordance with Technical Specification LCO 3.3.1, Reactor Trip System Instrumentation.

APPLICABILITY:

In accordance with Technical Specification LCO 3.3.1.

ACTION:

In accordance with Technical Specification LCO 3.3.1.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit as listed in TRM Table 3.3-2, in accordance with the test frequency specified in TS SR 4.3.1.2.

BASES:

In accordance with Technical Specification Bases section 3/4.3.1.

REFERENCE:

1. CR M3-00-2659.
2. CR-01-02540.

TABLE 3.3-2
REACTOR TRIP SYSTEM INSTRUMENTATION RESPONSE TIMES

Functional Unit No.	Functional Unit Description	Response Time in Seconds
1.	Manual Reactor Trip	N/A
2.	Power Range, Neutron Flux	0.5
3.	Power Range, Neutron Flux, High Positive Rate	N/A
4.	Deleted	N/A
5.	Intermediate Range, Neutron Flux	N/A
6.	Source Range, Neutron Flux	N/A
7.	Overtemperature $\Delta T^{(1)}$	
	a. Neutron Flux Portion	1.5
	b. Temperature Portion (ΔT Input)	1.5
	c. Temperature Portion (Tavg Input)	1.5
	d. Pressurizer Pressure Portion	1.5
	e. RTD Time Constants	5.5[(2)]
8.	Overpower $\Delta T^{(1)}$	
	a. Temperature Portion (ΔT Input)	1.5
	b. Temperature Portion (Tavg Input)	1.5
	c. RTD Time Constants	5.5
9.	Pressurizer Pressure - Low	2.0
10.	Pressurizer Pressure - High	2.0
11.	Pressurizer Level - High	2.0
12.	Reactor Coolant Flow - Low	1.0
13.	Steam Generator Water Level - Low-Low	2.0
14.	Low Shaft Speed - Reactor Coolant Pumps	0.6[(3)]
15.	Turbine Trip	
	a. Low Fluid Oil Pressure	N/A
	b. Turbine Stop Valve Closure	N/A
16.	Deleted	N/A
17.	Reactor Trip System Interlocks	N/A
18.	Reactor Trip Breakers	N/A
19.	Automatic Trip and Interlock Logic	N/A
20.	Three Loop Operations Bypass Circuitry	N/A

NOTE 1 Neutron detectors are exempt from response time verification. Response time of the neutron flux portion of the channel shall be measured from the detector output or input of the first electronic component in the channel.

NOTE 2 RTD Time Constants are measured by surveillance testing using the Loop Current Step Response (LCSR) method. All RTDs are to be tested at a refueling frequency.

NOTE 3 Speed Sensors are exempt from response time testing. Response time of the speed signal portion of the channel shall be measured from the detector output or first electronic component in the channel.

3/4.3 INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.2 In accordance with Technical Specification LCO 3.3.2, Engineered Safety Features Actuation System (ESFAS) Instrumentation.

APPLICABILITY:

In accordance with Technical Specification LCO 3.3.2.

ACTION:

In accordance with Technical Specification LCO 3.3.2.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within its limit as listed in TRM Table 3.3-5, in accordance with the test frequency specified in TS SR 4.3.2.2.

BASES:

ESF RESPONSE TIME for Safety Injection (SI) is the time interval from when the initiating parameter exceeds its ESF Actuation Setpoint until the last valve is in its required position for accident analysis purposes. FSAR Section 6.3.2.1 states that the suction valves from the Reactor Water Storage Tank (RWST) open and the Volume Control Tank (VCT) outlet isolation valves close on an SI signal. Therefore, there are two safety related functions in the VCT to RWST switchover: 1) Establishing full SI flow and 2) isolating the VCT to provide only highly borated water from the RWST and to prevent hydrogen ingestion by the charging pumps.

The Loss of Coolant Accident (LOCA) analysis assumes that full SI flow is established within 40 seconds concurrent with Loss of Power (LOP). This establishes a maximum time (27 seconds) for the RWST suction valves to open on SI signals associated with LOCA (low pressurizer pressure and high containment pressure). VCT isolation is not explicitly credited in the FSAR accident analysis for this case.

3/4.3 INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

BASES (Continued):

For the steam line break analysis, credit is no longer taken for borated flow from charging. However, for the feedwater line break, the current accident analysis still models borated flow from charging and is described in the FSAR. Thus, the low steam line pressure response time is being maintained. In order to prevent hydrogen ingestion by the charging pumps, at least one VCT isolation valve must close after the associated RWST suction valve has opened. Safety Evaluation S3-EV-97-0437 states: “To ensure the VCT with a low-low level setpoint of 4.4% of span does not drain below the vortex limit following an SI signal, the total time for each subject valve pair to complete their sequential stroke shall not exceed 36 seconds (VCT low-low level coincident with a SI signal.” This assumes no LOP. Standard emergency diesel generator start and instrument response are assumed to give a ESF/LOP total time of 49 seconds.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.3.2.

TRM TABLE 3.3-5
ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATION SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual Initiation	N.A.
a. Safety Injection (ECCS)	N.A.
b. Containment Spray	N.A.
c. Phase “A” Isolation	N.A.
d. Phase “B” Isolation	N.A.
e. Steam Line Isolation	N.A.
f. Feedwater Isolation	N.A.
g. Auxiliary Feedwater	N.A.
h. Service Water	N.A.
i. Control Building Isolation	N.A.
j. Reactor Trip	N.A.
k. Start Diesel Generator	N.A.
2. Containment Pressure - High-1	
a. Safety Injection (ECCS)	≤ 40(7) / 49(8)
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 6.8(11)
3) Phase “A” Isolation	≤ 1(2)(4) / 12(1)(4)
4) Auxiliary Feedwater	≤ 60
5) Service Water	≤ 90(1)
6) Start Diesel Generator	≤ 12
b. Control Building Isolation	≤ 10(9)
3. Pressurizer Pressure - Low	
a. Safety Injection (ECCS)	(See Items 2.a & 2.a.1-6)
4. Steam Line Pressure - Low	
a. Safety Injection (ECCS)	(See Items 2.a & 2.a.1-6)
b. Steam Line Isolation	≤ 11.8(3)
5. Containment Pressure - High-3	
a. Quench Spray	
1) Valves	≤ 41.4(2) / 52.4(1)

TRM TABLE 3.3-5
ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATION SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
2) Pumps	$\leq 4.4^{(2)}$ / $20.4^{(1)}$
b. Phase "B" Isolation	(See Item 2.a.3)
c. Motor-Driven Auxiliary Feedwater Pumps	(See Item 2.a.4)
d. Service Water	(See Item 2.a.5)
6. Containment Pressure - High-2	
a. Steam Line Isolation	(See Item 4.b)
7. Steam Line Pressure - Negative Rate - High	
a. Steam Line Isolation	(See Item 4.b)
8. Steam Generator Water Level - High-High	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	(See Item 2.a.2)
9. Steam Generator Water Level - Low-Low	
a. Motor-Driven Auxiliary Feedwater Pumps	(See Item 2.a.4)
b. Turbine-Driven Auxiliary Feedwater Pumps	≤ 90
10. Loss-of-Offsite Power	
a. Motor-Driven Auxiliary Feedwater Pumps	(See Item 2.a.4)
11. Loss of Power	
a. 4 kV Bus Undervoltage (Loss of Voltage)	≤ 13
b. 4 kV Emergency Bus Undervoltage (Grid Degraded Voltage)	$\leq 19^{(5)}$ / $311^{(6)}$
12. T_{ave} Low Coincident With Reactor Trip (P-4)	
a. Feedwater Isolation	
1) RTD Time Constant	≤ 5.5
2) Rack and Actuation Delays	≤ 1.5
3) Valve Stroke Time	≤ 5
13. Control Building Inlet Ventilation Radiation	
a. Control Building Isolation	$\leq 10^{(10)}$

TABLE NOTATIONS

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

(2) Diesel generator starting and sequence loading delays not included. Offsite power available.

(3) Hydraulic operated valves.

(4) Does not include valve stroke time.

(5) With an ESF signal present.

(6) Without an ESF signal present.

(7) Isolation of charging pump suction from VCT is not included. Diesel generator starting and sequence loading delays included.

(8) Isolation of charging pump suction from VCT is included. Diesel generator starting and sequence loading delays included.

(9) This time includes 4 seconds for the High-1 to process a signal to the Control Building Ventilation Inlet Dampers, 3HVC*AOD27A & B, and 6 seconds for the Control Building Ventilation Inlet Dampers, 3HVC*AOD27A & B, to close.

(10) This time includes 4 seconds for the radiation monitor to process a signal to the Control Building Ventilation Inlet Dampers, 3HVC*AOD27A & B, and 6 seconds for the Control Building Ventilation Inlet Dampers, 3HVC*AOD27A & B, to close.

(11) Pneumatic operated valves.

3/4.3 INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.2.1 The safety grade PORV opening instrumentation listed in TRM Table 3.3-3 shall be FUNCTIONAL with the Trip Setpoints set consistent with the values shown in the Trip Setpoint column of TRM Table 3.3-4, Engineered Safety Features Actuation System (ESFAS), Instrumentation Trip Setpoints.

APPLICABILITY:

In accordance with TRM Table 3.3-3.

ACTION:

In accordance with TRM Table 3.3-3.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.2.1.1 The safety grade PORV opening instrumentation shall be demonstrated FUNCTIONAL by performance of TECHNICAL SURVEILLANCE REQUIREMENTS specified in TRM Table 4.3-2.

BASES:

The Inadvertent Safety Injection submittal (PTSCR 3-9-98) included the commitment to restrict pressurizer channel FUNCTIONALITY beyond that in TS LCOs 3.3.1 and 3.3.2. Specifically, a single nonfunctional pressurizer pressure channel must be restored within 30 days to ensure that the inadvertent SI analysis remains valid. TS LCOs 3.3.1 and 3.3.2 allow unlimited operation as long as the failed channel is tripped within 72 hours.

REFERENCE:

1. CR M3-00-2659.
2. NNECO letter - B17144.

TRM TABLE 3.3-3 (CONTINUATION OF T.S. TABLE 3.3-3)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNEL FUNCTIONAL	APPLICABLE MODES	ACTION
11. PORV Open					
a. Pressurizer Pressure	4	2	3	1, 2, 3	27

ACTION STATEMENTS

27. With the number of FUNCTIONAL channels one less than the total number of channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

A. The nonfunctional channel is placed in the tripped condition within 72 hours and,

B. The minimum channels FUNCTIONAL requirement is met; however, the nonfunctional channel may be bypassed for up to 4 hours for surveillance testing of other channels IAW TECHNICAL SURVEILLANCE REQUIREMENTS as listed in TRM Table 4.3-2 and,

C. The nonfunctional channel is restored to FUNCTIONAL status within 30 days or be in at least HOT STANDBY within the next 6 hours and at least HOT SHUTDOWN within the following 6 hours.

TRM TABLE 3.3-4 (CONTINUATION OF T.S. TABLE 3.3-4)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINTS	ALLOWABLE VALUE
11. PORV Open		
a. Pressurizer Pressure	≤ 2,350 psia	≤ 2,388 psia

TRM TABLE 4.3-2 (CONTINUATION OF T.S. TABLE 4.3-2)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
TECHNICAL SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
11. PORV Open								
a. Pressurizer Pressure	N/A	R (4)	Q (4)	N/A	N/A	N/A	N/A	1, 2, 3

TABLE NOTATION

4. Test as required by T.S. SURVEILLANCE REQUIREMENT 4.4.4.1.a AND 4.4.4.1.c.

3/4.3 INSTRUMENTATION

3/4.3.3.2 MOVABLE INCORE DETECTORS

TECHNICAL REQUIREMENT

3.3.3.2 The Movable Incore Detection System shall be FUNCTIONAL with:

a. At least 75% of the detector thimbles,*

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

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

* Not required when using a quarter-core flux map for recalibration of the Excore Neutron Flux Detection System, or when using symmetric incore thimbles to monitor QUADRANT POWER TILT RATIO.

APPLICABILITY:

When the Movable Incore Detection System is used for:

a. Recalibration of the Excore Neutron Flux Detection System, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

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

ACTION:

With the Movable Incore Detection System nonfunctional, do not use the system for the above applicable monitoring or calibration functions.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.2 The Movable Incore Detection System shall be demonstrated FUNCTIONAL at least once per 24 hours by normalizing each detector output when required for:

a. Recalibration of the Excore Neutron Flux Detection System, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

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

3/4. 3 INSTRUMENTATION

3/4.3.3.2 MOVABLE INCORE DETECTORS

BASES:

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 core. The FUNCTIONALITY of this system is demonstrated by irradiating each detector used and determining the acceptability of its voltage curve.

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-A, February 1979, 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 nonfunctional.

REFERENCE:

1. CR M3-00-2659.

3/4.3 INSTRUMENTATION

3/4.3.3.3 SEISMIC INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.3.3 The seismic monitoring instrumentation shown in TRM Table 3.3.3.3-1 shall be FUNCTIONAL.

APPLICABILITY:

At all times.

ACTION:

With one or more of the above required seismic monitoring instruments nonfunctional, restore to FUNCTIONAL status within 30 days or otherwise initiate corrective actions.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.3 In accordance with the following TECHNICAL SURVEILLANCE REQUIREMENTS:

a. Each of the above required seismic monitoring instruments shall be demonstrated FUNCTIONAL by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and ANALOG CHANNEL OPERATIONAL TEST at the frequencies shown in TRM Table 3.3.3.3-2.

b. Each of the above required seismic monitoring instruments actuated during a seismic event shall be restored to FUNCTIONAL status within 24 hours and a CHANNEL CALIBRATION performed within 10 days following the seismic event. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion.

BASES:

The FUNCTIONALITY of the seismic 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 to determine if plant shutdown is required pursuant to Appendix A of 10 CFR Part 100. The instrumentation is consistent with the recommendations of Regulatory Guide 1.12, “Instrumentation for Earthquakes,” April 1974.

Initiate corrective actions means that the problem is entered into the Millstone Corrective Action Program and that it will be investigated and a corrective action plan will be developed and implemented in a timely manner as specified by the Millstone Corrective Action Program.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.3.3.3-1
SEISMIC MONITORING INSTRUMENTATION

INSTRUMENTS AND SENSOR LOCATIONS	MEASUREMENT RANGE	MINIMUM INSTRUMENTS FUNCTIONAL
1. Triaxial Force Balance Accelerometers		
a. NBE20A Containment Mat. (-24'3")	± 1g (2.5v/g)	1
b. NBE20B Containment Wall (40'6")	± 1g (2.5v/g)	1
c. NBE21 Emergency Generator Enclosure Located On Mat in Diesel Fuel Oil Vault (4'6")(1)	± 1g (2.5v/g)	1
d. NBE22 Auxiliary Building F-Line Wall Near Charging Pump Cooling Surge Tank (46'6")	± 1g (2.5v/g)	1
e. NBE23 Containment Steam Generator Support (51'4")	± 1g (2.5v/g)	1
2. Controller		
a. NBC20 Central Controller (NBE20-22)	N/A	1
3. Recorders		
a. NBR25 A Recorder (NBE20)	N/A	1
b. NBR26 B Recorder (NBE21-22)	N/A	1
c. NBR23 Etna (NBE23)	N/A	1
4. Alarm panel		
a. NBA20 Central Alarm Panel (NBE20-22)(2)	N/A	1

NOTES:

1. Sensor is located on wall approximately 3 feet above floor near corner to reduce the potential for equipment damage due to flooding. This location will provide representative indication based on the stiffness of the supporting structure.

2. Main control board annunciation for OBE exceedance sensed at containment mat (NBE20A).

TRM TABLE 3.3.3.3-2
SEISMIC MONITORING INSTRUMENTATION
TECHNICAL SURVEILLANCE REQUIREMENTS

	INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK[2]	CHANNEL CALIBRATION[2]	ANALOG CHANNEL OPERATIONAL TEST[2]
1.	Triaxial Force Balance Accelerometers			
	a. NBE20A	M	R	SA
	Containment Mat (-24'3")			
	b. NBE20B	M	R	SA
	Containment Wall (40'6")			
	c. NBE21	M	R	SA
	Emergency Generator Enclosure Located On Mat In Diesel Fuel Oil Vault (4'6")			
	d. NBE22	M	R	SA
	Auxiliary Building F-Line Wall Near Charging Pump Cooling Surge Tank (46'6")			
	e. NBE23	M	R	SA
	Containment Steam Generator Support (51'4")			
2.	Controller			
	a. NBC20	M	R	SA
	Central Controller (NBE20-22)			
3.	Recorders			
	a. NBR25	M	R	SA
	A Recorder (NBE20)			
	b. NBR26	M	R	SA
	B Recorder (NBE21-22)			
	c. NBR23	M	R	SA
	Etna (NBE23)[1]			
4.	Alarm Panel			
	a. NBA20	M	R	SA
	Central Alarm Panel (NBE20-22)	M	R	SA

NOTES:

1. Verify power available to Etna recorder daily.
2. Test definitions per ANSI/ANS 2.2.

3/4.3 INSTRUMENTATION

3/4.3.3.4 METEOROLOGICAL INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.3.4 The meteorological monitoring instrumentation channels listed in TRM Table 3.3.3.4-1 shall be FUNCTIONAL.

APPLICABILITY:

At all times.

ACTION:

With one or more required meteorological monitoring channels nonfunctional for more than 7 days, enter condition into the corrective action program.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.4 Each of the above meteorological monitoring instrumentation channels shall be demonstrated FUNCTIONAL by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION at the frequencies shown in TRM Table 3.3.3.4-2.

BASES:

The FUNCTIONALITY of the meteorological instrumentation ensures that sufficient meteorological data are available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public and is consistent with the recommendations of Regulatory Guide 1.23, “Onsite Meteorological Programs,” February 1972.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.3.3.4-1
METEOROLOGICAL MONITORING INSTRUMENTATION

INSTRUMENT		LOCATION	MINIMUM FUNCTIONAL
1. Wind Speed			
a.	WS-33	Nominal Elev. 33’	1
b.	WS-142	Nominal Elev. 142’	1
c.	WS-374	Nominal Elev. 374’	1
2. Wind Direction			
a.	WD-33	Nominal Elev. 33’	1
b.	WD-142	Nominal Elev. 142’	1
c.	WD-374	Nominal Elev. 374’	1
3. Air Temperature - ΔT*			
a.	DT-142	Nominal Elev. 142’	1
b.	DT-374	Nominal Elev. 374’	1

* Group reference is 33’. ΔT is the measured difference between the temperature at 33’ and the temperature at elevations 142’ and 374’, respectively.

TRM TABLE 3.3.3.4-2
METEOROLOGICAL MONITORING INSTRUMENTATION
TECHNICAL SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
1. Wind Speed		
a. Nominal Elev. 33’	D	SA
b. Nominal Elev. 142’	D	SA
c. Nominal Elev. 374’	D	SA
2. Wind Direction		
a. Nominal Elev. 33’	D	SA
b. Nominal Elev. 142’	D	SA
c. Nominal Elev. 374’	D	SA
3. Air Temperature - ΔT*		
a. Nominal Elev. 33’ - 142’	D	SA
b. Nominal Elev. 33’ - 374’	D	SA

3/4.3 INSTRUMENTATION

3/4.3.3.6 ACCIDENT MONITORING INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.3.6.1 Channels one and two of the following high radiation monitors shall be FUNCTIONAL each with an alarm setpoint set as specified in the surveillance procedures.

a. Vent high range radiation monitor (HVR*RE10A).

b. SLCRS high range radiation monitor (HVR*RE19A).

APPLICABILITY:

MODES 1, 2, 3, 4, 5 and 6

ACTION:

a. With an alarm setpoint exceeding the specified value, adjust the setpoint to within the specified value within twenty-four hours or declare the monitor nonfunctional.

b. With the high range radiation monitor(s) nonfunctional, within 72 hours, initiate an alternate method of monitoring the appropriate parameter (not required if the nonfunctionality is only due to alarm setpoint)

and

Restore the nonfunctional monitor(s) to FUNCTIONAL status within 30 days, or otherwise, initiate corrective actions.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.6.1 The high radiation monitors shall be demonstrated FUNCTIONAL by the performance of the following surveillances at the frequencies shown:

a. CHANNEL CHECK once per 31 days.

b. Digital Channel Operational Test once per 92 days.

c. CHANNEL CALIBRATION once per 18 months.

3/4.3 INSTRUMENTATION

3/4.3.3.6 ACCIDENT MONITORING INSTRUMENTATION

BASES:

This TECHNICAL REQUIREMENT is part of the program required by Technical Specification 6.8.4.e. It provides FUNCTIONALITY and TECHNICAL SURVEILLANCE REQUIREMENTS for instrumentation monitoring releases of radioactivity from the plant vent (HVR*RE10A) and from the Millstone Stack from Unit 3 through SLCRS (HVR*RE19A). The REMODCM provides FUNCTIONALITY and TECHNICAL SURVEILLANCE REQUIREMENTS for the normal range radiation monitors (HVR*RE10B and HVR*RE19B), which are also Category 2, RG 1.97, Revision 2 instrumentation.

The alternate method of monitoring specified in TR ACTION b. is contained in procedures. It includes use of the normal range radiation monitors (HVR*RE10B and HVR*RE19B) for these release pathways if FUNCTIONAL and on scale. These procedures describe additional methods to monitor activity in these release paths in the event the normal range radiation monitors are nonfunctional or not on scale.

A Digital Channel Operational Test shall consist of exercising the digital computer hardware using data base manipulation and/or injecting simulated process data to verify FUNCTIONALITY of alarm and/or trip functions.

A Digital Channel Operational Test (DCOT) is more appropriate for this application than an ANALOG CHANNEL OPERATIONAL TEST. The alarm function algorithm of the radiation monitor uses a digital value residing in a fixed memory location along with the current digital radiation value to determine alarm/trip. An alarm/trip will occur when the detected counts get to exactly the alarm value or above. Because a digital system has no hysteresis, the alarm value can be accurately reset after adjustment for testing purposes. The monitor setpoint is stored in nonvolatile memory such that the setpoint is not subject to drift or spontaneous change. The DCOT does not test the higher level bits of the instrument's digital counter. However, the counters are programmed to continually decrement and wrap around. Thus, all 16 bits are accessed during operation with normal levels of radioactivity, and a malfunctioning bit would either give a failure or high radiation alarm.

The DCOT method of testing is better than the ACOT since the monitor is never removed from service and no cables are disconnected.

3/4.3 INSTRUMENTATION

3/4.3.3.6 ACCIDENT MONITORING INSTRUMENTATION

REFERENCE:

1. NUREG-0737.
2. NRC Generic Letter 83-37.
3. CR-01-01982, “MPS High Range SLCRS and Vent Monitors Have No Action Statement Should They Become Inoperable.”
4. TRM Change LBDCR 02-MP3-001, June 24, 2003.

3/4.3 INSTRUMENTATION

3/4.3.3.7 FIRE DETECTION INSTRUMENTATION

TECHNICAL REQUIREMENT

3.3.3.7 As a minimum, the fire detection instrumentation for each fire detection zone listed in TRM Table 3.3-11 shall be FUNCTIONAL.

APPLICABILITY:

Whenever equipment protected by the fire detection instrument is required to be FUNCTIONAL.

ACTION:

a. With any but not more than one-half the total in any fire zone, Function A fire detection instruments shown in TRM Table 3.3-11 nonfunctional (except for Cable Spreading Area Incipient Fire Detection (IFD) panels), restore the nonfunctional instrument(s) to FUNCTIONAL status within 14 days or within the next 1 hour establish a fire watch patrol to inspect the zone(s) with the nonfunctional instrument(s) at least once per hour[2], unless the instrument(s) is located inside the containment, then inspect that containment zone at least once per 8 hours (or monitor the containment air temperature[1] at least once per hour at the locations listed in Technical Specification 4.6.1.5, Containment Systems, Air Temperature").

b. With more than one-half of the Function A fire detection instruments in any fire zone shown in TRM Table 3.3-11 nonfunctional, or with any Function B fire detection instruments shown in this section nonfunctional, or with any two or more adjacent fire detection instruments shown in TRM Table 3.3-11 nonfunctional (except for Cable Spreading Area IFD panels), within 1 hour establish a fire watch patrol to inspect the zone(s) with the nonfunctional instrument(s) at least once per hour[2], unless the instrument(s) is located inside the containment, then inspect that containment zone at least once per 8 hours[2] (or monitor the containment air temperature[1] at least once per hour at the locations listed in Technical Specification 4.6.1.5, "Containment Systems, Air Temperature").

c. With a Cable Spreading Area (CSA) IFD panel nonfunctional,

1. With 1 IFD panel nonfunctional, within 1 hour verify the fire barriers around the CSA are FUNCTIONAL and establish a one hour fire watch patrol in the area.
2. With 1 IFD panel nonfunctional and any fire barrier around the CSA nonfunctional, within 1 hour establish a continuous fire watch in the area.
3. With 2 IFD panels nonfunctional, within 1 hour establish a continuous fire watch in the area.

3/4.3 INSTRUMENTATION

3/4.3.3.7 FIRE DETECTION INSTRUMENTATION

TECHNICAL REQUIREMENTS (Continued)

ACTION: (continued)

Notes:

1. ACTIONS a. and b. allow for the use of containment air temperature, when monitored once per hour, as an alternative to a fire patrol when fire detection in containment is nonfunctional.

   i. As a supplement, EEQ temperature points corresponding to the general area of the lost detectors may be monitored. This shall not be considered as a substitute for the required points.

   ii. The points listed in Technical Specification 4.6.1.5, “Containment Systems, Air Temperature,” must be monitored hourly when required by TR 3.3.3.7, “Fire Detection Instrumentation,” as a minimum when containment is closed.

   140° F is the alarm setpoint for the following:

   a. LMS-20D (94 ft elevation, E outside crane wall)

   b. LMS-20F (86 ft elevation, NW outside crane wall)

   c. LMS-20H (75 ft elevation, W steam generator platform)

   d. LMS-20G (75 ft elevation, E steam generator platform)

   e. LMS-20L (45 ft elevation, pressurizer cubicle, crane wall)

   iii. When the plant is shutdown and the containment open, a fire watch will be used to satisfy TR 3.3.3.7, “Fire Detection Instrumentation,” for failed detectors. For this condition the fire watch shall be hourly.

2. For completion times stated in TR ACTIONs which require periodic performance on a “once per” basis, the specified frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the completion time, as measured from the previous performance or as measured from the time a specified condition of the frequency is met.

3/4.3 INSTRUMENTATION

3/4.3.3.7 FIRE DETECTION INSTRUMENTATION

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.7.1 Each of the above fire detection instruments (except for Cable Spreading Area IFD panels), which are accessible during plant operation, shall be demonstrated FUNCTIONAL at least once per 12 months by performance of a fire detector functional test. Fire detectors which are not accessible during plant operation[1] shall be demonstrated FUNCTIONAL by the performance of a fire detector functional test during each COLD SHUTDOWN exceeding 24 hours, unless performed in the previous 12 months.

4.3.3.7.2 The NFPA Standard 72D supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated FUNCTIONAL at least once per 12 months.

4.3.3.7.3 Each IFD panel shall be demonstrated FUNCTIONAL at least once per 12 months by performance of a fire detector FUNCTIONAL test, which shall include automatic actuation of each zone alarm.

TECHNICAL SURVEILLANCE REQUIREMENT Notes:

1. Includes detectors in containment, high radiation areas, and areas contaminated in excess of 100,000 dpm per 100 cm^2.

BASES:

1. The FUNCTIONALITY of the fire detection instrumentation ensures both adequate warning capability is available for prompt detection of fires and that fire suppression systems, which are actuated by fire detectors, will discharge extinguishing agents in a timely manner. Prompt detection and suppression of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility Fire Protection Program.

   If containment fire detection is out of service, temperature monitoring may be used to provide indication of a fire.

2. Fire detectors used to actuate fire suppression systems are a more important component of the plant’s Fire Protection Program than detectors that are installed solely for early fire warning and notification. Consequently, the minimum number of FUNCTIONAL fire detectors must be greater.

3. The loss of detection capability for fire suppression systems, actuated by fire detectors, represents a significant degradation of fire protection for any area. As a result, the establishment of a fire watch patrol must be initiated at an earlier stage than would be warranted for the loss of detectors that provide only early fire warning. The establishment of frequent fire patrols in the affected areas is required to provide detection capability until the nonfunctional instrumentation is restored to FUNCTIONALITY.

3/4.3 INSTRUMENTATION

3/4.3.3.7 FIRE DETECTION INSTRUMENTATION

BASES (Continued):

4. Use of the points listed in Technical Specification 4.6.1.5, "Containment Systems, Air Temperature," to monitor containment air temperature hourly is an acceptable substitute to an hourly fire watch, if the fire detection system becomes nonfunctional. The plant process computer continuously monitors air temperature throughout containment to compute an average air temperature. However, monitoring the average temperature is not ideal for detecting incipient stage fires at the reactor coolant pumps or cable penetration areas. If containment access is possible, a fire watch should be posted.

5. Fire Detector Functional Test - shall be the injection of a simulated signal at the primary sensor to verify detector FUNCTIONALITY and alarm transmission to the local zone panel.

6. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

7. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.

8. The IFD (Incipient Fire Detection) system has been provided as an additional level of detection for the CSA. The IFD system is an active air sampling system designed to be more sensitive than conventional smoke detectors. It consists of four zones per panel, arranged two zones near the ceiling and two at mid-level, for a total of eight zones.

REFERENCE:

1. CR M3-00-2659.

2. CR M3-98-1726.

3. FP-EV-01-0002, Revision 1, dated March 3, 2003, "MP3 CSA CO2 System with IFD System and Manual Fire Fighting Capabilities."

SECURITY-RELATED-INFORMATION—Withheld under 10 CFR 2.390 (d) (1)

TRM TABLE 3.3-11
FIRE DETECTION INSTRUMENTS

[redacted]

SECURITY-RELATED-INFORMATION—Withheld under 10 CFR 2.390 (d) (1)

TRM TABLE 3.3-11

FIRE DETECTION INSTRUMENTS

[redacted]

SECURITY-RELATED-INFORMATION—Withheld under 10 CFR 2.390 (d) (1)

TRM TABLE 3.3-11

FIRE DETECTION INSTRUMENTS

[redacted]

3/4.3 INSTRUMENTATION

3/4.3.3.8 LOOSE-PART DETECTION SYSTEM

TECHNICAL REQUIREMENT

3.3.3.8 The Loose-Part Detection System shall be FUNCTIONAL.

APPLICABILITY:

MODES 1 and 2.

ACTION:

With one or more Loose-Part Detection System channels nonfunctional for more than 30 days, enter condition into the corrective action program.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.3.8 Each channel of the Loose-Part Detection Systems shall be demonstrated FUNCTIONAL by performance of:

a. A CHANNEL CHECK at least once per 24 hours,

b. An ANALOG CHANNEL OPERATIONAL TEST at least once per 31 days, and

c. A CHANNEL CALIBRATION at least once per 24 months.

BASES:

The FUNCTIONALITY of the Loose-Part Detection System ensures that sufficient capability is available to detect loose metallic parts in the Reactor Coolant System and avoid or mitigate damage to Reactor Coolant System components. The allowable out-of-service times and surveillance requirements are consistent with the recommendations of Regulatory Guide 1.133, “Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors,” May 1981.

REFERENCE:

1. CR M3-00-2659.

3/4.3 INSTRUMENTATION

3/4.3.4 TURBINE OVERSPEED PROTECTION

TECHNICAL REQUIREMENT

3.3.4 The Turbine Overspeed Protection System shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2*, and 3*

* Not applicable in MODE 2 or 3 with all Main Steam Isolation valves and associated bypass valves in closed position and all other steam flow paths to the turbine isolated.

ACTION:

a. With one stop 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, restore the nonfunctional valve(s) to FUNCTIONAL status within 72 hours, or close at least one valve in the affected steam line(s), and take action(s) as specified in the Turbine Overspeed Protection System station procedures.

b. With the required Turbine Overspeed Protection System otherwise nonfunctional, take action(s) as specified in the Turbine Overspeed Protection System station procedures.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.3.4 The above required Turbine Overspeed Protection System shall be maintained, calibrated, tested, and inspected in accordance with the Millstone Unit No. 3 Turbine Overspeed Protection Maintenance and Testing Program. Adherence to this program shall demonstrate FUNCTIONALITY of this system. Any revisions or changes to the program should be reviewed and approved in accordance with the Quality Assurance Program Topical Report. Revisions shall be made in accordance with the provisions of 10 CFR 50.59. The provisions of TECHNICAL REQUIREMENT 4.0.4 are not applicable.

BASES:

The specification 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.

REFERENCE:

1. CR M3-00-2659.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.7 CHEMISTRY

TECHNICAL REQUIREMENT

3.4.7 The Reactor Coolant System chemistry shall be maintained within the limits specified in TRM Table 3.4-2.

APPLICABILITY:

MODES 1, 2, 3, 4, 5 and 6.

ACTION:

MODES 1, 2, 3, and 4:

a. With any one or more chemistry parameter in excess of its Steady-State Limit but within its Transient Limit, restore the parameter to within its Steady-State Limit within 24 hours or implement established plant chemistry guidelines.

b. With any one or more chemistry parameter in excess of its Transient Limit, implement established plant chemistry guidelines.

MODES 5 and 6:

With the concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Steady-State Limit for more than 24 hours or in excess of its Transient Limit, reduce the pressurizer pressure to less than or equal to 500 psia, if applicable, and perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operation prior to increasing the pressurizer pressure above 500 psia or prior to proceeding to MODE 4.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.4.7 The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in TRM Table 4.4-3.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.7 CHEMISTRY

BASES:

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. The TECHNICAL SURVEILLANCE REQUIREMENTS provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

Established plant chemistry guidelines are contained in MP-PROC-CH-CP-3802A, "Primary Chemistry Control."

REFERENCE:

1. License Amendment No. 204.
2. CR-04-03898.

TRM TABLE 3.4-2
REACTOR COOLANT SYSTEM CHEMISTRY LIMITS

PARAMETER	STEADY-STATE LIMIT	TRANSIENT LIMIT
Dissolved Oxygen[a]	< 0.10 ppm	≤ 1.00 ppm
Chloride	< 0.15 ppm	≤ 1.50 ppm
Fluoride	≤ 0.15 ppm	≤ 1.50 ppm

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[a] Limit not applicable with T_{avg} less than or equal to 250°F.

TRM TABLE 4.4-3
REACTOR COOLANT SYSTEM
CHEMISTRY LIMITS TECHNICAL SURVEILLANCE REQUIREMENTS

PARAMETER	SAMPLE AND ANALYSIS FREQUENCY
Dissolved Oxygen[a]	At least once per 72 hours
Chloride	At least once per 72 hours
Fluoride	At least once per 72 hours

[a] Not required with T_{avg} less than or equal to 250°F.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

TECHNICAL REQUIREMENT

3.4.9.1 In accordance with Technical Specification LCO 3.4.9.1, Pressure/ Temperature Limits.

APPLICABILITY:

In accordance with Technical Specification 3.4.9.1.

ACTION:

In accordance with Technical Specification 3.4.9.1.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.4.9.1.1 In accordance with Technical Specification Surveillance Requirement 4.4.9.1.1.

4.4.9.1.2 The reactor vessel material irradiation surveillance specimens shall be removed and examined, to determine changes in material properties, as required by 10 CFR Part 50, Appendix H, in accordance with the schedule in Table 4.4-5. The results of these examinations shall be used to update Technical Specification Figures 3.4-2 and 3.4-3 as required.

TABLE 4.4-5
MILLSTONE UNIT 3 REACTOR VESSEL SURVEILLANCE
CAPSULE WITHDRAWAL SCHEDULE

CAPSULE	LOCATION	LEAD FACTOR (a)	REMOVAL/ INSTALLATION TIME (EFPY) (b)	FLUENCE (n/cm2, E>1.0MeV) (a)
U	58.5°	4.06	1.3	4.00×10^{18} (c)
X	238.5°	4.35	8.0	1.98×10^{19} (c)
W	121.5°	4.22	13.8	3.16×10^{19} (c, d)
Y (e)	241°	3.98	13.8	
Y (f)	61°	3.98		Footnote (i)
V (e)	61°	3.98	Storage	
Z (g)	301.5°	4.22	23.4	5.37×10^{19} (h)

a. Updated in Capsule W dosimetry analysis.

b. Effective Full Power Years (EFPY) from plant startup.

c. Plant specific evaluation.

d. This fluence is not less than once or greater than twice the peak end of license fluence, and is approximately equal to the peak vessel fluence at 63 EFPY.

e. Capsules Y and V were withdrawn after 13.80 EFPY (EOC 10) and placed into storage after accruing 2.98×10^{19} n/cm^2 fluence.

f. Capsule Y was reinserted into location 61° at EOC 17 (approximately 23.4 EFPY).

g. Capsule Z was withdrawn at 23.4 EFPY (EOC 17) after accruing approximately 5.37×10^{19} n/cm^2 fluence. Dosimetry analysis was performed and the test specimens placed into vendor storage for future testing.

h. This projected fluence is greater than once and less than twice the projected 72 EFPY and 90 EFPY peak vessel fluence.

i. Capsule Y is installed for fluence monitoring during the operating license in accordance with ASTM E 185-82.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9 PRESSURE/TEMPURATURE LIMITS

BASES:

The TECHNICAL SURVEILLANCE REQUIREMENT to remove and examine the reactor vessel material irradiation surveillance specimens is in accordance with the requirements of 10 CFR 50, Appendix H.

REFERENCE:

1. License Amendment No. 214.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9.2 PRESSURIZER

TECHNICAL REQUIREMENT

3.4.9.2 The pressurizer temperature shall be limited to:

a. A maximum heatup of 100°F in any 1- hour period,

b. A maximum cooldown of 200°F in any 1- hour period, and

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

APPLICABILITY:

At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation within 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce pressurizer pressure to less than 500 psia within the following 30 hours.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.4.9.2 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown. The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9.2 PRESSURIZER

BASES:

BACKGROUND

The pressurizer is part of the Reactor Coolant Pressure Boundary, but is not subject to the same restrictions as the rest of the RCS. This TECHNICAL REQUIREMENT limits the temperature changes of the pressurizer and allowable temperature differentials, within the design assumptions and the stress limits for cyclic operation.

The TECHNICAL REQUIREMENT contains the pressurizer limits for heatup, cooldown, and spray water temperature differential. Each temperature limit defines an acceptable region for normal operation. The limits that apply to the pressurizer are as follows:

The pressurizer heatup and cooldown rates shall not exceed 100°F/hr and 200°F/hr, respectively. The spray shall not be used if the temperature difference between the pressurizer and the spray fluid is greater than 320°F.

The heatup limit represents a different set of restrictions than the cooldown limit because the directions of the thermal gradients through the pressurizer wall are reversed. The thermal gradient reversal alters the location of the tensile stress between the outer and inner walls.

The consequence of violating the TECHNICAL REQUIREMENT limits is that the pressurizer has been operated under conditions that can result in failure, possibly leading to a nonisolable leak or loss of coolant accident. In the event these limits are exceeded, an evaluation must be performed to determine the effect on the structural integrity of the pressurizer.

APPLICABLE SAFETY ANALYSIS

The pressurizer temperature limits are not derived from Design Basis Accident (DBA) analyses. They are prescribed during normal operation to avoid encountering temperature and temperature rate of change conditions that might cause the initiation/ propagation of undetected cracks and cause failure of the pressure boundary.

TECHNICAL REQUIREMENT

The two elements of this TECHNICAL REQUIREMENT are:

a. Limits on the rate of change of temperature; and

b. Limits on the spray water differential temperature.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9.2 PRESSURIZER

BASES (Continued):

The TECHNICAL REQUIREMENT limits apply to the pressurizer. These limits define allowable operating regions and permit a large number of operating cycles while providing a margin to nonductile failure.

The limits for the rate of change of temperature control the thermal gradient through the pressurizer wall and, therefore, restrict stresses caused by thermal gradients.

Violating the TECHNICAL REQUIREMENT limits places the pressurizer outside of the bounds of the stress analyses. The consequences depend on several factors, as follow:

a. The severity of the rate of change of temperature;

b. The length of time the limits were violated (longer violations allow the temperature gradient in the pressurizer walls to become more pronounced); and

c. The existence, size, and orientation of flaws in the pressurizer material.

APPLICABILITY:

The pressurizer temperature limits TECHNICAL REQUIREMENT provides a definition of acceptable operation for prevention of failure. The temperature limits were developed to provide requirements for operation during heatup or cooldown, and their Applicability is at all times in keeping with the concern for failure.

ACTION:

Operation outside the temperature limits must be corrected so that the pressurizer is returned to a condition that has been verified by stress analyses. The 30 minute allowed outage time (AOT) reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

Besides restoring operation within limits, an evaluation is required to determine if pressurizer operation can continue. The evaluation must verify the pressurizer integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9.2 PRESSURIZER

BASES (Continued):

The 72 hour AOT is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate.

This evaluation must be completed whenever a limit is exceeded. Restoration within 30 minutes alone is insufficient because higher than analyzed stresses may have occurred and may have affected the pressurizer integrity.

If the required remedial actions are not completed within the allowed times, the plant must be placed in a lower MODE because a sufficiently severe event may have caused entry into an unacceptable region. This possibility indicates a need for more careful examination of the event, best accomplished with the pressurizer at reduced pressure. In reduced pressure conditions, the possibility of propagation with undetected flaws is decreased.

If the required restoration activity cannot be accomplished within 30 minutes, action must be implemented to reduce pressure as specified in the ACTION statement.

If the required evaluation for continued operation cannot be accomplished within 72 hours or the results are indeterminate or unfavorable, action must proceed to reduce pressure as specified in the ACTION statement. A favorable evaluation must be completed and documented before returning to operating pressure conditions.

Pressure is reduced by bringing the plant to MODE 3 within 6 hours. Pressure is further reduced by bringing the plant to MODE 4 or 5 and reducing pressurizer pressure < 500 psia within the next 30 hours.

The AOTs are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TECHNICAL SURVEILLANCE REQUIREMENTS

Verification that operation is within the TECHNICAL REQUIREMENT heatup and cooldown limits is required every 30 minutes when pressurizer temperature conditions are undergoing planned changes. This frequency is considered reasonable in view of the control room indication available to monitor pressurizer status. Surveillance for heatup or cooldown may be discontinued when the definition given in the relevant plant procedure for

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.9.2 PRESSURIZER

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

BASES:

ending the activity is satisfied. The TECHNICAL SURVEILLANCE REQUIREMENT for heatup or cooldown is only required to be performed during system heatup and cooldown.

Verification that operation is within the TECHNICAL REQUIREMENT spray water temperature differential limit is required every 12 hours when auxiliary spray is in operation. This frequency is considered reasonable in view of the control room indication available to monitor pressurizer status.

REFERENCE:

1. License Amendment No. 204.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.10 STRUCTURAL INTEGRITY - ASME CODE CLASS 1, 2, 3 COMPONENTS

TECHNICAL REQUIREMENT

3.4.10 The structural integrity of ASME Code Class 1, 2 and 3 components shall be maintained in accordance with TECHNICAL SURVEILLANCE REQUIREMENT 4.4.10.

APPLICABILITY:

MODES 1, 2, 3, 4, 5, and 6, except when an ASME Code Class 1, 2, or 3 component is not required to be FUNCTIONAL.

ACTION:

a. With one or more ASME Code Class 1, 2 and 3 component(s) in a degraded or non-conforming condition(s), perform the following ACTIONS within 72 hours:*

1. Determine that structural integrity is still maintained in the degraded or non-conforming condition;

   or

2. Isolate the affected component(s) from service.

b. If the above ACTION is not completed within 72 hours, immediately declare the affected component(s) nonfunctional.

* - For ASME Code Class 1 and 2 components which have PRESSURE BOUNDARY LEAKAGE, the affected component(s) must be immediately isolated from service or declared nonfunctional.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.4.10 The structural integrity of ASME Code Classes 1, 2 and 3 components shall be inspected in accordance with the requirements delineated in the Inservice Inspection Program.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.10 STRUCTURAL INTEGRITY - ASME CODE CLASS 1, 2, 3 COMPONENTS

BASES:

The inservice inspection and testing programs for ASME Code Class 1, 2 and 3 components ensure that the structural integrity of these components will be maintained at an acceptable level throughout the life of the plant. The inservice inspection program is in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR Part 50.55a.

This TR requires that the structural integrity of ASME Code Class 1, 2 and 3 components be maintained. Structural integrity is the ability to withstand specified loading, with an acceptable margin, without collapse, rupture, brittle fracture, or unstable flaw growth.

