SEABROOK STATION
TECHNICAL REQUIREMENTS

TECHNICAL REQUIREMENTS MANUAL
(SSTR)

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SEABROOK STATION
TECHNICAL REQUIREMENTS

Chapter 1 – Introduction

1.0 INTRODUCTION

The implementation of the Seabrook Station Technical Specification Improvement Program has resulted in certain "Technical Requirements" being removed from the Technical Specifications and incorporated in this manual.

The Technical Requirements and changes to them shall be reviewed, approved, and issued in accordance with the instructions in the Regulatory Compliance Manual (NARC) Chapter 6, Section 1.0.

The Technical Requirements (TR) maintained a format and language similar to the Technical Specifications (TS) as a matter of convenience. In many instances, however, the TRs require functionality of a structure, system, or component (SSC), rather than operability of the SSCs. Functionality is an attribute of SSCs that is not controlled by the TS. An SSC is functional or has functionality when it is capable of performing its specified function, as set forth in the current licensing basis. Functionality does not apply to specified safety functions, but does apply to the ability of non-TS SSCs to perform other specified functions that have a necessary support function. The TRs use the term operable only in reference to a TS-controlled attribute of an SSC.

Defined terms are shown in all capital letters in the TRs. The definitions contained in section 1.0, Definitions, of the TS apply to these terms (excluding the term FUNCTIONAL, which is defined in the preceding paragraph).

Noncompliance with a Technical Requirement or Technical Requirement Program/Procedure will require action dependent upon the relationship to the Technical Specifications. For those Technical Requirements that maintain a corresponding Technical Specification the action shall be that required by the corresponding Technical Specification. For those Technical Requirements that do not have a corresponding Technical Specification, the noncompliance constitutes a degraded or nonconforming condition that requires corrective action in accordance with Appendix B of 10 CFR 50 to correct or resolve the condition. Regulatory Issue Summary 2005-20, “Revision to Guidance Formerly Contained in NRC Generic Letter 91-18, ‘Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability,’” provides guidance on the appropriate actions for a failure to conform to the UFSAR. In addition, station procedures initiate a timely risk assessment following a loss of functionality of equipment contained in the PRA model.

When a TRM action requires an evaluation in accordance with the corrective action program, a condition report is initiated to document the failure to meet a Technical Requirement limiting condition for operation. Then, Engineering evaluates the reported condition within 30 days in accordance with PI-AA-205, Condition Evaluation and Corrective Action. The evaluation determines if the nonconforming condition should be restored to its current design, repaired to an alternate design, or accepted as-is. A work order is initiated when the evaluation determines the condition should be restored to its current design. When the evaluation determines the condition will be restored to an alternate design or accepted for use as-is, Engineering will develop a design change. An evaluation is not required for non-compliance with a Technical Requirement limiting condition for operation resulting from surveillance testing or planned maintenance activities. These scheduled activities are managed under Maintenance Rule (a)(4) Risk Assessment (10 CFR 50.65).

A Surveillance Requirement associated with a Technical Requirement may be considered met if the surveillance is performed within 1.25 times the stated surveillance interval. This 25% extension facilitates surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the surveillance test. This provision applies only to the surveillance requirements in Chapter 2 of this manual excluding (1) those controlled by the TS, and (2) the surveillance requirements specifically excluded in the individual Technical Requirements. Other programs, such as the Containment Leakage Rate Testing Program contain testing requirements and frequencies in accordance with the regulations. This 25% extension cannot be used to extend a test interval specified in the regulations. Further, this provision does not apply to the initial performance of surveillance test, but only to periodic surveillance tests that follow initial performance. The 25% extension is not intended to be used repeatedly merely as an operational convenience to extend surveillance intervals, other than those consistent with refueling intervals, beyond those specified.

2.0 TECHNICAL REQUIREMENTS MANUAL REVISION HISTORY

Revision #	Description of Change	SORC Meeting #
110	Incorporated UFCR 07-062 that implements Cycle 13 reload core per DCR 07-010, DCN-00.	08-014
111	Incorporated UFCR 08-021 that removes the reference to OE 4.9 and replaces it with OE 3.6.	N/A
112	Incorporated UFCR 07-052. Added Additional Information on Dry Cask Loading operations. Incorporated UFCR 08-026. Added Table Notation (12) and (13) for the CBA Emergency Fan/Filter Actuation.	08-030 N/A
113	Incorporated UFCR 08-031. This change adds a discussion to TR 21 explaining that the Seabrook instrumentation self resets, and no action is required to restore the instrumentation to functional status following an actuation.	N/A
114	Editorial correction to TR 13, Sheet 14, in column "System Powered", changed CS to CC. (AR 196365)	N/A
115	Incorporated UFCR 09-017 that revises TR 24 to replace OE 4.5 with EN-AA-203-1001.	N/A
116	Incorporated UFCR 09-015 that revised TR 29 to Eliminate Surveillance 4.1.2.2.b.	N/A
117	Incorporated UFCR 09-023 that implements Cycle 14 reload core and operation per EC145084.	09-030
118	Incorporated UFCR 08-039 Rev. 1 that revised TR 23 and implements 07DCR005 (EC12635) Turbine Control System Replacement. Added Additional Information to reflect the difference between the old analog system and the new digital system. Incorporated UFCR 09-028 that revised TR 14 and incorporates TOL heater changes identified in EC 145115 Rev. 001.	N/A N/A
119	Incorporated UFCR 10-006 that replaces the reference to procedure OE 3.6, Condition Reports, which has been deleted, with a reference to PI-AA-205, Condition Evaluation and Corrective Action.	N/A

Revision #	Description of Change	SORC Meeting #
120	Incorporated UFCR 09-016 that revised TR29-3.1.2.5 refueling water storage tank minimum contained borated water volume from 24,500 to 55,000 gallons.	N/A
121	Incorporated UFCR 10-017 to change FdH surveillance limits from 1.585 and 1.587 to 1.584.	N/A
122	Incorporated UFCR 10-010 Rev. 00 and Rev. 01 that revised TR29-3.1.2.5 and TR29-3.1.2.6 minimum contained borated water volume. In addition, Additional Information was added to TR29-3.1.2.6.	N/A
123	Incorporated UFCR 10-009 to update referenced ASTM Specifications and Standards to allow for the use of improved analytical techniques and environmentally friendly reagents.	10-032 10-034
124	Incorporated UFCR 10-027 to reflect adopted 2004 Edition of ASME Section XI. IWF-5000 requires that snubbers shall be examined and tested in accordance with ASME/ANSI OM, Part 4. Incorporated UFCR 10-028 that revised TR9 to allow backup coverage for a hose to be a hose reel or a fire hydrant or an equivalent water source.	N/A N/A
125	Incorporated UFCR 11-006 COLR Chapter 6, Sections 1.0, changed cycle 14 to cycle 15, 2.5.1, changed +4.083 to +4.089, 2.15.1 changed cycle 14 to cycle 15 and 2180 ppm to 2195 ppm, and replaced Table 1:W(Z, BU) versus Axial Height.	11-004

Revision #	Description of Change	SORC Meeting #
126	Incorporated UFCR 09-030 that revises TR 13, by removing MM-MM-29 from overcurrent protective devices.	N/A
	Incorporated UFCR 10-030 that revises TR 13 and TR 14. Approves the motor replacement for the Motor Operated Valves (MOV) at locations 1-SI-V-17 and 1-RC-V-88.	N/A
	Incorporated UFCR 11-005, this change incorporates the information in LAR 10-03. The LAR relocated TS 3.8.4.2 as new Technical Requirement (TR) 34. Also, revises TR 13 and TR 15 to replace the reference to TS 3.8.4.2 with a Reference to TR 34.	N/A
	Incorporated UFCR 11-013 that revises TR 6. This change is an editorial change that corrects a cross reference, "Technical Specification Surveillance Requirements (SR) 4.6.3.1 does not exist, the correct reference is SR 4.6.3.3."	N/A
127	Incorporated UFCR 07-027 that revises TR 3. This reflects changes resulting from the complete replacement of the Loose Parts Monitoring System.	N/A
	Incorporated UFCR 11-007 that revises thermal overload trip time acceptance criteria in TR 13.	N/A
128	Incorporated UFCR 08-019 that revises TR 15. Added 1-RM-SKD-60 to Non-Class 1E Circuits.	09-014
129	Incorporated UFCR 11-023 that revised TR 6 to add administrative controls to RC-V23 and RC-V88.	N/A
	Incorporated UFCR 11-025 that revises TR 12 to correct inconsistency between TR 12-4.3.3.7.1 and Additional Information.	N/A
	Incorporated UFCR 11-028 that clarifies definitions in the Technical Specifications applying to terms in the Technical Requirements.	N/A
	Incorporated UFCR 11-029 that revises TR 7 to match the design and licensing basis requirement for 100% pump capacity at all times.	N/A
130	Incorporated UFCR 11-031 that revises TR 12 to make clearer the frequency of checking the alarm when detection is nonfunctional.	N/A

Revision #	Description of Change	SORC Meeting #
131	Incorporated UFCR 12-016 that revises TR 9 to add a reference to provide a means to determine if a fire hose station (reel) is providing primary protection.	N/A
132	Incorporated UFCR 12-024 that revises Chapter 6 as result of the Cycle 16 core reload design safety analysis.	12-033
133	Editorial correction to TR 6, Sheet 7, for valve numbers FW-V76#, FW-V82#, FW-V88# and FW-V94#, changed function name from "Feedwater" Isolation Check Valves to "EFW" Isolation Check Valves. (AR 1808128) Incorporated UFCR 12-028 that revises TR 14, for valve number SW-V4 changes overload heater and current range.	N/A N/A
134	Incorporated UFCR 12-026 that revises TR 33 by removing battery backup time for computer points D8499 and D8500. Incorporated UFCR 12-031 that revises TR 9 to allow for containment hose stations to not be required within 24 hours of entering Mode 5 from Mode 4 if containment is not being opened for general access. Incorporated UFCR 13-005 that revises TR 2 function listed from "Service Water System" to "Service Water to SCCW Isolation."	N/A N/A N/A
135	Incorporated UFCR 13-002 that revises TR 7 to provide guidance as to the required actions when two or more fire pumps or water supplies are non-functional.	N/A

SEABROOK STATION
TECHNICAL REQUIREMENTS

Chapter 2 – Technical Specification Improvement Program

Technical Requirement 1
Reactor Trip System Instrumentation Response Times
(Sheet 1 of 2)

LIMITING CONDITION FOR OPERATION

TR1 The response time of each Reactor Trip System (RTS) Function shown in Technical Specification (TS) 3/4.3.1, Table 3.3-1, shall be as specified herein.

APPLICABILITY: As shown in TS 3/4.3.1, Table 3.3-1.

ACTION: As specified in TS 3/4.3.1, Table 3.3-1.

SURVEILLANCE REQUIREMENTS

The response time of each RTS Function is verified by TS Surveillance Requirement 4.3.1.2.

Technical Requirement 1
Reactor Trip System Instrumentation Response Times
(Sheet 2 of 2)

	FUNCTIONAL UNIT	RESPONSE TIME
1.	Manual Reactor Trip	N. A.
2.	Power Range, Neutron Flux	
	a. High Setpoint	≤ 0.5 second*
	b. Low Setpoint	≤ 0.5 second*
3.	Power Range, Neutron Flux, High Positive Rate	≤ 0.65 seconds*
4.	Deleted	
5.	Intermediate Range, Neutron Flux	N.A.
6.	Source Range, Neutron Flux	N.A.
7.	Overtemperature ΔT	≤ 4 / ≤ 2 seconds* (1)
8.	Overpower ΔT	≤ 4 / ≤ 2 seconds* (1)
9.	Pressurizer Pressure--Low	≤ 2 seconds
10.	Pressurizer Pressure--High	≤ 2 seconds
11.	Pressurizer Water Level--High	N.A.
12.	Reactor Coolant Flow--Low	
	a. Single Loop (Above P-8)	≤ 1 second
	b. Two Loops (Above P-7 and below P-8)	≤ 1 second
13.	Steam Generator Water Level--Low-Low	≤ 2 seconds
14.	Undervoltage - Reactor Coolant Pumps (Above P-7)	≤ 1.5 seconds
15.	Underfrequency - Reactor Coolant Pumps (Above P-7)	≤ 0.6 second
16.	Turbine Trip (Above P-9)	
	a. Low Fluid Oil Pressure	N.A.
	b. Turbine Stop Valve Closure	N.A.
17.	Safety Injection Input from ESF	N.A.
18.	Reactor Trip System Interlocks	N.A.
19.	Reactor Trip Breakers	N.A.
20.	Automatic Trip and Interlock Logic	N.A.

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

Note (1) – The acceptance criterion for the RTDs is ≤ 4.0 seconds (time constant response). The acceptance criterion for signal processing delay is ≤ 2.0 seconds (pure delay). Signal processing (pure) delay analytical margin may be re-allocated to the RTD time constant response upon approval from engineering.

Technical Requirement 2
Engineered Safety Features Response Times

(Sheet 1 of 4)

LIMITING CONDITION FOR OPERATION

TR2 The response time of each Engineered Safety Feature (ESF) associated with the Engineered Safety Features Actuation System (ESFAS) functions shown in Technical Specification (TS) 3/4.3.2, Table 3.3-3, shall be as specified herein.

APPLICABILITY: As shown in TS 3/4.3.2, Table 3.3-3.

ACTION: As specified in TS 3.3.2.

SURVEILLANCE REQUIREMENTS

The response time of each ESF is verified by TS Surveillance Requirement 4.3.2.2.

Initiation Signal and Function	Response Time in Seconds(7)(8)
1. Manual Initiation	
a. Safety Injection	N.A.
1) Reactor Trip	N.A.
2) Feedwater Isolation	N.A.
3) Phase "A" Isolation	N.A.
4) Containment Ventilation Isolation	N.A.
5) Start Diesel Generator	N.A.
6) Emergency Feedwater	N.A.
7) CBA Emergency Fan/Filter Actuation	N.A.
8) Service Water to SCCW Isolation	N.A.
b. Containment Spray	N.A.
1) Containment Ventilation Isolation	N.A.
2) Phase "B" Isolation	N.A.
c. Steam Line Isolation	N.A.
d. Phase "A" Containment Isolation	N.A.
1) Containment Ventilation Isolation	N.A.

Technical Requirement 2
Engineered Safety Features Response Times
(Sheet 2 of 4)

Initiation Signal and Function			Response Time in Seconds[7][8]
2.	Containment Pressure—Hi-1		
	a.	Safety Injection (ECCS)	≤ 30[1][6]
		1) Reactor Trip	≤ 2
		2) Feedwater Isolation	≤ 11[3]
		3) Phase "A" Isolation	N.A.
		4) Containment Ventilation Isolation	≤ 3.5
		5) Emergency Feedwater	N.A.
		6) Service Water to SCCW Isolation	≤ 210[1]
		7) Start Diesel Generator	≤ 12
		8) CBA Emergency Fan/Filter Actuation	≤ 5[13]
3.	Pressurizer Pressure—Low		
	a.	Safety Injection (ECCS)	≤ 30[1][6]/27[5]
		1) Reactor Trip	≤ 2
		2) Feedwater Isolation	≤ 11[3]
		3) Phase "A" Isolation	N.A.
		4) Containment Ventilation Isolation	≤ 3.5
		5) Emergency Feedwater	≤ 77/100 [9]
		6) Service Water to SCCW Isolation	≤ 210[1]
		7) Start Diesel Generators	≤ 12
		8) CBA Emergency Fan/Filter Actuation	≤ 5[13]
4.	Steam Line Pressure—Low		
	a.	Safety Injection (ECCS)	≤ 30[1][6]/27[5]
		1) Reactor Trip	≤ 2
		2) Feedwater Isolation	≤ 11[3]
		3) Phase "A" Isolation	N.A.
		4) Containment Ventilation Isolation	≤ 3.5
		5) Emergency Feedwater	≤ 77/100[9]
		6) Service Water to SCCW Isolation	≤ 210[1]
		7) Start Diesel Generators	≤ 12
		8) CBA Emergency Fan/Filter Actuation	≤ 5[13]
	b.	Steam Line Isolation	≤ 6[10]

Technical Requirement 2
Engineered Safety Features Response Times

(Sheet 3 of 4)

Initiation Signal and Function				Response Time in Seconds[7][8]
5.	Containment Pressure—Hi-3			
	a.	Containment Spray		≤ 28[2]/37[1]
	b.	Phase "B" Isolation		N.A.
6.	Containment Pressure—Hi-2			
	a.	Steam Line Isolation		≤ 6[3]
7.	Steam Line Pressure - Negative Rate—High			
	a.	Steam Line Isolation		≤ 6[10]
8.	Steam Generator Water Level—High-High (P-14)			
	a.	Turbine Trip		N.A.
	b.	Feedwater Isolation		≤ 12[3]
9.	Steam Generator Water Level—Low-Low			
	a.	Motor-Driven Emergency Feedwater Pump		≤ 77/100[9]
	b.	Turbine-Driven Emergency Feedwater Pump		≤ 77/100[9]
10.	RWST Level--Low-Low Coincident with Safety Injection			
	a.	Automatic Switchover to Containment Sump		≤ 30
11.	Loss of Power			
	a.	4.16 kV Bus E5 and E6 (Loss of Voltage)		N.A.
		1)	Motor Driven Emergency Feedwater Pump	N.A.
		2)	Turbine Driven Emergency Feedwater Pump	N.A.
		3)	Diesel Generator	≤ 12.0
	b.	4.16 kV Bus E5 and E6 Degraded Voltage Coincident with Safety Injection		N.A.
12.	Low RCS Tave Coincident with Rx Trip			
	a.	Feedwater Isolation		N.A.
13.	Containment On Line Purge Radiation – High			
	a.	Containment Ventilation Isolation		N.A.
14.	Control Room - Hi Radiation			
	a.	CBA Emergency Fan/Filter Actuation		≤ 5[11] [12] [13]

Table Notations

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

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

(3) Hydraulic-pneumatic gate valve.

(4) Not used.

(5) Diesel generator starting and sequence loading delays not included. Only centrifugal charging pumps included. A total of 27 seconds is allowed for establishment of the centrifugal charging pump ECCS injection flow path. The 27-second delay includes time for the RWST and VCT outlet isolation valves to travel to their required positions.

(6) The VCT outlet isolation valve is allowed an additional 10 seconds from the response time shown in the table.

(7) No credit was taken in the accident analyses for functional units with response times indicated as N.A.

(8) ESF response time is defined as the time interval from when a monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing the safety function.

(9) An additional 23 seconds is allowed for isolation of the EFW flow control valve on high EFW flow.

(10) Includes 5 seconds for valve stroke time and a conservative value of 1 second for signal actuation time.

(11) Not required to demonstrate operability in accordance with TS 3/4.3.2 and Table 3.3-3.

(12) Radiation detectors are exempt from response time testing. Response time of the Control Room Hi Radiation signal shall be measured from the control module output.

(13) A 30-second delay is conservatively applied in the accident analysis for margin to account for the time to reach the signal, the diesel generator start time and damper actuation and positioning time.

Technical Requirement 3
Loose-Part Detection System

LIMITING CONDITION FOR OPERATION

TR3-3.3.3.8 The Loose-Part Detection System shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2.

ACTION:

As determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR3-4.3.3.8 Each channel of the Loose-Part Detection Systems shall be demonstrated FUNCTIONAL by performance of:

a. A CHANNEL CHECK on each active channel at least once per 24 hours,

b. A CHANNEL FUNCTIONAL TEST on each active channel at least once per 31 days, and

c. A CHANNEL CALIBRATION at least once per 18 months.

ADDITIONAL INFORMATION

UFSAR Section 4.4.6.4 describes the Loose Parts Monitoring System (LPMS) and provides a comparison of the LPMS with each of the regulatory positions of Regulatory Guide 1.133, Rev. 1, “Loose-Part Detection Program for the Primary System of Light-Water Cooled Reactors.” The loose parts monitoring system provides for the early detection of a loose part within the Reactor Coolant System (RCS) and the acquisition of data to aid plant personnel to determine the significance of the alert signal and the potential safety significance if a loose part is shown to be present.

Technical Requirement 3
Loose-Part Detection System

(Sheet 2 of 2)

The Loose Parts Monitoring System consists of sixteen sensor channels to detect loose part impacts in the vicinity of six natural collection regions where a loose part is expected to situate itself in the reactor coolant system. These channels provide audible capability, alert alarms and input into a data acquisition system capable of digitally archiving sensor waveforms for the alarming channel and its three nearest neighbors. Upon alarm, the system defaults to recording and displaying the alarming channel as well as the three nearest channels. The system is capable of immediate visual and audio monitoring of all signals.

Data acquisition is normally acquired by automatic actuation when the LPMS alarm is received; however, the data acquisition system is capable of being manually started. Thus, the ability to record data is available whether the data acquisition system is actuated automatically or manually.

With a Loose Parts Monitoring System (LPMS) alarm present (i.e., pre-determined alert level exceeded), diagnostic steps are required to be taken within 72 hours to determine whether a loose part is present and to determine its safety significance. To perform the diagnosis, the capability must exist to view sensor signal data and evaluate present and past data for trends. It should be noted that exceeding an alert level cannot be construed that a loose part is present since other events such as Control Rod movement, flow noise and electronic spikes can momentarily cause an alarm condition.

Technical Requirement 4
Reactor Vessel Material Surveillance Program - Withdrawal Schedule

LIMITING CONDITION FOR OPERATION

TR4 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. The results of these examinations shall be used to update TS 3.4.9.1, Figures 3.4-2 and 3.4-3.

APPLICABILITY: At all times.

ACTION: As determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program.

SURVEILLANCE REQUIREMENTS #

SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE

The following surveillance capsule withdrawal schedule meets the requirements of ASTM E185-82 and is recommended for future capsules to be removed from the reactor vessel. This recommended removal schedule is applicable to 32 EFPY of operation.

Surveillance Capsule	Vessel Azimuthal Location (degrees)	Lead Factor[a]	Removal Time (EFPY)[b]	Removal After Operation of Cycle	Fluence (n/cm^2)
U	58.5	3.96	0.91	1	3.142×10^{18} [c]
Y	241	3.74	5.57	5	1.292×10^{19} [c]
V	61	3.78	12.39	10	2.669×10^{19} [c]
X	238.5	4.11	21[d]	16	4.74×10^{19} [d]
W	121.5	4.10	Standby[e]	[e]	[e]
Z	301.5	4.10	Standby[e]	[e]	[e]

Notes

(a) Updated in Capsule V dosimetry analysis.

(b) Effective Full-Power Years (EFPYs) from plant startup.

(c) Actual plant evaluation calculated fluence.

(d) Estimated removal of Capsule X near 21 EFPYs at End-of-Cycle 16. Capsule fast fluence approaches a factor of 2 times the maximum vessel base metal IR fast fluence at 32 EFPYs.

(e) Capsules W and Z to be withdrawn within one cycle of the removal of Capsule X. Upon removal, Capsules W and Z to be placed in storage.

25% surveillance interval extension is not applicable

Technical Requirement 5

NOT USED

Technical Requirement 6
Containment Isolation Valves

(Sheet 1 of 11)

LIMITING CONDITION FOR OPERATION

TR6 The isolation times of each Containment Isolation Valve (CIV) required to be OPERABLE by Technical Specification 3.6.3 shall be as specified herein.

Note: The isolation times are for those valves that receive an automatic containment isolation signal (i.e., a Phase A or Phase B containment isolation signal, a containment ventilation isolation signal, or for the charging line isolation valve: a safety injection signal). The valve isolation times are those required to meet 10 CFR 100 limits.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: As specified in TS 3.6.3

SURVEILLANCE REQUIREMENTS

The isolation time of each CIV is demonstrated by TS Surveillance Requirement 4.6.3.3.

A PHASE "A" ISOLATION

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
CAH-FV6572	Radiation Monitoring Skid 60 Inlet	2
CAH-FV6573	Radiation Monitoring Skid 60 Inlet	2
CAH-FV6574	Radiation Monitoring Skid 60 Outlet	2
CGC-V14	Containment Enclosure Exhaust Filter Isolation	12
CGC-V28	Containment Enclosure Exhaust Filter Isolation	12
CS-V149	Reactor Coolant Letdown	10
CS-V150	Reactor Coolant Letdown	10
CS-V167	RCP Seal Water/Excess Letdown Return	10
CS-V168	RCP Seal Water/Excess Letdown Return	10
IA-530	IA Cross Connect	10
NG-FV4609	Nitrogen Gas Supply	2
NG-FV4610	Nitrogen Gas Supply	2
NG-V13	Accumulator Nitrogen Supply	10
NG-V14	Accumulator Nitrogen Supply	10
RC-FV2830	PZR Steam Sample	2
RC-FV2831	PZR Liquid Sample	2
RC-FV2832	RCS Loop 1 Sample	2
RC-FV2833	RCS Loop 3 Sample	2
RC-FV2836	PZR Relief Tank Gas Sample	2
RC-FV2837	PZR Relief Tank Gas Sample	2
RC-FV2840	PZR Steam/Liquid Sample	2
RC-FV2874	Loop 1 Sample	2
RC-FV2876	RCS Loop 3 Sample	2

Technical Requirement 6
Containment Isolation Valves

(Sheet 3 of 11)

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
RH-V27#	RHR Test Line	10
RH-V28#	RHR Test Line	10
RH-V49#	RHR Test Line	10
RMW-V30	Reactor Makeup Water	10
SB-V9#	SG Blowdown	10
SB-V1O#	SG Blowdown	10
SB-V11#	SG Blowdown	10
SB-V12#	SG Blowdown	10
SI-V62	Accumulator Fill and Test Line	10
SI-V70	Accumulator Fill and Test Line	10
SI-V131#	SI Test Line	10
SI-V134#	SI Test Line	10
SI-V157	Accumulator Fill and Test Line	10
SI-V158#	SI Test Line	10
SI-V160#	SI Test Line	10
SS-FV2857*	Post Accident Sample Flush Tank Drain	2
VG-FV1661	Hydrogenated Equipment Vent Header	2
VG-FV1712	Hydrogenated Equipment Vent Header	2
WLD-FV8330	Containment Floor Drains	2
WLD-FV8331	Containment Floor Drains	2
WLD-V81	Reactor Coolant Drain Tank	10
WLD-V82	Reactor Coolant Drain Tank	10

Not subject to Type C leakage test

* May be opened on an intermittent basis under administrative control. See page 2-6.11 for administrative control requirements.

Technical Requirement 6
Containment Isolation Valves

B. PHASE "B" ISOLATION

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
CC-V57	PCCW Loop A Supply	10
CC-V121	PCCW Loop A Return	10
CC-V122	PCCW Loop A Return	10
CC-V168	PCCW Loop A Supply	10
CC-V175	PCCW Loop B Supply	14
CC-V176	PCCW Loop B Supply	14
CC-V256	PCCW Loop B Return	10
CC-V257	PCCW Loop B Return	10

C. CONTAINMENT PURGE AND EXHAUST

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
COP-V1	Containment On-Line Purge	2
COP-V2	Containment On-Line Purge	2
COP-V3	Containment On-Line Purge	2
COP-V4	Containment On-Line Purge	2

D. MANUAL

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
CGC-V3#*	Hydrogen Analyzer Outlet	NA
CGC-V10#*	Hydrogen Analyzer Inlet	NA
CGC-V15*	Containment Exhaust Filter ORC Isolation	NA
CGC-V24#*	Hydrogen Analyzer Outlet	NA
CGC-V32#*	Hydrogen Analyzer Inlet	NA
CGC-V36*	Containment Exhaust Filter ORC Isolation	NA
CGC-V43*	Compressed Air Supply to Containment	NA
CGC-V44*	Compressed Air Supply to Containment	NA
CGC-V45	Portable Air Compressor Connection	NA
DM-V4*	Demineralized Water Supply	NA
DM-V5	Demineralized Water Supply	NA
FP-V592*	Containment Fire Protection Header	NA
LD-V1	Leak Detection	NA
LD-V2	Leak Detection	NA
SA-V229	Containment Service Air	NA
SA-V1042	Containment Service Air	NA
SF-V86	Refueling Cavity Cleanup	NA
SF-V87	Refueling Cavity Cleanup	NA

\# Not subject to Type C leakage test

* May be opened on an intermittent basis under administrative control. See page 2-6.11 for administrative control requirements.

Technical Requirement 6
Containment Isolation Valves
(Sheet 6 of 11)

E. OTHER

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
CAH-V12	Radiation Monitoring Skid 60 IRC Check	NA
CBS-V8#	Containment Sump	NA
CBS-V11	Containment Spray Header	NA
CBS-V12	Containment Spray Header Check	NA
CBS-V14#	Containment Sump	NA
CBS-V17	Containment Spray Header	NA
CBS-V18	Containment Spray Header Check	NA
CC-V410	PCCW Loop A Return Relief	NA
CC-V474	PCCW Loop B Return Relief	NA
CC-V840	PCCW Loop B Supply Relief	NA
CC-V845	PCCW Loop A Supply Relief	NA
CC-V1092#	PCCW Thermal Barrier Loop B Supply	NA
CC-V1095#	PCCW Thermal Barrier Loop B Return	NA
CC-V1101#	PCCW Thermal Barrier Loop A Supply	NA
CC-V1109#	PCCW Thermal Barrier Loop A Return	NA
CGC-V4#	Hydrogen Analyzer Outlet IRC Check	NA
CGC-V25#	Hydrogen Analyzer Outlet IRC Check	NA
CGC-V46	Compressed Air Supply IRC Check	NA
CS-V4#	RCP 1A Seal Water Check	NA
CS-V20#	RCP 1B Seal Water Check	NA
CS-V36#	RCP 1C Seal Water Check	NA
CS-V52#	RCP 1D Seal Water Check	NA
CS-V143#	Normal Charging	10

Not subject to Type C leakage test

Technical Requirement 6
Containment Isolation Valves
(Sheet 7 of 11)

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
CS-V144#	Normal Charging Check	NA
CS-V154#	RCP 1D Seal Water	NA
CS-V158#	RCP 1C Seal Water	NA
CS-V162#	RCP 1B Seal Water	NA
CS-V166#	RCP 1A Seal Water	NA
CS-V794	RCP Seal Water/Excess Letdown Return Relief	NA
DM-V18	Containment Demineralized Water Supply Relief	NA
FP-V588	Containment Fire Protection Header IRC Check	NA
FW-V30#	Feedwater Isolation	NA
FW-V39#	Feedwater Isolation	NA
FW-V48#	Feedwater Isolation	NA
FW-V57#	Feedwater Isolation	NA
FW-V76#	EFW Isolation Check Valves	NA
FW-V82#	EFW Isolation Check Valves	NA
FW-V88#	EFW Isolation Check Valves	NA
FW-V94#	EFW Isolation Check Valves	NA
IA-V531	IA Cross Connect Check	NA
MS-PV3001#	Atmospheric Steam Dump	NA
MS-PV3002#	Atmospheric Steam Dump	NA
MS-PV3003#	Atmospheric Steam Dump	NA
MS-PV3004#	Atmospheric Steam Dump	NA
MS-V6#	Main Steam Safety	NA
MS-V7#	Main Steam Safety	NA
MS-V8#	Main Steam Safety	NA
MS-V9#	Main Steam Safety	NA

Not subject to Type C leakage test

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
MS-V10#	Main Steam Safety	NA
MS-V22#	Main Steam Safety	NA
MS-V23#	Main Steam Safety	NA
MS-V24#	Main Steam Safety	NA
MS-V25#	Main Steam Safety	NA
MS-V26#	Main Steam Safety	NA
MS-V36#	Main Steam Safety	NA
MS-V37#	Main Steam Safety	NA
MS-V38#	Main Steam Safety	NA
MS-V39#	Main Steam Safety	NA
MS-V40#	Main Steam Safety	NA
MS-V50#	Main Steam Safety	NA
MS-V51#	Main Steam Safety	NA
MS-V52#	Main Steam Safety	NA
MS-V53#	Main Steam Safety	NA
MS-V54#	Main Steam Safety	NA
MS-V86#	Main Steam Isolation	NA
MS-V88#	Main Steam Isolation	NA
MS-V90#	Main Steam Isolation	NA
MS-V92#	Main Steam Isolation	NA
MS-V393#	EFW Pump Steam Supply Isolation	NA
MS-V394#	EFW Pump Steam Supply Isolation	NA
MS-V204#	Main Steam Isolation Bypass	NA
MS-V205#	Main Steam Isolation Bypass	NA
MS-V206#	Main Steam Isolation Bypass	NA
MS-V207#	Main Steam Isolation Bypass	NA
MSD-V44#	Main Steam Drain Isolation	NA

Not subject to Type C leakage test

Technical Requirement 6
Containment Isolation Valves
(Sheet 9 of 11)

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
MSD-V45#	Main Steam Drain Isolation	NA
MSD-V46#	Main Steam Drain Isolation	NA
MSD-V47#	Main Steam Drain Isolation	NA
RC-FV2894*	RCS Loop 1 Sample	NA
RC-FV2896*	RCS Loop 3 Sample	NA
RC-V23*	RHR Pump Suction From RCS Loop 1	NA
RC-V24	RHR Pump Suction Relief	NA
RC-V88*	RHR Pump Suction From RCS Loop 3	NA
RC-V89	RHR Pump Suction Relief	NA
RC-V312	Pressurizer Sample Relief	NA
RC-V314	RCS Loop 1 Sample Relief	NA
RC-V337	RCS Loop 3 Sample Relief	NA
RH-V14#	RHR Cold Leg Injection	NA
RH-V15#	RHR Cold Leg Injection Check	NA
RH-V26#	RHR Cold Leg Injection	NA
RH-V29#	RHR Cold Leg Injection Check	NA
RH-V30#	RHR Cold Leg Injection Check	NA
RH-V31#	RHR Cold Leg Injection Check	NA
RH-V32#	RHR Hot Leg Injection	NA
RH-V50#	RHR Hot Leg Injection Check	NA
RH-V51#	RHR Hot Leg Injection Check	NA
RH-V70#	RHR Hot Leg Injection	NA
RMW-V29	Reactor Makeup Water IRC Check	NA
SF-V101	Refueling Cavity Cleanup Relief	NA

Not subject to Type C leakage test

* May be opened on an intermittent basis under administrative control. See page 2-6.11 for administrative control requirements.

