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Definitions

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

Terms (words or phrases) denoted in capital letters in the Licensee Controlled Specifications are defined in the Technical Specifications. The Licensee Controlled Specifications do not redefine any Technical Specification definition.

Term	Definition
Compensatory Measures	The part of a Licensee Controlled Specification that prescribes required Compensatory Measures to be taken under designated conditions within specified Completion Times.
Technical Specifications	The NRC has redefined requirements which are derived from the plant's safety analyses report and focus on accident mitigation and public health and safety. Technical Specifications evolved from this bases to include additional NRC requirements governing the operation of nuclear power plants. The NRC has issued 10 CFR 50.36 on Technical Specification that provides the following criteria for inclusion as a Technical Specification: 1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; 2. A process variable, design feature, or operating restriction that is an initial condition of a Design Basis Accident (DBA) or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; 3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; and

(continued)

Definitions

Technical Specifications (continued)	4. A structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.
Licensee Controlled Specifications (LCS)	The LCS is an operator aid which defines and quantifies additional license bases and management requirements in a consistent format and central location. It includes regulatory commitments, operational guidance, and management requirements.
Licensee Controlled Specification Manual	Consolidation of individual Licensee Controlled Specifications.
Requirements for OPERABILITY (RFO)	Statement of system or component functional requirements.

1.0 REQUIREMENTS FOR OPERABILITY (RFO) APPLICABILITY

RFO 1.0.1	RFOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in RFO 1.0.2 and RFO 1.0.7.
RFO 1.0.2	Upon discovery of a failure to meet an RFO, the Required Compensatory Measures of the associated Conditions shall be met, except as provided in RFO 1.0.5 and RFO 1.0.6. If the RFO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Compensatory Measure(s) is not required, unless otherwise stated.
RFO 1.0.3	When an RFO is not met and the associated Compensatory Measures are not met, an associated Compensatory Measure is not provided, or if directed by the associated Compensatory Measures, the unit shall be placed in a MODE or other specified condition in which the RFO is not applicable or any supported equipment shall be declared inoperable. A Problem Evaluation Request (PER) shall be initiated to identify the failure to meet the RFO and any further corrective actions. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the RFO or Compensatory Measures, completion of the actions required by RFO 1.0.3 is not required. RFO 1.0.3 is only applicable in MODES 1, 2, and 3.
RFO 1.0.4	When an RFO is not met, entry into the MODE or other specified condition in the applicability shall not be made except when the associated Compensatory Measures to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with actions or that are a part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications.

(continued)

1.0 RFO APPLICABILITY (continued)

RFO 1.0.5	Equipment removed from service or declared inoperable to comply with Compensatory Measures may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to RFO 1.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
RFO 1.0.6	When a supported system RFO is not met solely due to a support system RFO not being met, the Conditions and Required Compensatory Measures associated with this supported system are not required to be entered. Only the support system RFO Compensatory Measures are required to be entered. This is an exception to RFO 1.0.2 for the supported system. When a support system's Required Compensatory Measure directs a supported system to be declared inoperable or directs entry into Conditions and Required Compensatory Measures for a supported system, the applicable Conditions and Required Compensatory Measures shall be entered in accordance with RFO 1.0.2.

1.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 1.0.1	SRs shall be met during the MODES or other specified conditions in the Applicability for individual RFOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the RFO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the RFO except as provided in SR 1.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.
SR 1.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
SR 1.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the RFO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance. If the Surveillance is not performed within the delay period, the RFO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the RFO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

1.0 SR APPLICABILITY (continued)

SR 1.0.4	Entry into a MODE or other specified condition in the Applicability of an RFO shall not be made unless the RFO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with Compensatory Measures, Actions, or that are part of a shutdown of the unit.

Figure 1.1.4-1 (page 1 of 2)
Correction of Scram Time Data to 800 psig Reactor Pressure

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

Figure 1.1.4-1 provides information to be used in conjunction with SR 3.1.4.3. See Technical Specification 3.1.4 and applicable Bases for further applilcation details.

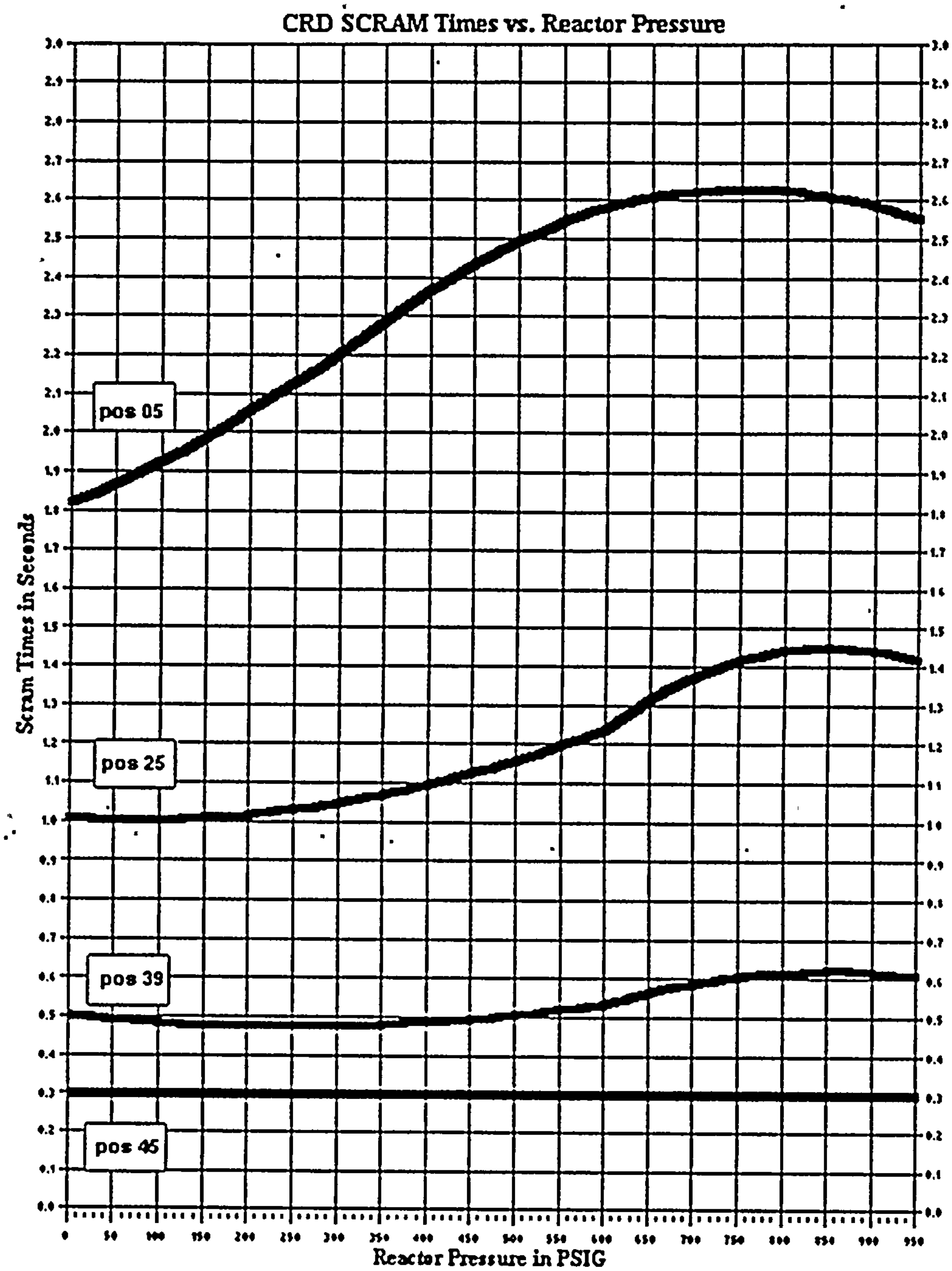

Figure 1.1.4-1 (page 2 of 2)
Correction of Scram Time Data to 800 psig Reactor Pressure

NOTE

Corrected scram times shall be less than the normal scram times (NSS) specified in the COLR. The correction factor is obtained from Figure 1.1.4-1 and the following calculation:

$C_f = T_p/T_{800}$ where

C_f = correction factor

T_P = Scram Time at the test pressure, from Figure 1.1.4-1

T_{800} = Scram Time at 800m psig, from Figure 1.1.4-1

The measured scram time is divided by a correction factor C_f to obtain the corrected scram time.

$T_c = T_m \div C_f$ where

T_c = Corrected scram time

T_m = Scram time measured at test pressure

Table 1.3.1.1-1 (page 1 of 1)
Reactor Protection System Response Time

---NOTE---
Table 1.3.1.1—1 lists required instrument response times to support OPERABILITY for LCO 3.3.1.1. See Technical Specification 3.3.1.1 and the applicable Bases for further application details.

FUNCTION	RESPONSE TIME (Seconds)
2. Average Power Range Monitor[a]:	
c. Fixed Neutron Flux—High	≤ 0.09
3. Reactor Vessel Steam Dome Pressure—High	≤ 0.55[b]
4. Reactor Vessel Water Level—Low, Level 3	≤ 1.05[b]
5. Main Steam Isolation Valve—Closure	≤ 0.06
8. Turbine Throttle Valve—Closure	≤ 0.06
9. Turbine Governor Valve Fast Closure, Trip Oil Pressure—Low	≤ 0.08[c]

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

(b) Sensor is eliminated from response time testing for these RPS circuits. Response time testing and conformance to the administrative limits for the remaining channel relay logic are required.

(c) Measured from start of turbine control valve fast closure.

Table 1.3.1.1-2 (page 1 of 2)
Reactor Protection System Instrumentation Setpoints

-NOTE-
Table 1.3.1.1—2 lists required instrument setpoints to support OPERABILITY for LCO 3.3.1.1. See Technical Specification 3.3.1.1 and the applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Intermediate Range Monitors	
a. Neutron Flux—High	≤ 120/125 divisions of full scale
b. Inop	NA
2. Average Power Range Monitors	
a. Neutron Flux—High, Setdown	≤ 15% RTP
b. Flow Biased Simulated Thermal Power—High	≤ 0.58W + 59% RTP and ≤ 113.5% RTP
c. Fixed Neutron Flux—High	≤ 118% RTP
d. Inop	NA
3. Reactor Vessel Steam Dome Pressure—High	≤ 1060 psig
4. Reactor Vessel Water Level—Low, Level 3	≥ 13.0 inches
5. Main Steam Isolation Valve—Closure	≤ 10.0% closed
6. Primary Containment Pressure—High	≤ 1.68 psig
7. Scram Discharge Volume Water Level—High	
a. Transmitter/Trip Unit	≤ 529 ft 7 inches elevation
b. Float Switch	≤ 529 ft 7 inches elevation

(continued)

Table 1.3.1.1-2 (page 2 of 2)
Reactor Protection System Instrumentation Setpoints

	FUNCTION	TRIP SETPOINT
8.	Turbine Throttle Valve—Closure	≤ 5% closed
9.	Turbine Governor Valve Fast Closure, Trip Oil Pressure—Low	≥ 1250 psig
10.	Reactor Mode Switch—Shutdown Position	NA
11.	Manual Scram	NA

1.3 INSTRUMENTATION

1.3.2.1 Control Rod Block Instrumentation

RFO 1.3.2.1 The Control Rod Block instrumentation for each Function in Table 1.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 1.3.2.1-1.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Place channel in trip.	7 days
B. One or more Functions with two or more required channels inoperable.	B.1 Place one channel in trip.	1 hour

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 1.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 1.3.2.1.1	------------------NOTES------------------ 1. For Functions 1.d, 3.a, 3.b, 3.c, and 3.d not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 2. For Functions 2.a, 2.b, 2.c, and 2.d, not required to be performed until 12 hours after IRMs on Range 2 or below. 3. For Functions 2.a, 3.a, this SR may be satisfied while in MODE 5 by administratively controlling the detector in the full in position, provided the CHANNEL FUNCTIONAL TEST has been performed within the past 92 days. --- Perform CHANNEL FUNCTIONAL TEST.	7 days
SR 1.3.2.1.2	------------------NOTE------------------ For Functions 1.b and 4.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 1.3.2.1.3	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For Function 1.d, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	184 days
SR 1.3.2.1.4	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For Functions 2.b and 2.d, not required to be performed when entering Range 2 from Range 3 or above until 12 hours after IRMs on Range 2 or below. 3. For Functions 3.b, 3.d, and 4.a not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	18 months
SR 1.3.2.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 1.3.2.1-1 (page 1 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Average Power Range Monitor (APRM)				
a. Flow Biased Neutron Flux - Upscale	1	4	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≤ (0.58W + 53%)T[(a)]
b. Inop	1, 2	4	1.3.2.1.2 1.3.2.1.5	NA
c. Downscale	1	4	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≥ 3% RTP
d. Neutron Flux - Upscale, Startup	2	4	1.3.2.1.1 1.3.2.1.3 1.3.2.1.5	≤ 14% RTP
2. Source Range Monitors (SRMs)				
a. Detector not full in	2[(c)]	3	1.3.2.1.1 1.3.2.1.5	NA
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.5	NA
b. Upscale	2[(d)]	3	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 1.6E5 cps
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 1.6E5 cps
c. Inop	2[(d)]	3	1.3.2.1.1 1.3.2.1.5	NA
	5	2[(e)(f)]	1.3.2.1.1 1.3.2.1.5	NA

(continued)

(a) Allowable value is in percent of RATED THERMAL POWER (RTP). W = Loop recirculation flow as a percentage of the loop recirculation flow which produces a rated core flow of 108.5 E6 lbs/hr. T = Lowest value of the ratio of fraction of RTP divided by the fraction of limiting power density. T is always less than or equal to 1.

(c) With the detector count rate ≤ 100cps or with associated IRM channels on range 1 or 2.

(d) With the associated IRM channels on range 1 or 2.

(e) Only one SRM channel is required to be OPERABLE during special offload or reload when the fueled region includes only that SRM detector.

(f) Special moveable detectors may be used in place of SRMs if connected to normal SRM circuits.

Table 1.3.2.1-1 (page 2 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. SRMs (continued)				
d. Downscale	2(d)	3	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 0.5 cps
	5	2(e)(f)	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 0.5 cps
3. Intermediate Range Monitors (IRMs)				
a. Detector not full in	2, 5(b)	6	1.3.2.1.1 1.3.2.1.5	NA
b. Upscale	2, 5(b)	6	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≤ 110/125 divisions of full scale
c. Inop	2, 5(b)	6	1.3.2.1.1 1.3.2.1.5	NA
d. Downscale	2(g), 5(b)	6	1.3.2.1.1 1.3.2.1.4 1.3.2.1.5	≥ 3/125 divisions of full scale
4. Scram Discharge Volume				
a. Water Level-High	1, 2	2	1.3.2.1.2 1.3.2.1.4 1.3.2.1.5	≤ 527 ft 5 inches elevation
5. Reactor Coolant System Recirculation Flow				
a. Upscale	1	2	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≤ 111/125 divisions of full scale
b. Inop	1	2	1.3.2.1.2 1.3.2.1.5	NA
c. Comparator	1	2	1.3.2.1.2 1.3.2.1.3 1.3.2.1.5	≤ 11% flow deviation

(b) With any control rod withdrawn from a core cell containing one or more fuel assemblies.
(d) With the associated IRM channels on range 1 or 2.
(e) Only one SRM channel is required to be OPERABLE during special offload or reload when the fueled region includes only that SRM detector.
(f) Special moveable detectors may be used in place of SRMs if connected to normal SRM circuits.
(g) With the associated IRM channels on range 2 or higher.

Table 1.3.2.1-2 (page 1 of 1)
Rod Block Monitoring Instrumentation Trip Setpoints

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

Table 1.3.2.1-2 lists required instrument setpoints to support OPERABILITY for LCO 3.3.2.1. See Technical Specification 3.3.2.1 and the applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Rod Block Monitor	
a. Upscale	≤ 0.58W + 48% RTP
b. Inop	NA
c. Downscale	≥ 5% RTP

Table 1.3.2.2-1 (page 1 of 1)
Feedwater and Main Turbine High Water Level Instrumentation Trip Setpoint

-------------------------------------NOTE-------------------------------------
Table 1.3.2.2-1 lists required instrument setpoints to support OPERABILITY for LCO 3.3.2.2. See Technical Specification 3.3.2.2 and the applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level—High, Level 8	≤ 54.5 inches

1.3 INSTRUMENTATION

1.3.3.1 Post Accident Monitoring (PAM) Instrumentation

RFO 1.3.3.1: The PAM instrumentation for each Function in Table 1.3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 1.3.3.1-1.