Components that may experience unanalyzed loads, have a deficient original design analysis, or have pressure boundary wall loss, but nevertheless can be shown to meet the minimum requirements of the original construction Code or ASME Section III Appendix F, are considered to retain their structural integrity. For components with degraded material properties or relevant conditions as defined in ASME Section XI, the criteria for structural integrity are contained or referenced in Section XI.

Alternative evaluation criteria may be used to determine structural integrity when approved by the NRC. In addition to the initial discovery supplemental NDE may be required to fully characterize the degraded condition. Preliminary judgments regarding structural integrity may be expressed considering the available information and the expectation that a final determination of structural integrity will result once all characterization, evaluation and documentation are complete.

For ASME Code Class 1 and high energy Class 2 components that have PRESSURE BOUNDARY LEAKAGE, the structural integrity of the component is considered not to be maintained and the affected component(s) must be immediately isolated from service. If the affected component(s) cannot be isolated from service, the affected component(s) is immediately declared nonfunctional and the required ACTIONS of the applicable TS and TRs apply. For moderate energy Class 2 and Class 3 components certain methodologies for evaluation of PRESSURE BOUNDARY LEAKAGE are approved or may be approved upon request for relief (References 1, 2). For all other structural integrity (i.e. non pressure boundary leakage) degraded or nonconforming conditions of Class 1, 2 or 3 components, the structural integrity of the affected component will be evaluated consistent with the requirements of this TR.

If the required determination of structural integrity cannot be accomplished within 72 hours or the results are indeterminate or structural integrity is not maintained, or the affected component is not isolated, or cannot be isolated, ACTION must proceed to declare the affected component(s) nonfunctional, as specified in ACTION statement 'b.' The appropriate TS or TR shall be considered not met, as appropriate.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.10 STRUCTURAL INTEGRITY - ASME CODE CLASS 1, 2, 3 COMPONENTS

BASES (Continued):

TECHNICAL SURVEILLANCE REQUIREMENT 4.4.10 requires performing inservice inspections of ASME Section XI Code Class 1, 2 and 3 components in accordance with TS 4.0.5.

Inservice inspection of ASME Code Class 1, 2 and 3 components are performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda, as required by 10 CFR 50.55a(g), to ensure that the structural integrity of these components will be maintained at an acceptable level throughout the life of the plant. The surveillance intervals specified in Section XI of the ASME Code apply. Exception to these requirements apply where relief has been granted by the Commission pursuant to 10 CFR 50.55a(a)(3) and (g)(6)(i).

REFERENCE:

1. NRC Regulatory Issue Summary 2005-20, Rev. 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," dated April 16, 2008.
2. NRC letter dated November 30, 2009, "Millstone Power Station, Unit No. 3 Issuance of Relief Request IR-3-04 Regarding Use of American Society of Mechanical Engineering Code, Section XI, 2004 Edition (TAC No. ME1256)."
3. Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2 and 3 Piping," June 15, 1990; and August 16, 1990.
4. Code Case N-513*, "Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping."
5. Code Case N-523*, "Mechanical Clamping Devices for Class 2 and 3 Piping."
6. License Amendment No. 204, LBDCR 3-2-01, May 8, 2002.

*Approved version as listed in Regulatory Guide 1.147, latest revision. Note for N-523, the case has been annulled by ASME and requirements have been incorporated in the 2004 Edition of ASME Section XI, Appendix IX.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.11 REACTOR COOLANT VENTS

TECHNICAL REQUIREMENT

3.4.11 At least one Reactor Coolant System vent path consisting of two parallel trains with two valves in series powered from emergency buses shall be FUNCTIONAL at each of the following locations:

a. Reactor vessel head, and

b. Pressurizer steam space.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

a. With one train of the reactor vessel head vent path nonfunctional, STARTUP and/or POWER OPERATION may continue provided the nonfunctional train is maintained closed with power removed from the valve actuators of all valves in the nonfunctional train; restore the nonfunctional train to FUNCTIONAL status within 30 days, or, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both trains of the reactor vessel head vent paths nonfunctional; maintain both trains closed with power removed from the valve actuators of all valves in the nonfunctional trains, and restore at least one of the trains to FUNCTIONAL status within 72 hours or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any valve(s) of the pressurizer steam space vent path nonfunctional in MODES 1, 2, or 3, follow the ACTION requirements of Technical Specification 3.4.4.

d. With any valve(s) of the pressurizer steam space vent path nonfunctional in MODE 4, follow the ACTION requirements of Technical Specification 3.4.9.3.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.4.11.1 Each train of the reactor vessel head vent path isolation valve not required to be closed by ACTION a. or b., above, shall be demonstrated FUNCTIONAL at least once per COLD SHUTDOWN, if not performed within the previous 92 days, by operating the valve through one complete cycle of full travel from the control room.

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.11 Reactor Coolant Vents

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

4.4.11.2 Each train of the reactor vessel head vent path shall be demonstrated FUNCTIONAL at least once per 24 months by:

a. Verifying all manual isolation valves in each vent path are locked in the open position,

b. Cycling each vent valve through at least one complete cycle of full travel from the control room, and

c. Verifying flow through the Reactor Coolant System vent paths during VENTING.

4.4.11.3 Each train of the pressurizer steam space vent path shall be demonstrated FUNCTIONAL per the applicable requirement of Technical Specifications 4.4.4.1 through 4.4.4.3 and 4.4.9.3.1. In addition, flow shall be verified through the pressurizer steam space VENTING path during venting at least once per 24 months.

BASES:

Reactor Coolant System vents are provided to exhaust noncondensible gases and/or steam from the Reactor Coolant 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 that the capability exists to perform this function. The reactor vessel head vent path consists of two parallel flow paths with redundant isolation valves (3RCS*SV8095A, 3RCS*SV8096A and 3RCS*SV8095B, and 3RCS*SV8096B) in each flow path. The pressurizer steam space vent path consists of two parallel paths with a power operated relief valve (PORV) and PORV block valve in series (3RCS*PCV455A, 3RCS*MV8000A and 3RCS*PCV456, 3RCS*MV8000B).

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 vents are consistent with the requirements of Item II.B.1 of NUREG-0737, “Clarification of TMI Action Plant Requirements,” November 1980.

REFERENCE:

1. License Amendment No. 204.
2. CR-04-02288.

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ACCUMULATORS

TECHNICAL REQUIREMENT

3.5.1 Each Reactor Coolant System (RCS) accumulator shall be FUNCTIONAL in accordance with Technical Specification LCO 3.5.1.

APPLICABILITY:

MODES 1, 2, 3*

* Pressurizer pressure above 1000 psig.

ACTION:

In accordance with Technical Specification LCO 3.5.1.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.5.1.1 Each accumulator water level and pressure channel shall be demonstrated FUNCTIONAL:

a. At least once per 92 days by the performance of an ANALOG CHANNEL OPERATIONAL TEST, and

b. At least once per 18 months by the performance of a CHANNEL CALIBRATION.

BASES:

TECHNICAL SURVEILLANCE REQUIREMENTS in this TECHNICAL REQUIREMENT were removed from Technical Specifications by Operating License Amendment 100 for performance of ACOT and CHANNEL CALIBRATION for accumulator water level and pressure channels.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.5.

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ECCS SUBSYSTEMS - T_{AVG} GREATER THAN OR EQUAL TO 350°F

TECHNICAL REQUIREMENT

3.5.2 Two independent Emergency Core Cooling System (ECCS) subsystems shall be FUNCTIONAL in accordance with Technical Specification LCO 3.5.2.

APPLICABILITY:

MODES 1, 2, and 3.

ACTION:

In accordance with Technical Specification LCO 3.5.2.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated FUNCTIONAL by performing a flow balance test following completion of modifications to the ECCS subsystems that adversely impact the subsystem flow characteristics.

BASES:

Flow Balance Testing for the charging and safety injection pumps ensure that at a minimum, the assumptions used in the safety analyses are met and that subsystem FUNCTIONALITY is maintained. These requirements ensure adequate flow resistance and pressure drop in the piping system to each injection point are maintained as necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the required flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses. Flow Balance Testing for RHR pump lines demonstrate that the sum of the injection line flow rates is sufficient with a single pump running to provide an acceptable level of total ECCS flow to associated injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ECCS SUBSYSTEMS - T_{AVG} GREATER THAN OR EQUAL TO 350°F

BASES (Continued):

The bases for the flow requirements are further detailed in the reference documents below.

This TECHNICAL SURVEILLANCE REQUIREMENT was relocated from the Technical Specifications as a result of License Amendment 237 and subsequently modified as a result of the design change associated with the charging system alternate minimum flow line modification and the charging pump rotating assembly replacements modification.

REFERENCE:

1. License Amendment 237, issued March 29, 2007.
2. Safety Evaluation S3-EV-07-002.
3. DCR M3-05002, Revision 1, Charging System Alternate Minimum Flow Line Modifications.
4. Technical Specification section 3/4.5.2.
5. DCR M3-07001, Rev. 1, “MP3 ‘A’ and ‘C’ Charging Pump Rotating Assembly Replacement.”
6. FSAR Section 6.3.1, Emergency Core Cooling System, Design Basis.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1.2 CONTAINMENT LEAKAGE

TECHNICAL REQUIREMENT |

3.6.1.2 The Secondary Containment Boundary Bypass Leakage Paths listed in TRM Table 3.6.1.2-1, shall be satisfied in accordance with Technical Specification LCO 3.6.1.2, Containment Systems, Containment Leakage.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

In accordance with Technical Specification LCO 3.6.1.2.

TECHNICAL SURVEILLANCE REQUIREMENTS |

4.6.1.2 In accordance with Technical Specification Surveillance Requirements 4.6.1.2.

BASES:

In accordance with Technical Specification Bases 3/4.6.1.2.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.6.1.2.
3. Technical Specification Administrative Controls 6.8.4.f, Containment Leakage Rate Testing Program.

TRM TABLE 3.6.1.2 - 1
SECONDARY CONTAINMENT BOUNDARY BYPASS LEAKAGE PATHS (TYPE C)

Penetration	Description	Release Location
12A	RCS Sample	Ground Release
12B	RCS Hot Leg Sample	Ground Release
12C	RCS Sample	Ground Release
13A	RCS Cold Leg Sample	Ground Release
13D	RCS Accumulator	Ground Release
14	N_2 to Safety Injection Tanks	Ground Release
15	Primary Water to Pressurizer Relief Tanks	Ground Release
23	Seal Water Return from RCPs	Ground Release
24	Reactor Coolant Letdown	Ground Release
27	Gaseous Drains	Ground Release
28	Aerated Drains	Plant Vent
29	Gaseous Vents	Ground Release
32	Containment Monitoring	Turbine Building Roof Exhaust
35	Vacuum Pump Suction	Plant Vent
36	Vacuum Pump Suction	Plant Vent
37	Air Ejector Suction	Plant Vent
38	Chilled Water Supply	Plant Vent
45	Chilled Water Return	Plant Vent
52	Service Air	Turbine Building Roof Exhaust
54	Instrument Air	Turbine Building Roof Exhaust
56	Fire Protection	Ground Release
59	Fuel Pool Purification	Ground Release
60	Fuel Pool Purification	Ground Release
63	Containment Monitoring	Turbine Building Roof Exhaust
70	Demineralized Water	Ground Release
72	Chilled Water Supply	Plant Vent
85	Containment Purge	Ground Release
86	Containment Purge	Plant Vent
99	SIH Test	Ground Release
100	Quench Spray System	Ground Release

TRM TABLE 3.6.1.2 - 1
SECONDARY CONTAINMENT BOUNDARY BYPASS LEAKAGE PATHS (TYPE C)

Penetration	Description	Release Location
101	Quench Spray System	Ground Release
111	Hydrogen Recombiner	Ground Release
112	Hydrogen Recombiner	Ground Release
113	Hydrogen Recombiner	Ground Release
114	Hydrogen Recombiner	Ground Release
115	Post Accident Sample Supply	Ground Release
116	Chilled Water Return	Plant Vent
120	Post Accident Sample Return	Ground Release
121	Containment Vacuum Discharge	Plant Vent
124	Nitrogen to Containment	Plant Vent

TRM TABLE 3.6.1.2 - 1
SECONDARY CONTAINMENT BOUNDARY BYPASS LEAKAGE PATHS (TYPE B)

Penetration	Description	Release Location
3RCP—Fuel	Fuel Transfer Tube	Plant Vent
Fuel Transfer Tube Bellows	Fuel Transfer Tube Enclosure Bellows	Plant Vent

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1.6 CONTAINMENT STRUCTURAL INTEGRITY

TECHNICAL REQUIREMENT

3.6.1.6 The following conditions shall be met:

a. Pump 3SRW-P5, ESF Building Porous Concrete Groundwater Sump Pump shall be FUNCTIONAL.

b. The groundwater inleakage rate shall be less than or equal to 2209 gallons per day.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

a. With pump 3SRW-P5 nonfunctional, restore pump 3SRW-P5 to a FUNCTIONAL status within either:

1. 8 hours or;

2. X hours, where X is calculated consistent with TECHNICAL SURVEILLANCE REQUIREMENT 4.6.1.6.3.c and by the following formula.

   X = [(2209 gpd/actual inleakage rate gpd)*32 hours]-24 hours

   The calculation of X is optional, and is only applicable if X is $\geq$ 8 hours.

Otherwise enter the ACTION statement of Technical Specification 3.6.1.6

b. With a groundwater inleakage rate greater than 2209 gallons per day and pump 3SRW-P5 FUNCTIONAL, restore inleakage rate within 6 days or otherwise enter ACTION Statement of Technical Specification 3.6.1.6.

c. With pump 3SRW-P5 nonfunctional and with a groundwater inleakage rate greater than 2209 gallons per day, immediately enter ACTION statement of Technical Specification 3.6.1.6.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1.6 CONTAINMENT STRUCTURAL INTEGRITY

TECHNICAL SURVEILLANCE REQUIREMENTS

4.6.1.6.3 The following requirements shall be met:

a. Verify pump 3SRW-P5 is FUNCTIONAL once per 24 hours.

b. Verify groundwater inleakage rate to be less than or equal to 2209 gallons per day based on net volume change in tank 3SRW-TK1, Groundwater Underdrains Storage Tank, or net volume change in sump 3SRW*SUMP6, ESF Building Porous Concrete Groundwater Sump, once per 24 hours.

c. Calculate the variable allowed outage time, X, at least once every 8 hours after the initial calculation, when operating within the requirements of ACTION a.2 above. The variable allowed outage time, X, shall be adjusted based on the new calculated value and applied to the initial nonfunctionality of pump 3SRW-P5.

   If the new calculated variable allowed outage time, X, is less than or equal to the time pump 3SRW-P5 has been nonfunctional, immediately enter the ACTION statement of Technical Specification 3.6.1.6.

BASES:

The containment steel liner is not analyzed for hydrostatic loading. The collection sump, 3SRW*SUMP6, is sized such that 32 hours capacity (based on inleakage rate of 2209 gallons per day) remains available above the normal operating level in the sump prior to reaching the elevation, (-)27’3” of the containment steel liner.

The total 32 hour allowed outage time (8 hours per TRM 3.6.1.6 plus 24 hours per TS 3.6.1.6) is based on an assumed groundwater inleakrate of 2209 gpd. If the actual groundwater inleakage rate is less than 2209 gpd, the total allowed outage time can be increased by the calculation of ACTION a.2.

For example, if the actual groundwater inleakage rate is 1104.5 gpd, 40 hours is available to restore the sump pump to a FUNCTIONAL status before it is necessary to enter the ACTION requirements of Technical Specification 3.6.1.6. The total time of 64 hours (40 + 24) before a plant shutdown is required is consistent with an inleakage rate of 1104.5 gpd, which is one-half of the design inleakage rate.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1.6 CONTAINMENT STRUCTURAL INTEGRITY

BASES (Continued):

Use of this calculation is optional, and is only applicable if the calculated time is ≥ 8 hours. The initial calculated time shall be based on the actual groundwater inleakage rate as determined within the previous 8 hours. If the calculation is < 8 hours, ACTION c will be applicable since the actual groundwater inleakage rate has exceeded 2209 gpd.

In reference to pump 3SRW-P5, FUNCTIONAL shall mean running in normal operating mode (automatically) or in manual mode with sufficient pump capacity to keep up with the groundwater inleakage rate and be able to reduce the level in collection sump 3SRW*SUMP6. Pump 3SRW-P5 shall also be considered FUNCTIONAL when placed in Manual Off position for the purpose of preparation and discharge of tank 3SRW-TK1.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.6.
3. Based upon the changes to be implemented under DCR M3-00004, Installation of Non-Safety Related SRW Pump in ESF Building, TRM Section 3.6.1.6 is added. Safety Evaluation S3-EV-00-0002 was written in support of DCR M3-00004, Installation of Non-Safety Related SRW Pump in ESF Building.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

TECHNICAL REQUIREMENT

3.6.3 The Containment Isolation Valves listed in TRM Tables 3.6.3-1 and 3.6.3-2, shall be FUNCTIONAL in accordance with Technical Specification LCO 3.6.3, Containment Isolation Valves.

APPLICABILITY:

In accordance with Technical Specification LCO 3.6.3.

ACTION:

In accordance with Technical Specification LCO 3.6.3.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.6.3 In accordance with Surveillance Requirements of Technical Specification LCO 3.6.3.

BASES:

The FSAR Table 6.2-65 lists all the Containment Isolation Valves. The Main Steam Isolation Valves which are addressed in Technical Specification 3.7.1.5 are not listed in either TRM table, but are identified in FSAR Table 6.2-65. GDC 55 and GDC 56 vents, drains, and test connections are not listed in Table 3.6.3-1, but are identified in FSAR Table 6.2-65.

The Technical Specification Bases further references FSAR Table 6.2-65 as a complete listing of containment isolation valves. TRM Table 3.6.3-1 provides a list of GDC 55 and GDC 56 Containment Isolation Valves that is consistent with FSAR Table 6.2-65. TRM Table 3.6.3-2 provides a list of GDC 57 Containment Isolation Valves and a list of the GDC 57 Containment Penetration Boundary Valves Located Outside Containment. The list of the GDC 57 Containment Isolation Valves contained in Table 3.6.3-2, with the exception of the Main Steam Isolation Valves, is consistent with FSAR Table 6.2-65. FSAR Table 6.2-65 specifies the acceptance criteria for design stroke time. Stroke times are controlled by the Inservice Test Program.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

BASES (Continued):

DBDP discrepancy identified that the containment isolation valves for the steam supply to the auxiliary feedwater pump turbine should include 3MSS*MOV17A, B, and D. Previously 3MSS*AOV31A, B and D were identified as containment isolation valves. These valves fail open and the capability to close the valves for containment isolation is not possible upon failure of the non-safety air supply. This is not in accordance with General Design Criteria (GDC) 57 which states “Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor directly connected to containment atmosphere shall have at least one containment isolation valve which shall be automatic, or locked closed, or capable of remote manual operation.” Therefore 3MSS*MOV17A, B, D, 3MSS*V885, V886, V887 were included as containment isolation valves and 3MSS*AOV31A, B, and D were deleted as containment isolation valves. 3MSS*MOV17A, B, and D have the capability for remote manual operation and 3MSS*V885, V886, and V887 are locked to comply with GDC 57.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.6.3.
3. TSCR 3-15-01.
4. 50.59 Evaluation S3-EV-01-0037.

TRM TABLE 3.6.3-1
CONTAINMENT SYSTEMS, GDC 55 AND 56 CONTAINMENT ISOLATION VALVES

Valve	Penetration	Applicable GDC
3CCP*MOV45A	Z-039	56
3CCP*MOV45B	Z-040	56
3CCP*MOV48A	Z-041	56
3CCP*MOV48B	Z-042	56
3CCP*MOV49A	Z-041	56
3CCP*MOV49B	Z-042	56
3CCP*RV275A	Z-041	56
3CCP*RV275B	Z-042	56
3CCP*V018	Z-039	56
3CCP*V060	Z-040	56
3CCP*V886	Z-070	56
3CCP*V887	Z-070	56
3CDS*CTV38A	Z-038	56
3CDS*CTV38B	Z-072	56
3CDS*CTV39A	Z-116	56
3CDS*CTV39B	Z-045	56
3CDS*CTV40A	Z-116	56
3CDS*CTV40B	Z-045	56
3CDS*CTV91A	Z-038	56
3CDS*CTV91B	Z-072	56
3CDS*RV105A	Z-038	56
3CDS*RV105B	Z-072	56
3CDS*RV106A	Z-116	56
3CDS*RV106B	Z-045	56
3CHS*CV8152	Z-024	55
3CHS*CV8160	Z-024	55
3CHS*MV8100	Z-023	55
3CHS*MV8105	Z-026	55
3CHS*MV8109A	Z-016	55
3CHS*MV8109B	Z-017	55
3CHS*MV8109C	Z-018	55
3CHS*MV8109D	Z-019	55
3CHS*MV8112	Z-023	55
3CHS*RV8113	Z-023	55
3CHS*RV8117	Z-024	55
3CHS*V058	Z-026	55

TRM TABLE 3.6.3-1
CONTAINMENT SYSTEMS, GDC 55 AND 56 CONTAINMENT ISOLATION VALVES

Valve	Penetration	Applicable GDC
3CHS*V371	Z-062	55
3CHS*V372	Z-062	55
3CHS*RV8351	Z-062	55
3CHS*V394	Z-016	55
3CHS*V434	Z-017	55
3CHS*V467	Z-018	55
3CHS*V501	Z-019	55
3CMS*CTV20	Z-032	56
3CMS*CTV21	Z-032	56
3CMS*CTV23	Z-063	56
3CMS*MOV24	Z-063	56
3CVS*AOV23	Z-037	56
3CVS*CTV20A	Z-035	56
3CVS*CTV20B	Z-036	56
3CVS*CTV21A	Z-035	56
3CVS*CTV21B	Z-036	56
3CVS*MOV25	Z-121	56
3CVS*V013	Z-121	56
3CVS*V020	Z-037	56
3DAS*CTV24	Z-028	56
3DAS*CTV25	Z-028	56
3DAS*RV87	Z-028	56
3DGS*CTV24	Z-027	56
3DGS*CTV25	Z-027	56
3DGS*RV51	Z-027	56
3FPW*CTV48	Z-056	56
3FPW*CTV49	Z-056	56
3FPW*RV87	Z-056	56
3FPW*V661	Z-056	56
3FPW*V666	Z-056	56
3GSN*CTV105	Z-124	56
3GSN*CV8033	Z-124	56
3HCS*V002	Z-111	56
3HCS*V003	Z-111	56
3HCS*V006	Z-113	56
3HCS*V007	Z-113	56

TRM TABLE 3.6.3-1
CONTAINMENT SYSTEMS, GDC 55 AND 56 CONTAINMENT ISOLATION VALVES

Valve	Penetration	Applicable GDC
3HCS*V009	Z-112	56
3HCS*V010	Z-112	56
3HCS*V013	Z-114	56
3HCS*V014	Z-114	56
3HVU*CTV32A	Z-086	56
3HVU*CTV32B	Z-085	56
3HVU*CTV33A	Z-086	56
3HVU*CTV33B	Z-085	56
3HVU*V005	Z-086	56
3IAS*MOV72	Z-054	56
3IAS*PV15	Z-054	56
3LMS*MOV40A	Z-013C	N/A (RG 1.11)
3LMS*MOV40B	Z-068	N/A (RG 1.11)
3LMS*MOV40C	Z-009A	N/A (RG 1.11)
3LMS*MOV40D	Z-033A	N/A (RG 1.11)
3PGS*CV8028	Z-015	56
3PGS*CV8046	Z-015	56
3PGS*RV77	Z-015	56
3QSS*MOV34A	Z-100	56
3QSS*MOV34B	Z-101	56
3QSS*V004	Z-100	56
3QSS*V008	Z-101	56
3RHS*MV8701A	Z-091	55
3RHS*MV8701B	Z-091	55
3RHS*MV8702A	Z-092	55
3RHS*MV8702B	Z-092	55
3RHS*RV8708A	Z-091	55
3RHS*RV8708B	Z-092	55
3RSS*MOV20A	Z-110	56
3RSS*MOV20B	Z-108	56
3RSS*MOV20C	Z-109	56
3RSS*MOV20D	Z-107	56
3RSS*MOV23A	Z-102	56
3RSS*MOV23B	Z-104	56
3RSS*MOV23C	Z-103	56
3RSS*MOV23D	Z-105	56

TRM TABLE 3.6.3-1
CONTAINMENT SYSTEMS, GDC 55 AND 56 CONTAINMENT ISOLATION VALVES

Valve	Penetration	Applicable GDC
3RSS*V003	Z-107	56
3RSS*V006	Z-108	56
3RSS*V009	Z-109	56
3RSS*V012	Z-110	56
3SAS*V050	Z-052	56
3SAS*V875	Z-052	56
3SFC*V989	Z-060	56
3SFC*V990	Z-060	56
3SFC*V991	Z-059	56
3SFC*V992	Z-059	56
3SIH*CV8823	Z-098	55
3SIH*CV8824	Z-097	55
3SIH*CV8843	Z-051	55
3SIH*CV8871	Z-099	56
3SIH*CV8881	Z-096	55
3SIH*CV8888	Z-099	56
3SIH*CV8964	Z-099	56
3SIH*MV8801A	Z-051	55
3SIH*MV8801B	Z-051	55
3SIH*MV8802A	Z-096	55
3SIH*MV8802B	Z-097	55
3SIH*MV8835	Z-098	55
3SIH*RV8870	Z-099	56
3SIH*V005	Z-051	55
3SIH*V022	Z-098	55
3SIH*V024	Z-098	55
3SIH*V026	Z-098	55
3SIH*V028	Z-098	55
3SIH*V110	Z-097	55
3SIH*V112	Z-097	55
3SIL*CV8825	Z-095	55
3SIL*CV8880	Z-014	56
3SIL*CV8890A	Z-093	55
3SIL*CV8890B	Z-094	55
3SIL*CV8968	Z-014	56
3SIL*MV8809A	Z-093	55

TRM TABLE 3.6.3-1
CONTAINMENT SYSTEMS, GDC 55 AND 56 CONTAINMENT ISOLATION VALVES

Valve	Penetration	Applicable GDC
3SIL*MV8809B	Z-094	55
3SIL*MV8840	Z-095	55
3SIL*V006	Z-093	55
3SIL*V007	Z-093	55
3SIL*V012	Z-094	55
3SIL*V013	Z-094	55
3SIL*V026	Z-095	55
3SIL*V027	Z-096	55
3SIL*V028	Z-095	55
3SIL*V029	Z-096	55
3SSP*CTV7	Z-115	55
3SSP*CTV8	Z-120	55
3SSP*RV62	Z-115	55
3SSP*RV63	Z-120	55
3SSP*V013	Z-115	55
3SSP*V014	Z-120	55
3SSR*CTV20	Z-012A	55
3SSR*CTV21	Z-012A	55
3SSR*CTV26	Z-012B	55
3SSR*CTV27	Z-012B	55
3SSR*CTV29	Z-013A	55
3SSR*CTV30	Z-013A	55
3SSR*CTV32	Z-013D	55
3SSR*CTV33	Z-013D	55
3SSR*CV8025	Z-012C	56
3SSR*CV8026	Z-012C	56
3VRS*CTV20	Z-029	56
3VRS*CTV21	Z-029	56

Notes:

1. GDC (General Design Criteria) are specified in 10 CFR 50 Appendix A. GDC 55 is titled Reactor Coolant Pressure Boundary Penetrating Containment. GDC 56 is titled Primary Containment Isolation (each line that connects to or can be exposed to containment atmosphere). GDC 57 is titled Closed System Isolation Valves.

TRM TABLE 3.6.3-2
CONTAINMENT SYSTEMS
CLOSED SYSTEM (GDC 57) CONTAINMENT ISOLATION VALVES
AND
GDC 57 CONTAINMENT PENETRATION BOUNDARY VALVES
LOCATED OUTSIDE CONTAINMENT

Valve ID Number	Penetration Number
3BDG*CTV22A	Z-047
3BDG*CTV22B	Z-050
3BDG*CTV22C	Z-048
3BDG*CTV22D	Z-049
3DTM*AOV29A	Z-001
3DTM*AOV29B	Z-002
3DTM*AOV29C	Z-003
3DTM*AOV29D	Z-004
3DTM*AOV63A	Z-075
3DTM*AOV63B	Z-076
3DTM*AOV63D	Z-074
3DTM*V113(1,3)	Z-001
3DTM*V998(1,3)	Z-001
3DTM*V115(1,3)	Z-002
3DTM*V996(1,3)	Z-002
3DTM*V117(1,3)	Z-003
3DTM*V994(1,3)	Z-003
3DTM*V119(1,3)	Z-004
3DTM*V992(1,3)	Z-004
3FWA*HV36A	Z-080
3FWA*HV36B	Z-081
3FWA*HV36C	Z-082
3FWA*HV36D	Z-079
3FWA*MOV35A	Z-080
3FWA*MOV35B	Z-081
3FWA*MOV35C	Z-082
3FWA*MOV35D	Z-079
3FWA*V944(1,3)	Z-080
3FWA*V878(1,3)	Z-081
3FWA*V941(1,3)	Z-081
3FWA*V880(1,2,3)	Z-082

TRM TABLE 3.6.3-2
CONTAINMENT SYSTEMS
CLOSED SYSTEM (GDC 57) CONTAINMENT ISOLATION VALVES AND GDC 57 CONTAINMENT PENETRATION BOUNDARY VALVES LOCATED OUTSIDE CONTAINMENT

Valve ID Number	Penetration Number
3FWA*V937(1,3)	Z-082
3FWA*V948(1,3)	Z-079
3FWS*CTV41A	Z-005
3FWS*CTV41B	Z-006
3FWS*CTV41C	Z-007
3FWS*CTV41D	Z-008
3MSS*MOV17A	Z-075
3MSS*MOV17B	Z-076
3MSS*MOV17D	Z-074
3MSS*V885(3)	Z-075
3MSS*V886(3)	Z-076
3MSS*V887(3)	Z-074
3MSS*HV28A	Z-001
3MSS*HV28B	Z-002
3MSS*HV28C	Z-003
3MSS*HV28D	Z-004
3MSS*MOV74A	Z-001
3MSS*MOV74B	Z-002
3MSS*MOV74C	Z-003
3MSS*MOV74D	Z-004
3MSS*PV20A	Z-001
3MSS*PV20B	Z-002
3MSS*PV20C	Z-003
3MSS*PV20D	Z-004
3MSS*RV22A	Z-001
3MSS*RV22B	Z-002
3MSS*RV22C	Z-003
3MSS*RV22D	Z-004
3MSS*RV23A	Z-001
3MSS*RV23B	Z-002
3MSS*RV23C	Z-003
3MSS*RV23D	Z-004

TRM TABLE 3.6.3-2
CONTAINMENT SYSTEMS
CLOSED SYSTEM (GDC 57) CONTAINMENT ISOLATION VALVES
AND
GDC 57 CONTAINMENT PENETRATION BOUNDARY VALVES
LOCATED OUTSIDE CONTAINMENT

Valve ID Number	Penetration Number
3MSS*RV24A	Z-001
3MSS*RV24B	Z-002
3MSS*RV24C	Z-003
3MSS*RV24D	Z-004
3MSS*RV25A	Z-001
3MSS*RV25B	Z-002
3MSS*RV25C	Z-003
3MSS*RV25D	Z-004
3MSS*RV26A	Z-001
3MSS*RV26B	Z-002
3MSS*RV26C	Z-003
3MSS*RV26D	Z-004
3MSS*V902(1,2,3)	Z-075
3MSS*V904(1,3)	Z-076
3MSS*V900(1,2,3)	Z-074
3SGF*AOV24A	Z-123
3SGF*AOV24B	Z-123
3SGF*AOV24C	Z-123
3SGF*AOV24D	Z-123
3SSR*CTV19A	Z-122
3SSR*CTV19B	Z-122
3SSR*CTV19C	Z-122
3SSR*CTV19D	Z-122

Notes:

1. This is a GDC 57 boundary valve located outside containment.
2. A single closed valve is sufficient for containment penetration boundary isolation. A second valve in series, if present is not required for containment penetration boundary integrity.
3. This valve is associated with the 72 hour ACTION for Technical Specification 3.6.3.d. This normally locked closed, closed system containment valve shall either be opened on an intermittent basis under administrative controls or the 72 hour ACTION can be entered to allow opening of this normally locked closed valve.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN MONITORS

TECHNICAL REQUIREMENT

3.6.4.1 Two independent containment hydrogen monitors shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2, and 3.

ACTION:

a. With one hydrogen monitor nonfunctional, restore the nonfunctional monitor to FUNCTIONAL status within 30 days or otherwise initiate corrective actions.

b. With both hydrogen monitors nonfunctional, restore at least one monitor to FUNCTIONAL status within 72 hours or otherwise initiate corrective actions.

c. Entry into an OPERATIONAL MODE is permitted while subject to these ACTION requirements.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.6.4.1 Each hydrogen monitor shall be demonstrated FUNCTIONAL:

a. By the performance of a Hydrogen Sensor Calibration and an ANALOG CHANNEL OPERATIONAL TEST at least once per 92 days on a STAGGERED TEST BASIS, and

b. By the performance of a CHANNEL CALIBRATION at least once each REFUELING interval.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

BASES:

The containment hydrogen monitors are used to assess the degree of core damage during beyond DESIGN BASIS accidents and to confirm that random or deliberate ignition of hydrogen in the containment atmosphere has taken place. Each containment hydrogen monitor is required to be FUNCTIONAL within 90 minutes after initiation of safety injection. The requirement that monitors be FUNCTIONAL within 90 minutes is based on the NRC's expectation outlined in Regulatory Guide 1.7, Revision 3, "Control of Combustible Gas Concentration in Containment Following a LOCA." If an explosive gas mixture threatens CONTAINMENT INTEGRITY during beyond DESIGN BASIS events, then severe accident management guidelines use the hydrogen monitors to implement strategies that protect the integrity of the containment boundary.

The equipment for monitoring containment hydrogen levels must be FUNCTIONAL, reliable and capable of continuously measuring the concentration of hydrogen in the containment atmosphere following beyond DESIGN BASIS accidents to facilitate accident management, including emergency planning. Since these monitors are not required to mitigate the effects of DESIGN BASIS events, entry into other OPERATIONAL MODES is permitted while taking actions to restore these monitors to service.

The hydrogen monitors are connected directly to the containment boundary by normally closed manual valves, and are an extension of the containment boundary during post accident conditions. When placed into service, any LEAKAGE from these monitors would bypass the containment boundary. Therefore, pressure boundary integrity is subject to Technical Specification 6.8.4.a, "Primary Coolant Sources Outside Containment," which establishes a program to reduce LEAKAGE from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels.

The TECHNICAL SURVEILLANCE REQUIREMENT to perform a hydrogen sensor calibration at least every 92 days is based upon vendor recommendations to maintain sensor calibration. This calibration consists of a two-point calibration, utilizing the following sample gasses:

a. One volume percent hydrogen, balance nitrogen

b. Four volume percent hydrogen, balance nitrogen

3/4.6 CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

BASES (Continued):

The ACTION requirement to initiate corrective actions means that the problem is entered into the Millstone Corrective Action Program and addresses why the hydrogen monitor(s) was (were) not restored to FUNCTIONAL status within the specified time. Use of the corrective action process in this situation will ensure management attention and oversight to minimize the additional time the containment hydrogen monitor(s) is (are) nonfunctional. actions shall be taken in a timely manner to establish alternate methods for determining hydrogen concentration levels as needed and determined by management.

REFERENCE:

1. Amendment No. 224, dated June 29, 2005.
2. DCR M3-04007, "Implementation of Revised Combustible Gas (Hydrogen) Control Requirements in Containment."
3. Regulatory Commitment RCR-42916 as described in Letter Serial No. 04-386, dated September 8, 2004.
4. Consolidated Line Item Improvement Process Notice of Availability, published September 25, 2003, (68 FR 55416) in support of TSTF-447.

3/4.7 PLANT SYSTEMS

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

TECHNICAL REQUIREMENT

3.7.2 The temperatures of both the reactor and secondary coolants in the steam generators shall be greater than 70°F when the pressure of either coolant in the steam generator is greater than 200 psig.

APPLICABILITY:

At all times.

ACTION:

With the above requirement not satisfied:

a. Reduce the steam generator pressure of the applicable side to less than or equal to 200 psig within 30 minutes, and

b. Perform an engineering evaluation 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.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.2 The pressure in each side of the steam generator shall be determined to be less than 200 psig at least once per hour when the temperature of either the reactor or secondary coolant is less than 70°F.

3/4.7 PLANT SYSTEMS

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

BASES:

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 a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

REFERENCE:

1. License Amendment No. 214

3/4.7 PLANT SYSTEMS

3/4.7.4 SERVICE WATER SYSTEM

TECHNICAL REQUIREMENT

3.7.4 Four service water pumps and associated strainers shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

a. With one service water pump and/or strainer nonfunctional:

1. Restore the nonfunctional service water pump and/or strainer to FUNCTIONAL status within 72 hours, or

2.a. Establish the in-service charging pump and associated cooling pump from the same emergency electrical power train as the unaffected service water pump train within 72 hours, and

b. Perform an evaluation of SFP heat load that verifies sufficient time is available to allow remedial actions to restore SFP cooling prior to exceeding the SFP maximum operating temperature, and

c. Restore the nonfunctional service water pump and/or strainer to FUNCTIONAL status within 30 days from the initial loss.

Otherwise, be in COLD SHUTDOWN within the next 36 hours.

b. With two service water pumps and/or strainers nonfunctional, one per train, restore one of the nonfunctional pumps and/or strainers to FUNCTIONAL status within the more restrictive of either 72 hours or the time requirements of ACTION a. based on the first nonfunctional service water pump and/or strainer. Otherwise, be in COLD SHUTDOWN within the next 36 hours. Following restoration of one service water pump, restore the remaining nonfunctional service water pump and/or strainer following the time requirements of ACTION a. based on the initial loss of the remaining nonfunctional service water pump and/or strainer.

c. All other nonfunctional service water pump and/or strainer combinations, refer to Technical Specification 3.7.4.

3/4.7 PLANT SYSTEMS

3/4.7.4 SERVICE WATER SYSTEM

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.4.1 In accordance with Technical Specification Surveillance Requirements 4.7.4.

BASES:

The purpose of this TECHNICAL REQUIREMENT is to control the function of the Service Water System (SWP) to provide Spent Fuel Pool (SFP) cooling and to protect other risk significant functions. All service water pumps and associated strainers are required to be FUNCTIONAL in MODES 1 through 4. Nonfunctional service water pumps and/or strainers are required to be restored within the specified allowed outage time, or a plant shutdown to MODE 5 is required.

The function of the service water strainers is to remove debris from the process stream. The automatic start on high differential pressure is described in the FSAR. To minimize likelihood of a high d/p, the strainers also start every 4 hours. However, this is not described in the FSAR.

The function of the strainer for the standby SWP is to respond to high d/p when the pump is placed in service to restore CCP to support spent fuel pool cooling. Since manual actions are required to start the standby pump and align SWP to the CCP heat exchanger, the additional action of placing the strainer control switch back in AUTO is acceptable. Therefore, placing the standby strainer in OFF to support surveillance testing does not prevent fulfilling this function and does not make the strainer nonfunctional. Likewise, placing a SWP pump in pull to lock during surveillance testing does not impact its ability to be started to support restoration of fuel pool cooling and does not make the pump nonfunctional for TRM purposes.

During strainer or pump maintenance, the condition of the strainer discharge piping must be considered in determining FUNCTIONALITY. If the piping is <u>not</u> configured to direct total flow of the in-service strainer to the bay, both strainers should be considered nonfunctional. For example, if the manual strainer blowdown valve for the out of service strainer is open to drain the pump discharge piping, starting the in-service strainer would result in at least partial discharge into the cubicle. Therefore, the other strainer is nonfunctional regardless of strainer control switch position. Once the strainer and piping is drained, the manual drain valve is closed and the strainer control switch is returned to AUTO. The in-service strainer is then considered FUNCTIONAL.

When one pump and strainer are out of service for maintenance, the other pump and strainer are required to be FUNCTIONAL for TECHNICAL REQUIREMENT 3.7.4. A single pump and strainer cannot be used to satisfy the TRM function of long term spent fuel pool cooling.

BASES (Continued):

If one service water pump and/or strainer is nonfunctional, the nonfunctional pump and/or strainer must be restored within 72 hours, or a plant shutdown to MODE 5 is required. The 72 hours allowed outage time can be increased to 30 days if the in-service charging pump and associated cooling pump are powered from the same emergency electrical power train as the train with two FUNCTIONAL service water pumps and associated strainers. This additional ACTION is required to reduce the risk associated with a loss of the one remaining service water pump and/or strainer on the affected train.

If two service water pumps and/or strainers are nonfunctional, one per train, one service water pump and/or strainer must be restored to FUNCTIONAL status within the more restrictive of either 72 hours or the time requirements of ACTION a. based on the first nonfunctional service water pump and/or strainer. Otherwise, a plant shutdown to MODE 5 is required. The remaining nonfunctional service water pump and/or strainer must be restored to FUNCTIONAL status in accordance with ACTION a. requirements based on the initial loss of that pump and/or strainer.

The ACTION requirements address unintentional (e.g., unexpected pump and/or strainer failure or nonfunctionality) as well as intentional (e.g., maintenance activities) service water pump and/or strainer nonfunctionality. Prior to using the 30 day allowed outage time for extended maintenance activities (expected duration in excess of 72 hours, e.g., pump overhauls) it is necessary to evaluate the SFP heat load to determine how much time would be available following a potential loss of SFP cooling until the SFP maximum operating temperature is reached. This time must be of sufficient length to allow reasonable remedial actions to restore SFP cooling if lost during extended maintenance activities. Remedial actions include restoration of power to available equipment or repair/replacement of failed components. The time to restore SFP cooling will change significantly during plant operation due to the variations in SFP heat load resulting from the addition of irradiated fuel assemblies to the SFP, and the subsequent irradiated fuel decay between refueling outages. The minimum time is specified in Reference 5.

During service water pump and/or strainer maintenance or repair activities, the plant configuration shall be controlled to minimize plant risk consistent with a Configuration Risk Management Program, as required by 10 CFR 50.65(a)(4). Use of this type of program will ensure risk significant combinations of nonfunctional equipment are identified, and appropriate time limits established to limit such plant configurations.

BACKGROUND

The SWP consists of two redundant flow paths (headers), each consisting of two service water pumps, two service water self-cleaning strainers, two booster pumps, piping, and valves.

3/4.7 PLANT SYSTEMS

3/4.7.4 SERVICE WATER SYSTEM

BASES (Continued):

The service water pumps and strainers are located in the circulating and service water pumphouse. The service water pumps are 15,000 gpm AC motor driven pumps. Each pump discharges through a separate self cleaning strainer.

During normal operating and unit cooldown conditions, one service water pump on each redundant header provides cooling water flow to the Reactor Plant Component Cooling Water (CCP) heat exchanger, Turbine Plant Component Cooling Water (CCS) heat exchanger, charging pump cooler, safety injection pump cooler, Control Building air conditioning heat exchanger, and other miscellaneous small loads. The remaining pump on each header is on standby and starts automatically on a low pressure signal from its service water discharge header.

The SWP is designed to be able to perform its safety function following a single failure. Power is supplied to redundant service water pumps from separate emergency busses. Each service water pump can supply the minimum cooling water flow requirements to mitigate all DESIGN BASIS accidents.

Reference 6 has evaluated the risk associated with one service water pump out of service for 30 days, and has found it acceptably low compared to the acceptance criteria described in Regulatory Guide 1.177 and NUMARC 93-01.

In the event of a significant loss of coolant accident (LOCA) or high energy line break (HELB) inside containment, a CDA signal is generated on high containment pressure. The CDA signal automatically closes the motor operated valves in the service water supply lines to the CCP and CCS heat exchangers, and opens motor operated isolation valves in the service water supply lines to the containment recirculation spray system coolers. If a loss of power also occurs, the emergency diesel generators (EDGs), which have already received an automatic start signal, will automatically energize the associated emergency buses, and one service water pump per loop will automatically start.

After the LOCA or HELB accident inside containment and initiation of the CDA signal, it will be necessary to supply service water to a CCP heat exchanger to reestablish SFP cooling. The CCP System is not immediately available after these accidents to cool the SFP coolers because it is not immediately needed and power from the EDGs is not immediately available due to loading considerations. After power is available, a second service water pump will be started to supply service water flow to the CCP heat exchanger. After the second service water pump is started, a CCP pump and heat exchanger will be started as will a SFP cooling pump and heat exchanger.