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
SI-V77#	SI Hot Leg Injection	NA
SI-V81#	SI Hot Leg Injection Check	NA
SI-V86#	SI Hot Leg Injection Check	NA
SI-V102#	SI Hot Leg Injection	NA
SI-V106#	SI Hot Leg Injection Check	NA
SI-V110#	SI Hot Leg Injection Check	NA
SI-V114#	SI Cold Leg Injection	NA
SI-V118#	SI Cold Leg Injection Check	NA
SI-V122#	SI Cold Leg Injection Check	NA
SI-V126#	SI Cold Leg Injection Check	NA
SI-V130#	SI Cold Leg Injection Check	NA
SI-V138#	CS Cold Leg Injection	NA
SI-V139#	CS Cold Leg Injection	NA
SI-V140#	CS Cold Leg Injection Check	NA
SI-V247	Accumulator Fill/Test Header Relief	NA
SS-V273	Post Accident Sample Flush Tank Drain IRC Check	NA
WLD-V209	Sump "B" to FDT Relief	NA
WLD-V213	PDT to RC Drain Tank Relief	NA

Not subject to Type C leakage test

Administrative Control Requirements for Opening of Locked or Sealed Closed Containment Isolation Valves

The opening of locked or sealed closed Containment Isolation Valves on an intermittent basis under administrative control includes the following considerations pursuant to USNRC Generic Letter 91-08:

(1) Stationing an operator, who is in constant communication with the Control Room, at the valve controls,

(2) Instructing this operator to close these valve(s) in an accident situation, and

(3) Assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

The residual heat removal (RHR) suction valves, RC-V23 and RC-V88, may be opened under administrative control to support operation of the RHR system in Mode 4. Because these valves are normally operated from the control room, either of the two required licensed operators in the control room may be credited as the operator required for administrative control to close the valves under accident conditions as directed by procedures.

If the above administrative control requirements are maintained during opening of a locked or sealed closed containment isolation valve, entry into the ACTION statement of Technical Specification 3.6.3 is not required.

NOTE

In addition to the containment isolation valves having an * in this table, all vents, drains, test connections and instrument isolation valves which are located outside containment (e.g., acceptable environmental conditions), but within the outside containment isolation boundary may be opened on an intermittent basis under administrative control without entry into the ACTION statement of Technical Specification 3.6.3.

LIMITING CONDITION FOR OPERATION

TR7-3.7.9.1 The Fire Suppression Water System shall be FUNCTIONAL with:

a. At least three fire suppression pumps with their discharge aligned to the fire suppression header.

b. Two separate water supplies, each with a minimum contained volume of 215,000 gallons.

c. A FUNCTIONAL flow path capable of taking suction from the fire water tank and transferring the water through distribution piping with FUNCTIONAL sectionalizing control or isolation valves to the yard hydrant curb valves, the last valve ahead of the water flow alarm device on each sprinkler or hose standpipe, and the last valve ahead of the deluge valve on each deluge or spray system required to be FUNCTIONAL per Technical Requirements 8, 9, and 10.

APPLICABILITY: At all times.

ACTION:

a. With a fire pump(s), water supply nonfunctional:

   1. With one pump nonfunctional, restore the nonfunctional equipment to FUNCTIONAL status within 7 days or provide an alternate backup pump.

   2. With more than one pump nonfunctional, restore the system with at least two pumps FUNCTIONAL within 24 hours or provide an alternate backup pump(s).

   3. With one water supply nonfunctional, restore the nonfunctional equipment to FUNCTIONAL status within 30 days or provide an alternate backup – supply.

   4. With both water supplies nonfunctional, restore at least one water supply to FUNCTIONAL status within 24 hours or provide an alternate backup – supply.

b. With the Fire Suppression Water System flow path nonfunctional and incapable of delivering the required flow to any spray or sprinkler system, fire hose station, or yard fire hydrant required to be FUNCTIONAL by TR 8, 9 or 10, establish a backup Fire Suppression Water System for the affected spray or sprinkler system, fire hose station, or yard fire hydrant within 24 hours.

c. With a sectionalizing control or isolation valve nonfunctional and open:

1. Verify the capability exists to isolate the portion of the fire header normally isolated by the nonfunctional valve, or establish a backup fire suppression system within 24 hours; and

2. Restore the valve to FUNCTIONAL status in a time frame determined by an evaluation conducted in accordance with the requirements of the Correction Action Program.

SURVEILLANCE REQUIREMENTS

TR7-4.7.9.1.1 The Fire Suppression Water System shall be demonstrated FUNCTIONAL:

a. At least once per 7 days by verifying the contained water supply volume of at least 215,000 gallons per tank.

b. At least once per 31 days by starting the electric motor-driven pump and operating it 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) in the flow path is in its correct position.

d. At least once per 12 months by performance of a system flush.

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

f. 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 that each automatic valve in the flow path actuates to its correct position,

(2) verifying that each pump develops at least 900 gpm at a total developed head of 295 feet,

(3) cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

(4) verifying that the fire suppression pumps start sequentially to maintain the Fire Suppression Water System pressure greater than or equal to 125 psig.

g. 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.

TR7-4.7.9.1.2 Each 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 209 gallons of fuel, and

 2) The diesel starts from ambient conditions and operates for at least 30 minutes on recirculation flow.

b. By verifying that the new fuel is diesel, prior to addition to the storage tank(s), and has:

 1) A Kinematic viscosity, at 40ºC, of greater than or equal to 1.4 centistokes but less than or equal to 5.8 centistokes; or

 2) An API gravity of greater than or equal to 30 degrees but less than or equal to 42 degrees; and

 3) Verifying that the fuel is free of water and visible debris or particulates. Samples which contain visible particulates shall be verified to contain less than 10 mg/liter total particulate contamination when tested in accordance with Technical Requirement Program 5.1.

c. At least once per 92 days verify that the fuel oil is free of water and visible debris or particulates. Samples which contain visible particulates shall be verified to contain less than 10 mg/liter total particulate contamination when tested in accordance with Technical Requirement Program 5.1.

d. 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.

TR7-4.7.9.1.3 The fire pump diesel starting 24-volt battery bank shall be demonstrated FUNCTIONAL:

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

 1) The electrolyte level of each battery is above the plates, and

 2) The overall battery voltage is greater than or equal to 24 volts.

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

c. At least once per 18 months by verifying that:

 1) The batteries, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration, and

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

ADDITIONAL INFORMATION

Technical Requirement 7 deals with functionality of the fire suppression water system (fire protection system). The limiting condition for operation TR7-3.7.9.1.c describes functionality in terms of available flow paths capable of distribution to those branches required by TRs 8, 9, and 10. If the flow path is incapable of delivering the required flow of fire water to any spray or sprinkler system, fire hose station, or yard fire hydrant required to be FUNCTIONAL by TR 8, 9, or 10, action b requires establishing a backup Fire Suppression Water System for the affected spray or sprinkler system, fire hose station, or yard fire hydrant within 24 hours. A functional flow path also requires that the sectionalizing control and isolation valves are functional as demonstrated by periodic surveillance tests that cycle each valve through one complete cycle of full travel. Post indicator isolation valves are provided at strategic locations in the underground loop header to allow for sectionalization during maintenance and repair, and to provide flow from the pumping facilities in either of two different directions in the event of a line break. Post indicator valves are also positioned in the loop header to isolate the loop between the take-offs for primary suppression and secondary systems. As a result, with a sectionalizing control or isolation valve nonfunctional and open, action c requires verification that capability exists to isolate the portion of the fire header normally isolated by the nonfunctional valve and to maintain availability of the remaining portions (non-isolated sections) of the fire header. If this capability no longer exists such that a break in the fire header could result in a non-isolable leak or a complete loss of the fire water headers, then the action requires establishing a backup fire suppression system within 24 hours.

In the event a valve becomes nonfunctional and renders the flow path incapable of delivering the required flow to any spray or sprinkler system, fire hose station, or yard fire hydrant required to be FUNCTIONAL by TR 8, 9, or 10, action b is applicable. However, if the nonfunctional valve remains open and does not adversely affect the flow path, the valve should be restored to functional status in a time frame determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program.

Due to the multi-loop design of the FP system, one or more ring header isolation valves could be closed and still maintain a functional flow path to all of the required branches described by the TRs 8, 9, and 10. Furthermore, unlike other systems, the administrative closure of a ring header isolation valve should not be cause to declare an entrance into the action statement because where two functional flow paths had once existed, one functional flow path remains.

The surveillance requirement of TR7-4.7.9.1.1.c is to verify that the valves are in the correct position. Therefore, a valve whose “normal” position is open but at the time of the surveillance is administratively controlled (tagged) closed, would have to be closed to be in the “correct” position at the time of the surveillance.

When a valve under administrative control (valve tagging order) is moved from its “normal” position to a different position, this different position (open or closed) becomes the “correct” position of the valve due to the tagging order. Prior to the issuance of a tagging order, an evaluation should be performed to determine the impact on the system of that tagging order and any required actions that would have to be taken due to the order.

Technical Requirement 7
Fire Suppression Water System

Fire Tank Supply

The system is designed with separate but not independent tanks and share some common flow paths. The water supply for the fire protection system is stored in two 500,000-gallon tanks. 300,000 gallons in each tank is reserved exclusively for fire protection by means of vertical standpipes. This standpipe extends up to the 300,000-gallon level in each tank and provides a source of water for non-fire protection service. The Technical Requirement minimum volume of water in each tank is 215,000 gallons.

The suction piping to the three fire pumps is arranged to permit suction from either or both of the two fire water storage tanks. The manual valves in the suction piping to the fire pumps and in the relief valve header permit isolation of either storage tank.

The fire tanks are not train redundant water supplies. Two tanks are provided so that the minimum required water supply will be available if one of the tanks is nonfunctional.

There is the capability to isolate the water tanks from each other and maintain the water supply to the fire pumps. Placing a tank out of service does not cause any of the fire pumps to become nonfunctional.

As written in the Safety Evaluation Report it is acceptable for the fire pumps to take suction from both water storage tanks. Isolation valves provide the capability to separate the tanks.

Battery Charger

The purpose of the battery charger is to maintain the batteries functional. The surveillance verifies the batteries are functional every 7 days thus indirectly verifying the charger is functioning properly. A non-functioning charger does not directly cause the diesel fire pump to become nonfunctional.

Fire Pump Sequential Start Testing

The purpose of the sequential start test is to verify the functionality of the system design. The three fire pumps are designed so the electric motor driven fire pump starts at 127 psig decreasing with the time delay relay set at minimal delay. The first diesel driven pump will start at 127 psig decreasing with a ten-second-time delay and the second diesel driven pump will start at 127 psig decreasing with a twenty-second-time delay.

The pumps shall be tested by verifying: (1) that the start pressure switch generates a start signal at a pressure greater than or equal to 125 psig, (2) the time delay relay generates a start signal after the appropriate delay and (3) the pump starts and restores the fire suppression water system pressure greater than or equal to 125 psig.

Fire Pump Surveillance

For surveillances **or** minor maintenance activities that remove a fire pump(s) from service, **either** ENTER TR7-3.7.9.1 action a **or** personnel **shall** remain in the vicinity of the pump(s) available to quickly restore the pump(s) to a FUNCTIONAL status in the event of a fire. If personnel remain in the vicinity and the pump(s) is able to be immediately restored, TR entry is **not** required.

Technical Requirement 8
Spray and Sprinkler Systems

LIMITING CONDITION FOR OPERATION

TR8-3.7.9.2 The Spray and Sprinkler Systems in the following table shall be FUNCTIONAL.

APPLICABILITY: Whenever equipment protected by the Spray and/or Sprinkler System is required to be OPERABLE.

ACTION:

With one or more of the above required Spray and/or Sprinkler Systems nonfunctional, within 1 hour establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components could be damaged; for other areas, establish an hourly fire watch patrol.

SURVEILLANCE REQUIREMENTS

TR8-4.7.9.2 Each of the required Spray and Sprinkler Systems shall be demonstrated FUNCTIONAL:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) 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 18 months:

   1) By performing a system functional test which includes simulated automatic actuation of the system, and:

      a) Verifying that the automatic valves in the flow path actuate to their correct positions on a simulated test signal, and

      b) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

   2) By a visual inspection of the dry pipe spray and sprinkler headers to verify their integrity; and

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

SURVEILLANCE REQUIREMENTS

TR8-4.7.9.2 (continued)

d. At least once per 3 years by performing an air flow test through each open head spray/sprinkler header and verifying each open head spray/sprinkler nozzle is unobstructed.

REQUIRED SPRAY / SPRINKLER SYSTEMS

a. Cable Spreading Room

1) System 1
2) System 2
3) System 3
4) System 4
5) System 5

b. Diesel Generator Building - Train A

1) Fuel Oil Storage Tank System
2) Redundant Fuel Oil Storage Tank System
3) Fuel Oil Day Tank System
4) Fuel Oil Pipe Trench System
5) Diesel Generator Room System
6) Fuel Oil Storage Tank Room Sump System

c. Diesel Generator Building - Train B

1) Fuel Oil Storage Tank System
2) Redundant Fuel Oil Storage Tank System
3) Fuel Oil Day Tank System
4) Fuel Oil Pipe Trench System
5) Diesel Generator Room System
6) Fuel Oil Storage Tank Room Sump System

d. Electrical Tunnel - Train A

e. Electrical Tunnel - Train B

f. Primary Auxiliary Building

1) Electrical Chase

a. Vertical Portion of Fire Area PAB-F-1G-A

b. Horizontal Portion of Fire Area PAB-F-1G-A

2) Elevation 25' Area System

Technical Requirement 9
Fire Hose Stations

LIMITING CONDITION FOR OPERATION

TR9-3.7.9.3 The fire hose station specified in the following table shall be FUNCTIONAL.

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

ACTION:

With one or more of the fire hose stations nonfunctional, provide gated wye(s) on the nearest FUNCTIONAL hose station(s), fire hydrant or equivalent water source. One outlet of the wye shall be connected to the standard length of hose if provided at that location. The second outlet of the wye shall be connected to a length of hose sufficient to provide coverage for the area left unprotected by the nonfunctional hose station.

The above ACTION requirement shall be accomplished within 24 hours. Per the BTP APCSB 9.5-1, Appendix A Report, there are no fire hose stations that are the primary means of fire suppression.

Note: Where it can be demonstrated that the physical routing of the fire hose would result in a recognizable hazard to operating technicians, plant equipment, or the hose itself, the fire hose shall be stored in a roll at the outlet of the FUNCTIONAL hose station, fire hydrant or equivalent water source. Signs shall be mounted above the gated wye(s) to identify the proper hose to use.

SURVEILLANCE REQUIREMENTS

TR9-4.7.9.3 The fire hose stations 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 18 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, and

   2) Conducting a hose hydrostatic (service) test at a minimum pressure of 250 psig.

Technical Requirement 9
Fire Hose Stations
(Sheet 2 of 4)

LOCATION	ELEVATION	HOSE REEL NUMBER
EMRG. FW BLDG.		
West end opposite door	27'	71
West end in stairway	27'	62
EQUIPMENT VAULTS		
North Vault	-50'	27
South Vault	-50'	26
North Vault	-31'	25
South Vault	-31'	24
North Vault	3'	23
South Vault	3'	22
CONTROL BUILDING		
Stairway	21'	30
Turbine Bldg. by door to Essential Swg Rm. A	21'	8A
Stairway	50'	29
Turbine Bldg. by door to Cable Spd. Rm.	50'	15A
Stairway	75'	28
Turbine Bldg. by tornado door	75'	20A
DIESEL GEN. BLDG.		
"A" Train in stairway	6'- 6"	67
"B" Train in stairway	6'- 6"	70
"A" Train in stairway	21'	66
"B" Train in stairway	21'	69
"A" Train in stairway	51'	65
"B" Train in stairway	51'	68

Technical Requirement 9
Fire Hose Stations
(Sheet 3 of 4)

LOCATION	ELEVATION	HOSE REEL NUMBER
ELECTRICAL TUNNELS		
"A" Train - West stairway	0'	63A
"A" Train - East stairway	0'	63
"B" Train - West end of Tunnel	-20'	64A
"B" Train - East stairway	-26'	64
PRI. AUX. BLDG. (PAB)		
Piping Penetration Area	-26'	37B
Piping Penetration Area	-26'	37C
North stairway	-6'	37
Outside Demineralizer Access Room	-6'	37A
North stairway	7'	36
South stairway	7'	38
North stairway	25'	34
South stairway	25'	35
North stairway	53'	33
South stairway	53'	32
Outside HVAC Eq. Room	81'	31
FUEL STORAGE BLDG.		
Outside SF pump area	7'	49
By West doorway	21'	48
By West stairway	64'	47
MAIN STM - FW PIPECHASE		
South stairway	12'	22A
South stairway	21'	22B

Technical Requirement 9
Fire Hose Stations
(Sheet 4 of 4)

LOCATION	ELEVATION	HOSE REEL NUMBER
CONTAINMENT [1,2]		
Approx. 55° on outside wall	-26'	53
Approx. 130° by "C" accumulator	-26'	51
Approx. 210°	-26'	60
Approx. 320° by stairway	-26'	57
Approx. 55°	0'	54
Approx. 120° by equip. hatch	0'	52
Approx. 220° opposite inst. rack	0'	61
Approx. 310°	0'	58
Approx. 65° behind H2 recom.	25'	55
Approx. 135° by equip. hatch	25'	50
Approx. 225°	25'	59
Approx. 310° by personnel hatch	25'	56

[1] a) Containment fire hose stations are not required to be functional a maximum of 24 hours prior to establishing containment integrity.
b) Containment fire hose stations shall be functional within 24 hours of entering Mode 5 from Mode 4, and in Mode 6 unless containment integrity is going to be maintained for the duration of the time the station is in Mode 5 and there is an assigned operator to open valve 1-FP-V-592.

[2] Containment fire hose stations are not required to be functional a maximum of 24 hours prior to and during the performance of the Type A containment leakage rate test. However, the fire hose stations shall be functional within 24 hours of the completion of the Type A test.

Technical Requirement 10
Yard Fire Hydrants and Hydrant Hose Houses

LIMITING CONDITION FOR OPERATION

TR10-3.7.9.4 The yard fire hydrants and associated hydrant hose houses shown in the following table shall be FUNCTIONAL.

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

ACTION:

With one or more of the yard fire hydrants or associated hydrant hose houses 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.

SURVEILLANCE REQUIREMENTS

TR10-4.7.9.4 The yard fire hydrants and associated hydrant hose houses 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 (service) test at a minimum pressure of 250 psig,

    2) Inspecting all the gaskets and replacing any degraded gaskets in the couplings, and

    3) Performing a flow check of each hydrant to verify its FUNCTIONALITY.

Technical Requirement 10
Yard Fire Hydrants and Hydrant Hose Houses

LOCATION	HYDRANT NO.	HOSE HOUSE NUMBER
CONTROL BUILDING		
Outside "B" Diesel doorway	17A	HH9A
Opposite stairway door	16	
DIESEL GEN. BLDG.		
Outside "B" Diesel doorway	17A	HH9A
Southeast of Diesel Gen. Bldg.	16	
FUEL STORAGE BLDG.		
South of Pri. Aux. Bldg. (PAB)	6	HH4
Opposite Fuel Storage Bldg.	7	
Southeast of Fuel Storage Bldg.	8	HH5
PRI. AUX. BLDG. (PAB)		
South of Pri. Aux. Bldg.	6	HH4
Outside "B" Diesel doorway	17A	HH9A
Northwest of Primary Aux. Bldg.	16	
Southeast of Primary Aux. Bldg.	7	
SERV. WTR. PUMP HOUSE		
Southwest of Serv. Wtr. Pump House	8	HH5
South of Serv. Water Pump House	26	
SERV. WTR. COOLING TOWER		
East end of Cooling Tower	5A	HH10
MAIN STM - FW PIPECHASE		
Near South entrance to pipechase	9	HH6
EMERGENCY FEEDWATER PUMPHOUSE		
Near South Entrance to Main Steam Feedwater Pipe Chase (East)	9	HH6

Technical Requirement 11
Fire Rated Assemblies
(Sheet 1 of 7)

LIMITING CONDITION FOR OPERATION

TR11-3.7.9.5 All fire rated assemblies (walls, floor/ceilings, cable tray enclosures, and other fire barriers) separating safety-related fire areas or separating portions of redundant systems important to safe shutdown within a fire area and all sealing devices in fire rated assembly penetrations (fire doors, fire windows, fire dampers, cable, piping, and ventilation duct penetration seals) shall be FUNCTIONAL.

APPLICABILITY: When equipment protected by the fire rated assemblies is required to be OPERABLE.

ACTION:

With one or more of the above required fire rated assemblies and/or sealing devices nonfunctional, within 1 hour either:

a. Establish a continuous fire watch on at least one side of the affected assembly, or

b. Verify the FUNCTIONALITY of fire detectors on at least one side of the nonfunctional assembly and establish an hourly fire watch patrol.

NOTE

HOURLY is defined as "being performed within the clock hour."

CAUTION: Management oversight should be exercised to ensure the intent of the requirement to perform patrols hourly is not undermined. For example, although meeting the above definition, it would not be within the intent of this requirement to perform a patrol of an area at one minute before the hour and one minute after the hour to satisfy a 2-hour period.

SURVEILLANCE REQUIREMENTS

TR11-4.7.9.5.1 At least once per 18 months the above required fire rated assemblies and penetration sealing devices shall be verified FUNCTIONAL by performing a visual inspection of:

a. the exposed surfaces of each accessible fire rated assembly,*

* The containment and containment enclosure structures are exempt from this surveillance requirement. These structures are surveilled pursuant to Technical Specification Surveillance Requirement 4.6.1.2.

SURVEILLANCE REQUIREMENTS

TR11-4.7.9.5.1 (continued)

b. at least 10% of the accessible fire dampers and associated hardware. If a fire damper is found to be nonfunctional, a visual inspection of an additional 10% sample shall be made. This inspection shall continue until a 10% sample with no nonfunctional fire dampers is found, or until 100% of the accessible fire dampers are inspected. Samples shall be selected such that each accessible fire damper will be inspected every 15 years.#

c. at least 10% of each type of accessible sealed penetration. If an apparent change in appearance or abnormal degradation is found that causes the seal to be nonfunctional, a visual inspection of an additional 10% of that type of sealed penetration shall be made. This inspection shall continue until a 10% sample with no apparent change in appearance or abnormal degradation is found that causes the seal to be nonfunctional, or until 100% of the accessible seals of that type are inspected. Samples shall be selected such that each accessible penetration will be inspected every 15 years.#

NOTE

TYPE is synonymous with category.

If the "tamper seal" is broken, then the fitting cover must be removed and fire seal inspected. The sole purpose of the "tamper seal" is to provide an indication of the fire seal condition without removing the fitting cover. A broken "tamper seal" does not cause the fire seal to be nonfunctional.

TR11-4.7.9.5.2 Each of the above required fire doors shall be verified FUNCTIONAL by inspecting the automatic hold-open, release and closing mechanism and latches at least once per 6 months, and by verifying:**

a. The FUNCTIONALITY of the fire door supervision system for each electrically supervised fire door by performing a TRIP ACTUATING DEVICE OPERATIONAL TEST at least once per 31 days.

b. That each locked closed fire door is closed at least once per 7 days.

25% surveillance interval extension is not applicable to 15 year frequency.

** The containment air locks are exempt from this surveillance requirement. They are surveilled pursuant to Technical Specification Surveillance Requirement 4.6.1.3.

SURVEILLANCE REQUIREMENTS

TR11-4.7.9.5.2 (continued)

c. That doors with automatic hold-open and release mechanisms are free of obstructions at least once per 24 hours, and a functional test is performed at least once per 18 months, and

d. That each unlocked fire door without electrical supervision is closed at least once per 24 hours.

ADDITIONAL INFORMATION

1. Verification of Functionality

Verification of functionality, when required by an ACTION statement, does not require the performance of the Surveillance Requirements for the affected equipment, if the Surveillance Requirements are current. To verify FUNCTIONALITY of equipment, the action required is to review the appropriate logs to ensure that the equipment has not been declared nonfunctional and ensure that no conditions exist which could render the affected equipment nonfunctional (i.e. power is available, etc.).

2. Inspection of Exposed Surfaces of Fire Rated Assemblies

Technical Requirement Surveillance Requirement TR11-4.7.9.5.1a requires a visual inspection of the exposed surfaces of each Technical Requirement fire rated assembly. The types of fire rated assemblies inspected under this requirement are concrete and steel walls, ceilings, floors, fire-wrapped conduits and steel beams/columns with fireproofing. Inspection of these fire rated assembly surfaces every 18 months using a hand-over-hand inspection technique is clearly onerous and beyond the intent of the requirement. Such an inspection would be severely labor intensive requiring major scaffolding evolutions, ladder usage and rappelling. Hand-over-hand inspections using scaffolding, ladders and rappelling greatly increase the potential for personnel injury.

ADDITIONAL INFORMATION (continued)

A reasonable visual inspection of the above fire rated assemblies can be accomplished from the floor. Such an inspection may necessitate the use of visual aids such as temporary lighting and binoculars. Precedent currently exists for the performance of inspections from the floor. For example, DRR 92-061 states that a visual inspection of Pyrocrete coated surfaces from the floor, with binoculars if necessary, will provide a reasonable assurance of functionality. The general inspection of the Containment/Containment Enclosure accessible surfaces prior to Type A Integrated Leak Rate Tests has also been performed from the floor using visual aids. This inspection is performed in accordance with the Containment Leakage Rate Testing Program. Concrete and steel surfaces are unquestionably less susceptible to inadvertent damage than are fireproofed or wrapped surfaces. The design and work controls in place will ensure that penetrations in concrete or steel fire rated assemblies are strictly controlled. If a fire rated assembly is degraded by the performance of a work order or modification, the required compensatory measures would be implemented. A baseline inspection of conduits which require fire seals was conducted by FPLE Seabrook (ref. 93WR2796) to ensure that all conduits which require a seal are actually sealed. This baseline inspection for the presence of conduit seals was also effective in identifying fire rated assembly surfaces that are degraded.

Floor inspections, using visual aids such as temporary lighting or binoculars, if necessary, will provide an acceptable visual inspection in lieu of a hand-over-hand technique. If the inspection from the floor indicates that the fire rated assembly may be degraded it will become necessary to perform a close inspection to evaluate the condition of the barrier.

Undoubtedly, the floor inspections will not be able to cover certain blind-spots on the fire rated assembly surfaces. For example, a section of a wall may not be visible due to the presence of a large ductwork running through/along the wall. In such cases where a blind spot may exist, it is reasonable to conclude that the baseline inspections discussed above provide sufficient evidence to conclude that the fire rated assembly surface is satisfactory. There is no credible mechanism for the wall to become damaged in this blind spot area such that fire barrier would not function.

Certain fire barriers are located in posted/locked high radiation areas. Fire barriers which are located in posted/locked radiation areas, such as Demin. Alley (PAB elev. 7’), may be considered temporarily or permanently inaccessible. Inspections should be coordinated with other activities which are required to be performed in the area. The Health Physics Department should be contacted to establish the practicality of coordination of the barrier inspection with other locked high radiation area entries in accordance with FPLE Seabrook ALARA policies. If it is determined that inspection of the fire barriers cannot be coordinated with other activities in the locked high radiation area, ALARA considerations should be the deciding factor in whether the barrier is inspected or considered temporarily or permanently inaccessible. The Maintenance Manager and/or Station Director should review and approve fire barrier inspections which are waived due to ALARA considerations.

ADDITIONAL INFORMATION (continued)

Penetration seals may be deemed inaccessible if their inspection would necessitate the breaching of a fire barrier such as fire wrap, the movement of seismic supports, the breaching of an equipment qualification barrier, exposure to a high personnel safety risk or if the inspection would be inconsistent with FPLE Seabrook ALARA policies. Specific examples of these conditions are (1) the removal of a metal cover which has an equipment qualification function; (2) the removal of a metal cover which can only be removed by eliminating obstructions such as piping or pipe supports; (3) the removal of fire wrap; or (4) a high personnel safety risk (to be determined by the Plant Manager or Operations Manager). Penetration seals which are not conveniently inspected (e.g., those which require the erection of staging) may not be deemed inaccessible based on inconvenience only. Penetration seals which are temporarily inaccessible may be postponed but must be inspected at a later date. Penetration seals which are located in locked high radiation areas, such as Demin. Alley (PAB elev. 7’), may be considered temporarily inaccessible to allow the inspection to be coordinated with other activities which are required to be performed in the locked high radiation area.

For penetration seals which are deemed inaccessible based on the criteria discussed above, the following procedure and documentation thereof on the applicable surveillance will satisfy the visual inspection requirement of Technical Requirement 11-4.7.9.5.1c:

1) Review penetration seal installation documentation and inspection documentation for correct sealant material, seal depth and QA acceptance. Determine if the penetration seal has been reworked and review rework documentation for the same attributes (material, depth, QA), and

2) Inspect the fire barrier, EQ barrier or obstructing piping or pipe supports to ensure they are intact. If these items are not intact, the penetration seal must be visually inspected.

3. Degraded Fire Doors/Penetration Seals/Fire Rated Assembly Surfaces

Technical Requirement Surveillance Requirement TR11-4.7.9.5.2 specifies the surveillance requirements for fire doors. If a surveillance is being performed on a fire door and the door is determined to be nonfunctional, the fire door surveillance must be deemed unsatisfactory and the ACTION requirements of Technical Requirement 11 applied. On occasion, concurrent surveillances are performed on a fire door(s) and on the surfaces of the wall through which the door(s) penetrates. Assuming separate tests are being performed for the doors and the wall surfaces, a failure of the door test does not require a failure of the wall test and conversely a failure of the wall test does not require a failure of the door test. A failure of either test for the door or the wall would require entry into the ACTION requirements of Technical Requirement 11.

If, during a fire barrier inspection, a fire door is incidentally discovered to be degraded, the Work Order is the appropriate mechanism for documenting/correcting the degradation and initiating entry into the ACTION requirements of Technical Requirement 11.

ADDITIONAL INFORMATION (continued)

As identified in TR11-4.7.9.5.1, the Containment and Containment Enclosure structures are exempt from the 18 month surveillance frequency for all fire rated assemblies (walls, floor/ceilings, cable tray enclosures, and other fire rated barriers). It is identified in TR11-4.7.9.5.1 that these structures are surveilled pursuant to Technical Specification Surveillance Requirement 4.6.1.2. This exemption from the 18 month surveillance frequency was approved as a result of Technical Requirements Change Request (CR) 94-01 dated 01/07/94. The exemption of the Containment and Containment Enclosure from the requirements of TR11-4.7.9.5.1 was justified on the following basis:

1) The Integrated Leakage Rate Test (ILRT) visual inspection procedure (EX1803.004) has the same inspection characteristics and general acceptance criteria.