COMPENSATORY MEASURES

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

1. Separate Condition entry is allowed for each channel.

2. RFO 1.0.4 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One or more functions with one or more required channels inoperable.	A.1	Enter the Condition referenced in Table 1.3.3.1-1 for the channel.	Immediately
B. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1.	B.1	Verify OPERABILITY of tailpipe temperature monitoring instrument for affected safety relief valve (SRV).	48 hours
	AND		
	B.2	Perform CHANNEL CHECK of tailpipe temperature monitoring instrument for affected SRV.	72 hours AND Once per 24 hours thereafter
	AND		

(continued)

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. (continued)	B.3 Restore channel to OPERABLE status.	30 days
C. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1	C.1 Restore channel to OPERABLE status.	7 days
D. As required by Required Compensatory Measure A.1 and referenced in Table 1.3.3.1-1	D.1 Restore channel to OPERABLE status.	30 days
E. Required Compensatory Measures and associated Completion Times not met.	E.1 Initiate Problem Evaluation Request (PER).	24 hours

SURVEILLANCE REQUIREMENTS

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

1. The following SRs apply for each PAM Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
SR 1.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 1.3.3.1.2	Perform CHANNEL CALIBRATION for all Functions except Function 20.	18 months
SR 1.3.3.1.3	Perform CHANNEL CALIBRATION for Function 20.	24 months

Table 1.3.3.1-1 (page 1 of 2)
PAM Instrumentation

FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED COMPENSATORY MEASURE A.1
1. SRV Position Indication	1, 2	1/valve	B
2. Suppression Chamber Water Temperature	1, 2	2/Sector	D
3. Suppression Chamber Air Temperature	1, 2	2	D
4. Drywell Air Temperature	1, 2	2	D
5. Condensate Storate Tank Level	1, 2	2	D
6. Main Steam Isolation Valve Leakage Control System Pressure	1, 2	2	D
7. Neutron Flux			
a. Average Power Range Monitor	1, 2	2	D
b. Intermediate Range Monitor	1, 2	2	D
c. Source Range Monitor	1, 2	2	D
8. Reactor Core Isolation Cooling Flow	1, 2	1	D
9. High Pressure Core Spray Flow	1, 2	1	D
10. Low Pressure Core Spray Flow	1, 2	1	D
11. Standby Liquid Control System Flow	1, 2	1	D

(continued)

Table 1.3.3.1-1 (page 2 of 2)
PAM Instrumentation

FUNCTION	APPLICABLE OPERATIONAL CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED COMPENSATORY MEASURE A.1
12. Standby Liquid Control System Tank Level	1, 2	1	D
13. Residual Heat Removal Flow	1, 2	1/loop	D
14. RHR Heat Exchanger Outlet Temperature	1, 2	1/heat exchanger	D
15. Standby Service Water Flow	1, 2	1/loop	D
16. Standby Service Water Spray Pond Temperature	1, 2	2	D
17. Emergency Ventilation Damper Position	1, 2	2/duct	D
18. Standby Power and Other Energy Sources, except DG	1, 2	2/source	D
19. Reactor Building Effluent Monitoring System	1, 2	1	C
20. DG Standby Power	1, 2	2/source	D

Table 1.3.3.2-1 (page 1 of 1)
Remote Shutdown System Instrumentation

-----NOTE-----
The Table 1.3.3.2-1 lists required equipment to support OPERABILITY for LCO 3.3.3.2. See Technical Specification 3.3.3.2 and applicable Bases for further application details.

	FUNCTION	READOUT LOCATION	REQUIRED CHANNELS PER FUNCTION
1.	Reactor Vessel Pressure	C61-P001	1
2.	Reactor Vessel Water Level	C61-P001	1
3.	Suppression Chamber Air Temperature	H22-P100	1
4.	Suppression Chamber Water Level	H22-P100	1
5.	Suppression Chamber Water Temperature	H22-P100	1
6.	Service Water Pump B Discharge Pressure	H22-P100	1
7.	Drywell Pressure, Low Range	H22-P100	1
8.	Drywell Pressure, High Range	H22-P100	1
9.	Upper Drywell Temperature	H22-P100	1
10.	RHR System B Flow	H22-P100	1
11.	Spray Pond B Level	H22-P100	1
12.	Spray Pond B Temperature	H22-P100	1
13.	RCIC System Flow	C61-P001	1
14.	RCIC Turbine Speed	C61-P001	1

Table 1.3.3.2-2 (page 1 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
1. RPV Pressure Control	a. MS-RV-4A	MS-RMS-RSCS61	MS-RMS-RSTS15
	b. MS-RV-4B	MS-RMS-RSCS48	MS-RMS-RSTS15
	c. MS-RV-4C	MS-RMS-RSCS49	MS-RMS-RSTS15
	d. MS-RV-3D	MS-RMS-ARS/V3D	E-RMS-ARST1
	e. MS-RV-5B	MS-RMS-ARS/V5B	E-RMS-ARST1
	f. MS-RV-5C	MS-RMS-ARS/V5C	E-RMS-ARST1
2. RCIC Injection	a. RCIC-V-8 Steam Supply Line Outboard Isolation	RCIC-RMS-RSCS20	RCIC-RMS-RSTS4
	b. RCIC-V-10 Pump Suction from CST	RCIC-RMS-RSCS21	RCIC-RMS-RSTS2
	c. RCIC-V-31 Pump Suction from Suppression Pool	RCIC-RMS-RSCS22	RCIC-RMS-RSTS2
	d. RCIC-V-46 Lube Oil Cooler Supply	RCIC-RMS-RSCS26	RCIC-RMS-RSTS2
	e. RCIC-V-13 RPV Injection	RCIC-RMS-RSCS53	RCIC-RMS-RSTS52
	f. RCIC-V-19 Min Flow Bypass	RCIC-RMS-RSCS55	RCIC-RMS-RSTS52
	g. RCIC-V-22 Test Bypass to CST	RCIC-RMS-RSCS23	RCIC-RMS-RSTS52
	h. RCIC-V-45 Steam Supply to Turbine	RCIC-RMS-RSCS25	RCIC-RMS-RST S5
	i. RCIC-V-1 Turbine Trip	RCIC-RMS-RSCS28	RCIC-RMS-RSTS5
	j. RCIC-V-68 Turbine Exhaust to Suppression Pool	RCIC-RMS-RSCS27	RCIC-RMS-RSTS5
	k. RCIC-V-69 Vacuum Pump Discharge to Suppression Pool	RCIC-RMS-RSCS60	RCIC-RMS-RSTS6

(continued)

Table 1.3.3.2-2 (page 2 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
2. RCIC Injection (continued)	l.	RCIC-P-2 Barometric Condensor Vacuum Pump	RCIC-RMS-RSCS30	RCIC-RMS-RSTS6
	m.	RCIC-P-4 Barometric Condensor Condensate Pump	RCIC-RMS-RSCS29	RCIC-RMS-RSTS6
	n.	RCIC-V-63 Steam Supply Line Inboard Isolation	RCIC-RMS-RSCS19	RHR-RMS-RSTS1
	o.	RCIC-FIC-1R Flow Indicating Controller	N/A	RCIC-RMS-RSTS7
3. RHR Loop B Injection, Shutdown Cooling, and Suppression Pool Cooling	a.	RRC-V-23A Recirc Pump A Suction	RRC-RMS-RSCS50	RRC-RMS-RSTS16
	b.	RHR-V-9 RHR Shutdown Cooling Inboard Isolation	RHR-RMS-RSCS51	RHR-RMS-RSTS17
	c.	RHR-V-6B RHR Shutdown Cooling Suction	RHR-RMS-RSCS34	RHR-RMS-RSTS1
	d.	RHR-P-2B RHR B Loop Pump	RHR-RMS-RSCS31	RHR-RMS-RSTS9
	e.	RHR-V-4B Pump Suction from Suppression Pool	RHR-RMS-RSCS32	RHR-RMS-RSTS9
	f.	RHR-V-47B Heat Exchanger Shell Side Inlet	RHR-RMS-RSCS46	RHR-RMS-RSTS14
	g.	RHR-V-48B Heat Exchanger Shell Side Bypass	RHR-RMS-RSCS45	RHR-RMS-RSTS14
	h.	RHR-V-42B LPCI Injection	RHR-RMS-RSCS42	RHR-RMS-RSTS12
	i.	RHR-V-3B Heat Exchanger Shell Side Outlet	RHR-RMS-RS/V3B	RHR-RMS-RSTS12
	j.	RHR-FCV-64B Minimum Flow Bypass	RHR-RMS-RSCS62	RHR-RMS-RSTS13
	k.	RHR-V-49 RHR Discharge to Radwaste	RHR-RMS-RSCS44	RHR-RMS-RSTS13
	l.	RHR-V-16B Lower Drywell Spray Outboard Isolation	RHR-RMS-RSCS56	RHR-RMS-RSTS57

(continued)

Table 1.3.3.2-2 (page 3 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
3. RHR Loop B Injection, Shutdown Cooling, and Suppression Pool Cooling (continued)	m.	RHR-V-27B Suppression Pool Spray	RHR-RMS-RSCS58	RHR-RMS-RSTS57
	n.	RHR-V-123A Testable Check Valve Bypass	RHR-RMS-RSCS36	RHR-RMS-RSTS11
	o.	RHR-V-24B Suppression Pool Cooling Return	RHR-RMS-RSCS37	RHR-RMS-RSTS11
	p.	RHR-V-23 RHR Head Spray	RHR-RMS-RSCS43	RHR-RMS-RSTS3
	q.	RHR-V-53B RHR Shutdown Cooling	RHR-RMS-RSCS39	RHR-RMS-RSTS3
	r.	RHR-V-68B RHR Hx SW Discharge	RHR-RMS-RSCS59	SW-RMS-RSTS4
4. Service Water Loop B	a.	SW-P-1B Service Water Pump 1B	SW-RMS-RS/P1B	SW-RMS-RSTS2
	b.	SW-V-2B Loop B Pump Discharge Valve	SW-RMS-RS/V2B	SW-RMS-RSTS2
	c.	SW-V-34 RCIC Pump Room Cooler SW Discharge	SW-RMS-RS/V34B	SW-RMS-RSTS5
	d.	SW-V-12B Loop B Return to Spray Pond A	SW-RMS-RS/V12B	SW-RMS-RSTS3
5. Diesel Generator, Div. 2	a.	DG2 Diesel Engine Control Selector, Local/Remote	DG-RMS-DG2/S20	DG-RMS-FTS56B
	b.	DG2 Generator Governor Control Switch	DG-RMS-DG2/S5/L	DG-RMS-FTS56B
	c.	DG2 Auto Mode Voltage Adjust Control Switch	DG-RMS-DG2/S4L	DG-RMS-FTS56B
	d.	DG2 Local Start Pushbutton	DG-RMS-DG2/S14	DG-RMS-FTS56B
	e.	DG-RLY-86\DG2 Manual Reset	N/A	DG-RMS-FTS56B
	f.	E-CB-DG2/8 Local Sync Selector Switch	DG-RMS-99/DG2/8/L	E-RMS-FRTS1
	g.	E-CB-DG2/8 Local Breaker Control Switch	DG-RMS-DG2/CS/L	E-RMS-FRTS1

(continued)

Table 1.3.3.2-2 (page 4 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
5. Diesel Generator, Div. 2 (continued)	h.	DG-VM-DG2/LOC, Local DG2 Volt Meter	N/A	N/A
	i.	DG-HZM-DG2/LOC, DG2 Local Frequency Meter	N/A	N/A
6. Electrical Distribution	a.	E-CB-DG2/8 Local Breaker Control	DG-RMS-DG2/CS/L	E RMS-FRTS1
	b.	E-CB-8/DG2 Close Breaker	E RMS-FRTS2	E RMS-FRTS2
	c.	E-CB-8/81 Local Breaker Control	E-RMS-CB8/81/TS	E-RMS-FRTS/8/81
	d.	E-CB-8/83 Local Breaker Control	E-RMS-CB8/83/TS	E-RMS-FRTS/8/83
	e.	E-RLY-86/8/DG2 Manual Reset	N/A	E RMS-FRTS2
7. HVAC Support, Div. 2	a.	WMA-FN-52B Start	E-RMS-FRTS5	E-RMS-FRTS5
	b.	WMA-FN-53B Start	E-RMS-FRTS5	E-RMS-FRTS5
	c.	RRA-FN-10 Start	E-RMS-FRTS6	E-RMS-FRTS6
	d.	RRA-FN-14 Start	E-RMS-FRTS6	E-RMS-FRTS6
8. Control Room Isolation	a.	E-CB-DG2/8 Controls Isolation	N/A	E-RMS-FRTS1
	b.	E-CB-8/DG2 Controls Isolation	N/A	E-RMS-FRTS2
	c.	WMA-FN-52B Controls Isolation	N/A	E-RMS-FRTS5
	d.	WMA-FN-53B Controls Isolation	N/A	E-RMS-FRTS5
	e.	RRA-FN-10, 14 Controls Isolation	N/A	E-RMS-FRTS6
	f.	DG2 Start/Stop Control Isolation	N/A	E-RMS-FRTS7

(continued)

Table 1.3.3.2-2 (page 5 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
8. Control Room Isolation (continued)	g.	E-CB-8/81 Controls Isolation	N/A	E-RMS-FRTS/8/81
	h.	E-SM-8/SL-81 Load Trips	N/A	E-RMS-FRTS/8/81
	i.	E-CB-B/8 Close Inhibit	N/A	E-RMS-FRTS/8/81
	j.	E-CB-8/83 Controls Isolation	N/A	E-RMS-FRTS/8/83
	k.	E-CB-8/3 Trip	N/A	E-RMS-FRTS/8/83
	l.	E-CB-8/85/1 Trip	N/A	E-RMS-FRTS/8/83
	m.	E-SM-8/SL-83 Load Trips	N/A	E-RMS-FRTS/8/83
	n.	E-SM-8 Undervoltage Scheme Isolation	N/A	E-RMS-FRTS/8/83
	o.	Metering Isolation	N/A	E-RMS-8/81/CT
	p.	Metering Isolation	N/A	E-RMS-8/83/CT
	q.	Metering Isolation	N/A	E-RMS-B/8/CT
	r.	Metering Isolation	N/A	E-RMS-RHR/CT
	s.	Metering Isolation	N/A	SW-RMS-CT/P1B
9. RHR Loop A Injection, Shutdown Cooling, and Suppression Pool Cooling	a.	RHR-V-8 RHR shutdown cooling outbd isolation	RHR-RMS-ARS/V8	E-RMS-ARST24
	b.	RHR-V-8 RHR shutdown cooling outbd isolation	RHR-RMS-ARS/V8/1	E-RMS-ARST24
	c.	RHR-V-6A RHR shutdown cooling suction	RHR-RMS-ARS/V6A	E-RMS-ARST18
	d.	RHR-P-2A RHR A Loop pump	RHR-RMS-ARS/P2A	E-RMS-ARST12
	e.	RHR-V-4A Pump suction from suppression pool	RHR-RMS-ARS/V4A	E-RMS-ARST2
	f.	RHR-V-47A Heat exchanger shell side inlet	RHR-RMS-ARS/V47A	E-RMS-ARST5

(continued)

Table 1.3.3.2-2 (page 6 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
9. RHR Loop A Injection, Shutdown Cooling, and Suppression Pool Cooling (continued)	g.	RHR-V-48A Heat exchanger shell side bypass	RHR-RMS-ARS/V48A	E-RMS-ARST4
	h.	RHR-V-42A LPCI Injection	RHR-RMS-ARS/V42A	E-RMS-ARST8
	i.	RHR-V-3A Heat exchanger shell side outlet	RHR-RMS-ARS/V3A	E-RMS-ARTS6
	j.	RHR-FCV-64A Min flow bypass	RHR-RMS-ARS/V64A	E-RMS-ARST3
	k.	RHR-V-16A Upper drywell spray outboard isol.	RHR-RMS-ARS/V16A	E-RMS-ARST11
	l.	RHR-V-27A Suppression pool spray	RHR-RMS-ARS/V27A	E-RMS-ARST7
	m.	RHR-V-24A Suppression pool cooling return	RHR-RMS-ARS/V24A	E-RMS-ARST10
	n.	RHR-V-53A RHR shutdown cooling	RHR-RMS-ARS/V53A	E-RMS-ARST9
10. Service Water Loop A	a.	SW-P-1A Service Water Pump 1A	SW-RMS-ARS/P1A	E-RMS-ARST20
	b.	SW-V-2A Pump 1A Discharge	SW-RMS-ARS/V2A	E-RMS-ARST15
	c.	RHR-V-68A RHR Hx SW Discharge	RHR-RMS-ARS/V68A	E-RMS-ARST22
	d.	SW-V-12A Loop A Return to Pond B	SW-RMS-ARS/V12A	E-RMS-ARST21
11. HVAC, Div 1	a.	WMA-FN-53A Critical Switchgear rooms recirc Fan	WMA-RMS-ARS/FN53A	E-RMS-ARST16
12. Instruments	a.	MS-PI-2[illegible] RPV Pressure	N/A	RHR-RMS-RSTS8
	b.	MS-PI-11AR RPV Pressure	N/A	E-RMS-ARST17, 23
	c.	MS-LI-10[illegible] RPV level	N/A	RHR-RMS-RSTS8