The limiting DESIGN BASIS accident from the standpoint of restoration of SFP cooling is the large break LOCA with a loss of offsite power and a single failure. This is due to the continued need for heat removal from containment. As a result, a second service water pump is required to support the restoration of CCP cooling. This pump can be on the same or opposite header depending on plant conditions.

3/4.7 PLANT SYSTEMS

3/4.7.4 SERVICE WATER SYSTEM

BASES (Continued):

However, even if SFP cooling is lost because one SW pump is nonfunctional following a DESIGN BASIS loss of coolant accident concurrent with a loss of offsite power and the single failure of an EDG, there are numerous methods to provide SFP cooling. These methods (FSAR 9.1.3.3), which include makeup to the SFP from primary grade water, the RWST, service water and fire water (some of which may be unavailable following a DBA), will ensure the irradiated fuel remains covered thereby ensuring SFP cooling. Since the use of the 30 day allowed outage time also requires an analysis which shows the SFP would not exceed design temperature within 24 hours, ample time is available to accomplish these alternate methods of cooling. Therefore, the risk associated with this 30 day AOT is considered very low.

The other DESIGN BASIS accidents (e.g., secondary side HELBs) are short duration and are expected to allow termination of containment recirculation spray within approximately 4 hours. This eliminates the need for the second service water pump.

In summary, the service water pump requirements are:

- 1 of 4 service water pumps is required to provide core (and containment) decay heat removal during a DESIGN BASIS accident coincident with a loss of offsite power. This requires the availability of 2 service water pumps, 1 pump per header, to meet single failure requirements. Compliance with Technical Specification 3.7.4, two OPERABLE service water loops, meets this requirement.
- 2 of 4 service water pumps are required during recovery from a large break LOCA to provide SFP cooling in addition to core and containment heat removal. This requires the availability of 4 service water pumps, 2 pumps per header, to meet single failure requirements. Compliance with TECHNICAL REQUIREMENT 3.7.4, four FUNCTIONAL service water pumps, meets this requirement.

REFERENCE:

1. CR M3-00-2659.
2. Technical Specification section 3/4.7.
3. Letter from G. D. Hicks, Northeast Nuclear Energy Company to Nuclear Regulatory Commission, “Millstone Nuclear Power Station Unit No. 3, Licensee Event Report 97-041-00,” dated August 13, 1997.
4. Letter from R. P. Necci, Northeast Nuclear Energy Company to U.S. Nuclear Regulatory Commission, “Millstone Nuclear Power Station, Unit No. 3, Notification of Closed Commitment, Licensee Event Report 97-041-00,” dated November 30, 2000.
5. Millstone Unit No. 3 Technical Evaluation M3-EV-01-0015, Service Water Pump Allowed Outage Time Study.
6. ETE-NAF-2011-0022, Rev 0, “Millstone Unit 3 Service Water Pump Allowed Outage Time Risk Evaluation.”

3/4.7 PLANT SYSTEMS

3/4.7.6 FLOOD PROTECTION

TECHNICAL REQUIREMENT

3.7.6 Flood protection shall be provided for the service water pump cubicles and components when the water level exceeds 13 feet Mean Sea Level, USGS datum, at the Unit 3 intake structure.

APPLICABILITY:

At all times.

ACTION:

With the water level at greater than 13 feet above Mean Sea Level, USGS datum, at the Unit 3 intake structure, shut the watertight doors of both service water pump cubicles and isolate the pump cubicle sump drain lines within 15 minutes.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.6 The water level at the Unit 3 intake structure shall be determined to be within the limits by:

a. Measurement at least once per 24 hours when the water level is below elevation 8 feet above Mean Sea Level, USGS datum, and

b. Measurement at least once per 2 hours when the water level is equal to or above elevation 8 feet above Mean Sea Level, USGS datum.

BASES:

The limitation on flood protection ensures that the service water pump cubicle watertight doors will be closed and the pump cubicle sump drain line will be isolated before the water level reaches the critical elevation of 14.5 feet Mean Sea Level. Elevation 14.5 feet MSL is the floor elevation of the service water pump cubicle.

REFERENCE:

1. License Amendment No. 214.

3/4.7 PLANT SYSTEMS

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION

TECHNICAL REQUIREMENT

3.7.7.1 Two trains of the Control Building (CB) Temperature Control System, utilizing the associated HVK chiller, shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2, 3 and 4.

During movement of recently irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4

a. With one or more train(s) of Control Building (CB) Temperature Control System nonfunctional and the associated service water (SW) to CB chilled water cross-tie(s) FUNCTIONAL, restore the nonfunctional CB Temperature Control System train(s) to FUNCTIONAL status within 30 days, otherwise be in HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.

b. With one train of CB Temperature Control System nonfunctional and the associated SW to CB chilled water cross-tie nonfunctional, restore the nonfunctional CB Temperature Control System train to FUNCTIONAL status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN in the following 30 hours.

c. With both trains of CB Temperature Control System otherwise nonfunctional, immediately suspend the movement of fuel within the spent fuel pool. Restore at least one nonfunctional CB Temperature Control System train to FUNCTIONAL status within 1 hour or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN in the following 30 hours.

During movement of recently irradiated fuel assemblies:

d. With one or more train(s) of CB Temperature Control System nonfunctional and the associated SW to CB chilled water cross-tie(s) FUNCTIONAL, restore the nonfunctional CB Temperature Control System train(s) to FUNCTIONAL status within 30 days, otherwise, immediately place the FUNCTIONAL train of CB Temperature Control System in operation or immediately suspend the movement of recently irradiated fuel assemblies.

e. With one train of CB Temperature Control System nonfunctional and the associated SW to CB chilled water cross-tie nonfunctional, restore the nonfunctional CB

3/4.7 PLANT SYSTEMS

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION

TECHNICAL REQUIREMENTS (Continued)

Temperature Control System train to FUNCTIONAL status within 7 days, otherwise, immediately place the FUNCTIONAL train of CB Temperature Control System in service or immediately suspend the movement of recently irradiated fuel assemblies.

f. With both trains of CB Temperature Control System otherwise nonfunctional, immediately suspend the movement of recently irradiated fuel assemblies.

TECHNICAL SURVEILLANCE REQUIREMENTS

As specified in Technical Specification Surveillance Requirement 4.7.7a.

BASES:

The Control Building (CB) Temperature Control System is required to maintain the control room envelope environment (i.e., temperature, humidity) for human habitability as well as long-term acceptable equipment performance. The CB Temperature Control System incorporates suitable redundancy in its design to ensure that one train remains available under accident conditions assuming a single failure.

Technical Specification 3.7.7, Control Room Emergency Ventilation System surveillance requirement 4.7.7a requires that the control room temperature be verified once per 12 hours to be less than or equal to 95°F. The CB Temperature Control System supports compliance with this requirement.

The equipment listed in the following table represents the normal complement of equipment that must be available and capable of performing its function in order for a train of CB Temperature Control System to be considered FUNCTIONAL:

TRAIN A	TRAIN B
3HVK*CHL1A	3HVK*CHL1B
3HVC*ACU1A/2A	3HVC*ACU1B/2B
3HVK*P1A	3HVK*P1B
3SWP*P2A	3SWP*P2B
Associated HVK Isolation and Temperature Control Valves	Associated HVK Isolation and Temperature Control Valves

In the event that a listed component is unavailable, the associated CB Temperature Control System train remains FUNCTIONAL as long as the associated SW to CB chilled

BASES (Continued):

water system cross-tie is FUNCTIONAL. Use of the cross-tie has been evaluated by engineering and determined to be capable of maintaining control room temperature below the required value. For a cross-tie to be considered FUNCTIONAL, the following equipment for the associated train is required to be available:

TRAIN A	TRAIN B
3SWP*V100 3SWP*V101 3SWP*V102 3SWP*V103	3SWP*V105 3SWP*V106 3SWP*V107 3SWP*V108
3HVC*ACU1A/2A	3HVC*ACU1B/2B
3SWP*P2A	3SWP*P2B
3HVK*P1A	3HVK*P1B

If one or more of the listed components is unavailable, the cross-tie can be considered FUNCTIONAL if a documented assessment is prepared to demonstrate that the affected component(s) availability can be restored and the cross-tie aligned so that the control room temperature does not exceed 95°F.

The alignment of the cross-tie is covered under existing plant procedures and can be accomplished with the minimum operations crew complement specified by Technical Specifications. The cross-tie valves are subject to periodic testing at a frequency considered acceptable for the function the valves perform. Operator access to the required equipment under accident conditions has been assessed and can be accomplished without exceeding radiological exposure limits. The rate of temperature rise in the affected areas following a loss of ventilation is relatively low, thereby allowing sufficient time for plant operators to conduct actions necessary to stabilize plant conditions following an accident prior to dispatching personnel to align the cross-tie for use.

The 30-day allowed outage time (AOT) is derived from NUREG-1431, “Standard Technical Specifications for Westinghouse Plants.” The 30-day AOT in NUREG-1431 is considered reasonable on the basis that the remaining FUNCTIONAL CB Temperature Control System is adequate to maintain the control building temperature within limits. The 30-day AOT is based on the low probability of an event requiring control building isolation, the consideration that the remaining train can provide the required protection and, that alternate safety or non-safety related means to provide temperature control are available. In the case of Millstone Unit 3 (MPS3), the alternate means credited for

3/4.7 PLANT SYSTEMS

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION

BASES (Continued):

providing temperature control is the SW to CB chilled water system cross-tie. This capability exists for either train of the CB Temperature Control System such that under any circumstance of an accident with single failure, cooling of the control room can be accomplished. In the event that the associated cross-tie is not available, then entry into Technical Specifications 3.7.7a and b for the Control Room Emergency Ventilation System is appropriate. However, these ACTIONS direct restoration of the filtration system, while the TECHNICAL REQUIREMENT ACTIONS restore components specific to the CB Temperature Control System. These TECHNICAL REQUIREMENTS shall be maintained until such time as a Technical Specification specifically addressing the Temperature Control System is implemented.

During movement of recently irradiated fuel assemblies (i.e., fuel that has occupied part of a critical reactor core within the previous 350 hours*), ACTION to suspend fuel movement consistent with the requirements of Technical Specifications 3.7.7d and e, is appropriate when the associated cross-tie is not available. However, it is not considered beneficial to place the Control Room Emergency Ventilation System on recirculation when one train of CB Temperature Control System is nonfunctional under these conditions. That ACTION is directed in the event that a filtration train is not available to mitigate the consequences of an accident. The function of temperature control and filtration are sufficiently distinct to support allowing the filtration train to remain in its normal alignment under these conditions. Suspension of recently irradiated fuel movement reduces to a minimum the level of monitoring and event management activity that must be carried out from the control room.

REFERENCE:

1. CR-05-11723.
2. Technical Specification section 3/4.7.7.
3. Calculation 97-112, Rev. 1, “Determination of SW Flow and Control Building Temperatures From Use of SW Cooling for Control Building Air Handling Units.”
4. Table 1, NRC Safety Evaluation Report, Amendment 243, dated September 18, 2008.

*During fuel assembly cleaning evolutions that involve the handling or cleaning of two fuel assemblies coincidently, recently irradiated fuel is fuel that has occupied part of a critical reactor core within the previous 525 hours.

3/4.7 PLANT SYSTEMS

3/4.7.11 SEALED SOURCE CONTAMINATION

TECHNICAL REQUIREMENT

3.7.11 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 greater than or equal to 0.005 microCurie of removable contamination.

APPLICABILITY:

At all times.

ACTION:

a. With a sealed source having removable contamination in excess of the above limits, immediately withdraw the sealed source from use and either:

1. Decontaminate and repair the sealed source, or

2. Dispose of the sealed source in accordance with Commission Regulations.

b. The provisions of TECHNICAL REQUIREMENT 3.0.3 are not applicable.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.11.1 Test Requirements - Each sealed source shall be tested for leakage and/or contamination by:

a. The licensee, or

b. Other persons specifically authorized by the Commission or an Agreement State.

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

4.7.11.2 Test Frequencies - Each category of sealed sources (excluding startup sources and fission detectors previously subjected to core flux) shall be tested at the frequency described below.

3/4.7 PLANT SYSTEMS

3/4.7.11 SEALED SOURCE CONTAMINATION

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

a. Sources in use - At least once per 6 months for all sealed sources containing radioactive materials:

1. With a half-life greater than 30 days (excluding Hydrogen 3), and

2. In any form other than gas.

b. Stored sources not in use - Each sealed source and fission detector shall be tested prior to use or transfer to another licensee unless tested within the previous 6 months. Sealed sources and fission detectors transferred without a certificate indicating the last test date shall be tested prior to being placed into use; and

c. Startup sources and fission detectors - Each sealed startup source and fission detector shall be tested within 31 days prior to being subjected to core flux or installed in the core and following repair or maintenance to the source.

4.7.11.3 Reports - A report shall be prepared and submitted to the Commission on an annual basis if sealed source or fission detector leakage tests reveal the presence of greater than or equal to 0.005 microCurie of removable contamination.

BASES:

The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(a)(3) limits for plutonium. This limitation will ensure that leakage from Byproduct, Source, and Special Nuclear Material sources will not exceed allowable intake values.

Sealed sources are classified into three groups according to their use, with TECHNICAL 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.

REFERENCE:

1. License Amendment No. 214.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

TECHNICAL REQUIREMENT

3.7.12.1 The Fire Suppression Water System shall be FUNCTIONAL with:

a. Three high pressure fire pumps, each with a capacity of at least 1,800 gpm, with pump discharge aligned to the fire suppression header.

b. Two water supplies, each with a minimum contained volume of 200,000 gallons.

c. A FUNCTIONAL flow path capable of taking suction from the fire water tanks and transferring the water through distribution piping with FUNCTIONAL sectionalizing control or isolation valves to the yard hydrant curb valves, hose standpipes, the first valve upstream of the water flow alarm device on each sprinkler system, and the first valve upstream of the deluge valve on each Deluge or Spray System required to be FUNCTIONAL per TRM Sections 3.7.12.2, “Spray and/or Sprinkler Systems,” and 3.7.12.5, “Fire Hose Stations,” and 3.7.12.6, “Yard Fire Hydrants and Hydrant Hose Houses.”

APPLICABILITY:

At all times.

ACTION:

a. With one pump and/or one water supply nonfunctional:

1. Restore the nonfunctional equipment to FUNCTIONAL status within 7 days **OR**

2. Provide an alternate backup pump or water supply within 24 hours **AND** develop a plan and schedule, within 14 days, for restoring the system to FUNCTIONAL status.

b. With two pumps nonfunctional:

1. Establish a continuous fire watch in the Turbine Building with backup suppression within 1 hour **AND**

2. Provide an alternate backup pump within 24 hours **AND**

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

TECHNICAL REQUIREMENTS (Continued)

3. Restore the nonfunctional equipment to FUNCTIONAL status within 7 days **OR** develop a plan and schedule, within 14 days, for returning the equipment to FUNCTIONAL status.

c. With the Fire Suppression Water System otherwise nonfunctional:

1. Establish a continuous fire watch in the Turbine Building with backup suppression within 1 hour **AND**

2. Restore the fire suppression water distribution system to FUNCTIONAL within 24 hours **OR**

3. Establish a back up Fire Suppression Water System within 24 hours **AND** develop a plan and schedule, within 14 days, for restoring the system to FUNCTIONAL status.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.12.1.1 The Fire Suppression Water System shall be demonstrated FUNCTIONAL:

a. At least once per 7 days, by verifying the contained water supply volume.

b. At least once per 31 days, on a STAGGERED TEST BASIS, by starting and operating each electric motor-driven pump for at least 15 minutes on recirculation flow.

c. At least once per 31 days, by verifying that each valve (manual, power operated, or automatic) outside containment in the flow path is in its correct position.

d. At least once per 12 months, by cycling each testable valve in the flow path through at least one complete cycle of full travel.

e. At least once per 24 months, by verifying that each valve (manual, power-operated, or automatic) inside containment in the flow path is in its correct position.

f. At least once per 24 months, by cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

g. At least once per 18 months, by performing a system FUNCTIONAL test which includes simulated automatic actuation of the system throughout its operating sequence, and:

   1. Verifying each pump develops at least 1,800 gpm at a pump differential pressure of 100 psid and

   2. Verifying each pump starts sequentially to maintain the Fire Suppression Water System pressure greater than or equal to 75 psig.

h. At least once per 3 years, by performing a flow test of the system in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition, published by the National Fire Protection Association.

4.7.12.1.2 The fire pump diesel engine shall be demonstrated FUNCTIONAL:

a. At least once per 31 days, by verifying:

   1. The fuel storage tank contains at least 125 gallons of fuel; and

   2. The fire pump diesel engine starts from ambient conditions and operates for at least 30 minutes while loaded with the fire pump on recirculation flow.

b. At least once per 92 days, by verifying a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water, and sediment.

c. At least once per 18 months, by subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer’s recommendations for the class of service.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

4.7.12.1.3. The fire pump diesel starting 12-volt batteries and charger shall be demonstrated FUNCTIONAL:

a. At least once per 7 days, by verifying:

1. The electrolyte level of each battery cell is above the plates.

2. The voltage of each battery is greater than or equal to 12 volts.

b. At least once per 92 days, by verifying the specific gravity is appropriate for continued service of the batteries.

c. At least once per 18 months, by verifying;

1. The batteries, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration; <u>and</u>

2. The battery-to-battery and terminal connections are clean, tight, free of corrosion, and coated with anti-corrosion material.

BASES:

1. The FUNCTIONALITY of the fire suppression system ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety related equipment is located. The fire suppression system consists of the high pressure fire pumps, water supply tanks, fire hydrants, fire hose stations, distribution piping and valves, spray and/or sprinkler systems, Halon and CO_2.

2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

BASES (Continued):

3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is required to be made available in the affected areas until the nonfunctional equipment is restored to service. If the nonfunctional firefighting equipment is a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.

   Backup fire protection equipment will normally take the form of permanently mounted fire extinguishers, hose stations, or both, in or near the area, or fire hoses routed to the affected areas.

   The Millstone Unit 2 and 3 fire pump houses, which serve Millstone Unit 3, house three 2,000 gpm at 100 psi rated fire pumps, two with electric motor drive and one with diesel engine drive. All three pumps have individual connections to the underground supply system. Maximum system flow and pressure requirements are met with any one of the three pumps out of service. The maximum system flow and pressure requirements are based on the Unit 3 Turbine Building FPW sprinkler system water demand. In the event two pumps are nonfunctional and system demand for the Turbine Building sprinkler system is not met, alternate backup fire suppression and a continuous fire watch are made available for this area until one of the nonfunctional pumps is restored to service. One pump is sufficient to maintain system flow and pressure for those fire suppression systems protecting all other MP3 fire areas where safety-related equipment is located. However, it is not the intent of Millstone to rely on backup systems or other compensatory measures for an extended period of time and action will be taken to restore the nonfunctional pumps to FUNCTIONAL status within a reasonable time period.

   Unit 3 has backup suppression in all safety-related areas and most non-safety-related areas as required by the BTP CMEB 9.5-1.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE SUPPRESSION WATER SYSTEM

BASES (Continued):

4. The TECHNICAL SURVEILLANCE REQUIREMENTS provide assurance the minimum FUNCTIONALITY requirements of the Fire Suppression Systems are met.

5. In the event the Fire Suppression Water System or portions thereof become nonfunctional, corrective measures are taken commensurate with the specific loss since this system provides the major fire suppression capability of the plant.

6. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

7. It is the intent of monthly diesel engine fire pump testing to conduct this test during a different week than electric motor pump testing. Nominal monthly ("once per 31 days") and 18 month TECHNICAL SURVEILLANCE REQUIREMENTS are consistent with the Unit 1 and 2 surveillance requirements. The surveillance procedures for each of the three fire pumps are common to Units 1, 2, and 3.

   (See AR 97026324-03 for additional information).

REFERENCE:

1. CR M3-00-2659

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

SPRAY AND/OR SPRINKLER SYSTEMS

TECHNICAL REQUIREMENT

3.7.12.2 The following Deluge Spray and/or Sprinkler Systems shall be FUNCTIONAL:

a. Emergency Generator A Enclosure Sprinkler**
b. Emergency Generator B Enclosure Sprinkler**
c. RSST A Deluge
d. RSST B Deluge
e. Fuel Building Filter Bank A Deluge**
f. Fuel Building Filter Bank B Deluge**
g. Auxiliary Building Filter Bank A Deluge**
h. Auxiliary Building Filter Bank B Deluge **
i. Supplementary Leak Collection Filter Bank A Deluge**
j. Supplementary Leak Collection Filter Bank B Deluge**
k. Containment Cable Penetration Area Sprinkler * **
l. Charging Pump Water Curtain Sprinkler System**
m. ESF Building Water Curtain Sprinkler System**
n. NSST A Deluge
o. NSST B Deluge
p. Main Transformer A Deluge
q. Main Transformer B Deluge
r. Main Transformer C Deluge

* The Containment Cable Penetration Area Sprinkler System is not required to be FUNCTIONAL during the performance of Type A containment leakage rate tests.

** These systems protect areas containing safety-related equipment.

APPLICABILITY:

Whenever equipment protected by the Deluge Spray/Sprinkler System is required to be FUNCTIONAL.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

SPRAY AND/OR SPRINKLER SYSTEMS

TECHNICAL REQUIREMENTS (Continued)

ACTION:

a. With one or more of the above required Deluge Spray and/or Sprinkler Systems nonfunctional, within 1 hour establish a continuous fire watch for those areas in which both trains of redundant fire safe shutdown systems or components could be damaged(2); for other areas, establish an hourly fire watch patrol(1).

Notes:

1. For Completion Times stated in TECHNICAL REQUIREMENT ACTIONs which require periodic performance on a “once per . .” basis, the specified Frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the Completion Time, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

2. For the Containment Cable Penetration Sprinkler System, if operating conditions prevent establishing a continuous fire watch, install remote cameras within 24 hours and monitor the cable penetration area continuously. Additionally, monitor area temperatures and smoke detectors. (See Bases item 8.)

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.12.2 Each of the above required Deluge Spray and/or Sprinkler Systems shall be demonstrated FUNCTIONAL:

a. At least once per 31 days by verifying each valve (manual, power-operated, or automatic) <u>outside</u> containment in the flow path is in its correct position.

b. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.

c. At least once per 24 months by verifying each valve (manual, power-operated, or automatic) <u>inside</u> containment in the flow path is in its correct position.

d. At least once per 18 months:

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

SPRAY AND/OR SPRINKLER SYSTEMS

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

1. By performing a system FUNCTIONAL test, which includes simulated automatic actuation of the system and verifying the deluge valves in the flow path actuate to their correct positions on a simulated test signal.

2. By a visual inspection of the dry pipe deluge and sprinkler headers to verify integrity.

3. By a visual inspection of each nozzle's spray area to verify the spray pattern is not obstructed.*

e. At least once per 24 months by cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

f. At least once per 3 years by performing an air flow or water test through each open head deluge header and verifying each open head deluge nozzle is unobstructed.*

* Not applicable to the Filter Banks in the Fuel Building, Auxiliary Building, or for Supplementary Leak Collection.

BASES:

1. The FUNCTIONALITY of the Fire Suppression Systems ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of the water system, spray, and/or sprinklers, CO_2, Halon, fire hose stations, and yard fire hydrants.

2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.

3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is available in the affected areas until the nonfunctional equipment is restored to service. If the nonfunctional firefighting equipment is a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

SPRAY AND/OR SPRINKLER SYSTEMS

BASES (Continued):

Backup fire protection equipment will normally take the form of permanently mounted fire extinguishers, hose stations, or both in or near the area, or fire hoses routed to the affected areas. However, it is not the intent of Millstone Unit 3 to rely on backup systems or other compensatory measures for an extended period of time and action will be taken to restore the nonfunctional portions of the system to FUNCTIONAL status within a reasonable period of time.

The purpose of the charcoal filter bank fire water deluge systems is for early suppression of fires in the charcoal filters. Manual operation of these systems is allowed because two-point heat detection with the control room and local annunciation of trouble conditions is provided for the charcoal filters. The FUNCTIONALITY of the fire suppression system protecting the charcoal filters is only required when there is charcoal in the filters and the filters are required to be FUNCTIONAL. Actuation of spray water onto the charcoal filters requires both the manual opening of the system isolation valve and reaching the high temperature alarm setpoint for the automatic opening of the system deluge valve.

Unit 3 has backup suppression in all safety-related areas and most non-safety-related areas as required by the BTP 9.5-1.

4. The surveillance requirements provide assurance that the minimum FUNCTIONALITY requirements of the fire suppression system are met.

5. In the event the Deluge System over the RSST or NSST/Main transformers are nonfunctional, an hourly fire watch is required to ensure adequate attention of Fire Protection to the non-safety transformers. For the purpose of distribution, the RSST and NSST/Main transformers are redundant to each other as recognized in Technical Specification 3.8.1, “Electrical Power Systems, A.C. Sources.”

6. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

SPRAY AND/OR SPRINKLER SYSTEMS

BASES (Continued):

7. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.

8. The allowance to not post a fire watch in containment during at-power conditions is based upon the lack of transient combustibles and ignition sources, and the low potential for introducing new transient combustibles or ignition sources, because containment is not normally accessible during power operation. The NRC has previously reviewed a similar issue (Thermo-Lag in Containment, July 6, 1993, Letter A11091), and found the use of video cameras acceptable "...in areas to mitigate overriding high radiation and ALARA concerns for fire watches...".

9. The intent of TR 3.7.12.2 ACTION Statement a. is to require continuous fire watch for protected areas containing redundant fire safe-shutdown SSCs. The ESF sprinklers are considered a required enhancement for the fire barrier penetration seals they protect. Compensatory measures for these sprinkler impairments should be comparable to fire barrier impairments. An hourly fire watch patrol is adequate.

REFERENCE:

1. CR M3-00-2659.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE PROTECTION SYSTEMS

CO_2 SYSTEMS

TECHNICAL REQUIREMENT

3.7.12.3 The following CO_2 Systems shall be FUNCTIONAL:

a. Emergency Generator Fuel Oil Tank A Vault
b. Emergency Generator Fuel Oil Tank B Vault
c. North Electrical Tunnel
d. South Electrical Tunnel
e. Cable Spreading Room
f. West Switchgear Room
g. East Switch gear Room
h. MCC and Rod Control A Area
i. MCC and Rod Control B Area

APPLICABILITY:

Whenever equipment protected by the CO_2 Systems is required to be FUNCTIONAL.

ACTION:

a. With the cable spreading room CO_2 system nonfunctional, within 1 hour establish a continuous fire watch.(2)

b. With one or more of the required CO_2 Systems (except the cable spreading room) nonfunctional, within 1 hour, verify the fire barrier(1) between adjacent areas is FUNCTIONAL; and:

1. If the fire barrier(1) is FUNCTIONAL, establish an hourly fire watch patrol(3) for the affected area.(2)

2. If the fire barrier(1) is nonfunctional, establish a continuous fire watch for the affected area.(2)

NOTES:

1. Fire dampers that have S&R Products Electro-Thermal Links that melt at 165°F (all ETLs at MP3) are considered FUNCTIONAL unless physically blocked open. MP3 Engineering has determined that the ETLs will either de-fuse on an inputted voltage or upon ambient temperature reaching 165°F +/- 5°F.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE PROTECTION SYSTEMS

CO_2 SYSTEMS

TECHNICAL REQUIREMENTS (Continued)

If a fire condition is present, fire zone separation will occur via the de-fusing of the ETLs due to ambient temperatures. The closed positioned fire dampers provide a fire containment boundary in addition to a CO_2 concentration boundary. This boundary ensures design requirement CO_2 levels are established and maintained.

Therefore, while replacing the ETLs with the CO_2 System in the areas not FUNCTIONAL (except the cable spreading room) - only an hourly fire patrol is required; unless the fire damper is going to be physically blocked open - then a continuous fire patrol is required.

2. The requirement for an hourly or continuous fire watch being posted is exempted, based on FUNCTIONAL detectors, during the period of time just prior to CO_2 being discharged from the header to the room area until such time that the CO_2 concentrations are determined to be at an acceptable level to allow personnel access to the area.

3. For Completion Times stated in TECHNICAL REQUIREMENT ACTIONs which require periodic performance on a "once per.." basis, the specified Frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the Completion Time, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.12.3.1 Each of the required CO_2 Systems shall be demonstrated FUNCTIONAL at least once per 31 days by verifying each valve (manual, power-operated, or automatic) in the flow path is in its correct position (unless a ball valve, zone switch, or pull station is tagged or closed to isolate automatic operation).

4.7.12.3.2 Each of the required CO_2 Systems shall be demonstrated FUNCTIONAL:

a. At least once per 7 days by verifying the CO_2 storage tank level to be greater than 50% of volume and pressure to be greater than 275 psig.

b. At least once per 18 months by verifying:

   1. The system, including valves and associated ventilation system fire dampers, actuates manually and automatically upon receipt of a simulated actuation signal.

   2. Flow from each nozzle during a "Puff Test."

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE PROTECTION SYSTEMS

CO_2 SYSTEMS

BASES:

1. The FUNCTIONALITY of the Fire Suppression Systems ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of water system, spray, and/or sprinklers, CO_2, Halon, fire hose stations, and yard fire hydrants.

2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.

3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is available in the affected areas until the nonfunctional equipment is restored to service. When the nonfunctional firefighting equipment is intended for use as a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.

   Backup fire protection equipment will normally take the form of permanently mounted fire extinguishers, hose stations, or both in or near the area, or fire hoses routed to the affected areas. However, it is not the intent of Millstone Unit 3 to rely on backup systems or other compensatory measures for an extended period of time and action will be taken to restore the nonfunctional portions of the system to FUNCTIONAL status within a reasonable period of time. Unit 3 has backup suppression in all safety-related areas and most non-safety related areas as required by BTP 9.5-1. Manual fire fighting is the primary suppression method for the Cable Spreading Area (CSA). The installed CO_2 system provides backup suppression.

4. The surveillance requirements provide assurance that the minimum FUNCTIONALITY requirements of the fire suppression system are met.

5. In the event the Fire Suppression System in the Cable Spreading Room is nonfunctional, a continuous fire watch is required due to the presence of redundant safe shutdown systems and/or components in the Cable Spreading Room that could be damaged by a common fire. The criteria for redundancy is described in Branch Technical Position (BTP) 9.5-1.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE PROTECTION SYSTEMS

CO_2 SYSTEMS

BASES (Continued):

6. The requirement for a hourly or continuous fire watch being posted is exempted during the period of time just prior to CO_2 being discharged from the header to the room area until such time that the CO_2 concentrations are determined to be at an acceptable level to allow personnel access to the areas. This allows for CO_2 puff testing without personnel in the area. Fire safety is assured during this brief interval of the test by the presence of FUNCTIONAL fire detectors and the capability to re-activate the system in a timely manner in the event of an actual fire.
7. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.
8. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.

REFERENCE:

1. CR M3-00-2659

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

HALON SYSTEMS

TECHNICAL REQUIREMENT

3.7.12.4 The Instrument Rack Room Underfloor Area and the Fire Pump House Halon Systems shall be FUNCTIONAL.

APPLICABILITY:

Whenever equipment protected by the Halon System is required to be FUNCTIONAL.

ACTION:

a. With any of the above required Halon Systems nonfunctional, within 1 hour establish a continuous fire watch for those areas in which both trains of redundant fire safe-shutdown systems or components could be damaged; for other areas, establish an hourly fire watch patrol[(1)].

b. At the time that the above Fire Pump House Halon system is determined to be nonfunctional, notify the Site Fire Marshal.

NOTES:

1. For Completion Times stated in TECHNICAL REQUIREMENT ACTIONs which require periodic performance on a “once per . .” basis, the specified Frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the Completion Time, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.12.4 The above required Halon System shall be demonstrated FUNCTIONAL:

a. At least once per 31 days by verifying each valve (manual, power-operated, or automatic) in the flow path is in its correct position.

b. At least once per 6 months by verifying Halon storage tank weight to be at least 95% of full charge weight and pressure to be at least 90% of full charge pressure.

c. At least once per 18 months by:

   1. Verifying the system, including associated Ventilation System fire dampers, actuates manually and automatically, upon receipt of a simulated actuation signal.
   2. Performance of a flow test through headers and nozzles to assure no blockage, except for the Fire Pump House Halon system. Performance of a visual inspection of the discharge nozzles to assure no blockage shall be performed for the Fire Pump House Halon system.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

HALON SYSTEMS

BASES:

1. The FUNCTIONALITY of the Fire Suppression Systems ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of the water system, spray, and/or sprinklers, CO_2, Halon, fire hose stations, and yard fire hydrants.

2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.

3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is available in the affected areas until the nonfunctional equipment is restored to service. If the nonfunctional firefighting equipment is a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.

   Backup fire protection equipment will normally take the form of permanently mounted fire extinguishers, hose stations, or both in or near the area, or fire hoses routed to the affected areas. However, it is not the intent of Millstone Unit 3 to rely on backup systems or other compensatory measures for an extended period of time and action will be taken to restore the nonfunctional portions of the system to FUNCTIONAL status within a reasonable period of time.

   Unit 3 has backup suppression in all safety-related areas and most non-safety-related areas as required by BTP 9.5-1.

4. The TECHNICAL SURVEILLANCE REQUIREMENTS provide assurance that the minimum FUNCTIONALITY requirements of the fire suppression system are met.

5. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

6. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

HALON SYSTEMS

BASES (Continued):

7. The intent of TECHNICAL REQUIREMENT 3.7.12.4 ACTION Statement a. is to require continuous fire watch for areas containing redundant fire safe-shutdown SSCs. The fire pump house is not a fire safe-shutdown SSC, so a continuous fire watch is not required when the halon system is nonfunctional. An hourly fire watch patrol is adequate.

REFERENCE:

1. CR M3-00-2659.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE HOSE STATIONS

TECHNICAL REQUIREMENT

3.7.12.5 The fire hose stations given in TRM Table 3.7-4 shall be FUNCTIONAL.

APPLICABILITY:

Whenever equipment in the areas protected by the fire hose stations is required to be FUNCTIONAL.

ACTION:

1. With one or more of the fire hose stations given in TRM Table 3.7-4 nonfunctional, route an additional equivalent capacity fire hose to the unprotected area(s) from a FUNCTIONAL hose station(s)(1) or establish a continuous fire watch with backup fire suppression equipment for the unprotected area(s).

   Where the physical routing of the fire hose would result in a recognizable hazard to personnel, plant equipment, or the hose itself, the fire hose shall be stored in a roll at the outlet of the FUNCTIONAL hose station. Signs shall be mounted to identify the proper hose to use.

   The above ACTION requirement shall be accomplished within 1 hour if the nonfunctional fire hose is the primary(2) means of fire suppression; otherwise route the additional hose within 24 hours.

NOTES:

(1) Routing of equivalent capacity hose(s) shall not adversely impact FUNCTIONAL hose station(s) hose coverage. Additionally, for Hose Station 52 in Aux. Bldg. 24’, equivalent hose is the desired option to prevent Maintenance Rule unavailability during the time of hose station nonfunctionality. This hose station is referenced in AOP 3560, “Loss of Service Water” as a cooling alternative for a running charging pump.

(2) (2)The fire hose stations are the primary means of fire suppression for all areas except the containment cable penetration area where the containment cable penetration area sprinkler provides the primary means of fire suppression.

The auxiliary building charging pump water curtain sprinkler system provides protection and separation for the charging pump area and limited protection for the floor openings between elev. 4’6” and elev. 24’6”, including the southeast stairwell. The hose stations are required as a primary means of fire suppression for all safety-related areas not protected by the water curtain sprinkler system and MCC control rod drive area CO_2 suppression system.

The fire hoses in the Fuel Building are the primary means of suppression. Secondary means of suppression are the fire extinguishers.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE HOSE STATIONS

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.12.5 Each of the fire hose stations given in TRM Table 3.7-4 shall be demonstrated FUNCTIONAL:

a. At least once per 31 days, by a visual inspection of the fire hose stations accessible during plant operations to assure all required equipment is at the station.

b. At least once per 24 months, by:

1. Visual inspection of the stations not accessible during plant operations to assure all required equipment is at the station.
2. Removing the hose for inspection and re-racking; and
3. Inspecting all gaskets and replacing any degraded gaskets in the couplings.

c. At least once per 3 years, by:

1. Partially opening each hose station valve to verify valve FUNCTIONALITY and no flow blockage.
2. Conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.

BASES:

1. The FUNCTIONALITY of the Fire Suppression Systems ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of the water system, spray, and/or sprinklers, CO_2, Halon, fire hose stations, and yard fire hydrants.

2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.

3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is available in the affected areas until the nonfunctional equipment is restored to service. If the nonfunctional firefighting equipment is a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

FIRE HOSE STATIONS

BASES (Continued):

4. The TECHNICAL SURVEILLANCE REQUIREMENTS provide assurance that the minimum FUNCTIONALITY requirements of the Fire Suppression Systems are met.
5. In the event any of the fire hose stations listed in TRM Table 3.7-4 becomes nonfunctional, corrective measures must be taken since this system provides the primary fire suppression capability of the affected areas.
6. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.7-4
FIRE HOSE STATIONS

Location	Elevation	Hose Rack Number
Containment*	-24’ 6”	86, 90
Containment*	3’ 8”	85, 89
Containment*	24’ 6”	84, 88, 105
Containment*	51’ 4”	83, 87
Auxiliary Building	4’ 6”	45 - 49
Auxiliary Building	24’ 6”	50 - 53
Auxiliary Building	43’ 6”	54 - 57
Auxiliary Building	66’ 6”	58 - 62
Cable Spreading Area	24’ 6”	122, 124, 125 135-139 (booster reels)
Control Building	4’ 6”	126, 127
Control Building	47’ 6”	120, 121
Control Building	64’ 6”	119, 130
Diesel Generator A Enclosure	24’ 6”	78
Diesel Generator B Enclosure	24’ 6”	79
ESF Building	4’ 6”	114, 116
ESF Building	21’ 6”	113, 118
ESF Building	30’ 6”	115, 117
Fuel Building	11’ 0”	65
Fuel Building	24’ 6”	66 - 68
Fuel Building	52’ 4”	94
Service Building	4’ 6”	128, 129
Service Building	49’ 6”	13

* The fire hose stations located within the containment are not required to be FUNCTIONAL during the performance of Type A containment leakage rate tests.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

YARD FIRE HYDRANTS AND HYDRANT HOSE HOUSES

TECHNICAL REQUIREMENT

3.7.12.6 The yard fire hydrants and associated hydrant hose houses given in TRM Table 3.7-5 shall be FUNCTIONAL.

APPLICABILITY:

Whenever equipment in the areas protected by the yard fire hydrants is required to be FUNCTIONAL.

ACTION:

1. With one or more of the yard fire hydrants or associated hydrant hose houses given in TRM Table 3.7-5 nonfunctional, within 1 hour have sufficient additional lengths of 2 1/2 inch diameter hose located in an adjacent FUNCTIONAL hydrant hose house to provide service to the unprotected area(s) if the nonfunctional fire hydrant or associated hydrant hose house is the primary means of fire suppression; otherwise, provide the additional hose within 24 hours.

TECHNICAL SURVEILLANCE REQUIREMENTS

1. 4.7.12.6Each of the yard fire hydrants and associated hydrant hose houses given in TRM Table 3.7-5 shall be demonstrated FUNCTIONAL:

   a. At least once per 31 days, by visual inspection of the hydrant hose house to assure all required equipment is at the hose house.

   b. At least once per 6 months (once during March, April, or May and once during September, October, or November), by visually inspecting each yard fire hydrant and verifying that the hydrant barrel is dry and that the hydrant is not damaged.

   c. At least once per 12 months by:

      1. Conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.
      2. Inspecting all the gaskets and replacing any degraded gaskets in the couplings.
      3. Performing a flow check of each hydrant to verify its FUNCTIONALITY.

3/4.7 PLANT SYSTEMS

3/4.7.12 FIRE SUPPRESSION SYSTEMS

YARD FIRE HYDRANTS AND HYDRANT HOSE HOUSES

BASES:

1. The FUNCTIONALITY of the Fire Suppression Systems ensures adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related equipment is located. The Fire Suppression System consists of the water system, spray, and/ or sprinklers, CO_2, Halon, fire hose stations, and yard fire hydrants.
2. The collective capability of the Fire Suppression Systems is adequate to minimize potential damage to safety-related equipment and is a major element in the facility Fire Protection Program.
3. In the event portions of the Fire Suppression Systems are nonfunctional, alternate backup firefighting equipment is available in the affected areas until the nonfunctional equipment is restored to service. If the nonfunctional firefighting equipment is a backup means of fire suppression, a longer period of time is allowed to provide an alternate means of fire fighting than if the nonfunctional equipment is the primary means of fire suppression.
4. The TECHNICAL SURVEILLANCE REQUIREMENTS provide assurance that the minimum FUNCTIONALITY requirements of the Fire Suppression Systems are met.
5. In the event the Fire Suppression Water System or portions thereof become nonfunctional, corrective measures are taken commensurate with the specific loss since this system provides major fire suppression capability to the plant.
6. Testable - component is accessible during plant operations and is available for testing. A component not testable would be located in an area not normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.7-5
YARD FIRE HYDRANTS AND HYDRANT HOSE HOUSES

Location	Hydrant Number
West Yard Header	6, 7, 8, 9
North Yard Header	4, 5
East Yard Header	2, 3
South Yard Header	1,10,11

3/4.7 PLANT SYSTEMS

3/4.7.13 FIRE RATED ASSEMBLIES

TECHNICAL REQUIREMENT

3.7.13 All fire rated assemblies[(1) (3) (4)] separating safety-related fire areas or separating portions of redundant systems important to safe shutdown within a fire area shall be FUNCTIONAL; and,

Penetration sealing devices[(2)], located in the above required fire rated assemblies, shall be FUNCTIONAL.

NOTES:

1. Fire rated assemblies include walls, floor/ceiling, cable tray enclosures, and other fire barriers. All fire barriers required to be FUNCTIONAL are identified on drawings 12179-FIG-77A, -77B, -77C, -77D, -77E, and -77F.
2. Sealing devices include fire doors, fire windows, fire dampers, cable, piping, and ventilation duct penetration seals. Fire doors required to be FUNCTIONAL are listed in TRM Table 3.7-6.
3. For this requirement, each of the two containment personnel air lock steel doors shall be considered redundant FUNCTIONAL fire rated assemblies when closed; when both are open, comply with required ACTION of this TECHNICAL REQUIREMENT.
4. Fire dampers that have S&R Products Electro-Thermal Links that melt at 165°F (all ETLs at MP3) are considered FUNCTIONAL unless physically blocked open. MP3 Engineering has determined that the ETLs will either de-fuse on an inputted voltage or upon ambient temperature reaching 165°F +/- 5°F.

   If a fire condition is present, fire zone separation will occur via the de-fusing of the ETLs due to ambient temperatures. The closed positioned fire dampers provide a fire containment boundary in addition to a CO_2 concentration boundary. This boundary ensures design requirement CO_2 levels are established and maintained.

   Therefore, while replacing the ETLs with the CO_2 System in the areas not FUNCTIONAL (except the cable spreading room) - only an hourly fire patrol is required; unless the fire damper is going to be physically blocked open - then a continuous fire patrol is required.

APPLICABILITY:

At all times.

ACTION:

a. With one or more of the above required fire rated assemblies and/or sealing devices nonfunctional, within 1 hour, either establish a continuous fire watch on at least one side of the affected assembly, or verify the FUNCTIONALITY of fire detectors on at least one side of the nonfunctional assembly and, if applicable, verify CO_2 FUNCTIONAL on both sides of barrier and Establish an hourly fire watch patrol[(1)].

3/4.7 PLANT SYSTEMS

3/4.7.13 FIRE RATED ASSEMBLIES

TECHNICAL REQUIREMENTS (Continued)

ACTION NOTES:

1. For Completion Times stated in TECHNICAL REQUIREMENT ACTIONs which require periodic performance on a "once per . ." basis, the specified Frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the Completion Time, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.13.1 At least once per 18 months the above required fire rated assemblies and penetration sealing devices shall be verified FUNCTIONAL by performing:

a. A visual inspection of the exposed surfaces of each fire rated assembly.

b. A functional test of at least 10% of fire dampers installed in fire rated floor/ wall assemblies. If functional testing acceptance criteria are <u>not</u> met functional testing of an additional 10% of fire dampers will be performed. This testing process will continue until a 10% sample of fire dampers has been found to satisfy acceptance criteria. Functional testing of fire dampers will be performed so that a 100% verification of the FUNCTIONALITY of the fire dampers will be achieved every 15 years.

c. A visual inspection of at least 10% of each type of sealed penetration. If apparent changes in appearance or abnormal degradations are found, a visual inspection of an additional 10% of each type of sealed penetration shall be made. This inspection process shall continue until a 10% sample with no apparent changes in appearance or abnormal degradation is found. Samples shall be selected such that each penetration will be inspected every 15 years.