2) The robust design of the Containment and Containment Enclosure structures exceeds the requirements for an Appendix R fire barrier.

3) The design, work control process and structure integrity requirements will ensure that the integrity of these structures is not compromised.

The containment equipment hatch and personnel hatch doors are considered fire doors as a result of their function but are exempt from the surveillance requirements outlined in Technical Requirement Surveillance Requirement 11-4.7.9.5. The design of the air locks in conjunction with the testing requirements specified in the Containment Leakage Rate Testing Program is adequate to satisfy the inspection requirements of Technical Requirement 11-4.7.9.5.2 for these doors. The intent of the Technical Requirement inspection of the fire doors is to verify that the doors are functional. The testing requirements of the Containment Leakage Rate Testing Program provide reasonable assurance that the air lock doors are operable and the integrity of the fire barrier will be maintained. Failure of the air lock leakage test will not be cause to declare the air lock a nonfunctional fire barrier provided that one of the air lock doors is closed. Technical Specification 3.6.1.3, Action (a) 1 and 2 will ensure that the integrity of this fire barrier is maintained.

Technical Requirement Surveillance Requirement TR11-4.7.9.5.1c specifies the surveillance requirements for penetration fire seals. If a surveillance is being performed on a penetration seal and the seal is determined to be degraded, the penetration seal surveillance must be deemed unsatisfactory and the ACTION requirements of Technical Requirement 11 applied. On occasion, concurrent surveillances are performed on penetration fire seals and on the surfaces of the wall containing the sealed penetration. Assuming separate tests are being performed for the penetration fire seals and the wall surfaces, a failure of the penetration fire seal test does not require a failure of the wall test and conversely a failure of the wall test does not require a failure of the penetration fire seal test. A failure of either the test for the penetration fire seal or the wall would require entry into the ACTION requirements of Technical Requirement 11.

ADDITIONAL INFORMATION (continued)

If, during a fire barrier inspection or at any other time, a penetration seal is incidentally discovered to be missing, the Condition Report is the appropriate mechanism for documenting the degradation and initiating entry into the ACTION requirements of Technical Requirement 11.

Technical Requirement Surveillance Requirement TR11-4.7.9.5.1a requires a visual inspection of the exposed surfaces of each fire rated assembly. The types of fire rated assemblies inspected under this requirement are concrete and steel walls, ceilings, floors, fire-wrapped conduits and steel beams/columns with fireproofing.

If, during a fire rated assembly inspection, a breach in the assembly is identified and verified to be under the scope of the work control process and the ACTION requirements of Technical Requirement 11 have been entered, it is not necessary to fail the fire rated assembly test due to the existence of this breach. Assuming the remainder of the fire rated assembly is satisfactory, the test can be deemed satisfactory in spite of the known/planned breach. It is recommended that the surveillance be annotated to state that the breach was identified and verified to be under the scope of the work control process and the ACTION requirements of Technical Requirement 11 have been entered. If the breach cannot be verified to be under the scope of the work control process and the ACTION requirements of Technical Requirement 11 have not been entered, the Condition Report is the appropriate mechanism for documenting the degradation and initiating entry into the ACTION requirements of Technical Requirement 11.

LIMITING CONDITION FOR OPERATION

TR12-3.3.3.7 As a minimum, the fire detection instrumentation for each fire detection zone or group, shown in the following table shall be functional.

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

ACTION:

a. With any, but not more than one-half the total Type X fire detection instruments in any fire zone or group, shown in the following table nonfunctional either:

   1) Restore the inoperable instrument(s) to functional status within 14 days, or

   2) Establish a fire watch patrol within 1 hour to inspect the zone(s) or group(s) with the nonfunctional instrument(s) hourly*.

b. With more than one-half of the Type X fire detection instruments in any fire zone or group, shown in the following table nonfunctional, within 1 hour establish a fire watch patrol to inspect the zone(s) or group(s) with the nonfunctional instrument(s) hourly*.

c. With any Type Y fire detection instruments shown in the following table nonfunctional; within 1 hour establish a fire watch patrol to inspect the zone(s) or group(s) with the nonfunctional instrument(s) hourly*.

d. With any two or more adjacent fire detection instruments shown in the following table nonfunctional; within 1 hour establish a fire watch patrol to inspect the zone(s) or group(s) with the nonfunctional instrument(s) hourly*.

e. With any charcoal filter fire (CO) detection instrument(s) in any fire zone shown in the following table nonfunctional*:

   1) Within 1 hour establish a continuous fire watch to monitor the operating filter(s) with the nonfunctional instruments.

   OR

   2) Shut down the filter(s) with the nonfunctional instrument(s) and within one hour establish an hourly fire patrol to monitor the filter(s) temperature.

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* If the instrument(s) is located inside the containment, then, at least once per eight hours, either inspect that containment zone or ensure that the alarm point that monitors CONTAINMENT AREA TEMPERATURE HIGH is not in alarm. If the CONTAINMENT AREA TEMPERATURE HIGH is in alarm or if the alarm is nonfunctional, monitor the containment air temperature hourly at the locations listed in Technical Specification 4.6.1.5.

LIMITING CONDITION FOR OPERATION (continued)

f. With any fire detection control panel(s) unable to communicate with the control room, within one hour establish a watch to monitor the non-communicating fire detection control panel(s).

> **NOTE**
>
> HOURLY is defined as "being performed within the clock hour."
>
> CAUTION: Management oversight should be exercised to ensure the intent of the requirement to perform patrols hourly is not undermined. For example, although meeting the above definition, it would not be within the intent of this requirement to perform a patrol of an area at one minute before the hour and one minute after the hour to satisfy a 2-hour period.

SURVEILLANCE REQUIREMENTS

TR12-4.3.3.7.1

- Each of the required fire detection instruments shown in the following table which are accessible during plant operation shall be demonstrated functional at least once per 18 months (Heat detectors - 25% every 18 months, all in 6 years)[#] by performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST.

- Fire detectors which are not accessible during plant operation shall be demonstrated functional by the performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 18 months (Heat detectors - 25% every 18 months, all in 6 years).[#]

TR12-4.3.3.7.2 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.

TR12-4.3.3.7.3 The nonsupervised circuits, associated with detector alarms, between the instrument and the control room shall be demonstrated functional at least once per 31 days.

[#] 25% surveillance interval extension is not applicable to 6 year frequency.

ADDITIONAL INFORMATION

Activities required to demonstrate that the fire protection instruments are functional may require technicians to work atop ladders and staging while the plant is at power and create a significant personnel safety hazard. This condition is sufficient to determine that the fire detection instruments are not accessible during plant operation. Therefore, these fire detection instruments should be demonstrated functional by the performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 18 months (18 months for smoke detectors).

The logic described above should be applied to any other fire detection instrument which may not be accessible during plant operation. The Station Director or designee should be consulted to determine if other fire detection equipment is inaccessible. When extraordinary means, which can affect the capability to provide safe immediate evacuation or egress for personnel or which constitute a personnel safety hazard, are required to gain access to areas and equipment, that equipment should be considered as inaccessible. Additionally, the appropriate changes should be made to the preventive maintenance scheduling system so that any fire detection instruments determined not to be accessible are demonstrated to be functional during the appropriate COLD SHUTDOWN.

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS**		
1. CONTAINMENT***		HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
Control Panel #376				
Zone #1	El. 0' 0"			16/0
Zone #2	El. 0' 0"			19/0
Zone #3	El. 0' 0"			12/0
Zone #4	El. 0' 0"			16/0
Zone #5	El. (-)26' 0"			23/0
Zone #6	El. (-)26' 0"			8/0
Zone #7	El. (-)26' 0"			12/0
Zone #8	El. (-)26' 0"			20/0
Zone #9	El. (-)26' 0"			11/0
2. CONTROL BUILDING				
Control Panel #558				
Group #1	El. 75' 0"			17/0
Group #2	El. 75' 0"			10/0
Group #3	El. 75' 0"	2/0		17/0
Group #4	El. 75' 0"			9/0
Group #5	El. 21' 6"			12/0
Group #6	El. 21' 6"			12/0
Group #7	El. 21' 6"			3/0
Group #8	El. 21' 6"			3/0
Group #9	El. 21' 6"			3/0
Group #10	El. 21' 6"			3/0
Group #11	El. 21' 6"			12/0
Group #12	El. 21' 6"			1/0
Group #13	El. 21' 6"			1/0
Group #17	El. 50' 0"			14/0
Group #18	El. 50' 0"			12/0
Group #19	El. 75' 0"			2/0
Group #20	El. 21' 6"			9/0
Group #21	El. 21' 6"			9/0
Group #22	El. 21' 6"			30/0
Group #23	El. 75' 0"			13/0

(x/y): **x is number of early warning fire detection and notification only instruments. **y** is number of actuation of Fire Suppression Systems and early warning and notification instruments.

*** The fire detection instruments located within the containment are not required to be functional during the performance of Type A containment leakage rate tests.

Technical Requirement 12
Fire Detection Instrumentation

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS**		
		HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
3. PRIMARY AUXILIARY BUILDING				
Control Panel #559				
Group #1	El. 7' 0"			2/0
Group #2	El. 7' 0"			2/0
Group #3	El. 53' 0"			9/0
Group #4	El. 81' 0"			12/0
Group #5	El. 7' 0"			10/0
Group #6	El. 7' 0"			2/0
Group #7	El. 53' 0"			14/0
Group #8	El. 53' 0"			18/0
Group #9	El. 7' 0"			4/0
Group #10	El. 7' 0"			8/0
Group #11	El. 7' 0"			17/0
Group #12	El. 53' 0"			2/0
Group #13	El. 53' 0"			2/0
4. SERVICE WATER PUMPHOUSE				
Control Panel #380				
Zone #1	El. 21' 6"			14/0
Zone #2	El. 21' 6"			9/0
5. SERVICE WATER COOLING TOWER				
Control Panel #381				
Zone #3	El. 22' 0"			3/0
Zone #4	El. 22' 0"			3/0
Zone #6	El. 46' 0"			19/0
6. ELECTRICAL TUNNELS (A & B)				
Control Panel #560				
Group #1	El. (-)26' 0"			0/28
Group #2	El. (-)26' 0"			0/28
Group #3	El. 0' 0"			0/25
Group #4	El. 0' 0"			0/25
Group #7	El. 50' to (-)2'			0/7
Group #8	El. 50' to 0'			0/2

(x/y): **x is number of early warning fire detection and notification only instruments. **y** is number of actuation of Fire Suppression Systems and early warning and notification instruments.

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS**		
		HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
7. DIESEL GENERATOR BUILDING "A"				
Control Panel #561				
Group #1	El. 25' 0"	0/9		
Group #2	El. 25' 0"		8/0	
Group #3	El. (-)16' 0"	0/5		0/1
Group #4	El. (-)16' 0"	0/1		0/5
Group #5	El. 51' 0"	0/1		
Group #6	El. 51' 0"			0/1
Group #11	El. 51' 0"			10/0
Group #12	El. 25' 0"			27/0
8. DIESEL GENERATOR BUILDING "B"				
Control Panel #562				
Group #1	El. 25' 0"	0/9		
Group #2	El. 25' 0"		8/0	
Group #3	El. (-)16' 0"	0/5		0/1
Group #4	El. (-)16' 0"	0/1		0/5
Group #5	El. 51' 0"	0/1		
Group #6	El. 51' 0"			0/1
Group #11	El. 51' 0"			10/0
Group #12	El. 25' 0"			27/0
9. CABLE SPREADING ROOM				
Control Panel #558				
Group #1	El. 50' 0"	0/10		0/11
Group #2	El. 50' 0"	0/8		0/7
Group #3	El. 50' 0"	0/4		0/2
Group #4	El. 50' 0"	0/2		0/4
Group #5	El. 50' 0"	0/3		0/3
Group #6	El. 50' 0"	0/3		0/3
Group #7	El. 50' 0"	0/3		0/3
Group #8	El. 50' 0"	0/3		0/3
Group #9	El. 50' 0"	0/4		0/2
Group #10	El. 50' 0"	0/2		0/4

(x/y): **x is number of early warning fire detection and notification only instruments. **y** is the number of actuation of Fire Suppression Systems and early warning and notification instruments.

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS** HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
10. CABLE TUNNEL C – (PAB to Control Building Above RHR Vault)				
Control Panel #559				
Group #1	El. 30' 0"			0/8
Group #2	El. 30' 0"			0/9
11. CONTAINMENT FAN ENCLOSURE				
Control Panel #559				
Group #1	El. 25' 0"			9/0
Group #2	El. 25' 0"			15/0
12. EMERGENCY FEEDWATER PUMP BUILDING				
Control Panel #560				
Group #1	El. 27' 0"			11/0
13. MECHANICAL PENETRATION AREA				
Control Panel #446				
Zone #1	El. (-)11'2 1/2" and (-)8'			8/0
Zone #2	El. (-)11'2 1/2", (-)8' and (-)20"			19/0
14. EAST - MS AND FW PIPECHASE				
Control Panel #451				
Zone #1	El. 12' 0"			8/0
Zone #2	El. 8' 0"			7/0
Zone #3	El. 28' 0"			2/0
Zone #4	El. 28' 0" (CP-511)			1/0
15. WEST - MS AND FW PIPECHASE				
Control Panel #452				
Zone #1	El. 12' 0"			6/0
Zone #2	El. 8' 0"			6/0
Zone #3	El. 25' 0"			1/0
Zone #4	El. 28' 0" (CP-512)			1/0

(x/y): **x is number of early warning fire detection and notification only instruments. **y** is the number of actuation of Fire Suppression Systems and early warning and notification instruments.

Technical Requirement 12
Fire Detection Instrumentation

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS**		
		HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)
16. PRIMARY AUXILIARY BUILDING				
Control Panel #453				
Zone #1	El. (-)6' 0"			29/0
Zone #3	El. 25' 0"			12/0
Zone #4	El. 25' 0"			16/0
17. FUEL STORAGE BUILDING				
Control Panel #454				
Zone #1	El. 7' 0"			7/0
Zone #2	El. 21' 0"		3/0	3/0
Zone #3	El. 64' 0"			30/0
Zone #4	El. 21' 0"		1/0	6/0
Zone #5	El. 64' 0"			13/0
18. PRIMARY AUXILIARY BUILDING				
Control Panel #559				
Group #1	El. 25' 0"			0/30
Group #2	El. 25' 0"			0/29
Group #3	El. 25' 0"			0/17
Group #4	El. 25' 0"			0/21
Group #5	El. 25' 0"			0/10
Group #6	El. 25' 0"			0/10
19. SERVICE WATER PUMPHOUSE (PUMP AREA)				
Control Panel #474				
Zone #1	El. 21' 6"			21/0
Zone #2	El. 21' 6"			26/0

(x/y): **x is number of early warning fire detection and notification only instruments. **y** is the number of actuation of Fire Suppression Systems and early warning and notification instruments.

INSTRUMENT LOCATION		TOTAL NUMBER OF INSTRUMENTS** HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)	CARBON MONOXIDE
20. RHR VAULTS					
Control Panel #475					
Zone #1	El. (-)61' to 0'			5/0	
Zone #2	El. (-)61' to 0'			5/0	
Zone #3	El. (-)61' 0"			2/0	
Zone #4	El. (-)61' 0"			2/0	
Zone #5	El. (-)50' 0"			2/0	
Zone #6	El. (-)50' 0"			2/0	
Zone #7	El. (-)31' to 0'			3/0	
Zone #8	El. (-)31' to 0'			3/0	
Zone #9	El. (-)61' to 20'			7/0	
Zone #10	El. (-)61' to 20'			7/0	
21. CONTAINMENT					
Control Panel MM-CP-517					
Zone #CAH-F-8	El. 25'0"				1
22. CONTROL BUILDING					
Control Panel MM-CP-517					
Zone #CBA-F-38	El. 75'0"				2
Zone #CBA-F-8038	El. 75'0"				2
23. PRIMARY AUXILIARY BUILDING					
Control Panel MM-CP-517					
Zone #PAH-F-16	El. 81'0"				3
Zone #CAP-F-40	El. 53'0"				2
24. CONTAINMENT FAN ENCLOSURE					
Control Panel MM-CP-517					
Zone #EAH-F-9	El. 25'0"				2
Zone #EAH-F-69	El. 25'0"				2

** (x/y): **x** is number of early warning fire detection and notification only instruments. **y** is the number of actuation of Fire Suppression Systems and early warning and notification instruments.

INSTRUMENT LOCATION		HEAT (x/y)	FLAME (x/y)	SMOKE (x/y)	CARBON MONOXIDE
25. FUEL STORAGE BUILDING					
Control Panel MM-CP-517					
Zone #FAH-F-41	El. 64'0"				2
Zone #FAH-F-74	El. 64'0"				2

Technical Requirement 13
Containment Penetration Conductor Overcurrent Protective Devices

LIMITING CONDITION FOR OPERATION

TR13 The test setpoints and verification times of each containment penetration conductor overcurrent protective device required to be FUNCTIONAL by Technical Requirement 34 shall be as specified herein.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: As specified in TR 34

SURVEILLANCE REQUIREMENTS

The test setpoints and verification time of each containment penetration conductor overcurrent protective device is demonstrated by Surveillance Requirement TR 34-4.8.4.2.

ADDITIONAL INFORMATION

1. Prior to replacement of any circuit breakers, ensure that the replacement is the same as existing (i.e., frame size, trip size, manufacturer) including consideration of any usage restrictions given on applicable drawings. This is necessary for test setpoints and verification times listed in the Table to remain applicable. Replacements that are not the same must be evaluated by Engineering prior to installation.

   Approved replacement breakers of a different type, as indicated on design drawings and in this table, can be used without any additional Engineering evaluation.

2. Certain Type HE breakers with the same trip rating may have different test criteria specified because of usage restrictions.

3. Whenever the tie breakers between US-E53 & US-E51 and US-E63 & US-E61 are closed and the incoming breakers opened on US-E53 and US-E63, penetration protection for the loads supplied from US-E53 and US-E63 must be considered nonfunctional. The incoming breakers on US-E51 and US-E61 have not been analyzed for penetration protection and are not listed in the following table of Technical Requirement 13.

4. Type ED thermal magnetic breakers may be used as replacements for Type E thermal magnetic breakers as designated in this table. Applicable test setpoints and verification times are provided as appropriate. This substitution is approved for all applicable panels except EDE-PP-112A & 112B branch breakers. Type ED thermal magnetic breakers are considered a different type of breaker than the type E thermal magnetic breakers when performing surveillance testing.

ADDITIONAL INFORMATION (continued)

5. Type KD thermal magnetic breakers may be used as replacements for type JL thermal magnetic breakers as designated in this table. Applicable test setpoints and verification times are provided as appropriate. Type KD thermal magnetic breakers are considered a different type of breaker than the type JL thermal magnetic breakers when performing surveillance testing.

6. Verification that a breaker trips at the specified current within the required time demonstrates compliance with TR 34. This method of testing is consistent with NEMA AB-2 and the vendor's (Telemecanique & NLI) recommendations. Resetting the breaker immediately following a trip provides additional verification that the instantaneous trip device and not the thermal element was responsible for the trip, but is not required to satisfy the surveillance requirement. As the acceptance criterion for response time is ≤ 0.167 seconds (equivalent to 10 cycles), the thermal element would not respond quickly enough to provide the trip. Therefore, meeting the time and current acceptance criteria provides verification that the instantaneous trip device functions as required. However, to ensure that the repeated pulsing of current has not resulted in the thermal element tripping the breaker, the breaker should be allowed to cool and then retested at the current which resulted in a successful test or a current higher but still within the allowed range to demonstrate that the instantaneous trip element was responsible for the trip.

   Based on the foregoing, the inability to immediately reset a tripped breaker does not constitute a failure of the instantaneous trip test and does not affect the operability of the instantaneous trip function. However, if an attempt to reset the breaker after it has cooled fails, an investigation into the cause of the failure to reset is required to be performed.

7. Type HFD thermal magnetic breakers are used as replacements for Type HE3 thermal magnetic breakers as designated in this table. Applicable test setpoints and verification times are provided as appropriate. Type HFD thermal magnetic breakers are considered a different type of breaker than the Type HE3 thermal magnetic breakers when performing surveillance testing.

8. Similarly, type HMCP motor circuit protectors are used as replacements for AMPCAP motor circuit protectors as designated in this table, with appropriate testing data provided for these different type devices.

9. Similarly, type CR123 thermal overload relays are used as replacements for G30 thermal overload relays as designated in this table, with appropriate testing data provided for these different type devices.

Device Number and Location	CT Secondary Test Current (amps) Instant / Longtime	Verification Time Instant / Longtime	System Powered
I. 13.8 kV			
a. Circuit Breakers			
1. Bus 1 – Overcurrent Trip Devices - IAC Relays			
RAT-X3A (S) Incoming Line Breaker	40* 12	0.37-0.43 3.7-4.3	RC
RC-P-lA (P) Reactor Coolant Pump Feeder Breaker	35.6-39.4 15	0-0.08 26-30	RC
RC-P-lB (P) Reactor Coolant Pump Feeder Breaker	35.6-39.4 15	0-0.08 26-30	RC
UAT-X2A (S) Incoming Line Breaker	40* 12	0.37-0.43 3.7-4.3	RC
2. Bus 2 – Overcurrent Trip Devices - IAC Relays			
RAT-X3B (S) Incoming Line Breaker	40* 12	0.37-0.43 3.7-4.3	RC
RC-P-1C (P) Reactor Coolant Pump Feeder Breaker	35.6-39.4 15	0-0.08 26-30	RC
RC-P-1D (P) Reactor Coolant Pump Feeder Breaker	35.6-39.4 15	0-0.08 26-30	RC
UAT-X2B (S) Incoming Line Breaker	40* 12	0.37-0.43 3.7-4.3	RC

3. The opening response time to a trip signal for all 13.8 kV circuit breakers should be less than 0.042 seconds for verification time purposes. The response time of the lock out relays for these breakers should be less than 0.020 seconds for verification time purposes.

Note:
(P) - Primary
(S) - Back-up/Secondary
(*) - Short-Time Value

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
II. 480 V			
a. Unit Substations			
Bus E53 (S) Secondary Breaker (Note 3)	9600* 4800	0.48-0.84 10-28	CAH
Bus E63 (S) Secondary Breaker (Note 3)	9600* 4800	0.48-0.84 10-28	CAH
CAH-FN-1A (P) Containment Structure Cooling Fan	3000-4500 990	0-0.070 10-28	CAH
CAH-FN-1B (P) Containment Structure Cooling Fan	2160-3240 900	0-0.080 10-28	CAH
CAH-FN-1C (P) Containment Structure Cooling Fan	3000-4500 990	0-0.070 10-28	CAH
CAH-FN-1D (P) Containment Structure Cooling Fan	2160-3240 900	0-0.080 10-28	CAH
CAH-FN-1E (P) Containment Structure Cooling Fan	3000-4500 990	0-0.070 10-28	CAH
CAH-FN-1F (P) Containment Structure Cooling Fan	2160-3240 900	0-0.080 10-28	CAH
RC-PP-6A(S) Pressurizer Heater Backup Group A	2000-3000 1800	0-0.11 7-35	RC
RC-PP-6B(S) Pressurizer Heater Backup Group B	2000-3000 1800	0-0.11 7-35	RC

Note:
(*) - Short-Time Value

	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3-Thermal Magnetic Circuit Breaker			
MCC-E522			
SI-V3 (P) Accum. Tk. 9A Outlet Iso. Valve	450-2800 120	0-0.167 20-125	SI
SI-V32 (P) Accum. Tk. 9C Outlet Iso. Valve	450-2800 120	0-0.167 20-125	SI
MCC-E531			
ED-X-16H Feeder (P) Lighting Transformer	450-2800 300	0-0.167 6-125	ED
ED-X-16H Feeder (S) Lighting Transformer	450-2800 300	0-0.167 6-125	ED
Power Receptacle (P)	450-2800 180	0-0.167 6-125	ED
Power Receptacle (S)	450-2800 180	0-0.167 6-125	ED
SA-C-4A (P) Containment Building Air Compressor	450-2800 120	0-0.167 20-125	SA

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3-Thermal Magnetic Circuit Breaker (Continued)			
MCC-E622			
SI-V17 (P) Accum. Tk. 9B Outlet Iso. Valve	450-2800 120	0-0.167 20-125	SI
SI-V47 (P) Accum. Tk. 9D Outlet Iso. Valve	450-2800 120	0-0.167 20-125	SI
MCC-E631			
ED-X-16A Feeder (P) Lighting Transformer	450-2800 300	0-0.167 6-125	ED
ED-X-16A Feeder (S) Lighting Transformer	450-2800 300	0-0.167 6-125	ED
SA-C-4B (P) Containment Building Air Compressor	450-2800 120	0-0.167 20-125	SA

III. MOTOR CONTROL CENTERS

a. Type HE3-Thermal Magnetic Circuit Breaker (Continued)

MCC-111

	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
Incore Detector Drive A (P) NI-MM-8010-A-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive A (S) NI-MM-8010-A-S	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive B (P) NI-MM-8010-B-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive B (S) NI-MM-8010-B-S	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive C (P) NI-MM-8010-C-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive C (S) NI-MM-8010-C-S	300-2100 45	0-0.167 3-70	IC
MM-MM-30 (P) Containment Building Personnel Air-Lock	300-2100 45	0-0.167 3-70	MM
MM-MM-30 (S) Containment Building Personnel Air-Lock	300-2100 45	0-0.167 3-70	MM

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered

III. MOTOR CONTROL CENTERS

a. Type HE3-Thermal Magnetic Circuit Breaker (Continued)

MCC-111 (Continued)

	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
RC-P-1A (P) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1A (S) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1B (P) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1B (S) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-229A (P) RC-P-1A Oil Lift Pump	300-2100 90	0-0.167 3-70	RC
RC-P-229B (P) RC-P-1B Oil Lift Pump	300-2100 90	0-0.167 3-70	RC
WLD-P-33A (P) RC Drain Tank Pump	300-2100 90	0-0.167 3-70	WLD

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3-Thermal Magnetic Circuit Breaker (Continued)			
MCC-231			
Incore Detector Drive D (P) NI-MM-8010-D-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive D (S) NI-MM-8010-D-S	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive E (P) NI-MM-8010-E-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive E (S) NI-MM-8010-E-S	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive F (P) NI-MM-8010-F-P	300-2100 45	0-0.167 3-70	IC
Incore Detector Drive F (S) NI-MM-8010-F-S	300-2100 45	0-0.167 3-70	IC

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3-Thermal Magnetic Circuit Breaker (Continued)			
MCC-231 (Continued)			
RC-P-1C (P) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1C (S) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1D (P) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-1D (S) Motor Space Heater	300-2100 45	0-0.167 3-70	RC
RC-P-229C (P) RC-P-1C Oil Lift Pump	300-2100 90	0-0.167 3-70	RC
RC-P-229D (P) RC-P-1D Oil Lift Pump	300-2100 90	0-0.167 3-70	RC
WLD-P-33B (P) RC Drain Tank Pump B	300-2100 90	0-0.167 3-70	WLD

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a.1 Type HFD-Thermal Magnetic Circuit Breaker			
MCC-111			
ED-X-16E Feeder (P) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16E Feeder (S) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16J Feeder (P) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16J Feeder (S) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
MCC-231			
ED-X-16F Feeder (P) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16F Feeder (S) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16K Feeder (P) Lighting Transformer	525-2030 300	0-0.167 12-170	ED
ED-X-16K Feeder (S) Lighting Transformer	525-2030 300	0-0.167 12-170	ED

	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a.1 Type HFD-Thermal Magnetic Circuit Breaker (Continued)			
MCC-E512			
CAH-FN-3A (P) Containment Structure Recirc Filter Fan	600-2310 375	0-0.167 10-250	CAH
MCC-E515			
CC-P-322 A (P) Thermal Barrier PCCW Recirculating Pump	450-1750 210	0-0.167 11-150	CC
MCC-E531			
CAH-FN-2A (P) Control Rod Drive Mechanism Cooling Fan	450-1750 210	0-0.167 11-150	CAH
MCC-E612			
CAH-FN-3B (P) Containment Structure Recirc. Filter Fan	600-2310 375	0-0.167 10-250	CAH
MCC-E615			
CC-P-322B (P) Thermal Barrier PCCW Recirculating Pump	450-1750 210	0-0.167 11-150	CC

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a.1 Type HFD-Thermal Magnetic Circuit Breaker (Continued)			
MCC-E631			
CAH-FN-2B (P) Control Rod Drive Mechanism Cooling Fan	450-1750 210	0-0.167 11-150	CAH
CAH-FN-2D (P) Control Rod Drive Mechanism Cooling Fan	450-1750 210	0-0.167 11-150	CAH

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
b. AMPCAP Motor Circuit Protector			
MCC-E512			
CC-V428 (P) RC-P-1A to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V428 (S) RC-P-1A to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V439 (P) RC-P-1D to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V439 (S) RC-P-1D to PCCW Iso. Valve	32-59	0-0.167	CC
CS-V149 (P) Regen. HT Exch Letdown Iso. Valve	44-81	0-0.167	CC
CS-V149 (S) Regen. HT Exch Letdown Iso. Valve	44-81	0-0.167	CC

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
b. AMPCAP Motor Circuit Protector (Continued)			
MCC-E521			
CGC-V14 (P) Containment Purge Iso. Valve	8.6-16	0-0.167	CGC
CGC-V14 (S) Containment Purge Iso. Valve	8.6-16	0-0.167	CGC
RC-V23 (P) RC Loop 1 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V23 (S) RC Loop l RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V88 (P) RC Loop 4 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V88 (S) RC Loop 4 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V122 (P) RC Loop 4 Pressurizer Press. Relief Iso. Valve	39-73	0-0.167	RC
RC-V122 (S) RC Loop 4 Pressurizer Press. Relief Iso. Valve	39-73	0-0.167	RC

Technical Requirement 13
Containment Penetration Conductor
Overcurrent Protective Devices

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III. MOTOR CONTROL CENTERS

b. AMPCAP Motor Circuit Protector (Continued)

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
MCC-E522			
SI-V3 (S) Accum Tk 9A Outlet Iso. Valve	317-591	0-0.167	SI
SI-V32 (S) Accum Tk 9C Outlet Iso. Valve	317-591	0-0.167	SI
MCC-E531			
CS-HCV-189 (P) Letdown Control Valve	5.3-10	0-0.167	CS
CS-HCV-189 (S) Letdown Control Valve	5.3-10	0-0.167	CS
RC-V81 (P) RC Loop 3 Letdown to Regen. HX Iso. Valve	17-31	0-0.167	RC
RC-V81 (S) RC Loop 3 Letdown to Regen. HX Iso. Valve	17-31	0-0.167	RC
SA-C-4A (S) Containment Bldg. Air Compressor	252-470	0-0.167	SA

III. MOTOR CONTROL CENTERS

b. AMPCAP Motor Circuit Protector (Continued)

MCC-E612

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
CC-V395 (P) RC-P-1B to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V395 (S) RC-P-1B to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V438 (P) RC-P-1C to PCCW Iso. Valve	32-59	0-0.167	CC
CC-V438 (S) RC-P-1C to PCCW Iso. Valve	32-59	0-0.167	CC
CS-V168 (P) RCP Seal Water Iso. Valve	29-55	0-0.167	CS
CS-V168 (S) RCP Seal Water Iso. Valve	29-55	0-0.167	CS
RC-V323 (P) Reactor Vent Valve	27-50	0-0.167	RC
RC-V323 (S) Reactor Vent Valve	27-50	0-0.167	RC

III. MOTOR CONTROL CENTERS

b. AMPCAP Motor Circuit Protector (Continued)

MCC-E621

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
CGC-V28 (P) Containment Purge Isolation Valve	9.2-17	0-0.167	CGC
CGC-V28 (S) Containment Purge Isolation Valve	9.2-17	0-0.167	CGC
RC-V22 (P) RC Loop 1 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V22 (S) RC Loop 1 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V87 (P) RC Loop 4 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V87 (S) RC Loop 4 RHR Inlet Iso. Valve	67-125	0-0.167	RC
RC-V124 (P) RC Loop 1 Pressurizer Press. Relief Iso. Valve	39-73	0-0.167	RC
RC-V124 (S) RC Loop 1 Pressurizer Press. Relief Iso. Valve	39-73	0-0.167	RC

III. MOTOR CONTROL CENTERS

b. AMPCAP Motor Circuit Protector (Continued)