(continued)

Table 1.3.3.2-2 (page 7 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION		EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
12. Instruments (continued)	d.	MS-LI-10AR RPV Level	N/A	E-RMS-ARST17, 23
	e.	CMS-TI-42R Suppression Pool Air Temp	N/A	N/A
	f.	CMS-TI-44AR Suppression Pool Air Temp	N/A	E-RMS-ARST17
	g.	CMS-LI-2R Suppression Pool Level	N/A	N/A
	h.	CMS-LI-1AR Suppression Pool Level	N/A	E-RMS-ARST17, 23
	i.	CMS-TI-43R Suppression Pool Water Temp	N/A	N/A
	j.	CMS-TI-41AR Suppression Pool Water Temp	N/A	E-RMS-ARST17
	k.	SW-PI-32AR SW Pump 1A Discharge Pressure	N/A	E-RMS-ARST23
	l.	SW-PI-32BR SW Pump 1B Discharge Pressure	N/A	N/A
	n.	CMS-PI-2R Containment Pressure Low Range	N/A	N/A
	o.	CMS-PI-6R Containment Pressure High Range	N/A	N/A
	p.	CMS-TI-19R Containment Temp,SAC Shield Annul	N/A	N/A
	q.	CMS-TI-37R Containment Temp,SRV Area	N/A	N/A
	r.	CMS-TI-39R Containment Temp,SRV Area	N/A	N/A
	s.	RHR-FI-4AR RHR Loop A Flow	N/A	E-RMS-ARST17, 23

(continued)

Table 1.3.3.2-2 (page 8 of 8)
Remote Shutdown System Functions

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR FUNCTION	CONTROL SWITCH	TRANSFER SWITCH
12. Instruments (continued)	t. RHR-FI-5 RHR Loop B Flow	N/A	RHR-RMS-RSTS8
	u. SW-LI-1BR Spray Pond B Level	N/A	N/A
	v. SW-TI-1BR Spray Pond B Temp	N/A	N/A
	w. RCIC-FI-1R RCIC Flow	N/A	RCIC-RMS-RSTS7
	x. RCIC-SI-1 RCIC Turbine Speed	N/A	RCIC-RMS-RSTS7
	y. E-VM-C11 Div. 1 Battery Voltage	N/A	N/A
	z. E-VM-C12 Div. 1 Battery Voltage	N/A	N/A

Table 1.3.4.1-1 (page 1 of 1)
EOC-RPT System Instrumentation Response Time

---NOTE---

Table 1.3.4.1-1 lists required instrument response times applicable to LCO 3.3.4.1. See Technical Specification 3.3.4.1 and applicable Bases for further application details.

FUNCTION	RESPONSE TIME (Milliseconds)
1. Breaker Arc Suppression	≤ 83
2. Turbine Throttle Valve—Closure	≤ 97
3. Turbine Governor Valve—Fast Closure	≤ 97

Table 1.3.4.1-2 (page 1 of 1)
EOC-RPT System Instrumentation Trip Setpoint

---NOTE---

Table 1.3.4.1-2 lists required instrument trip setpoints applicable to LCO 3.3.4.1. See Technical Specification 3.3.4.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Breaker Arc Suppression	NA
2. Turbine Throttle Valve—Closure	≤ 5% Closed
3. Turbine Governor Valve—Fast Closure, Trip Oil Pressure—Low	≤ 1250 psig

Table 1.3.4.2-1 (page 1 of 1)
ATWS-RPT System Instrumentation Trip Setpoint

------------------------------------NOTE------------------------------------
Table 1.3.4.2-1 lists required instrument trip setpoints applicable to LCO 3.3.4.2. See Technical Specification 3.3.4.2 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
2. Reactor Vessel Steam Dome Pressure—High	≤ 1128 psig

1.3 INSTRUMENTATION

1.3.4.6 Reactor Coolant System (RCS) Interface Valves Leakage Pressure Monitors

RFO 1.3.4.6 The RCS Interface Valves Leakage Pressure Monitor for each Function shown on Table 1.3.4.6-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more monitors inoperable.	A.1.1 Restore inoperable monitor to OPERABLE status.	7 days
	OR	
	A.2.1 Verify pressure less than alarm setpoint.	7 days AND Once per 12 hours thereafter
	AND	
	A.2.2 Restore inoperable monitors to OPERABLE status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Initiate Problem Evaluation Request (PER).	24 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----
These SRs apply to each Function in Table 1.3.4.6-1.

SURVEILLANCE		FREQUENCY
SR 1.3.4.6.1	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.4.6.2	Perform CHANNEL CALIBRATION.	18 months

Table 1.3.4.6-1 (page 1 of 1)
Reactor Coolant System Interface Valves Leakage Pressure Monitors

FUNCTION	INSTRUMENT NUMBER	ALARM SETPOINT (psig)
1. HPCS Pump Suction Pressure High	HPCS-PIS-3	≤ 80
2. LPCS Pump Discharge Pressure High	LPCS-PIS-5	≤ 442
3. RCIC Pump Suction Pressure High	RCIC-PS-21	≤ 91
4. RHR Pump Discharge Pressure to RPV High	RHR-PIS-22A, B, C	≤ 475
5. RHR Pump Shutdown Cooling Suction Pressure High	RHR-PS-18	≤ 168

Table 1.3.5.1-1 (page 1 of 1)
Emergency Core Cooling System Response Time

-----NOTE-----
Table 1.3.5.1-1 lists required instrument response times to support OPERABILITY of LCO 3.3.5.1. See Technical Specification 3.3.5.1 and applicable Bases for further application details.

ECCS	RESPONSE TIME [a] (Seconds)
1. Low Pressure Core Spray System	≤ 52
2. Low Pressure Coolant Injection Mode of RHR System	≤ 56
3. High Pressure Core Spray System	≤ 37

(a) ECCS actuation instrumentation is eliminated from response time testing.

Table 1.3.5.1-2 (page 1 of 4)
Emergency Core Cooling System Instrumentation Trip Setpoints

-----------------------------------NOTE-----------------------------------
Table 1.3.5.1-2 lists required instrument trip setpoints times to support OPERABILITY of LCO 3.3.5.1. See Technical Specification 3.3.5.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems	
a. Reactor Vessel Water Level—Low Low Low, Level 1	≥ -129 inches
b. Drywell Pressure—High	≤ 1.65 psig
c. LPCS Pump Start—LOCA Time Delay Relay	≥ 8.67 seconds and ≤ 10.50 seconds
d. LPCI Pump A Start—LOCA Time Delay Relay	≥ 17.70 seconds and ≤ 21.07 seconds
e. LPCI Pump A Start—LOCA/LOOP Time Delay Relay	≥ 3.19 seconds and ≤ 5.85 seconds
f. Reactor Vessel Pressure—Low (Injection Permissive)	≥ 466 psig and ≤ 488 psig
g. LPCS Pump Discharge Flow—Low (Minimum Flow)	≥ 698 gpm and ≤ 1047 gpm
h. LPCI Pump A Discharge Flow—Low (Minimum Flow)	≥ 650 gpm and ≤ 956 gpm
i. Manual Initiation	NA
2. LPCI B and LPCI C Subsystems	
a. Reactor Vessel Water Level—Low Low Low, Level 1	≥ -129 inches

(continued)

Table 1.3.5.1-2 (page 2 of 4)
Emergency Core Cooling System Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINT
2. LPCI B and LPCI C Subsystems (continued)	
b. Drywell Pressure—High	≤ 1.65 psig
c. LPCI Pump B Start—LOCA Time Delay Relay	≥ 17.70 seconds and ≤ 21.07 seconds
d. LPCI Pump C Start—LOCA Time Delay Relay	≥ 8.67 seconds and ≤ 10.50 seconds
e. LPCI Pump B Start—LOCA/LOOP Time Delay Relay	≥ 3.19 seconds and ≤ 5.85 seconds
f. Reactor Vessel Pressure—Low (Injection Permissive)	≥ 466 psig and ≤ 488 psig
g. LPCI Pumps B & C Discharge Flow—Low (Minimum Flow)	≥ 650 gpm and ≤ 956 gpm
h. Manual Initiation	NA
3. High Pressure Core Spray (HPCS) System	
a. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
b. Drywell Pressure—High	≤ 1.65 psig
c. Reactor Vessel Water Level—High, Level 8	≤ 54.5 inches
d. Condensate Storage Tank Level—Low	≥ 448 ft 3 inch elevation
e. Suppression Pool Water Level—High	≤ 466 ft 8 inches elevation

(continued)

Table 1.3.5.1-2 (page 3 of 4)
Emergency Core Cooling System Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINT
3. High Pressure Core Spray (HPCS) System (continued)	
f. HPCS System Flow Rate—Low (Minimum Flow)	≥ 1223 gpm and ≤ 1494 gpm
g. Manual Initiation	NA
4. Automatic Depressurization System (ADS) Trip System A	
a. Reactor Vessel Water Level—Low Low Low, Level 1	≥ -129 inches
b. ADS Initiation Timer	≤ 105.0 seconds
c. Reactor Vessel Water Level—Low, Level 3 (Permissive)	≥ 13.0 inches
d. LPCS Pump Discharge Pressure—High	≥ 124 psig and ≤ 166 psig
e. LPCI Pump A Discharge Pressure—High	≥ 118 psig and ≤ 132 psig
f. Accumulator Backup Compressed Gas System Pressure—Low	≥ 154 psig
g. Manual Initiation	NA
5. ADS Trip System B	
a. Reactor Vessel Water Level—Low Low Low, Level 1	≥ -129 inches
b. ADS Initiation Timer	≤ 105.0 seconds

(continued)

Table 1.3.5.1-2 (page 4 of 4)
Emergency Core Cooling System Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINT
5. ADS Trip System B (continued)	
c. Reactor Vessel Water Level—Low, Level 3 (Permissive)	≥ 13.0 inches
d. LPCI Pumps B & C Discharge Pressure—High	≥ 118 psig and ≤ 132 psig
e. Accumulator Backup Compressed Gas System Pressure—Low	≥ 154 psig
f. Manual Initiation	NA

1.3 INSTRUMENTATION

1.3.5.2 Automatic Depressurization System (ADS) Inhibit

RFO 1.3.5.2 Two ADS Inhibit switches shall be OPERABLE.

APPLICABILITY: MODE 1,
MODE 2 and 3 when RPV pressure is > 150 psig.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more ADS Inhibit switches inoperable.	A.1 Verify associated ADS division is not inhibited by the inoperable ADS Inhibit switch.	96 hours from discovery of inoperable channel concurrent with HPCS or RCIC inoperable <u>AND</u> 8 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Declare associated ADS division inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.3.5.2.1 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 1.3.5.3-1 (page 1 of 1)
RCIC System Instrumentation Trip Setpoints

NOTE

Table 1.3.5.3-1 lists required instrument trip setpoints to support OPERABILITY of LCO 3.3.5.2. See Technical Specification 3.3.5.2 and applicable Bases for further application details.

	FUNCTION	TRIP SETPOINTS
1.	Reactor Vessel Water Level—Low Low, Level 2	≥ —50 inches
2.	Reactor Vessel Water Level—High, Level 8	≤ 54.5 inches
3.	Condensate Storage Tank Level—Low	≥ 448 ft 3 inches elevation
4.	Manual Initiation	NA

1.3 INSTRUMENTATION

1.3.5.3 Reactor Core Isolation Cooling (RCIC) Instrumentation

RFO 1.3.5.3 The RCIC isolation instrumentation for Drywell Pressure—High shall be OPERABLE.

APPLICABILITY: Modes 1, 2, and 3.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	24 hours
B. With automatic isolation capability not maintained.	B.1 Restore isolation capability.	1 hour
C. Required Compensatory Measure and associated Completion Time of Condition A not met.	C.1 Close the affected system isolation valve(s) and declare the affected system inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

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

When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours provided the associated Function maintains isolation capability.

SURVEILLANCE	FREQUENCY
SR 1.3.5.3.1 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 1.3.5.3.2 Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 1.88 psig.	18 months
SR 1.3.5.3.3 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 1.3.6.1-1 (page 1 of 1)
Primary Containment Isolation Instrumentation Response Time

-----NOTE-----
Table 1.3.6.1-1 lists required instrument response times to support OPERABILITY for LCO 3.3.6.1. See Technical Specification 3.3.6.1 and applicable Bases for further application details.

FUNCTION	RESPONSE TIME (seconds)[a]
1. Main Steam Line Isolation	
a. Reactor Vessel Water Level—Low Low, Level 2	≤ 1.0[b]/NA
b. Main Steam Line Pressure—Low	≤ 1.0[b]/NA
c. Main Steam Line Flow—High	≤ 0.5[b]/NA
4. Reactor Water Clean Up System Isolation	
c. Blowdown Flow—High	≤ 2.4

(a) Isolation system instrumentation response time specified for the Trip Function actuating each valve group shall be added to isolation time for valves in each valve group to obtain ISOLATION SYSTEM RESPONSE TIME for each valve.

(b) Isolation system instrumentation response time for MSIVs only. No diesel generator delays assumed. Sensor is eliminated from response time testing for the MSIV actuation logic circuits. Response time testing and conformance to the administrative limits for the remaining channel including trip unit and relay logic are required.

Table 1.3.6.1-2 (page 1 of 4)
Primary Containment Isolation Instrumentation Trip Setpoints

---NOTE---
Table 1.3.6.1-2 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.6.1. See Technical Specification 3.3.6.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINTS
1. Main Steam Line Isolation	
a. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
b. Main Steam Line Pressure—Low	≥ 831 psig
c. Main Steam Line Flow—High	≤ 115.6 psid
d. Condenser Vacuum—Low	≥ 7.6 inches Hg vacuum
e. Main Steam Tunnel Temperature—High	≤ 164°F
f. Main Steam Tunnel Differential Temperature—High	≤ 80°F
g. Manual Initiation	NA
2. Primary Containment Isolation	
a. Reactor Vessel Water Level—Low, Level 3	≥ 13.0 inches
b. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
c. Drywell Pressure—High	≤ 1.68 psig
d. Reactor Building Vent Exhaust Plenum Radiation—High	≤ 13.0 mR/hr
e. Manual Initiation	NA

(continued)

Table 1.3.6.1-2 (page 2 of 4)
Primary Containment Isolation Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINTS
3. Reactor Core Isolation Cooling (RCIC) System Isolation	
a. RCIC Steam Line Flow—High	≤ 236 inches wg
b. RCIC Steam Line Flow—Time Delay	≤ 2.8 seconds
c. RCIC Steam Supply Pressure—Low	≥ 62 psig
d. RCIC Turbine Exhaust Diaphragm Pressure—High	≤ 10 psig
e. RCIC Equipment Room Area Temperature—High	≤ 160°F
f. RCIC Equipment Room Area Differential Temperature—High	≤ 50°F
g. RWCU/RCIC Steam Line Routing Area Temperature—High	≤ 160°F
h. Manual Initiation	NA
4. Reactor Water Clean Up System Isolation	
a. Differential Flow—High	≤ 58.4 gpm
b. Differential Flow—Time Delay	≤ 45.0 seconds
c. Blowdown Flow—High	≤ 264.5 gpm
d. Heat Exchanger Room Area Temperature—High	≤ 150°F
e. Heat Exchanger Room Area Ventilation Differential Temperature—High	≤ 60°F

(continued)

Table 1.3.6.1-2 (page 3 of 4)
Primary Containment Isolation Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINTS
4. Reactor Water Clean Up System Isolation (continued)	
f. Pump Room Area Temperature—High	≤ 160°F
g. Pump Room Area Ventilation Differential Temperature—High	≤ 70°F
h. RWCU/RCIC Line Routing Area Temperature—High	≤ 160°F
i. RWCU Line Routing Area Temperature—High	
Room 409, 509 Areas	≤ 160°F
Room 408, 511 Areas	≤ 160°F
j. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
k. SLC System Initiation	NA
l. Manual Initiation	NA
5. Residual Heat Removal Shutdown Cooling System Isolation	
a. Pump Room Area Temperature—High	≤ 140°F
b. Pump Room Area Ventilation Differential Temperature—High	≤ 55°F
c. Heat Exchanger Area Temperature—High	
Room 505 Area	≤ 130°F
Room 507 Area	≤ 150°F

(continued)

Table 1.3.6.1-2 (page 4 of 4)
Primary Containment Isolation Instrumentation Trip Setpoints

FUNCTION	TRIP SETPOINTS
5. Residual Heat Removal Shutdown Cooling System Isolation	
c. Heat Exchanger Area Temperature—High (continued)	
Room 605 Area	≤ 140°F
Room 606 Area	≤ 130°F
d. Reactor Vessel Water Level—Low, Level 3	≥ 13.0 inches
e. Reactor Vessel Pressure—High	≤ 125 psig
f. Manual Initiation	NA

Table 1.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation Trip Setpoints

-----NOTE-----
Table 1.3.6.2-1 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.6.2. See Technical Specification 3.3.6.2 and applicable Bases for further application details.