4.7.13.2 Each of the required fire doors listed in TRM Table 3.7-6 shall be verified FUNCTIONAL by inspecting that each door is capable of being closed and latched at least once per 6 months for doors electronically supervised, and for doors <u>not</u> electronically supervised by verifying:

a. At least once per 7 days, each required locked closed fire door is closed and locked.

b. At least once per 24 hours, each unlocked fire door is closed and latched.

3/4.7 PLANT SYSTEMS

3/4.7.13 FIRE RATED ASSEMBLIES

BASES (Continued):

1. The FUNCTIONAL integrity of the fire rated assemblies and barrier penetrations ensures fires will be confined or adequately retarded from spreading to adjacent portions of the facility. These design features minimize the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishing of the fire. The fire barrier penetrations are a passive element in the facility Fire Protection Program and any penetration seals located in fire barriers separating safety-related fire areas or separating portions of redundant systems important to safe shutdown within a fire area are subject to periodic inspections.
2. Fire barrier penetrations, including cable penetration barriers, fire doors and dampers are considered FUNCTIONAL when the visually observed condition is the same as the as-designed condition as per their approved surveillances. For those fire barrier penetrations that are <u>not</u> in the as-designed condition, an evaluation shall be performed to show that the modification has not degraded the fire rating of the fire barrier penetration.
3. During periods of time when a barrier separating safety-related fire areas or separating portions of redundant systems important to safe shutdown within a fire area is nonfunctional, either:

    a. A continuous fire watch is required to be maintained in the vicinity of the affected barrier; or

    b. The fire detectors on at least one side of the affected barrier must be verified FUNCTIONAL and an hourly fire watch patrol established until the barrier is restored to FUNCTIONAL status. CO_2 is verified FUNCTIONAL to ensure proper compensatory ACTIONS are taken.

4. The containment personnel air lock steel doors are verified closed and OPERABLE by Technical Specification Surveillance Requirement 4.6.1.3. Technical Specification Surveillance Requirements 4.6.1.4 requires primary containment pressures to be maintained within a specified pressure range. The personnel air lock steel doors are required to maintain the specified pressure range. The requirements for maintaining pressure are more stringent than those required for fire door visual inspection.
5. Testable - component is accessible during plant operations and is available for testing. A component <u>not</u> testable would be located in an area <u>not</u> normally accessible, such as containment, during normal operations or is unavailable for testing by being isolated or tagged out.

3/4.7 PLANT SYSTEMS

3/4.7.13 FIRE RATED ASSEMBLIES

BASES (Continued):

6. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.
7. The ESF sprinklers are considered a required enhancement for the fire barrier penetration seals they protect. Compensatory measures for these sprinkler impairments should be comparable to fire barrier impairments. An hourly fire watch patrol is adequate.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.7-6
FIRE DOORS

[redacted]

TRM TABLE 3.7-6
FIRE DOORS

[redacted]

PLANT SYSTEMS

3/4.7.14 AREA TEMPERATURE MONITORING

TECHNICAL REQUIREMENT

3.7.14 The temperature limit of each area shown in Table 3.7-7 shall not be exceeded.

APPLICABILITY: Whenever the equipment in an affected area is required to be OPERABLE/FUNCTIONAL.

ACTION:

With one or more areas exceeding the temperature limit(s) shown in Table 3.7-7:

a. By less than 20°F and for less than 8 hours, record the cumulative time and the amount by which the temperature in the affected area(s) exceeded the limit(s).

b. By less than 20°F and for greater than or equal to 8 hours, enter the condition into the Corrective Action Program.

c. With one or more areas exceeding the temperature limit(s) shown in Table 3.7-7 by greater than or equal to 20°F, enter the condition into the Corrective Action Program and within 4 hours either restore the area(s) to within the temperature limit(s) or declare the equipment in the affected area(s) inoperable/nonfunctional.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.7.14 The temperature in each of the areas shown in Table 3.7-7 shall be determined to be within its limits:

a. At least once per seven days when the alarm is FUNCTIONAL, and;

b. At least once per 12 hours when the alarm is nonfunctional.

BASES:

The temperature limits listed in Table 3.7-7 were established to provide indication to operators that mitigating actions are required to prevent further temperature increases. Extreme high temperature exposure or long term exposure above these limits may degrade equipment and eventually cause loss of OPERABILITY for Technical Specification (TS) equipment or loss of FUNCTIONALITY for non-TS equipment. The temperature limits include an allowance for instrument error of ± 2.2°F.

REFERENCE:

1. License Amendment No. 250

TABLE 3.7-7
AREA TEMPERATURE MONITORING

	AREA	TEMPERATURE LIMIT (°F)
1.	**AUXILIARY BUILDING**	
AB-02,	VCT and Boric Acid Transfer Pump Area, El 43' 6"	≤ 120
AB-03,	Charging Pump Area, El 24' 6"	≤ 110
AB-04,	General Area, El 66' 6"	≤ 120
AB-06,	General Area, El 43' 6"	≤ 120
AB-07,	General Area, El 4' 6"	≤ 120
AB-08,	General Area (East), El 4' 6"	≤ 120
AB-09,	General Area (South), El 4' 6"	≤ 120
AB-10,	General Area, El 4' 6"	≤ 120
AB-11,	General Area, El 43' 6"	≤ 120
AB-13,	General Area (North), El 4' 6"	≤ 120
AB-16,	Supplemental Leak Collection Filter Area, El 66' 6"	≤ 120
AB-19,	MCC/Rod Drive Area, El 24' 6"	≤ 120
AB-21,	MCC Air Conditioning Room, El 66' 6"	≤ 120
AB-22,	Rod Drive Area, El 43' 6"	≤ 120
AB-25,	Charging Pump Area, El 24' 6"	≤ 110
AB-26,	RPCCW Pump Area, El 24' 6"	≤ 110
AB-29,	General Area (Southeast), El 24' 6"	≤ 120
AB-33,	Boric Acid Tank Area, El 43' 6"	≤ 120
AB-35,	Boric Acid Tank Area, El 43' 6"	≤ 120
AB-39,	Fuel Building and Auxiliary Building Filter Area, El 66' 6"	≤ 120

TABLE 3.7-7 (CONTINUED)
AREA TEMPERATURE MONITORING

	AREA	TEMPERATURE LIMIT (°F)
2.	**CONTROL BUILDING**	
CB-01,	Switchgear and Battery Rooms, El 4' 6"	≤ 104
CB-02,	Cable Spreading Room, El 24' 6"	≤ 110
CB-03,	Control and Computer Rooms, El 47' 6"	≤ 95
CB-04,	Chiller Room, El 64' 6"	≤ 104
CB-05,	Mechanical Equipment Room, El 64-6”	≤ 104
3.	**CONTAINMENT**	
CS-01,	Inside Crane Wall, El all except CS-03 and CS-04	≤ 120
CS-02,	Outside Crane Wall, El all	≤ 120
CS-03,	Pressurizer Cubicle, El all	≤ 130
CS-04,	Inside Crane wall, El 51' 4" except CS-03 and steam generator enclosures	≤ 120
4.	**INTAKE STRUCTURE**	
CW-01,	Entire Building	≤ 110
5.	**DIESEL GENERATOR BUILDING**	
DG-01,	Entire Building	≤ 120
6.	**ESF BUILDING**	
ES-01,	HVAC and MCC Area, El 36' 6"	≤ 110
ES-02,	SIH Pump Area, El 21' 6"	≤ 110
ES-03,	Pipe Tunnel Area, El 4' 6"	≤ 110
ES-04,	RHS Cubicles, El all	≤ 110
ES-05,	RSS Cubicles, El all	≤ 110
ES-06,	Motor Driven Auxiliary Feedwater Pump Area, El 24’-6”	≤ 110
ES-07,	Turbine Driven Auxiliary Feedwater Pump Area, El 24’ 6”	≤ 110
ES-07A	Aux. Feedwater Turbine Steam Supply Valve Room, El 24’6”	≤ 120

TABLE 3.7-7 (CONTINUED)
AREA TEMPERATURE MONITORING

	AREA	TEMPERATURE LIMIT (°F)
7.	**FUEL BUILDING**	
FB-02,	Fuel Pool Pump Cubicles, El 24' 6"	≤ 119
FB-03,	General Area, El 52' 4"	≤ 108
8.	**FUEL OIL VAULT**	
FV-01,	Diesel Fuel Oil Vault	≤ 95
9.	**HYDROGEN RECOMBINER BUILDING**	
HR-01,	Recombiner Skid Area, El 24' 6"	≤ 125
HR-02,	Controls Area, El 24' 6"	≤ 110
HR-03,	Sampling Area, El 24' 6"	≤ 110
HR-04,	HVAC Area, El 37' 6"	≤ 110
10.	**MAIN STEAM VALVE BUILDING**	
MS-01,	Areas above El 58' 0"	≤ 140
MS-02,	Areas below El 58' 0"	≤ 140
11.	**DELETED**	
12.	**TUNNEL**	
TN-02,	Pipe Tunnel-Auxiliary, Fuel and ESF Building	≤ 112
13.	**YARD**	
YD-01,	Yard	≤ 115

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OFFSITE LINE POWER SOURCES

TECHNICAL REQUIREMENT

3.8.1 The offsite lines to the Millstone Switchyard: 310, 348 (includes 3252 line), 371 (includes 364 line), and 383, shall be FUNCTIONAL. |

APPLICABILITY:

When Millstone Power Station (MPS) electrical output exceeds 1650 MWe net.

ACTION:

a. With one offsite line nonfunctional, perform the following or reduce total station output to ≤ 1650 MWe net within the next 6 hours:

   1. Restore FUNCTIONALITY of the affected offsite line within 72 hours, or

   2. Establish the following ACTION requirements AND restore FUNCTIONALITY within 7 days for Lines 310, 348/3252, and 383, or within 14 days for Line 371/364. |

      a. Once per shift, verify the remaining offsite lines to the MPS switchyard are FUNCTIONAL.

      b. Perform an initial weather assessment for the scheduled line outage duration and then once per shift thereafter.

         1. If the assessment predicts adverse or inclement weather will exist while the offsite line is nonfunctional (i.e., out of service), reduce total station output to ≤ 1650 MWe net prior to arrival of the adverse or inclement weather.

      c. Within one hour prior to or after entering this condition and at least once per 24 hours thereafter, verify that both the Millstone Unit 2 EDGs and the Millstone Unit 3 EDGs are OPERABLE and the Millstone Unit 3 SBO diesel generator is available. Restore any inoperable Millstone Unit 2 EDG or Millstone Unit 3 EDG to OPERABLE status and/or the Millstone Unit 3 SBO to available status within 72 hours or reduce total station output to ≤ 1650 MWe net within the next 6 hours.

b. With two offsite lines nonfunctional, reduce total station output to ≤ 1650 MWe net within the next 30 minutes.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OFFSITE LINE POWER SOURCES

TECHNICAL SURVEILLANCE REQUIREMENTS

4.8.1 The four offsite lines to the Millstone Switchyard shall be determined to be FUNCTIONAL at least once per 7 days when station output exceeds 1650 MWe net.

BASES:

TR 3.8.1 requires that all four offsite 345 kV transmission lines are FUNCTIONAL when MPS electrical output exceeds 1650 MWe net. TR 3.8.1 contains ACTIONS that must be performed when one offsite 345 kV transmission line is nonfunctional.

TR 3.8.1 provides flexibility to preclude plant downpowers due to planned and unplanned offsite transmission line outages. The TRM requirements provide this flexibility while also maintaining adequate defense-in-depth to ensure grid reliability and stability are preserved and the ability of the plants to respond to design basis accidents is not adversely affected.

With one offsite line nonfunctional, ACTION a.1 allows 72 hours to restore FUNCTIONALITY. This 72-hour allowed outage time (AOT) is conservatively based on the loss of one offsite line being equal to the risk of losing one onsite connection to the offsite power system (i.e., TS 3.8.1.1).

With one offsite line nonfunctional, ACTION a.2 contains the provision to allow up to 7 days for Lines 310, 348/3252, and 383, or 14 days for Line 371/364 to restore FUNCTIONALITY if ACTIONS a.2.a, a.2.b, and a.2.c are met. The applicable AOT reduces the risk of a plant perturbation as a result of having to downpower the unit for short duration line outages and provides flexibility for conducting maintenance and improves operational safety margin by the following:

- Minimizes the number of plant downpowers for short duration 345 kV transmission line outages.
- Reduces the likelihood of a loss of offsite power event by establishing an AOT with additional defense-in-depth measures to minimize the potential for a double circuit failure scenario which can result in grid instability.

During the applicable AOT, ACTION a.2.a ensures there are no known issues that could threaten the reliability of the remaining 345 kV transmission lines. Verifying the remaining 345 kV offsite transmission lines to the MPS switchyard are FUNCTIONAL, increases confidence that the remaining 345 kV lines will remain FUNCTIONAL during the planned outage of the affected 345 kV line.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OFFSITE LINE POWER SOURCES

BASES: (Continued):

During the applicable AOT, the action to perform weather assessments as required by ACTION a.2.b ensures appropriate actions are taken to minimize the potential for adverse or inclement weather event to impact grid reliability with one line nonfunctional. If adverse or inclement weather is predicted, the nonfunctional 345 kV line would be restored to FUNCTIONAL status or station output would be reduced to ≤ 1650 MWe net prior to the arrival of the adverse or inclement weather.

During the applicable AOT, ACTION a.2.c (i.e., both the Millstone Unit 2 and Millstone Unit 3 EDGs are operable and the Millstone Unit 3 SBO is available) provides assurance that AC power will be available to support required safety-related equipment in the unlikely event of a complete loss of offsite power during the time one of the 345 kV lines is nonfunctional. This ACTION ensures that electrical power will be available in a timely manner to perform the required functions to maintain cooling to the reactor core in the unlikely event a loss of offsite power was to occur during the AOT.

For the condition where the applicable AOT is in use for one nonfunctional transmission line and one or more of the following components is out-of-service:

- a Millstone Unit 2 EDG
- a Millstone Unit 3 EDG
- the Millstone Unit 3 SBO diesel generator

72 hours is allowed for restoration of the out-of-service component. If any one of these components is not restored within 72 hours, reduce total station output to ≤ 1650 MWe net within the next 6 hours.

The allowed outage times for Lines 310, 348/3252, 371/364, and 383 are based on the configuration of the transmission lines at Hunts Brook Junction where Lines 383 and 310 cross over Line 371/364 and Line 348/3252 runs to the west of the crossover. With Line 348/3252, 310, or 383 nonfunctional, the possibility exists that either Line 383 or 310 could drop on Line 371/364 and result in three lines nonfunctional. This condition would impact grid stability and therefore, a 7-day AOT is allowed with the specified ACTION requirements in place. When Line 371/364 is nonfunctional, if either Line 310 or 383 drops, two transmission lines remain FUNCTIONAL. Therefore, a 14-day AOT is allowed with the specified ACTION requirements in place.

REFERENCE:

1. License Amendment 269

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.1 CONTAINMENT PENETRATION

CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

TECHNICAL REQUIREMENT

3.8.4.1 All containment penetration conductor overcurrent protective devices listed in TRM Table 3.8.4.1-1 shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

With one or more of the containment penetration conductor overcurrent protective device(s) nonfunctional:

a. Restore the protective device(s) to FUNCTIONAL status or deenergize the circuit(s) by tripping the associated backup circuit breaker or racking out or removing the nonfunctional circuit breaker within 72 hours, declare the affected system or component nonfunctional, and verify the backup circuit breaker to be tripped or the nonfunctional circuit breaker racked out or removed at least once per 7 days thereafter; or

b. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.8.4.1 All containment penetration conductor overcurrent protective devices shall be demonstrated FUNCTIONAL:

a. At least once per 18 months by verifying that the medium voltage (4-15 kV) circuit breakers are FUNCTIONAL by selecting, on a rotating basis, 50% of the circuit breakers of each voltage level, and performing the following:

   1. A CHANNEL CALIBRATION of the associated protective relays,

   2. An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.1 CONTAINMENT PENETRATION

CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 60 months by subjecting each circuit breaker to an inspection and preventive maintenance in accordance with procedures prepared in conjunction with its manufacturer's recommendations.

c. At least once per 10 years by functionally testing each of the lower voltage circuit breakers.

Air circuit breaker long-time and short-time delay trip elements shall be tested to verify that the circuit breaker operates within the manufacturer's time delay band width for the specified test current. The instantaneous element shall be tested by injecting a current equal to ± 20% of the pickup value of the element and verifying that the circuit breaker trips instantaneously with no intentional time delay.

Molded case circuit breakers and unitized starters (a frame size of 250 amps or less) shall be tested for long time delay as described above, and in addition, tested for the instantaneous trip by injecting a current value which falls within +40% (of the upper limit) and -25% (of the lower limit) of the manufacturer's instantaneous trip current range and verifying the breaker trips instantaneously with no intentional time delay. For those molded case circuit breakers/unitized starters used in 480V ungrounded circuits, if single pole instantaneous test results fall outside these tolerances, additional instantaneous testing shall be conducted to determine the breaker's FUNCTIONALITY using two poles in series, including A-B, B-C and C-A phase combinations. If test results of all two poles in series combinations fall within the specified tolerances, the breaker is considered FUNCTIONAL.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.1 CONTAINMENT PENETRATION

CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

BASES:

Containment electrical penetrations and penetration conductors are protected by either deenergizing circuits not required during reactor operation or by demonstrating the FUNCTIONALITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

Long-time trip elements are tested by injecting a test current (300% of the pickup) in accordance with the manufacturer's specifications and verifying that the circuit breaker operates within the time delay band width for that current as specified by the manufacturer. Short-time trip elements are tested by injecting a test current (150% of the pick-up) in accordance with the manufacturer's specifications and verifying that the circuit breaker operates within the time delay band width for that current as specified by the manufacturer.

The molded case circuit breakers and unitized starters will be tested in accordance with manufacturer's instructions.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3CCP*MOV48A	Component Cooling Main Return Header Valve Motor Power Feeder
3CCP*MOV48B	Component Cooling Main Return Header Valve Motor Power Feeder
3CCP*MOV222	Containment Recirculation Cooling Coil C Supply Valve Motor Power Feeder
3CCP*MOV223	Containment Recirculation Cooling Coil C Supply Valve Motor Power Feeder
3CCP*MOV224	Containment Recirculation Cooling Coil C Return Valve Motor Power Feeder
3CCP*MOV225	Containment Recirculation Cooling Coil C Return Valve Motor Power Feeder
3CCP*MOV226	Containment Recirculation Cooling Coil B Supply Valve Motor Power Feeder
3CCP*MOV227	Containment Recirculation Cooling Coil B Supply Valve Motor Power Feeder
3CCP*MOV228	Containment Recirculation Cooling Coil B Return Valve Motor Power Feeder
3CCP*MOV229	Containment Recirculation Cooling Coil B Return Valve Motor Power Feeder
3CHS*MV8112	Reactor Cooling Pump Seal Water Return Isolation Valve Motor Power Feeder
3CMS*MOV24	Containment Building Atmosphere Monitoring Isolation Valve Motor Power Feeder
3COP-AMP200	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP201	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP202	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP203	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP220	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP221	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP240	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP241	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3COP-AMP260	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP261	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3COP-AMP262	Containment Communication Paging Amplifier Power Feeder (REF 3COP-TB240)
3CVS*MOV25	Containment Building Vacuum System Leakage Monitoring Valve Motor Feeder
3DAS-LIS20	Containment Building Sump Level Switch 20 Power Feeder (REF 3DAS-JB01)
3DAS-P1	Containment Incore Instrument Room Sump Pump Motor Power Feeder
3DAS-P2A	Containment Building Sump Pump 2A Motor Power Feeder
3DAS-P2B	Containment Building Sump Pump 2B Motor Power Feeder
3DAS-P10	Containment Building Leak Sump Pump Motor Power Feeder
3DGS-P1A	Containment Building Drain Transfer Pump 1A Motor Power Feeder
3DGS-P1B	Containment Building Drain Transfer Pump 1B Motor Power Feeder
3DGS-P3A	Pressurizer Relief Tank Drains Transfer Pump 3A Motor Power Feeder
3DGS-P3B	Pressurizer Relief Tank Drains Transfer Pump 3B Motor Power Feeder
3ECS-TT71	Containment Building Temperature Transmitter Power Feeder
3FNT-CONTR	Nuclear Fuel Transfer Control Panel (Containment Building) Control and Motor Power Feeder
3FNT-CONTR	Nuclear Fuel Transfer Control Panel (Containment Building) Panel Heater Feeder
3HVU-FLT1A	Containment Building Air Filtration Filter 1A Power Feeder
3HVU-FLT1B	Containment Building Air Filtration Filter 1B Power Feeder
3HVU-FN1A	Containment Building Recirculation Fan 1A Motor Power Feeder
3HVU-FN1A	Containment Building Recirculation Fan 1A Motor Heater Feeder
3HVU-FN1B	Containment Building Recirculation Fan 1B Motor Power Feeder
3HVU-FN1B	Containment Building Recirculation Fan 1B Motor Heater Feeder

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3HVU-FN1C	Containment Building Recirculation Fan 1C Motor Power Feeder
3HVU-FN1C	Containment Building Recirculation Fan 1C Motor Heater Feeder
3HVU-FN2A	Control Rod Drive Shroud Cooling Fan 2A Motor Power Feeder
3HVU-FN2A	Control Rod Drive Shroud Cooling Fan 2A Motor Heater Feeder
3HVU-FN2B	Control Rod Drive Shroud Cooling Fan 2B Motor Power Feeder
3HVU-FN2B	Control Rod Drive Shroud Cooling Fan 2B Motor Heater Feeder
3HVU-FN2C	Control Rod Drive Shroud Cooling Fan 2C Motor Power Feeder
3HVU-FN2C	Control Rod Drive Shroud Cooling Fan 2C Motor Heater Feeder
3HVU-FN3A	Containment Building Recirculation Fan 3A Motor Power Feeder
3HVU-FN3B	Containment Building Recirculation Fan 3B Motor Power Feeder
3HVU-FS34A	Containment Air Recirculation Cooler Outlet Flow Switch 34A Power Feeder
3HVU-FS34B	Containment Air Recirculation Cooler Outlet Flow Switch 34B Power Feeder
3HVU-FS34C	Containment Air Recirculation Cooler Outlet Flow Switch 34C Power Feeder
3HVU-FS36A	Control Rod Drive Shroud Recirculation Flow Switch 36A Power Feeder (REF 3JB-0004)
3HVU-FS36B	Control Rod Drive Shroud Recirculation Flow Switch 36B Power Feeder (REF 3JB-0004)
3HVU-FS36C	Control Rod Drive Shroud Recirculation Flow Switch 36C Power Feeder (REF 3JB-0004)
3HVU-FS36D	Control Rod Drive Shroud Recirculation Flow Switch 36D Power Feeder (REF 3JB-0004)
3HVU-PDIS20A	Containment Building Filter [3HVU-FLT1A] Pressure Differential Switch 20A Power Feeder
3HVU-PDIS20B	Containment Building Filter [3HVU-FLT1B] Pressure Differential Switch 20B Power Feeder
3HVU-PDIS21A	Containment Building Filter [3HVU-FLT1A] Pressure Differential Switch 21A Power Feeder
3HVU-PDIS21B	Containment Building Filter [3HVU-FLT1B] Pressure Differential Switch 21B Power Feeder

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3HVU-PDIS22A	Containment Building Filter [3HVU-FLT1A] Pressure Differential Switch 22A Power Feeder
3HVU-PDIS22B	Containment Building Filter [3HVU-FLT1B] Pressure Differential Switch 22B Power Feeder
3HVU-PDIS23A	Containment Building Filter [3HVU-FLT1A] Pressure Differential Switch 23A Power Feeder
3HVU-PDIS23B	Containment Building Filter [3HVU-FLT1B] Pressure Differential Switch 23B Power Feeder
3HVU-PNL-01A	Containment Building Charcoal Filter Temperature Detector Panel Power Feeder
3HVU-PNL-01B	Containment Building Charcoal Filter Temperature Detector Panel Power Feeder
3IAS*MOV72	Containment Instrument Air Isolation Valve Motor Power Feeder
3JRB-EL	Containment Building Elevator Motor Power Feeder
3LAR-PNL3RC10	Containment Building Lighting Distribution Panel Power Feeder
3LAR-PNL3RC2P	Containment Building Lighting Distribution Panel Power Feeder
3LAR-XLR1	Containment Building Lighting for Panel Transformer Power Feeder
3LAR-XLR2	Containment Building Lighting for Panel Transformer Power Feeder
3LAR-XLR3	Containment Building Lighting for Panel Transformer Power Feeder
3LAR-XLR4	Containment Building Lighting for Panel Transformer Power Feeder
3MHR-CRN1	Reactor Containment Building Polar Crane Power Feeder
3MHR-CRN2	REFUELING Machine – Reactor Building Crane Power Feeder
3MHR-CRN2	REFUELING Machine – Reactor Building Crane Motor Heater Feeder
3MHR-CRN3A	Containment Building Equipment Jib Crane 3A Power Feeder
3MHR-CRN3C	Containment Building Equipment Jib Crane 3C Power Feeder
3MHR-CRN3D	Containment Building Equipment Jib Crane 3D Power Feeder
3MHR-CRN4	Containment Building Crane Power Feeder
3MHR-CRN5	Containment Building Crane Power Feeder
3NMT-DRA 3NMT-DRB	Neutron Monitoring Incore Flux Mapping Controller Power Feeder [3NMT-CONT1A7]

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3NMT-DRC 3NMT-DRD	Neutron Monitoring Incore Flux Mapping Controller Power Feeder [3NMT-CONT3A7]
3POP-JB1R1	Containment Building Welding Receptacle CKT1 [3POP-RCPT1R] Power Feeder
3POP-JB2R1	Containment Building Welding Receptacle CKT2 [3POP-RCPT2R] Power Feeder
3POP-JB3R1	Containment Building Welding Receptacle CKT3 [3POP-RCPT3R] Power Feeder
3RCS-HTR-23, 49, 50	Pressurizer Heater Group A (REF 3JB*0023) Power Feeder [3RCS*H1A] US BUS 32-S
3RCS-HTR-28, 55, 56	Pressurizer Heater Group A (REF 3JB*0023) Power Feeder [3RCS*H1A US BUS 32-S
3RCS-HTR-33, 61, 62	Pressurizer Heater Group A (REF 3JB*0023) Power Feeder [3RCS*H1A] US BUS 32-S
3RCS-HTR-38, 67, 68	Pressurizer Heater Group A (REF 3JB*0023) Power Feeder [3RCS*H1A] US BUS 32-S
3RCS-HTR-43, 73, 74	Pressurizer Heater Group A (REF 3JB*0023) Power Feeder [3RCS*H1A] US BUS 32-S
3RCS-HTR-24, 51, 52	Heater Group B (REF 3JB*0024) Power Feeder [3RCS*H1B] US BUS 32-V
3RCS-HTR-29, 57, 58	Pressurizer Heater Group B (REF 3JB*0024) Power Feeder [3RCS*H1B] US BUS 32-V
3RCS-HTR-34, 63, 64	Pressurizer Heater Group B (REF 3JB*0024) Power Feeder [3RCS*H1B] US BUS 32-V
3RCS-HTR-39, 69, 70	Pressurizer Heater Group B (REF 3JB*0024) Power Feeder [3RCS*H1B] US BUS 32-V
3RCS-HTR-44, 75, 76	Pressurizer Heater Group B (REF 3JB*0024) Power Feeder [3RCS*H1B] US BUS 32-V
3RCS-HTR-21, 47, 48	Pressurizer Heater Group C (REF 3JB-0025) Power Feeder [3RCS*H1C] US BUS 32-C
3RCS-HTR-26, 53, 54	Pressurizer Heater Group C (REF 3JB-0025) Power Feeder [3RCS*H1C] US BUS 32-C

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3RCS-HTR-31, 59, 60	Pressurizer Heater Group C (REF 3JB-0025) Power Feeder [3RCS*H1C] US BUS 32-C
3RCS-HTR-36, 65, 66	Pressurizer Heater Group C (REF 3JB-0026) Power Feeder [3RCS*H1C] US BUS 32-C
3RCS-HTR-41, 71, 72	Pressurizer Heater Group C (REF 3JB-0026) Power Feeder [3RCS*H1C] US BUS 32-C
3RCS-HTR-46, 77, 78	Pressurizer Heater Group C (REF 3JB-0026) Power Feeder [3RCS*H1C] US BUS 32-C
3RCS-HTR-13, 14, 37	Pressurizer Heater Group D (REF 3JB-0025) Power Feeder [3RCS*H1D] US BUS 32-B
3RCS-HTR-17, 18, 42	Pressurizer Heater Group D (REF 3JB-0025) Power Feeder [3RCS*H1D] US BUS 32-B
3RCS-HTR-9, 10, 32	Pressurizer Heater Group D (REF 3JB-0026) Power Feeder [3RCS*H1D] US BUS 32-B
3RCS-HTR-1, 2, 22	Pressurizer Heater Group D (REF 3JB-0026) Power Feeder [3RCS*H1D] US BUS 32-B
3RCS-HTR-5, 6, 27	Pressurizer Heater Group D (REF 3JB-0026) Power Feeder [3RCS*H1D] US BUS 32-B
3RCS-HTR-7, 8, 30	Pressurizer Heater Group E (REF 3JB-0026) Power Feeder [3RCS*H1E] US BUS 32-N
3RCS-HTR-11, 12, 35	Pressurizer Heater Group E (REF 3JB-0025) Power Feeder [3RCS*H1E] US BUS 32-N
3RCS-HTR-15, 16, 40	Pressurizer Heater Group E (REF 3JB-0025) Power Feeder [3RCS*H1E] US BUS 32-N
3RCS-HTR-19, 20, 45	Pressurizer Heater Group E (REF 3JB-0025) Power Feeder [3RCS*H1E] US BUS 32-N
3RCS-HTR-3, 4, 25	Pressurizer Heater Group E (REF 3JB-0026) Power Feeder [3RCS*H1E] US BUS 32-N
3RCS*MV8000A	Pressurizer Relief Isolation Valve A Motor Power Feeder
3RCS*MV8000B	Pressurizer Relief Isolation Valve B Motor Power Feeder
3RCS*MV8001A	Reactor Coolant Hot Leg Stop Valve A Motor Power Feeder
3RCS*MV8001A	Reactor Coolant Hot Leg Stop Valve A Motor Heater Feeder

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3RCS*MV8001B	Reactor Coolant Hot Leg Stop Valve B Motor Power Feeder
3RCS*MV8001B	Reactor Coolant Hot Leg Stop Valve B Motor Heater Feeder
3RCS*MV8001C	Reactor Coolant Hot Leg Stop Valve C Motor Power Feeder
3RCS*MV8001C	Reactor Coolant Hot Leg Stop Valve C Motor Heater Feeder
3RCS*MV8001D	Reactor Coolant Hot Leg Stop Valve D Motor Power Feeder
3RCS*MV8001D	Reactor Coolant Hot Leg Stop Valve D Motor Heater Feeder
3RCS*MV8002A	Reactor Coolant Cold Leg Stop Valve A Motor Power Feeder
3RCS*MV8002A	Reactor Coolant Cold Leg Stop Valve A Motor Heater Feeder
3RCS*MV8002B	Reactor Coolant Cold Leg Stop Valve B Motor Power Feeder
3RCS*MV8002B	Reactor Coolant Cold Leg Stop Valve B Motor Heater Feeder
3RCS*MV8002C	Reactor Coolant Cold Leg Stop Valve C Motor Power Feeder
3RCS*MV8002C	Reactor Coolant Cold Leg Stop Valve C Motor Heater Feeder
3RCS*MV8002D	Reactor Coolant Cold Leg Stop Valve D Motor Power Feeder
3RCS*MV8002D	Reactor Coolant Cold Leg Stop Valve D Motor Heater Feeder
3RCS*MV8003A	Reactor Coolant Loop Bypass Valve A Motor Power Feeder
3RCS*MV8003A	Reactor Coolant Loop Bypass Valve A Motor Heater Feeder
3RCS*MV8003B	Reactor Coolant Loop Bypass Valve B Motor Power Feeder
3RCS*MV8003B	Reactor Coolant Loop Bypass Valve B Motor Heater Feeder
3RCS*MV8003C	Reactor Coolant Loop Bypass Valve C Motor Power Feeder
3RCS*MV8003C	Reactor Coolant Loop Bypass Valve C Motor Heater Feeder
3RCS*MV8003D	Reactor Coolant Loop Bypass Valve D Motor Power Feeder
3RCS*MV8003D	Reactor Coolant Loop Bypass Valve D Motor Heater Feeder
3RCS*MOV8098	Reactor Vessel Excess Pressure Letdown Valve Motor Power Feeder
3RCS*P1A	Reactor Coolant Pump A Motor Power Feeder
3RCS*P1B	Reactor Coolant Pump B Motor Power Feeder
3RCS*P1C	Reactor Coolant Pump C Motor Power Feeder
3RCS*P1D	Reactor Coolant Pump D Motor Power Feeder

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3RCS-P1A1	Reactor Coolant Pump [3RCS*P1A] Bearing Oil Lift Pump Motor Power Feeder
3RCS-P1B1	Reactor Coolant Pump [3RCS*P1B] Bearing Oil Lift Pump Motor Power Feeder
3RCS-P1C1	Reactor Coolant Pump [3RCS*P1C] Bearing Oil Lift Pump Motor Power Feeder
3RCS-P1D1	Reactor Coolant Pump [3RCS*P1D] Bearing Oil Lift Pump Motor Power Feeder
3RCS-TBP1A-2	Reactor Coolant Pump [3RCS*P1A] Motor Heater Feeder
3RCS-TBP1B-2	Reactor Coolant Pump [3RCS*P1B] Motor Heater Feeder
3RCS-TBP1C-2	Reactor Coolant Pump [3RCS*P1C] Motor Heater Feeder
3RCS-TBP1D-2	Reactor Coolant Pump [3RCS*P1D] Motor Heater Feeder
3RDI-CABA (3RDI-XFMR-1)	Reactor Rod Drive Position Indication Transformer Power Feeder [REF 3RDI-JB01]
3RDI-CABB (3RDI-XFMR-2)	Reactor Rod Drive Position Indication Transformer Power Feeder [REF 3RDI-JB01]
3RHS*MV8701A	Residual Heat Removal System Suction Isolation Valve Motor Power Feeder
3RHS*MV8701C	Residual Heat Removal System Suction Isolation Valve Motor Power Feeder
3RHS*MV8702B	Residual Heat Removal System Suction Isolation Valve Motor Power Feeder
3RHS*MV8702C	Residual Heat Removal System Suction Isolation Valve Motor Power Feeder
3RMS-RM01	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 6.8, 56 ft
3RMS-RM02	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 6.0, 8 ft
3RMS-RM03	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 7.0, 41 ft
3RMS-RM31	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 6.0, 29 ft
3RMS-RM32	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 1.2, 20 ft
3RMS-RM35	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 7.0, 7 ft

TRM TABLE 3.8.4.1-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

Component ID	Circuit Description
3RMS*RM41	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 12.0, 71 ft
3RMS*RM42	Radiation Monitoring Containment Building Rate Meter Power Feeder – Col 18.0, 71 ft
3RSS-LIT49	Containment Building Sump Level Transmitter 49 Power Feeder (REF 3DAS-JB01)
3SES-TL17A	Nuclear Servicing Stud Tension Hoist A Motor Power Feeder
3SES-TL17B	Nuclear Servicing Stud Tension Hoist B Motor Power Feeder
3SES-TL17C	Nuclear Servicing Stud Tension Hoist C Motor Power Feeder
3SIL*MV8808A	Safety Injection Accumulator Isolation Valve A Motor Power Feeder
3SIL*MV8808A	Safety Injection Accumulator Isolation Valve A Position Indication Power Feeder
3SIL*MV8808B	Safety Injection Accumulator Isolation Valve B Motor Power Feeder
3SIL*MV8808B	Safety Injection Accumulator Isolation Valve B Position Indication Power Feeder
3SIL*MV8808C	Safety Injection Accumulator Isolation Valve C Motor Power Feeder
3SIL*MV8808C	Safety Injection Accumulator Isolation Valve C Position Indication Power Feeder
3SIL*MV8808D	Safety Injection Accumulator Isolation Valve D Motor Power Feeder
3SIL*MV8808D	Safety Injection Accumulator Isolation Valve D Position Indication Power Feeder

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.2.1 MOTOR - OPERATED VALVES THERMAL OVERLOAD PROTECTION

TECHNICAL REQUIREMENT

3.8.4.2.1 Each thermal overload protection bypassed only under accident conditions, for the safety related valves listed in TRM Table 3.8.4.2.1-1, shall be bypassed by a FUNCTIONAL bypass device integral with the motor starter.

APPLICABILITY:

Whenever the motor-operated valve is required to be FUNCTIONAL.

ACTION:

With the thermal overload protection for one or more of the above required valves not bypassed under conditions for which it is designed to be bypassed, restore the nonfunctional device or provide a means to bypass the thermal overload within 8 hours, or declare the affected valve(s) nonfunctional and apply the appropriate ACTION Statement(s) of the affected system(s).

TECHNICAL SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves shall be verified to be bypassed by the appropriate accident signal(s) by performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST of the bypass circuitry at least once per 36 months.

BASES:

Motor-operated valves (MOVs) with thermal overload protection devices for valve motors, are used in safety systems and in their auxiliary supporting systems. The primary concern in the application of overload devices is to protect the motor windings against excessive heating. However, a conservative trip setting for motor protection could interfere in the successful functioning of a safety-related system; i.e., the thermal overload could open to remove power from a motor before the safety function has been completed or initiated. Therefore, bypass circuitry is employed to bypass the overload protection device during a safety injection actuation. Reference: Regulatory Position C.1 of Regulatory Guide 1.106, Rev 1, March 1977.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.2.1 MOTOR - OPERATED VALVES THERMAL OVERLOAD PROTECTION

BASES (Continued):

The FUNCTIONALITY of the motor-operated valves thermal overload protection and bypass circuitry ensures that the thermal overload protection will not prevent safety-related valves from performing their function. The TECHNICAL SURVEILLANCE REQUIREMENTS for demonstrating the FUNCTIONALITY of the thermal overload protection are in accordance with Regulatory Guide 1.106, “Thermal Overload Protection for Electric Motors on Motor Operated Valves,” Revision 1, March 1977.

TRM Table 3.8.4.2.1-1 lists those safety-related MOVs for which thermal overload protection is automatically bypassed, only under accident conditions. During normal plant operations, thermal overload protection for these components is in force to protect the motors from destructive heating.

During accident conditions, the thermal overload protection is automatically bypassed, to ensure completion of the safety function override of the motor protective devices.

If the bypass circuitry becomes nonfunctional, then the device must either be restored to FUNCTIONAL or otherwise bypassed within 8 hours to ensure the safety function of the component is not jeopardized.

As an alternative, the associated component supplied by the starter can be declared nonfunctional and the appropriate ACTIONS applied.

The safety injection isolation valves are disabled in the open position whenever an automatic shut signal is present (not blocked). Therefore, testing that the thermal overload (TOL) device is bypassed under accident conditions is not required.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.8.4.2.1-1
THERMAL OVERLOAD PROTECTION BYPASSED ONLY UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3CCP*MOV45A	Component Cooling Main Supply Header Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R3M)]
3CCP*MOV45B	Component Cooling Main Supply Header Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F6F)]
3CCP*MOV48A	Component Cooling Main Return Header Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R1J)]
3CCP*MOV48B	Component Cooling Main Return Header Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R1J)]
3CCP*MOV49A	Component Isolation Main Return Header Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F6J)]
3CCP*MOV49B	Component Isolation Main Return Header Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R1M)]
3CCP*MOV222	Containment Recirculation Cooling Coil C Supply Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R2F)]
3CCP*MOV223	Containment Recirculation Cooling Coil C Supply Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R2J)]
3CCP*MOV224	Containment Recirculation Cooling Coil C Return Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R2M)]
3CCP*MOV225	Containment Recirculation Cooling Coil C Return Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R1F)]
3CCP*MOV226	Containment Recirculation Cooling Coil B Supply Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R2F)]
3CCP*MOV227	Containment Recirculation Cooling Coil B Supply Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R2J)]
3CCP*MOV228	Containment Recirculation Cooling Coil B Return Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R2M)]
3CCP*MOV229	Containment Recirculation Cooling Coil B Return Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R1F)]

TRM TABLE 3.8.4.2.1-1
THERMAL OVERLOAD PROTECTION BYPASSED ONLY UNDER ACCIDENT CONDITIONS

Component ID	**Circuit Description**
Component ID	Circuit Description
3CHS*LCV112B	Volume Control Tank Outlet Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-F3J)]
3CHS*LCV112C	Volume Control Tank Outlet Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F3J)]
3CHS*LCV112D	Refueling Water Storage Tank Pump Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R4J)]
3CHS*LCV112E	Refueling Water Storage Tank Pump Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R4J)]
3CHS*MV8100	Reactor Coolant Pump Seal Water Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R3M)]
3CHS*MV8105	Charging Pump to Reactor Coolant Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R3J)]
3CHS*MV8106	Charging Pump to Reactor Coolant Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R3J)]
3CHS*MV8110	Charging Pump to Miniflow Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R1J)]
3CHS*MV8111A	Charging Pump Miniflow Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R1J)]
3CHS*MV8111B	Charging Pump Miniflow Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R5J)]
3CHS*MV8111C	Charging Pump Miniflow Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R5M)]
3CHS*MV8112	Reactor Coolant Pump Seal Water Return Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R5J)]
3CHS*MV8511A	Charging Pump Miniflow Control Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R1M)]
3CHS*MV8511B	Charging Pump Miniflow Control Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F3M)]
3CMS*MOV24	Containment Atmosphere Monitoring Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R3M)]

TRM TABLE 3.8.4.2.1-1
THERMAL OVERLOAD PROTECTION BYPASSED ONLY UNDER ACCIDENT CONDITIONS

Component ID	**Circuit Description**
Component ID	Circuit Description
3IAS*MOV72	Containment Instrument Air Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F4J)]
3QSS*MOV34A	Quench Spray Header Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F5E)]
3QSS*MOV34B	Quench Spray Header Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R5L)]
3RSS*MOV20A	Containment Recirculation Water Spray Header Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F7E)]
3RSS*MOV20B	Containment Recirculation Water Spray Header Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F1M)]
3RSS*MOV20C	Containment Recirculation Water Spray Header Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F3J)]
3RSS*MOV20D	Containment Recirculation Water Spray Header Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F3J)]
3RSS*MOV23A	Containment Recirculation Pump Suction Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F8E)]
3RSS*MOV23B	Containment Recirculation Pump Suction Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R3E)]
3RSS*MOV23C	Containment Recirculation Pump Suction Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F8H)]
3RSS*MOV23D	Containment Recirculation Pump Suction Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R3H)]
3RSS*MOV38A	Containment Recirculation Pump Miniflow Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F8L)]
3RSS*MOV38B	Containment Recirculation Pump Miniflow Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R5L)]
3SIH*MV8801A	Charging Pump to Reactor Cold Leg Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R3F)]
3SIH*MV8801B	Charging Pump to Reactor Cold Leg Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R3F)]

TRM TABLE 3.8.4.2.1-1
THERMAL OVERLOAD PROTECTION BYPASSED ONLY UNDER ACCIDENT CONDITIONS

Component ID	**Circuit Description**
Component ID	Circuit Description
3SWP*MOV50A	Reactor Plant Component Cooling Heat Exchange Supply Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R4M)]
3SWP*MOV50B	Reactor Plant Component Cooling Heat Exchange Supply Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R4M)]
3SWP*MOV54A	Containment Recirculation Service Water Cooler Supply Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F5H)]
3SWP*MOV54B	Containment Recirculation Service Water Cooler Supply Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F5E)]
3SWP*MOV54C	Containment Recirculation Service Water Cooler Supply Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F5L)]
3SWP*MOV54D	Containment Recirculation Service Water Cooler Supply Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F5H)]
3SWP*MOV71A	Turbine Plant Component Cooling Service Water Inlet Valve MCC Bus 32-1R [3EHS*MCC3A1 (-F1J)]
3SWP*MOV71B	Turbine Plant Component Cooling Service Water Inlet Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F1J)]
3SWP*MOV115A	Circulating Water Pumps Lubricating Water Valve MCC Bus 32-5T [3EHS*MCC1A5 (-5H)]
3SWP*MOV115B	Circulating Water Pumps Lubricating Water Valve MCC Bus 32-5U [3EHS*MCC1B5 (-5H)]
3SWP*MOV102A	Service Water Pump Discharge Valve MCC Bus 32-5T [3EHS*MCC1A5 (-3H)]
3SWP*MOV102B	Service Water Pump Discharge Valve MCC Bus 32-5U [3EHS*MCC1B5 (-3H)]
3SWP*MOV102C	Service Water Pump Discharge Valve MCC Bus 32-5T [3EHS*MCC1A5 (-4H)]
3SWP*MOV102D	Service Water Pump Discharge Valve MCC Bus 32-5U [3EHS*MCC1B5 (-4H)]

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.2.2 MOTOR - OPERATED VALVE THERMAL OVERLOAD PROTECTION NOT BYPASSED

TECHNICAL REQUIREMENT

3.8.4.2.2 Each thermal overload protection listed in TRM Table 3.8.4.2.2-1 not bypassed under accident conditions for safety-related motor-operated valves shall be FUNCTIONAL.