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
MCC-E622			
SI-V17 (S) Accum Tk 9B Outlet Iso. Valve	317-591	0-0.167	SI
SI-V47 (S) Accum Tk 9D Outlet Iso. Valve	317-591	0-0.167	SI
MCC-E631			
CS-HCV-190 (P) Letdown Control Valve	5.3-10	0-0.167	CS
CS-HCV-190 (S) Letdown Control Valve	5.3-10	0-0.167	CS
SA-C-4B (S) Containment Bldg. Air Compressor	252-470	0-0.167	SA
MCC-111			
CC-V434 (P) Excess Letdown Heat Exchanger Valve	27-50	0-0.167	CC
CC-V434 (S) Excess Letdown Heat Exchanger Valve	27-50	0-0.167	CC

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
b. AMPCAP Motor Circuit Protector (Continued)			
MCC-111 (Continued)			
RC-P-229A (S) RC-P-1A Oil Lift Pump	129-241	0-0.167	RC
RC-P-229B (S) RC-P-1B Oil Lift Pump	129-241	0-0.167	RC
RC-P-271 (P) Pressure Relief Tank Cooling Pump	29-55	0-0.167	RC
RC-P-271 (S) Pressure Relief Tank Cooling Pump	29-55	0-0.167	RC
WLD-P-5A (P) Containment Structure Sump A Pump	51-95	0-0.167	WLD
WLD-P-5A (S) Containment Structure Sump A Pump	51-95	0-0.167	WLD
WLD-P-5C (P) Containment Structure Sump B Pump	51-95	0-0.167	WLD
WLD-P-5C (S) Containment Structure Sump B Pump	51-95	0-0.167	WLD
WLD-P-33A (S) RC Drain Tank Pump A	185-344	0-0.167	WLD

III. MOTOR CONTROL CENTERS

b. AMPCAP Motor Circuit Protector (Continued)

MCC-231

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
RC-P-229C (S) RC-P-1C Oil Lift Pump	129-241	0-0.167	RC
RC-P-229D (S) RC-P-1D Oil Lift Pump	129-241	0-0.167	RC
WLD-P-5B (P) Containment Structure Sump A Pump	51-95	0-0.167	WLD
WLD-P-5B (S) Containment Structure Sump A Pump	51-95	0-0.167	WLD
WLD-P-5D (P) Containment Structure Sump B Pump	51-95	0-0.167	WLD
WLD-P-5D (S) Containment Structure Sump B Pump	51-95	0-0.167	WLD
WLD-P-33B (S) RC Drain Tank Pump B	185-344	0-0.167	WLD

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
b.1 Type HMCP Motor Circuit Protector			
MCC-E512			
CAH-FN-3A (S) Containment Structure Recirc. Filter Fan	450-840	0-0.167	CAH
MCC-E515			
CC-P-322A (S) Thermal Barrier PCCW Recirculating Pump	375-700	0-0.167	CC
MCC-E531			
CAH-FN-2A (S) Control Rod Drive Mech. Cooling Fan	375-700	0-0.167	CAH
MCC-E612			
CAH-FN-3B (S) Containment Structure Recirc. Filter Fan	450-840	0-0.167	CAH
MCC-E615			
CC-P-322B (S) Thermal Barrier PCCW Recirculating Pump	375-700	0-0.167	CC

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
b.1 Type HMCP Motor Circuit Protector (Continued)			
MCC-E631			
CAH-FN-2B (S) Control Rod Drive Mech. Cooling Fan	375-700	0-0.167	CAH
CAH-FN-2D (S) Control Rod Drive Mech. Cooling Fan	375-700	0-0.167	CAH

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Overcurrent Protective Devices

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	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
III. MOTOR CONTROL CENTERS			
c. Type G30T Thermal Overload Relays			
MCC-E512			
CC-V428 (P) RC-P-1A to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V428 (S) RC-P-1A to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V439 (P) RC-P-1D to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V439 (S) RC-P-1D to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CS-V149 (P) Regen. Heat Exchanger Letdown Iso. Valve	8.0 12.0	27-140 12-65	CS
CS-V149 (S) Regen. Heat Exchanger Letdown Iso. Valve	8.0 12.0	27-140 12-65	CS

Technical Requirement 13
Containment Penetration Conductor
Overcurrent Protective Devices

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

MCC-E521

	Test Setpoint (amps) 200% / 300%	Verification Time (seconds) 200% / 300%	System Powered
CGC-V14 (P) Containment Purge Iso. Valve	1.8 2.6	27-140 12-65	CGC
CGC-V14 (S) Containment Purge Iso. Valve	1.8 2.6	27-140 12-65	CGC
RC-V23 (P) RC Loop 1 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V23 (S) RC Loop 1 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V88 (P) RC Loop 4 RHR Inlet Iso. Valve	15 22	27-140 12-65	RC
RC-V88 (S) RC Loop 4 RHR Inlet Iso. Valve	15 22	27-140 12-65	RC
RC-V122 (P) RC Loop 4 Pressurizer Press. Relief Iso. Valve	7.2 11	27-140 12-65	RC
RC-V122 (S) RC Loop 4 Pressurizer Press. Relief Iso. Valve	7.2 11	27-140 12-65	RC

Technical Requirement 13
Containment Penetration Conductor
Overcurrent Protective Devices

(Sheet 26 of 43)

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
MCC-E522			
SI-V3 (S) Accumulator Tank 9A Outlet Iso. Valve	64 96	27-140 12-65	SI
SI-V32 (S) Accumulator Tank 9C Outlet Iso. Valve	64 96	27-140 12-65	SI
MCC-E531			
CS-HCV-189 (P) Letdown Control Valve	1.2 1.8	27-140 12-65	CS
CS-HCV-189 (S) Letdown Control Valve	1.2 1.8	27-140 12-65	CS
RC-V81 (P) RC Loop 3 Letdown to Regen. HX Iso. Valve	3.2 4.8	27-140 12-65	RC
RC-V81 (S) RC Loop 3 Letdown to Regen. HX Iso. Valve	3.2 4.8	27-140 12-65	RC
SA-C-4A (S) Containment Building Air Compressor	68 102	27-140 12-65	SA

	Test Setpoint (amps)	Verification Time (seconds)	System Powered
	200% 300%	200% 300%	

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

MCC-E612

	Test Setpoint (amps)	Verification Time (seconds)	System Powered
CC-V395 (P) RC-P-1B to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V395 (S) RC-P-1B to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V438 (P) RC-P-1C to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CC-V438 (S) RC-P-1C to PCCW Iso. Valve	4.8 7.2	27-140 12-65	CC
CS-V168 (P) RCP Seal Water Iso. Valve	3.6 5.4	27-140 12-65	CS
CS-V168 (S) RCP Seal Water Iso. Valve	3.6 5.4	27-140 12-65	CS
RC-V323 (P) Reactor Vent Valve	3.6 5.4	27-140 12-65	RC
RC-V323 (S) Reactor Vent Valve	3.6 5.4	27-140 12-65	RC

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

MCC-E621

	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
CGC-V28 (P) Containment Purge Isolation Valve	2.0 2.9	27-140 12-65	CGC
CGC-V28 (S) Containment Purge Isolation Valve	2.0 2.9	27-140 12-65	CGC
RC-V22 (P) RC Loop 1 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V22 (S) RC Loop 1 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V87 (P) RC Loop 4 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V87 (S) RC Loop 4 RHR Inlet Iso. Valve	14 20	27-140 12-65	RC
RC-V124 (P) RC Loop 1 Pressurizer Press. Relief Iso. Valve	8.0 12	27-140 12-65	RC
RC-V124 (S) RC Loop 1 Pressurizer Press. Relief Iso. Valve	8.0 12	27-140 12-65	RC

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
MCC-E622			
SI-V17 (S) Accumulator Tank 9B Outlet Isol. Valve	64 96	27-140 12-65	SI
SI-V47 (S) Accumulator Tank 9D Outlet Isol. Valve	64 96	27-140 12-65	SI
MCC-E631			
CS-HCV-190 (P) Letdown Control Valve	1.2 1.8	27-140 12-65	CS
CS-HCV-190 (S) Letdown Control Valve	1.2 1.8	27-140 12-65	CS
SA-C-4B (S) Containment Bldg. Air Compressor	68 102	27-140 12-65	SA
MCC-111			
CC-V434 (P) Excess Letdown Heat Exch. Valve	4.8 7.2	27-140 12-65	CC
CC-V434 (S) Excess Letdown Heat Exch. Valve	4.8 7.2	27-140 12-65	CC

	Test Setpoint (amps)	Verification Time (seconds)	System Powered
	200%	200%	
	300%	300%	
III. MOTOR CONTROL CENTERS			
c. Type G30T Thermal Overload Relays (Continued)			
MCC-111 (Continued)			
RC-P-229A (S)	35	27-140	RC
RC-P-1A Oil Lift Pump	52	12-65	
RC-P-229B (S)	35	27-140	RC
RC-P-1B Oil Lift Pump	52	12-65	
RC-P-271 (P)	7.2	27-140	RC
Pressure Relief Tank Cooling Pump	11	12-65	
RC-P-271 (S)	7.2	27-140	RC
Pressure Relief Tank Cooling Pump	11	12-65	
WLD-P-5A (P)	10	27-140	WLD
Containment Structure Sump A Pump	15	12-65	
WLD-P-5A (S)	10	27-140	WLD
Containment Structure Sump A Pump	15	12-65	
WLD-P-5C (P)	10	27-140	WLD
Containment Structure Sump B Pump	15	12-65	
WLD-P-5C (S)	10	27-140	WLD
Containment Structure Sump B Pump	15	12-65	
WLD-P-33A (S)	48	27-140	WLD
Reactor Coolant Drain Tank Pump	71	12-65	

III. MOTOR CONTROL CENTERS

c. Type G30T Thermal Overload Relays (Continued)

MCC-231

	Test Setpoint (amps) 200% / 300%	Verification Time (seconds) 200% / 300%	System Powered
RC-P-229C (S) RC-P-1C Oil Lift Pump	35 52	27-140 12-65	RC
RC-P-229D (S) RC-P-1D Oil Lift Pump	35 52	27-140 12-65	RC
WLD-P-5B (P) Containment Structure Sump A Pump	10 15	27-140 12-65	WLD
WLD-P-5B (S) Containment Structure Sump A Pump	10 15	27-140 12-65	WLD
WLD-P-5D (P) Containment Structure Sump B Pump	10 15	27-140 12-65	WLD
WLD-P-5D (S) Containment Structure Sump B Pump	10 15	27-140 12-65	WLD
WLD-P-33B (S) Reactor Coolant Drain Tank Pump	48 71	27-140 12-65	WLD

	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
III. MOTOR CONTROL CENTERS			
c.1 Type CR123 Thermal Overload Relays			
MCC-E512			
CAH-FN-3A (S) Containment Structure Recirc. Filter Fan	184 276	53-110 24-47	CAH
MCC-E515			
CC-P-322A (S) Thermal Barrier PCCW Recirculating Pump	103 154	53-110 24-47	CC
MCC-E531			
CAH-FN-2A (S) Control Rod Drive Mech. Cooling Fan	86 129	53-110 24-47	CAH
MCC-E612			
CAH-FN-3B (S) Containment Structure Recirc. Filter Fan	184 276	53-110 24-47	CAH
MCC-E615			
CC-P-322B (S) Thermal Barrier PCCW Recirculating Pump	103 154	53-110 24-47	CC

	Test Setpoint (amps) 200% 300%	Verification Time (seconds) 200% 300%	System Powered
III. MOTOR CONTROL CENTERS			
c.1 Type CR123 Thermal Overload Relays (Continued)			
MCC-E631			
CAH-FN-2B (S) Control Rod Drive Mech. Cooling Fan	86 129	53-110 24-47	CAH
CAH-FN-2D (S) Control Rod Drive Mech. Cooling Fan	86 129	53-110 24-47	CAH

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS				
d. Type JL and Type KD-Thermal Magnetic				
MCC-E521				
CGC-MM-284A (P) Hydrogen Recombiner	JL	563-1050 375	0-0.167 32-150	CGC
	or			
	KD	586-976 375	0-0.167 65-250	CGC
CGC-MM-284A (S) Hydrogen Recombiner	JL	563-1050 375	0-0.167 32-150	CGC
	or			
	KD	586-976 375	0-0.167 65-250	CGC
MCC-E621				
CGC-MM-284B (P) Hydrogen Recombiner	JL	563-1050 375	0-0.167 32-150	CGC
	or			
	KD	586-976 375	0-0.167 65-250	CGC
CGC-MM-284B (S) Hydrogen Recombiner	JL	563-1050 375	0-0.167 32-150	CGC
	or			
	KD	586-976 375	0-0.167 65-250	CGC

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS				
(125 V dc & 120 V ac)				
a. Type BQ Thermal Magnetic				
120 V ac Vital Instrument Distr. Panel 11E				
Circuit #3 (P)		263-980 45	0-0.167 7-50	RM
120 V ac Vital Instrument Distr. Panel 11F				
Circuit #3 (P)		263-980 45	0-0.167 7-50	RM
MCC-E512, 120 V ac Distr. Panel				
Circuit #1 (P)		120-420 60	0-0.167 5-50	RC
Circuit #14 (S)		120-420 45	0-0.167 5-50	CC/CAH
Circuit #15 (S)		120-420 45	0-0.167 5-50	CC
MCC-E515, 120 V ac Distr. Panel				
Circuit #13 (S)		120-420 45	0-0.167 5-50	CC
MCC-E521, 120 V ac Distr. Panel				
Circuit #7 (P)		120-420 45	0-0.167 5-50	SI
Circuit #10 (P)		120-420 45	0-0.167 5-50	CC
Circuit #13 (S)		120-420 45	0-0.167 5-50	CGC

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS				
(125 V dc & 120 V ac)				
a. Type BQ Thermal Magnetic (Continued)				
MCC-E531, 120 V ac Distr. Panel				
Circuit #2 (S)		120-420 45	0-0.167 5-50	RC/CS SA/CAH
Circuit #11 (P)		120-420 45	0-0.167 5-50	CC
MCC-E612, 120 V ac Distr. Panel				
Circuit #9 (P)		120-420 45	0-0.167 5-50	RC
Circuit #10 (P)		120-420 45	0-0.167 5-50	RC
Circuit #11 (P)		120-420 60	0-0.167 5-50	VG
Circuit #13 (S)		120-420 45	0-0.167 5-50	CAH/RC
Circuit #15 (S)		120-420 45	0-0.167 5-50	CC
MCC-E615, 120 V ac Distr. Panel				
Circuit #10 (P)		120-420 60	0-0.167 5-50	CAH
Circuit #11 (P)		120-420 60	0-0.167 5-50	NG
Circuit #12 (P)		120-420 60	0-0.167 5-50	RC
Circuit #13 (S)		120-420 45	0-0.167 5-50	CC

Technical Requirement 13
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Overcurrent Protective Devices

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS				
(125 V dc & 120 V ac)				
a. Type BQ Thermal Magnetic (Continued)				
MCC-E621, 120 V ac Distr. Panel				
Circuit #1 (P)		120-420 60	0-0.167 5-50	WLD
Circuit #4 (P)		120-420 45	0-0.167 5-50	SI
Circuit #6 (P)		120-420 45	0-0.167 5-50	CC
Circuit #13 (S)		120-420 45	0-0.167 5-50	CGC
MCC-E631, 120 V ac Distr. Panel				
Circuit #1 (S)		120-420 45	0-0.167 5-50	CS/CAH
Circuit #2 (S)		120-420 45	0-0.167 5-50	SA
Circuit #10 (P)		120-420 45	0-0.167 5-50	CC
ED-PP-8C 120/240 V ac Distr. Panel				
Circuit #5 (S)		263-980 45	0-0.167 7-50	CAH

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS				
(125 V dc & 120 V ac)				
a. Type BQ Thermal Magnetic (Continued)				
MCC-111, 120 V ac Distr. Panel				
Circuit #1 (S)		120-420 45	0-0.167 5-50	SF/ CC
Circuit #2 (S)		120-420 45	0-0.167 5-50	WLD
Circuit #12 (S)		263-980 60	0-0.167 7-50	CAH
Circuit #21 (S)		120-420 45	0-0.167 5-50	RC
Circuit #28 (P)		263-770 105	0-0.167 5-50	IC
Circuit #31 (P)		120-420 45	0-0.167 5-50	RMW
MCC-231, 120 V ac Distr. Panel				
Circuit #4 (P)		120-420 45	0-0.167 5-50	WLD
Circuit #5 (P)		263-770 105	0-0.167 5-50	IC
Circuit #14 (P)		263-770 105	0-0.167 5-50	IC

IV. LOW VOLTAGE CIRCUIT BREAKERS

(125 V dc & 120 V ac)

> **NOTE**
>
> In cases where both the primary and secondary protective devices are not listed, the required protection is provided by fuses that are not listed in this table.

b. Type E2/ED4 Thermal Magnetic

	Breaker Type	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
EDE-PP-111A 125 V dc Distr. Panel				
Circuit #4 (P)	E2	300-980 60	0-0.167 4.5-70	CAH
	or			
	ED4	300-980 60	0-0.167 5-200	CAH
Circuit #6 (P)	E2	300-980 60	0-0.167 4.5-70	NG
	or			
	ED4	300-980 60	0-0.167 5-200	NG
Circuit #14 (P)	E2	300-980 60	0-0.167 4.5-70	SB
	or			
	ED4	300-980 60	0-0.167 5-200	SB
EDE-PP-111B 125 V dc Distr. Panel				
Circuit #4 (P)	E2	300-980 60	0-0.167 4.5-70	CAH
	or			
	ED4	300-980 60	0-0.167 5-200	CAH

IV. LOW VOLTAGE CIRCUIT BREAKERS

(125 V dc & 120 V ac)

b. Type E2/ED4 Thermal Magnetic (Continued)

EDE-PP-112A 125 V dc Distr. Panel

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
Circuit #2 (P)	E2	300-980 60	0-0.167 4.5-70	RH
Circuit #7 (P)	E2	300-980 60	0-0.167 4.5-70	SI
Circuit #19 (P)	E2	300-980 60	0-0.167 4.5-70	RC

EDE-PP-112B 125 V dc Distr. Panel

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
Circuit #1 (P)	E2	300-980 60	0-0.167 4.5-70	RC
Circuit #2 (P)	E2	300-980 60	0-0.167 4.5-70	RH
Circuit #3 (P)	E2	300-980 60	0-0.167 4.5-70	COP
Circuit #5 (P)	E2	300-980 60	0-0.167 4.5-70	WLD
Circuit #7 (P)	E2	300-980 60	0-0.167 4.5-70	SI
Circuit #16 (P)	E2	300-980 60	0-0.167 4.5-70	CAP
Circuit #19 (P)	E2	300-980 60	0-0.167 4.5-70	RC

	Breaker Type	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS (125 V dc & 120 V ac)				
b. Type E2/ED4 Thermal Magnetic (Continued)				
EDE-PP-113A 125 V dc Distr. Panel				
Circuit #4 (P)	E2	300-980 60	0-0.167 4.5-70	CC
	or			
	ED4	300-980 60	0-0.167 5-200	CC
Circuit #7 (P)	E2	300-980 60	0-0.167 4.5-70	SI
	or			
	ED4	300-980 60	0-0.167 5-200	SI
EDE-PP-113B 125 V dc Distr. Panel				
Circuit #4 (P)	E2	300-980 60	0-0.167 4.5-70	CC
	or			
	ED4	300-980 60	0-0.167 5-200	CC
Circuit #7 (P)	E2	300-980 60	0-0.167 4.5-70	SI
	or			
	ED4	300-980 60	0-0.167 5-200	SI

IV. LOW VOLTAGE CIRCUIT BREAKERS

(125 V dc & 120 V ac)

b. Type E2/ED4 Thermal Magnetic (Continued)

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
ED-MM-167N 125 V dc Lighting Distr. Panel				
Circuit #20 (P)	E2	450-1260 120	0-0.167 4.5-70	ED
	or			
	ED4	450-1400 120	0-0.167 5-200	ED
Circuit #20 (S)	E2	450-1260 120	0-0.167 4.5-70	ED
	or			
	ED4	450-1400 120	0-0.167 5-200	ED
EDE-PP-1E 120 V ac Vital Instrument Distr. Panel				
Circuit #3 (S)	E2	300-980 45	0-0.167 4.5-70	ML
	or			
	ED4	300-980 45	0-0.167 5-200	ML
Circuit #9 (P)	E2	300-980 45	0-0.167 4.5-70	SI
	or			
	ED4	300-980 45	0-0.167 5-200	SI
Circuit #16 (P)	E2	300-980 45	0-0.167 4.5-70	RC
	or			
	ED4	300-980 45	0-0.167 5-200	RC

Technical Requirement 13
Containment Penetration Conductor
Overcurrent Protective Devices

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS				
(125 V dc & 120 V ac)				
b. Type E2/ED4 Thermal Magnetic (Continued)				
EDE-PP-1F 120 V ac Vital Instrument Distr. Panel				
Circuit #3 (S)	E2	300-980 45	0-0.167 4.5-70	ML
	or			
	ED4	300-980 45	0-0.167 5-200	ML
Circuit #9 (P)	E2	300-980 45	0-0.167 4.5-70	SI
	or			
	ED4	300-980 45	0-0.167 5-200	SI
Circuit #16 (P)	E2	300-980 45	0-0.167 4.5-70	RC
	or			
	ED4	300-980 45	0-0.167 5-200	RC

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 1 of 6)

LIMITING CONDITION FOR OPERATION

TR14 The heater current range for each thermal overload protection device for safety-related motor-operated valves required to be OPERABLE by Technical Specification (TS) 3.8.4.3 shall be as specified herein.

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE.

ACTION: As specified in TS 3.8.4.3.

SURVEILLANCE REQUIREMENTS

The heater current range for each thermal overload protection device for safety-related motor-operated valves is demonstrated by TS Surveillance Requirement 4.8.4.3.

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 2 of 6)

VALVE NUMBER	FUNCTION/SYSTEM	OVERLOAD HEATER CAT. NO.	HEATER CURRENT RANGE (AMPERES)*
AS-V175	Auxiliary Steam Isolation	G30T37A	(8.05-8.95)
AS-V176	Auxiliary Steam Isolation	G30T37A	(8.05-8.95)
CBS-V2	ECCS/CS Fluid Supplies	G30T40	(11.2-12.3)
CBS-V5	ECCS/CS Fluid Supplies	G30T40	(11.2-12.3)
CBS-V8	ECCS/CS Fluid Supplies	G30T30	(3.51-3.93)
CBS-V11	ECCS/CS Fluid Supplies	G30T32A	(4.27-4.63)
CBS-V14	ECCS/CS Fluid Supplies	G30T30	(3.51-3.93)
CBS-V17	ECCS/CS Fluid Supplies	G30T32A	(4.27-4.63)
CBS-V38	ECCS/CS Fluid Supplies	G30T13	(0.643-0.706)
CBS-V43	ECCS/CS Fluid Supplies	G30T13	(0.643-0.706)
CBS-V47	Safety Injection Cold Leg	G30T23	(1.75-1.91)
CBS-V49	Safety Injection Cold Leg	G30T29	(3.19-3.50)
CBS-V51	Safety Injection Cold Leg	G30T27	(2.61-2.86)
CBS-V53	Safety Injection Cold Leg	G30T29	(3.19-3.50)
CC-V137	Primary Component Cooling	G30T15	(0.783-0.863)
CC-V145	Primary Component Cooling	G30T15	(0.783-0.863)
CC-V266	Primary Component Cooling	G30T15	(0.783-0.863)
CC-V272	Primary Component Cooling	G30T15	(0.783-0.863)
CC-V395**	Primary Component Cooling Thermal Barrier	G30T24	(1.92-2.12)
CC-V428**	Primary Component Cooling Thermal Barrier	G30T24	(1.92-2.12)

* Overload heater trip current is equal to 1.25 times the minimum value of the heater current range.

** This Motor Operated Valve Thermal Overload may not be bypassed as it provides penetration protection.

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 3 of 6)

VALVE NUMBER	FUNCTION/SYSTEM	OVERLOAD HEATER CAT. NO.	HEATER CURRENT RANGE (AMPERES)*
CC-V438**	Primary Component Cooling Thermal Barrier	G30T24	(1.92-2.12)
CC-V439**	Primary Component Cooling Thermal Barrier	G30T24	(1.92-2.12)
CC-V1092	Primary Component Cooling Thermal Barrier	G30T9	(0.430-0.474)
CC-V1095	Primary Component Cooling Thermal Barrier	G30T9	(0.430-0.474)
CC-V1101	Primary Component Cooling Thermal Barrier	G30T9	(0.430-0.474)
CC-V1109	Primary Component Cooling Thermal Barrier	G30T9	(0.430-0.474)
CGC-V14**	Combustible Gas Control	G30T14	(0.707-0.782)
CGC-V28**	Combustible Gas Control	G30T15	(0.783-0.863)
CS-LCV-112B	Chemical and Volume Control	G30T29	(3.19-3.50)
CS-LCV-112C	Chemical and Volume Control	G30T29	(3.19-3.50)
CS-LCV-112D	ECCS/CS Fluid Supplies	G30T28	(2.87-3.18)
CS-LCV-112E	ECCS/CS Fluid Supplies	G30T28	(2.87-3.18)
CS-V142	Chemical and Volume Control	G30T29	(3.19-3.50)
CS-V143	Chemical and Volume Control	G30T29	(3.19-3.50)
CS-V149**	Chemical and Volume Control	G30T29	(3.19-3.50)
CS-V154	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V158	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V162	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V166	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V167	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V168**	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V196	Chemical and Volume Control	G30T21	(1.42-1.57)

* Overload heater trip current is equal to 1.25 times the minimum value of the heater current range.

** This Motor Operated Valve Thermal Overload may not be bypassed as it provides penetration protection.

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 4 of 6)

VALVE NUMBER	FUNCTION/SYSTEM	OVERLOAD HEATER CAT. NO.	HEATER CURRENT RANGE (AMPERES)*
CS-V197	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V426	Chemical and Volume Control	G30T21	(1.42-1.57)
CS-V460	Safety Injection Cold Leg	G30T29	(3.19-3.50)
CS-V461	Safety Injection Cold Leg	G30T29	(3.19-3.50)
CS-V475	Safety Injection Cold Leg	G30T29	(3.19-3.50)
FW-FV-4214A	Feedwater	G30T18	(1.06-1.16)
FW-FV-4214B	Feedwater	G30T18	(1.06-1.16)
FW-FV-4224A	Feedwater	G30T18	(1.06-1.16)
FW-FV-4224B	Feedwater	G30T18	(1.06-1.16)
FW-FV-4234A	Feedwater	G30T18	(1.06-1.16)
FW-FV-4234B	Feedwater	G30T18	(1.06-1.16)
FW-FV-4244A	Feedwater	G30T18	(1.06-1.16)
FW-FV-4244B	Feedwater	G30T18	(1.06-1.16)
FW-V346	Feedwater	G30T24	(1.92-2.12)
FW-V347	Feedwater	G30T24	(1.92-2.12)
MS-V204	Main Steam Isolation Bypass	G30T26	(2.34-2.60)
MS-V205	Main Steam Isolation Bypass	G30T26	(2.34-2.60)
MS-V206	Main Steam Isolation Bypass	G30T26	(2.34-2.60)
MS-V207	Main Steam Isolation Bypass	G30T26	(2.34-2.60)
MSD-V44	Main Steam Drain	G30T14	(0.707-0.782)
MSD-V45	Main Steam Drain	G30T14	(0.707-0.782)
MSD-V46	Main Steam Drain	G30T14	(0.707-0.782)
MSD-V47	Main Steam Drain	G30T14	(0.707-0.782)

* Overload heater trip current is equal to 1.25 times the minimum value of the heater current range.

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 5 of 6)

VALVE NUMBER	FUNCTION/SYSTEM	OVERLOAD HEATER CAT. NO.	HEATER CURRENT RANGE (AMPERES)*
RC-V22**	Reactor Coolant Loop 1 (RHR)	G30T34	(5.45-5.93)
RC-V23**	Reactor Coolant Loop 1 (RHR)	G30T34	(5.45-5.93)
RC-V87**	Reactor Coolant Loop 4 (RHR)	G30T34	(5.45-5.93)
RC-V88**	Reactor Coolant Loop 4 (RHR)	G30T35	(5.94-6.42)
RC-V122**	Reactor Coolant Pressurizer	G30T28	(2.87-3.18)
RC-V124**	Reactor Coolant Pressurizer	G30T29	(3.19-3.50)
RC-V323**	Reactor Vessel Head Vent	G30T21	(1.42-1.57)
RH-FCV-610	Residual Heat Removal	G30T21	(1.42-1.57)
RH-FCV-611	Residual Heat Removal	G30T21	(1.42-1.57)
RH-V14	Residual Heat Removal	G30T40	(11.2-12.3)
RH-V21	Residual Heat Removal	G30T29	(3.19-3.50)
RH-V22	Residual Heat Removal	G30T28	(2.87-3.18)
RH-V26	Residual Heat Removal	G30T40	(11.2-12.3)
RH-V32	Residual Heat Removal	G30T29	(3.19-3.50)
RH-V35	Residual Heat Removal	G30T28	(2.87-3.18)
RH-V36	Residual Heat Removal	G30T29	(3.19-3.50)
RH-V70	Residual Heat Removal	G30T29	(3.19-3.50)
SI-V3**	Safety Injection Accumulators	G30T47A	(25.4-27.1)
SI-V17**	Safety Injection Accumulators	G30T47A	(25.4-27.1)
SI-V32**	Safety Injection Accumulators	G30T47A	(25.4-27.1)
SI-V47**	Safety Injection Accumulators	G30T47A	(25.4-27.1)
SI-V77	SI Hot Leg Injection	G30T24	(1.92-2.12)
SI-V89	Safety Injection Cold Leg	G30T22	(1.58-1.74)
SI-V90	Safety Injection Cold Leg	G30T21	(1.42-1.57)
SI-V93	Safety Injection	G30T21	(1.42-1.57)
SI-V102	SI Hot Leg Injection	G30T24	(1.92-2.12)

* Overload heater trip current is equal to 1.25 times the minimum value of the heater current range.

** This Motor Operated Valve Thermal Overload may not be bypassed as it provides penetration protection.

Technical Requirement 14
Motor Operated Valves with Thermal Overload Protection Devices

(Sheet 6 of 6)

VALVE NUMBER	FUNCTION/SYSTEM	OVERLOAD HEATER CAT. NO.	HEATER CURRENT RANGE (AMPERES)*
SI-V111	Safety Injection	G30T24	(1.92-2.12)
SI-V112	Safety Injection Cold Leg	G30T24	(1.92-2.12)
SI-V114	Safety Injection Cold Leg	G30T24	(1.92-2.12)
SI-V138	CS Cold Leg Injection	G30T32A	(4.27-4.63)
SI-V139	CS Cold Leg Injection	G30T32A	(4.27-4.63)
SW-V2	Service Water	G30T29	(3.19-3.50)
SW-V4	Service Water	G30T16	(0.864-0.955)
SW-V5	Service Water	G30T15	(0.783-0.863)
SW-V15	Service Water	G30T28	(2.87-3.18)
SW-V17	Service Water	G30T27	(2.61-2.86)
SW-V19	Service Water	G30T27	(2.61-2.86)
SW-V20	Service Water	G30T28	(2.87-3.18)
SW-V22	Service Water	G30T29	(3.19-3.50)
SW-V23	Service Water	G30T27	(2.61-2.86)
SW-V25	Service Water	G30T26	(2.34-2.60)
SW-V27	Service Water	G30T29	(3.19-3.50)
SW-V29	Service Water	G30T29	(3.19-3.50)
SW-V31	Service Water	G30T29	(3.19-3.50)
SW-V34	Service Water	G30T27	(2.61-2.86)
SW-V54	Service Water	G30T27	(2.61-2.86)
SW-V56	Service Water	G30T29	(3.19-3.50)
SW-V74	Service Water	G30T27	(2.61-2.86)
SW-V76	Service Water	G30T27	(2.61-2.86)
SW-V139	Service Water	G30T28	(2.87-3.18)
SW-V140	Service Water	G30T29	(3.19-3.50)

* Overload heater trip current is equal to 1.25 times the minimum value of the heater current range.

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits
Connected to Class 1E Power Sources

LIMITING CONDITION FOR OPERATION

TR15 The test setpoints and verification times of each protective device for Non-Class 1E circuits connected to Class 1E power sources required to be FUNCTIONAL by Technical Requirement 34 shall be as specified herein.