	FUNCTION	TRIP SETPOINTS
1.	Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
2.	Drywell Pressure—High	≤ 1.68 psig
3.	Reactor Building Vent Exhaust Plenum Radiation—High	≤ 13.0 mR/hr
4.	Manual Initiation	NA

Table 1.3.7.1-1 (page 1 of 1)
Control Room Emergency Filtration System Instrumentation Trip Setpoint

---------------------------------NOTE---------------------------------
Table 1.3.7.1-1 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.7.1. See Technical Specification 3.3.7.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Reactor Vessel Water Level—Low Low, Level 2	≥ -50 inches
2. Drywell Pressure—High	≤ 1.68 psig
3. Reactor Building Vent Exhaust Plenum Radiation—High	≤ 13.0 mR/hr
4. Main Control Room Ventilation Radiation Monitor	≤ 3273 cpm

1.3 INSTRUMENTATION

1.3.7.2 Seismic Monitoring Instrumentation

RFO 1.3.7.2: The seismic monitoring instrumentation shown in Table 1.3.7.2-1 shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One or more channels inoperable.	A.1	Restore channel to OPERABLE status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1	Issue a Problem Evaluation Request (PER).	24 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 1.3.7.2-1 to determine which SRs apply for each Seismic Monitoring Function.

SURVEILLANCE	FREQUENCY
SR 1.3.7.2.1 Perform CHANNEL CHECK.	31 days
SR 1.3.7.2.2 Perform CHANNEL FUNCTIONAL TEST.	184 days
SR 1.3.7.2.3 Perform CHANNEL CALIBRATION.	18 months

Table 1.3.7.2-1 (page 1 of 1)
Seismic Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS
1. Triaxial Time-History Accelerographs		
a. Reactor Building Foundation Triaxial Seismic Trigger	1	1.3.7.2.2 1.3.7.2.3
b Reactor Building Foundation Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
c. Reactor Building Mid Level (522′ floor) Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
d. Free Field Accelerometer	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
2. Triaxial Peak Accelerographs		
a. Valve Support (530′) Reactor Building	1	1.3.7.2.3
b. HPCS Injection Piping	1	1.3.7.2.3
c. Standby Service Water Pump House	1	1.3.7.2.3
3. Triaxial Seismic Switch		
a. Reactor Building Foundation	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
4. Triaxial Response-Spectrum Recorders		
a. Reactor Building Foundation	1	1.3.7.2.1 1.3.7.2.2 1.3.7.2.3
b. HPCS Injection Line Piping Support	1	1.3.7.2.3
c. Reactor Building Refueling Floor	1	1.3.7.2.3
d. Radwaste Building Foundation	1	1.3.7.2.3

1.3 INSTRUMENTATION

1.3.7.3 Explosive Gas Monitoring Instrumentation

RFO 1.3.7.3 One Main Condenser Offgas Treatment System Hydrogen Monitor shall be OPERABLE.

APPLICABILITY: During Main Condenser Offgas Treatment System operation.

COMPENSATORY MEASURES

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

RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One required Hydrogen Monitor inoperable.	A.1 Monitor Main Condenser Offgas Treatment System Hydrogen concentration.	8 hours AND Once per 8 hours thereafter
	AND	
	A.2 Restore inoperable monitor to operable status.	30 days
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Initiate Problem Evaluation Request (PER).	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.3.7.3.1 Perform CHANNEL CHECK.	24 hours
SR 1.3.7.3.2 Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.7.3.3 Perform CHANNEL CALIBRATION.	92 days

1.3 INSTRUMENTATION

1.3.7.4 New Fuel Storage Vault Radiation Monitoring Instrumentation

RFO 1.3.7.4 The New Fuel Storage Vault Criticality Monitor shall be OPERABLE.

APPLICABILITY: When fuel is stored in the New Fuel Storage Vault.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. New Fuel Storage Vault Monitor inoperable during fuel movement.	A.1	Provide portable continuous monitor in the vicinity.	Immediately
B. New Fuel Storage Vault Monitor inoperable and no fuel movement in process.	B.1	Perform area survey.	Once per 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.3.7.4.1	Perform CHANNEL CHECK.	12 hours
SR 1.3.7.4.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.7.4.3	Perform CHANNEL CALIBRATION. The alarm setpoint shall be $\leq$ 5 R/h.	18 months

1.3 INSTRUMENTATION

1.3.7.5 Spent Fuel Storage Pool Radiation Monitoring Instrumentation

RFO 1.3.7.5 The Spent Fuel Storage Pool Radiation Monitoring Instrumentation shall be OPERABLE.

APPLICABILITY: When fuel is stored in the Spent Fuel Storage Pool.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Spent Fuel Storage Pool Monitor inoperable during fuel movement.	A.1 Provide portable continuous monitor in same vicinity.	Immediately
B. Spent Fuel Storage Pool Monitor inoperable and no fuel movement in process.	B.1 Perform area survey.	Once per 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.3.7.5.1 Perform CHANNEL CHECK.	12 hours
SR 1.3.7.5.2 Perform CHANNEL FUNCTIONAL TEST.	31 days
SR 1.3.7.5.3 Perform CHANNEL CALIBRATION. The alarm setpoint shall be $\leq$ 20 mR/h.	18 months

1.3 INSTRUMENTATION

1.3.7.6 Turbine Overspeed Protection System

RFO 1.3.7.6 One Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One high pressure turbine valve inoperable.	A.1 Restore high pressure turbine valve to OPERABLE status.	72 hours
B. One low pressure turbine valve inoperable.	B.1 Restore low pressure turbine valve to OPERABLE status.	72 hours
C. Required Compensatory Measure and associated Completion Time of Condition A or B not met. OR Required Turbine Overspeed Protection System inoperable for reasons other than Condition A or B.	C.1 Isolate the affected steam line from the steam supply. OR C.2 Isolate the main turbine from the steam supply.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

-----------------------------------NOTE-----------------------------------
SR 1.0.4 is not applicable.

SURVEILLANCE		FREQUENCY
SR 1.3.7.6.1	Cycle each of the following valves through at least one complete cycle from the running position for the overspeed protection control system, the electrical overspeed trip system, and the mechanical overspeed trip system: a. Four high pressure turbine throttle valves; b. Six low pressure turbine reheat stop valves; c. Four high pressure turbine governor valves; and d. Six low pressure turbine interceptor valves.	92 days
SR 1.3.7.6.2	Perform CHANNEL CALIBRATION.	18 months
SR 1.3.7.6,3	Disassemble at least one of each of the above valves, perform a visual and surface inspection of all valve seats, disks and stems and verify no unacceptable flaws or excessive corrosion. If unacceptable flows or excessive corrosion are found, all other valves of that type shall be inspected.	40 months

1.3 INSTRUMENTATION

1.3.7.7 Traversing In-Core Probe (TIP) System

RFO 1.3.7.7 The TIP System shall be OPERABLE.

APPLICABILITY: When the TIP is used for calibration of the local power range monitor (LPRM) detectors.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One required moveable detector inoperable.	A.1 Verify an A-type control rod pattern is in use. <u>AND</u> A.2 The total core TIP asymmetry is less than 6% (standard deviation).	Immediately Immediately
B. Required Compensatory Measures and associated Completion Time not met. <u>OR</u> With the TIP System inoperable for reasons other than Condition A.	B.1 Suspend use of the system for LPRM calibration.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.3.7.7.1 Normalize each of the required detector outputs.	Once within 72 hours prior to use AND 72 hours thereafter

Table 1.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation Trip Setpoints

NOTE

Table 1.3.8.1-1 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.8.1. See Technical Specification 3.3.8.1 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINTS
1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage	
a. TR-S Loss of Voltage—4.16 kV Basis	≥ 2782.5 V and ≤ 2957.5 V
b. TR-S Loss of Voltage—Time Delay	≥ 3.8 seconds and ≤ 4.2 seconds
c. TR-B Loss of Voltage—4.16 kV Basis	≥ 2782.5 V and ≤ 2957.5 V
d. TR-B Loss of Voltage—Time Delay	≥ 3.33 seconds and ≤ 3.68 seconds
e. Degraded Voltage—4.16 kV Basis	≥ 3711.8 V and ≤ 3729.2 V
f. Degraded Voltage—Primary Time Delay	≥ 5.05 seconds and ≤ 5.25 seconds
g. Degraded Voltage—Secondary Time Delay	≥ 2.8 seconds and ≤ 3.2 seconds
2. Division 3 - 4.16 kV Emergency Bus Undervoltage	
a. Loss of Voltage—4.16 kV Basis	≥ 2782.5 V and ≤ 2957.5 V
b. Loss of Voltage—Time Delay	≥ 2.85 seconds and ≤ 3.15 seconds
c. Degraded Voltage—4.16 kV Basis	≥ 3711.8 V and ≤ 3729.2 V
d. Degraded Voltage—Time Delay	≥ 7.69 seconds and ≤ 8.01 seconds

Table 1.3.8.2-1 (page 1 of 1)
RPS Electric Power Monitoring, Trip Setpoints

------------------------------------NOTE------------------------------------
Table 1.3.8.2-1 lists required instrument trip setpoints to support OPERABILITY for LCO 3.3.8.2. See Technical Specification 3.3.8.2 and applicable Bases for further application details.

FUNCTION	TRIP SETPOINT
1. Over Voltage	≤ 131.6 V
2. Over Voltage Time Delay	≤ 2.92 sec
3. Under Voltage	≥ 112.6 V
4. Under Voltage Time Delay	≤ 2.92 sec
5. Under Frequency	≥ 57.6 Hz
6. Under Frequency Time Delay	≤ 2.92 sec

1.4 REACTOR COOLANT SYSTEM

1.4.1 Reactor Coolant System (RCS) Chemistry

RFO 1.4.1 The RCS chemistry shall be maintained within the limits of Table 1.4.1-1.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

-----NOTE-----
RFO 1.0.3 and RFO 1.0.4 are not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Conductivity greater than the limit of Table 1.4.1-1 but ≤ 10 μmho/cm in MODE 1, 2, or 3. OR Chloride concentration greater than the limit of Table 1.4.1-1 but ≤ 0.5 ppm in MODE 1, 2, or 3. OR pH not within the limits of Table 1.4.1-1 in MODE 1, 2, or 3.	A.1 Restore RCS Chemistry to within limits.	72 hours

(continued)

COMPENSATORY MEASURES (continued)

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. Required Compensatory Measure and associated Completion Time of Condition A not met. OR Conductivity > 10 µmho/cm in MODE 1, 2, or 3. OR Chloride concentration > 0.5 ppm in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours
C. Chemistry of the RCS not within limits in other than MODES 1, 2, and 3.	C.1 Restore RCS Chemistry to within limits.	72 hours
D. Required Compensatory Measure and associated Completion Time of Condition C not met.	D.1 Determine RCS is acceptable for operation.	Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.4.1.1	------------------NOTE---------------- Not required to be met if SR 1.4.1.3 is satisfied. -------------------------------------- Verify conductivity is within the limits of Table 1.4.1-1.	24 hours
SR 1.4.1.2	Verify conductivity, chlorides and pH are within the limits of Table 1.4.1-1.	7 days
SR 1.4.1.3	Perform CHANNEL CHECK of continuous recording conductivity monitor.	7 days

Table 1.4.1-1 (page 1 of 1)
RCS Chemistry Limits

MODE OR OTHER SPECIFIED CONDITION	CHLORIDE (ppm)	CONDUCTIVITY (μmho/cm at 25°C)	pH
1	≤ 0.2	≤ 1.0	≥ 5.6 and ≤ 8.6
2, 3	≤ 0.1	≤ 2.0	≥ 5.6 and ≤ 8.6
At all other times	≤ 0.5	≤ 10.0	≥ 5.3 and ≤ 8.6

Table 1.4.6-1 (page 1 of 1)
Reactor Coolant System Pressure Isolation Valves

-----------------------------------NOTE-----------------------------------
Table 1.4.6-1 lists valves required to support OPERABILITY for LCO 3.4.6. See Technical Specification LCO 3.4.6 and applicable Bases for further application details.

VALVE NUMBER	SYSTEM
HPCS-V-4	HPCS
HPCS-V-5	HPCS
LPCS-V-5	LPCS
LPCS-V-6	LPCS
RCIC-V-66	RCIC
RCIC-V-13	RCIC
RHR-V-8	RHR
RHR-V-9/209	RHR
RHR-V-23	RHR
RHR-V-41A, B, C	RHR
RHR-V-42A, B, C	RHR
RHR-V-50A/123A, 50B/123B	RHR
RHR-V-53A, B	RHR

Table 1.6.1.3-1 (page 1 of 13)
Primary Containment Isolation Valves

NOTE

Table 1.6.1.3-1 lists valves required to support OPERABILITY for LCO 3.6.1.3. See Technical Specification LCO 3.6.1.3 and applicable Bases for further application details.

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
1. Automatic Isolation Valves		
a. Main Steam Isolation Valves	1	5[b]
MS-V-22A,B,C,D[c]		
MS-V-28A,B,C,D[c]		
b. Main Steam Line Drains	1	
MS-V-16		25
MS-V-19		25
MS-V-67A,B,C,D[c]		15
c. Reactor Recirc. Cooling Sample Valves	2	5
RRC-V-19		
RRC-V-20		
d. Containment Purge Exhaust & Supply[d]	3	
CEP-V-1A,2A,3A,4A		4
CEP-V-1B,2B,3B,4B		4
CSP-V-1		4
CSP-V-2		4
CSP-V-3		4
CSP-V-4		4
CSP-V-93		4

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(b) But greater than 3 seconds.
(c) Valve leakage not included in sum of Type B and C tests.
(d) Provisions of Technical Specification SR 3.0.4 are not applicable.

Table 1.6.1.3-1 (page 2 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
1. Automatic Isolation Valves (continued)		
d. Containment Purge Exhaust & Supply[d] (continued)		
CSP-V-96		4
CSP-V-97		4
CSP-V-98		4
e. Equipment Drain (Radioactive)	4	15
EDR-V-19		
EDR-V-20		
f. Floor Drain (Radioactive)	4	15
FDR-V-3		
FDR-V-4		
g. Fuel Pool Cooling/Suppression Pool Cleanup	4	35
FPC-V-149		
FPC-V-153[h]		
FPC-V-154[h]		
FPC-V-156		
h. Traversing Incore Probe	4	5
TIP-V-1,2,3,4,5		
TIP-V-15		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(d) Provisions of Technical Specification SR 3.0.4 are not applicable.
(h) Hydraulic leak test at 1.10 Pa.

Table 1.6.1.3-1 (page 3 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
1. Automatic Isolation Valves (continued)		
i. Reactor Closed Cooling	4	60
RCC-V-5 RCC-V-21 RCC-V-40 RCC-V-104		
j. Radiation Monitoring Supply & Return	4	5
PI-VX-250 PI-VX-251 PI-VX-253 PI-VX-256 PI-VX-257 PI-VX-259		
k. Residual Heat Removal		
RHR-V-123A,B[i]	5	15
RHR-V-8[i][m]	6	40
RHR-V-9[i]	6	40
RHR-V-23[i]	6	90
RHR-V-53A,B[i]	6	40
RHR-V-24A,B[e]	10	270
RHR-V-21	10	270
RHR-V-27A,B[e]	10	36

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(e) May be opened on an intermittent basis under administrative control.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.7.1.
(m) During operational conditions 1, 2 & 3 the requirement for automatic isolation does not apply to RHR-V-8. Except that RHR-V-8 may be opened in operational conditions 2 & 3 provided control is returned to the control room, with the interlocks reestablished, and reactor pressure is less than 135 psig.