APPLICABILITY:

Whenever the motor-operated valve is required to be FUNCTIONAL.

ACTION:

With the thermal overload protection for one or more of the above required valves nonfunctional, bypass the nonfunctional thermal overload within 8 hours; restore the nonfunctional thermal overload to FUNCTIONAL status within 30 days or declare the affected valve(s) nonfunctional and apply the appropriate ACTION Statement(s) for the affected system(s).

TECHNICAL SURVEILLANCE REQUIREMENTS

4.8.4.2.2

a. The thermal overload protection for the above required valves shall be demonstrated FUNCTIONAL at least once per 18 months by the performance of a CHANNEL CALIBRATION of a representative sample of at least 25% of all thermal overloads for the above required valves.

b. The thermal overload protection for an above required valve shall be demonstrated FUNCTIONAL following maintenance on its motor starter by the performance of a CHANNEL CALIBRATION.

BASES:

Motor-operated valves (MOVs) with thermal overload protection devices for valve motors, are used in safety systems and in their auxiliary supporting systems. The primary concern in the application of overload devices is to protect the motor windings against excessive heating. However, a conservative trip setting for motor protection could interfere in the successful functioning of a safety-related system; i.e., the thermal overload could open to remove power from a motor before the safety function has been completed or even initiated.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

3/4.8.4.2.2 MOTOR - OPERATED VALVE THERMAL OVERLOAD PROTECTION NOT BYPASSED

BASES (Continued):

TRM Table 3.8.4.2.2-1 lists those safety-related MOVs for which thermal overload protection is not bypassed under accident conditions. Trip setpoints of the thermal overload devices for these components have been established with all uncertainties resolved in favor of completing the safety-related action. During plant operations, thermal overload protection for these components is sufficient to protect the motors from destructive heating, yet during accident conditions, sufficient margin to the setpoint is provided to ensure completion of the safety function. Reference: Regulatory Position C.2 of Regulatory Guide 1.106, Rev 1, March 1977.

The FUNCTIONALITY of the motor-operated valves thermal overload protection ensures that the thermal overload protection will not prevent safety-related valves from performing their function. The TECHNICAL SURVEILLANCE REQUIREMENTS for demonstrating the FUNCTIONALITY of the thermal overload protection are in accordance with Regulatory Guide 1.106, “Thermal Overload Protection for Electric Motors on Motor Operated Valves,” Revision 1, March 1977.

If the thermal overload protection device becomes nonfunctional (for example, trips at too low of a current), the thermal overload could open prematurely, interrupt current to the motor, and thereby prevent the completion of the safety function by the component. In this case, the thermal overload must either be restored to FUNCTIONAL or otherwise bypassed within 8 hours to ensure the safety function of the component is not jeopardized. As an alternative, the associated component supplied by the starter can be declared nonfunctional and the appropriate ACTIONS applied.

REFERENCE:

1. CR M3-00-2659.

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3CHS*MV8104	Boric Acid Filter to Charging Pump Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R1M)]
3CHS*MV8109A	Reactor Coolant Pump Seal Water Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-F4F)]
3CHS*MV8109B	Reactor Coolant Pump Seal Water Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F4F)]
3CHS*MV8109C	Reactor Coolant Pump Seal Water Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-F4J)]
3CHS*MV8109D	Reactor Coolant Pump Seal Water Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R3F)]
3CHS*MV8116	Charging System Header Isolation Valve MCC Bus 32-1R {3EHS*MCC3A1 (-R5M)]
3CHS*MV8438A	Charging System Header Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R5F)]
3CHS*MV8438B	Charging System Header Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R5F)]
3CHS*MV8438C	Charging System Header Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R5J)]
3CHS*MV8468A	Low-Pressure Safety Injection Charging Pump Valve MCC Bus 32-1R [3EHS*MCC3A1 (-R4F)]
3CHS*MV8468B	Low-Pressure Safety Injection Charging Pump Valve MCC Bus 32-1W [3EHS*MCC3B1 (-R4F)]
3CHS*MV8507A	Charging System Boric Acid Gravity Feed Valve MCC Bus 32-1R [3EHS*MCC3A1 (-F1M)]
3CHS*MV8507B	Charging System Boric Acid Gravity Feed Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F1M)]
3CHS*MV8512A	Charging Pump Control Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R3M)]

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3CHS*MV8512B	Charging Pump Control Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R5F)]
3FWA*MOV35A	Steam Generator Auxiliary Feedwater Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F3M)]
3FWA*MOV35B	Steam Generator Auxiliary Feedwater Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R5H)]
3FWA*MOV35C	Steam Generator Auxiliary Feedwater Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R5L)]
3FWA*MOV35D	Steam Generator Auxiliary Feedwater Isolation Valve MCC Bus 32-4U [3EHS*MCC1B4 (-F4E)]
3LMS*MOV40A	Containment Open Pressure Tap Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-F3M)]
3LMS*MOV40B	Containment Open Pressure Tap Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F3M)]
3LMS*MOV40C	Containment Open Pressure Tap Isolation Valve MCC Bus 32-1R [3EHS*MCC3A1 (-F3F)]
3LMS*MOV40D	Containment Open Pressure Tap Isolation Valve MCC Bus 32-1W [3EHS*MCC3B1 (-F3F)]
3MSS*MOV17A	Auxiliary Feedwater Turbine Steam Supply Nonreturn Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R5H)]
3MSS*MOV17B	Auxiliary Feedwater Turbine Steam Supply Nonreturn Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R6E)]
3MSS*MOV17D	Auxiliary Feedwater Turbine Steam Supply Nonreturn Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R6H)]
3MSS*MOV18A	Main Steam Pressure Relief Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-F5J)]
3MSS*MOV18B	Main Steam Pressure Relief Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R4J)]
3MSS*MOV18C	Main Steam Pressure Relief Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-F5M)]

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3MSS*MOV18D	Main Steam Pressure Relief Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R4M)]
3MSS*MOV74A	Main Steam Pressure Relief Control Bypass Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F5M)]
3MSS*MOV74B	Main Steam Pressure Relief Control Bypass Valve MCC Bus 32-2R [3EHS*MCC3A2 (-F5F)]
3MSS*MOV74C	Main Steam Pressure Relief Control Bypass Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R5M)]
3MSS*MOV74D	Main Steam Pressure Relief Control Bypass Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R5M)]
3RCS*MV8000A	Pressurizer Relief Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R4F)]
3RCS*MV8000B	Pressurizer Relief Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-R4F)]
3RCS*MV8098	Reactor Vessel Excess Pressure Letdown Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R4J)]
3RHS*FCV610	Residual Heat Removal Recirculation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R8H)]
3RHS*FCV611	Residual Heat Removal Recirculation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-F2J)]
3RHS*MV8701A	Residual Heat System Suction Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R3F)]
3RHS*MV8701B	Residual Heat System Suction Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R2K)]
3RHS*MV8701C	Residual Heat Removal Suction Isolation Valve MCC Bus 32-2R [3EHS*MCC3A2 (-R3J)]
3RHS*MV8702A	Residual Heat Removal Suction Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R8E)]
3RHS*MV8702B	Residual Heat Removal Suction Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F3J)]

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3RHS*MV8702C	Residual Heat Removal Suction Isolation Valve MCC Bus 32-2W [3EHS*MCC3B2 (-F3F)]
3RHS*MV8716A	Residual Heat Removal Cross-Connection Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R3K)]
3RHS*MV8716B	Residual Heat Removal Cross-Connection Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-F3K)]
3RSS*MV8837A	Recirculation Spray to Residual Heat Removal Cross-Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F9E)]
3RSS*MV8837B	Recirculation Spray to Residual Heat Removal Cross-Connection Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R3L)]
3RSS*MV8838A	Recirculation Spray to Residual Heat Removal Cross-Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F9H)]
3RSS*MV8838B	Recirculation Spray to Residual Heat Removal Cross-Connection Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R2E)]
3SIH*MV8802A	Safety Injection Pump to Hot Leg Control Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R2E)]
3SIH*MV8802B	Safety Injection Pump to Hot Leg Control Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R1K)]
3SIH*MV8806	Refueling Water Storage Tank to Safety Injection Pump Valve MCC Bus 32-3U [3EHS*MCC1B3 (-F3E)]
3SIH*MV8807A	Safety Injection Suction Header Cross-Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F7H)]
3SIH*MV8807B	Safety Injection Suction Header Cross-Connection Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R5H)]
3SIH*MV8813	Safety Injection Pump to Recirculation Line Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-F5E)]
3SIH*MV8814	Safety Injection Pump Miniflow Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F3M)]
3SIH*MV8821A	Safety Injection Pump to Cold Leg Cross-Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R2K)]

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3SIH*MV8821B	Safety Injection Pump to Cold Leg Cross-Connection Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R1E)]
3SIH*MV8835	Safety Injection Pump to Cold Leg Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R3E)]
3SIH*MV8920	Safety Injection Pump Miniflow Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R9H)]
3SIH*MV8923A	Safety Injection Pump Suction Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F4E)]
3SIH*MV8923B	Safety Injection Pump Suction Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R4E)]
3SIH*MV8924	Charging Pump Suction to Safety Injection Cross-Connection Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R9E)]
3SIL*MV8804A	Residual Heat Removal Pump to Charging Pump Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R1H)]
3SIL*MV8804B	Residual Heat Removal Pump to High Pressure Safety Injection Pump Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R3E)]
3SIL*MV8809A	Residual Heat Removal to Cold Leg Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R7H)]
3SIL*MV8809B	Residual Heat Removal to Cold Leg Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R2E)]
3SIL*MV8812A	Refueling Water Storage Tank to Residual Heat Removal Pump Isolation Valve MCC Bus 32-4T [3EHS*MCC1A4 (-R1E)]
3SIL*MV8812B	Refueling Water Storage Tank to Residual Heat Removal Pump Isolation Valve MCC Bus 32-3U [3EHS*MCC1B3 (-R3H)]
3SIL*MV8840	Residual Heat Removal Pump Hot Leg Valve MCC Bus 32-3U [3EHS*MCC1B3 (-F5K)]
3SWP*MOV24A	Service Water Pump Backwash Valve MCC Bus 32-5T [3EHS*MCC1A5 (-3E)]
3SWP*MOV24B	Service Water Pump Backwash Valve MCC Bus 32-5U [3EHS*MCC1B5 (-3E)]

TRM TABLE 3.8.4.2.2-1
THERMAL OVERLOAD PROTECTION NOT BYPASSED UNDER ACCIDENT CONDITIONS

Component ID	Circuit Description
3SWP*MOV24C	Service Water Pump Backwash Valve MCC Bus 32-5T [3EHS*MCC1A5 (-4E)]
3SWP*MOV24D	Service Water Pump Backwash Valve MCC Bus 32-5U [3EHS*MCC1B5 (-4E)]
3SWP*MOV57A	Containment Recirculation Service Water Cooler Outlet Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F6E)]
3SWP*MOV57B	Containment Recirculation Service Water Cooler Outlet Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R4E)]
3SWP*MOV57C	Containment Recirculation Service Water Cooler Outlet Valve MCC Bus 32-4T [3EHS*MCC1A4 (-F6H)]
3SWP*MOV57D	Containment Recirculation Service Water Cooler Outlet Valve MCC Bus 32-4U [3EHS*MCC1B4 (-R4H)]

<u>3/4.9 REFUELING OPERATIONS</u>

<u>3/4.9.5 COMMUNICATIONS</u>

TECHNICAL REQUIREMENT

3.9.5 Direct communications shall be maintained between the control room and personnel at the refueling station.

<u>APPLICABILITY:</u> During CORE ALTERATIONS.

<u>ACTION:</u>

When direct communications between the control room and personnel at the refueling station cannot be maintained, suspend all CORE ALTERATIONS.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.9.5 Direct communications between the control room and personnel at the refueling station shall be demonstrated within 1 hour prior to the start of and at least once per 12 hours during CORE ALTERATIONS.

<u>BASES:</u>

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

<u>REFERENCE:</u>

1. License Amendment Number 225, dated August 11, 2005, Serial Number 05-551.

3/4.9 REFUELING OPERATIONS

3/4.9.6 REFUELING MACHINE

TECHNICAL REQUIREMENT

3.9.6 The refueling machine main and auxiliary hoists shall be used for movement of control rods or fuel assemblies and shall be FUNCTIONAL with:

a. The refueling machine main hoist used for movement of fuel assemblies having:

1) A minimum capacity of 4000 pounds, and

2) An overload cutoff limit less than or equal to 3900 pounds.

b. The auxiliary hoist used for latching and unlatching control rods having:

1) A minimum capacity of 3000 pounds, and

2) A load indicator which shall be used to prevent lifting loads in excess of 1000 pounds.

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

ACTION:

With the requirements for refueling machine main and/or auxiliary hoist FUNCTIONALITY not satisfied, suspend use of any nonfunctional refueling machine main and/or auxiliary hoist from operations involving the movement of control rods and fuel assemblies within the reactor vessel.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.9.6.1 Each refueling machine main hoist used for movement of fuel assemblies within the reactor vessel shall be demonstrated FUNCTIONAL within 100 hours prior to the start of such operations by performing a load test of at least 4000 pounds and demonstrating an automatic load cutoff limit less than or equal to 3900 pounds.

4.9.6.2 Each auxiliary hoist and associated load indicator used for movement of control rods within the reactor vessel shall be demonstrated FUNCTIONAL within 100 hours prior to the start of such operations by performing a load test of at least 3000 pounds.

3/4.9 REFUELING OPERATIONS

3/4.9.6 REFUELING MACHINE

BASES:

The FUNCTIONALITY requirements for the refueling machine ensure that: (1) refueling machines will be used for movement of control rods and fuel assemblies, (2) each hoist has sufficient load capacity to lift a control rod or fuel assembly, and (3) the core internals and reactor vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

REFERENCE:

1. License Amendment Number 225, dated August 11, 2005, Serial Number 05-551.

3/4.9 REFUELING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE AREAS

TECHNICAL REQUIREMENT

3.9.7 Loads in excess of 2200 pounds shall be prohibited from travel over fuel assemblies in the storage pool with the following exception.

a. Single failure proof lifts in the cask pit in accordance with the guidelines of NUREG-0612.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTION:

a. With the requirements of the above specification not satisfied, place the crane load in a safe condition.

b. The provisions of TECHNICAL REQUIREMENT 3.0.3 are not applicable.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.9.7.a Crane interlocks and physical stops which prevent crane travel with loads in excess of 2200 pounds over the fuel storage pool shall be demonstrated FUNCTIONAL within 7 days prior to crane use and at least once per 7 days thereafter during crane operation. Administrative controls may be used in lieu of crane interlocks and physical stops for handling fuel racks, spent fuel pool gates, or loads less than 2200 pounds.

b. Limiting devices, sensing devices, and safety devices which ensure that a single failure will not result in failure of the protective devices are functionally tested under the Spent Fuel Shipping Cask Trolley annual inspections or in pre-operational checks performed under the Spent Fuel Shipping Cask Trolley operating procedure.

BASES:

The restriction on movement of loads over fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be less than the activity release assumed in the DESIGN BASIS fuel handling accident, and (2) the resulting geometry will not result in a critical array. With the Spent Fuel Shipping Cask Crane design and application of single failure proof lifting devices that satisfy the increased design margins of NUREG-0612, a load drop onto irradiated fuel assemblies is not credible and need not be postulated. For other cranes capable of travel with loads in excess of 2200 pounds over irradiated fuel assemblies in the cask pit, administrative controls are in place to ensure compliance with the heavy loads guidelines of NUREG-0612.

REFERENCE:

1. License Amendment Number 225, dated August 11, 2005, Serial Number 05-551.

3/4.10 SPECIAL TEST EXCEPTIONS

3/4.10.5 POSITION INDICATION SYSTEM - SHUTDOWN

TECHNICAL REQUIREMENT

3.10.5 The limitations of TECHNICAL REQUIREMENT 3.1.3.3 may be suspended during the performance of control rod drop time measurements provided;

a. One Digital Rod Position Indication subsystem agrees within 12 steps of the group demand position when rods are stationary, and

b. One Digital Rod Position Indication subsystem agrees within 24 steps of the group demand position during rod motion, and

c. The SHUTDOWN MARGIN requirement of Technical Specification 3.1.1.1.2 shall be met without credit for withdrawn control rods.

APPLICABILITY:

MODES 3, 4, and 5 during performance of rod drop time measurements.

ACTION:

With the Position Indication Systems requirements not met, immediately open the reactor trip breakers.

TECHNICAL SURVEILLANCE REQUIREMENTS

4.10.5 The above required Position Indication Systems shall be determined to be properly functioning at least once per 24 hours during rod drop time measurements by verifying the Demand Position Indication System and the Digital Rod Position Indication System agree:

a. Within 12 steps when the rods are stationary, and

b. Within 24 steps during rod motion.

BASES:

This special test exception permits the Position Indication Systems to be nonfunctional during rod drop time measurements. The exception is required since the data necessary to determine the rod drop times are derived from the induced voltage in the position indicator coils as the rod is dropped. This induced voltage is small compared to the normal voltage and, therefore, cannot be observed if the Position Indications Systems remain energized. Power is removed from the Digital Rod Position Indication System (DRPI) data cabinets just prior to rod drop testing. The DRPI System is not FUNCTIONAL in this condition.

3/4.10 SPECIAL TEST EXCEPTIONS

3/4.10.5 POSITION INDICATION SYSTEM - SHUTDOWN

BASES (Continued):

It is acceptable to suspend TECHNICAL REQUIREMENT 3.1.3.3 because the position indication of the shutdown and control rods are not assumed to be FUNCTIONAL to mitigate the consequences of a Design Basis Accident (DBA) or transient during shutdown conditions. In addition, no DBA or transient assumes operator action to manually trip the reactor.

The Digital Rod Position Indication System will be out of service for a short period of time when the power is removed from the DPRI cabinets until the reactor trip breakers are opened. TECHNICAL REQUIREMENT 3.1.3.3 requires the reactor trip breakers to be open when one digital rod position indicator is not available for each shutdown or control rod not fully inserted in MODE 3, 4, or 5. The suspended requirements of TECHNICAL REQUIREMENT 3.1.3.3 will be fully met since the rod drop test is initiated by opening the reactor trip breakers.

The SHUTDOWN MARGIN is not allowed to credit withdrawn control rods during control rod drop time measurements. This ensures that K_{eff} is maintained far below critical since the reactivity state of the core has not been evaluated yet during the STARTUP PHYSICS TESTS.

The Digital Rod Position Indication System is verified to be functioning properly by verifying agreement with the Demand Position Indication System for rods to be tested once per 24 hours. This provides reasonable assurance that after the DRPI System has been de-energized, rods dropped, and the DRPI re-energized, an accurate indication of rod positions will be displayed.

REFERENCE:

1. Millstone Power Station, Unit No. 3, Technical Specification Change Request 3-10-01, Relocation of Technical Specifications Related to Position Indication System - Shutdown, (B18469) dated September 26, 2001.
2. Millstone Nuclear Power Station, Unit No. 3 - Issuance of Amendment RE: Relocating Control Rod Position Indication Requirements to the Technical Requirements Manual (TAC No. MB3019), dated July 30, 2002. (Amendment No. 207, see letter A15735).
3. Condition Report 01-06356.

5.0 DESIGN FEATURES

5.3 REACTOR CORE

5.3.1 FUEL ASSEMBLIES

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

a. Fuel assemblies having a maximum nominal U-235 enrichment of 5.0 weight percent. [Ref 6.]

b. $K_{eff} \leq 0.95$ with the vault fully loaded and flooded with potential moderators.

c. $K_{eff} \leq 0.98$ with the highest reactivity fuel and optimum moderation of the racks.

d. A minimum nominal 22.125 inch center to center distance between fuel assemblies placed in the storage racks.

REFERENCE:

1. NUREG-1431, Standard Technical Specifications Westinghouse Plants.
2. PDCR MP3-88-010.
3. DWG 25212-59119, sh 1.
4. SE/MP3-88-069, Rev. 0, New Fuel Vault Racks, Criticality Evaluation.
5. ACR 5029, Spent Fuel Pool Issues With Potential Regulatory Impact.
6. T.S. 5.3.1, Design Features, Reactor Core, Fuel Assemblies.
7. CR M3-00-2659.

6.0 ADMINISTRATIVE CONTROLS

6.2.2 FIRE PROTECTION ADMINISTRATIVE REQUIREMENTS

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a. A site Fire Brigade of at least five members* shall be maintained on site at all times. The Fire Brigade shall not include two members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency.

b. A training program for the Fire Brigade shall be maintained and shall meet or exceed the requirements of NFPA 27 - 1975. One exception is Fire Brigade training sessions, which shall be held at least quarterly.

* The Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours, in order to accommodate unexpected absence, provided immediate action is taken to fill the required positions.

REFERENCE:

1. CR M3-00-2659.

7.0 ADDITIONAL REQUIREMENTS

7.2 AMSAC

TECHNICAL REQUIREMENT

7.2.1 The AMSAC system shall be FUNCTIONAL.

APPLICABILITY:

MODE 1 greater than or equal to 40% nominal full turbine load. [indicated by first stage pressure equivalent (261 psig)]

ACTION:

1. With AMSAC nonfunctional at power levels of greater than or equal to the setpoint, operation may continue, however efforts shall be made to return to FUNCTIONAL status as soon as possible.
2. With AMSAC nonfunctional at power levels of less than the 40% of nominal full turbine load setpoint, operation may continue provided power is restricted to less than 40% of nominal full turbine load indicated by first stage pressure equivalent (261 psig).

TECHNICAL SURVEILLANCE REQUIREMENTS

7.2.1.1 AMSAC System shall be tested from sensors through final actuation device with plant shutdown at each refueling.

7.2.1.2. AMSAC System shall be tested quarterly by overlap testing with the AMSAC outputs bypassed whenever the system is required to be operating.

BASES:

1. TECHNICAL REQUIREMENT - Loss of load and heat sink analysis per WCAP 8330 and PDCR MP3 - 88 - 008 indicate operation of the AMSAC System, at power levels of greater than 40%, enhances plant safety. The system is a backup to Reactor Trip System. Operation with AMSAC in operation is highly desirable, but not a requirement of the safety analysis. Operation with AMSAC nonfunctional does not constitute a failure of a safety system and is not reportable to the NRC.
2. TECHNICAL SURVEILLANCE REQUIREMENT - The means for bypassing shall be accomplished by using a permanently installed, human factored, bypass switch. Disallowed methods for bypassing, such as lifting leads, pulling fuses, blocking relays, or tripping breakers will not be used. The surveillance interval and actions required to service the AMSAC will be administratively controlled using station procedures.

REFERENCE:

1. CR M3-00-2659.
2. DM3-00-0394-08, “MPS3 SPU - Impulse Chamber Pressure Rescale - CRED CR 120576.”

7.3 SAFETY PARAMETER DISPLAY SYSTEM

TECHNICAL REQUIREMENT

7.3.1 The SPDS system shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2, 3, and 4.

ACTION:

1. With SPDS nonfunctional in MODEs 1 or 2, operation may continue however, efforts to return SPDS to FUNCTIONAL status shall begin as soon as possible. A MODE change from MODE 2 to 1 may be done.
2. With SPDS nonfunctional in MODE 3 or 4, operation may continue provided SPDS is returned to service prior to proceeding to MODE 2.

TECHNICAL SURVEILLANCE REQUIREMENTS

7.3.1.1 None.

BASES:

The SPDS is designed to be an aid to the operator in diagnosis of plant transients. The system is a backup to plant Accident Monitoring Instrumentation and the ERG network of procedures. Having the system in operation is highly desirable, but not a requirement of the safety analysis. Having the SPDS system nonfunctional does not constitute the failure of a safety system and is not reportable to the NRC.

REFERENCE:

1. CR M3-00-2659.
2. CR 6826.
3. SP-EE-149A.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

TECHNICAL REQUIREMENT

7.4.1 The following conditions for Fire Related Safe Shutdown Components shall be met.

a. Fire Related Safe Shutdown components in TRM Table 7.4-1 shall be FUNCTIONAL.

b. Total reactor coolant pump seal return flow from all four pumps shall be limited to less than or equal to 16 gpm.

c. Appendix R 8-hour emergency lighting units shall be FUNCTIONAL.

d. Charging pumps A and B shall be aligned for service.

e. Reactor Plant Component Cooling Pump B shall be operating.

f. Safety Injection Pump A shall be FUNCTIONAL.

g. Boric Acid Storage Tanks shall have a minimum indicated combined borated water volume of 36,000 gallons and a boron concentration between 6600 and 7175 ppm.

h. East and West Switchgear Room breathing air systems shall be FUNCTIONAL.

i. Risk Significant Fire Related Safe Shutdown Components in TRM Table 7.4-1 shall be FUNCTIONAL.

APPLICABILITY:

MODES 1, 2 and 3.

ACTION:

a. With a required component listed in TRM Table 7.4-1 nonfunctional:

1. Restore FUNCTIONALITY of the affected component within fourteen (14) days; or
2. Within fourteen (14) days:
    a. Establish a one - hour[2] roving fire watch for all areas identified in TRM Table 7.4-1[1] for the affected component (except the Control Room and Containment);
    b. Verify the FUNCTIONALITY of all fire suppression listed in TECHNICAL REQUIREMENTS Sections 3.7.12.1, 3.7.12.2, 3.7.12.3, or 3.7.12.4 and detection systems listed in TECHNICAL REQUIREMENT 3.3.3.7 for the affected areas and at least once every twenty-four hours thereafter;
    c. Note required transient combustibles and verify the lack of substantial new transient combustibles in the affected areas (except containment), at least once per twenty-four hours, and bring any changes to the attention of the Shift Manager.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

TECHNICAL REQUIREMENTS (Continued)

ACTION: (continued)

3. Prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Fire Related Safe Shutdown component, if component FUNCTIONALITY cannot be established within 60 days. Applicable time constraints for continued operation with the nonfunctional Fire Related Safe Shutdown component will be identified and justified in the assessment.

b. With reactor coolant pump seal return flow greater than 16 gpm:

1. Restore Reactor Coolant Pump seal return flow to 16 gpm or less within 14 days; or
2. Within 14 days:

    a. Establish a one-hour[(2)] roving fire watch for fire areas[(1)] AB-1D, AB-1E, and AB-1F;

    b. Verify the FUNCTIONALITY of all fire suppression listed in TECHNICAL REQUIREMENTS 3.7.12.1, 3.7.12.2, 3.7.12.3, or 3.7.12.4 and detection systems listed in TECHNICAL REQUIREMENT 3.3.3.7 for the affected areas and at least once every 24 hours thereafter;

    c. Note required transient combustibles and verify the lack of substantial new transient combustibles in fire areas AB-1D, AB-1E, and AB-1F, at least once per twenty-four hours, and bring any changes to the attention of the Shift Manager.

3. Prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, if Reactor Coolant Pump seal return flow of 16 gpm or less cannot be established within 60 days. Applicable time constraints for continued operation with Reactor Coolant Pump seal return flow greater than 16 gpm will be identified and justified in the assessment.

c. With an Appendix R 8-hour Emergency Lighting Unit nonfunctional:

1. Restore FUNCTIONALITY of the affected lighting unit within 14 days; or
2. Within 14 days, replace affected unit with battery-powered lantern and verify placement and FUNCTIONALITY daily.

d. With Charging Pump C aligned to Train A or B, perform ACTION “a”.

e. With Component Cooling Pump C operating supplying the B Train, perform ACTION “a”.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

TECHNICAL REQUIREMENTS (Continued)

ACTION: (continued)

f. With Safety Injection Pump A nonfunctional:

1. Restore FUNCTIONALITY of Safety Injection Pump A within 14 days; or
2. Within 14 days:
   a. Establish a one hour[(2)] roving fire watch for fire areas[(1)] AB-1D, AB-1E and AB-1F;
   b. Verify the FUNCTIONALITY of all fire suppression listed in TECHNICAL REQUIREMENTS 3.7.12.1, 3.7.12.2, 3.7.12.3, or 3.7.12.4 and detection systems listed in TECHNICAL REQUIREMENT 3.3.3.7 for fire areas AB-1D, AB-1E and AB-1F and at least once every 24 hours thereafter;
   c. Note required transient combustibles and verify the lack of substantial new transient combustibles in fire areas AB-1D, AB-1E, and AB-1F, at least once per twenty-four hours, and bring any changes to the attention of the Shift Manager.
3. Prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Safety Injection Pump A, if Safety Injection Pump A FUNCTIONALITY cannot be established within 60 days. Applicable time constraints for continued operation with the nonfunctional Safety Injection Pump A will be identified and justified in the assessment.

g. With the Boric Acid Tanks nonfunctional:

1. Restore the Boric Acid Tanks to FUNCTIONAL within fourteen (14) days; or
2. Within fourteen (14) days:
   a. Establish a one-hour[(2)] roving fire watch for fire areas[(1)] CB-8, 9, 11A, and 11B (except the Control Room);
   b. Verify the FUNCTIONALITY of all fire suppression listed in TECHNICAL REQUIREMENTS 3.7.12.1, 3.7.12.4 and 3.7.12.5 and detection systems listed in TECHNICAL REQUIREMENT 3.3.3.7 for fire areas CB-8, 9, 11A, and 11B and at least once every 24 hours thereafter;
   c. Note required transient combustibles and verify the lack of substantial new transient combustibles in fire areas CB-8, CB-9, CB-11A, and CB-11B, at least once per twenty-four hours, and bring any changes to the attention of the Shift Manager.

ACTION: (continued)

3. Prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Boric Acid Storage Tanks, if FUNCTIONALITY of the Boric Acid Storage Tanks cannot be established within 60 days. Applicable time constraints for continued operation with the nonfunctional Boric Acid Storage Tanks will be identified and justified in the assessment.

h. With either the east or west switchgear room breathing air systems nonfunctional:

1. With 1 air cylinder found below 5,400 psi, or nonfunctional, within 1 hour establish a one hour fire watch patrol in the CSA.

2. With two or more air cylinders, from either the East or West Switchgear room Breathing Air Systems or a combination from each, found below 5,400 psi or nonfunctional, or with the breathing air system otherwise nonfunctional, within 1 hour lock-out and prohibit the CSA carbon dioxide system from use and establish a continuous fire watch.

i. With a required Risk Significant component listed in TRM Table 7.4-1 nonfunctional:

1. Restore FUNCTIONALITY of the affected Risk Significant component within 72 hours, or

2. Establish the following risk management action (RMA) Defense-In-Depth compensatory measures for the next 30 days, to limit transient combustible material and ignition sources identified in the following component tables:

   a. Review existing transient combustible material permits for the affected areas.

   b. Review existing ignition source permits for the affected areas.

   c. Perform an area walkdown of the affected areas.

   d. Evaluate all work requiring transient combustibles, hot work or racking of breakers in the affected areas.

   e. On a daily basis, brief the shift operators and the fire brigade lead on the significance of a fire in the affected areas.

   f. Restore FUNCTIONALITY of the affected Risk Significant component within the 30 days or prepare a RAS determination for the Risk Significant component out of service.

ACTION: (continued)

NOTES:

(1) Refer to Fire Fighting Strategies for fire watch patrol area.

(2) For Completion Times stated in TECHNICAL REQUIREMENT ACTIONs which require periodic performance on a “once per. .” basis, the specified Frequency is met, after the initial performance, if the requirement is performed within 1.25 times the interval specified in the Completion Time, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

TECHNICAL SURVEILLANCE REQUIREMENTS

7.4.1.1 Each component listed in TRM Table 7.4-1 shall be demonstrated FUNCTIONAL at least once per forty-eight (48) months on a staggered basis, unless otherwise noted, by one or more of the following as identified in Table 7.4-1.

a. Operation of each fire related safe shutdown component locally;

b. Operation of each fire related safe shutdown component transfer switch, power and control circuit including actuated component at local switchgear;

c. Operation of each fire related safe shutdown component from the Fire Transfer Switch Panel (FTSP);

d. Operation of each fire related safe shutdown component from the Auxiliary Shutdown Panel including, if applicable, the transfer switch or instrumentation from the FTSP;

e. Operation of each fire related safe shutdown component from the Control Room;

f. Local inspection of material to verify its usability;

g. Automatic sequencer start of each fire related safe shutdown component on a loss of power; or

h. Inspection to verify control switch is maintained in the lockout position on MB5R.

7.4.1.2 Total reactor coolant pump seal return flow from all four pumps shall be demonstrated to be less than or equal to 16 gpm at least once every 7 days.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

TECHNICAL SURVEILLANCE REQUIREMENTS (Continued)

7.4.1.3 Each Appendix R 8-hour emergency lighting unit shall be demonstrated FUNCTIONAL in accordance with the Emergency Lighting Unit (ELU) surveillance frequency established by the Preventive Maintenance Program, during any MODE by all of the following:

a. Performance of an 8-hour discharge test;

b. Verify proper unit head position and alignment; and

c. Confirm that the emergency lighting unit automatically actuates on loss of corresponding AC power.

7.4.1.4 Safety Injection Pump A shall be demonstrated OPERABLE by verifying that it develops a differential pressure of greater than or equal to 1525 psid on recirculation flow when tested pursuant to Technical Specification Surveillance Requirement 4.0.5.

7.4.1.5 The east and west switchgear room breathing air systems shall be demonstrated FUNCTIONAL by:

a. At least once per day, verify that each air cylinder is pressurized to greater or equal to 5,400 psig and perform general visual inspection.

b. At least once per year perform a functional check of each air breathing system which shall include breathing through each airline and verifying that low pressure alarm whistle is FUNCTIONAL.

c. At least every five years, hydrostatically test each air storage cylinder.

7.4.1.6 The Boric Acid Storage System shall be demonstrated FUNCTIONAL at least once per seven (7) days by verifying the boron concentration in the water and the required borated water volume in the system.

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
	SERVICE WATER SYSTEM			
3SWP*P1A 3SWP*P1C	Service Water Pump	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.
3SWP*MOV102A 3SWP*MOV102C	SW Pump Discharge Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3SWP*STR1A 3SWP*STR1C	SW Pump Discharge Strainer	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a.
3SWP*MOV24A 3SWP*MOV24C	SW Pump Discharge Strainer Backwash Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 6)
3SWP*MOV50A	SW Supply to CCP HXs Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Notes 4 and 7)
3SWP*MOV54A 3SWP*MOV54C	Containment Recirculation Coolers SW Inlet	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3SWP*MOV71A	TPCCW HX Service Water Supply Header	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3SWP*AOV39A	DG HX Service Water Return Header	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 4)
3SWP*V744 3SWP*V745 3SWP*V746 3SWP*V747	SW Backup to Control Building Chilled Water System Isolation Valve	CB-8, 9, 11A, 11B, 13, 14	N/A	TSR 7.4.1.1.a. (Note 4)
	AUXILIARY FEEDWATER SYSTEM			
3FWA*P1A	Motor Driven AFW Pump A	N/A	ESF-5	N/A
3FWA*P1B	Motor Driven AFW Pump B	N/A	ESF-5	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3FWA*P2	Turbine Driven AFW Pump	N/A	CB-1, 2, 8, 9, 11, SB-2, 3, ESF-1, 2, 4, 7, 8, 9	N/A
DWST	DWST	N/A	AB-1	N/A
3FWA-LI63A	Local DWST Level Indicator	CB-8, 9, 11A, 11B, ESF-5	N/A	TSR 7.4.1.1.a./R (Note 1)
3FWS*LI501A 3FWS*LI503A	Steam Generator Level (wide range) Indicator	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d./R (Note 1)
3FWS*LI529A 3FWS*LI548A	Steam Generator Level (narrow range) Indicator	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d./R (Note 1)
3FWA*V33 3FWA*V37 3FWA*V41 3FWA*V45	TDAFP Discharge Isolation Valve	CB-8, 9, 11A, 11B, ESF-1	N/A	TSR 7.4.1.1.a. (Note 6)
Removable Spool-piece	DWS to DWST Spool-piece	CB-8, 9, 11A, 11B, AB-1	N/A	TSR 7.4.1.1.f.
Removable Fire Hose Fitting	Fire Water to DWST Fire Hose Fitting	CB-8, 9, 11A, 11B, AB-1	N/A	TSR 7.4.1.1.f.
REACTOR PLANT COMPONENT COOLING WATER SYSTEM				
3CCP*P1A (Note 3.) 3CCP*P1C	Reactor Plant Component Cooling Pump	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.
3CCP*P1B	Reactor Plant Component Cooling Pump	AB-1D, 1E, 1F	N/A	None

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3CCP*V7 3CCP*V8 3CCP*V9 3CCP*V10 3CCP*V92 3CCP*V93 3CCP*V94 3CCP*V95	RPCCW Suction and Discharge Cross-Connect Valves	AB-1D, 1E, 1F	N/A	TSR 7.4.1.1.a. (Note 4)
REACTOR COOLANT SYSTEM				
3RCS*PI405B	RCS Loop No. 1 Wide Range Pressure Indicator	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d./R (Note 1)
3RCS*LI459C	Pressurizer Level Indicator	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d./R (Note 1)
3NME*SIG 1	Nuclear Instrumentation GM Source Range and Wide Range	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d./R (Note 1)
3RCS*PCV455A	Pressurizer Power Operated Relief Valve (PORV)	CB-8, 9, 11A, 11B	AB-6, SB-3, CB-1, 8, 9, 11A, 11B	TSR 7.4.1.1.d.
3RCS*PCV456	Pressurizer Power Operated Relief Valve (PORV)	N/A	AB-5, SB-2, CB-2	N/A
3RCS*MV8000A	Pressurizer Power Operated Relief Isolation (Block) Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3RCS*TI413C 3RCS*TI423C 3RCS*TI433C 3RCS*TI443C	RCS Loop No. 1/2/3/4 Wide Range Hot Leg Temperature Indicator	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d./R (Note 1)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3RCS*TI413D 3RCS*TI423D 3RCS*TI433D 3RCS*TI443D	RCS Loop No. 1/2/3/4 Wide Range Cold Leg Temperature Indicator	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d./R (Note 1)
3RCS*PI 455B	Pressurizer Pressure Indicator	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d./R (Note 1)
3RCS*HCV442A	Reactor Vessel Head Vent Path to Pressurizer Relief Tank Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3RCS*AV8145	Pressurizer Auxiliary Spray Isolation Valve	CB-8, 9, 11A, 11B, RC-1	N/A	TSR 7.4.1.1.d. and TSR 7.4.1.1.e.
3RCS*H1A	Local Hand switch for pressurizer heater group A on Buss 32S	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.
CHEMICAL AND VOLUME CONTROL SYSTEM				
3CHS*P3A	Charging Pump A	CB-1, 8, 9, 11A, 11B, AB-6, SB-3	AB-6, SB-3, CB-1, EG-2, EG-4	TSR 7.4.1.1.b.
3CHS*P3B	Charging Pump B	AB-5, CB-2, SB-2, AB-1A, 1B, 1D	AB-5, SB-2, CB-2, EG-1, EG-3	None
3CHS*MV8507A	Gravity Boration Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 6 and 7)
3CHS*MV8438A	Charging Header Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3CHS*MV8438C	Charging Header Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3CHS*MV8116	Emergency Boration Bypass Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*HCV190A	Emergency Boration Flow Control Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3CHS*V55	Charging Flow Controller Outlet Isolation Valve	AB-1A, 1B, 1D	N/A	TSR 7.4.1.1.a. (Note 5)
3CHS*V54	Charging Flow Controller Bypass Valve	AB-1A, 1B, 1D, CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 6)
3CHS*MV8105	Charging Line Safety Injection Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3CHS*MV8109A 3CHS*MV8109C	Seal Injection Isolation Valve	AB-5, CB-2, 8, 9, 11A, 11B, SB-2	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8109B 3CHS*MV8109D	Seal Injection Isolation Valve	AB-6, CB-1, 8, 9, 11A, 11B, SB-3	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*LCV112D	Emergency Makeup from RWST to Charging Pump Isolation Valve	AB-1A, 1B, 1D	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*LCV112E	Emergency Makeup from RWST to Charging Pump Isolation Valve	AB-1A, 1B, 1D	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8511A	Centrifugal Charging Pump Alternate Miniflow Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8512A	Centrifugal Charging Pump Alternate Miniflow Isolation Valve	AB-5, CB-2, SB-2	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8512B	Centrifugal Charging Pump Alternate Miniflow Isolation Valve	AB-6, CB-1, 8, 9, 11A, 11B, SB-3	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8106	Charging Line Safety Injection Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3CHS*MV8100	Seal Line Return Containment Isolation (outer)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3CHS*V291	Boric Acid Storage Tank Manual Crosstie	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 4)
3CHS*PI102T	Temporary 0-15 psig Heise Gauge	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.f./A (Note 4)
3SIH*P1A	SIH Pump A	N/A	AB-1D	N/A
3SIH*MV8814	SIH Pump A Miniflow Isolation	N/A	AB-1D	N/A
CHS PUMP COOLING				
3CCE*P1A	CHS Pump Cooling Pump "A"	CB-8, 9, 11A, 11B	AB-6, SB-3, CB-1, EG-2, EG-4	TSR 7.4.1.1.d.
3CCE*P1B	CHS Pump Cooling Pump "B"	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
3CCE*E1A	"A" Charging Pump Cooler	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A
3CCE*E1B	"B" Charging Pump Cooler	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
3CCE*SOV37A	"A" Charging Pump Cooling Train Temperature Solenoid	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A
3CCE*SOV37B	"B" Charging Pump Cooling Train Temperature Solenoid	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
LOW PRESSURE SAFETY INJECTION SYSTEM				
3SIL*MV8808A 3SIL*MV8808B 3SIL*MV8808C 3SIL*MV8808D	Accumulator Tank Outlet Isolation Valve	RC-1	N/A	TSR 7.4.1.1.a./V (Note 5 and 7)
3SIL*SV8875A 3SIL*SV8875B 3SIL*SV8875C 3SIL*SV8875D	Accumulator Nitrogen Isolation Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3SIL*HCV943A	Accumulator Nitrogen Vent Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
MAIN STEAM SYSTEM				
3MSS*PI514B 3MSS*PI524B 3MSS*PI534B 3MSS*PI544B	Main Steam Line A/B/C/D Pressure Indicator	CB-8, 9, 11A, 11B, MSV-1	N/A	TSR 7.4.1.1.d./R (Note 1)
3MSS*MOV17A 3MSS*MOV17B 3MSS*MOV17D	Auxiliary Feedwater Pump Steam Supply Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3MSS*MOV18A 3MSS*MOV18C	Main Steam Pressure Relieving Isolation Valve	AB-5, CB-2, 8, 9, 11A, 11B, SB-2	N/A	TSR 7.4.1.1.a./V (Note 6 and 7)
3MSS*MOV18B 3MSS*MOV18D	Main Steam Pressure Relieving Isolation Valve	AB-6, CB-1, 8, 9, 11A, 11B, SB-3	N/A	TSR 7.4.1.1.a./V (Note 6 and 7)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3MSS*MOV74A 3MSS*MOV74B 3MSS*MOV74C 3MSS*MOV74D	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Lockout/Normal control switch (MB5R)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.h./W (Note 8)
RESIDUAL HEAT REMOVAL SYSTEM				
3RHS*P1A	Residual Heat Removal Pump "A"	CB-8, 9, 11A, 11B, ESF-5	N/A	TSR 7.4.1.1.b.
3RHS*MV8701A	Residual Heat Removal Loop Isolation Valve (Inner)	CB-8, 9, 11A, 11B, ESF-3	N/A	TSR 7.4.1.1.a./V (Note 4 and 7) and TSR 7.4.1.1.d.
3RHS*MV8701B	Residual Heat Removal Loop Isolation Valve (Outer)	AB-6, CB-1, 8, 9, 11A, 11B, ESF-3, 10, SB-3	N/A	TSR 7.4.1.1.a. (Note 4)
3RHS*MV8701C	Residual Heat Removal Loop Isolation Valve (Inner)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.d.
3RHS*MV8702A	Residual Heat Removal Loop Isolation Valve (Outer)	CB-2, ESF-4, 6, 7, 8, 11, SB-2	N/A	TSR 7.4.1.1.a. (Note 4)
3RHS*MV8702B	Residual Heat Removal Loop Isolation Valve (Inner)	RC-1	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
3RHS*MV8702C	Residual Heat Removal Loop Isolation Valve (Inner)	RC-1	N/A	TSR 7.4.1.1.a./V (Note 4 and 7)
HEATING VENTILATION AND AIR CONDITIONING SYSTEM				
3HVC*ACU3A 3HVC*ACU4A	East Switchgear A/C Units	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3HVY*FN2A	Service Water Pumphouse Exhaust Fan	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3HVY*AOD23A	Service Water Pumphouse Intake Damper	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3HVQ*ACUS1A	ESF Self Contained A/C Unit	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.
3HVR-FN18 3HVR-G1	Portable Emergency Ventilation Fan, Generator and Support Equipment in the Appendix R Cage	AB-1D, 1E, 1F	N/A	TSR 7.4.1.1.a. TSR 7.4.1.1.f./A (Note 1)
3HVR*FN14A	CHS/CCP Area Supply Fan	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3HVR*MOD50A	CHS Pump A Cubicle Supply Damper	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.c.
3HVR*ACU1A	MCC, Rod Control and Cable Vault A/C Unit	CB-2, SB-2, AB-5	N/A	TSR 7.4.1.1.c. and TSR 7.4.1.1.e.
3HVR*ACU1B	MCC, Rod Control and Cable Vault A/C Unit	CB-2, SB-2, AB-5	N/A	TSR 7.4.1.1.e.
3HVP*FN1A 3HVP*FN1C	EDG Enclosure Supply Fans	CB-8, 9, 11A, 11B	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	TSR 7.4.1.1.c.
3HVP*MOD20A 3HVP*MOD20C 3HVP*MOD23A 3HVP*MOD26A	EDG Enclosure Ventilation Dampers	CB-8, 9, 11A, 11B	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3HVP*FN1B 3HVP*FN1D	EDG Enclosure Supply Fans	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7,ESF-8	N/A
3HVP*MOD20B 3HVP*MOD20D 3HVP*MOD23B 3HVP*MOD26B	EDG Enclosure Ventilation Dampers	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7,ESF-8	N/A
3HVU-FN1A	Containment Recirculation Fan A	RC-1	N/A	TSR 7.4.1.1.g.
3HVU-FN1B	Containment Recirculation Fan B	RC-1	N/A	TSR 7.4.1.1.g.
EMERGENCY DIESEL GENERATOR				
3EGS*EGA	Diesel Engine – Generator Set A	CB-8, 9, 11A, 11B	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	TSR 7.4.1.1.b.
EGF*TK1A	Diesel Generator A Fuel Tank	CG-8, 9, 11A, 11B	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3EGS*EGB	Diesel Engine - Generator Set B	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7, ESF-8	N/A
EGF*TK1B	EDG Generator B Fuel Tank	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7, ESF-8	N/A
3EGA*ASV1A	Main Air Start Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 4)
3EGA*ASV2A	Main Air Start Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a. (Note 4)
3EGA*SOV25A	EDG Shutdown Solenoid Valve	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.b.
EMERGENCY AC/DC DISTRIBUTION				
3ENS*SWG-A (Bus 34C)	All 4.16 kV breakers except load center breakers to Bus 32Y, 32T, 32S, and 32R	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
34C1-2	480V load center Bus 32Y supply [3EJS*US-4A(O)]	AB-5	N/A	TSR 7.4.1.1.e./P (Note 2)
34C4-2	480V load center Bus 32S supply [3EJS*US-2A(O)]	AB-5	N/A	TSR 7.4.1.1.e./P (Note 2)
34C5-2	480V load center Bus 32R supply [3EJS*US-3A(O)]	AB-5	N/A	TSR 7.4.1.1.e./P (Note 2)
23SA3-34D-2	4.16 kV RSST supply to Bus 34D [3ENS*SWG-B(P)]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
34D-1T-2	4.16 kV supply from Bus 34B [3NNS-SWG-B] to Bus 34D [3ENS*SWG-B(P)]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
34D20-2	4.16 kV supply to charging pump P3B (3CHS*P3B)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
34D21-2	4.16 kV supply to charging pump P3C transfer switch [3CHS*TRS-P3C]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
34D3-2	480V load center Bus 32V supply [3EJS*US-2B(P)]	AB-6	N/A	TSR 7.4.1.1.e./P (Note 2)
34D4-2	480V load center Bus 32W supply [3EJS*US-3B(P)]	AB-6	N/A	TSR 7.4.1.1.e./P (Note 2)
34D22-2	480V load center Bus 32X supply [3EJS*US-4B(P)]	AB-6	N/A	TSR 7.4.1.1.e./P (Note 2)
3SA3-34A-2	4.16 kV NSST supply to Bus 34A [3NNS-SWG-A]	AB-6	N/A	TSR 7.4.1.1.a./P (Note 2)
34A18-2	480V load center Bus 32C supply [3NJS-US-5A]	AB-5	N/A	TSR 7.4.1.1.e./P (Note 2)
34R4-2	32-1R MCC SUPPLY BREAKER 3EHS*MCC-3A1	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A
32-1R	480V AC MOTOR CONTROL CENTER	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A
32R5-2	32-2R MCC SUPPLY BREAKER 3EHS*MCC-3A2	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
32-2R	480V AC MOTOR CONTROL CENTER	N/A	AB-6, SB-3, CB-1, EG-2, EG-4	N/A
32T4-2	32-1T MCC SUPPLY BREAKER	N/A	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11A, CB-11B, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	N/A
32-1T	480V AC MOTOR CONTROL CENTER	N/A	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11A, CB-11B, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	N/A
32-4T	480V AC MOTOR CONTROL CENTER	N/A	CB-1, CB-4, CB-6, CB-16, SB-3, CB-8, CB-9, CB-11A, CB-11B, CB-13, CB-14, CSW-3, EG-2, EG-4, ESF-1, ESF-9	N/A
32U4-2	32-1U MCC SUPPLY BREAKER	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7, ESF-8	N/A