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

ACTION: As specified in TR 34.

SURVEILLANCE REQUIREMENTS

The test setpoints and verification times of each protective device for Non-Class 1E circuits connected to Class 1E power sources is demonstrated by Surveillance Requirement TR 34-4.8.4.2.

ADDITIONAL INFORMATION

1. Prior to replacement of any circuit breakers, ensure that the replacement is the same as existing, i.e., frame size, trip size, manufacturer. This is necessary for test setpoints and verification times listed in the Table to remain applicable. Replacements that are not the same must be evaluated by Engineering prior to installation.

2. Type ED may be used as replacements for Type E thermal magnetic breakers as designated in this table. Applicable test setpoints and verification times are provided as appropriate. This substitution is approved for all applicable panels except EDE-PP-112A & 112B branch breakers. Type ED thermal magnetic breakers are considered a different type of breaker than the type E thermal magnetic breakers when performing surveillance testing.

ADDITIONAL INFORMATION (continued)

3. Verification that a breaker trips at the specified current within the required time demonstrates compliance with TR 34. This method of testing is consistent with NEMA AB-2 and the vendor's (Telemechanique) recommendations. Resetting the breaker immediately following a trip provides additional verification that the instantaneous trip device and not the thermal element was responsible for the trip, but is not required to satisfy the surveillance requirement. As the acceptance criterion for response time is $\leq$0.067 seconds (equivalent to 4 cycles), the thermal element would not respond quickly enough to provide the trip. Therefore, meeting the time and current acceptance criteria provides verification that the instantaneous trip device functions as required. However, to ensure that the repeated pulsing of current has not resulted in the thermal element tripping the breaker, the breaker should be allowed to cool and then retested at the current which resulted in a successful test or a current higher but still within the allowed range to demonstrate that the instantaneous trip element was responsible for the trip.

   Based on the foregoing, the inability to immediately reset a tripped breaker does not constitute a failure of the instantaneous trip test and does not affect the functionality of the instantaneous trip function. However, if an attempt to reset the breaker after it has cooled fails, an investigation into the cause of the failure to reset is required to be performed.

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits
Connected to Class 1E Power Sources

(Sheet 3 of 17)

Device Number and Location	CT Secondary Test Current (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered

I. 4.16 kV CIRCUIT BREAKER

a. Bus 5 - Overcurrent Trip Devices - IAC Relays

Device Number and Location	CT Secondary Test Current (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
EDE-X-5E 480 V Bus-E53 Transformer	59.4-65.6 18	0-0.08 3.4-4.0	EDE
FW-P-113 Start-up Feed Pump	45.1-49.9 12	0-0.08 9.3-10.7	FW

b. The opening response time to a trip signal for all 4.16kV circuit breakers should be less than 0.035 second for verification time purposes. The response time of the lockout relays for these breakers should be less than 0.020 second for verification time purposes.

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
II. 480V			
a. Unit Substation			
Bus E53 Secondary Breaker	9600* 4800	0.48-0.84 10-28	EDE
Bus E63 Secondary Breaker	9600* 4800	0.48-0.84 10-28	EDE
MCC E511 Feeder Breaker	3600* 1440	0.14-0.35 10-30	EDE
MCC E523 Feeder Breaker	3600* 1800	0.14-0.35 10-30	EDE
MCC E611 Feeder Breaker	3600* 1800	0.14-0.35 10-30	EDE
RC-PP-6A Pressurizer Heater Back-up Group A	2000-3000 1800	0-0.11 7-35	RC
RC-PP-6B Pressurizer Heater Back-up Group B	2000-3000 1800	0-0.11 7-35	RC
SA-SKD-137A Service Air Compressor Skid	1760-2640 840	0-0.07 10-30	SA
UPS ED-I-2B	1200-1800 450	0-0.07 7-35	ED

(*) - Short time value.

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3 Thermal-Magnetic Circuit Breaker			
MCC-E513			
15 KVA XFMR for 22 Circuit Distr. Panel	450-2800 120	0-0.167 6-125	-
ED-MM-170C Security Lighting Panel	450-2800 180	0-0.167 6-125	ED
ED-X-29 25KVA XFMR for Lighting Panel	450-2800 210	0-0.167 6-125	ED
HT-CP-428 SW System Process Heat Tracing Dist. Panel	300-2100 45	0-0.167 3-70	HT
Power Receptacles	450-2800 300	0-0.167 6-125	-
SFD-PP-179 15 KVA XFMR for Sec. and Fire Det. Power Panel	450-2800 120	0-0.167 6-125	SFD
SW-H-67A Cooling Tower Fan 51A Gear Red. Imrs. Heater	300-2100 45	0-0.167 3-70	SW
SWA-UH-112 Cooling Tower SWGR RM Train A Heater	300-2100 45	0-0.167 3-70	SWA
SWA-UH-113 Cooling Tower SWGR RM Train A Heater	300-2100 45	0-0.167 3-70	SWA

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits
Connected to Class 1E Power Sources

III. MOTOR CONTROL CENTERS

a. Type HE3 Thermal-Magnetic Circuit Breaker (Continued)

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
MCC-E514			
15 KVA XFMR for 22 Circuit Distr. Panel	450-2800 120	0-0.167 6-125	-
ED-MM-159C Lighting Panel	450-2800 120	0-0.167 6-125	ED
ED-MM-159D Lighting Panel	450-2800 120	0-0.167 6-125	ED
ED-MM-159E Security Lighting M-159E	300-2100 60	0-0.167 3-70	ED
SFD-PP-180 15 KVA XFMR for Sec. and Fire Det. Power Panel	450-2800 120	0-0.167 6-125	SFD
MCC-E641			
2-SW-H-67B Cooling Tower Fan 51B Gear Red. Imrs. Heater	300-2100 45	0-0.167 3-70	SW
HT-CP-429 SW System Process Heat Tracing Distr. Panel	300-2100 45	0-0.167 3-70	HT

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
III. MOTOR CONTROL CENTERS			
a. Type HE3 Thermal-Magnetic Circuit Breaker (Continued)			
MCC-E641 (Continued)			
SW-H-67B Cooling Tower Fan 51B Gear Red. Imrs. Heater	300-2100 45	0-0.167 3-70	SW
SWA-UH-114 Cooling Tower SWGR RM Train B Heater	300-2100 45	0-0.167 3-70	SWA
SWA-UH-115 Cooling Tower SWGR RM Train B Heater	300-2100 45	0-0.167 3-70	SWA
a.1 Type HFD-Thermal Magnetic Circuit Breaker			
MCC-E512			
RM-SKD-60 Containment Recirc Leak Detection Radiation Monitor Skid	375-1120 45	0-0.167 12-70	RM
b. AMPCAP Motor Circuit Protector			
MCC-E514			
CW-P-136A CW Pumps Lube Booster Pump	129-241	0-0.167	CW

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits
Connected to Class 1E Power Sources

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
	200% 300%	200% 300%	
III. MOTOR CONTROL CENTERS			
c. Type G30T Thermal Overload Relays			
MCC-E514			
CW-P-136A CW Pumps Lube Booster Pump	31 46.5	27-140 12-65	CW

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS (125V dc and 120V ac)			
a. Type BQ Thermal Magnetic			
MCC-E512, 120V ac Distr. Panel			
Circuit #8	120-420 45	0-0.167 5-50	CS
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---
MCC-E515, 120V ac Distr. Panel			
Circuit #2	120-420 45	0-0.167 5-50	SB
Circuit #4	120-420 45	0-0.167 5-50	FW
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---
MCC-E521, 120V ac Distr. Panel			
Circuit #4	120-420 45	0-0.167 5-50	RC
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---
MCC-E612, 120V ac Distr. Panel			
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS (125V dc and 120V ac)			
a. Type BQ Thermal Magnetic (Continued)			
MCC-E614, 120V ac Distr. Panel			
Circuit #2	120-420 45	0-0.167 5-50	SWA
Circuit #3	120-420 45	0-0.167 5-50	SEC
Circuit #5	120-420 45	0-0.167 5-50	EDE
MCC-E615, 120V ac Distr. Panel			
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---
MCC-E621, 120V ac Distr. Panel			
Subpanel Feeder Breaker	525-1680 300	0-0.167 7-70	---
MCC-E641, 120V ac Distr. Panel			
Circuit #1	120-420 45	0-0.167 5-50	ED
Circuit #2	263-980 60	0-0.167 7-50	EDE
Circuit #12	120-420 45	0-0.167 5-50	ED
EDE-PP-11E 120V ac Distr. Panel			
Circuit #4	263-980 45	0-0.167 7-50	VI

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits
Connected to Class 1E Power Sources

	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS (125V dc and 120V ac)			
a. Type BQ Thermal Magnetic (Continued)			
EDE-PP-11F 120V ac Distr. Panel			
Circuit #4	263-980 45	0-0.167 7-50	VI
Circuit #11	263-980 45	0-0.167 7-50	MM

IV. LOW VOLTAGE CIRCUIT BREAKERS
(125V dc and 120V ac)

b. Type E2/ED4 Thermal Magnetic

	Breaker Type	Test Setpoint (amps) Instant / Longtime	Verification Time (seconds) Instant / Longtime	System Powered
EDE-PP-1A 120V ac Distr. Panel				
Circuit #10	E2	300-980 45	0-0.167 4.5-70	ED
	or			
	ED4	300-980 45	0-0.167 5-200	ED
EDE-PP-1B 120V ac Distr. Panel				
Circuit #10	E2	300-980 45	0-0.167 4.5-70	ED
	or			
	ED4	300-980 45	0-0.167 5-200	ED
EDE-PP-1C 120V ac Distr. Panel				
Circuit #14	E2	450-1260 90	0-0.167 4.5-70	ED
	or			
	ED4	450-1400 90	0-0.167 5-200	ED
EDE-PP-1D 120V ac Distr. Panel				
Circuit #9	E2	300-980 45	0-0.167 4.5-70	ED
	or			
	ED4	300-980 45	0-0.167 5-200	ED

IV. LOW VOLTAGE CIRCUIT BREAKERS
(125V dc and 120V ac)

b. Type E2/ED4 Thermal Magnetic (Continued)

EDE-PP-1E 120V ac Distr. Panel

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
Circuit #3	E2	300-980 45	0-0.167 4.5-70	ML
	or			
	ED4	300-980 45	0-0.167 5-200	ML
Circuit #5	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE
Circuit #6	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE
Circuit #8	E2	300-980 45	0-0.167 4.5-70	SM
	or			
	ED4	300-980 45	0-0.167 5-200	SM

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
IV. LOW VOLTAGE CIRCUIT BREAKERS (125V dc and 120V ac)				
b. Type E2/ED4 Thermal Magnetic (Continued)				
EDE-PP-1E 120V ac Distr. Panel (Continued)				
Circuit #14	E2	300-980 45	0-0.167 4.5-70	ED
	or			
	ED4	300-980 45	0-0.167 5-200	ED
Circuit #15	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE
Circuit #20	E2	450-1260 180	0-0.167 4.5-70	ED
	or			
	ED4	450-1400 180	0-0.167 5-200	ED
EDE-PP-1F 20V ac Distr. Panel				
Circuit #3	E2	300-980 45	0-0.167 4.5-70	ML
	or			
	ED4	300-980 45	0-0.167 5-200	ML

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered

IV. LOW VOLTAGE CIRCUIT BREAKERS
(125V dc and 120V ac)

b. Type E2/ED4 Thermal Magnetic (Continued)

EDE-PP-1F 120V ac Distr. Panel (Continued)

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
Circuit #5	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE
Circuit #6	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE
Circuit #14	E2	300-980 45	0-0.167 4.5-70	ED
	or			
	ED4	300-980 45	0-0.167 5-200	ED
Circuit #15	E2	300-980 45	0-0.167 4.5-70	EDE
	or			
	ED4	300-980 45	0-0.167 5-200	EDE

IV. LOW VOLTAGE CIRCUIT BREAKERS
(125V dc and 120V ac)

b. Type E2/ED4 Thermal Magnetic (Continued)

	Breaker Type	Test Setpoint (amps) Instant Longtime	Verification Time (seconds) Instant Longtime	System Powered
EDE-PP-111B 125V dc Distr. Panel				
Circuit #18	E2	450-1260 300	0-0.167 4.5-70	EDE
	or			
	ED4	450-1400 300	0-0.167 5-200	EDE
EDE-PP-112A 125V dc Distr. Panel				
Circuit #19	E2	300-980 60	0-0.167 4.5-70	RC

Technical Requirement 15
Protective Devices for Non-Class 1E Circuits Connected to Class 1E Power Sources

	Test Setpoint (amps) Instant Short-time Longtime	Verification Time (seconds) Instant Short-time Longtime	System Powered
V. 125V DC CIRCUIT BREAKER			
UPS ED-I-2A	2400-3600 3600 1800	0-0.11 0.07-0.35 10-30	EDE

Technical Requirement 16

NOT USED

Technical Requirement 17
Accumulator Water Level and Pressure Instrumentation

LIMITING CONDITION FOR OPERATION

TR17-3.5.1.1 Each Reactor Coolant System (RCS) accumulator shall be OPERABLE in accordance with Technical Specification 3.5.1.1 and the requirements presented below.

APPLICABILITY: As per Technical Specification 3.5.1.1

ACTION: As per Technical Specification 3.5.1.1

SURVEILLANCE REQUIREMENTS

TR17-4.5.1.1 Each accumulator water level and pressure channel shall be demonstrated OPERABLE:

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

b. at least once every 18 months by performance of a CHANNEL CALIBRATION.

Technical Requirement 18
Reactor Coolant System Pressure Isolation Valves
(Sheet 1 of 3)

LIMITING CONDITION FOR OPERATION

TR18 The maximum allowable leakage for each Reactor Coolant System pressure isolation valve required to be OPERABLE by Technical Specification 3.4.6.2f shall be as specified herein.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: As specified in Technical Specification 3.4.6.2.

SURVEILLANCE REQUIREMENTS

Determination of leakage for each Reactor Coolant System pressure isolation valve below the maximum allowable leakage limit is demonstrated by TS Surveillance Requirement 4.4.6.2.2.

Technical Requirement 18
Reactor Coolant System Pressure Isolation Valves
(Sheet 2 of 3)

VALVE NUMBER	VALVE SIZE	FUNCTION	MAX. ALLOWABLE LEAKAGE (GPM)
SI-V144	1-1/2"	SI to RCS Loop 1 Cold-Leg Injection	0.75
SI-V148	1-1/2"	SI to RCS Loop 2 Cold-Leg Injection	0.75
SI-V152	1-1/2"	SI to RCS Loop 3 Cold-Leg Injection	0.75
SI-V156	1-1/2"	SI to RCS Loop 4 Cold-Leg Injection	0.75
SI-V81	2"	SI to RCS Loop 3 Hot-Leg Injection	1.0
SI-V86	2"	SI to RCS Loop 2 Hot-Leg Injection	1.0
SI-V106	2"	SI to RCS Loop 4 Hot-Leg Injection	1.0
SI-V110	2"	SI to RCS Loop 1 Hot-Leg Injection	1.0
SI-V118	2"	SI to RCS Loop 1 Cold-Leg Injection	1.0
SI-V122	2"	SI to RCS Loop 2 Cold-Leg Injection	1.0
SI-V126	2"	SI to RCS Loop 3 Cold-Leg Injection	1.0
SI-V130	2"	SI to RCS Loop 4 Cold-Leg Injection	1.0
SI V140	3"	SI to RCS Cold-Leg Injection	1.5
RH-V15	6"	RHR to SI Loop 1 Cold-Leg Injection	3.0
RH-V29	6"	RHR to SI Loop 3 Cold-Leg Injection	3.0
RH-V30	6"	RHR to SI Loop 4 Cold-Leg Injection	3.0
RH-V31	6"	RHR to SI Loop 2 Cold-Leg Injection	3.0
RH-V52	6"	SI to RCS Loop 1 Hot-Leg Injection	3.0
RH-V53	6"	SI to RCS Loop 4 Hot-Leg Injection	3.0
SI-V82	6"	SI to RCS Loop 3 Hot-Leg Injection	3.0
SI-V87	6"	SI to RCS Loop 2 Hot-Leg Injection	3.0
RH-V50	8"	RHR to SI Loop 4 Hot-Leg Injection	4.0
RH-V51	8"	RHR to SI Loop 1 Hot-Leg Injection	4.0
SI-V5	10"	SI to RCS Loop 1 Cold-Leg Injection	5.0
SI-V6	10"	SI Tank 9A Discharge Isolation	5.0
SI-V20	10"	SI to RCS Loop 2 Cold-Leg Injection	5.0
SI-V21	10"	SI Tank 9B Discharge Isolation	5.0
SI-V35	10"	SI to RCS Loop 3 Cold-Leg Injection	5.0
SI-V36	10"	SI Tank 9C Discharge Isolation	5.0
SI-V50	10"	SI to RCS Loop 4 Cold-Leg Injection	5.0
SI-V51	10"	SI Tank 9D Discharge Isolation	5.0

Technical Requirement 18
Reactor Coolant System Pressure Isolation Valves
(Sheet 3 of 3)

VALVE NUMBER	VALVE SIZE	FUNCTION	MAX. ALLOWABLE LEAKAGE (GPM)
RC-V22*	12"	RHR Pump 8A Suction Isolation	5.0
RC-V23*	12"	RHR Pump 8A Suction Isolation	5.0
RC-V87*	12"	RHR Pump 8B Suction Isolation	5.0
RC-V88*	12"	RHR Pump 8B Suction Isolation	5.0
RC-V475**	1/2"	RC-V22 Bypass Check	0.25
RC-V479**	1/2"	RC-V87 Bypass Check	0.25

* Testing per Technical Specification 4.4.6.2.2d not required.

** Testing per Technical Specification 4.4.6.2.2d is required if there has been flow through the valve. "Flow through the valve" is defined as forward flow greater than 0.25 gpm. Flow in excess of 0.25 gpm is not expected to occur under normal operation or plant cooldown conditions.

Technical Requirement 19
Feedwater Isolation on Low RCS T_{ave} Coincident with Reactor Trip

(Sheet 1 of 2)

LIMITING CONDITION FOR OPERATION

TR19: The Feedwater Isolation on Low RCS T_{ave} Coincident with Reactor Trip control function shall be FUNCTIONAL.

- Total No. of Channels – 4
- Minimum Channels for actuation – 2
- Minimum Channels FUNCTIONAL – 3
- Trip Setpoint – greater than or equal to 557°F
- Allowable Value - greater than or equal to 554.3°F.

APPLICABILITY: MODES 1 and 2

ACTION: As determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

- A CHANNEL CHECK shall be performed at least once per 12 hours.
- An ANALOG CHANNEL OPERATIONAL TEST shall be performed at least once per 92 days.
- A CHANNEL CALIBRATION shall be performed at least once per 18 months.

ADDITIONAL INFORMATION

The purpose of the feedwater isolation function on low RCS T_{avg} coincident with a reactor trip is to preclude overcooling events due to continued feedwater flow following a reactor trip. It also has a role in establishing the design transients which form the basis of the system and components design.

After a reactor trip, the average RCS Temperature (T_{avg}) will decrease to the no-load temperature due to steam dump actuation and continued feedwater flow. Additionally, for reactor trips from power levels above 50%, the shrink in steam generator level typically goes below the lo-lo level setpoint, actuating emergency feedwater (EFW). If feedwater flow is not isolated while the RCS is cooling down, T_{avg} will undershoot the target value of no-load temperature. The addition of EFW will further aggravate the undershoot effects. This undershoot could subsequently result in safety injection actuation on low RCS pressure as well as loss of required minimum shutdown margin. Consequently, a feedwater isolation on low RCS T_{avg} coincident with reactor trip has been provided in the design.

However, while the feedwater flow isolation feature is not credited in the safety analysis it does perform a control function. It is intended that the function will remain functional and any changes to the setpoint or function will be controlled pursuant to the requirements of 10 CFR 50.59.

ADDITIONAL INFORMATION (continued)

Westinghouse Electric Corporation performs the Loss of Coolant Accident (LOCA) and related analyses for Seabrook Station. Westinghouse confirmed that the LOCA analyses and related analyses, including large and small break LOCA, reactor vessel and loop LOCA blowdown forces, post-LOCA long term core cooling subcriticality, post-LOCA long term core cooling minimum flow and hot leg switchover to prevent boron precipitation are not affected by the low RCS T_{avg} feedwater isolation setpoint. Feedwater isolation in these analyses is achieved as the result of the initiation of a Safety Injection (SI).

Technical Requirement 20
Incore Detector System
(Sheet 1 of 1)

LIMITING CONDITION FOR OPERATION

TR20-3.3.3.2 The Incore Detector System shall be FUNCTIONAL with:

a. At least 75% of the detector locations, and

b. A minimum of two detector locations per core quadrant,

c. A FUNCTIONAL incore detector location consists of a fuel assembly containing a fixed detector string with a minimum of three FUNCTIONAL detectors or a FUNCTIONAL movable incore detector capable of mapping the location.

APPLICABILITY: When the Incore Detector 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 $F_{\Delta H}^{N}$ and $F_Q(Z)$.

ACTION:

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

SURVEILLANCE REQUIREMENTS

(Plant procedures are used to determine that the Incore Detector System is FUNCTIONAL.)

Technical Requirement 21
Seismic Instrumentation

(Sheet 1 of 3)

LIMITING CONDITION FOR OPERATION

TR21-3.3.3.3 The seismic monitoring instrumentation listed on the following table shall be FUNCTIONAL.

APPLICABILITY: At all times.

ACTION:

As determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR21-4.3.3.3.1 Each of the above required seismic monitoring instruments shown in the seismic monitoring instrumentation surveillance requirements table shall be demonstrated FUNCTIONAL by the performance of:

a. A Monthly CHANNEL CHECK, and

b. A Semiannual CHANNEL FUNCTIONAL TEST, and

c. A Refueling Interval CHANNEL CALIBRATION

TR21-4.3.3.3.2 Each of the above required seismic monitoring instruments which is actuated during a seismic event greater than or equal to 0.01 g, and which does not self-reset, shall be restored to FUNCTIONAL status within 24 hours and a CHANNEL CALIBRATION performed within 30 days following the seismic event. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion.

ADDITIONAL INFORMATION

The function of the seismic instrumentation is to provide information in the event of an earthquake to support a prompt evaluation of the response of Category I structures and components and comparison to the design basis. The seismic instrumentation is capable of recording seismic event after seismic event without operator intervention. Therefore, following actuation of the system by a seismic event or a false trigger, the seismic instrumentation remains functional. Further, the requirements in TR21-4.3.3.3.2 to restore actuated seismic instruments to functional status and perform channel calibrations apply only to instruments that do not self reset. Since the Seabrook instruments self reset, these requirements are normally not applicable following actuation of the seismic instruments.

Technical Requirement 21
Seismic Instrumentation

(Sheet 2 of 3)

INSTRUMENTS AND SENSOR LOCATIONS	MEASUREMENT RANGE	MINIMUM INSTRUMENTS FUNCTIONAL
1. Triaxial Time-History Accelerographs		
a. 1-SM-XT-6700, Free Field Control Room East Air Intake, elevation 11'-6"	± 1g	1*
b. 1-SM-XT-6701, Containment Foundation, elevation -26'-0"	± 1g	1*
c. 1-SM-XT-6710, Containment Operating Floor, elevation 25'-0"	± 1g	1*
d. 1-SM-XR-6707, Primary Auxiliary Building, elevation 53'-0"	± 1g	1
e. 1-SM-XR-6708, Service Water Pump House, elevation 22'-0"	± 1g	1

* With reactor control room indication.

Technical Requirement 21
Seismic Instrumentation

(Sheet 3 of 3)

INSTRUMENTS AND SENSOR LOCATIONS	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST**
1. Triaxial Time-History Accelerographs			
a. 1-SM-XT-6700, Free Field Control Room East Air Intake,* elevation 11'-6"	M	R	SA
b. 1-SM-XT-6701, Containment Foundation,* elevation -26'-0"	M	R	SA
c. 1-SM-XT-6710, Containment Operating Floor,* elevation 25'-0"	M	R	SA
d. 1-SM-XR-6707, Primary Auxiliary Building, elevation 53'-0"	M	R	SA
e. 1-SM-XR-6708, Service Water Pump House, elevation 22'-0"	M	R	SA

* With reactor control room indication.

** Channel Functional Test (Secondary Calibration) is defined as the determination without adjustment that an instrument, sensor, or system responds to a known input of such character that it will verify the instrument, sensor, or system is functioning in a manner that can be calibrated.

Technical Requirement 22
Meteorological Instrumentation

(Sheet 1 of 3)

LIMITING CONDITION FOR OPERATION

TR22-3.3.3.4 The meteorological monitoring instrumentation channels shown in the following table shall be FUNCTIONAL.

APPLICABILITY: At all times.

ACTION:

As determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR22-4.3.3.4 Each of the meteorological monitoring instrumentation channels shown in the following table shall be demonstrated FUNCTIONAL by the performance of:

a. A Daily CHANNEL CHECK, and

b. A Semiannual CHANNEL CALIBRATION.

ADDITIONAL INFORMATION

Meteorological data can be obtained from either the Primary or Backup Meteorological Monitoring Systems. The Primary Meteorological System (Primary Met Tower) is included in the Seabrook Station Technical Requirements manual. This system is a 210 foot (ft) tower which provides data on the wind speed and direction at 43 ft and 209 ft nominal elevations, and the temperature differential between 43 ft and 150 ft, and 43 ft and 209 ft. The Backup Meteorological System (Backup Met Tower) is a 53 ft tower which provides wind speed and direction at the elevation corresponding to the 43 ft elevation of the Primary Met Tower. An algorithm is used to compute the average upper wind speed, wind direction, and delta-T. The Backup Met Tower was installed to provide meteorological data in the event the Primary Met Tower became unavailable and was not designed to replace the Primary Met Tower for Technical Requirement compliance.

ADDITIONAL INFORMATION (continued)

A CHANNEL CHECK is defined as follows: “A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.” The meteorological instrumentation on the various levels of the Primary Met Tower and on the Backup Met Tower may be subject to variations in local weather conditions. This may cause variances in the data obtained from similar instruments in proximity to one another. In addition, the Backup Met Tower does not directly measure upper wind speed, upper wind direction, and air temperature delta T, but instead uses an algorithm to estimate this data. Consequently, variations in data values among the various Primary and Backup Met Tower channels require further evaluation before a determination of channel nonfunctionality can be made. The evaluation should be in accordance with the guidance provided in YAEC memorandum REG 100/86, “Criteria for Implementing Daily Meteorological Channel Checks” dated April 17, 1986.

The preferred method for performing a CHANNEL CHECK is to compare the upper level and lower level wind speed, wind direction, and air temperature delta T. This comparison can be done using the Main Plant Computer (MPC) or the chart recorders locally at the Primary Met Tower. If this method cannot be performed, a CHANNEL CHECK may be done by comparing data from the Primary Met Tower with similar data from the Backup Met Tower. If neither of the two CHANNEL CHECK methods described above is available, then a comparison of Primary Met Tower data with apparent outside weather conditions is acceptable and satisfies the intent of a CHANNEL CHECK.

The following are examples of operational situations and an appropriate CHANNEL CHECK methodology:

Main Plant Computer not available

Utilize the chart recorders located locally at the Primary Met Tower to compare upper and lower level wind speed, wind direction, and air temperature delta T.

Primary Met Tower upper wind speed not available

Enter Technical Requirement TR22-3.3.3.4 for the upper wind speed instrument. Perform a CHANNEL CHECK of the lower wind speed instrument by comparison with lower wind speed from the Backup Met Tower.

Primary Met Tower upper wind speed and Backup Met Tower not available

Enter Technical Requirement TR22-3.3.3.4 for the upper wind speed instrument. Perform a CHANNEL CHECK of the lower wind speed instrument by comparison with apparent outside weather conditions.

Technical Requirement 22
Meteorological Instrumentation
(Sheet 3 of 3)

INSTRUMENT		LOCATION	MINIMUM FUNCTIONAL
1.	Wind Speed		
	a. Lower Level	Nominal Elev. 43 ft	1
	b. Upper Level	Nominal Elev. 209 ft	1
2.	Wind Direction		
	a. Lower Level	Nominal Elev. 43 ft	1
	b. Upper Level	Nominal Elev. 209 ft	1
3.	Air Temperature - ΔT		
	a. Lower Level	Between Elev. 43 ft and 150 ft	1
	b. Upper Level	Between Elev. 43 ft and 209 ft	1

Technical Requirement 23
Turbine Overspeed Protection

(Sheet 1 of 2)

LIMITING CONDITION FOR OPERATION

TR23-3.3.4 At least one Turbine Overspeed Protection System shall be FUNCTIONAL.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

With the Turbine Overspeed Protection System nonfunctional, restore the system to functional status within the time period determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR23-4.3.4.1 The above required Turbine Overspeed Protection System shall be demonstrated FUNCTIONAL:

a. At least once per 90 days by cycling each of the following valves through at least one complete cycle from the running position:

    1) Four high pressure turbine stop valves, and

    2) Six low pressure combined intermediate valves.

b. At least once per 90 days by direct observation of the movement of each of the above valves and the four high pressure turbine control valves through one complete cycle from the running position,

c. At least once per 18 months by performance of the following:

    1) a CALIBRATION of the analog to digital conversion devices and

    2) a digital channel operation test on the Primary and Emergency Turbine Overspeed Protection Systems.

d. At least once per 40 months by disassembling at least one of each of the above valves and performing a visual and surface inspection of valve seats, disks, and stems and verifying no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion is found, all other valves of that type shall be inspected.

Technical Requirement 23
Turbine Overspeed Protection

(Sheet 2 of 2)

ADDITIONAL INFORMATION

Surveillance Requirements TR23-4.3.4.1a and TR23-4.3.4.1b both require cycling each valve "from the running position." The requirements of Surveillance Requirements TR23-4.3.4.1a and TR23-4.3.4.1b must be satisfied within 24 hours of being able to cycle each valve from its "running position." Typically, the "running position" for the turbine control valves is greater than 10% open; however, certain plant conditions may result in a "running condition" less than 10% open. In these cases any open valves should be tested.

If the unit is operated at low power levels for extended periods (>90 days), the Surveillance should be performed on those valves which are in their running position to demonstrate their functionality.

The calibration of the analog to digital conversion is the verification that a known frequency input results in a digital output that matches within a defined tolerance. Since these devices are not adjustable, calibration in this context is simply verification of expected performance and does not include adjustment. The digital channel operational test shall consist of exercising the digital computer hardware using database manipulation and/or injecting simulated process data and/or actual operating conditions to verify operability of alarm and/or trip functions for turbine overspeed protection. Calibration of the sensor is not required because the system performs the automated equivalent of a continuous channel check and will provide alarms if a sensor deviates from other sensors by a predefined amount.

As part of 07DCR005 (EC12635) the mechanical turbine overspeed protection system was removed and replaced with a redundant diverse, electrical overspeed protection system, therefore this surveillance requirement includes tests of both the primary and emergency overspeed protection systems.

The digital turbine control system includes additional protective features/trips associated with the speed signal faults and acceleration/deceleration. These additional protective features/trips are not considered part of the primary and emergency overspeed protection systems. Also, the emergency overspeed protection system includes redundant channels, only one of which is required to be demonstrated as being functional.

Technical Requirement 24
Area Temperature Monitoring
(Sheet 1 of 4)

LIMITING CONDITION FOR OPERATION

TR24-3.7.10 The temperature of each area shown in Table 24-1 shall not be exceeded for more than 8 hours or by more than 30ºF. (See Note.)

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

ACTION:

If Technical Specification (TS) equipment cannot perform its specified function due to non-functional air conditioning or ventilation equipment (HVAC), then it is necessary to enter the Technical Specification action statement(s) for the affected equipment. Figure 1 provides a listing of HVAC systems and the corresponding most limiting Technical Specification or Technical Requirement for equipment affected by the HVAC systems.

For systems with approved Compensatory Ventilation Plans (CVPs), the OPERABILITY of supported equipment may be satisfied by aligning equipment in the manner specified. The CVPs may include specific time allowances for system re-alignment based on Engineering Area Heat Rate Calculations. For the duration of the approved CVP re-alignment, no additional HVAC limits apply to OPERABLE equipment.

In those instances where compensatory ventilation measures have not been established and an allotted time allowance for room heatup has been provided in OS1023.74, 50% of the time allowance may be used and reset as an iterative process provided that the room temperature is re-evaluated on a periodic basis and efforts continue to restore the air conditioning and ventilation system to normal. Re-evaluation periods shall be based on application of no more than 50% of the allotted time. During this time, the room temperature shall be monitored to ensure compliance with the requirements of TR24-3.7.10.