Table 1.6.1.3-1 (page 4 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
1. Automatic Isolation Valves (continued)		
l. Reactor Water Cleanup System	7	
RWCU-V-1[f]		30[l]
RWCU-V-4		21[l]
m. Reactor Core Isolation Cooling		
RCIC-V-8	8	26
RCIC-V-63	8	16
RCIC-V-76	8	22
n. Low Pressure Core Spray		
LPCS-V-12	10	180
o. High Pressure Core Spray		
HPCS-V-23	11	180
2. Excess Flow Check Valves[g]		
a. Containment Atmosphere		NA
PI-EFC-X29b		
PI-EFC-X29f		
PI-EFC-X30a		
PI-EFC-X30f		
PI-EFC-X42c		
PI-EFC-X42f		
PI-EFC-X61c		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(f) Not closed by SLC actuation signal.
(g) Not subject to Type C Leak Rate Test.
(l) Reflects closure times for containment isolation only.

Table 1.6.1.3-1 (page 5 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
2. Excess Flow Check Valves[g]		
a. Containment Atmosphere (continued)		NA
PI-EFC-X62b PI-EFC-X69f PI-EFC-X78a PI-EFC-X66 PI-EFC-X67 PI-EFC-X82b PI-EFC-X84a PI-EFC-X86A,B PI-EFC-X87A,B PI-EFC-X119		
b. Reactor Pressure Vessel		NA
PI-EFC-X18A,B,C,D PI-EFC-X37e,f PI-EFC-X38a,b,c,d,e,f PI-EFC-X39a,b,d,e PI-EFC-X40c,d PI-EFC-X41c,d PI-EFC-X42a,b PI-EFC-X44Aa,Ab,Ac,Ad,Ae,Af,Ag,Ah, Aj,Ak,Al,Am PI-EFC-X44Ba,Bb,Bc,Bd,Be,Bf,Bg,Bh, Bj,Bk,Bl,Bm PI-EFC-X61a,b PI-EFC-X62c,d PI-EFC-X69a,b,e PI-EFC-X70a,b,c,d,e,f PI-EFC-X71a,b,c,d,e,f PI-EFC-X72a PI-EFC-X73a PI-EFC-X74a,b,e,f		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.

Table 1.6.1.3-1 (page 6 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
2. Excess Flow Check Valves[g]		
b. Reactor Pressure Vessel (continued)		NA
PI-EFC-X75a,b,c,d,e,f		
PI-EFC-X78b,c,f		
PI-EFC-X79a,b		
PI-EFC-X106		
PI-EFC-X107		
PI-EFC-X108		
PI-EFC-X109		
PI-EFC-X110		
PI-EFC-X111		
PI-EFC-X112		
PI-EFC-X113		
PI-EFC-X114		
PI-EFC-X115		
c. Other		NA
PI-EFC-X40e,f		
PI-EFC-X41e,f		
3. Manual Containment Isolation Valves		
a. Demineralized Water		NA
DW-V-156		
DW-V-157		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.

Table 1.6.1.3-1 (page 7 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
3. Manual Containment Isolation Valves (continued)		
b. Containment Air System		NA
CAS-VX-82e		
CAS-V-730		
c. Service Air		NA
SA-V-109		
d. Residual Heat Removal		NA
RHR-V-11A,B		
RHR-V-120		
RHR-V-121		
RHR-V-124A,B		
RHR-V-125A,B		
e. Reactor Core Isolation Cooling		NA
RCIC-V-64		
RCIC-V-742[i][c]		
f. Air Supply to Testable Check Valves		NA
Air Supply / Check Valve		
PI-VX-42d / RHR-V-50A		
PI-VX-216		
PI-VX-69c / RHR-V-50B		
PI-VX-221		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.

Table 1.6.1.3-1 (page 8 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER		VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
f. Air Supply to Testable Check Valves (continued)			NA
Air Supply	Check Valve		
PI-VX-61f PI-VX-219	RHR-V-41A		
PI-VX-54Bf PI-VX-218	RHR-V-41B		
PI-VX-62f PI-VX-220	RHR-V-41C		
LPCS-V-66 LPCS-V-67	LPCS-V-6		
HPCS-V-65 HPCS-V-68	HPCS-V-5		
RCIC-V-184 RCIC-V-740	RCIC-V-66		
4. Other Containment Isolation Valves			
a. Main Steam Leakage Control[c]			NA
MSLC-V-3A,B,C,D			
b. Reactor Feedwater/RWCU Return			NA
RFW-V-10A,B RFW-V-32A,B RFW-V-65A,B RWCU-V-40			

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.

Table 1.6.1.3-1 (page 9 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP(a)	MAXIMUM ISOLATION TIME (Seconds)
4. Other Containment Isolation Valves (continued)		
c. High Pressure Core Spray		NA
HPCS-V-4(i)(c)		
HPCS-V-5(i)(c)		
HPCS-V-12		
HPCS-V-15(h)(c)		
HPCS-RV-14(g)(j)		
HPCS-RV-35(g)(j)		
d. Low Pressure Core Spray		NA
LPCS-V-1(h)(c)		
LPCS-V-5(i)(c)		
LPCS-V-6(i)(c)		
LPCS-RV-18(g)(j)		
LPCS-RV-31(g)(j)		
LPCS-FCV-11		
e. Standby Liquid Control		NA
SLC-V-7		
SLC-V-4A,B		
f. Reactor Core Isolation Cooling		NA
RCIC-V-13(i)(c)		
RCIC-V-19		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(g) Not subject to Type C Leak Rate Test.
(h) Hydraulic leak test at 1.10 Pa.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(j) Tested as part of Type A test.

Table 1.6.1.3-1 (page 10 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP(a)	MAXIMUM ISOLATION TIME (Seconds)
f. Reactor Core Isolation Cooling (continued)		NA
RCIC-V-28		
RCIC-V-31(h)(c)		
RCIC-V-40		
RCIC-V-66(i)(c)		
RCIC-V-68		
RCIC-V-69		
g. Residual Heat Removal/Low Pressure Injection		NA
RHR-V-4A,B,C(h)(c)		
RHR-V-16A,B		
RHR-V-17A,B		
RHR-V-41A,B,C(i)(c)		
RHR-V-42A,B,C(i)(c)		
RHR-V-50A,B(i)(c)		
RHR-V-73A,B		
RHR-V-134A,B(e)		
RHR-V-209(i)(c)		
RHR-RV-1A,B(g)(j)		
RHR-RV-5(g)(j)		
RHR-RV-25A,B,C(g)(j)		
RHR-RV-30(g)(j)		
RHR-RV-88A,B,C(g)(j)		
RHR-FCV-64A,B,C		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(c) Valve leakage not included in sum of Type B and C tests.
(e) May be opened on an intermittent basis under administrative control.
(g) Not subject to Type C Leak Rate Test.
(h) Hydraulic leak test at 1.10 Pa.
(i) Not subject to Type C test. Test per Technical Specification SR 3.4.6.1.
(j) Tested as part of Type A test.

Table 1.6.1.3-1 (page 11 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
4. Other Containment Isolation Valves (continued)		
h. Containment Atmosphere Control[e][k] (H2 Recombiner)		NA
CAC-V-2		
CAC-FCV-2A,B		
CAC-V-15		
CAC-FCV-1A,B		
CAC-V-11		
CAC-V-6		
CAC-V-4		
CAC-FCV-4A,B		
CAC-V-13		
CAC-V-17		
CAC-FCV-3A,B		
CAC-V-8		
CSP-V-5		
CSP-V-6		
CSP-V-7		
i. Containment Purge System		NA
CSP-V-8		
CSP-V-9		
CSP-V-10		
j. Reactor Recirculation (Seal Injection)		NA
RRC-V-13A,B		
RRC-V-16A,B		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(e) May be opened on an intermittent basis under administrative control.
(k) May be tested as part of Type A test. If so tested, Type C test results may be excluded from sum of other Type B and C tests.

Table 1.6.1.3-1 (page 12 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[a]	MAXIMUM ISOLATION TIME (Seconds)
4. Other Containment Isolation Valves (continued)		
k. Containment Instrument Air		NA
CIA-V-20		
CIA-V-21		
CIA-V-30A,B		
CIA-V-31A,B		
l. Post-Accident Sampling System[e]		NA
PSR-V-X73-1		
PSR-V-X73-2		
PSR-V-X77A1		
PSR-V-X77A2		
PSR-V-X77A3		
PSR-V-X77A4		
PSR-V-X80-1		
PSR-V-X80-2		
PSR-V-X82-1		
PSR-V-X82-2		
PSR-V-X82-7		
PSR-V-X82-8		
PSR-V-X83-1		
PSR-V-X83-2		
PSR-V-X84-1		
PSR-V-X84-2		
PSR-V-X88-1		
PSR-V-X88-2		
m. Radiation Monitoring		NA
PI-V-X72f/1		
PI-V-X73e/1		

(continued)

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(e) May be opened on an intermittent basis under administrative control.

Table 1.6.1.3-1 (page 13 of 13)
Primary Containment Isolation Valves

VALVE FUNCTION AND NUMBER	VALVE GROUP[(a)]	MAXIMUM ISOLATION TIME (Seconds)
4. Other Containment Isolation Valves (continued)		
a. Transversing Incore Probe System		NA
TIP-V-6 TIP-V-7,8,9,10,11[(g)]		

(a) See Technical Specification Bases 3.3.6.1 for the isolation signal(s) which operate each group.
(g) Not subject to Type C Leak Rate Test.

1.6 CONTAINMENT SYSTEMS

1.6.1.5 Suppression Pool Spray

RFO 1.6.1.5 Two residual heat removal (RHR) suppression pool spray subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One RHR suppression pool spray subsystem inoperable.	A.1	Restore RHR suppression pool spray subsystem to OPERABLE status.	7 days
B. Two RHR suppression pool spray subsystems inoperable.	B.1	Restore one RHR suppression pool spray subsystem to OPERABLE status.	8 hours
C. Required Compensatory Measure and associated Completion Time not met.	C.1	Initiate Problem Evaluation Request (PER).	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 1.6.1.5.1	Verify each RHR suppression pool spray subsystem manual valve and power operated valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	31 days
SR 1.6.1.5.2	Verify each RHR suppression pool spray subsystem pump develops a flow of at least 450 gpm on recirculation flow through the RHR heat exchanger and suppression pool spray sparger.	In accordance with the Inservice Test Program

Table 1.6.4.2-1 (page 1 of 1)
Secondary Containment Ventilation System Automatic Isolation Valves

---NOTE---
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

VALVE FUNCTION	MAXIMUM ISOLATION TIME (Seconds)
1. Reactor Building Ventilation Supply Valve ROA-V-1	10
2. Reactor Building Ventilation Supply Valve ROA-V-2	10
3. Reactor Building Ventilation Exhaust Valve REA-V-1	8
4. Reactor Building Ventilation Exhaust Valve REA-V-2	8

Table 1.6.4.2-2 (page 1 of 1)
Secondary Containment System Automatic Isolation

------------------------------------NOTE------------------------------------
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

FUNCTION	VALVE NUMBER
1. ECCS room sump discharge to Radwaste	FDR-V-219
2. ECCS room sump discharge to Radwaste	FDR-V-220
3. ECCS room sump discharge to Radwaste	FDR-V-221
4. ECCS room sump discharge to Radwaste	FDR-V-222
5. Reactor Building sump discharge to Radwaste	EDR-V-394
6. Reactor Building sump discharge to Radwaste	EDR-V-395

Table 1.6.4.2-3 (page 1 of 2)
Secondary Containment System Manual Isolation

------------------------------------NOTE------------------------------------
Tables 1.6.4.2-1, 2, and 3 list valves required to support OPERABILITY for LCO 3.6.4.2. See Technical Specification LCO 3.6.4.1 and applicable Bases for further application details.

FUNCTION	LOCATION
1. NE Airlock Door R-109	RB 441
2. NE Airlock Door R-108	RB 441
3. NW Airlock Door R-110	RB 441
4. NW Airlock Door R-111	RB 441
5. SW Airlock Door R-105	RB 441
6. SW Airlock Door R-104	RB 441
7. RR Bay Airlock Outer Door R-106	RB 441
8. RR Bay Airlock Access Door R-103	RB 441
9. Sand Filled Cavity Drains FD-V-37	RB 441
10. Sand Filled Cavity Drains FD-V-36	RB 441
11. Floor Hatch to RB 422 MT-DOOR-A2	RB 441
12. Floor Hatch to RR Bay Airlock MT-DOOR-A1	RB 471
13. NW Airlock Door R-204	RB 471
14. NW Airlock Door R-205	RB 471
15. NW Airlock Door R-211	RB 471
16. NW Airlock to RW Building Door R-207	RB 471
17. NW Airlock to RW Building Door R-206	RB 471

(continued)

Table 1.6.4.2-3 (page 2 of 2)
Secondary Containment System Manual Isolation

FUNCTION	LOCATION
18. MWR-V-120	RB 478
19. MWR-V-121	RB 478
20. Reactor Building Elevator Access Lock Door R-210	RB 487
21. Reactor Building Elevator Access Lock Door R-209	RB 487
22. Steam Tunnel Blowout Panel North Wall	TB 501
23. Steam Tunnel Blowout Panel East Wall	TB 501
24. Steam Tunnel Blowout Panel Ceiling	TB 501
25. Steam Tunnel Blowout Panel East Wall - Manway cover	TB 501
26. NW Airlock Door R-304	RB 501
27. NW Airlock Door R-305	RB 501
28. Steam Tunnel Door R-313[(a)]	RB 501
29. Miscellaneous Drain Isolation MD-V-102	RB 572
30. Reactor Building Metal Siding	RB 606
31. Reactor Building Metal Roofing	RB 606
32. Reactor Building Roof Access Hatch	RB 606

(a) This door is not required for secondary containment operability. It is required to mitage the effects of a high energy line break.

1.7 PLANT SYSTEMS

1.7.1 Area Temperature Monitoring

RFO 1.7.1: Area temperatures shall be maintained within limits as shown in Table 1.7.1-1.

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

COMPENSATORY MEASURES

-----------------------------NOTE-----------------------------
Separate condition entry is allowed for each area.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more areas with area temperatures > 30°F above limits.	A.1 Declare affected equipment inoperable.	4 hours
B. One or more areas with area temperatures not within limits.	B.1 Restore area temperature to within limits.	8 hours
C. Required Compensatory Measures B.1 and associated Completion Times not met.	C.1 Initiate a Problem Evaluation Request (PER).	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.1.1	Verify area temperatures are within limits.	12 hours

Table 1.7.1-1 (page 1 of 1)
Area Temperature Monitoring

	AREA	TEMPERATURE LIMIT
1.	Control Room	< 104°F
2.	Auxiliary Electric Equipment Room	< 104°F
3.	Primary Containment (Drywell)	< 150°F
4.	High Pressure Core Spray, Low Pressure Core Spray, Reactor Heat Removal, Reactor Core Isolation Cooling Rooms	< 150°F
5.	Primary Containment Beneath Reactor Pressure Vessel	< 165°F
6.	Switchgear Rooms	< 104°F

1.7 PLANT SYSTEMS

1.7.2 Control Room Emergency Chillers

RFO 1.7.2: Control Room Emergency Chillers shall be OPERABLE.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One control room chiller inoperable.	A.1 Restore control room chiller to OPERABLE status.	30 days
B. Two control room chillers inoperable.	B.1 Restore one control room chiller to OPERABLE status.	14 days
C. Required Compensatory Measure and associated Completion Times of Condition A or B not met.	C.1 Submit Special Report to Vice President, Nuclear Operations.	10 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.7.2.1 Verify each control room chiller has the capability to remove control room heat load.	31 days

1.7 PLANT SYSTEMS

1.7.3 Snubbers

RFO 1.7.3 Each required hydraulic and mechanical snubber shall be OPERABLE.

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

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. --------NOTE-------- Required Compensatory Measure A.2 shall be completed if this condition is entered. ------------------- One or more system with one or more required snubbers inoperable.	A.1.1 Restore snubber to OPERABLE status.	72 hours
	<u>OR</u>	
	A.1.2 Replace inoperable snubber with OPERABLE snubber.	72 hours
	<u>AND</u>	
	A.2 Perform engineering evaluation on the attached component in accordance with the Augmented Inservice Testing and Inspection Program.	72 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Declare associated system inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.3.1	Each snubber shall be demonstrated OPERABLE in accordance with the Augmented Inservice Testing Inspection Program.	In accordance with the program

Table 1.7.6-1
Main Turbine Bypass System Response Time

-----------------------------------NOTE-----------------------------------
Table 1.7.6-1 lists required response time to support OPERABILITY for LCO 3.7.6. See Technical Specification 3.7.6 and applicable Bases for further application details.

FUNCTION	RESPONSE TIME (Milliseconds)
1. 80% of Turbine Bypass Capacity established	≤ 300

1.7 PLANT SYSTEMS

1.7.8 Sealed Source Contamination

RFO 1.7.8 Each sealed source containing > 100 microcuries of beta and/or gamma emitting material or > 5 microcuries of alpha emitting material shall be free of removable contamination ≥ 0.005 microcuries.