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
32-1U	480V AC MOTOR CONTROL CENTER	N/A	CB-2, CB-3, CB-5, CB-7, CB-17, SB-2, CSW-4, EG-1, EG-3, ESF-4, ESF-7, ESF-8	N/A
32-4U	480V AC MOTOR CONTROL CENTER	N/A	ESF-5	N/A
32W4-2	32-1W MCC SUPPLY BREAKER	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
32-1W	480V AC MOTOR CONTROL CENTER	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
32W5-2	32-2W MCC SUPPLY BREAKER	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
32-2W	480V AC MOTOR CONTROL CENTER	N/A	AB-5, SB-2, CB-2, EG-1, EG-3	N/A
3SA3-34B-2	4.16 kV NSST supply to Bus 34B [3NNS-SWG-B]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
34B16-2	480V load center Bus 32M supply [3NJS-US-5B]	AB-5	N/A	TSR 7.4.1.1.e./P (Note 2)
3SB3-35A-2	6.9 kV NSST supply to Bus 35A [3NOS-SWG-A]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
23SB3-35A-2	6.9 kV RSST supply to Bus 35A [3NOS-SWG-A]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
35A4-2	6.9 kV supply to reactor coolant pump (3RCS*P1A)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
3SB3-35B-2	6.9 kV NSST supply to Bus 35B [3NOS-SWG-B]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
23SB3-35B-2	6.9 kV RSST supply to Bus 35B [3NOS-SWG-B]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
35B2-2	6.9 kV supply to reactor coolant pump (RCS*P1B)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
3SB3-35C-2	6.9 kV NSST supply to Bus 35C [3NOS-SWG-C]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
23SB3-35C-2	6.9 kV RSST supply to Bus 35C [3NOS-SWG-C]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
35C5-2	6.9 kV supply to reactor coolant pump (3RCS*P1C)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
3SB3-35D-2	6.9 kV NSST supply to Bus 35D [3NOS-SWG-D]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
23SB3-35D-2	6.9 kV RSST supply to Bus 35D [3NOS-SWG-D]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
35D1-2	6.9 kV Supply to Reactor Coolant Pump (3RCS*P1D)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
32T9-2	480V supply to MCC 32-4T in ESF Building [3EHS*MCC1A4(-O)]	ESF-7	N/A	TSR 7.4.1.1.a./P (Note 2)
32U13-2	480V supply to MCC 32-3U in ESF Building [3EHS*MCC1 B3(-P)]	ESF-10	N/A	TSR 7.4.1.1.a./P (Note 2)
301B-1 (3BYS*ACB-2)	Battery 2 301B-1 [3BYS*BAT-2(-P)] output breaker	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
301C-1 (3BYS-ACB-5)	Battery 5 301C-1 [3BYS-BAT-5(-N)] output breaker	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT01 301A-1A [3BYS* PNL-1V (-O)]	4.16 kV Emergency Switchgear Control Bus Power Supply [3ENS*SWG-A(O)]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT10 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A1 [3BYS*PNL1F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT11 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A2 [3BYS*PNL2F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT12 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A3 [3BYS*PNL13F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT13 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A4 [3BYS*PNL15F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT14 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A5 [3BYS*PNL17F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT17 301A-1A [3BYS*PNL-1V (-O)]	125 VDC Distribution Fuse Panel Power Supply 301A-1A7 [3BYS*PNL22F]	CB-8, 9, 11A, 11B, AB-5	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT13 301B-1A [3BYS*PNL-2V (-P)]	125 VDC Distribution Fuse Panel Power Supply 301B-1A4 [3BYS*PNL16F]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)

TRM TABLE 7.4-1
FIRE RELATED SAFE SHUTDOWN COMPONENTS

Equipment No.	Component Name	Affected Areas (see ACTION "a")	Risk Significant Affected Areas (see ACTION "i")	Related TSR Frequency
CKT17 301B-1A [3BYS*PNL-2V (-P)]	125 VDC Distribution Fuse Panel Power Supply 301B-1A7 [3BYS*PNL23F]	AB-6	N/A	TSR 7.4.1.1.a./P (Note 2)
CKT05 301C-1 [3BYS*PNL-5]	Battery Charger 301C-1 [3BYS*CHGR-5(-O)] to 125VDC Bus 301C-1 [3BYS-PNL-5(-N)]	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
3SCV*DISC 1 (O)	Disconnect Switch to 120/240VAC Distribution Panel 3SCV*PNL R1O	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
3VBA*ACB3P	Bypass Switch to 120VAC Vital Bus Distribution Panel 1 (VIAC-1)	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a./P (Note 2)
MISCELLANEOUS				
3COS	Sound Powered Phone System	CB-8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a.
3COR	Operation and Maintenance Radio System	CB-1, 8, 9, 11A, 11B	N/A	TSR 7.4.1.1.a.
Repair Materials	CCP Pump Repair Materials in the Appendix R Cage	AB-1A, 1B, 1D (Note 9) (Note 10)	N/A	TSR 7.4.1.1.f./A (Note 1)
3IAS-C1B	Instrument Air Compressor	RC-1	N/A	TSR 7.4.1.1.e.

NOTES:

1. TSR frequency R is defined as “at least once per 18 months,” and TSR frequency A is defined as “at least once per 12 months.”
2. TSR frequency P is the electrical breaker TSR frequency established by the Preventive Maintenance Program. Also, these electrical breaker TSRs may be performed during any MODE as allowed by the Preventive Maintenance Program. (See Bases Number 11.)
3. Either CCP pump (P1A or P1C) is required to be FUNCTIONAL.
4. Valve TSR is to manually open valve per compliance report.
5. Valve TSR is to manually close valve per compliance report.
6. Valve TSR is to manually cycle open/close valve per compliance report.
7. TSR frequency V is the TSR frequency established by the MOV Preventive Maintenance Program (see basis 20).
8. TSR frequency W is defined as “at least once per 7 days.”
9. Several Unit 3 BTP items are shared with Unit 2. Notify Unit 2 Shift Manager of any impacts.
10. Perform Actions a.2.b and a.2.c within one shift turnover for missing/non-functional Repair Materials. Repair Material shall not be utilized as plant spare material.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

BASES:

1. Safe shutdown components are those components used in plant systems to achieve and maintain HOT STANDBY and HOT/COLD SHUTDOWN when a fire occurs in any area or disables any system(s) at Millstone Unit No. 3. This TECHNICAL REQUIREMENT addresses the additional FUNCTIONALITY requirements for safe shutdown components not addressed in Millstone Unit No. 3 Technical Specifications or Technical Requirements Manual. It also provides compensatory measures when these additional FUNCTIONALITY requirements are not met, and the TECHNICAL SURVEILLANCE REQUIREMENTS to ensure that they are met. These additional FUNCTIONALITY requirements are developed in the BTP 9.5-1 Compliance Report based on a review of potential fire damage to these safe shutdown components.
2. DELETED
3. The initiation frequency of fires at nuclear plant that result in damage requiring the use of these components as addressed in this TECHNICAL REQUIREMENT are several orders of magnitude lower than those for DESIGN BASIS Accidents. The fourteen (14) day outage window for restoration of safe shutdown component to FUNCTIONALITY, the establishment of compensatory measures, and the TSR frequency reflect this decreased level of risk. Compensatory measures will be established prior to the 14-day window when it is apparent that the 14-day restoration period cannot be met.
4. Safe shutdown components which are addressed in more restrictive Technical Specifications or TECHNICAL REQUIREMENTS, are not addressed in this document. Exceptions include shutdown process instrumentation which are allowed to be out of service by Technical Specifications or TECHNICAL REQUIREMENTS based upon the availability of redundant channels. If the redundant channel(s) is not a safe shutdown component, the redundant channel cannot be credited as a safe shutdown component, and the instrumentation is included in this document for further administrative control.
5. The compensatory measures are intended to minimize the possibility that a fire will occur in an area of the plant which relies on the particular component for safe shutdown.
6. The lack of fire watch requirements for the control room is based upon continuous staffing by licensed operators. The lack of fire watch requirements for containment is based upon the administrative control of transient combustibles and the low potential of introducing transient combustibles or ignition sources, since containment is not normally accessible during power operation.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

BASES (Continued):

7. ACTIONs a.3, b.3, f.3, and g.3 require the impact of nonfunctional components be managed by performance of a FUNCTIONALITY Assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, if component FUNCTIONALITY cannot be established within the time period specified in the ACTION. The use of a FUNCTIONALITY Assessment, including a RAS determination, if warranted, assures the FUNCTIONALITY of the components through evaluation or the use of compensatory measures if needed.

8. DELETED

9. The ACTION requirements do not prohibit a MODE change when the requirements of TRM Section 7.4.1 are not met. For components nonfunctional/ conditions not satisfied, for less than sixty (60) days, OPERATIONAL MODE changes may take place while relying on the applicable ACTIONS outlined in these TECHNICAL REQUIREMENTS.

10. A plant startup planned with any component nonfunctional/condition not satisfied, as identified in TRM Section 7.4.1, for more than sixty (60) days must be supported by documenting the basis for the acceptability of the MODE change in accordance with OP-AA-102, “Operability Determinations.” The basis should address the cause, the compensatory measures in place, the plans to restore, and the estimated time to restore the component/condition to a FUNCTIONAL status.

11. TSR frequencies are as specified in the Preventive Maintenance Program. Changes in the frequency for breaker PMs, as allowed by the Preventive Maintenance Program, continue to fulfill the TECHNICAL SURVEILLANCE REQUIREMENTS and prove FUNCTIONALITY of these breakers. Also, these electrical breaker TECHNICAL SURVEILLANCE REQUIREMENTS may be performed in any MODE when preventive maintenance on the breakers is allowed by either the Preventive Maintenance Program or by breaker availability, such as during a train outage. And finally, operation of a breaker locally is defined as cycling the breaker via the mechanical trip and close buttons.

12. FUNCTIONALITY of the instrumentation addressed in this Technical Requirements Manual is proven by the calibration of the individual instruments. The calibrations of these instruments are performed on a refueling cycle frequency which is the frequency necessary to ensure the instrument accuracy is maintained, based on plant and industry experience.

13. With respect to 4160V pumps, TSR 7.4.1.1.b. is satisfied with the breaker configured for remote testing and then operating the breaker with the local control switches. In this configuration, the breakers will operate, but the load will not be energized. This will test the FUNCTIONALITY of the local controls which is the intent of this surveillance.

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

BASES (Continued):

14. Performance of the reactor coolant pump seal return flow TECHNICAL SURVEILLANCE REQUIREMENT every 7 days is adequate to meet the requirements of this Technical Requirements Manual.

    This TECHNICAL SURVEILLANCE REQUIREMENT is only being performed to verify that an analysis assumption is maintained. Reactor coolant pump seals are monitored by various main board indications and alarms. This TECHNICAL SURVEILLANCE REQUIREMENT will not be used to detect any equipment failures. Including this in the weekly control room surveillances is justified to minimize operator burden.

15. Existing compensatory ACTION for a nonfunctional fire suppression and/or detection system may be utilized in lieu of FUNCTIONALITY for that suppression or detection system when compensatory ACTIONS are required for another TECHNICAL REQUIREMENT.

16. Surveillance of the ability to manually operate an MOV by use of its handwheel may be accomplished by: (a) from the existing valve position, start partially closing (or opening) the MOV manually at least 1/4 inch of valve stem travel or rotation which demonstrates the motor operator has disengaged correctly and the handwheel has engaged properly, and (b) complete cycling of the valve fully closed (or open) and then back to the starting position by use of the motor operator demonstrating that the valve disc/stem has moved without binding. This partial stroke method may be utilized for MOVs that are required to be manually opened, manually closed, or manually throttled. This type of test is acceptable to demonstrate that the MOV is capable of manual operation in either direction since there is no difference in the valve mechanism for opening or closing the valve.

17. FUNCTIONALITY status (absence of impairments) of fire protection equipment may be verified by reviewing the fire prevention tracking database maintained by the Site Fire Marshal.

18. The intent of limiting transient combustibles as a compensatory measure is to create a heightened awareness of potential fire hazards (combustibles), limit to the extent possible the introduction of new hazards, and limit existing hazards through removal as work is completed. This would be accomplished by the fire watch, and the administrative controls of the permitting process. It is not the intent to prevent the introduction of materials required for repair of the system(s) in question, or fire protection systems used as compensatory measures.

    (See AR 06000479-02 for additional information)

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

BASES (Continued):

19. A minimum indicated combined borated water volume of 36,000 gallons and boron concentration between 6600 and 7175 ppm in the Boric Acid Storage Tanks is required to achieve COLD SHUTDOWN due to a fire. An indicated 36,000 gallons ensures that 9,996 gallons will be injected into the RCS with the charging pump recirculation aligned to the RWST, seal injection isolated, and letdown through the head vent system. A combined volume of 36,000 gallons also provides that any single tank will have 16,000 gallons to provide for injecting 9,996 gallons for the method where charging pump minimum flow is provided by seal injection and safety grade charging flow with letdown through the head vent system. These volumes include consideration for suction location, vortexing, and minimum NPSH. Instrument inaccuracy is not considered. The injected volume of 9,996 gallons of 6600 ppm borated water is sufficient to provide a 1% SHUTDOWN MARGIN with RCS loops filled and plant cooled to 200°F. Initial RCS boron concentration is based on a minimum expected hot full power or hot zero power condition (peak xenon) and final RCS boron concentration assumes that the most reactive control rod is not inserted into the core. The analysis assumes that boration is completed prior to commencing cooldown, and RCS makeup for shrinkage is from the RWST. No additional accidents are postulated to occur during the fire event or the cooldown.

20. Roving fire watches must monitor the area or the device in question, as a minimum, within the specified time frame, plus or minus 25% of the time interval specified in the ACTION statement for periodic roving fire watches. The 25% extension of the time interval specified does not degrade the reliability that results from performing the rove at the specified interval, based on plant experience, and Fire Protection Engineering analysis as documented in Technical Evaluation M3-EV-02-0005.

21. TECHNICAL SURVEILLANCE REQUIREMENT frequencies are as specified in the MOV Preventive Maintenance Program. The MOV program establishes a TECHNICAL SURVEILLANCE REQUIREMENT frequency based on MOV performance and industry experience which is acceptable for ensuring that MOVs will operate to support plant operation and accident mitigation. These valves are electrically operated at least every refueling cycle. Since there is no mechanism for degrading the handwheel gear train or its engaging mechanisms while these valves are not in use, the PM program, in conjunction with the ISI electrical stroke surveillances, will provide assurance that the valves would be capable of being manually operated if needed.

BASES (Continued):

22. The FUNCTIONALITY of the east and west switchgear room breathing air systems ensures that the operators have sufficient breathing air to supplement their SCBA bottle air while performing safe shutdown procedures in the east and west switchgear rooms following a control room evacuation and CSA CO_2 discharge. The breathing air systems were installed to address potential CO_2 migration into the east and west switchgear rooms from a CO_2 discharge in the CSA. The capacity of the breathing air system accounts for two full CO_2 discharges, fire brigade investigation between discharges and sufficient time to PURGE and ventilate the CSA and adjacent areas without air cylinder change-out.

23. Nuclear Instrumentation, 3NME*SIG1 is required by the Millstone Nuclear Power Station Unit 3 BTP 9.5-1 Compliance Report, Key Specification 25212 - BTP 9.5-1, to demonstrate that one train of equipment necessary to achieve hot shutdown from either the Control Room or Auxiliary Shutdown Panel (ASP) be maintained free of fire damage by a single fire. Nuclear Instrumentation supports the shutdown function of Source Range Flux Monitoring, which is provided by the Gamma Metrics Source Range Indication, and the Gamma Metrics Wide Range Indication.

24. According to Regulatory Guide 1.160, Revision 3, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” the NRC determined additional guidance was necessary to adequately assess and manage the risk from internal fires in the conduct of activities required by MRule (a)(4). Revision 4A of NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” addresses this concern by providing methods licensees can use to identify equipment important to mitigation of risk of core damage from Fire initiations. The revision also describes approaches to developing and implementing fire Risk Management Actions (RMAs) and the tools for effective implementation of the guidance.

    This risk associated with the performance of maintenance activities having the potential to cause a fire (e.g., welding, use of cutting and grinding tools, transient combustibles, etc.), removal of fire detection or suppression equipment from service, and removal or impairment of fire barriers (e.g., opening of fire doors to facilitate maintenance, removal of protective barriers on cable trap or conduit, etc.) are all addressed by the existing Fire Safe Shutdown program. No additional action is warranted under MRule (a)(4) for these items. However, under the new guidance, removal of equipment from service important to core damage mitigation requires additional action to ensure adequate risk assessment for the impact of fire risk.

    According to NUMARC 93-01, Revision 4A, the identification of equipment important for mitigating core damage resulting from fire initiating events can come

7.4 FIRE PROTECTION - SAFE SHUTDOWN REQUIREMENTS

7.4.1 FIRE RELATED SAFE SHUTDOWN COMPONENTS

BASES (Continued):

24. (continued)

from either: 10 CFR 50.48/Appendix R, (BTP 9.5-1 for MPS3) a screening analysis (e.g. Fire Induced Vulnerability Evaluation), or a fire Probability Risk Assessment (PRA). MPS3 does not have fire PRAs, so Appendix R was used as the basis to identify the equipment within the existing MRule (a)(4) scope that is found to have appreciable impact on core damage mitigation for fire initiators.

The Fire Related Safe Shutdown Component list was compared with the PRA Internal Events model list of components which are risk significant for core damage frequency. Those components that were common to both lists, comprised the population of components considered for inclusion in the MRule (a)(4) program for fire risk impact. This component list was further refined down to a risk-informed list through site-specific working groups and a fleet expert panel. Once the appropriate scope of components was determined, RMAs to compensate for the reduction of the fire Safe Shutdown Capability when the component is removed from service, were developed based on guidance provided in NUMARC 93-01, Section 11.3.7.5.

The RMAs will be implemented using the method detailed in the NUMARC 93-01, Section 11.3.7.3, Item 2. If a component important for mitigating core damage resulting from fire initiating events is out of service for 72 hours, RMAs must be implemented. Within 30 days, the component is to be returned to service. If the component is not returned to service within 30 days, additional risk evaluations to determine additional actions must be performed.

It is important to note, the RMAs developed under the new guidance only address incremental risk from fire events. It is not appropriate to utilize the fire risk RMA implementation methods to address aggregate risk from fire and internal events. Risk from internal events will continue to be evaluated under the current MRule (a)(4) program.

REFERENCE:

1. CR M3-00-2659.
2. DCR No. M3-01008, “Installation of Incipient Fire Detection System In MP3 Cable Spreading Area.”
3. DCR No. M3-02006, “Restoration of MP3 Cable Spreading Area Carbon Dioxide Fire Suppression System.”
4. DNC letter, serial number 04-070 “License Amendment Request Regarding a Change to the Fire Protection Program.”
5. Calculation 05-ENG-04123M3, “MP3 Boric Acid Storage Tank Volume Delivered to RCS- Post Fire Event.”

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

TECHNICAL REQUIREMENT

7.6.1 The components listed in TRM Table 7.6-1 shall be FUNCTIONAL for Safety Grade Cold Shutdown.

APPLICABILITY:

MODES 1, 2 and 3.

ACTION:

a. With a required component listed in TRM Table 7.6-1 other than a Boric Acid Tank nonfunctional:

   1. Restore FUNCTIONALITY of equipment within 7 days for equipment located outside containment or 21 days for equipment located inside containment; or

   2. Prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Safety Grade Cold Shutdown component, if component FUNCTIONALITY cannot be established within the specified period. Applicable time constraints for continued operation with the nonfunctional Safety Grade Cold Shutdown component will be identified and justified in the assessment.

b. With one Boric Acid Tank nonfunctional due to indicated boric acid solution volume less than 16,000 gallons, operation may continue for up to 14 days provided that within 7 days:

   1. Two boron injection flow paths from the Refueling Water Storage Tank via charging pumps to the RCS are verified FUNCTIONAL as specified in TECHNICAL REQUIREMENT 3.1.2.2 and at least once every 24 hours thereafter, and

   2. The Demineralized Water Storage Tank is verified FUNCTIONAL as specified in Technical Specification 3.7.1.3 and at least once every 24 hours thereafter, and

   3. The Condensate Storage Tank indicated volume is verified greater than or equal to 210,000 gallons and at least once every 24 hours thereafter; otherwise, prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Boric Acid Tank, if Boric Acid Tank FUNCTIONALITY cannot be established within the specified period. Applicable time constraints for continued operation with the nonfunctional Boric Acid Tank will be identified and justified in the assessment.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

TECHNICAL REQUIREMENTS (Continued)

ACTION: (continued)

c. With two Boric Acid Tanks nonfunctional due to indicated boric acid solution volume less than 16,000 gallons, restore FUNCTIONALITY of one Boric Acid Tank within 7 days, or prepare a FUNCTIONALITY assessment, including a Reasonable Assurance of Safety (RAS) determination, if warranted, for the nonfunctional Boric Acid Tanks, if the FUNCTIONALITY of the Boric Acid Tanks cannot be established within the specified period. Applicable time constraints for continued operation with the nonfunctional Boric Acid Tanks will be identified and justified in the assessment.

d. Entry into an OPERATIONAL MODE is permitted while subject to these ACTION requirements.

TECHNICAL SURVEILLANCE REQUIREMENTS

7.6.1.1 The capability of Safety Grade Cold Shutdown components shall be verified at least once per refueling interval to meet FUNCTIONALITY requirements contained in TRM Table 7.6-2.*

7.6.1.2 Each Boric Acid Tank shall be demonstrated FUNCTIONAL, at least once per 7 days by verifying indicated borated water volume to be greater than 16,000 gallons in each tank.

* Table 7.6-2 specifies TSR frequency for local operation of 3MSS*MOV74A/B/C/D.

7.6 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

TRM TABLE 7.6 - 1
EQUIPMENT NOT ASSOCIATED WITH OR NOT ADEQUATELY COVERED BY TECHNICAL SPECIFICATIONS OR OTHER TECHNICAL REQUIREMENTS

Equipment	Component Functional Description
3CHS*TK5A	Boric Acid Tank
3CHS*TK5B	Boric Acid Tank
3CHS*V270	Charging Pump Main Charging Bypass
3CHS*V271	Charging Pump Main Charging Bypass
3CHS*V272	Charging Pump Main Charging Bypass
3CHS*V273	Charging Pump Main Charging Bypass
3CHS*HCV190A	Emergency Boration Flow Control Valve
3CHS*HCV190B	Emergency Boration Flow Control Valve
3CHS*LI102	Boric Acid Tank A Level Indicator
3CHS*LI106	Boric Acid Tank B Level Indicator
3CHS*MV8116	Emergency Boration Bypass Isolation Valve
3CHS*MV8438A	Charging Header Isolation Valve
3CHS*MV8438B	Charging Header Isolation Valve
3CHS*MV8507A	Gravity Boration Valve
3CHS*MV8507B	Gravity Boration Valve
3MSS*MOV74A	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel
3MSS*MOV74B	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel
3MSS*MOV74C	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel
3MSS*MOV74D	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel
3SIL*MV8808A	Accumulator Discharge Isolation Valve
3SIL*MV8808B	Accumulator Discharge Isolation Valve
3SIL*MV8808C	Accumulator Discharge Isolation Valve
3SIL*MV8808D	Accumulator Discharge Isolation Valve
3SIL*HCV943A	Accumulator Nitrogen Vent Valve
3SIL*HCV943B	Accumulator Nitrogen Vent Valve
3SIL*SV8875A	Accumulator A Nitrogen Isolation Valve
3SIL*SV8875E	Accumulator A Nitrogen Isolation Valve
3SIL*SV8875B	Accumulator B Nitrogen Isolation Valve
3SIL*SV8875F	Accumulator B Nitrogen Isolation Valve
3SIL*SV8875C	Accumulator C Nitrogen Isolation Valve
3SIL*SV8875G	Accumulator C Nitrogen Isolation Valve
3SIL*SV8875D	Accumulator D Nitrogen Isolation Valve
3SIL*SV8875H	Accumulator D Nitrogen Isolation Valve
3RHS*FCV6I8	RHR Heat Exchanger Bypass Valve (Travel Limiter Only)
3RHS*FCV619	RHR Heat Exchanger Bypass Valve (Travel Limiter Only)

7.6 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

TRM TABLE 7.6-2
EQUIPMENT FOR SGCS TECHNICAL SURVEILLANCE REQUIREMENTS

Equipment	FUNCTIONALITY Requirement	TSR
3CHS*V270	Capable of being opened locally	Manually cycle valve locally
3CHS*V271	Capable of being opened locally	Manually cycle valve locally
3CHS*V272	Capable of being opened locally	Manually cycle valve locally
3CHS*V273	Capable of being closed locally	Manually cycle valve locally
3MSS*MOV74A (Hand Wheel)	Capable of being opened locally	Manually cycle valve locally*
3MSS*MOV74B (Hand Wheel)	Capable of being opened locally	Manually cycle valve locally*
3MSS*MOV74C (Hand Wheel)	Capable of being opened locally	Manually cycle valve locally*
3MSS*MOV74D (Hand Wheel)	Capable of being opened locally	Manually cycle valve locally*
3RHS*FCV618 (Travel Limiter)	Capable of being throttled locally	Manually throttle valve locally*
3RHS*FCV619 (Travel Limiter)	Capable of being throttled locally	Manually throttle valve locally*

* Tested as part of the Inservice Testing Program.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES:

1. This documents the safety grade equipment required to perform a SGCS at Millstone Unit 3. The equipment listed herein is based on the assumptions and equipment described in FSAR Chapter 5.4.7.2.3.5, “Safety Grade Cold Shutdown.” For some safety related systems required for SGCS (i.e., RHR, Component Cooling, Service Water, Auxiliary Feedwater), all components required to perform the applicable safety functions of the system are not listed. These systems are already covered by TS and support equipment is already required to be OPERABLE by a TS and are identified in current TS surveillance requirements. Relief valves and check valves are not listed since they are normally addressed by Technical Specification 4.0.5 instead of a specific Technical Specification LCO requirement.

   Main steam relieving valves are allowed to be operated intermittently to allow normal plant operations and maintenance.

   The purpose of the list is to identify components required for SGCS which are not covered under current TS or TRM. The components required for SGCS which are not covered under current TS or other TRMs are included in the TECHNICAL REQUIREMENT of this TRM. The current TS or TRM is listed only if it requires the components to be OPERABLE or FUNCTIONAL in MODE 1, 2, or 3 in the required configuration (position) for Safety Grade Cold Shutdown. The components listed in TRM Table 7.6-1 are the components required for SGCS, but are not included in existing Technical Specifications or other TRMs.

   The capability of identified equipment required for Safety Grade Cold Shutdown is verified by any applicable TS or TRM surveillances. Equipment not verified by an applicable TS or TRM surveillance is covered by this TRM. The Applicability statement only applies to MODES 1, 2 and 3 since all components contained in Table 7.6-1, except the RHR Heat Exchanger Bypass Valve Travel Limiters, are used to perform boration, initial cooldown to RHR conditions, and depressurization functions which are performed in MODE 3. The RHR Heat Exchanger Bypass Travel Limiters are used to increase cooldown rate during the RHR cooldown to COLD SHUTDOWN and allow the Safety Grade Cold Shutdown 72 hour licensing basis to be met for a shutdown initiated from MODES 1, 2 or 3. The RHR Heat Exchanger Bypass Valve Travel Limiters are not required for a Safety Grade Cold Shutdown initiated from MODE 4 since the boration, initial cooldown, and depressurization functions have already been completed and there is sufficient time available to perform RHR cooldown to COLD SHUTDOWN without the RHR Heat Exchanger Bypass Valve Travel Limiters.

2. TECHNICAL SURVEILLANCE REQUIREMENT 7.6.1.2: TECHNICAL REQUIREMENT 3.1.2.6 addresses Boric Acid Storage Tank FUNCTIONALITY. This TECHNICAL REQUIREMENT does not require the tanks to be FUNCTIONAL in MODES 1-3. The BAT tanks are only required to be FUNCTIONAL if the path via the boric acid transfer pumps is credited in TECHNICAL REQUIREMENT 3.1.2.2 as one of the two required flow paths. In addition, the Safety Grade Cold Shutdown analysis requires both tanks with 14,040 gallons (net usable) in each due to single failure concerns.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

The level in the tanks will be verified on the same frequency as the weekly TECHNICAL REQUIREMENT boration flow path TECHNICAL SURVEILLANCE REQUIREMENT. Each tank must contain sufficient volume to support COLD SHUTDOWN. This condition requires a net usable volume of 14,040 gallons to ensure that the COLD SHUTDOWN MARGIN can be achieved without requiring manual operation of the BAT cross-connect valves. The unusable volume in each boric acid storage tank is 1,824 gallons and includes instrument inaccuracy, vortexing, level tap location and suction location. Due to readability issues, another 136 gallons is added. Therefore, the indicated volume requirement is 16,000 gallons.

DEFINITIONS

a. Safety Grade Cold Shutdown - Branch Technical Position RSB 5-1 states that Safety Grade Cold Shutdown is the ability to bring the reactor from HOT STANDBY to a COLD SHUTDOWN condition utilizing only safety related equipment, with only offsite or only on-site power available, with the most limiting single failure, within a reasonable period.

b. Reasonable Period - NUREG-0800, Rev. 3, “Standard Review Plan,” clarifies the reasonable period of time as 36 hours within which the reactor must be brought to conditions permitting operation of the RHR system. The reasonable period of time within which the reactor must be brought from shutdown to a COLD SHUTDOWN condition is defined as 72 hours in the FSAR.

BACKGROUND DISCUSSION

1. ASSUMPTIONS

a. The most limiting single failure is loss of one redundant RHR train, as a result of a loss of one vital bus.

b. Only safety grade equipment is available.

c. Non-safety grade equipment is assumed to be unavailable.

d. The Control Room is available to perform required operator actions.

e. A Loss-Of-Coolant (LOCA) accident has not occurred.

f. Loss-Of-Offsite Power (LOP) occurs.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

LOP results in the loss of the following equipment and associated functions used during normal COLD SHUTDOWN:

Equipment lost due to LOP	Normal COLD SHUTDOWN function lost due to LOP
Reactor Coolant Pumps	RCS forced circulation
Reactor Coolant Pumps	Pressurizer spray for RCS depressurization
Auxiliary spray air operated valves	Pressurizer spray for alternate RCS depressurization
RCS letdown air operated valves	Normal RCS letdown for boration
RCS charging air operated valves	Normal charging flow control
Boric acid transfer air operated valves	Normal transfer of boron from boric acid tank
Circulating water pumps	Steam dump to condenser for RCS cooldown
Main Feedwater pumps	Normal feedwater
Condensate storage tank air operated valves	Additional Auxiliary feedwater source
Air operated valves	Valve dependent

g. Air operated valves are assumed to fail to their design fail position due to Loss-of-offsite power and loss of air for those events where air is unavailable.

h. Valves, which are in the required position for SGCS during normal plant operation and which do not need to be operated during SGCS, are not considered as required.

2. DESCRIPTION OF EVENT RESPONSE

Normal COLD SHUTDOWN involves taking the RCS from no-load temperature (557°F) and pressure to COLD SHUTDOWN Temperature (< 200°F). SGCS is an evolution performed with only safety grade equipment. BTP RSB 5-1 stipulates SGCS is to be performed from the control room with minimum local actions.

a. Initial Conditions

1. For the Millstone Unit 3 Safety Grade Cold Shutdown, it is assumed a Loss-Of-Offsite Power (LOP) occurs. As a result of the LOP, the diesel generators startup and energize the emergency 4.16kV buses 34C and 34D. The limiting single failure is the loss of one redundant RHR train, due to the loss of a diesel generator or vital bus.

2. Instrument air is lost.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

3. Reactor trip and turbine trip are assumed to occur due to an initiating event, LOP, or manually. Reactor coolant circulation is accomplished by natural circulation since the reactor coolant pump coast down due to LOP.
4. To achieve and maintain COLD SHUTDOWN, the following key steps are performed:
   - Boration and inventory control
   - Initial Cooldown to RHS conditions
   - Depressurization
   - Cooldown to COLD SHUTDOWN

b. Boration and Inventory Control

The RCS is borated while at HOT STANDBY to the required COLD SHUTDOWN MARGIN so the core will remain subcritical following the RCS cooldown and decay of Xenon.

The charging pumps suction line from the VCT (3CHS*LCV112B/C) is isolated. Boration is accomplished with the charging pumps taking suction from the gravity drain lines (3CHS*MV8507A/B) from the boric acid tanks (BATs). The TECHNICAL REQUIREMENT 3.1.2.1 emergency boration flow path through 3CHS*MV8104 is not credited since it is not single failure proof and 3CHS*MV8104 is assumed to be closed.

After boration, makeup is accomplished by taking a suction from the RWST (3CHS*LCV112D/E). Valves, 3CHS*FCV110B and 3CHS*FCV111B must fail close, if open, to ensure boric acid is not diverted to the VCT. Valve

3CHS*FCV111A must fail close, if open, to prevent diversion of boric acid into the Primary Grade Water System following a failure of check valve, 3CHS*V310.

Each BAT has two (2) level instruments powered from opposite electrical trains. Although they provide redundancy, SGCS design only requires a single level instrument powered by the same electrical train for single failure criteria (loss of one electrical bus). Therefore, level instruments 3CHS*LI102 and 3CHS*LI106 are considered required BAT (3CHS*TK5) support equipment and 3CHS*LI104 and 3CHS*LI105 are not.

The charging pumps discharge through the bypass charging flow path consisting of an SOV (3CHS*HCV190A) and a motor operated throttling valve (3CHS*MV8116) which are on the same Class 1E bus. The bypass charging flow path is used since the air operated flow control valves (3CHS*FCV121) in the normal charging flow path fails open on loss of air resulting in loss of throttle capability. When the bypass charging flow path is used, the normal flowpath is isolated by closing (3CHS*MV8106).

If a bus failure occurs and 3CHS*MV8106 cannot be closed, valve 3CHS*MV8438A, which is on the opposite Class 1E bus, can be closed to isolate the normal charging flowpath. In this case, local manual action is credited to align alternate seal injection by opening valve 3CHS*V272 (for pump A) or 3CHS*V271 (for pump C) and closing valve 3CHS*V273 to maintain an RCP seal cooling flowpath.

BASES (Continued):

When the bypass charging flowpath is used, flow is directed to RCS loop A through normally open valve 3CHS*AV8146. In the event of a single failure (Purple bus failure, 3MSS*MOV74A, 3MSS*MOV18A) which results in the loss of natural circulation and boron mixing in the RCS loop A, valve 3CHS*AV8147 must be opened to direct flow to RCS loop D to ensure adequate boron reaches the core.

A different throttle valve (3CHS*HCV190B), powered from the opposite Train Class 1E bus, can be used to throttle through the high pressure ECCS injection lines (3SIH*MV8801A/B) by closing 3CHS*MV8438B. In this case, local manual action is credited to align alternate seal injection by opening valve 3CHS*V270 (for pump B) or 3CHS*V271 (for pump C) and closing valve 3CHS*V273 to maintain an RCP seal cooling flowpath.

RCP seal injection is maintained throughout SGCS. If the normal seal control valve 3CHS*HCV182 fails closed due to single failure, seal flow can be controlled by opening a manual valve for the running charging pump (3CHS*V270, 3CHS*V271, and 3CHS*V272) and closing valve (3CHS*V273).

Letdown is accomplished through a parallel and series arrangement of reactor vessel head vent isolation valves (3RCS*SV8095A/B, 3RCS*SV8096A/B), and parallel throttle valves (3RCS*HCV442A/B) to the pressurizer relief tank (PRT). The letdown flow is controlled with throttling valves (3RCS*HCV442A/B). If the PRT fills, the rupture disk will open allowing inventory to flow onto the containment floor.

c. Initial Cooldown to RHR

Initial heat removal/cooldown is accomplished with the steam generators, supplied by auxiliary feedwater (AFW) and steaming through the pressure relieving bypass (atmospheric dump) valves (3MSS*MOV74A/B/C/D). In the event of loss of power due to bus failure local manual opening, via the hand wheel, of MSS*MOV74A/B/C/D may be required to support RCS cool down and depressurization. The main steam pressure relieving isolation (block) valves (3MSS*MOV18A/B/C/D) must be open in order to use the pressure relieving bypass valves. Two steam generators and their associated valves are sufficient to bring the plant to RHS initiation conditions. The block valves must remain open during operation since a bus failure with a block valve closed may result in only one steam generator being capable to relieve steam through an atmospheric dump valve.

The assumed single failure of the loss of one diesel generator results in the loss of one motor driven auxiliary feedwater pump. Only one motor driven or one turbine driven auxiliary feedwater pump is required to supply sufficient water to the two steam generators to remove decay heat. The motor driven auxiliary feedwater is supplied from the demineralized water storage tank (DWST) and throttled through valves (3FWA*HV31A/B/C/D).

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

The turbine driven auxiliary feedwater is supplied through the demineralized water storage tank (DWST) and throttled through valves (3FWA*HV32A/B/C/D and 3FWA*HV36A/B/C/D). For the DESIGN BASIS Safe Shutdown event, the DWST has adequate inventory to supply auxiliary feedwater during the shutdown. The RCS is cooled to 350°F.

d. Depressurization

The safety injection accumulators are isolated using the discharge MOVs (3SIL*MV8808A/B/C/D), to prevent accumulator injection during RCS depressurization. There is adequate time to restore power to each MOV if power is lost due to LOP and a diesel generator failure. In the event that a MOV fails to close, the accumulators are depressurized using parallel solenoid-operated nitrogen vent valves (3SIL*SV8875A/B/C/D/E/F/G/H) through a common vent header with parallel valves (3SIL*HCV943A/B).

The low pressurizer pressure and low steam line pressure SI signals are blocked prior to depressurization to prevent ECCS actuation. RCS depressurization is accomplished using one pressurizer power-operated relief (PORV) valves (3RCS*PCV455A, 3RCS*PCV456). The associated pressurizer power operated relief isolation (block) valve

(3RCS*MV8000A/B) must be open to use the PORVs. The RCS is depressurized to approximately 375 psig.

e. Cooldown to COLD SHUTDOWN

Once the RCS is less than or equal to 350°F and 375 psig, one train of RHR is placed in service. The second RHR train is assumed to be lost due to the loss of one diesel generator (single failure). Before the RHR System is placed into service, the RHR pump suctions from the RWST (3SIL*MV8812A/B) are closed and the suctions from the RCS hot legs (3RHS*MV8701A/B/C, and 3RHS*MV8702A/B/C) are opened. In the event of bus failure, valves 3RHS*MV8701B and 3RHS*MV8702A are locally opened, since they are powered from the opposite train bus as the associated RHR pump.