SURVEILLANCE REQUIREMENTS

TR24-4.7.10 The temperature in each of the areas shown in Table 24-1 shall be determined to be within its limit at least once per 12 hours.

NOTE: The maximum exceedence temperature for the Control Room is limited to 15°F above the maximum operating limit vs. 30°F for all other areas.

ADDITIONAL INFORMATION

The following administrative limitations shall apply during the performance of HVAC system maintenance or testing. This is done to limit the time HVAC equipment is unavailable, assuring the continued ventilation support function for OPERABLE equipment.

For those instances where compensatory ventilation measures have not been established and an iterative allotted time allowance has been applied, a seventy-two (72) hour administrative limit will be applied to ensure expedient efforts are taken to restore the HVAC system to normal. Exceedance of this limit will require approval by the Shift Manager.

For short periods of time (e.g., maintenance, testing, troubleshooting), the substitution of manual action for an automatic system function or for the immediate restoration of HVAC service is allowed. These specific actions must be contained in a procedure or evaluated and documented in approved written instructions with approval by the on-duty Shift Manager. The evaluation shall consider the limitations and requirements of procedure EN-AA-203-1001, Attachment 3, Item 17, which addresses use of manual action in place of automatic action.

When air conditioning/ventilation systems alignment not covered by CVPs are not functional and the OPERABILITY of Technical Specification equipment is called into question, OPERABILITY shall be documented using procedure EN-AA-203-1001, Operability Determinations/Functionality Assessments.

Some TS systems are supported by non-TS ventilation systems that consist of two redundant 100% capacity trains, each capable of supporting both trains of a TS system. These include the following ventilation systems: emergency feedwater pump house, hydrogen analyzer room and hydrogen analyzer electrical room, PCCW pump area, service water pump house, service water pump house electrical rooms, service water cooling tower pump room, and containment enclosure cooling system. A loss of one train of these ventilation systems does not result in a loss of support for either train of TS equipment provided the functional train is capable of being powered from an emergency diesel generator. Both TS trains remain operable, despite a loss of support function redundancy, because the TS definition of operability does not require a TS subsystem's necessary support function to meet single-failure design criterion. Therefore, the TS for the supported system does not limit the duration of the non-TS support system outage even though the single failure design criterion for the supported TS system is not met.

The duration that a redundant 100% capacity ventilation train may remain non-functional for preventative or corrective maintenance is determined in accordance with 10 CFR 50.65(a)(4). If, however, the supporting ventilation train will be nonfunctional for more than 90 days, an evaluation of the configuration change, including consideration of the single failure design consideration, must be made under 10 CFR 50.59. If both trains of the ventilation system are non-functional, then both trains of the supported TS system must be declared inoperable unless an operability determination concludes that the support system is not actually required for operability of the supported TS system or implementation of compensatory actions provides the required support.

FIGURE 1

AIR CONDITIONING AND VENTILATION UNITS	AFFECTED EQUIPMENT MOST LIMITING T.S./TR
Service Water Cooling Tower Ventilation	3.7.4
Service Water Pumphouse Ventilation	3.7.4
Containment Enclosure Cooling System	3.6.2.1 3.5.3.1 (Mode 4)
Emergency Feedwater Pumphouse Ventilation System	3.7.1.2
PCCW/Boron Injection Pump Auxiliary Fans (Part of PAB HVAC)	3.7.3
East Pipe Chase Hydrogen Analyzer and Electrical Room Ventilation	TR32-3.6.4.1
Diesel Generator Building Ventilation System	3.8.1.1
CBA Switchgear and Battery Room Ventilation	3.8.3.1

Technical Requirement 24
Area Temperature Monitoring

(Sheet 4 of 4)

TABLE 24-1

	AREA	MAXIMUM OPERATING TEMPERATURE LIMIT (°F)
1.	Control Room	90
2.	Cable Spreading Room	104
3.	Switchgear Room - Train A	104
4.	Switchgear Room - Train B	104
5.	Battery Rooms - Train A	97
6.	Battery Rooms - Train B	97
7.	ECCS Equipment Vault - Train A	104
8.	ECCS Equipment Vault - Train B	104
9.	Centrifugal Charging Pump Room - Train A	104
10.	Centrifugal Charging Pump Room - Train B	104
11.	ECCS Equipment Vault Stairwell - Train A	104
12.	ECCS Equipment Vault Stairwell - Train B	104
13.	PCCW Pump Area	104
14.	Cooling Tower Switchgear Room - Train A	104
15.	Cooling Tower Switchgear Room - Train B	104
16.	Cooling Tower SW Pump Area	127
17.	SW Pumphouse Electrical Room - Train A	104
18.	SW Pumphouse Electrical Room - Train B	104
19.	SW Pump Area	104
20.	Diesel Generator Room - Train A	120
21.	Diesel Generator Room - Train B	120
22.	EFW Pumphouse	104
23.	Electrical Penetration Area - Train A	100
24.	Electrical Penetration Area - Train B	85
25.	Fuel Storage Building Spent Fuel Pool Cooling Pump Area	104
26.	Main Steam and Feedwater Pipe Chase - East	130
27.	Main Steam and Feedwater Pipe Chase - West	130
28.	Hydrogen Analyzer Room	104
29.	MSFW East Pipe Chase Electrical Room	104

Technical Requirement 25
Refueling Communications
(Sheet 1 of 1)

LIMITING CONDITION FOR OPERATION

TR25-3.9.5 Direct communications shall be maintained between the control room and personnel at the refueling station.

APPLICABILITY: During CORE ALTERATIONS.

ACTION:

When direct communications between the control room and personnel at the refueling station cannot be maintained, suspend all CORE ALTERATIONS.

SURVEILLANCE REQUIREMENTS

TR25-4.9.5 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.

ADDITIONAL INFORMATION

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.

Technical Requirement 26
Refueling Machine

(Sheet 1 of 1)

LIMITING CONDITION FOR OPERATION

TR26-3.9.6 The refueling machine and auxiliary hoist shall be used for movement of drive rods or fuel assemblies and shall be FUNCTIONAL with:

a. The refueling machine 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 drive rods having:

   1) A minimum capacity of 2100 pounds, and

   2) A load indicator which shall be used to prevent lifting loads in excess of 1000 pounds.

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

ACTION:

With the requirements for refueling machine and/or hoist FUNCTIONALITY not satisfied, suspend use of any nonfunctional refueling machine and/or auxiliary hoist from operations involving the movement of drive rods and fuel assemblies within the reactor vessel.

SURVEILLANCE REQUIREMENTS

TR26-4.9.6.1 The refueling machine 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 when the refueling machine load exceeds 3900 pounds.

TR26-4.9.6.2 The auxiliary hoist and associated load indicator used for movement of drive 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 2100 pounds.

ADDITIONAL INFORMATION

The FUNCTIONALITY requirements for the refueling machine ensure that: (1) refueling machine will be used for movement of drive rods and fuel assemblies, (2) each hoist has sufficient load capacity to lift a drive 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.

Technical Requirement 27
Crane Travel – Spent Fuel Storage Areas

LIMITING CONDITION FOR OPERATION

TR27-3.9.7 Loads in excess of 2100 pounds shall be prohibited from travel over fuel assemblies in the storage pool.

APPLICABILITY: With fuel assemblies in the storage pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition.

SURVEILLANCE REQUIREMENTS

TR27-4.9.7 Crane interlocks that prevent crane travel with loads in excess of 2100 pounds over fuel assemblies shall be demonstrated FUNCTIONAL within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.

ADDITIONAL INFORMATION

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

During Dry Cask Loading operations, the single-failure-proof (in accordance with NUREG-0554, 'Single-Failure-Proof Cranes for Nuclear Power Plants', and compliant with NUREG-0612, 'Control of Heavy Loads') Cask Handling Crane (1-FH-RE-1) shall be utilized for the movement of heavy loads over fuel assemblies located in the Cask Loading Pool. This TR does not apply when using the single-failure-proof crane in accordance with NUREG-0612 requirements.

Technical Requirement 28
ESF Pump OPERABILITY Requirements

LIMITING CONDITION FOR OPERATION

TR28-3.1 Each ESF Pump, as listed below, shall be demonstrated OPERABLE when tested in accordance with the Inservice Test Program and/or ASME OM Code per the criteria specified herein.

APPLICABILITY: Whenever the ESF pumps are required to be OPERABLE per the Technical Specification (TS) Surveillance Requirement as tabulated below.

ACTION:

As specified per the applicable Technical Specification.

SURVEILLANCE REQUIREMENTS

TR28-4.1 Demonstrate OPERABILITY of each ESF Pump as listed below:

Technical Specification/ Requirement	ESF Pump	Operability Requirements
TR29-4.1.2.3.1	Centrifugal Charging	By verifying, on recirculation flow, that a differential pressure across the pump of greater than or equal to **2330 psid** is developed.
TS 4.5.2f.1)	Centrifugal Charging	By verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to **2330 psid** is developed.
TS 4.5.2f.2)	Safety Injection	By verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to **1357 psid** is developed.
TS 4.5.2f.3)	RHR	By verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to **169 psid** is developed.
TS 4.6.2.1b.	Containment Spray	By verifying, on recirculation flow, that a differential pressure across each pump of greater than or equal to **262 psid** is developed.
TS 4.7.1.2.1b.1)	Motor-driven EFW	By verifying that the pump develops a discharge pressure of greater than or equal to **1460 psig** at a flow of greater than or equal to **270 gpm**.
TS 4.7.1.2.1b.2)	Turbine-driven EFW	By verifying that the pump develops a discharge pressure of greater than or equal to **1460 psig** at a flow of greater than or equal to **270 gpm** when the secondary steam supply pressure is greater than **500 psig**.
TS 4.7.1.2.1b.3)	Startup Feedwater	By verifying that the pump develops a discharge pressure of greater than or equal to **1375 psig** at a flow of greater than or equal to **425 gpm**.

SURVEILLANCE REQUIREMENTS (continued)

TR28-4.2. Perform a flow balance test, during shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics and verifying that:

1) For centrifugal charging pump lines, with a single pump running:

   a. The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 298.3 gpm, and

   b. The total pump flow rate is less than or equal to 549 gpm.

2) For Safety Injection pump lines, with a single pump running:

   a. The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 410.4 gpm, and

   b. The total pump flow rate is less than or equal to 669 gpm.

3) For RHR pump lines, with a single pump running, the sum of the injection line flow rates is greater than 4150 gpm, if the surveillance test is performed with suction from the hot leg, or 4190 gpm if the surveillance test is performed with suction from the refueling water storage tank (RWST).

ADDITIONAL INFORMATION

Periodic surveillance testing of ESF pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Technical Specifications which either 1) invokes inservice testing per Specification 4.0.5 pursuant to the requirements of ASME OM Code, and/or 2) require testing to ensure safety analyses criteria continue to be met. Such testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis.

FLOW PATHS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

TR29-3.1.2.1 As a minimum, one of the following boron injection flow paths shall be FUNCTIONAL and capable of being powered from an OPERABLE emergency power source:

a. A flow path from the boric acid tanks via either a boric acid transfer pump or a gravity feed connection and a charging pump to the Reactor Coolant System, or

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

APPLICABILITY: MODES 4, 5, and 6*.

ACTION:

With none of the above flow paths FUNCTIONAL or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

TR29-4.1.2.1 At least one of the above required flow paths shall be demonstrated FUNCTIONAL 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.

* An alternate boron injection flow path is available in Mode 6 and is included as one of the boron injection flow paths in Mode 6 that shall be FUNCTIONAL and capable of being powered from an OPERABLE emergency power source. This is the flow path from the refueling water storage tank via a safety injection pump to the Reactor Coolant System if the refueling water storage tank in Requirement TR29-3.1.2.5b. is FUNCTIONAL.

ADDITIONAL INFORMATION

In general, vents, drains, sampling system connections, and instrument taps are not required to be included in the Surveillance Requirements to verify a system's correct lineup per Technical Requirements. For flowpaths addressed by Technical Requirements, only those valves and other components in the direct flowpath through safety-related equipment whose position is critical to the proper functioning of safety-related equipment, are considered part of the safety-related flowpath. Sampling connections and instrument taps are not considered to be essential components and thus are not required to be verified in their correct position per Technical Requirements. Vents, drains, and other components not directly in the flowpath, whose position is not critical to the proper functioning of safety-related equipment, are also not required to be verified in their correct position.

A valve that receives an accident signal is allowed to be in a non-accident position provided the valve will automatically re-position upon receipt of an actuation signal within the required stroke time.

Upon a failure to meet the LCO, the action requires suspension of core alterations and positive reactivity changes. Operations that individually add limited, positive reactivity are acceptable when, combined with other actions that add negative reactivity, the overall net reactivity addition is zero or negative. For example, a positive reactivity addition caused by temperature fluctuations from inventory addition or temperature control fluctuations is acceptable if it is combined with a negative reactivity addition such that the overall, net reactivity addition is zero or negative. Refer to TS Bases 3/4.9.1, Boron Concentration, for limits on boron concentration and water temperature for Mode 6 action statements involving suspension of positive reactivity changes.

<u>FLOW PATHS - OPERATING</u>

LIMITING CONDITION FOR OPERATION

TR29-3.1.2.2 At least two of the following three boron injection flow paths shall be FUNCTIONAL:

a. The flow path from the boric acid tanks 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.

<u>APPLICABILITY</u>: MODES 1, 2, and 3*.

<u>ACTION</u>:

With only one of the above required boron injection flow paths to the RCS FUNCTIONAL, restore at least two boron injection flow paths to the RCS to FUNCTIONAL status within the time period determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the non-compliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR29-4.1.2.2 At least two of the above required flow paths shall be demonstrated FUNCTIONAL:

a. 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;

b. Deleted

c. At least once per 18 months by verifying that the flow path required by Requirement TR29- 3.1.2.2a. delivers at least 30 gpm to the RCS.

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* The Limiting Condition for Operation and Surveillance Requirements are not applicable for entry into MODE 3 for the centrifugal charging pump declared inoperable pursuant to Requirement TR29-4.1.2.3.2 provided that the centrifugal charging pump is restored to OPERABLE status within 4 hours or prior to the temperature of one or more of the RCS cold legs exceeding 375ºF, whichever comes first.

ADDITIONAL INFORMATION

In general, vents, drains, sampling system connections, and instrument taps are not required to be included in the Surveillance Requirements to verify a system's correct lineup per Technical Requirements. For flowpaths addressed by Technical Requirements, only those valves and other components in the direct flowpath through safety-related equipment whose position is critical to the proper functioning of safety-related equipment, are considered part of the safety-related flowpath. Sampling connections and instrument taps are not considered to be essential components and thus are not required to be verified in their correct position per Technical Requirements. Vents, drains, and other components not directly in the flowpath, whose position is not critical to the proper functioning of safety-related equipment, are also not required to be verified in their correct position.

A valve that receives an accident signal is allowed to be in a non-accident position provided the valve will automatically re-position upon receipt of an actuation signal within the required stroke time.

PUMPS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

TR29-3.1.2.3 One charging pump in the boron injection flow path required by Requirement TR29-3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 4, 5, and 6*.

ACTION:

With no pump OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

TR29-4.1.2.3.1 The above required pumps shall be demonstrated OPERABLE when tested pursuant to Technical Requirement TR28-3/4.1.

ADDITIONAL INFORMATION

Upon a failure to meet the LCO, the action requires suspension of core alterations and positive reactivity changes. Operations that individually add limited, positive reactivity are acceptable when, combined with other actions that add negative reactivity, the overall net reactivity addition is zero or negative. For example, a positive reactivity addition caused by temperature fluctuations from inventory addition or temperature control fluctuations is acceptable if it is combined with a negative reactivity addition such that the overall, net reactivity addition is zero or negative. Refer to TS Bases 3/4.9.1, Boron Concentration, for limits on boron concentration and water temperature for Mode 6 action statements involving suspension of positive reactivity changes.

* In Mode 6, a safety injection pump is available as an alternative to the charging pump provided the operability restrictions in Technical Specification 3.5.3.2 are satisfied. This safety injection pump shall be OPERABLE in the boron injection flow path required by TR29-3.1.2.1 and shall be capable of being powered from an OPERABLE emergency power source.

TR29-3.1.2.4 This requirement number is not used.

BORATED WATER SOURCES – SHUTDOWN

LIMITING CONDITION FOR OPERATION

TR29-3.1.2.5 As a minimum, one of the following borated water sources shall be FUNCTIONAL as required by TR29-3.1.2.1 for MODES 5 and 6:

a. A Boric Acid Storage System with:

1) A minimum contained borated water volume of 14,000 gallons,

2) A minimum boron concentration of 7000 ppm, and

3) A minimum solution temperature of 65ºF.

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

1) A minimum contained borated water volume of 55,000 gallons,

2) A minimum boron concentration of 2400 ppm, and

3) A minimum solution temperature of 50ºF.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water source FUNCTIONAL, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

SURVEILLANCE REQUIREMENTS

TR29-4.1.2.5 The above required borated water source shall be demonstrated FUNCTIONAL:

a. At least once per 7 days by:

1) Verifying the boron concentration of the water,

2) Verifying the contained borated water volume, and

3) Verifying 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.

ADDITIONAL INFORMATION

Upon a failure to meet the LCO, the action requires suspension of core alterations and positive reactivity changes. Operations that individually add limited, positive reactivity are acceptable when, combined with other actions that add negative reactivity, the overall net reactivity addition is zero or negative. For example, a positive reactivity addition caused by temperature fluctuations from inventory addition or temperature control fluctuations is acceptable if it is combined with a negative reactivity addition such that the overall, net reactivity addition is zero or negative. Refer to TS Bases 3/4.9.1, Boron Concentration, for limits on boron concentration and water temperature for Mode 6 action statements involving suspension of positive reactivity changes.

BORATED WATER SOURCES – OPERATING

LIMITING CONDITION FOR OPERATION

TR29-3.1.2.6 As a minimum, the following borated water source shall be FUNCTIONAL as required by TR29-3.1.2.2 for MODES 1, 2 and 3 or TR29-3.1.2.1 for MODE 4:

a. A Boric Acid Storage System with:

1) A minimum contained borated water volume of 29,500 gallons,

2) A minimum boron concentration of 7000 ppm, and

3) A minimum solution temperature of 65ºF.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the Boric Acid Storage System nonfunctional and being used as the above required borated water source, restore the system to FUNCTIONAL status within the time period determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program. An evaluation is not required if the non-compliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR29-4.1.2.6 The borated water source shall be demonstrated FUNCTIONAL:

a. At least once per 7 days by:

1) Verifying the boron concentration in the water,

2) Verifying the contained borated water volume of the water source, and

3) Verifying the Boric Acid Storage System solution temperature when it is the source of borated water.

ADDITIONAL INFORMATION

Based on the Seabrook Station 10CFR50 Appendix R report, the BATs are required to meet the requirements provided in TR29-3.1.2.6 during Modes 1, 2, and 3. During power operation, the BATs are routinely recirculated to establish a uniform boron concentration and associated surveillance. In addition, the BATs may be isolated for maintenance. The alignment of the BATs to the charging pumps is, however, not required for the system to be considered functional for Appendix R purposes. The following provides the basis for this consideration.

As discussed in 07DCR003 (EC-12633):

> *Fire safe shutdown analyses assume at the onset of the postulated fire event that all safe shutdown systems (including applicable redundant trains) are operable and available for post-fire safe shutdown. Systems are assumed to be operational with no repairs, maintenance, testing, Limiting Conditions for Operation, etc. in progress. The units are assumed to be operating at full power under normal conditions and normal lineups. These statements are based on NEI document NEI-00-01, Section 3.1.1.3* [now 3.1.1.5].

Based on this, an Appendix R event is not assumed to occur with the system in a surveillance or maintenance alignment.

In accordance with the requirements of Branch Technical Position RSB 5-1, safety grade cold shutdown includes a 4 hour hot standby period followed by a cooldown to RHR cut-in conditions in approximately 5 hours. Per calculation C-S-1-84214, the BATs need to be aligned by the commencement of plant cooldown. Therefore, operator action to align the BATs is required in 4 hours. This provides adequate time for any additional required operator action, should the tanks not be in the normal lineup.

Technical Requirement 30
Reactor Coolant System Chemistry
(Sheet 1 of 2)

LIMITING CONDITION FOR OPERATION

TR30-3.4.7 The Reactor Coolant System chemistry shall be maintained within the following limits:

Parameter	Steady-State Limit	Transient Limit
Dissolved Oxygen*	< 0.10 ppm	≤ 1.00 ppm
Chloride	< 0.15 ppm	≤ 1.50 ppm
Fluoride	≤ 0.15 ppm	≤ 1.50 ppm

* Limit not applicable with T_{avg} less than or equal to 250ºF

APPLICABILITY: At all times.

ACTION:

With any one or more chemistry parameter in excess of its Steady-State Limit or its Transient Limit, restore the parameter to within its Steady-State Limit within the time period determined by an evaluation conducted in accordance with the requirements of the Corrective Action Program.

SURVEILLANCE REQUIREMENTS

TR30-4.4.7 The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters specified in Requirement TR30-3.4.7 at least once per 72 hours.**

ADDITIONAL INFORMATION

The following actions are required when it is not possible to sample the reactor coolant system during refueling operations:

a. Obtain a sample prior to securing flow in the reactor coolant system and analyze for chloride and fluoride concentrations. Ensure these concentrations are sufficiently below the steady state limit. If not, reduce the chloride/fluoride concentrations prior to securing flow.

b. Samples of the reactor coolant are not required once obtaining these samples using sample system sample points is not possible.

c. When reactor coolant flow is restored, and more than 72 hours has elapsed since the last sample, obtain and analyze a sample as soon as possible. In no case shall pressure be increased above 500 psig before the reactor coolant is sampled and chloride and fluoride concentrations are determined to be below the steady state limits. If they are not within the steady state limits, remain below 500 psig pending the results of an engineering evaluation as required by Technical Requirement TR30-3.4.7.

** Sample and analysis for dissolved oxygen is not required with $T_{avg} \leq 250$ºF

Technical Requirement 31
Supplemental Emergency Power System
Availability Requirements

(Sheet 1 of 2)

LIMITING CONDITION FOR OPERATION

TR 31-3.1 The Supplemental Emergency Power System (SEPS) shall be available for standby service.

APPLICABILITY: At All Times

ACTION:

With the requirements of the LCO not satisfied, initiate corrective action to restore the SEPS to available status.

SURVEILLANCE REQUIREMENTS

TR 31-4.1 The SEPS shall be demonstrated available:

a. Within 72 hours prior to removing an emergency diesel generator (EDG) from service in Modes 1 through 4 for planned maintenance that is expected to extend beyond 72 hours by performing an operational readiness status check per surveillance c. below.

b. Prior to exceeding 72 hours from the time the EDG initially became inoperable during an unplanned corrective maintenance outage in Modes 1 through 4 by performing an operational readiness status check per surveillance c. below.

c. At least once every 72 hours while an EDG is inoperable in Modes 1 through 4 by performing an operational readiness status check that consists of the following:

   1) Verifying the SEPS is operationally ready for automatic start and energization of the selected emergency bus;

   2) Verifying the fuel oil level in each fuel oil storage tank is greater than or equal to 4775 gallons;

   3) Verifying the SEPS 5 kV circuit breaker and transfer switch are aligned to the selected emergency bus; and

   4) Verifying the 480 volt circuit breaker for the SEPS support systems is aligned to the non-emergency bus.

d. At least once every 31 days by:

   1) Verifying each diesel starts from manual or automatic initiation and attains a steady-state generator voltage and frequency of 4160 ± 420 volts and 60 ± 1.2 Hz;

SURVEILLANCE REQUIREMENTS

TR 31-4.1 (continued)

2) Verifying load-sharing capability of each generator while synchronized together and loaded to 50% rated capacity (1080 kW to 1620kW);

3) Verifying the SEPS 5 kV circuit breaker and transfer switch are aligned to the selected emergency bus; and

4) Verifying the 480 volt circuit breaker for the SEPS support systems is aligned to the non-emergency bus; and

5) Verifying the fuel oil level in each fuel oil storage tank is greater than or equal to 4775 gallons.

e. At least once every 92 days by checking for and removing accumulated water from the fuel oil storage tanks.

f. At least once every 12 months by:

1) Verifying both diesel generator sets automatically start together on a simulated loss of power signal, auto-synchronize together, energize the SEPS non-safety related common bus and attain a steady-state voltage and frequency of 4160 ± 420 volts and 60 ± 1.2 Hz.

2) Performing an inspection, following initial startup, of each diesel generator set in accordance with procedures prepared in conjunction with** its manufacturer's recommendations for this class of standby service.

3) Verifying the structural integrity, following initial startup, of the SEPS hurricane proof enclosure.

g. At least once every 24 months, following initial startup, by loading each diesel generator set to 100% rated capacity (2430 kW to 2700 kW) for at least one hour.

** The words "prepared in conjunction with" do not mean that compulsory acceptance of all vendor recommendations is necessary.

Technical Requirement 32
Hydrogen Monitors

LIMITING CONDITION FOR OPERATION

TR32-3.6.4.1 Two independent containment hydrogen monitors shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2.

ACTION:

With one or more of the containment hydrogen monitors nonfunctional, restore the nonfunctional monitor to FUNCTIONAL status within a period determined by an evaluation conducted in accordance with the requirements of the corrective action program. An evaluation is not required if the noncompliance is a consequence of surveillance testing or planned maintenance.

SURVEILLANCE REQUIREMENTS

TR32-4.6.4.1 Each containment hydrogen monitor shall be demonstrated FUNCTIONAL:

a. at least every 9 months by performing a channel functional test**, and

b. at least every 18 months by performing a CHANNEL CALIBRATION using sample gas containing

   1. one volume percent hydrogen, balance nitrogen, and

   2. four volume percent hydrogen, balance nitrogen.

ADDITIONAL INFORMATION

The monitoring of hydrogen concentrations in containment is not the primary means of detecting a significant abnormal degradation of the reactor coolant pressure boundary. Therefore, FUNCTIONALITY of the containment hydrogen monitoring equipment is intended to ensure the capability to diagnose the course of beyond design basis accidents. Returning of nonfunctional containment hydrogen channels to FUNCTIONAL status shall be performed as soon as practicable.

** Channel function test is defined as a test which verifies that without adjustment(s) an instrument, sensor, or system responds in a manner such that it can be calibrated when a known input is applied.

LIMITING CONDITION FOR OPERATION

TR 33.3.1 The Ultrasonic Mode Calorimetric System shall be in service with

a. The Caldon LEFM CheckPlus™ System FUNCTIONAL

b. The Main Plant Computer System AVAILABLE.

APPLICABILITY: MODE 1, > 3587 MWt

ACTION:

a. With the Caldon LEFM CheckPlus™ System NONFUNCTIONAL:

1. Restore the Caldon LEFM CheckPlus™ System to FUNCTIONAL status or reduce reactor core power to 3587 MWt or less within 48 hours.

2. If reactor core power is reduced to 3587 MWt or less, limit maximum allowable reactor core power to 3587 MWt.

b. With the Main Plant Computer System UNAVAILABLE:

1. Restore the Main Plant Computer System to AVAILABLE status or reduce reactor core power to 98% of rated thermal power (RTP) or less prior to performing the nuclear instrumentation / power calorimetric comparison.

2. If reactor core power is reduced to 98% RTP or less, limit maximum allowable reactor core power to 98% RTP.

ADDITIONAL INFORMATION

The maximum allowable reactor core power levels discussed in this Technical Requirement are based on the analyzed reactor core power level assumed in the reactor safety analysis of 3659 MWt and the magnitude of the calorimetric power determination uncertainty which is a function of the calorimetric power determination method.

Safety Analysis Power Level	Calorimetric Power Determination Uncertainty (Reference Calculation)	Maximum Allowable Indicated Reactor Core Power Level	Allowable Calorimetric Power Determination Mode(s)
3659 MWt	0.3% (C-S-1-50035)	3648 MWt	Ultrasonic
3659 MWt	2.0% (C-S-1-50031)	3587 MWt	Feedwater Flow or Steam Flow

Operation at core power levels above 3587 MWt requires a calorimetric power determination uncertainty of less than 2.0%. This is only possible if the Ultrasonic mode calorimetric is used. Therefore, except for the Allowed Outage Time (AOT) described later, operation at reactor core power levels greater than 3587 MWt requires the use of the Ultrasonic mode calorimetric.

The Ultrasonic mode calorimetric is unique in that it receives feedwater mass flow, feedwater temperature and feedwater pressure inputs directly from the LEFM Ultrasonic flow measurement system (1-FW-FIQ-4343). The LEFM system measures and transmits this data more accurately than the equivalent instrumentation for the feedwater flow or steam flow calorimetric modes. This is the basis for the reduced uncertainty that is characteristic of the Ultrasonic mode calorimetric.

The Ultrasonic mode calorimetric can be performed using either of two methods: automatically by the Main Plant Computer System (MPCS) or manually using a non-MPCS calculation. The MPCS method is performed entirely by the MPCS with no operator participation required. The calculated core power for MPCS Ultrasonic mode calorimetric is displayed on Main Control Board (MCB) indicator 1-CP-JI-412 and via several MPCS Satellite Display System (SDS) displays. The manual method is performed by station personnel on a calculating device other than the MPCS and is controlled by a station procedure. The manual Ultrasonic mode calorimetric requires input data gathered directly from the LEFM via the local display on the LEFM system electronics panel as well as supporting process data provided by either analog points displayed by the MPCS or by alternate measurement methods which satisfy the Ultrasonic mode calorimetric uncertainty assumptions. MCB indicators shall not be used as the source of input data for the manual Ultrasonic mode calorimetric because the increased uncertainty associated with the use of these indicators has not been included in the Ultrasonic mode calorimetric uncertainty analysis.

Both the MPCS and manual methods of performing the Ultrasonic mode calorimetric power determination meet the requirements of the uncertainty analysis supporting operation at power levels greater than 3587 MWt. Whenever possible, the MPCS Ultrasonic mode calorimetric should be used to determine reactor core power when operating at power levels greater than 3587 MWt.

LEFM System Functional Status:

For this Technical Requirement, "Functional Status" of the LEFM system is defined as the ability to provide feedwater mass flow, feedwater temperature and feedwater pressure at the required uncertainty level to be used as input for either the MPCS Ultrasonic mode calorimetric calculation or the manual Ultrasonic mode calorimetric calculation. The LEFM data may be retrieved via the LEFM/MPCS datalink application (for the MPCS Ultrasonic mode calorimetric) or locally via the display on the LEFM system electronics panel (for the manual Ultrasonic mode calorimetric).

The LEFM electronics package (1-FW-FIQ-4343) and the MPCS/LEFM datalink application (DALEFZZ.EXE) perform extensive self monitoring and internal diagnostics to ensure proper operation. The LEFM system provides a number of alarms to the Main Plant Computer System (MPCS) Video Alarm System (VAS) to annunciate degraded or failed conditions. These alarms and their associated functional status are described in the table below.