APPLICABILITY: At all times.

COMPENSATORY MEASURES

------------------------------------NOTE------------------------------------
RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. Requirements of the RFO not met.	A.1	Remove sealed source from use.	Immediately
	<u>AND</u>		
	A.2	Repair or dispose of sealed source.	Prior to use
	<u>AND</u>		
	A.3	Submit report to NRC.	12 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.7.8.1	Verify each sealed startup source and fission detector is within limit.	Once within 31 days prior to being subjected to core flux or installed in the core AND Once within 31 days following repair or maintenance
SR 1.7.8.2	----------------NOTES--------------- 1. Hydrogen 3 and gases are excluded. 2. Sealed startup sources and fission detectors previously subjected to core flux are excluded. ------------------------------------ Verify each sealed source in use with a half-life > 30 days is within limit.	6 months
SR 1.7.8.3	----------------NOTE---------------- Startup sources and fission detectors previously subjected to core flux are excluded. ------------------------------------ Verify each sealed source and fission detector not in use are within limit.	Once within 6 months prior to use or transfer to another licensee

1.8 ELECTRICAL POWER SYSTEMS

1.8.4 24 VDC Sources

RFO 1.8.4 The Division 1 and Division 2 24 VDC electrical power subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: When supported equipment is required to be OPERABLE.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more 24 VDC electrical power subsystems inoperable.	A.1 Declare required supported equipment inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.4.1	Verify battery terminal voltage on float charge is ≥ 26 volts.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 1.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is $\leq$ 137 E-6 ohms for inter-cell connectors and $\leq$ 20% above the resistance as measured during installation for inter-tier and inter-rack connectors.	92 days
SR 1.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that degrades battery performance.	18 months
SR 1.8.4.4	Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	18 months
SR 1.8.4.5	Verify battery connection resistance is $\leq$ 137 E-6 ohms for inter-cell connectors and $\leq$ 20% above the resistance as measured during installation for inter-tier and inter-rack connectors.	18 months
SR 1.8.4.6	Verify each required battery charger supplies required loads for $\geq$ 1.5 hours.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 1.8.4.7	------------------NOTE------------------ The modified performance discharge test in SR 1.8.4.8 may be performed in lieu of the service test in SR 1.8.4.7 once per 60 months. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required load when subjected to a battery service test.	 24 months
SR 1.8.4.8	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 18 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

1.8 ELECTRICAL POWER SYSTEMS

1.8.6 24 VDC Battery Parameters

RFO 1.8.6 Battery cell parameters for the Division 1 and 2, 24V batteries shall be within the limits of Table 1.8.6-1.

APPLICABILITY: When associated 24 VDC electrical power subsystems are required to be OPERABLE.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One or more 24V batteries with one or more battery cell parameters not within Category A or B limits.	A.1	Verify pilot cell(s) electrolyte level and float voltage meet Table 1.8.6-1 Category C limits.	1 hour
	<u>AND</u>		
	A.2	Verify battery cell parameters meet Table 1.8.6-1 Category C limits.	24 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>		
	A.3	Restore battery cell parameters to Category A and B limits of Table 1.8.6-1.	31 days

(continued)

COMPENSATORY MEASURES (continued)

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
B. Required Compensatory Measure and associated Completion Time of Condition A not met. <u>OR</u> One or more 24V batteries with average electrolyte temperature of the representative cells ≤ 60°F. <u>OR</u> One or more 24V batteries with one or more battery cell parameters not within Category C limits.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.6.1	Verify battery cell parameters meet Table 1.8.6-1 Category A limits.	7 days
SR 1.8.6.2	Verify battery cell parameters meet Table 1.8.6-1 Category B limits.	92 days <u>AND</u> Once within 24 hours after battery discharge < 22V <u>AND</u> Once within 24 hours after battery overcharge > 31V
SR 1.8.6.3	Verify average electrolyte temperature of representative cells is > 60°F.	92 days

Table 1.8.6-1 (page 1 of 1)
Battery Cell Parameter Requirements

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

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

(b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge.

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

1.8 ELECTRICAL POWER SYSTEMS

1.8.7 24 VDC Distribution System

RFO 1.8.7 The Division 1 and Division 2 24 VDC electrical distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: When supported equipment is required to be OPERABLE.

COMPENSATORY MEASURES

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

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more 24 VDC electrical power distribution subsystems inoperable.	A.1 Declare required supported equipment inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 1.8.7.1 Verify correct breaker alignments and indicated power availability to required 24 VDC electrical power distribution subsystems.	7 days

1.8 ELECTRICAL POWER SYSTEMS

1.8.9 Circuits Inside Primary Containment

RFO 1.8.9 The following AC circuits shall be deenergized:

a. Circuits off of breakers 2AR and 8AR of E-MC-8C.
b. Circuits off of panel E-LP-6BAG.
c. Circuits off of panel E-LP-3DAG.
d. Circuits off of breakers 2BL, 1D and 2CR of E-MC-3DA.

APPLICABILITY: MODES 1, 2, and 3, except during entries into the drywell.

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more required circuits energized.	A.1 Deenergize the required circuit.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.9.1	Verify each required circuit that is not locked, sealed or otherwise secured in the deenergized condition is deenergized.	24 hours
SR 1.8.9.2	Verify each required circuit that is locked, sealed or otherwise secured in the deenergized condition is deenergized.	31 days

1.8 ELECTRICAL POWER SYSTEM

1.8.10 Primary Containment Penetration Conductor Overcurrent Protection

RFO 1.8.10 Each primary containment penetration conductor overcurrent protective device shown in Table 1.8.10-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

COMPENSATORY MEASURES

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each overcurrent protective device.

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. One or more required primary containment penetration overcurrent protective devices inoperable.	A.1	Declare the affected component inoperable.	Immediately
	<u>AND</u>		
	A.2	Deenergize the associated circuit.	72 hours
	<u>AND</u>		
	A.3	Verify the associated circuit is deenergized.	Once per 7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.10.1	-------------------NOTE-------------------- For each overcurrent protective device that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all overcurrent protective devices have been tested. --- Perform CHANNEL CALIBRATION of the associated protective relays for a representative sample, on a rotating basis, of the required 6.9 kV reactor recirculation pump circuits.	18 months
SR 1.8.10.2	-------------------NOTE-------------------- For each overcurrent protective device that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all overcurrent protective devices have been tested. --- Perform system functional test for a representative sample, on a rotating basis, of the required 6.9 kV reactor recirculation pump circuits, including breaker actuation.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 1.8.10.3	-------------------NOTE-------------------- For each overcurrent circuit breaker that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all overcurrent circuit breakers have been tested. --- Functionally test a representative sample, on a rotating basis of the required 480 V overcurrent circuit breakers.	18 months
SR 1.8.10.4	Inspect and perform preventative maintenance on each associated circuit breaker.	60 months

TABLE 1.8.10-1 (page 1 of 1)

Primary Containment Penetration Conductor
Overcurrent Protective Devices

EQUIPMENT	PRIMARY PROTECTION		BACKUP PROTECTION	
a. 6900 V Circuit Breakers				
RRC-P-1A	RRC-CB-RRA (Relay)		E-CB-S/5 (Relay) E-CB-N2/5 (Relay)	
RRC-P-1B	RRC-CB-RRB (Relay)		E-CB-S/6 (Relay) E-CB-N2/6 (Relay)	
b. 480VAC Fused Disconnects				
MS-V-16	MC-8B-A	Fused	MC-8B	Fused
RWCU-V-1	MC-8B-A	Fused	MC-8B	Fused
RHR-V-9	MC-8B-A	Fused	MC-8B	Fused
RCIC-V-63	MC-8B-A	Fused	MC-8B	Fused
RCC-V-40	MC-8B-A	Fused	MC-8B	Fused
RHR-V-123B	MC-8B-A	Fused	MC-8B	Fused
RCIC-V-76	MC-8B-A	Fused	MC-8B	Fused
RHR-V-123A	MC-8B-A	Fused	MC-8B	Fused

1.8 ELECTRICAL POWER SYSTEM

1.8.11 Motor Operated Valve (MOV) Thermal Overload Protection

RFO 1.8.11 The thermal overload protection for each MOV shown in Table 1.8.11-1 shall be OPERABLE.

APPLICABILITY: Whenever the MOV is required to be OPERABLE.

COMPENSATORY MEASURES

-----NOTE-----
Separate Condition entry is allowed for each MOV thermal overload.

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. One or more MOV thermal overloads inoperable.	A.1 Continuously bypass the inoperable MOV thermal overload.	8 hours
B. Required Compensatory Measure and associated Completion Time not met.	B.1 Declare the MOV inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.8.11.1	Perform a CHANNEL CALIBRATION of a representative sample, on a rotating basis, on the MOV thermal overloads.	18 months

TABLE 1.8.11-1 (page 1 of 2)

Motor Operated Valves Thermal Overload Protection

	VALVE NUMBER	SYSTEM(S) AFFECTED
a.	CAC-V-2 CAC-V-4 CAC-V-6 CAC-V-8 CAC-V-11 CAC-V-13 CAC-V-15 CAC-V-17	Containment Atmospheric Control System
b.	CIA-V-20 CIA-V-30A CIA-V-30B	Containment Instrument Air System
c.	FPC-V-149 FPC-V-153 FPC-V-154 FPC-V-156 FPC-V-172 FPC-V-173 FPC-V-175 FPC-V-181A FPC-V-181B FPC-V-184	Fuel Pool Cooling System
d.	HPCS-V-1 HPCS-V-4 HPCS-V-10 HPCS-V-11 HPCV-V-12 HPCS-V-15 HPCS-V-23	High Pressure Core Spray System
e.	LPCS-V-1 LPCS-V-5 LPCS-FCV-11 LPCS-V-12	Low Pressure Core Spray System
f.	MS-V-1 MS-V-2 MS-V-5 MS-V-16 MS-V-19 MS-V-20 MS-V-67A MS-V-67B MS-V-67C MS-V-67D MS-V-146	Main Steam System
g.	MSLC-V-1A MSLC-V-1B MSLC-V-1C MSLC-V-1D MSLC-V-2A MSLC-V-2B MSLC-V-2C MSLC-V-2D MSLC-V-3A MSLC-V-3B MSLC-V-3C MSLC-V-3D MSLC-V-4 MSLC-V-5 MSLC-V-9 MSLC-V-10	Main Steam Isolation Valve Leakage Control System
h.	RCC-V-5 RCC-V-21 RCC-V-40 RCC-V-104 RCC-V-129 RCC-V-130 RCC-V-131	Reactor Closed Cooling Water System
i.	RCIC-V-1 RCIV-V-8 RCIC-V-10 RCIC-V-13 RCIC-V-19 RCIC-V-22 RCIV-V-31 RCIC-V-45 RCIC-V-46 RCIC-V-59 RCIC-V-63 RCIC-V-68 RCIC-V-69 RCIC-V-76 RCIV-V-110 RCIC-V-113	Reactor Core Isolation Cooling System
j.	RFW-V-65A RFW-V-65B	Reactor Feedwater System

TABLE 1.8.11-1 (page 2 of 2)

Motor Operated Valves Thermal Overload Protection

	VALVE NUMBER	SYSTEM(S) AFFECTED
k.	RHR-V-3A RHR-V-3B RHR-V-4A RHR-V-4B RHR-V-4C RHR-V-6A RHR-V-6B RHR-V-8 RHR-V-9 RHR-V-16A RHR-V-16B RHR-V-17A RHR-V-17B RHR-V-21 RHR-V-23 RHR-V-24A RHR-V-24B RHR-V-27A RHR-V-27B RHR-V-40 RHR-V-42A RHR-V-42B RHR-V-42C RHR-V-47A RHR-V-47B RHR-V-48A RHR-V-48B RHR-V-49 RHR-V-53A RHR-V-53B RHR-V-64A RHR-V-64B RHR-V-64C RHR-V-68A RHR-V-68B RHR-V-73A RHR-V-73B RHR-V-74A RHR-V-74B RHR-V-115 RHR-V-116 RHR-V-123A RHR-V-123B RHR-V-134A RHR-V-134B	Residual Heat Removal System
l.	RRC-V-16A RRC-V-16B	Reactor Recirculation System
m.	RWCU-V-1 RWCU-V-4 RWCU-V-40	Reactor Water Cleanup System
n.	SGT-V-1A SGT-V-1B SGT-V-3A1 SGT-V-3A2 SGT-V-3B1 SGT-V-3B2 SGT-V-4A1 SGT-V-4A2 SGT-V-4B1 SGT-V-4B2 SGT-V-5A1 SGT-V-5A2 SGT-V-5B1 SGT-V-5B2	Standby Gas Treatment System
o.	AS-V-68A AS-V-68B	Auxiliary Steam System
p.	SW-V-2A SW-V-2B SW-V-12A SW-V-12B SW-V-29 SW-V-75A SW-V-75B SW-V-90 SW-V-187A SW-V-187B SW-V-188A SW-V-188B	Standby Service Water System

1.9 REFUELING OPERATIONS

1.9.1 Refueling Platform

RFO 1.9.1 The refueling platform shall be OPERABLE.

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

COMPENSATORY MEASURES

CONDITION	REQUIRED COMPENSATORY MEASURE	COMPLETION TIME
A. Refueling platform inoperable.	A.1 Suspend movement of fuel assemblies and control rods within the reactor pressure vessel with the refueling platform.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.1.1	Demonstrate operation of the overload cutoff on the main hoist when the load exceeds 1700 (1250)[a] pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.2	Demonstrate operation of the overload cutoff on the frame mounted and monorail hoists when the load exceeds 535 pounds.	Once within 7 days prior to start of operations with hoist

(a) Values in parenthesis are applicable to NF400 mast.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 1.9.1.3	Demonstrate operation of the uptravel electrical stop on the frame mounted and monorail hoists when uptravel brings the top of active fuel assembly to 7 feet 6 inches below the minimum fuel storage pool water level.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.4	Demonstrate operation of the down travel electrical cutoff on the main hoist when grapple hook down travel reaches 54 feet 2 inches below track.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.5	Demonstrate operation of the slack cable cutoff on the main hoist when the load is less than 50 pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.6	Demonstrate operation of the loaded interlock on the main hoist when the load exceeds 750 (535)[a] pounds.	Once within 7 days prior to start of operations with hoist
SR 1.9.1.7	Demonstrate operation of the redundant loaded interlock on the main hoist when the load exceeds 750 (600)[a] pounds.	Once within 7 days prior to start of operations with hoist

(a) Values in parenthesis are applicable to NF400 mast.

1.9 REFUELING OPERATIONS

1.9.2 Crane Travel

RFO 1.9.2 Crane travel with loads over fuel assemblies stored in the spent fuel storage pool racks shall be within the limits of Figure 1.9.2-1.

APPLICABILITY: With irradiated fuel stored in the spent fuel storage pool (SFP) racks.

COMPENSATORY MEASURES

------------------------------------NOTE------------------------------------
RFO 1.0.3 is not applicable.