Due to loss of instrument air, valves 3RHS*HCV606/607 and 3RHS*FCV618/619 fail open to their limited positions. To ensure that COLD SHUTDOWN conditions are achieved within the 72 hour licensing basis, RHR valves, 3RHS*FCV618/619, must be manually throttled during the cooldown to direct more flow through the RHR heat exchanger as RCS temperature decreases, but without exceeding 145°F CCP outlet temperature.

Component cooling water pumps provide water to the RHR heat exchangers. Cooldown by steaming through atmospheric dump valves will continue in parallel with RHR operation until a single train of RHR can remove decay heat.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

RCS cooldown is performed with the RHR System until the COLD SHUTDOWN condition (approximately 200°F) is reached.

3. REQUIRED EQUIPMENT

a. Instrumentation required to perform the Safety Grade Cold Shutdown.

Parameter	Instrument
Pressurizer Water Level	3RCS*LI459A 3RCS*LI460A
Pressurizer Pressure	3RCS*LI455B 3RCS*LI456B
Steam Generator Water Level	3FWS*LI501 3FWS*LI502 3FWS*LI503 3FWS*LI504 3FWS*LI519 3FWS*LI529 3FWS*LI537 3FWS*LI548
Steam Line Pressure	3MSS*PI514A 3MSS*PI524A 3MSS*PI534A 3MSS*PI544A 3MSS*PI515A 3MSS*PI525A 3MSS*PI535A 3MSS*PI545A
RCS Hot Leg Temperature	3RCS*TI413A 3RCS*TI423A 3RCS*TR433A
RCS Cold Leg Temperature	3RCS*TI413B 3RCS*TI423B 3RCS*TR433B
RCS Wide Range Pressure	3RCS*PI403 3RCS*PI405
Nuclear Instrumentation	3NME*DET1 3NME*DET2
Demineralized Water Storage Tank Level	3FWA*LI20A 3FWA*LI20B
Boric Acid Tank Level	3CHS*LI102 3CHS*LI106

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

3. REQUIRED EQUIPMENT (continued):

b. The safety grade equipment required to perform a SGCS at Millstone Unit 3 identified by system is as follows:

1. Auxiliary Feedwater System

Equipment ID	Component Name	Tech. Spec
3FWA*TK1	Demineralized Water Storage Tank	3.7.1.3
3FWA*LI20A	Demineralized Water Storage Tank Level Indicator	3.3.3.6
3FWA*LI20B	Demineralized Water Storage Tank Level Indicator	3.3.3.6
3FWS*LI501	Steam Generator (wide range) indicator	3.3.3.6
3FWS*LI502	Steam Generator (wide range) indicator	3.3.3.6
3FWS*LI503	Steam Generator (wide range) indicator	3.3.3.6
3FWS*LI504	Steam Generator (wide range) indicator	3.3.3.6
3FWS*LI519	Steam Generator Level (narrow range) Control	3.3.3.6
3FWS*LI529	Steam Generator Level (narrow range) Control	3.3.3.6
3FWS*LI537	Steam Generator Level (narrow range) Control	3.3.3.6
3FWS*LI548	Steam Generator Level (narrow range) Control	3.3.3.6
3FWA*P1A	Motor Driven Auxiliary Feedwater Pump 1A	3.7.1.2
3FWA*HV31A	Auxiliary Feedwater Flow Control to SG 1	3.7.1.2
3FWA*HV31D	Auxiliary Feedwater Flow Control to SG 4	3.7.1.2
3FWA*MOV35A	Auxiliary Feedwater Isolation to SG 1	3.7.1.2
3FWA*MOV35D	Auxiliary Feedwater Isolation to SG 4	3.7.1.2
3FWA*P1B	Motor Driven Auxiliary Feedwater Pump 1B	3.7.1.2
3FWA*HV31B	Auxiliary Feedwater Flow Control to SG 2	3.7.1.2
3FWA*HV31C	Auxiliary Feedwater Flow Control to SG 3	3.7.1.2
3FWA*MOV35B	Auxiliary Isolation Feedwater to SG 2	3.7.1.2
3FWA*MOV35C	Auxiliary Isolation Feedwater to SG 3	3.7.1.2
3FWA*P2	TDAFW Pump	3.7.1.2
3FWA*HV32A	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV32B	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV32C	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV32D	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV36A	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV36B	TDAFW Flow Control Valve	3.7.1.2
3FWA*HV36C	TDAFW Flow Control Valve	3.7.1.2

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** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

1. Auxiliary Feedwater System (Continued)

Equipment ID	Component Name	Tech. Spec.
3FWA*HV36D	TDAFW Flow Control Valve	3.7.1.2
3MSS*AOV31A	Auxiliary Feedwater Pump Steam Admission Valve	3.7.1.2
3MSS*AOV31B	Auxiliary Feedwater Pump Steam Admission Valve	3.7.1.2
3MSS*AOV31D	Auxiliary Feedwater Pump Steam Admission Valve	3.7.1.2

2. Chemical And Volume Control System

Equipment ID	Component Name	Tech. Spec.	Tech Req.
3CHS*P3A	Charging Pump A	3.5.2	3.1.2.2 3.1.2.4
3CHS*P3B	Charging Pump B	3.5.2	3.1.2.2 3.1.2.4
3CHS*P3C	Charging Pump C	3.5.2	3.1.2.2 3.1.2.4
3CHS*MV8116	Emergency Boration Bypass Isolation Valve	4.0.5	3.1.2.2***
3CHS*TK5A	Boric Acid Tank		3.1.2.6****
3CHS*TK5B	Boric Acid Tank		3.1.2.6****
3CHS*LI102	Boric Acid Tank Level Indicator		3.1.2.6****
3CHS*LI106	Boric Acid Tank Level Indicator		3.1.2.6****
3CHS*MV8507A	Gravity Boration Valve	4.0.5	3.1.2.1***
3CHS*MV8507B	Gravity Boration Valve	4.0.5	3.1.2.1***

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7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

2. Chemical And Volume Control System (continued)

Equipment ID	Component Name	Tech. Spec.	Tech Req.
3CHS*LCV112B	VCT Outlet Isolation Valve	4.0.5	3.1.2.2
3CHS*LCV112C	VCT Outlet Isolation Valve	4.0.5	3.1.2.2
3CHS*LCV112D	RWST to Charging Pump Suction	4.0.5	3.1.2.2
3CHS*LCV112E	RWST to Charging Pump Suction	4.0.5	3.1.2.2
3CHS*HCV190A	Emergency Boration Flow Control Valve	4.0.5	3.1.2.2***
3CHS*HCV190B	Emergency Boration Flow Control Valve	4.0.5	3.1.2.2***
3CHS*MV8106	Charging Line Isolation Valve	4.0.5	3.1.2.2
3CHS*AV8146	RCS Loop A Charging Isolation Valve	4.0.5	3.1.2.2
3CHS*AV8147	RCS Loop D Charging Isolation Valve	4.0.5	3.1.2.2
3CHS*FCV110B	Borate/Alternate Dilute Flow Control Valve	4.0.5	3.1.2.2
3CHS*FCV111A	Primary Grade Water Flow Control Valve	4.0.5	3.1.2.2
3CHS*FCV111B	Dilute/Alternate Dilute Flow Control Valve	4.0.5	3.1.2.2
3CHS*MV8438A	Charging Pump Discharge Isolation Valve	4.0.5	3.1.2.2***
3CHS*MV8438B	Charging Pump Discharge Isolation Valve	4.0.5	3.1.2.2***
3CHS*V270	Charging Pump Main Charging Bypass	4.0.5 3.5.2*	3.1.2.2***
3CHS*V271	Charging Pump Main Charging Bypass	4.0.5 3.5.2*	3.1.2.2***
3CHS*V272	Charging Pump Main Charging Bypass	4.0.5 3.5.2*	3.1.2.2***
3CHS*V273	Charging Pump Main Charging Bypass	4.0.5 3.5.2*	3.1.2.2***

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7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

3. Main Steam System

Equipment ID	Component Name	Tech. Spec
3MSS*CTV27A	Main Steam Isolation Valves	3.7.1.5
3MSS*CTV27B	Main Steam Isolation Valves	3.7.1.5
3MSS*CTV27C	Main Steam Isolation Valves	3.7.1.5
3MSS*CTV27D	Main Steam Isolation Valves	3.7.1.5
3MSS*PI514A	Main Steam Line A Pressure Indicator	3.3.3.6
3MSS*PI515A	Main Steam Line A Pressure Indicator	3.3.3.6
3MSS*PI524A	Main Steam Line B Pressure Indicator	3.3.3.6
3MSS*PI525A	Main Steam Line B Pressure Indicator	3.3.3.6
3MSS*PI534A	Main Steam Line C Pressure Indicator	3.3.3.6
3MSS*PI535A	Main Steam Line C Pressure Indicator	3.3.3.6
3MSS*PI544A	Main Steam Line D Pressure Indicator	3.3.3.6
3MSS*PI545A	Main Steam Line D Pressure Indicator	3.3.3.6
3MSS*MOV74A	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valves	4.0.5 3.6.3 3.7.1.6
3MSS*MOV74A	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel	3.7.1.6**

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** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

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7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

3. Main Steam System (continued)

Equipment ID	Component Name	Tech. Spec
3MSS*MOV74B	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valves	4.0.5 3.6.3 3.7.1.6
3MSS*MOV74B	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel	3.7.1.6**
3MSS*MOV74C	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valves	4.0.5 3.6.3 3.7.1.6
3MSS*MOV74C	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel	3.7.1.6**
3MSS*MOV74D	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valves	4.0.5 3.6.3 3.7.1.6
3MSS*MOV74D	Main Steam Pressure Relieving Bypass (Atmospheric Dump) Valve Manual Open Hand Wheel	3.7.1.6**
3MSS*MOV18A	Main Steam Pressure Relieving Isolation Valve	4.0.5 3.7.1.6
3MSS*MOV18C	Main Steam Pressure Relieving Isolation Valve	4.0.5 3.7.1.6
3MSS*MOV18B	Main Steam Pressure Relieving Isolation Valve	4.0.5 3.7.1.6
3MSS*MOV18D	Main Steam Pressure Relieving Isolation Valve	4.0.5 3.7.1.6

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7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

4. Reactor Coolant System

Equipment ID	Component Name	Tech. Spec
3NME*DET1	Nuclear Instrumentation	3.3.3.6
3NME*DET2	Nuclear Instrumentation	3.3.3.6
3RCS*TI413A	3RCS Loop No. I Wide Range Hot Leg Temperature Indicator	3.3.3.6
3RCS*TI423A	3RCS Loop No. 2 Wide Range Hot Leg Temperature Indicator	3.3.3.6
3RCS*TR433A	3RCS Loop No. 3 Wide Range Hot Leg Temperature Indicator	3.3.3.6
3RCS*TR433A	3RCS Loop No. 4 Wide Range Hot Leg Temperature Indicator	3.3.3.6
3RCS*TI413B	3RCS Loop No. 1 Wide Range Cold Leg Temperature Indicator	3.3.3.6
3RCS*TI423B	3RCS Loop No. 2 Wide Range Cold Leg Temperature Indicator	3.3.3.6
3RCS*TR433B	3RCS Loop No. 3 Wide Range Cold Leg Temperature Indicator	3.3.3.6
3RCS*TR433B	3RCS Loop No. 4 Wide Range Cold Leg Temperature Indicator	3.3.3.6
3RCS*PI403	3RCS Loop No. 4 Wide Range Pressure Indicator	3.3.3.6
3RCS*PI405	3RCS Loop No. 1 Wide Range Pressure Indicator	3.3.3.6
3RCS*LI459A	Pressurizer Level Indicator	3.3.3.6
3RCS*LI460A	Pressurizer Level Indicator	3.3.3.6
3RCS*PI455B	Pressurizer Pressure Indicator	3.3.3.5
3RCS*PI456B	Pressurizer Pressure Indicator	3.3.3.5

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** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

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7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

4. Reactor Coolant System (Continued)

Equipment ID	Component Name	Tech. Spec	Tech Req.
3RCS*PCV455A	Pressurizer Power Operated Relief Isolation Valve (PORV)	3.4.4 3.4.9.3	3.4.11
3RCS*PCV456	Pressurizer Power Operated Relief Isolation Valve (PORV)	3.4.4 3.4.9.3	3.4.11
3RCS*MV8000A	Pressurizer Power Operated Relief Isolation (Block) Valve	3.4.4	3.4.11
3RCS*MV8000B	Pressurizer Power Operated Relief Isolation (Block) Valve	3.4.4	3.4.11
3RCS*SV8095A	Reactor Vessel Head Vent Isolation Valve		3.4.11
3RCS*SV8095B	Reactor Vessel Head Vent Isolation Valve		3.4.11
3RCS*SV8096A	Reactor Vessel Head Vent Isolation Valve		3.4.11
3RCS*SV8096B	Reactor Vessel Head Vent Isolation Valve		3.4.11
3RCS*HCV442A	Reactor Vessel Head Vent Throttle Valve		3.4.11
3RCS*HCV442B	Reactor Vessel Head Vent Throttle Valve		3.4.11
3RCS*SG1A	Steam Generator A	3.4.1.2.a 3.4.1.3.a 3.4.5	
3RCS*SG1B	Steam Generator B	3.4.1.2.b 3.4.1.3.b 3.4.5	
3RCS*SG1C	Steam Generator C	3.4.1.2.c 3.4.1.3.c 3.4.5	
3RCS*SG1D	Steam Generator D	3.4.1.2.d 3.4.1.3.d 3.4.5	

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** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

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**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

5. Reactor Plant Component Cooling Water System

Equipment ID	Component Name	Tech. Spec
3CCP*P1A	Reactor Plant Component Cooling Pump	3.7.3
3CCP*P1B	Reactor Plant Component Cooling Pump	3.7.3
3CCP*P1C	Reactor Plant Component Cooling Pump	3.7.3

6. Residual Heat Removal System

Equipment ID	Component Name	Tech. Spec
3RHS*HCV606	Residual Heat Removal Pump Discharge Isolation Valve	4.0.5 3.4.1.3* 3.5.2
3RHS*HCV607	Residual Heat Removal Pump Discharge Isolation Valve	4.0.5 3.4.1.3* 3.5.2
3RHS*FCV618	Residual Heat Removal Heat Exchanger Bypass Valve	4.0.5 3.4.1.3*
3RHS*FCV619	Residual Heat Removal Heat Exchanger Bypass Valve	4.0.5 3.4.1.3*
3RHS*MV8701A	Residual Heat Removal Pump A Loop Isolation Valve	4.0.5 3.4.1 3* 4.6.3.3
3RHS*MV8701B	Residual Heat Removal Pump A Loop Isolation Valve	4.0.5 3.4.1 3* 4.6.3.3
3RHS*MV8701C	Residual Heat Removal Pump A Loop Isolation Valve	4.0.5 3.4.1 3*
3RHS*MV8702A	Residual Heat Removal Pump B Loop Isolation Valve	4.0.5 3.4.1.3* 4.6.3.3
3RHS*MV8702B	Residual Heat Removal Pump B Loop Isolation Valve	4.0.5 3.4.1.3* 4.6.3.3

* Technical Specifications do not address Limiting Conditions for Operation or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.TS surveillance requirements are met by TS 4.0.5.

** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

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**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

6. Residual Heat Removal System (Continued)

Equipment ID	Component Name	Tech. Spec
3RHS*MV8702C	Residual Heat Removal Pump B Loop Isolation Valve	4.0.5 3.4.1.3*
3RHS*P1A	Residual Heat Removal Pump A	3.5.2
3RHS*P1B	Residual Heat Removal Pump B	3.5.2
3RHS*E1A	RHR Heat Exchanger	3.5.2
3RHS*E1B	RHR Heat Exchanger	3.5.2

7. Low Pressure Safety Injection System

Equipment ID	Component Name	Tech. Spec
3SIL*MV8808A	Accumulator Discharge Isolation Valve	4.0.5, 3.5.1*
3SIL*MV8808B	Accumulator Discharge Isolation Valve	4.0.5, 3.5.1*
3SIL*MV8808C	Accumulator Discharge Isolation Valve	4.0.5
3SIL*MV8808D	Accumulator Discharge Isolation Valve	4.0.5, 3.5.1*
3SIL*HCV943A	Accumulator Nitrogen Vent Valve	4.0.5, 3.5.1*
3SIL*HCV943B	Accumulator Nitrogen Vent Valve	4.0.5, 3.5.1*
3SIL*SV8875A	Accumulator A Nitrogen Isolation Valve	4.0.5, 3.5.1*
3SIL*SV8875E	Accumulator A Nitrogen Isolation Valve	4.0.5, 3.5.1*
3SIL*SV8875B	Accumulator B Nitrogen Isolation Valve	4.0.5, 3.5.1*

* Technical Specifications do not address Limiting Conditions for Operation or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.TS surveillance requirements are met by TS 4.0.5.

** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

*** The Technical Requirements Manual does not address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference. TS surveillance requirements are met by TS 4.0.5.

**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

7. Low Pressure Safety Injection System (Continued)

Equipment ID	Component Name	Tech. Spec
3SIL*SV8875F	Accumulator B Nitrogen Isolation Valve	4.0.5 3.5.1*
3SIL*SV8875C	Accumulator C Nitrogen Isolation Valve	4.0.5 3.5.1*
3SIL*SV8875G	Accumulator C Nitrogen Isolation Valve	4.0.5 3.5.1*
3SIL*SV8875D	Accumulator D Nitrogen Isolation Valve	4.0.5 3.5.1*
3SIL*SV8875H	Accumulator D Nitrogen Isolation Valve	4.0.5 3.5.1*
3SIL*MV8812A	RWST to Residual Heat Removal Pump Suction Isolation	4.0.5 3.5.2
3SIL*MV8812B	RWST to Residual Heat Removal Pump Suction Isolation	4.0.5 3.5.2

8. High Pressure Safety Injection System

Equipment ID	Component Name	Tech. Spec
3SIH*MV8801A	Charging to Cold Leg Injection Isolation Valves	3.5.2
3SIH*MV8801 B	Charging to Cold Leg Injection Isolation Valves	3.5.2

* Technical Specifications do not address Limiting Conditions for Operation or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.TS surveillance requirements are met by TS 4.0.5.

** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

*** The Technical Requirements Manual does not address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference. TS surveillance requirements are met by TS 4.0.5.

**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

9. HVAC System

Equipment ID	Component Name	Tech. Spec.	Tech. Req.
3HVY*FN2A	Service Water Pump House Exhaust Fan	3.7.4	
3HVR*FN14A	3CHS/CCP Area Supply Fan	3.5.2 3.7.9	3.1.2.4
3HVR*FN13A	3CHS/CCP Area Exhaust Fan	3.5.2 3.7.9	3.1.2.4
3HVP*FN1A	EDG Enclosure Supply Fan	3.8.1.1	
3HVP*FN1C	EDG Enclosure Supply Fan	3.8.1.1	

10. Emergency Diesel Generator

Equipment ID	Component Name	Tech. Spec
3EGS*EG1A	Diesel Engine - Generator Set Emergency Diesel	3.8.1.1
3EGS*EG1B	Diesel Engine - Generator Set Emergency Diesel	3.8.1.1

11. 3CHS Pump Cooling

Equipment ID	Component Name	Tech. Spec	Tech. Req.
3CCE*P1A	3CHS Pump Cooling Pump A	3.5.2 3.7.3	3.1.2.4
3CCE*P1B	3CHS Pump Cooling Pump B	3.5.2 3.7.3	3.1.2.4

* Technical Specifications do not address Limiting Conditions for Operation or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference. TS surveillance requirements are met by TS 4.0.5.

** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

*** The Technical Requirements Manual does not address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference. TS surveillance requirements are met by TS 4.0.5.

**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

7.6 SAFETY GRADE COLD SHUTDOWN (SGCS)

7.6.1 EQUIPMENT REQUIRED FOR SAFETY GRADE COLD SHUTDOWN

BASES (Continued):

12. Service Water System

Equipment ID	Component Name	Tech. Spec
3SWP*P1A	Service Water Pump	3.7.4
3SWP*PIB	Service Water Pump	3.7.4
3SWP*P1C	Service Water Pump	3.7.4
3SWP*P1D	Service Water Pump	3.7.4

13. Emergency AC Distribution System

Equipment ID	Component Name	Tech. Spec
Bus 34C (3ENS*SWG-A)	Emergency 4.16kV Bus 34C Train A	3.8.3.1
Bus 34D (3ENS*SWG-B)	Emergency 4.16kV Bus 34D Train B	3.8.3.1

* Technical Specifications do not address Limiting Conditions for Operation or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.TS surveillance requirements are met by TS 4.0.5.

** Technical Specifications do not adequately address Limiting Conditions or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TS is listed for reference.

*** The Technical Requirements Manual does not address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference. TS surveillance requirements are met by TS 4.0.5.

**** The Technical Requirements Manual does not adequately address TECHNICAL REQUIREMENT or ACTION requirements for MODE 1, 2 and 3 for component to support Safety Grade Shutdown. TECHNICAL REQUIREMENT is listed for reference.

REFERENCE:

1. CR M3-00-2659.

8.0 APPENDICES

TECHNICAL REQUIREMENTS MANUAL

APPENDIX 8.1

CORE OPERATING LIMITS REPORT

CYCLE 19

Table of Contents

List of Figures

List of Tables

Millstone Unit 3
Cycle 19
CORE OPERATING LIMITS REPORT

1.0 CORE OPERATING LIMITS REPORT

This CORE OPERATING LIMITS REPORT (COLR) for Millstone Unit 3 Cycle 19 has been prepared in accordance with the requirements of Technical Specification 6.9.1.6.a. The Technical Specifications affected by this report are listed below.

2.1.1 Safety Limits

2.2.1 Limiting Safety System Settings

3/4.1.1.1.1 SHUTDOWN MARGIN - MODES 1 and 2

3/4.1.1.1.2 SHUTDOWN MARGIN - MODES 3, 4 and 5 Loops Filled

3/4.1.1.2 SHUTDOWN MARGIN - MODE 5 Loops Not Filled

3/4.1.1.3 Moderator Temperature Coefficient

3/4.1.3.5 Shutdown Rod Insertion Limit

3/4.1.3.6 Control Rod Insertion Limits

3/4.2.1.1 AXIAL FLUX DIFFERENCE

3/4.2.2.1 Heat Flux Hot Channel Factor

3/4.2.3.1 RCS Total Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor

3/4.2.5 DNB Parameters

3/4.3.5 Shutdown Margin Monitor Alarm Setpoint

3/4.9.1.1 REFUELING Boron Concentration

2.0 Operating Limits

The cycle-specific parameter limits for the specifications listed in Section 1.0 are presented in the following subsections. These limits have been developed using the NRC-approved methodologies specified in Technical Specification 6.9.1.6.b.

2.1 Safety Limits (Specification 2.1.1)

2.1.1 Reactor Core

The combination of THERMAL POWER, Reactor Coolant System highest loop average temperature, and pressurizer pressure shall not exceed the limits shown in Figure 1.

2.2 Limiting Safety System Settings (Specification 2.2.1)

2.2.1 Overtemperature ΔT

2.2.1.1 $K_1 \leq 1.20$

2.2.1.2 $K_2 \geq 0.025$ / °F

2.2.1.3 $K_3 \geq 0.00113$ / psi

2.2.1.4 $\tau_1 \geq 8$ seconds

2.2.1.5 $\tau_2 \leq 3$ seconds

2.2.1.6 $\tau_4 \geq 20$ seconds

2.2.1.7 $\tau_5 \leq 4$ seconds

2.2.1.8 T' is loop specific indicated T_{avg} at RATED THERMAL POWER, ≤ 587.1°F

2.2.1.9 P' is nominal pressurizer pressure, ≥ 2250 psia

2.2.1.10 $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power range neutron ion chambers; with nominal gains to be selected based on measured instrument response during plant startup tests calibrations such that:

(1) For $q_t - q_b$ between -18% and +10%, $f_1(\Delta I) \geq 0$, where q_t and q_b are percent RATED THERMAL POWER in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RATED THERMAL POWER;

(2) For each percent that the magnitude of $q_t - q_b$ exceeds -18%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 3.75% of its value at RATED THERMAL POWER.

(3) For each percent that the magnitude of $q_t - q_b$ exceeds +10%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 2.14% of its value at RATED THERMAL POWER.

2.2.2 Overpower ΔT

2.2.2.1 $K_4 \leq 1.10$

2.2.2.2 Deleted

2.2.2.3 $K_6 \geq 0.0015$ / °F when T > T'' and $K_6 \leq 0$ / °F when T≤ T''

2.2.2.4 $\tau_1 \geq 8$ seconds

2.2.2.5 $\tau_2 \leq 3$ seconds

2.2.2.6 Deleted

2.2.2.7 T'' is loop specific indicated T_{avg} at RATED THERMAL POWER, ≤ 587.1°F

2.3 SHUTDOWN MARGIN - MODES 1 and 2 (Specification 3/4.1.1.1.1)

2.3.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.3% $\Delta k/k$.

2.4 SHUTDOWN MARGIN - MODES 3, 4 and 5 Loops Filled (Specification 3⁄4.1.1.1.2)

2.4.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in Figures 2, 3 and 4.[1]

2.5 SHUTDOWN MARGIN - MODE 5 Loops Not Filled (Specification 3⁄4.1.1.2)

2.5.1 The SHUTDOWN MARGIN shall be greater than or equal to the limits shown in Figure 5 or the limits shown in Figure 4 with the chemical and volume control system (CVCS) aligned to preclude reactor coolant system boron concentration reduction.[1]

2.6 Moderator Temperature Coefficient (Specification 3/4.1.1.3)

2.6.1 The BOL/ARO/0% - 70% RTP MTC shall be less positive than $+ 0.5 \times 10^{-4}$ $\Delta k/k/°F$. Above 70% RTP, the MTC limit is a linear ramp to 0 $\Delta k/k/°F$ at 100% RTP.

2.6.2 The EOL/ARO/RTP MTC shall be less negative than $- 5.65 \times 10^{-4}$ $\Delta k/k/°F$.

[1]The SHUTDOWN MARGIN requirements in Figures 2, 3, 4 and 5 are based on cycle-specific boron dilution analyses performed by Dominion.

2.6.3 The 300 ppm/ARO/RTP MTC should be less negative than or equal to - 4.9 x 10^{-4} Δk/k/°F,

where: BOL stands for Beginning Of Cycle Life

ARO stands for All Rods Out

HZP stands for Hot Zero Power

EOL stands for End Of Cycle Life

RTP stands for RATED THERMAL POWER.

2.7 Shutdown Rod Insertion Limit (Specification 3/4.1.3.5)

2.7.1 The shutdown rods shall be at least 220 steps withdrawn (inclusive).

2.8 Control Rod Insertion Limits (Specification 3/4.1.3.6)

2.8.1 The control rod banks shall be limited in physical insertion as shown in Figure 6, and

2.8.2 Control bank A shall be at least 220 steps withdrawn.

2.9 AXIAL FLUX DIFFERENCE (Specification 3/4.2.1.1)

2.9.1 The AXIAL FLUX DIFFERENCE (AFD) limits are provided in Figure 7.

2.9.2 Deleted

2.9.3 Deleted

2.10 Heat Flux Hot Channel Factor - $F_Q(Z)$ (Specification 3/4.2.2.1)

$$F_Q^M(Z) \le \frac{F_Q^{RTP}}{P} \times K(Z) \quad \text{for } P > 0.5$$

$$F_Q^M(Z) \le \frac{F_Q^{RTP}}{0.5} \times K(Z) \quad \text{for } P \le 0.5$$

where: $$P = \frac{THERMAL\ POWER}{RATED\ THERMAL\ POWER}$$

2.10.1 F^{RTP}_Q = 2.60.

2.10.2 K(Z) is provided in Figure 8.

2.11 Heat Flux Hot Channel Factor Surveillance - $F_Q(Z)$ (Specification 3/4.2.2.1.2)

$$F_Q^M(Z) \leq \frac{F_Q^{RTP} \times K(Z)}{P \times W(Z)} \quad \text{for } P > 0.5$$

$$F_Q^M(Z) \leq \frac{F_Q^{RTP} \times K(Z)}{0.5 \times W(Z)} \quad \text{for } P \leq 0.5$$

where: $P = \frac{THERMAL\ POWER}{RATED\ THERMAL\ POWER}$

2.11.1 $F^{RTP}_Q = 2.60$.

2.11.2 K(Z) is provided in Figure 8.

2.11.3 W(Z) values for RAOC operation are provided in Table 1. The Cycle 19 burnup dependent RAOC W(Z) values are valid over the range of burnup from 0 to 21,600 MWD/MTU.

2.11.4 Deleted.

2.11.5 W(Z) values for Part Power operation are provided in Table 3. The Cycle 19 burnup dependent Part Power W(Z) values are valid over the range of burnup from 0 to 150 MWD/MTU.

2.11.6 The factors in Table 4 shall be used for surveillance requirement 4.2.2.1.2. A 2% factor shall be used outside of the burnup range shown in Table 4.

2.11.7 The values provided in Table 5 shall be used to reduce the normal operating space for $F_Q(Z)$ exceeding its limits.

2.11.8 W(Z) values for RAOC operation for compensatory action at 97% RTP for 1% Transient F_Q Margin Gain are provided in Table 6. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.11.9 W(Z) values for RAOC operation for compensatory action at 95% RTP for 2% Transient FQ Margin Gain are provided in Table 7. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.11.10 W(Z) values for RAOC operation for compensatory action at 93% RTP for 3% Transient F_Q Margin Gain are provided in Table 8. The Cycle 19 burnup dependent W(Z) values are valid over a range of burnup from 0 to 21,600 MWD/MTU.

2.12 RCS Total Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor - $F^N_{\Delta H}$ (Specification 3⁄4.2.3.1)

2.12.1 The RCS Total Flow Rate shall be greater than or equal to 379,200 gpm.

2.12.2 $F^N_{\Delta H} \leq F^{RTP}_{\Delta H} \times (1 + PF_{\Delta H} \times [1 - P])$

where: $$P = \frac{THERMAL\ POWER}{RATED\ THERMAL\ POWER}$$

2.12.2.1 $F^{RTP}_{\Delta H}$ = 1.586 for Robust Fuel Assemblies (RFA) and (RFA-2)

2.12.2.2 $PF_{\Delta H}$ = 0.3 for P < 1.0.

2.13 DNB Parameters (Specification 3/4.2.5)

The following DNB-related parameters shall be maintained within the limits specified below:

2.13.1 Reactor Coolant System T_{avg} shall be maintained ≤ 593.5°F.

2.13.2 Pressurizer Pressure shall be maintained ≥ 2204 psia [2].

[2] Limit not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% of RATED THERMAL POWER.

2.14 Shutdown Margin Monitor Alarm Setpoint (Specification 3/4.3.5)[3]

2.14.1 The Shutdown Margin Monitor (SMM) minimum count rate and Alarm Ratio Setting to meet Limiting Condition for Operation (LCO) 3.3.5 shall be as shown below.

Tech. Spec. LCO	SMM Alarm Ratio Setting	Min. Count Rate (counts/sec)
3.3.5.a	1.50	1.0
	1.25	0.6
3.3.5.b.1	1.50	0.50
	1.25	0.35
3.3.5.b.2	1.50	0.35
	1.25	0.25

The combination of the SMM Alarm Ratio setting and minimum count rate accounts for the time lag between the indicated and actual count rates, as well as other uncertainties. The specified SMM Alarm Ratio setting ensures that the assumption that an alarm is generated at flux doubling in the Boron Dilution Event analysis remains valid. The count rate is displayed on the SMM.

2.15 Refueling Boron Concentration (Specification 3/4.9.1.1)

2.15.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling cavity shall be maintained at a boron concentration of greater than or equal to 2600 ppm.[4]

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3 Section 2.14 is based on cycle-specific boron dilution analyses performed by Dominion.

4 This boron concentration bounds the condition of $k_{eff} \leq 0.95$ (all rods in less the most reactive two rods) and subcriticality ($k_{eff} \leq 1.0$ with all rods out).