Alarm	Alarm Description	Alarm Condition	LEFM System Status
B8324	LEFM/MPCS DATALINK TROUBLE	One of the two Ethernet communication links is not functioning properly. LEFM data is being transferred from the LEFM to the MPCS via the functional Ethernet link.	FUNCTIONAL
B8325	LEFM/MPCS DATALINK INOP	Both of the two Ethernet communication links are not functioning properly. LEFM data is not being transferred from the LEFM to the MPCS.	NON-FUNCTIONAL (Note 1)
B8330	LEFM MASS FLOW NO CHANGE IN 5 MINS	The LEFM system mass flow rate retrieved by the MPCS (C0117) has remained constant for 5 minutes indicating a possible problem with the LEFM or LEFM/MPCS datalink.	FUNCTIONAL
D8499	LEFM UPS B TROUBLE	LEFM UPS B has lost input line power and is providing battery backup power to LEFM CPU B. When the battery power is exhausted CPU B will shutdown resulting in an LEFM MAINTENANCE alarm (D8505) and LEFM NONFUNCTIONAL alarm (F8127).	FUNCTIONAL

Technical Requirement 33
Ultrasonic Mode Calorimetric

(Sheet 4 of 8)

Alarm	Alarm Description	Alarm Condition	LEFM System Status
D8500	LEFM UPS A TROUBLE	LEFM UPS A has lost input line power and is providing battery backup power to LEFM CPU A. When the battery power is exhausted CPU A will shutdown resulting in an LEFM MAINTENANCE alarm (D8505) and LEFM NONFUNCTIONAL alarm (F8127).	FUNCTIONAL
D8504	LEFM FAILURE	The LEFM system has experienced a failure affecting both CPU A and CPU B. The LEFM system has failed or cannot meet the uncertainty requirements for the Ultrasonic Mode Calorimetric.	NON-FUNCTIONAL
D8505	LEFM MAINTENANCE	The LEFM system has experienced a failure affecting either CPU A or CPU B. The LEFM system cannot meet the uncertainty requirements for the Ultrasonic Mode Calorimetric.	NON-FUNCTIONAL
D8506	LEFM PANEL TEMP HI	The interior of the LEFM electronics cabinet is above the temperature setpoint. The LEFM system can continue to meet the uncertainty requirements for the Ultrasonic Mode Calorimetric. Continued operation at high internal LEFM panel temperatures will adversely affect component service life but will not affect the ability of the LEFM to meet the uncertainty requirements for the Ultrasonic Mode Calorimetric.	FUNCTIONAL
F8127	LEFM NONFUNCTIONAL	The LEFM system or MPCS/LEFM Datalink has experienced a failure and cannot meet the uncertainty requirements for the Ultrasonic Mode Calorimetric. Calorimetric mode must be changed from Ultrasonic to Steam Flow or Feed Flow.	NON-FUNCTIONAL (Note 1)

Alarm	Alarm Description	Alarm Condition	LEFM System Status
NONE	Failure or shutdown of MPCS IRTU #8	IRTU8 processes the discrete input signals for hardwired LEFM system VAS alarms; D8504, D8505, D8506, D8499 and D8500. D8504 and D8505 are inputs into the "Healthy OR" (HOR) block F8127. If IRTU8 is out of service, the D points listed above and F8127 will become status NCAL. This will cause the Ultrasonic mode calorimetric to become invalid. Calorimetric mode must be changed from Ultrasonic to Steam Flow or Feed Flow.	NON-FUNCTIONAL (Note 1)

Notes:

1. If the MPCS/LEFM datalink is nonfunctional or IRTU8 is out of service, upon approval from Design Engineering, the LEFM System may be declared FUNCTIONAL to provide data for input to the manual Ultrasonic mode calorimetric calculation. This data would be retrieved via the local display on the LEFM system electronics panel.

MPCS Availability Status:

For this Technical Requirement, "Availability" of the MPCS is defined as the ability of the MPCS to either perform an MPCS Ultrasonic mode calorimetric calculation or to provide supporting process input data for a manual Ultrasonic mode calorimetric calculation via analog points displayed on the MPCS. "Availability" for various faults is defined in the following table.

Fault	Discussion	MPCS Availability
Failure or shutdown of MPCS IRTU #8	IRTU #8 processes the discrete input signals for hardwired LEFM system VAS alarms; D8504, D8505, D8506, D8499 and D8500.	AVAILABLE
B8324, LEFM/MPCS DATALINK TROUBLE	One of the two Ethernet communication links to the LEFM is malfunctioning. LEFM data is being transferred from the LEFM to the MPCS via the functional Ethernet link.	AVAILABLE
F8127, LEFM NONFUNCTIONAL	The LEFM system or MPCS/LEFM Datalink has experienced a failure and cannot meet the uncertainty requirements for the Ultrasonic Mode Calorimetric. Calorimetric mode must be changed from Ultrasonic to Steam Flow or Feed Flow.	AVAILABLE

Fault	Discussion	MPCS Availability
B8330, LEFM MASS FLOW NO CHANGE IN 5 MINS	The LEFM system mass flow rate retrieved by the MPCS (C0117) has remained constant for 5 minutes indicating a possible problem with the LEFM or LEFM/MPCS datalink.	AVAILABLE
Malfunction of the MPCS calorimetric power calculation caused by a malfunction or abort of the MPCS application performing the calorimetric calculation or a loss of required calorimetric input data.	Results in a display of "8888.8" on MCB indicator 1-CP-JI-412 and an NCAL status for the MPCS calorimetric calculated results displayed on the Satellite Display System, SDS. Manual calorimetric power calculation and control of core power using the power range NI indicators is required.	UNAVAILABLE (Note 2)
MPCS Failover	Brief loss of MPCS Calorimetric power calculation and I/O points (typical failover duration is less than 5 minutes).	AVAILABLE
MPCS Coldstart	Loss of MPCS Calorimetric power calculation and I/O points. Manual calorimetric power calculation and control of reactor core power using the power range NI indicators is required.	UNAVAILABLE
Complete MPCS Failure	Complete loss of all MPCS functions. Manual calorimetric power calculation and control of reactor core power using the power range NI indicators is required.	UNAVAILABLE

Notes:

2. Upon approval from Design Engineering, the MPCS may be declared AVAILABLE if the calorimetric input data required to perform a manual (non MPCS) Ultrasonic mode secondary calorimetric power calculation is being displayed by the MPCS or can be measured by alternate methods which satisfy the calorimetric uncertainty assumptions.

Reactor Control Using the NI Power Indicators While the Main Plant Computer System is Unavailable:

Reactor core power limitations for this Technical Requirement shall be based on the highest reading Power Range NI channel. The readability of these indicators is 0.5% of rated thermal power (RTP). The required power level of 98.3% RTP (3587 MWt) has been conservatively rounded down to 98% RTP.

A main plant computer system (MPCS) unavailability will be treated as if the Caldon LEFM CheckPlus^{TM} System had also concurrently become nonfunctional. Operation at the rated thermal power level of 3648 MWt (100% RTP) may continue until the next required nuclear instrumentation / power calorimetric comparison, which could be up to 24 hours. The main plant computer system unavailability will result in reducing maximum reactor core power to 98% RTP or less by NI indication, as needed, to support a manual calorimetric power calculation without MPCS display of calorimetric input points or input from the LEFM system. The 48-hour time period will not apply in this specific case.

LEFM System Allowed Outage Time:

The allowed outage time for operation at any reactor core power level in excess 3587 MWt with the Caldon LEFM CheckPlus^{TM} System nonfunctional, is 48 hours, provided steady-state conditions persist (i.e., no power changes below 3587 MWt) throughout the 48-hour period. The bases for the proposed allowed outage time are:

- Alternate plant instruments (feedwater venturies and main steam flow) shall be used if the Caldon LEFM CheckPlus^{TM} System is nonfunctional for greater than 48 hours. Specifically, the main steam flow instruments will be normalized to the Caldon LEFM CheckPlus^{TM} System, and their accuracy will gradually degrade over time as a result of nozzle fouling and transmitter drift. However, values of drift are typically in the range of tenths of a percent of the calibrated span over 18 to 24 months or more. This typical drift value will not result in any significant drift for the instrumentation associated with the calorimetric measurements over a 48-hour period.

- Most repairs to the Caldon LEFM CheckPlus^{TM} System can be made within an eight-hour shift. Forty-eight hours will give plant personnel time to plan the work, make repairs, and verify normal operation of the Caldon LEFM CheckPlus^{TM} System within its original uncertainty bounds at the same power level and indications as before the failure.

- Operations personnel will operate the plant based on the calibrated alternate plant instruments when the Caldon LEFM CheckPlus^{TM} System is nonfunctional. A reduction in power could, and in many cases, will be avoided altogether since repairs would typically be accomplished prior to the expiration of the 48-hour period.

- License amendment 110 requires that if the plant experiences a power change of greater than ten percent during the 48-hour period, then the permitted maximum allowable reactor core power level will be reduced to 3587 MWt, since a plant transient may result in calibration changes to the alternate instruments. Action statements a and b require that maximum allowable reactor core power be limited to 3587 MWt (98% RTP) if reactor core power is reduced below 3587 MWt (98% RTP). These action statement limits are selected to be consistent with other Technical Specification actions and are conservative to the License Amendment 110 requirements.

For the Caldon LEFM CheckPlus^{TM} System nonfunctional condition, the 48-hour “clock” will start at the time of the failure. Failure will be annunciated in the control room.

Use of Alternate Flow Instruments While the Caldon LEFM CheckPlus^{TM} System is Nonfunctional:

The power calorimetric calculation flow inputs using the alternate instrumentation (feedwater venturies or main steam flow) and the Caldon LEFM CheckPlus^{TM} System calorimetric are completely separate, and the calculations of reactor core thermal power are performed independently by the main plant computer system.

The preferred alternate method to provide flow input to the calorimetric power calculation is the main steam flow instruments normalized to the Caldon LEFM CheckPlus^{TM} System flow. The steam flow normalization is performed periodically as needed while the LEFM system is functional by taking the ratio of total steam flow to the feedwater flow from the Caldon LEFM CheckPlus^{TM} System. In addition, the flow input can be provided by either the main steam flow normalized to the venturies, or the feedwater venturies directly. All three methods are bounded by the 2% uncertainty for the maximum reactor core power level of 3587 MWt.

Technical Requirement 34

Containment Penetration Conductor Overcurrent Protective Devices and Protective Devices for Class 1E Power Sources Connected to Non-Class 1E Circuits

LIMITING CONDITION FOR OPERATION

TR34-3.8.4.2 Each containment penetration conductor overcurrent protective device and each protective device for Class 1E power sources connected to non-Class 1E circuits shall be FUNCTIONAL.

APPLICABILITY: MODES 1, 2, 3, 4, 5,* and 6.*

ACTION:

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

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

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

b. With one or more of the Class 1E power source protective device(s) nonfunctional, restore the protective device(s) to FUNCTIONAL status or deenergize the circuit(s) by tripping the circuit breaker or racking out or removing the nonfunctional protective device within 72 hours, declare the affected component inoperable or nonfunctional, and verify the circuit breaker to be tripped or the nonfunctional protective device to be racked out or removed at least once per 7 days thereafter.

SURVEILLANCE REQUIREMENTS

TR 34-4.8.4.2 Each containment penetration conductor overcurrent and Class 1E power source protective device shall be demonstrated FUNCTIONAL:

   a. At least once per 18 months:

      1) By verifying that the medium voltage 13.8-kV and 4.16-kV circuit breakers are FUNCTIONAL by selecting, on a rotating basis, at least one of the circuit breakers, and performing the following:

* Only for protective devices for Class 1E power sources connected to non-Class 1E loads.

a) A channel calibration of the associated protective relays (because of the large currents involved, it is impractical to inject primary side signals to current transformers; therefore, the channel calibration will be performed by injecting a signal on the secondary side of those transformers at their test plug),

b) 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, and

c) For each circuit breaker found nonfunctional during these functional tests, one additional circuit breaker of the nonfunctional type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

2) By selecting and functionally testing a representative sample of at least 10% of each type of lower voltage circuit breakers and overload devices. Circuit breakers and overload devices selected for functional testing shall be selected on a rotating basis.

Testing of air circuit breakers shall consist of injecting a current with a value equal to 300% of the pickup of the long-time delay trip element and 150% of the pickup of the short-time delay trip element. The instantaneous element shall be tested by injecting a current equal to ±20% of the pickup value of the element.

Testing of thermal magnetic molded-case circuit breakers shall consist of injecting a current with a value equal to 300% of the circuit breaker trip rating and -25% to +40% of the circuit breaker instantaneous trip range or setpoint.

Testing of combination starters (a magnetic only molded-case circuit breaker in series with a motor starter and integral overload device) shall consist of injecting a current with a value equal to -25% to +40% of the circuit breaker instantaneous trip setpoint, and 200% and 300% of the thermal overload device trip rating to the respective devices.

Circuit breakers and/or overload devices found nonfunctional during functional testing shall be restored to FUNCTIONAL status prior to resuming operation. For each circuit breaker and or overload devices found nonfunctional during these functional tests, an additional representative sample of at least 10% of all the circuit breakers and or overload devices of the nonfunctional type shall also be functionally tested until no more failures are found or all circuit breakers and or overload devices of that type have been functionally tested.

3) Corrective actions for any generic degradation of overcurrent protective devices, such as setpoint drift, manufacturing deficiencies, material defects, etc., shall be applicable to all (Class 1E and non-Class 1E) protective devices of identical design.

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.

ADDITIONAL INFORMATION

Containment electrical penetrations and penetration conductors are protected by demonstrating the FUNCTIONALITY of primary and backup overcurrent protection circuit breakers during periodic surveillance. The Surveillance Requirements applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's air circuit breakers, molded case circuit breakers, and overload devices are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers, it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for surveillance purposes.

SEABROOK STATION
TECHNICAL REQUIREMENTS

Chapter 5 – Programs and Procedures

This program complies with TS 6.7.6i. It provides controls for the required testing of both new fuel oil and stored fuel oil. For the intent of this program, new fuel oil shall represent diesel fuel oil that has not been added to the DG Fuel Oil Storage Tank(s). Once the fuel oil is added to the DG Fuel Oil Storage Tank(s), the diesel fuel oil is considered stored fuel oil and shall meet the applicable requirements for stored fuel oil.

APPLICABILITY: When associated DG is required to be OPERABLE.

a. New Fuel Oil

The sampling and analysis requirements for new fuel oil are a means to verify that the fuel is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. The following sampling and analysis requirements apply to new fuel oil:

1. New fuel oil is sampled from the delivery tanker in accordance with ASTM D4057-81, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products," prior to addition to the storage tanks.

2. Prior to addition to the storage tank(s) the sample is verified using the guidance of the tests specified in ASTM D975-09b, "Standard Specification for Diesel Fuel Oils," to have:

   a) An API gravity of within 0.3 degrees at 60ºF, or a specific gravity of within 0.0016 at 60/60ºF, when compared to the bill of lading, or an absolute specific gravity at 60/60ºF of ≥ 0.81 and ≤ 0.88, or an API gravity of ≥ 30 degrees and ≤ 42 degrees;

   b) A flash point ≥ 125ºF;

   c) A kinematic viscosity of ≥ 1.9 centistokes and ≤ 4.1 centistokes at 40ºC, if gravity was not determined by comparison with the supplier's certification; and

   d) A clear and bright appearance with proper color when tested in accordance with ASTM D4176-82, "Test Method for Free Water and Particulate Contamination in Distillate Fuels." The centrifuge method specified in ASTM D2709-82, "Test Method for Water and Sediment in Distillate Fuels By Centrifuge," is an acceptable quantitative method of performing this verification. These tests verify that the fuel oil is free of visible water and particulates, and is congruent with the bases identified in T.S. 6.7.6i.

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but is not an OPERABILITY concern since the fuel oil has not been added to the diesel fuel oil storage tanks.

In addition to the tests specified in ASTM D975-09b, the fuel oil is tested to verify a biodiesel content of < 0.1%, which is based on the lower limit of detection for the biodiesel detection equipment. A screening method can be used to verify a biodiesel content of < 2.0%, which is the lower limit of detection for the biodiesel screening equipment, provided that a sample of the fuel oil is tested to verify a biodiesel content of < 0.1% within 31 days. The 31 day period is based on the degradation of stored fuel oil which contains biodiesel being a long term process, allowing remediation of an affected storage tank before it can impact the performance of the emergency diesel generator. If the biodiesel results indicate a biodiesel content > 0.1%, then the storage tank is sampled to verify a biodiesel content < 0.1%. If the biodiesel in the storage tank is > 0.1% then the tank is monitored for particulates and action taken as directed by the corrective action program. The tank is not considered inoperable solely due to biodiesel > 0.1% if particulates are within the acceptable limit as discussed in section b.

3. Verify within 31 days of obtaining the new fuel oil sample that the other properties specified in Table 1 of ASTM D975-09b are met when tested in accordance with ASTM D975-09b, except that the analysis for sulfur may be performed in accordance with ASTM D5453-09, “Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence”, D7039-07, “Test Method for Sulfur in Gasoline and Diesel Fuel by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry” or ASTM D2622-07, “Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry”. If any of the results exceed the required values then the storage tank is sampled to determine if the storage tank values are within the required values and action taken as directed by the corrective action program.

b. Stored Fuel Oil

Fuel oil degradation during long-term storage generally shows up as an increase in particulate contamination, primarily due to oxidation. The presence of particulate contamination does not mean that the fuel oil will not burn properly in a diesel engine. The particulate contamination can, however, cause fouling of filters and fuel oil injection equipment, which can cause engine failure. The following sampling and analysis requirements apply to stored fuel oil:

1. At least once every 31 days, obtain a sample of stored fuel oil in accordance with ASTM D2276-06, “Standard Test Methods for Particulate Contaminant in Aviation Fuels by line Sampling,” or ASTM D5452-08, “Standard Test Method for Particulate Contamination in Aviation Fuels by Laboratory Filtration” and verify that total particulate contamination is less than 10 mg/liter when checked in accordance with D6217-98, “Standard Test Method for Particulate Contaminant in Middle Distillate Fuels by Laboratory Filtration” or ASTM D5452-08, “Standard Test Method for Particulate Contamination in Aviation Fuels by Laboratory Filtration.” It is acceptable to obtain a field sample in accordance with ASTM D4057-81, “Standard Practice for Manual Sampling of Petroleum and Petroleum Products,” for subsequent laboratory testing in lieu of field testing. Where the total stored fuel oil volume is contained in two or more interconnected storage tanks, each storage tank must be considered and tested separately. The 31-day frequency of this analysis considers fuel oil degradation trends that indicate that particulate contamination is not likely to change significantly during the interval.

   Note: A composite sample should be taken at multi levels within the diesel generator fuel oil storage tanks. This method of sampling will provide for more consistent data acquisition to enhance trend analysis of particulate matter. (See Engineering Evaluation 90-33 for additional details.)

2. Stored fuel oil total particulates not within limits shall be restored within limits within 7 days. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated EDG inoperable. The 7 day completion time allows for further evaluation, re-sampling and re-analysis of the EDG fuel oil, and restoration actions, as required.

3. Stored fuel oil, when mixed with new fuel oil having properties not meeting the requirements specified in TRP 5.1a.3, above, shall have its fuel oil properties restored within limits within 30 days. The 30 day time interval considers that even if a DG start and load was required during this time interval, with fuel oil properties outside the limits, there is a high likelihood that the DG would still be capable of performing its intended function.

4. TS 4.8.1.1.2b and 4.8.1.1.2c set the frequency and conditional requirements for checking for water in the day and storage tanks. The analytical methodology to be used shall be ASTM D4176, ASTM D2709 or ASTM equivalent test for water in the fuel oil.

c. At least once per 10 years, each fuel oil storage tank shall be drained, the accumulated sediment removed, and the tanks cleaned using a sodium hypochlorite solution, or equivalent.

The presence of sediment does not necessarily represent a failure of this surveillance requirement, provided that accumulated sediment is removed during performance of the Surveillance.

Technical Requirement Program 5.3
Containment Leakage Rate Testing Program

(Sheet 1 of 1)

This Technical Requirement Program implements the requirements of Technical Specification (TS) 6.15, Containment Leakage Rate Testing Program (CLRTP). The program implements the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. The program is in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak Test Program, dated September 1995," as modified by approved exceptions. The specific implementation details are located in the Leakage Test Reference Manual (SLTR).

The provisions of Technical Specification 4.0.2 are not applicable to the CLRTP.

The provisions of Technical Specification 4.0.3 are applicable to the CLRTP.

Technical Requirement Program 5.4
Standby Emergency Diesel Generator Inspection Program

Requirement:

Each diesel generator shall be demonstrated OPERABLE at least once per 18 months*, during shutdown#, by subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its vendor/owner's group recommendations for this class of standby service. In addition, other diesel generator inspection / surveillance activities identified on the following table shall be performed at the frequencies specified.

Note:

The words "prepared in conjunction with" do not mean that compulsory acceptance of all vendor/owner's group recommendations is necessary.

Ensuring EDG OPERABILITY and reliability is the overall goal of this Requirement and considering vendor/owner's group recommendations contributes to the achievement of that goal. The bases for demonstrating OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977. This Guide does not include any level of detail addressing specific maintenance activities or the need for verbatim compliance with vendor/owner's group recommendations.

In some instances vendor/owner's group recommendations may be overly conservative, prescriptive, or not applicable due to site specific applications. The FPL Energy Seabrook system engineer and maintenance personnel are cognizant of the site specific EDG operating experience which may be used to develop superior inspection alternatives that have a decided time savings advantage or cost benefit over vendor/owner's group recommendations.

Vendor/owner's group inspection recommendations are not regulatory requirements. FPL Energy Seabrook should use sound engineering judgment regarding the inclusion of, or omission of, vendor/owner's group recommendations in maintenance and inspection procedures. The safety significance of the EDGs warrants that any omission of vendor/owner's group recommendations or any use of alternatives should be justified by an evaluation that shows there is no compromise in EDG reliability or OPERABILITY. This evaluation shall be documented in the Preventative Maintenance Technical Basis. Basis for recommendations that will not be implemented shall be documented in the Corrective Action System.

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*Selected inspection activities may be performed at frequencies other than 18 months provided a documented evaluation supports performance of that activity at a different frequency. Frequency changes shall be documented in the Preventative Maintenance Technical Basis.

Selected surveillance requirements, or portions thereof, may be performed during conditions or modes other than shutdown, provided an evaluation supports safe conduct of that surveillance in a condition or mode that is consistent with safe operation of the plant. (ref. NRC GL 91-04)

Technical Requirement Program 5.4
Standby Emergency Diesel Generator Inspection Program

	Inspection Activity	Frequency	Reference Basis
1.	Visually inspecting the lagging in the area of the flanged joints on the silencer outlet of the diesel exhaust system for leakage.	At least once every 31 days (also after an extended operation of greater than 24 hours)	License Amendment Request (LAR) 01-01 / Amendment No. 80
2.	Verifying that the following diesel generator lockout features prevent diesel generator starting: a) Barring device engaged, or b) Differential lockout relay.	At least once every 18 months during shutdown#	License Amendment Request (LAR) 01-01 / Amendment No. 80

Selected surveillance requirements, or portions thereof, may be performed during conditions or modes other than shutdown, provided an evaluation supports safe conduct of that surveillance in a condition or mode that is consistent with safe operation of the plant. (ref. NRC GL 91-04)

Technical Requirement Program 5.5
Seabrook Station Snubber Inservice Inspection Program

1.0 OBJECTIVE

To demonstrate that each snubber is OPERABLE by the performance of this inservice inspection program. This program is based on 10CFR50.55a(b)(3)(v).

2.0 REFERENCES

1. Technical Specifications, Section 3/4.7.7
2. Technical Specifications, Section 4.0.5
3. Code of Federal Regulations, 10CFR50.55a, Codes and standards, dated 1-1-10
4. Generic Letter 90-09
5. ASME Section XI, 2004 Edition
6. ASME OM Code, Subsection ISTD, 2004 Edition
7. Letter NYN 91053
8. EX1805.01, Visual Examination and Functional Testing Program for Snubbers

3.0 SCOPE

Each snubber shall be demonstrated OPERABLE by the performance of the following inservice inspection program and the requirements of Technical Specifications 4.0.5.

4.0 INSTRUCTIONS

4.1 General Requirements

Snubbers shall be examined and tested in accordance with the ASME OM Code, Subsection ISTD, 2004 Edition. Snubber attachment hardware shall be examined in accordance with ASME Section XI, Subsection IWF, 2004 Edition. Refer to program implementing procedure EX1805.01, Visual Examination and Functional Testing Program for Snubbers.

4.2 Snubber Visual Examination

Snubber Visual Examination shall be performed in accordance with ISTD-4000 of the ASME OM Code. The visual examination of snubber attachment hardware shall be performed in accordance with Article IWF-5000 of ASME Section XI, 2004 Edition.

4.2.1 Snubber Categorization

Each snubber has been categorized as inaccessible or accessible during reactor operation. Based on the inaccessible and accessible categorization, each category of snubbers may be considered separately for examination.

4.2.2 Snubber Visual Examination Acceptance Criteria

Snubber visual examinations shall meet all the following requirements to be considered OPERABLE:

Restrained Movement: Snubbers shall be installed so they are capable of restraining movement when activated. Examinations shall include observations for the following and the conditions shall be evaluated when found:

(a) loose fasteners, or members that are corroded or deformed;

(b) Disconnected components or other conditions that might interfere with the proper restraint of movement.

Snubbers evaluated to be incapable of restraining movement shall be classified unacceptable.

Thermal Movement: Snubber installations shall not restrain thermal movement to an extent that unacceptable stresses could develop in the snubber, the pipe, or other equipment that the snubber is designed to protect or restrain. This requirement is satisfied if no indication of binding, misalignment, or deformation of the snubber is observed.

Design-Specific Characteristics: Snubbers shall be free of defects that may be generic to particular designs as may be detected by visual examination. For example, fluid supply or content for hydraulic snubbers shall be observed. An observation that the fluid level is equal to or greater than the minimum specified amount that is sufficient for actuation at its operating extension is considered to satisfy this requirement. If the fluid is less than the minimum amount, the installation shall be identified as unacceptable, unless a test establishes that the performance of the snubber is within specified limits. The initial test shall start with the piston at the as-found setting and be performed in the extension (tension) direction, or in a mode that more closely resembles the operating and design requirements of the snubber.

Attachment Hardware: Snubber attachment hardware shall be free of the following conditions:

(a) deformations or structural degradations of fasteners, springs, clamps, or other support items;

(b) missing, detached, or loosened support items;

(c) arc strikes, weld spatter, paint, scoring, roughness, or general corrosion on close tolerance machined or sliding surfaces;

(d) misalignment of supports;

(e) improper clearances of guides and stops.

4.2.3 Snubber Visual Examination Failure Evaluation

Snubbers that do not meet examination requirements of 4.2.2 shall be evaluated to determine the root cause of the unacceptability.

Snubber attachment hardware that does not meet the requirements of 4.2.2 shall be evaluated.

4.2.4 Snubber Visual Examination Corrective Action

Unacceptable snubbers and snubber attachment hardware shall be adjusted, repaired, modified, or replaced. Repairs and replacements shall be in accordance with ASME Section XI, Article IWA-4000. Additional action regarding the examination interval shall be taken as required.

4.3 Snubber Testing

Snubbers shall be tested for operational readiness during each fuel cycle. Tests are required to be in accordance with a specified sampling plan. Testing shall be performed during normal system operation, or during system or plant outages. The Seabrook administrative procedures govern removing snubbers from operable system(s). For each snubber determined to be unacceptable by operational readiness testing, additional snubbers shall be tested as determined by the type of failure and the corrective action taken.

4.3.1 Snubber Testing Defined Test Plan Groups (DTPGs)

Seabrook snubbers are separated into Types or Defined Test Plan Groups, which are based on the snubber design and manufacturer (and not the snubber capacity).

4.3.2 Snubber Testing Sampling Plan

Seabrook has elected to implement the 10% Testing Sample Plan.

NOTE

Prior to initiation of the first Seabrook snubber testing program per the ASME OM Code, the NRC Regional Administrator was notified that the 10% Sampling Plan would be used (Ref. NYN 91053). Because the current snubber testing program also utilizes the 10% Sampling Plan, no additional NRC notifications are required. If another plan were to be used, these Technical Requirements must be revised and the NRC Regional Administrator must be notified of the change in writing prior to use of the new sample plan.

4.3.3 Snubber Testing Acceptance Criteria

Snubber testing shall meet all of the following requirements to be considered OPERABLE:

(a) activation is within the specified range of velocity or acceleration in tension and in compression.

(b) release rate, when applicable, is within the specified range in tension and in compression. For units specifically required not to displace under continuous load, ability of the snubber to withstand load without displacement.

(c) for mechanical snubbers, drag force is within specified limits, in tension and in compression.

4.3.4 Transient Event Inspection

An inspection shall be performed of all snubbers attached to sections of systems that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems within 6 months following such an event. In addition to satisfying the visual inspection acceptance criteria, freedom-of-motion of mechanical snubbers shall be verified using at least one of the following: (1) manually induced snubber movement; or (2) evaluation of in-place snubber piston setting; or (3) stroking the mechanical snubber through its full range of travel.

4.3.5 Test Failure Evaluation

Snubbers that do not meet test requirements specified in 4.3.3 or the applicable Qualitative Tests shall be evaluated to determine the root cause of the failure, as follows:

(a) The evaluation shall include review of information related to other unacceptable snubbers found during testing that refueling outage.

(b) The evaluation results shall be used, as applicable, to determine Failure Mode Groups (FMGs) to which snubbers should be assigned. Additional justifying information should be used to assign snubbers with failures previously identified as unexplained or isolated to an appropriate FMG.

4.3.6 Corrective Action

Unacceptable snubbers shall be adjusted, repaired, modified, or replaced. Snubbers that do not meet the test requirements of 4.3.3 or the applicable Qualitative Tests shall be functionally tested as required.

4.4 Snubber Service Life Monitoring Program

Service life shall be evaluated at least once each fuel cycle, and increased or decreased, if warranted. Evaluation shall be based upon technical data from representative snubbers that have been in service in the plant, or other information related to service life. If the evaluation indicates that service life will be exceeded before the next scheduled system or plant outage, one of the following actions shall be taken:

(a) the snubber shall be replaced with a snubber for which the snubber life will not be exceeded before the next scheduled system or plant outage.

(b) technical justification shall be documented for extending the service life to or beyond the next scheduled system or plant outage.

(c) the snubber shall be reconditioned such that its service life will be extended to or beyond the next scheduled system or plant outage.

Critical parts shall be replaced so that the maximum service life will not be exceeded during a period when the snubber is required to be OPERABLE. The parts replacements shall be documented and the documentation shall be retained in accordance with the Quality Assurance Topical Report (QATR).

Technical Requirement Program 5.6
Post Accident Assessment Program

(Sheet 1 of 1)

This Technical Requirement Program establishes, implements and maintains the Post Accident Assessment Program (PAAP) at Seabrook Station. The PAAP ensures the capability to obtain information about the radionuclides existing post-accident. The information would allow those with decision-making responsibilities to plan for long-term recovery operations and limit the public's ingestion of radioactive materials. The program includes the following:

1) The capability for classifying fuel damage events at the Alert level threshold of 300 microcuries per ml dose equivalent iodine (DEI) or 3000 microcuries per ml gross activity.

2) Contingency plans for obtaining and analyzing highly radioactive samples of reactor coolant, containment sump (including pH), and containment atmosphere (including hydrogen).

3) The capability to monitor radioactive iodines that have been released to offsite environs.

> NOTE
>
> Changes to the PAAP and associated implementing procedures will require the following determinations:
>
> 1. Whether the change decreases the effectiveness of the emergency plan in accordance with the provisions of 10 CFR 50.54(q) requirements, and
>
> 2. Assess the impact on Core Damage Assessment Methodology (CDAM).

References

1. License Amendment Request (LAR) 00-06, "Application For Technical Specification Improvement To Eliminate Requirements For Post Accident Systems Using The Consolidated Line Item Improvement Process". Approved as License Amendment 78.

2. WCAP-14986-A Revision 2, Westinghouse Owners Group Post Accident Sampling System Requirements: A Technical Basis, dated July 2000.

3. Industry/TSTF Standard Technical Specification Change Traveler, TSTF-366 (WOG-149, Rev. 0), Elimination of Requirements for a Post Accident Sampling System (PASS).

4. Design Basis for the Seabrook Station Emergency Classification System.

1.0 Core Operating Limits Report (COLR)

This Core Operating Limits Report for Seabrook Station Unit 1, Cycle 16 has been prepared in accordance with the requirements of Technical Specification 6.8.1.6.

The Technical Specifications affected by this report are:

1)	2.2.1	Limiting Safety System Settings
2)	2.1	Safety Limits
3)	3.1.1.1	Shutdown Margin Limit for MODES 1, 2, 3, 4
4)	3.1.1.2	Shutdown Margin Limit for MODE 5
5)	3.1.1.3	Moderator Temperature Coefficient
6)	3.1.2.7	Minimum Boron Concentration for MODES 4, 5, 6
7)	3.1.3.5	Shutdown Rod Insertion Limit
8)	3.1.3.6	Control Rod Insertion Limits
9)	3.2.1	Axial Flux Difference
10)	3.2.2	Heat Flux Hot Channel Factor
11)	3.2.3	Nuclear Enthalpy Rise Hot Channel Factor
12)	3.2.5	DNB Parameters
13)	3.5.1.1	Boron Concentration Limits for MODES 1, 2, 3
14)	3.5.4	Boron Concentration Limits for MODES 1, 2, 3, 4
15)	3.9.1	Boron Concentration Limits for MODE 6

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 6.8.1.6.