CONDITION	REQUIRED COMPENSATORY MEASURE		COMPLETION TIME
A. Requirements of RFO not met.	A.1	Initiate actions to move the crane load from over the spent fuel storage pool racks.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 1.9.2.1	------------------NOTE------------------ Only required when crane is in use. -- Perform system functional test.	7 days

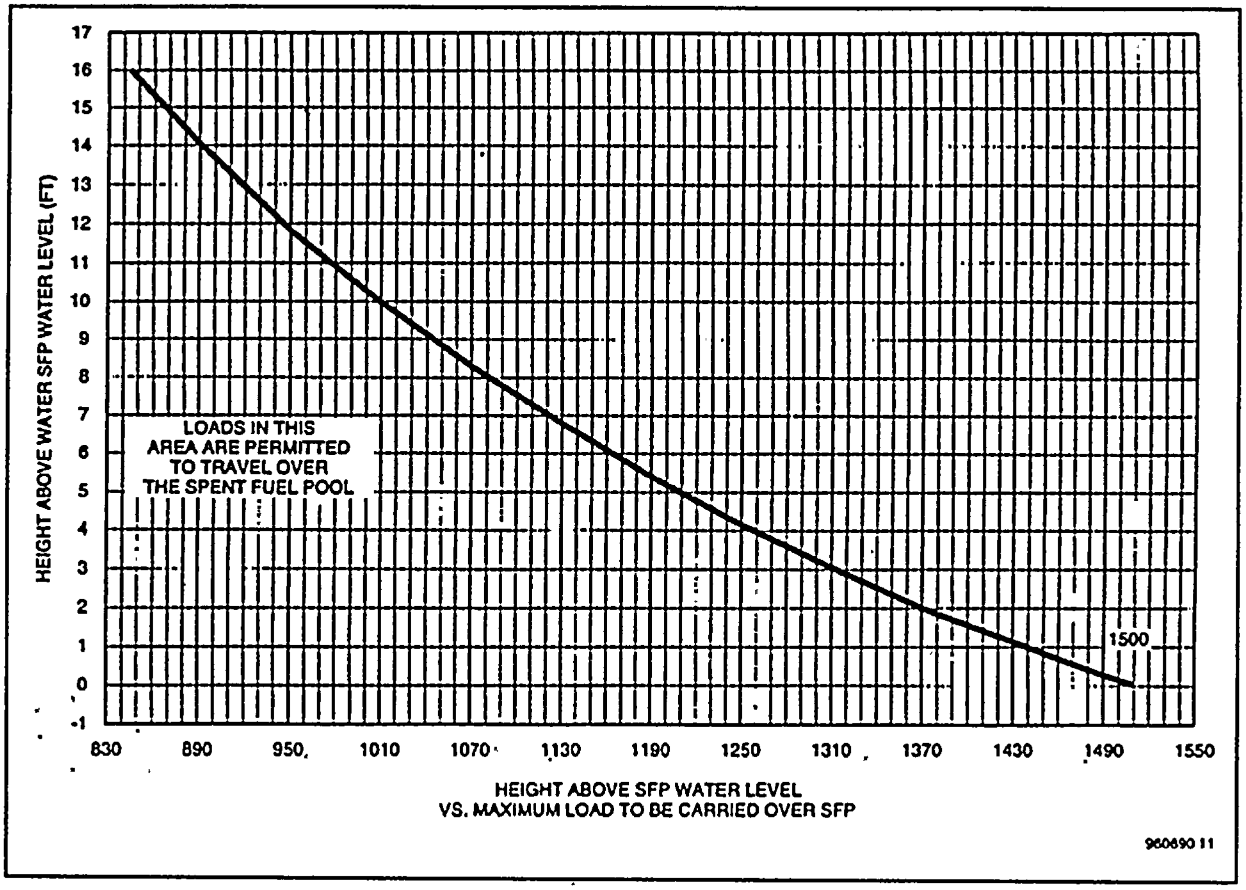

Figure 1.9.2-1
Crane Travel

B 1.0 REQUIREMENTS FOR OPERABILITY (RFO) APPLICABILITY

BASES

RFOs	RFO 1.0.1 through RFO 1.0.6 establish the general requirements applicable to all Specifications in Sections 1.1 through 1.9 and apply at all times, unless otherwise stated.
RFO 1.0.1	RFO 1.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the RFO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).

RFO 1.0.2

RFO 1.0.2 establishes that upon discovery of a failure to meet an RFO, the associated COMPENSATORY MEASURES shall be met. The Completion Time of each Compensatory Measure for a COMPENSATORY MEASURES Condition is applicable from the point in time that a COMPENSATORY MEASURES Condition is entered. The Required Compensatory Measures establish those remedial measures that must be taken within specified Completion Times when the requirements of an RFO are not met. This Specification establishes that:

a. Completion of the Required Compensatory Measures within the specified Completion Times constitutes compliance with a Specification; and

b. Completion of the Required Compensatory Measures is not required when an RFO is met within the specified Completion Time, unless otherwise specified.

There are two basic types of Required Compensatory Measures. The first type of Required Compensatory Measure specifies a time limit in which the RFO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Compensatory Measure is not completed within the specified Completion Time, an action may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Compensatory Measure or not, correction of the entered Condition is an action that may always be considered upon entering

(continued)

BASES

RFO 1.0.2 (continued)

COMPENSATORY MEASURES.) The second type of Required Compensatory Measure specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Compensatory Measures provides an acceptable level of safety for continued operation.

Completing the Required Compensatory Measures is not required when an RFO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The nature of some Required Compensatory Measures of some Conditions necessitates that, once the Condition is entered, the Required Compensatory Measures must be completed even though the associated Condition no longer exists. The individual RFO's COMPENSATORY MEASURES specify the Required Compensatory Measures where this is the case.

The Completion Times of the Required Compensatory Measures are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the COMPENSATORY MEASURES include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering COMPENSATORY MEASURES for these reasons must be done in a manner that does not compromise safety. Intentional entry into COMPENSATORY MEASURES should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead. Doing so limits the time both subsystems/divisions of a safety function are inoperable and limits the time other conditions exist which result in RFO 1.0.3 being entered. Individual Specifications may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Compensatory Measures are applicable when this time limit expires, if the equipment remains removed from service or bypassed.

When a change in MODE or other specified condition is required to comply with Required Compensatory Measures, the unit may enter a MODE or other specified condition in which another Specification becomes applicable. In this case, the

(continued)

BASES

LCO 1.0.2 (continued)	Completion Times of the associated Required Compensatory Measures would apply from the point in time that the new Specification becomes applicable and the Condition(s) are entered.
RFO 1.0.3	RFO 1.0.3 establishes the actions that must be implemented when an RFO is not met and: a. An associated Required Compensatory Measure and Completion Time is not met and no other Condition applies; or b. The condition of the unit is not specifically addressed by the associated COMPENSATORY MEASURES. This means that no combination of Conditions stated in the COMPENSATORY MEASURES can be made that exactly corresponds to the actual condition of the unit. Sometimes, possible combinations of Conditions are such that entering RFO 1.0.3 is warranted; in such cases, the COMPENSATORY MEASURES specifically state a Condition corresponding to such combinations and also that RFO 1.0.3 be entered immediately. This Specification delineates the time limits for placing the unit in a safe MODE or other specified condition when operation cannot be maintained within the limits for safe operation as defined by the RFO and its COMPENSATORY MEASURES. It is not intended to be used as an operational convenience that permits routine voluntary removal of redundant systems or components from service in lieu of other alternatives that would not result in redundant systems or components being inoperable. Upon entering RFO 1.0.3, 1 hour is allowed to prepare a change in unit operation or initiate a Problem Evaluation Request (PER). Compensatory Measures required in accordance with RFO 1.0.3 may be terminated and RFO 1.0.3 exited if any of the following occurs:

(continued)

BASES

RFO 1.0.3 (continued)

a. The RFO is now met.

b. A Condition exists for which the Required Compensatory Measures have now been performed.

c. COMPENSATORY MEASURES exist that do not have expired Completion Times. These Completion Times are applicable from the point in time that the Condition is initially entered and not from the time RFO 1.0.3 is exited.

In MODES 1, 2, and 3, RFO 1.0.3 provides actions for Conditions not covered in other Specifications. The requirements of RFO 1.0.3 do not apply in MODES 4 and 5 because the unit is already in the most restrictive Condition required by RFO 1.0.3. The requirements of RFO 1.0.3 do not apply in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the COMPENSATORY MEASURES of individual Specifications sufficiently define the remedial measures to be taken.

RFO 1.0.4

RFO 1.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an RFO is not met. It precludes placing the unit in a MODE or other specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Unit conditions are such that the requirements of the RFO would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the RFO requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Compensatory Measures.

Compliance with Required Compensatory Measures that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made

(continued)

BASES

RFO 1.0.4 (continued)

in accordance with the provisions of the Required Compensatory Measures. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of RFO 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with COMPENSATORY MEASURES. In addition, the provisions of RFO 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

Exceptions to RFO 1.0.4 are stated in the individual Specifications. Exceptions may apply to all the COMPENSATORY MEASURES or to a specific Required Compensatory Measure of a Specification.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 1.0.1. Therefore, changing MODES or other specified conditions while in a COMPENSATORY MEASURE Condition, either in compliance with RFO 1.0.4, or where an exception to RFO 1.0.4 is stated, is not a violation of SR 1.0.1 or SR 1.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected RFO.

RFO 1.0.4 is only applicable when entering MODE 3 from MODE 4, MODE 2 from MODE 3 or 4, or MODE 1 from MODE 2. Furthermore, RFO 1.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, or 3. The requirements of RFO 1.0.4 do not apply in MODES 4 and 5, or in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the COMPENSATORY MEASURES of individual Specifications sufficiently define the remedial measures to be taken.

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BASES (continued)

RFO 1.0.5

RFO 1.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with COMPENSATORY MEASURES. The sole purpose of this Specification is to provide an exception to RFO 1.0.2 (e.g., to not comply with the applicable Required Compensatory Measure(s)) to allow the performance of SRs to demonstrate:

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

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the COMPENSATORY MEASURES is limited to the time absolutely necessary to perform the allowed SRs. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Compensatory Measures, and must be reopened to perform the SRs.

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

RFO 1.0.6

RFO 1.0.6 establishes an exception to RFO 1.0.2 for support systems that have an RFO specified in the Licensee Controlled Specifications (LCS). This exception is provided because RFO 1.0.2 would require that the Conditions and Required Compensatory Measures of the associated inoperable supported system's RFO be entered solely due to the inoperability of the support system. This exception is justified because the actions that are required to ensure

(continued)

BASES

RFO 1.0.6 (continued)

the plant is maintained in a safe condition are specified in the support system's RFO's Required Compensatory Measures. These Required Compensatory Measures may include entering the supported system's Conditions and Required Compensatory Measures or may specify other Required Compensatory Measures.

When a support system is inoperable and there is an RFO specified for it in the LCS, the supported system(s) are required to be declared inoperable if determined to be inoperable as a result of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Compensatory Measures unless directed to do so by the support system's Required Compensatory Measures. The potential confusion and inconsistency of requirements related to the entry into multiple support and supported systems' RFO's Conditions and Required Compensatory Measures are eliminated by providing all the actions that are necessary to ensure the plant is maintained in a safe condition in the support system's Required Compensatory Measures.

However, there are instances where a support system's Required Compensatory Measure may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Compensatory Measures for the supported system. This may occur immediately or after some specified delay to perform some other Required Compensatory Measure. Regardless of whether it is immediate or after some delay, when a support system's Required Compensatory Measure directs a supported system to be declared inoperable or directs entry into Conditions and Required Compensatory Measures for a supported system, the applicable Conditions and Required Compensatory Measures shall be entered in accordance with RFO 1.0.2.

B 1.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

BASES

SRs

SR 1.0.1 through SR 1.0.4 establish the general requirements applicable to all Specifications in Sections 1.1 through 1.9 and apply at all times, unless otherwise stated.

SR 1.0.1

SR 1.0.1 establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the RFO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance within the specified Frequency, in accordance with SR 1.0.2, constitutes a failure to meet an RFO.

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

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

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

Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated RFO are not applicable, unless otherwise specified.

Surveillances, including Surveillances invoked by Required Compensatory Measures, do not have to be performed on inoperable equipment because the COMPENSATORY MEASURES define the remedial measures that apply. Surveillances have to be met and performed in accordance with SR 1.0.2, prior to returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with SR 1.0.2. Post maintenance testing may not be possible in

(continued)

BASES

SR 1.0.1 (continued)

the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed.

SR 1.0.2

SR 1.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Compensatory Measure with a Completion Time that requires the periodic performance of the Required Compensatory Measure on a "once per..." interval.

SR 1.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the SRs. The exceptions to SR 1.0.2 are those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual Specifications. The requirements of regulations take precedence over the LCS.

As stated in SR 1.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Compensatory Measure, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of

(continued)

BASES

SR 1.0.2 (continued)

function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR 1.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

SR 1.0.3

SR 1.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limits of the specified Frequency, whichever is less, applies from the point in time it is discovered that the Surveillance has not been performed in accordance with SR 1.0.2, and not at the time that the specified Frequency was not met. This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Compensatory Measure or other remedial measures that might preclude completion of the Surveillance.

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

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions or operational situations, is discovered not to have been performed when specified, SR 1.0.3 allows the full delay period of 24 hours to perform the Surveillance.

SR 1.0.3 also provides a time limit for completion of Surveillances that become applicable as a consequence of MODE changes imposed by Required Compensatory Measures.

(continued)

BASES

SR 1.0.3 (continued)

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 1.0.3 is a flexibility which is not intended to be used as an operational convenience to extend Surveillance intervals.

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable then is considered outside the specified limits and the Completion Times of the Required Compensatory Measures for the applicable RFO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Compensatory Measures for the applicable RFO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the COMPENSATORY MEASURES, restores compliance with SR 1.0.1.

SR 1.0.4

SR 1.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

However, in certain circumstances, failing to meet an SR will not result in SR 1.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed per SR 1.0.1, which states that

(continued)

BASES

SR 1.0.4 (continued)

Surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 1.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency, on equipment that is inoperable, does not result in an SR 1.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the RFO is not met in this instance, RFO 1.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of SR 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with COMPENSATORY MEASURES. In addition, the provisions of SR 1.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of SRs are specified such that exceptions to SR 1.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated RFO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the RFO Applicability would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached.

SR 1.0.4 is only applicable when entering MODE 3 from MODE 4, MODE 2 from MODE 3 or 4, or MODE 1 from MODE 2. Furthermore, SR 1.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, or 3. The requirements of SR 1.0.4 do not apply in MODES 4 and 5, or in other specified conditions of the Applicability (unless in MODE 1, 2, or 3) because the COMPENSATORY MEASURES of individual Specifications sufficiently define the remedial measures to be taken.

B 1.3 INSTRUMENTATION

B 1.3.2.1 Control Rod Block Instrumentation

BASES

BACKGROUND

The purpose of the control rod block instrumentation is to mitigate rod withdrawal errors. Control rods provide the primary means for control of reactivity changes. The most significant source of reactivity changes during power increase is due to control rod withdrawal. Control rod block instrumentation includes channel sensors, logic circuitry, switches, and relays arranged so that a trip in any channel will result in a control rod block.

The Average Power Range Monitoring (APRM) instrumentation will initiate a rod block to prevent control rod withdrawal if the average core flux exceeds mode switch dependent upscale setpoints. Downscale (MODE 1 only) and INOP generated rod blocks prevent rod withdrawal if the channel is not operating as expected.

The Source Range Monitor (SRM) instrumentation provides a rod block to prevent control rod withdrawal if the SRM is not fully inserted into the core when the count level is below the retract permissive setpoint. This is to assure that the SRM is correctly inserted when it must be relied upon to provide neutron flux level information. The SRM instrumentation also provides a rod block if the localized neutron flux exceeds a predetermined setpoint. This is to assure that the SRM is correctly retracted during a reactor startup. The SRM also provides a rod block if the localized neutron flux falls below a predetermined setpoint, or is inoperative during control rod manipulations. This is to ensure that the SRM is correctly inserted and responding to the neutron flux signal.

The Intermediate Range Monitors (IRM) instrumentation provides a rod block to prevent control rod withdrawal if the IRM is not fully inserted into the core when in MODE 2 or 5. This is to assure that no control rod is withdrawn during low neutron flux level operations unless proper neutron monitoring capability is available. The IRM instrumentation provides a rod block if the localized neutron flux exceeds a predetermined setpoint. This is to assure that no control rod is withdrawn unless the IRM instrumentation is correctly upranged during a reactor startup. This rod block also provides a means to stop rod

(continued)

BASES

BACKGROUND (continued)

withdrawal in time to avoid conditions requiring Reactor Protection System (RPS) action (scram) in the event that a rod withdrawal error is made during low neutron flux level operations. The IRM instrumentation provides a rod block to prevent control rod withdrawal if the IRM count level is downscale except when the IRM range switch is on the lowest range, or is inoperative. This assures that no control rod is withdrawn unless the neutron flux is being correctly monitored.

The scram discharge volume (SDV) high level instrumentation will initiate a rod block when the level is above the setpoint, or the SDV high water trip is bypassed. This assures that no control rod is withdrawn unless the high discharge level trip is in service, and enough capacity is available in the SDV to accommodate a scram.

The reactor coolant recirculation flow unit instrumentation provides total recirculation loop flow signals to the APRM and rod block monitor (RBM) systems for generation of flow biased settings for RPS and rod block trips. The reactor coolant recirculation flow units will generate a rod block when any channel indicates high flow, a mis-match between channels or a INOP condition to prevent rod withdrawal if the channel is not operating as expected.

APPLICABLE SAFETY ANALYSES

The control rod block instrumentation supports the initiation of a rod block when initiating conditions exceed preset limits.

REQUIREMENTS FOR OPERABILITY

1. Trip Setpoint Allowances

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor power), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The actual setpoints are calibrated consistent with applicable setpoint methodology. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Values between successive CHANNEL CALIBRATIONS. Operation with a

(continued)

BASES

REQUIREMENTS FOR OPERABILITY

1. Trip Setpoint Allowances (continued)

trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The Allowable Values are derived from the analytic limits, corrected for process and all instrument uncertainties, except drift and calibration. The trip setpoints are derived from the analytic limits, corrected for process and all instrument uncertainties, including drift and calibration. The trip setpoints derived in this manner provide adequate protection because all instrumentation uncertainties and process effects are taken into account.