Figure 1—Reactor Core Safety Limit

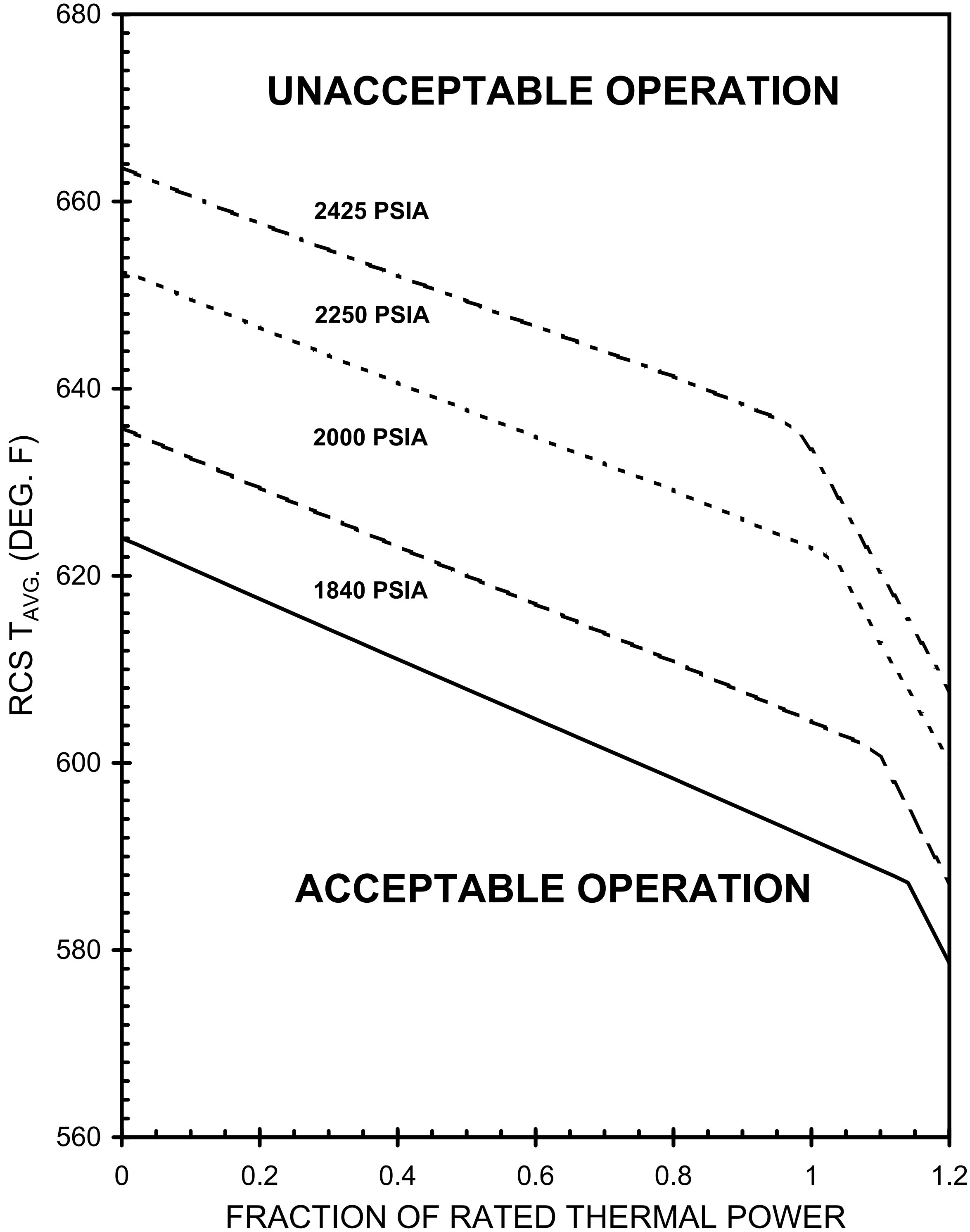

Figure 2—Required SHUTDOWN MARGIN for MODE 3

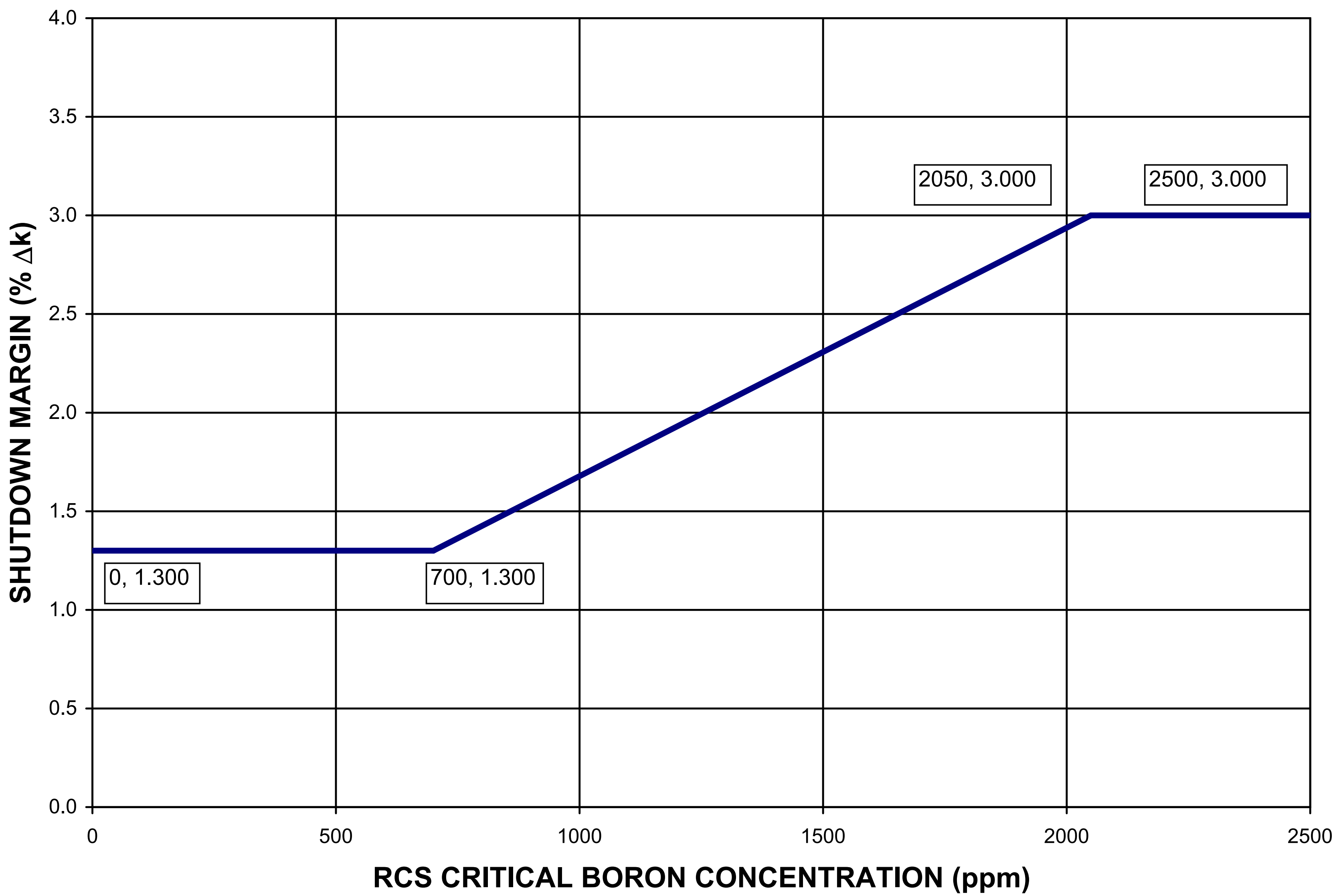

Figure 3—Required SHUTDOWN MARGIN for MODE 4

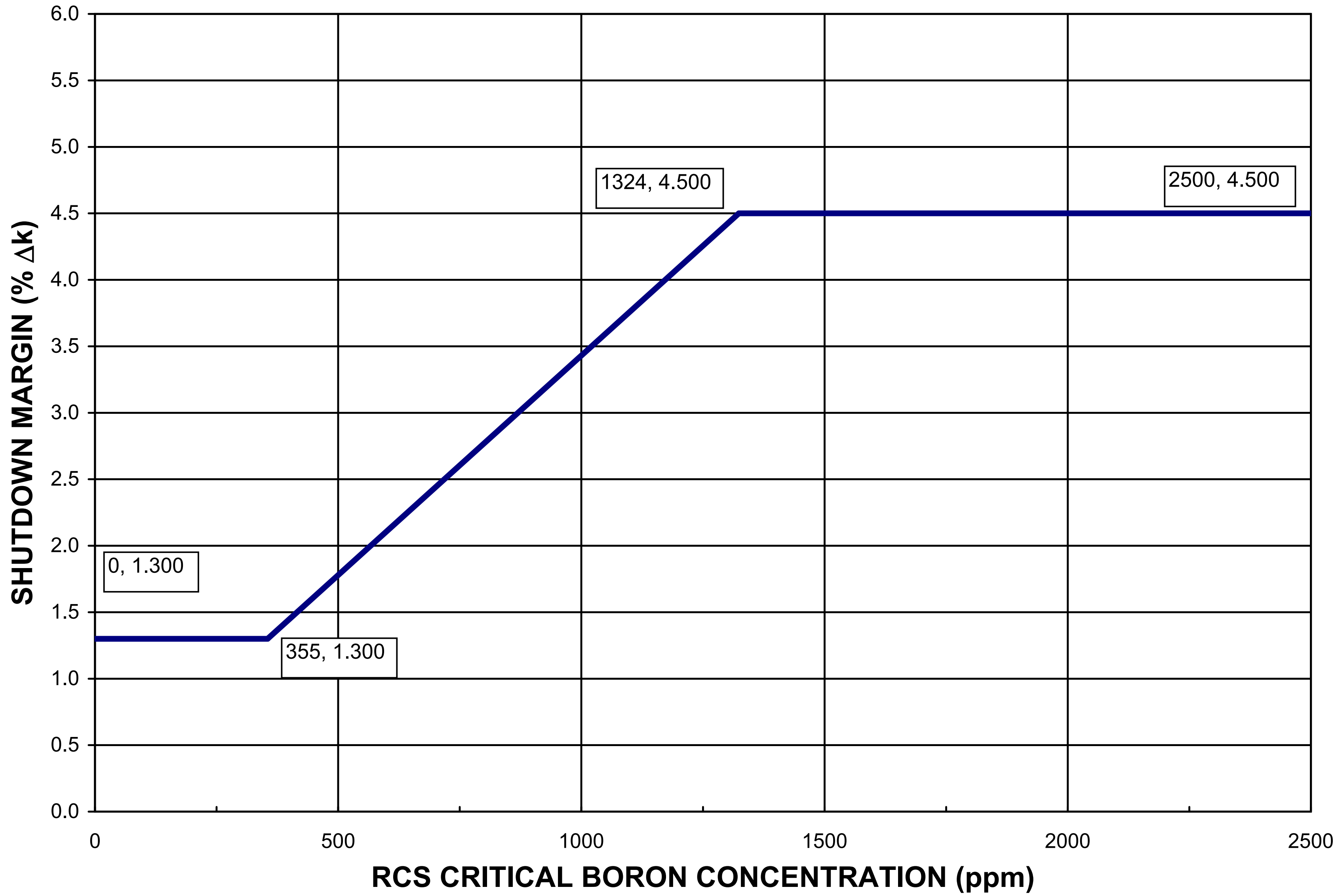

Figure 4—Required SHUTDOWN MARGIN for MODE 5 with RCS Loops Filled

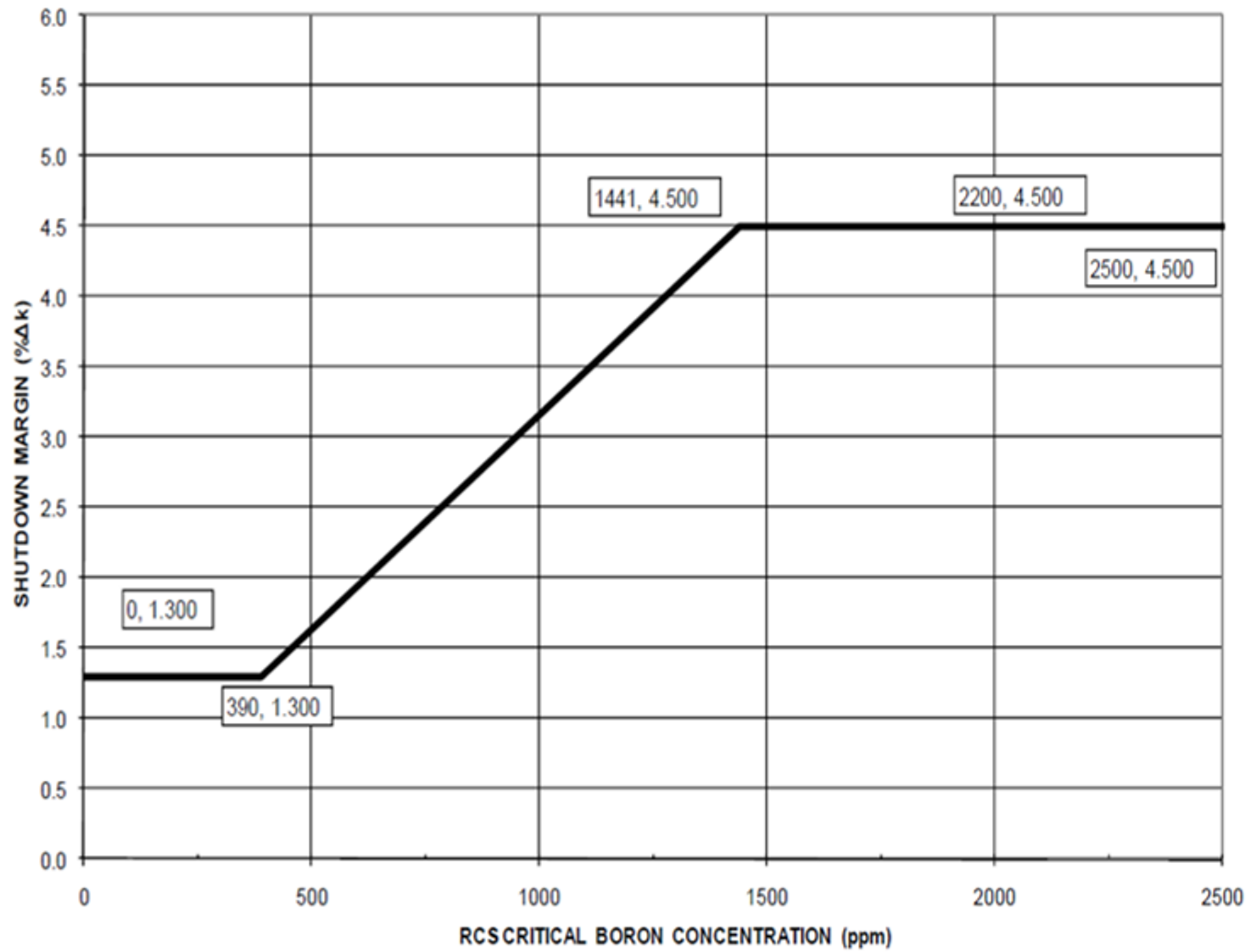

Figure 5—Required SHUTDOWN MARGIN for MODE 5 with RCS Loops Not Filled

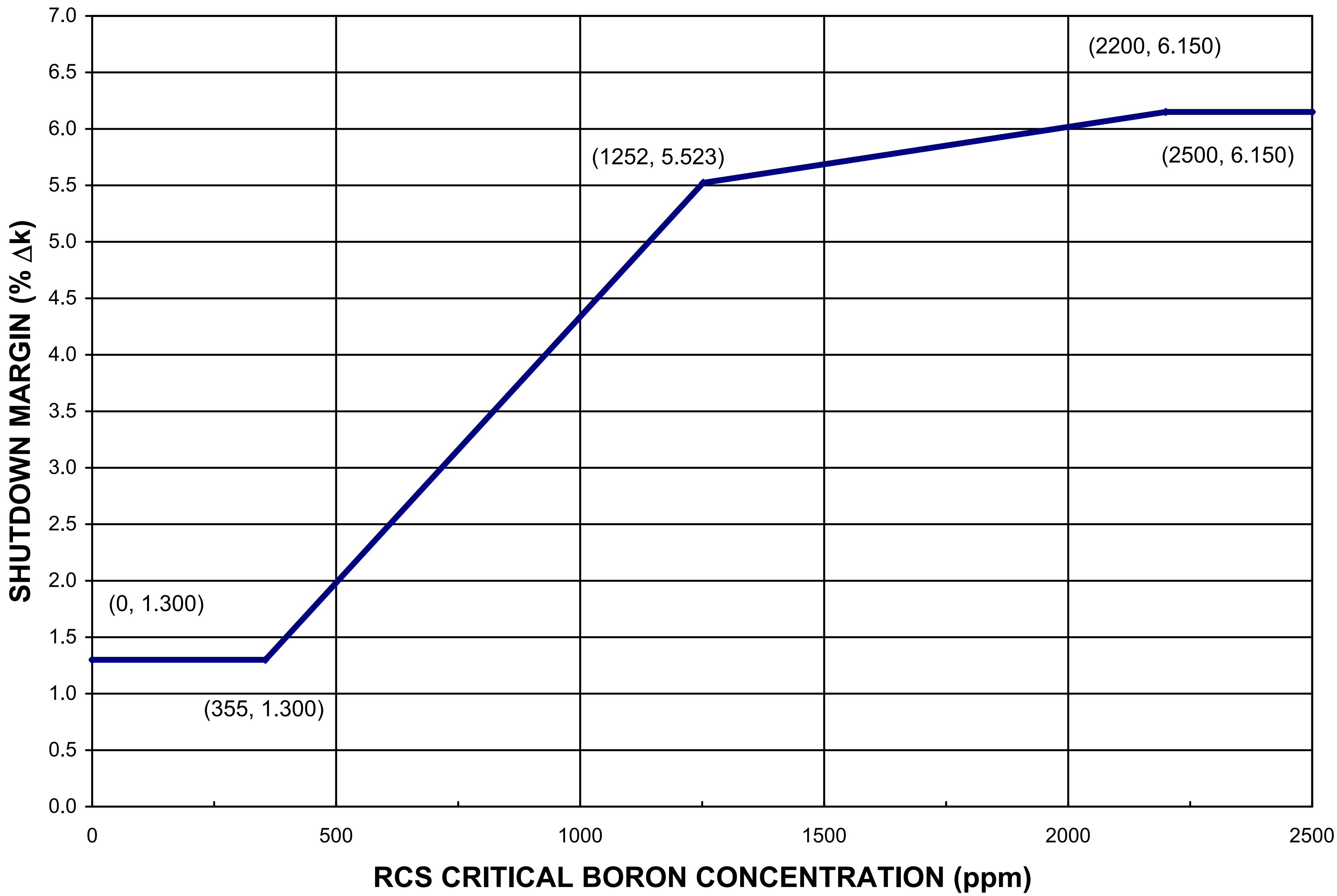

Figure 6—Control Rod Bank Insertion Limits versus THERMAL POWER

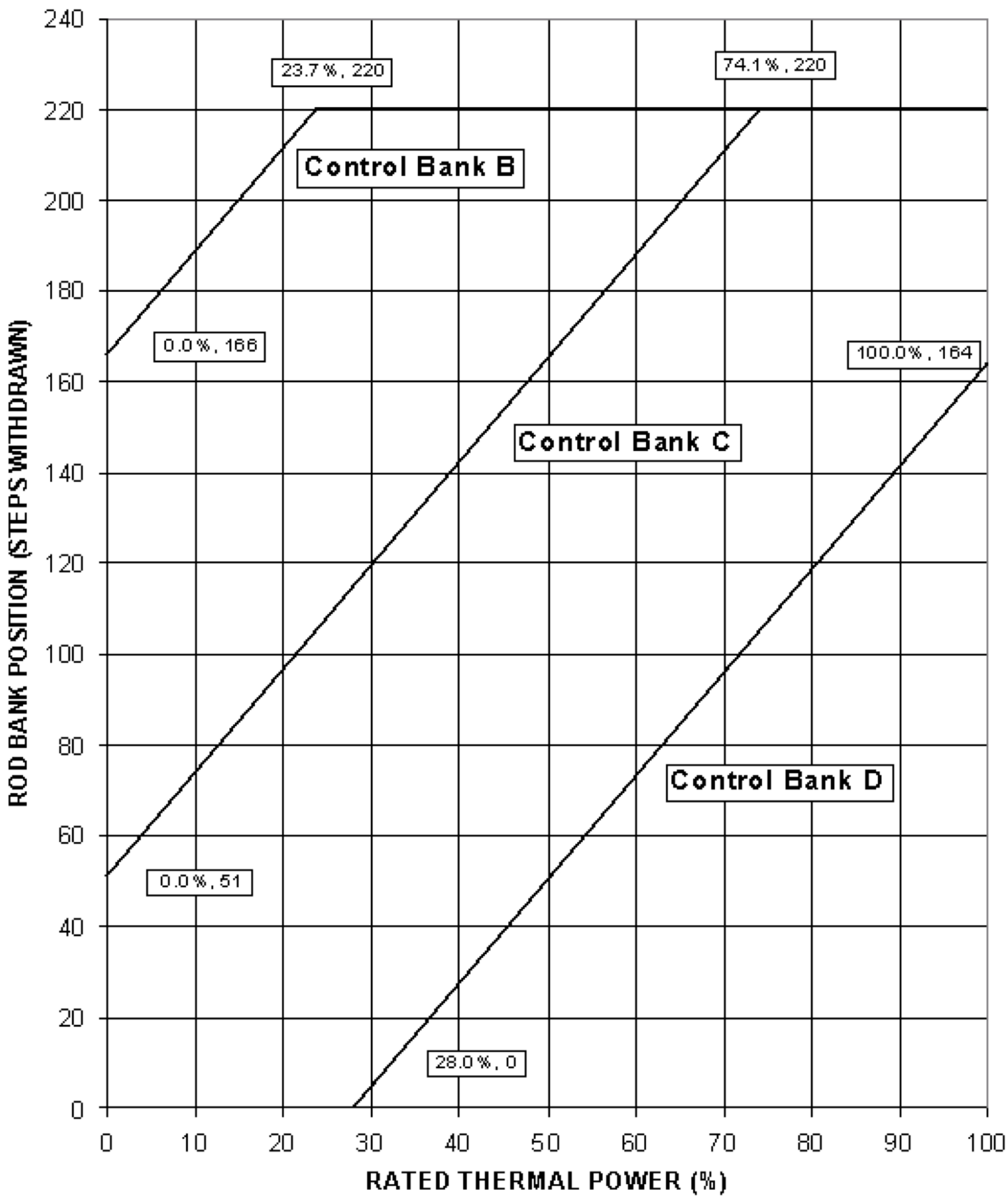

Figure 7—AXIAL FLUX DIFFERENCE Limits as a Function of RATED THERMAL POWER

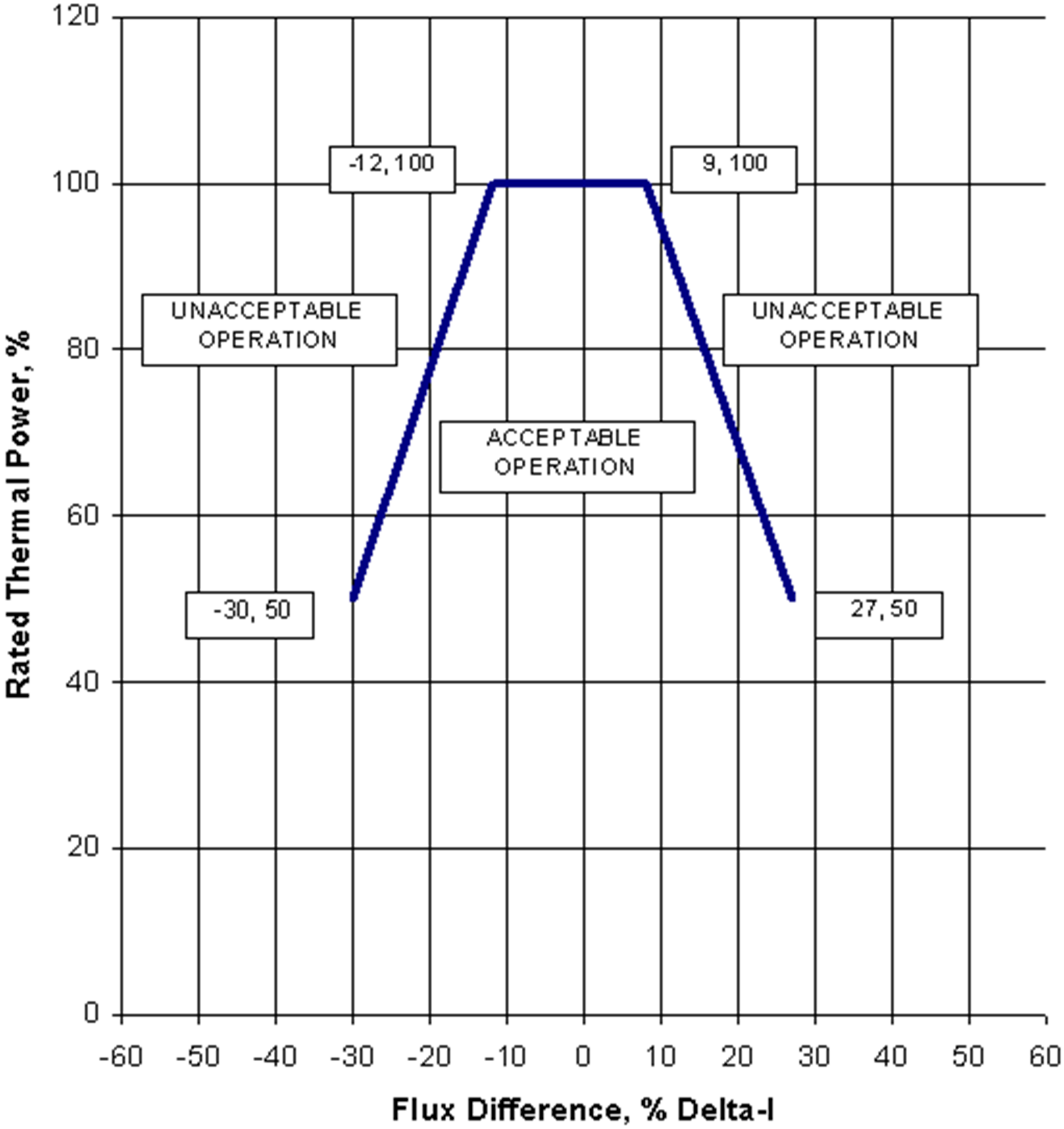

Figure 8—K(Z) - Normalized $F_Q(Z)$ as a Function of Core Height

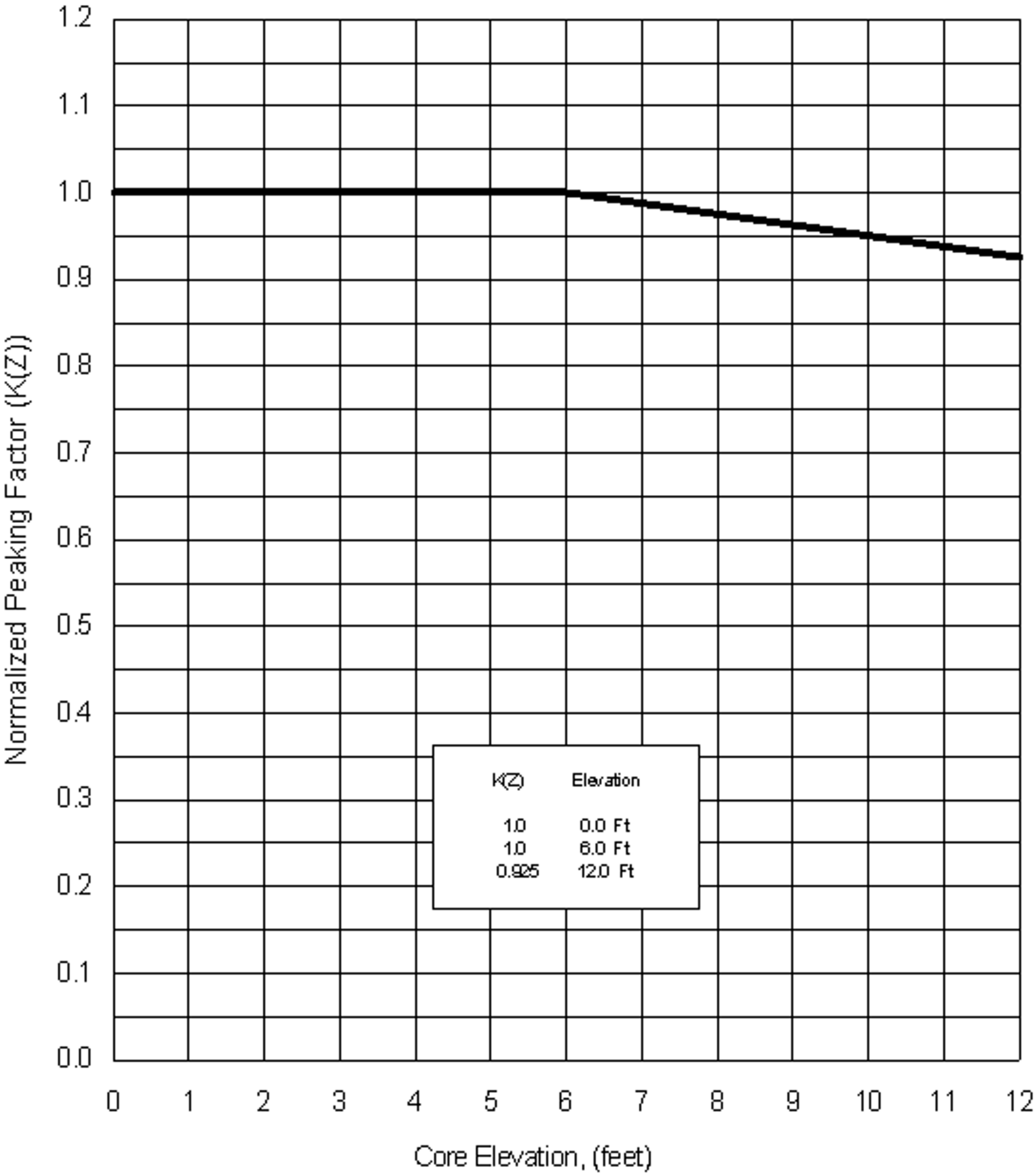

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2540	1.3643	1.3356	1.3198	1.2909
8	10.9036	1.2444	1.3605	1.3342	1.3191	1.2897
9	10.7358	1.2329	1.3641	1.3287	1.3166	1.2860
10	10.5681	1.2189	1.3536	1.3222	1.3112	1.2808
11	10.4003	1.2047	1.3321	1.3132	1.3037	1.2749
12	10.2326	1.1924	1.3120	1.3010	1.2976	1.2679
13	10.0649	1.1822	1.2921	1.2911	1.2912	1.2595
14	9.8971	1.1727	1.2735	1.2817	1.2835	1.2520
15	9.7294	1.1635	1.2586	1.2703	1.2754	1.2474
16	9.5616	1.1564	1.2494	1.2592	1.2685	1.2452
17	9.3939	1.1514	1.2393	1.2477	1.2594	1.2410
18	9.2261	1.1483	1.2222	1.2320	1.2457	1.2323
19	9.0584	1.1475	1.2029	1.2179	1.2311	1.2243
20	8.8906	1.1481	1.1883	1.2076	1.2195	1.2181
21	8.7229	1.1529	1.1810	1.2013	1.2124	1.2137
22	8.5551	1.1576	1.1745	1.1975	1.2064	1.2142
23	8.3874	1.1615	1.1666	1.1938	1.1994	1.2165
24	8.2196	1.1647	1.1584	1.1894	1.1917	1.2179
25	8.0519	1.1669	1.1524	1.1891	1.1867	1.2225
26	7.8841	1.1680	1.1491	1.1894	1.1824	1.2280
27	7.7164	1.1680	1.1478	1.1877	1.1770	1.2309
28	7.5486	1.1669	1.1462	1.1847	1.1739	1.2320
29	7.3809	1.1647	1.1438	1.1806	1.1713	1.2317

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
30	7.2131	1.1616	1.1406	1.1752	1.1665	1.2296
31	7.0454	1.1572	1.1363	1.1687	1.1603	1.2260
32	6.8777	1.1529	1.1320	1.1611	1.1527	1.2209
33	6.7099	1.1496	1.1288	1.1525	1.1439	1.2143
34	6.5422	1.1461	1.1253	1.1430	1.1353	1.2062
35	6.3744	1.1417	1.1212	1.1329	1.1282	1.1969
36	6.2067	1.1365	1.1164	1.1222	1.1227	1.1867
37	6.0389	1.1306	1.1106	1.1100	1.1161	1.1749
38	5.8712	1.1246	1.1057	1.1021	1.1094	1.1630
39	5.7034	1.1203	1.1036	1.1016	1.1054	1.1536
40	5.5357	1.1232	1.1062	1.1004	1.1072	1.1499
41	5.3679	1.1312	1.1120	1.0996	1.1114	1.1496
42	5.2002	1.1372	1.1164	1.1021	1.1141	1.1494
43	5.0324	1.1427	1.1203	1.1044	1.1164	1.1484
44	4.8647	1.1481	1.1241	1.1059	1.1184	1.1466
45	4.6969	1.1529	1.1273	1.1072	1.1199	1.1441
46	4.5292	1.1572	1.1303	1.1084	1.1211	1.1409
47	4.3614	1.1612	1.1329	1.1092	1.1220	1.1371
48	4.1937	1.1648	1.1352	1.1100	1.1227	1.1327
49	4.0259	1.1680	1.1375	1.1107	1.1231	1.1285
50	3.8582	1.1709	1.1390	1.1110	1.1234	1.1246
51	3.6904	1.1734	1.1405	1.1115	1.1235	1.1211
52	3.5227	1.1760	1.1453	1.1139	1.1237	1.1175
53	3.3550	1.1777	1.1515	1.1179	1.1240	1.1139
54	3.1872	1.1796	1.1574	1.1221	1.1243	1.1118
55	3.0195	1.1873	1.1681	1.1276	1.1307	1.1170
56	2.8517	1.1999	1.1838	1.1368	1.1416	1.1294
57	2.6840	1.2139	1.2026	1.1506	1.1539	1.1426
58	2.5162	1.2278	1.2217	1.1651	1.1664	1.1558

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 1
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
-12/+9 AFD at 100% RTP (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
59	2.3485	1.2437	1.2409	1.1793	1.1789	1.1688
60	2.1807	1.2630	1.2601	1.1935	1.1915	1.1815
61	2.0130	1.2818	1.2790	1.2073	1.2039	1.1939
62	1.8452	1.2996	1.2975	1.2207	1.2159	1.2058
63	1.6775	1.3166	1.3152	1.2334	1.2273	1.2170
64	1.5097	1.3324	1.3317	1.2451	1.2380	1.2274
65	1.3420	1.3468	1.3469	1.2556	1.2477	1.2368
66	1.1742	1.3592	1.3603	1.2646	1.2559	1.2448
67	1.0065	1.3686	1.3706	1.2710	1.2617	1.2501
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 2
Deleted

TABLE 2 INTENTIONALLY DELETED.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19

Mesh No	Height*	W(z)
1	12.0778	1.0000
2	11.9101	1.0000
3	11.7423	1.0000
4	11.5746	1.0000
5	11.4068	1.0000
6	11.2391	1.0000
7	11.0713	1.1210
8	10.9036	1.1026
9	10.7359	1.0894
10	10.5681	1.0796
11	10.4004	1.0694
12	10.2326	1.0614
13	10.0649	1.0558
14	9.8971	1.0510
15	9.7294	1.0469
16	9.5616	1.0447
17	9.3939	1.0443
18	9.2261	1.0456
19	9.0584	1.0492
20	8.8906	1.0553
21	8.7229	1.0658
22	8.5551	1.0763
23	8.3874	1.0854
24	8.2196	1.0934
25	8.0519	1.1002
26	7.8841	1.1061
27	7.7164	1.1108
28	7.5486	1.1143
29	7.3809	1.1169

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19 (Continued)

Mesh No	Height*	W(z)
30	7.2132	1.1185
31	7.0454	1.1189
32	6.8777	1.1193
33	6.7099	1.1210
34	6.5422	1.1227
35	6.3744	1.1235
36	6.2067	1.1234
37	6.0389	1.1225
38	5.8712	1.1214
39	5.7034	1.1220
40	5.5357	1.1298
41	5.3679	1.1429
42	5.2002	1.1540
43	5.0324	1.1647
44	4.8647	1.1754
45	4.6969	1.1854
46	4.5292	1.1947
47	4.3614	1.2039
48	4.1937	1.2127
49	4.0259	1.2212
50	3.8582	1.2295
51	3.6904	1.2372
52	3.5227	1.2450
53	3.3550	1.2518
54	3.1872	1.2588
55	3.0195	1.2719
56	2.8517	1.2904
57	2.6840	1.3098
58	2.5162	1.3286
59	2.3485	1.3498

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 3
Part Power (74% RTP, 150 MWD/MTU) RAOC W(Z) Function
Millstone Unit 3 - Cycle 19 (Continued)

Mesh No	Height*	W(z)
60	2.1807	1.3748
61	2.0130	1.3995
62	1.8452	1.4233
63	1.6775	1.4465
64	1.5097	1.4686
65	1.3420	1.4896
66	1.1742	1.5088
67	1.0065	1.5253
68	0.8387	1.0000
69	0.6710	1.0000
70	0.5032	1.0000
71	0.3355	1.0000
72	0.1677	1.0000
73	0.0000	1.0000

*Distance from bottom of active core (feet)

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 4
Burnup Penalty for Incore
Millstone Unit 3 - Cycle 19*

Burnup (MWD/MTU)	Penalty
0	1.020
311	1.020
633	1.028
794	1.029
955	1.028
1276	1.024
1437	1.022
1598	1.020
3529	1.020
4173	1.021
4334	1.020

*Note: A Penalty of 1.020 shall be used outside of the burnup range shown in Table 4.

Table 5
Required Normal Operating Space Reductions for $F_Q(Z)$ Exceeding Its Non-Equilibrium Limits

Required Non-Equilibrium $F_Q(Z)$ Margin Improvement (%)	Required THERMAL POWER Limit (%RTP)	Required Negative Band AFD Reduction (%AFD)	Required Positive Band AFD Reduction (%AFD)
≤ 1%	≤ 97%	≥ 2%	≥ 4%
> 1% and ≤ 2%	≤ 95%	≥ 3%	≥ 5%
> 2% and ≤ 3%	≤ 93%	≥ 4%	≥ 6%
> 3%	≤ 50%	N/A	N/A

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain+

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2162	1.2141	1.2503	1.2490	1.1762
8	10.9036	1.2016	1.2102	1.2494	1.2511	1.1716
9	10.7358	1.1842	1.2148	1.2461	1.2492	1.1637
10	10.5681	1.1660	1.2056	1.2423	1.2412	1.1594
11	10.4003	1.1488	1.1893	1.2375	1.2291	1.1587
12	10.2326	1.1324	1.1800	1.2299	1.2180	1.1585
13	10.0649	1.1148	1.1739	1.2198	1.2054	1.1564
14	9.8971	1.1043	1.1684	1.2086	1.1907	1.1523
15	9.7294	1.1024	1.1618	1.1976	1.1749	1.1468
16	9.5616	1.1009	1.1537	1.1887	1.1587	1.1411
17	9.3939	1.0970	1.1450	1.1820	1.1414	1.1351
18	9.2261	1.0915	1.1359	1.1752	1.1246	1.1290
19	9.0584	1.0867	1.1257	1.1656	1.1159	1.1251
20	8.8906	1.0841	1.1194	1.1577	1.1128	1.1211
21	8.7229	1.0835	1.1191	1.1549	1.1105	1.1169
22	8.5551	1.0866	1.1161	1.1507	1.1103	1.1203
23	8.3874	1.0910	1.1107	1.1443	1.1106	1.1292
24	8.2196	1.0932	1.1057	1.1375	1.1104	1.1354
25	8.0519	1.0977	1.1013	1.1314	1.1129	1.1408
26	7.8841	1.1025	1.1002	1.1271	1.1169	1.1455

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain⁺ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.1056	1.1031	1.1243	1.1190	1.1490
28	7.5486	1.1083	1.1050	1.1205	1.1199	1.1514
29	7.3809	1.1111	1.1053	1.1168	1.1198	1.1526
30	7.2131	1.1139	1.1048	1.1144	1.1185	1.1526
31	7.0454	1.1155	1.1033	1.1108	1.1162	1.1515
32	6.8777	1.1158	1.1009	1.1056	1.1129	1.1491
33	6.7099	1.1149	1.0976	1.0994	1.1086	1.1457
34	6.5422	1.1130	1.0941	1.0914	1.1032	1.1422
35	6.3744	1.1101	1.0907	1.0842	1.0976	1.1388
36	6.2067	1.1063	1.0871	1.0797	1.0924	1.1352
37	6.0389	1.1014	1.0825	1.0764	1.0865	1.1316
38	5.8712	1.0964	1.0777	1.0745	1.0806	1.1277
39	5.7034	1.0930	1.0743	1.0743	1.0766	1.1239
40	5.5357	1.0931	1.0741	1.0734	1.0769	1.1216
41	5.3679	1.0947	1.0766	1.0729	1.0789	1.1209
42	5.2002	1.1002	1.0803	1.0732	1.0795	1.1207
43	5.0324	1.1053	1.0835	1.0732	1.0796	1.1195
44	4.8647	1.1096	1.0867	1.0727	1.0797	1.1177
45	4.6969	1.1136	1.0906	1.0719	1.0799	1.1159
46	4.5292	1.1172	1.0942	1.0710	1.0800	1.1137
47	4.3614	1.1204	1.0973	1.0709	1.0799	1.1108
48	4.1937	1.1232	1.1001	1.0720	1.0799	1.1074
49	4.0259	1.1257	1.1025	1.0725	1.0801	1.1035
50	3.8582	1.1279	1.1047	1.0744	1.0802	1.0993
51	3.6904	1.1298	1.1074	1.0792	1.0801	1.0947
52	3.5227	1.1314	1.1123	1.0838	1.0803	1.0900

*Distance from bottom of active core (feet)

⁺W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 6
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 97% RTP for 1% Transient F_Q Margin Gain+ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.1347	1.1176	1.0878	1.0808	1.0860
54	3.1872	1.1411	1.1222	1.0916	1.0813	1.0843
55	3.0195	1.1481	1.1293	1.0951	1.0866	1.0898
56	2.8517	1.1570	1.1418	1.0988	1.0963	1.1011
57	2.6840	1.1697	1.1597	1.1043	1.1084	1.1115
58	2.5162	1.1859	1.1781	1.1147	1.1207	1.1219
59	2.3485	1.2033	1.1960	1.1280	1.1330	1.1326
60	2.1807	1.2199	1.2142	1.1411	1.1454	1.1431
61	2.0130	1.2360	1.2321	1.1541	1.1575	1.1535
62	1.8452	1.2516	1.2495	1.1668	1.1694	1.1636
63	1.6775	1.2663	1.2662	1.1789	1.1806	1.1732
64	1.5097	1.2800	1.2818	1.1902	1.1911	1.1822
65	1.3420	1.2929	1.2960	1.2005	1.2006	1.1904
66	1.1742	1.3042	1.3085	1.2092	1.2086	1.1973
67	1.0065	1.3125	1.3181	1.2155	1.2142	1.2019
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain$^+$

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.2125	1.2109	1.2412	1.1669	1.1687
8	10.9036	1.1974	1.2071	1.2401	1.1702	1.1660
9	10.7358	1.1800	1.2119	1.2361	1.1713	1.1603
10	10.5681	1.1617	1.2036	1.2313	1.1693	1.1530
11	10.4003	1.1439	1.1856	1.2251	1.1663	1.1444
12	10.2326	1.1273	1.1689	1.2159	1.1647	1.1364
13	10.0649	1.1120	1.1517	1.2041	1.1620	1.1345
14	9.8971	1.0962	1.1377	1.1912	1.1567	1.1336
15	9.7294	1.0795	1.1297	1.1780	1.1482	1.1284
16	9.5616	1.0643	1.1214	1.1669	1.1403	1.1235
17	9.3939	1.0551	1.1094	1.1558	1.1313	1.1172
18	9.2261	1.0507	1.0944	1.1441	1.1195	1.1084
19	9.0584	1.0449	1.0832	1.1308	1.1092	1.1035
20	8.8906	1.0439	1.0771	1.1239	1.1021	1.1027
21	8.7229	1.0528	1.0747	1.1236	1.0983	1.1046
22	8.5551	1.0623	1.0748	1.1210	1.0965	1.1103
23	8.3874	1.0685	1.0749	1.1159	1.0955	1.1173
24	8.2196	1.0714	1.0748	1.1111	1.0948	1.1230
25	8.0519	1.0732	1.0775	1.1027	1.0968	1.1278
26	7.8841	1.0757	1.0816	1.0952	1.1003	1.1318

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain+ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.0793	1.0839	1.0928	1.1019	1.1346
28	7.5486	1.0820	1.0851	1.0910	1.1023	1.1362
29	7.3809	1.0848	1.0853	1.0881	1.1016	1.1366
30	7.2131	1.0884	1.0846	1.0846	1.0999	1.1359
31	7.0454	1.0907	1.0828	1.0802	1.0971	1.1341
32	6.8777	1.0916	1.0802	1.0753	1.0933	1.1309
33	6.7099	1.0914	1.0767	1.0703	1.0886	1.1267
34	6.5422	1.0901	1.0727	1.0659	1.0827	1.1228
35	6.3744	1.0878	1.0691	1.0620	1.0766	1.1187
36	6.2067	1.0846	1.0661	1.0585	1.0710	1.1140
37	6.0389	1.0804	1.0623	1.0558	1.0653	1.1100
38	5.8712	1.0764	1.0583	1.0547	1.0600	1.1064
39	5.7034	1.0739	1.0556	1.0548	1.0569	1.1032
40	5.5357	1.0731	1.0555	1.0544	1.0576	1.1013
41	5.3679	1.0736	1.0578	1.0541	1.0598	1.1007
42	5.2002	1.0789	1.0613	1.0548	1.0607	1.1005
43	5.0324	1.0838	1.0645	1.0550	1.0611	1.0994
44	4.8647	1.0877	1.0669	1.0550	1.0611	1.0973
45	4.6969	1.0914	1.0690	1.0550	1.0607	1.0945
46	4.5292	1.0947	1.0730	1.0564	1.0600	1.0910
47	4.3614	1.0976	1.0780	1.0588	1.0590	1.0868
48	4.1937	1.1001	1.0825	1.0606	1.0577	1.0822
49	4.0259	1.1024	1.0866	1.0622	1.0568	1.0770
50	3.8582	1.1045	1.0905	1.0636	1.0562	1.0715
51	3.6904	1.1063	1.0940	1.0649	1.0558	1.0659
52	3.5227	1.1078	1.0972	1.0661	1.0555	1.0608

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 7
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 95% RTP for 2% Transient F_Q Margin Gain+ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.1097	1.1001	1.0674	1.0555	1.0568
54	3.1872	1.1140	1.1027	1.0690	1.0579	1.0548
55	3.0195	1.1238	1.1055	1.0715	1.0649	1.0601
56	2.8517	1.1379	1.1140	1.0758	1.0755	1.0717
57	2.6840	1.1538	1.1313	1.0834	1.0877	1.0829
58	2.5162	1.1703	1.1493	1.0948	1.0999	1.0940
59	2.3485	1.1869	1.1664	1.1078	1.1120	1.1052
60	2.1807	1.2032	1.1839	1.1202	1.1240	1.1160
61	2.0130	1.2190	1.2012	1.1322	1.1356	1.1266
62	1.8452	1.2342	1.2179	1.1439	1.1468	1.1367
63	1.6775	1.2486	1.2339	1.1550	1.1574	1.1464
64	1.5097	1.2619	1.2489	1.1652	1.1671	1.1552
65	1.3420	1.2740	1.2626	1.1743	1.1758	1.1631
66	1.1742	1.2842	1.2745	1.1819	1.1830	1.1697
67	1.0065	1.2916	1.2836	1.1868	1.1875	1.1735
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain$^+$

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
1	12.0778	1.0000	1.0000	1.0000	1.0000	1.0000
2	11.9101	1.0000	1.0000	1.0000	1.0000	1.0000
3	11.7423	1.0000	1.0000	1.0000	1.0000	1.0000
4	11.5746	1.0000	1.0000	1.0000	1.0000	1.0000
5	11.4068	1.0000	1.0000	1.0000	1.0000	1.0000
6	11.2391	1.0000	1.0000	1.0000	1.0000	1.0000
7	11.0713	1.1322	1.2092	1.2311	1.1379	1.1660
8	10.9036	1.1204	1.2059	1.2275	1.1396	1.1636
9	10.7358	1.1072	1.2094	1.2204	1.1397	1.1580
10	10.5681	1.0945	1.2010	1.2121	1.1364	1.1509
11	10.4003	1.0830	1.1835	1.2018	1.1317	1.1413
12	10.2326	1.0724	1.1671	1.1879	1.1282	1.1305
13	10.0649	1.0619	1.1501	1.1710	1.1232	1.1269
14	9.8971	1.0531	1.1362	1.1512	1.1173	1.1260
15	9.7294	1.0477	1.1279	1.1310	1.1117	1.1219
16	9.5616	1.0451	1.1192	1.1185	1.1072	1.1180
17	9.3939	1.0427	1.1068	1.1144	1.1022	1.1127
18	9.2261	1.0382	1.0913	1.1145	1.0952	1.1047
19	9.0584	1.0354	1.0780	1.1152	1.0887	1.0986
20	8.8906	1.0353	1.0697	1.1161	1.0852	1.0911
21	8.7229	1.0446	1.0664	1.1173	1.0844	1.0817
22	8.5551	1.0532	1.0654	1.1149	1.0825	1.0819
23	8.3874	1.0583	1.0645	1.1108	1.0788	1.0869
24	8.2196	1.0602	1.0633	1.1067	1.0747	1.0896
25	8.0519	1.0609	1.0649	1.0992	1.0713	1.0954
26	7.8841	1.0623	1.0681	1.0907	1.0699	1.1024

*Distance from bottom of active core (feet)

$^+$W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain+ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
27	7.7164	1.0651	1.0694	1.0828	1.0698	1.1072
28	7.5486	1.0668	1.0695	1.0719	1.0690	1.1107
29	7.3809	1.0687	1.0688	1.0634	1.0685	1.1130
30	7.2131	1.0713	1.0671	1.0615	1.0692	1.1139
31	7.0454	1.0727	1.0644	1.0595	1.0688	1.1135
32	6.8777	1.0727	1.0608	1.0560	1.0669	1.1119
33	6.7099	1.0716	1.0564	1.0519	1.0640	1.1090
34	6.5422	1.0695	1.0518	1.0468	1.0601	1.1049
35	6.3744	1.0663	1.0474	1.0416	1.0553	1.0997
36	6.2067	1.0621	1.0434	1.0373	1.0495	1.0938
37	6.0389	1.0576	1.0396	1.0341	1.0427	1.0880
38	5.8712	1.0542	1.0362	1.0327	1.0375	1.0832
39	5.7034	1.0522	1.0340	1.0327	1.0353	1.0800
40	5.5357	1.0499	1.0364	1.0323	1.0362	1.0786
41	5.3679	1.0498	1.0420	1.0319	1.0389	1.0785
42	5.2002	1.0537	1.0461	1.0324	1.0406	1.0789
43	5.0324	1.0576	1.0497	1.0323	1.0418	1.0784
44	4.8647	1.0607	1.0530	1.0321	1.0426	1.0769
45	4.6969	1.0635	1.0558	1.0326	1.0430	1.0747
46	4.5292	1.0656	1.0582	1.0329	1.0430	1.0718
47	4.3614	1.0683	1.0604	1.0328	1.0427	1.0682
48	4.1937	1.0729	1.0622	1.0326	1.0421	1.0641
49	4.0259	1.0777	1.0634	1.0333	1.0412	1.0594
50	3.8582	1.0821	1.0654	1.0357	1.0406	1.0546
51	3.6904	1.0862	1.0694	1.0394	1.0407	1.0509
52	3.5227	1.0904	1.0739	1.0428	1.0427	1.0504

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

Table 8
RAOC W(Z) Function, Millstone Unit 3 - Cycle 19
Compensatory Action at 93% RTP for 3% Transient F_Q Margin Gain+ (Continued)

		Burnup Step		(MWD/MTU)		
Mesh No.	**Height***	**150**	**4000**	**9000**	**11000**	**18000**
53	3.3550	1.0953	1.0784	1.0458	1.0454	1.0504
54	3.1872	1.1007	1.0825	1.0486	1.0476	1.0503
55	3.0195	1.1049	1.0852	1.0524	1.0520	1.0513
56	2.8517	1.1111	1.0904	1.0595	1.0587	1.0544
57	2.6840	1.1229	1.1022	1.0706	1.0665	1.0656
58	2.5162	1.1390	1.1189	1.0829	1.0743	1.0770
59	2.3485	1.1565	1.1373	1.0951	1.0819	1.0873
60	2.1807	1.1733	1.1549	1.1073	1.0893	1.0978
61	2.0130	1.1895	1.1722	1.1191	1.0966	1.1080
62	1.8452	1.2052	1.1889	1.1306	1.1035	1.1177
63	1.6775	1.2201	1.2048	1.1414	1.1099	1.1270
64	1.5097	1.2338	1.2195	1.1513	1.1156	1.1354
65	1.3420	1.2462	1.2329	1.1603	1.1207	1.1430
66	1.1742	1.2568	1.2444	1.1677	1.1245	1.1493
67	1.0065	1.2643	1.2527	1.1724	1.1263	1.1529
68	0.8387	1.0000	1.0000	1.0000	1.0000	1.0000
69	0.6710	1.0000	1.0000	1.0000	1.0000	1.0000
70	0.5032	1.0000	1.0000	1.0000	1.0000	1.0000
71	0.3355	1.0000	1.0000	1.0000	1.0000	1.0000
72	0.1678	1.0000	1.0000	1.0000	1.0000	1.0000
73	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

*Distance from bottom of active core (feet)

+W(Z) functions were calculated assuming a Full Power Steady State $F_Q(Z)$ shape that will need to be adjusted for surveillance specific conditions.

Note: Surveillance exclusion zone is 8% top, 8% bottom.

3.0 Analytical Methods

The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents.

3.1 WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (Westinghouse Proprietary).

Methodology for Specifications:

- 2.1.1 Reactor Core Safety Limits
- 3.1.1.1.1 SHUTDOWN MARGIN – MODES 1 AND 2
- 3.1.1.1.2 SHUTDOWN MARGIN – MODES 3, 4, and 5 Loops Filled
- 3.1.1.2 SHUTDOWN MARGIN – Cold Shutdown – Loops Not Filled
- 3.1.1.3 Moderator Temperature Coefficient
- 3.1.3.5 Shutdown Rod Insertion Limit
- 3.1.3.6 Control Rod Insertion Limits
- 3.2.1.1 AXIAL FLUX DIFFERENCE
- 3.2.2.1 Heat Flux Hot Channel Factor
- 3.2.3.1 RCS Total Flow Rate, Nuclear Enthalpy Rise Hot Channel Factor
- 3.2.5 DNB Parameters
- 3.3.5 Shutdown Margin Monitor
- 3.9.1.1 REFUELING Boron Concentration

3.2 WCAP-10216-P-A-R1A, "Relaxation of Constant Axial Offset Control F_Q Surveillance Technical Specification," Rev. 1, February 1994 (Westinghouse Proprietary).

Methodology for Specifications:

- 3.2.1.1 AXIAL FLUX DIFFERENCE
- 3.2.2.1 Heat Flux Hot Channel Factor

3.3 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).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.4 WCAP-16009-P-A, "Realistic Large-Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)," January 2005 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.5 WCAP-11946, “Safety Evaluation Supporting a More Negative EOL Moderator Temperature Coefficient Technical Specification for the Millstone Nuclear Power Station Unit 3,” September 1988 (Westinghouse Proprietary).

Methodology for Specification:

- 3.1.1.3 Moderator Temperature Coefficient

3.6 WCAP-10054-P-A, “Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code,” August 1985 (Westinghouse Proprietary).

Methodology for Specification

- 3.2.2.1 Heat Flux Hot Channel Factor

3.7 WCAP-10079-P-A, “NOTRUMP - A Nodal Transient Small Break and General Network Code,” August 1985 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.8 WCAP-12610-P-A, “VANTAGE+ Fuel Assembly Report,” April 1995 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.9 WCAP-8301, “LOCTA-IV Program: Loss-of Coolant Transient Analysis,” June 1974 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor.

3.10 WCAP-10054-P-A, Addendum 2, Revision 1, “Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model,” July 1997 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor

3.11 WCAP-8745-P-A, “Design Bases for the Thermal Overpower ∆T and Thermal Overtemperature ∆T Trip Functions,” September 1986 (Westinghouse Proprietary).

Methodology for Specification:

- 2.2.1 Overtemperature ∆T and Overpower ∆T Setpoints

3.12 WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, “Optimized ZIRLO™,” July 2006 (Westinghouse Proprietary).

Methodology for Specification:

- 3.2.2.1 Heat Flux Hot Channel Factor