2.1 Limiting Safety System Settings: (Specification 2.2.1)

2.1.1 Cycle Dependent Overtemperature ΔT Trip Setpoint Parameters and Function Modifier:

2.1.1.1 K_1 = 1.210

2.1.1.2 K_2 = 0.021 / °F

2.1.1.3 K_3 = 0.0011 / psig

T = Measured RCS T_{avg} (°F), and

T^1 = Indicated RCS T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, ≤ 589.1°F).

P^1 = Nominal RCS operating pressure, 2235 psig

2.1.1.4 Channel Total Allowance (TA) = N.A.

2.1.1.5 Channel Z = N.A.

2.1.1.6 Channel Sensor Error (S) = N.A.

2.1.1.7 Allowable Value – The channel's maximum Trip Setpoint shall not exceed its computed Trip Setpoint by more than 0.5% of ΔT span. Note that 0.5% of ΔT span is applicable to OTΔT input channels ΔT, Tavg and Pressurizer Pressure; 0.25% of ΔT span is applicable to ΔI.

2.1.1.8 $f_1(\Delta I)$ 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 –20% and +8%, $f_1(\Delta I) \geq 0$; 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 –20%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 2.87% of its value at RATED THERMAL POWER.

(3) For each percent that the magnitude of $q_t - q_b$ exceeds +8%, the ΔT Trip Setpoint shall be automatically reduced by ≥ 1.71% of its value at RATED THERMAL POWER.

See Figure 5.

2.1.1.9 $\tau_1 = 0$ seconds

2.1.1.10 $\tau_2 = 0$ seconds

2.1.1.11 $\tau_3 \leq 2$ seconds

2.1.1.12 $\tau_4 \geq 28$ seconds

2.1.1.13 $\tau_5 \leq 4$ seconds

2.1.1.14 $\tau_6 \leq 2$ seconds

2.1.2 Cycle Dependent Overpower ΔT Trip Setpoint Parameters and Function Modifier:

2.1.2.1 K_4 = 1.116

2.1.2.2 K_5 = 0.020 / °F for increasing average temperature and K_5 = 0.0 for decreasing average temperature.

2.1.2.3 K_6 = 0.00175 / °F for $T > T^{11}$ and K_6 = 0.0 for $T \leq T^{11}$,

where:

T = Measured T_{avg} (°F), and

T^{11} = Indicated T_{avg} at RATED THERMAL POWER (Calibration temperature for ΔT instrumentation, ≤ 589.1 °F).

2.1.2.4 Channel Total Allowance (TA) = N.A.

2.1.2.5 Channel Z = N.A.

2.1.2.6 Channel Sensor Error (S) = N.A.

2.1.2.7 Allowable Value – The channel's maximum Trip Setpoint shall not exceed its computed Trip Setpoint by more than 0.5% of ΔT span. Note that 0.5% of ΔT span is applicable to OPΔT input channels ΔT and Tavg.

2.1.2.8 $f_2(\Delta I)$ is disabled.

2.1.2.9 τ_1 as defined in 2.1.1.9, above.

2.1.2.10 τ_2 as defined in 2.1.1.10, above.

2.1.2.11 τ_3 as defined in 2.1.1.11, above.

2.1.2.12 τ_6 as defined in 2.1.1.14, above.

2.1.2.13 $\tau_7 \geq 10$ seconds. It is recognized that exactly equal values cannot always be dialed into the numerator and denominator in the protection system hardware, even if the nominal values are the same (10 seconds). Thus given the inequality sign in the COLR (greater than or equal to) the intent of the definition of this time constant applies primarily to the rate time constant (i.e. the Tau value in the numerator). The lag time constant (denominator Tau value) may be less than 10 seconds or less than the value of the numerator Tau value (e.g., if the numerator is set at 10.5, the denominator may be set to 10 or 9.5) and still satisfy the intent of the anticipatory protective feature.

2.2 Safety Limits: (Specification 2.1.1)

2.2.1 In Modes 1 and 2, the combination of Thermal Power, reactor coolant system highest loop average temperature and pressurizer pressure shall not exceed the limits in Figure 6.

2.3 Shutdown Margin Limit for MODES 1, 2, 3, and 4: (Specification 3.1.1.1)

2.3.1 The Shutdown Margin shall be greater than or equal to

1.3% ΔK/K, in MODES 1, 2 and 3.

2.3.2 The Shutdown Margin shall be greater than or equal to

2.3% ΔK/K, in MODE 4.

2.3.3 The Boric Acid Storage System boron concentration

shall be greater than or equal to 7000 ppm.

2.4 Shutdown Margin Limit for MODE 5: (Specification 3.1.1.2)

2.4.1 The Shutdown Margin shall be greater than or equal to 2.3% ΔK/K.

2.4.2 The RCS boron concentration shall be greater than or equal to 2000 ppm when the reactor coolant loops are in a drained condition.

2.4.3 The Boric Acid Storage System boron concentration shall be greater than or equal to 7000 ppm.

2.5 Moderator Temperature Coefficient: (Specification 3.1.1.3)

2.5.1 The Moderator Temperature Coefficient (MTC) shall be less positive than $+3.945 \times 10^{-5}$ ΔK/K/°F for Beginning of Cycle Life (BOL), All Rods Out (ARO), Hot Zero Thermal Power conditions.

2.5.2 MTC shall be less negative than -5.5×10^{-4} ΔK/K/°F for End of Cycle Life (EOL), ARO, Rated Thermal Power conditions.

2.5.3 The 300 ppm ARO, Rated Thermal Power MTC shall be less negative than -4.6×10^{-4} ΔK/K/°F (300 ppm Surveillance Limit).

2.5.4 The Revised Predicted near-EOL 300 ppm MTC shall be calculated using the algorithm contained in WCAP 13749-P-A:

Revised Predicted MTC = Predicted MTC + AFD Correction – 3 PCM/degree F

If the Revised Predicted MTC is less negative than the SR 4.1.1.3.b 300 ppm surveillance limit and all the benchmark data contained in the surveillance procedure are met, then an MTC measurement in accordance with SR 4.1.1.3.b is not required to be performed.

2.6 Minimum Boron Concentration for MODES 4, 5, 6 (Specification 3.1.2.7)

2.6.1 The Boric Acid Storage System boron concentration shall be greater than or equal to 7000 ppm.

2.7 Shutdown Rod Insertion Limit: (Specification 3.1.3.5)

2.7.1 The shutdown rods shall be fully withdrawn. The fully withdrawn position is defined as the interval within 225 steps withdrawn to the mechanical fully withdrawn position inclusive.

2.8 Control Rod Insertion Limits: (Specification 3.1.3.6)

2.8.1 The control rod banks shall be limited in physical insertion as specified in Figure 1. Control Bank A shall be at least 225 steps withdrawn.

2.9 Axial Flux Difference: (Specification 3.2.1)

2.9.1 The indicated AFD must be within the Acceptable Operation Limits specified in Figure 2.

2.10 Heat Flux Hot Channel Factor: (Specification 3.2.2)

2.10.1 $F^{RTP}_{Q} = 2.50$

2.10.2 K(Z) is specified in Figure 3.

2.10.3 W(Z) is specified in Table 1.

The W(Z) data is applied over the cycle as follows:

BU < 150 MWD/MTU,	linear extrapolation of 150 and 3000 MWD/MTU W(Z) data
150 ≤ BU < 6500 MWD/MTU,	quadratic interpolation of 150, 3000, and 10000 MWD/MTU data
6500 ≤ BU <18000 MWD/MTU,	quadratic interpolation of 3000, 10000, and 18000 MWD/MTU W(Z) data
BU ≥ 18000 MWD/MTU,	linear extrapolation of 10000 and 18000 MWD/MTU W(Z) data

Note: The FQ(Z) surveillance exclusion zone is specified by Technical Specification 4.2.2.2.g

2.10.4 The $F^M_Q(Z)$ penalty factor is applied over the cycle as follows:

$0 \leq BU < 472$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.020
$472 \leq BU < 633$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.025
$633 \leq BU < 954$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.030
$954 \leq BU < 1115$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.027
$1115 \leq BU < 1276$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.023
$BU \geq 1276$ MWD/MTU,	$F^M_Q(Z)$ penalty factor is 1.020

2.11 Nuclear Enthalpy Rise Hot Channel Factor: (Specification 3.2.3)

2.11.1 $F^N_{\Delta H} \leq F^N_{\Delta H}(RTP) \times (1 + PF \times (1 - P))$

where P = THERMAL POWER / RATED THERMAL POWER.

2.11.2.a For $F^N_{\Delta H}$ measured by the fixed incore detectors:

$F^N_{\Delta H}(RTP) = 1.584$.

2.11.2.b For $F^N_{\Delta H}$ measured by the movable incore detectors:

$F^N_{\Delta H}(RTP) = 1.584$.

2.11.3 Power Factor Multiplier for $F^N_{\Delta H}$ = PF = 0.3.

2.12 DNB Parameters (Specification 3.2.5)

2.12.1 The Reactor Coolant System Tavg shall be less than or equal to 595.1 degrees F.

2.12.2 The Pressurizer Pressure shall be greater than or equal to 2185 PSIG.

Note: Technical Specification Bases 3/4.2.5, "DNB Parameters" indicates that the limits on DNB-related parameters assure consistency with the normal steady-state envelope of operation assumed in the transient and accident analyses. Operating procedures include allowances for measurement and indication uncertainty so that the limits in the COLR for T_{avg} and pressurizer pressure are not exceeded. Consistent with the Bases, the values of these DNB parameters are the limiting T_{avg} and pressurizer pressure assumed in the transient and accident analyses.

2.13 Accumulator Boron Concentration Limits for MODES 1,2,3 (Specification 3.5.1.1)

2.13.1 Each Accumulator shall have a boron concentration between 2300 and 2600 ppm.

2.14 Refueling Water Storage Tank Boron Concentration Limits for MODES 1, 2, 3, 4 (Specification 3.5.4)

2.14.1 The RWST shall have a boron concentration between 2400 and 2600 ppm.

2.15 Refueling Boron Concentration Limits for MODE 6 (Specification 3.9.1)

2.15.1 The Refueling Boron Concentration during Cycle 16 shall be greater than or equal to 2235 ppm.

2.15.2 The Boric Acid Storage System boron concentration shall be greater than or equal to 7000 ppm.

Figure 1: Control Bank Insertion Limits Versus Thermal Power

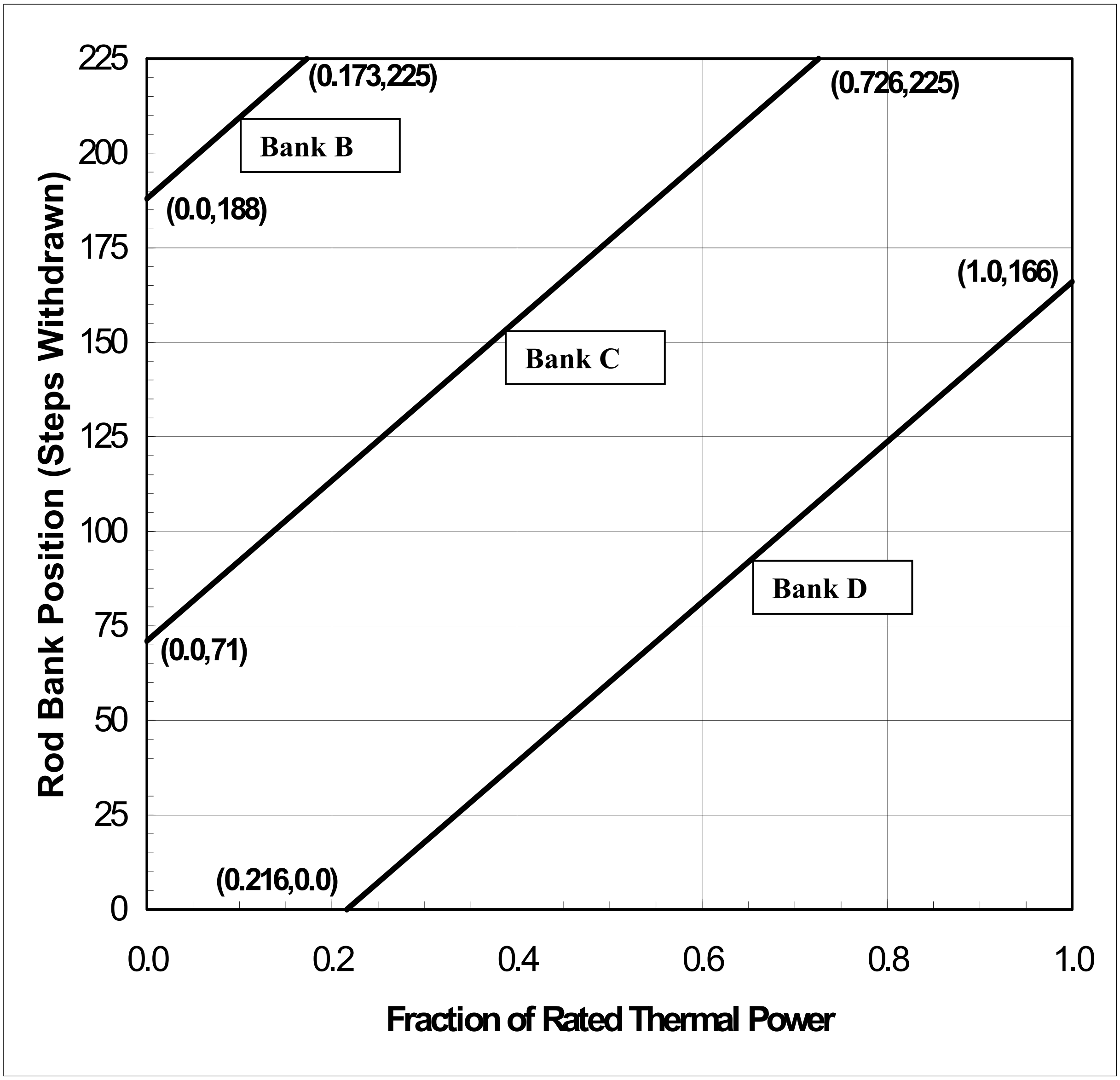
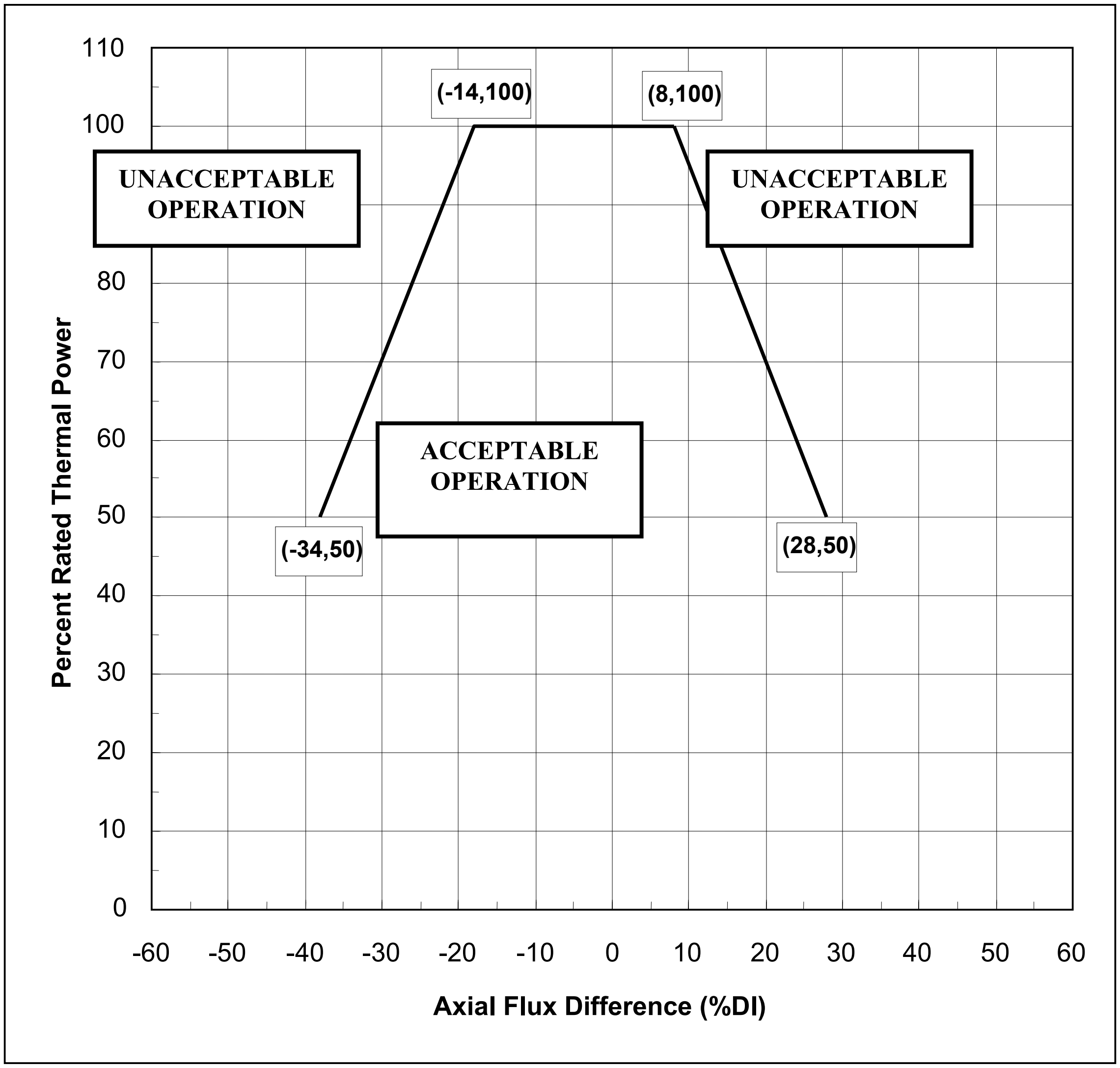


Figure 2: Axial Flux Difference Operating Limits Versus Thermal Power



Note: %DI = %ΔI

Figure 3: K(Z) Versus Core Height

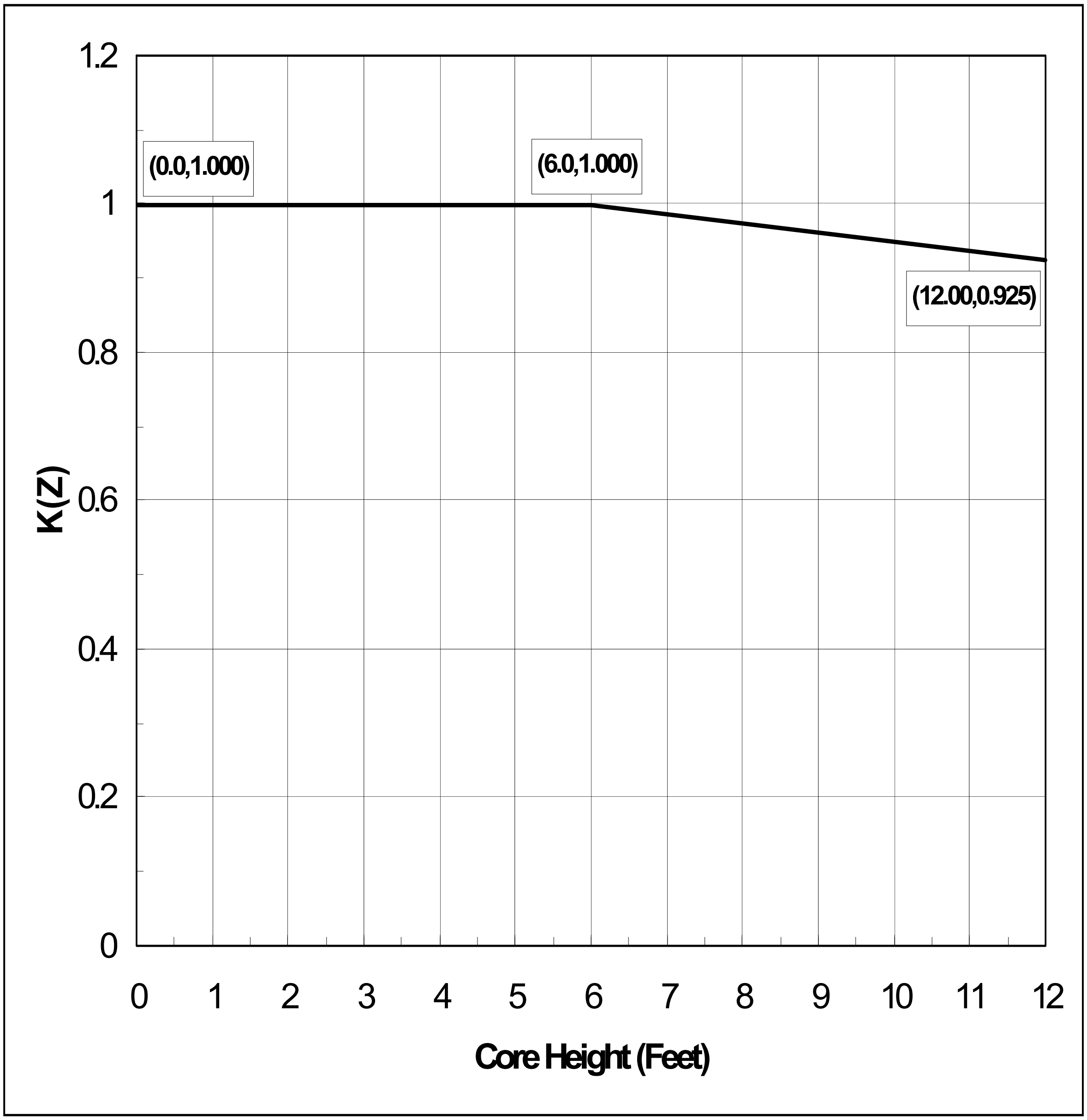


FIGURE 4 DELETED

Figure 5: $f_1(\Delta I)$ Function

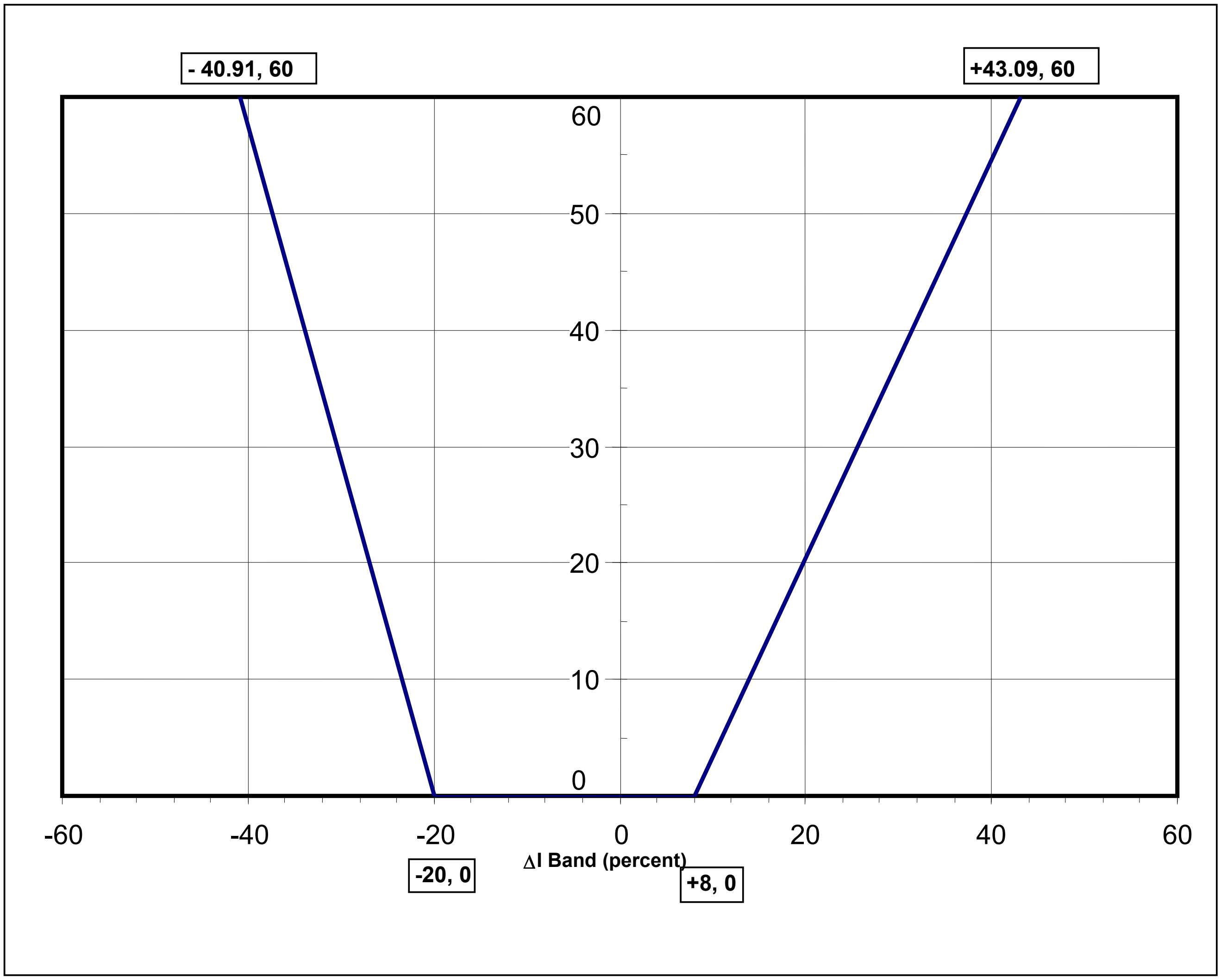


Figure 6: Safety Limits

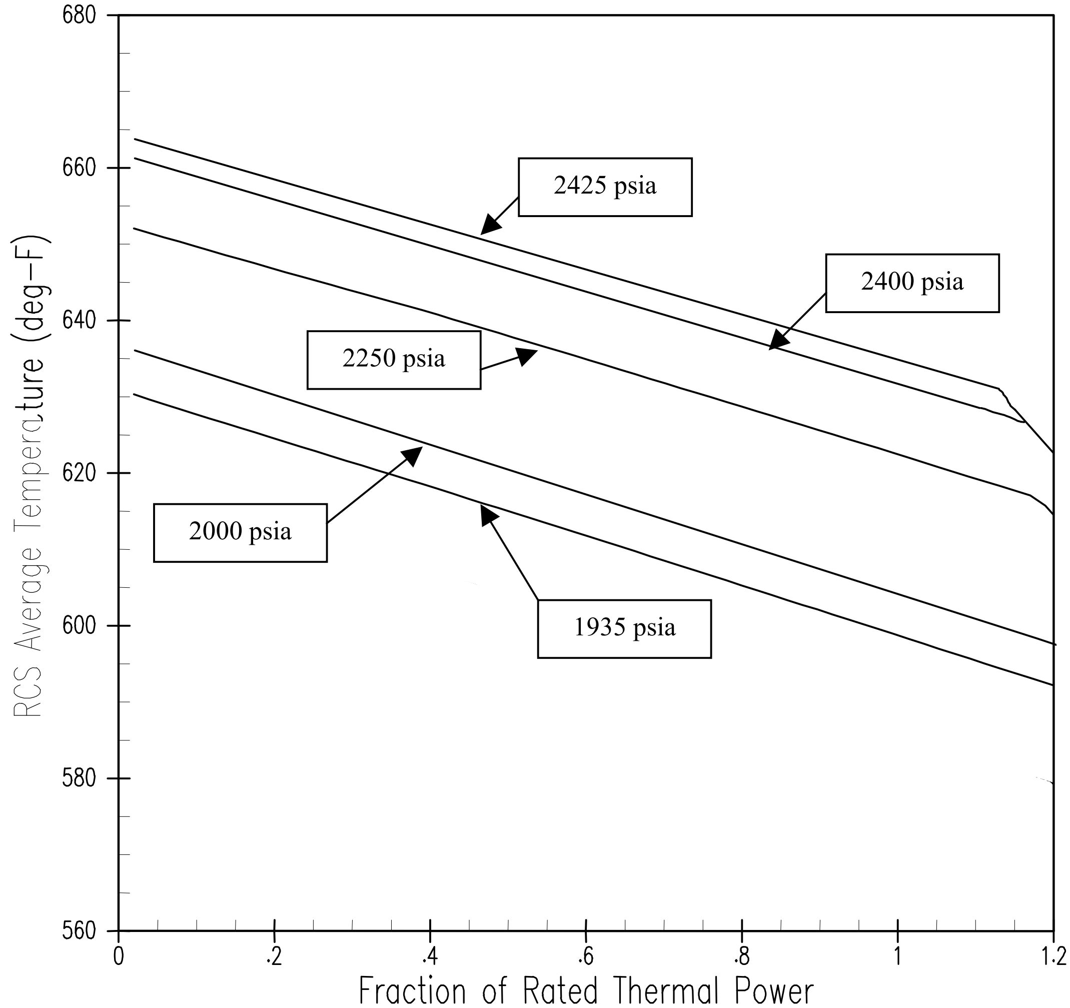


Table 1: W(Z,BU) versus Axial Height

(Sheet 1 of 2)

HEIGHT (Z) (Feet)	W(Z,BU) 150 MWD/MTU	W(Z,BU) 3000 MWD/MTU	W(Z,BU) 10000 MWD/MTU	W(Z,BU) 18000 MWD/MTU
≤1.0	1.0000	1.0000	1.0000	1.0000
1.2	1.2820	1.3157	1.3302	1.2935
1.4	1.2702	1.3027	1.3188	1.2841
1.6	1.2564	1.2876	1.3053	1.2728
1.8	1.2410	1.2707	1.2902	1.2602
2.0	1.2247	1.2527	1.2738	1.2465
2.2	1.2075	1.2353	1.2565	1.2322
2.4	1.1901	1.2180	1.2387	1.2171
2.6	1.1726	1.2006	1.2205	1.2014
2.8	1.1548	1.1824	1.2025	1.1893
3.0	1.1495	1.1683	1.1845	1.1791
3.2	1.1456	1.1612	1.1748	1.1735
3.4	1.1417	1.1577	1.1720	1.1717
3.6	1.1387	1.1533	1.1681	1.1713
3.8	1.1352	1.1492	1.1637	1.1705
4.0	1.1312	1.1450	1.1589	1.1708
4.2	1.1268	1.1401	1.1536	1.1705
4.4	1.1218	1.1355	1.1477	1.1692
4.6	1.1174	1.1315	1.1413	1.1670
4.8	1.1140	1.1270	1.1344	1.1638
5.0	1.1102	1.1219	1.1268	1.1595
5.2	1.1059	1.1163	1.1189	1.1545
5.4	1.1019	1.1101	1.1104	1.1493
5.6	1.1029	1.1029	1.1007	1.1455
5.8	1.1078	1.1008	1.1003	1.1496
6.0	1.1139	1.1026	1.1059	1.1602
6.2	1.1210	1.1086	1.1172	1.1679
6.4	1.1302	1.1129	1.1273	1.1744
6.6	1.1384	1.1161	1.1364	1.1797
6.8	1.1460	1.1191	1.1443	1.1854
7.0	1.1551	1.1264	1.1511	1.1905
7.2	1.1651	1.1336	1.1565	1.1938
7.4	1.1735	1.1397	1.1605	1.1955
7.6	1.1805	1.1447	1.1630	1.1957
7.8	1.1855	1.1497	1.1643	1.1943
8.0	1.1904	1.1559	1.1633	1.1912
8.2	1.1964	1.1612	1.1618	1.1867
8.4	1.2012	1.1654	1.1638	1.1805
8.6	1.2083	1.1682	1.1649	1.1722
8.8	1.2152	1.1727	1.1668	1.1653

Table 1: W(Z,BU) versus Axial Height

(Sheet 2 of 2)

HEIGHT (Z) (Feet)	W(Z,BU) 150 MWD/MTU	W(Z,BU) 3000 MWD/MTU	W(Z,BU) 10000 MWD/MTU	W(Z,BU) 18000 MWD/MTU
9.0	1.2250	1.1847	1.1724	1.1596
9.2	1.2411	1.2019	1.1823	1.1652
9.4	1.2616	1.2242	1.1953	1.1865
9.6	1.2957	1.2487	1.2131	1.2092
9.8	1.3342	1.2795	1.2370	1.2298
10.0	1.3703	1.3151	1.2627	1.2491
10.2	1.4043	1.3482	1.2848	1.2664
10.4	1.4349	1.3755	1.3033	1.2879
10.6	1.4631	1.3965	1.3179	1.3059
10.8	1.4796	1.4144	1.3317	1.3185
≥11.0	1.0000	1.0000	1.0000	1.0000

Note: The FQ(Z) surveillance exclusion zone is specified by Technical Specification 4.2.2.2.g