2. APRM Rod Block

Four channels of the APRM are required to be OPERABLE, with their setpoints within the appropriate Allowable Values to ensure that no single instrument failure can preclude a rod block from this Function.

3. SRM Rod Block

Three channels of the SRM are required to be OPERABLE in MODE 2 with the associated IRM channels on range 1 or 2, with their setpoints within the appropriate Allowable Values. The detector not full in function is required to be OPERABLE in MODE 2 with the detector count rate ≤ 100 cps or with the associated IRM channels on range 1 or 2.

Two channels of the SRM are required to be OPERABLE in MODE 5, with their setpoints within the appropriate Allowable Values. If the reactor core is offloaded such that there is only one SRM in the area of the remaining fuel, then only the one SRM in the fueled region must be OPERABLE. Special movable detectors may be used in the place of the SRM if the detector is connected to the SRM circuits.

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BASES

REQUIREMENTS FOR OPERABILITY (continued)

4. IRM Rod Block

Six channels of the IRM are required to be OPERABLE in MODE 2, or in MODE 5 with any control rod withdrawn from any core cell containing one or more fuel assemblies, with their setpoints within the appropriate Allowable Values. The downscale function is not necessary with the range switch on 1.

5. Reactor Coolant System Recirculation Flow

Two channels are required to be OPERABLE in MODE 1 with the setpoints within the appropriate Allowable Values to ensure that no single channel failure will preclude a rod block when required.

6. SDV Rod Block

Two channels are required to be OPERABLE in MODES 1 and 2 with the setpoints within the appropriate Allowable Values to ensure that no single channel failure will preclude a rod block when required.

APPLICABILITY

During power operation, the APRM, Reactor Coolant System recirculation flow (APRM-F/U), SDV and the RBM instrumentation generate rod block inputs. Applicability of the RBM is described in the ITS.

During MODES 2 and 5, the SRM and IRM rod blocks are also provided so that in the event of an initial equipment failure followed by any other single equipment failure or operator error, one or both of the SRM/IRM rod block functions actuate to provide a rod movement block signal (Refs 2 and 3).

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the RBM instrumentation channels. The Required Compensatory Measures provide appropriate measures for separate inoperable RBM instrumentation channels. As such, a Note has been provided to allow separate Condition entry for each inoperable RBM instrumentation channel instead of requiring that the Completion Time begin on initial entry into the Condition.

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BASES

COMPENSATORY MEASURES (continued)

Compensatory Measures require an inoperable channel to be placed in the trip condition in 7 days for one required channel of any Function inoperable, and in 1 hour with more than one channel of any Function inoperable.

A limited number of manual bypasses can be inserted to permit continued power operation during repair or calibration of equipment for selected rod block instrumentation as follows:

1 SRM channel

2 IRM channels (1 on either RPS Bus A or RPS Bus B)

2 APRM channels (1 on either RPS Bus A or RPS Bus B)

The permissible IRM and APRM bypasses are arranged in the same way as the RPS. The IRM's are arranged as two groups of equal number of channels. One manual bypass is allowed in each group. The groups are chosen so that adequate monitoring of the core is maintained with one channel bypassed in each group. The same type of grouping and bypass arrangement is used for the APRMs. The arrangement allows for the bypassing of one IRM and one APRM in each RPS logic circuit.

SURVEILLANCE REQUIREMENTS

As Noted at the beginning of the SRs, the SRs for each RBM instrumentation Function are located in the SRs column of Table 1.3.2.1-1.

The Surveillances are modified by a second Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Compensatory Measures taken. The 6 hour testing allowance is acceptable because Surveillance testing is not normally performed coincident with rod motion and this does not significantly reduce the probability of proper rod block action, when necessary.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.2.1.1

Performance of a CHANNEL FUNCTIONAL TEST every 7 days ensures that the instrumentation required to monitor low power neutron flux will perform the intended function.

SR 1.3.2.1.2

Performance of a CHANNEL FUNCTIONAL TEST every 92 days ensures that the instrumentation required to monitor power operation will perform the intended function.

SR 1.3.2.1.3

A CHANNEL CALIBRATION is performed every 184 days, or approximately every 6 months, on the rod block instrumentation that is used for power operation. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with typical industry refueling cycles.

Performance of a CHANNEL CALIBRATION every 184 days ensures that the instrumentation used for power operations is calibrated to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

SR 1.3.2.1.4

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling, on the rod block instrumentation used for low power operation. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with typical industry refueling cycles.

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BASES

SURVEILLANCE REQUIREMENTS

SR 1.3.2.1.4 (continued)

Performance of a CHANNEL CALIBRATION every 18 months ensures that the instrumentation used for low power operation is calibrated to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

SR 1.3.2.1.5

Performance of a LOGIC SYSTEM FUNCTIONAL TEST every 24 months demonstrates the OPERABILITY of the required rod block trip logic through each activity control path of the Reactor Manual Control System (RMCS) for a specific RMCS input and reactor mode switch position. The functional testing of APRM, SRM, IRM, SDV and reactor coolant recirculation flow, in SR 1.3.2.1.1 through SR 1.3.2.1.4, overlap this Surveillance to provide complete testing of each Function. Each CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION verifies the channel through the common point where the channels lose their identity to the RMCS inputs (Npd, Nu, Npu, Hw). Several channels are combined into the RMCS mode dependent logic to develop the rod block output signal. The LOGIC SYSTEM FUNCTIONAL TEST is summarized as a verification of each RMCS activity control path resulting in rod blocks for Npd, Npu and Hw inputs in MODE 1; Nu, Npu and Hw inputs in MODE 2; and Nu for MODE 5. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage due to the reactor mode switch inputs.

REFERENCES

1. FSAR, Section 7.7.1.2.b.2.b) Rod Block Functions.
2. FSAR, Section 15.4.1.
3. FSAR, Section 15.4.2.

B 1.3 INSTRUMENTATION

B 1.3.3.1 Post Accident Monitoring (PAM) Instrumentation

BASES

BACKGROUND

The primary purpose of the PAM instrumentation is to display plant variables that provide information required by the control room operators during accident situations. Instruments monitoring variables designated as Category 1 in accordance with Regulatory Guide 1.97 (Ref. 1) are contained in the WNP-2 Technical Specifications. Instruments monitoring variables designated as Category 2 or 3 have been removed from the Standard Technical Specifications in accordance with Reference 2. Selected instruments monitoring Category 2 variables have been relocated to the Licensee Controlled Specifications to assure compliance with other regulatory requirements.

Instruments monitoring Category 2 variables indicate system operating status. Instruments monitoring Category 3 variables are used as a backup to the Category 1 and Category 2 variables to aid in diagnosing the type of transient or accident, and determining the extent of damage, if any. Definitions of the variable type and category are contained in Reference 1.

APPLICABLE SAFETY ANALYSES

The PAM instrumentation RFO ensures the OPERABILITY of selected Regulatory Guide 1.97, non-Type A, Category 2 and III variables so that the control room operating staff can:

- Determine whether systems important to safety are performing their safety functions;
- Determine the potential for causing a gross breach of the barriers to radioactivity release;
- Determine whether a gross breach of a barrier has occurred; and
- Initiate action necessary to protect the public and to obtain an estimate of the magnitude of any impending threat.

The plant specific Regulatory Guide 1.97 analysis (Ref. 3) documents the process that identified the variable Types and Categories.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

Reference 4 states that reactor coolant system relief and safety valves shall be provided with a positive indication in the control room from a reliable valve-position detection device or a reliable indication of flow in the discharge pipe. WNP-2 satisfies this requirement using two separate systems which are monitored in the main control room.

1. Direct Indication - utilizes linear variable differential transformers (LVDTs) mounted directly on the safety relief valves (SRVs). These sensors generate a voltage signal proportional to valve lift that is processed to provide closed/not closed indication and annunciation in the control room.

2. Tailpipe Thermocouple - utilizes thermocouples attached to the SRV tailpipes that monitor the temperature rise in the piping resulting from open or leaking relief valves. The tailpipe temperatures are recorded and annunciated in the control room. Although not safety grade, this backup indication system is seismically mounted and is powered from a reliable source.

Seismic qualification requirements for the SRV position indication do not relate to the position indication being available during or after a seismic event, but only that the device does not interfere with the operation of the equipment to which it is attached, if that equipment must function during the seismic event (Ref. 4).

The SRV position indication instrumentation can be used to detect an open or stuck open SRV. However, in the Reference 5 transient analysis for a stuck open SRV, no credit is taken for the SRV stem position or tailpipe thermocouple indication and alarm functions. Operator actions to attempt to close the valve and establish suppression pool cooling are assumed to be initiated based on a suppression pool high temperature alarm.

The transient resulting from a stuck open SRV does not represent the same magnitude of challenge to a Boiling Water Reactor (BWR) as does a stuck open pressurizer relief or safety valve on a Pressurized Water Reactor (PWR). As discussed in the Final Safety Analysis Report (FSAR) transient analysis for a stuck open SRV, the event causes only a slight decrease in thermal margins and does not

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BASES

APPLICABLE SAFETY ANALYSES (continued)	result in fuel damage. The Minimum Critical Power Ratio (MCPR) is essentially unchanged, and as a result, the safety limit margin is unaffected. The depressurization transient is termed as "mild," with no significant effect on the reactor coolant pressure boundary (RCPB) or containment design pressure limits. Furthermore, a stuck open SRV event does not result in an uncontrolled radioactivity release to the environment or exposure to plant personnel or the public.

REQUIREMENTS FOR OPERABILITY

OPERABILITY of the PAM instrumentation ensures that there is sufficient information available on selected plant parameters to monitor and assess plant status and behavior following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97.

Listed below is a discussion of the specified instrument Functions listed in Table 1.3.3.1-1 that monitor non-type A Category 2 and Category 3 variables.

1. SRV Position Indication

SRV position indication is a Category 2 Type D variable provided to indicate a breach of the RCPB through an open or leaking SRV. RFO 1.3.3.1 requires that one valve position indication channel be OPERABLE for each SRV. This is sufficient to ensure proper operator response for an open or leaking SRV since other parameters such as SRV tailpipe temperature, suppression pool temperature and level, main turbine governor valve position, generator output, main turbine steam flow, steam/feedwater flow mismatch, and reactor pressure can also be used to indicate or confirm the condition. The RFO pertains only to the SRV valve stem position indication channel. Although the SRV tailpipe temperature channel is also designed to indicate an open or leaking SRV, it is approved only as a diverse backup method of SRV position indication.

2. Suppression Chamber Water Temperature Indication

Suppression chamber water temperature indication is a Category 2 Type D variable provided to monitor suppression pool water temperature and alert the plant operator to the condition of elevated suppression chamber water temperature. Elevated suppression chamber water temperature affects the

(continued)

BASES

REQUIREMENTS FOR OPERABILITY

2. Suppression Chamber Water Temperature Indication (continued)

ability of the steam quenching function and the requirements for net positive suction head (NPSH) on the Emergency Core Cooling System (ECCS) pumps. Suppression chamber water temperature is used in monitoring post accident performance for primary containment control in the emergency procedures.

3. Suppression Chamber Air Temperature Indication

Suppression chamber air temperature indication is a Category 2 Type D variable provided to indicate the temperature of the air volume of the suppression chamber. Elevated temperature in the suppression chamber are an indication of the loss of steam condensing of the suppression pool.

4. Drywell Air Temperature Indication

Drywell air temperature indication is a Category 2 Type D variable provided to indicate the temperature of the drywell. Elevated temperatures in the drywell are an indication of heat energy being added to the drywell, or the loss of heat removal capability. Loss of cooling to the drywell severely challenges safety related equipment OPERABILITY from an equipment qualification standpoint. Prolonged operation at or above the environmental conditions for qualification would pose a significant risk for damage and would certainly necessitate wholesale equipment replacement upon recovery. Drywell air temperature indication is used in monitoring post accident performance for primary containment control in the emergency procedures. Drywell air temperature is also used post accident to confirm that the reactor pressure vessel (RPV) level instruments are not affected by elevated temperatures.

5. Condensate Storage Tank Level Indication

Condensate storage tank level indication is a Category 3 Type D variable provided to indicate the level of water in the condensate storage tank. The condensate storage tank is the source of water for ECCS injection. Level indication is used as confirmation that ECCS injection is being accomplished, and that injection switchover to the suppression pool source is imminent.

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BASES

REQUIREMENTS FOR OPERABILITY (continued)

6. Main Steam Isolation Valve Leakage Control System Pressure indication

Main steam isolation valve (MSIV) leakage control system pressure indication is a Category 2 Type D variable provided to indicate the function of the main steam leakage control system. Increasing pressure of this variable indicates that the main steam isolation valve may be leaking, and the MSIV leakage control system may not be operating properly. This could increase the potential for a radionuclide release.

7. Neutron Flux Indication

Neutron Flux indications for average power range monitor (APRM), intermediate range monitor (IRM) and source range monitor (SRM) are a Category 2 Type D variable provided to indicate that the reactor shutdown has been successful. The neutron flux level is an indication of reactor core power. An insertion of negative reactivity and the subsequent decrease in neutron flux are indications used in the emergency operating procedures to confirm protective system actions and make decisions regarding the direction of subsequent emergency action.

8. Reactor Core Isolation Cooling (RCIC) Flow Indication

RCIC flow indication is a Category 3 Type D variable provided to indicate the operation of the RCIC System. The RCIC System does not provide a safety function; however, this variable is indicated to provide a back up to other ECCS functions.

9. High Pressure Core Spray (HPCS) Flow Indication

HPCS flow is a Category 2 Type D variable provided to indicate the operation of the HPCS System. HPCS flow indication is monitored post accident to fulfill the RPV Level and RPV flooding functions of the emergency procedures.

10. Low Pressure Core Spray (LPCS) Flow Indication

LPCS flow is a Category 2 Type D variable provided to indicate the operation of the LPCS System. LPCS flow indication is monitored post accident to fulfill the RPV Level and RPV flooding functions of the emergency procedures.

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BASES

REQUIREMENTS FOR OPERABILITY (continued)

11. Standby Liquid Control (SLC) System Flow Indication

SLC System flow is a Category 2 Type D variable provided to indicate flow in the SLC System. SLC flow is an indication that SLC is injecting and used as verification of function in the RPV control reactor power ATWS portion of the emergency procedures.

12. SLC System Tank Level Indication

SLC System tank level is a Category 3 Type D variable provided to indicate the availability of SLC inventory for injection. Decreasing SLC tank level is an indication that SLC is injecting, and is used in the RPV control reactor power ATWS portion of the emergency procedures to secure the SLC function.

13. Residual Heat Removal (RHR) Flow Indication

RHR flow is a Category 2 Type D variable provided to indicate flow for low pressure cooling injection (LPCI) and shutdown cooling. RHR flow indication is monitored post accident to fulfill the RPV level and RPV flooding functions of the emergency procedures.

14. RHR Heat Exchanger Outlet Temperature Indication

RHR heat exchanger outlet temperature is a Category 3 Type D variable provided to indicate temperature of the water leaving the RHR heat exchanger. This instrumentation is backup to RHR/Service Water flow indications used for post accident monitoring.

15. Standby Service Water Flow Indication

Standby service water flow is a Category 2 Type D variable provided to indicate standby service water as cooling flow for equipment needed to support post accident operation. Standby service water is supplied to equipment that functions in response to accident conditions. Indication of standby service water flow provides assurance that the cooling water to support the equipment operation is functioning.

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BASES

REQUIREMENTS FOR OPERABILITY (continued)

16. Standby Service Water Spray Pond Temperature Indication

Standby service water spray pond temperature is a Category 2 Type D variable provided to indicate the availability of the water cooling medium in support of equipment that must operate post accident. Standby service water is supplied to equipment that functions in response to accident conditions. Indication of standby service water spray pond temperature provides assurance that the cooling water to support the equipment operation is available.

17. Emergency Ventilation Damper Position Indication

Emergency ventilation damper position is a Category 2 Type D variable. Emergency damper position indication is provided in the control room for all dampers necessary to prevent the release of radioactive gases to the environment or for the protection of operating personnel during post accident conditions.

18. Standby Power and Other Sources Indication

Standby power and other sources indication is a Category 2 Type D variable provided to indicate the availability and characteristics of emergency electrical power. Emergency electric power is provided by diesel electric generators, and supplied through a safety related power distribution system. In addition, other sources of power from the transmission grid are monitored to indicate the availability of the source. Monitoring of voltage and current for the power source and distribution system provides assurance that post accident mitigating functions are available.

19. Reactor Building Effluent Monitoring System Indication

Reactor Building Effluent Monitoring System indication is a Category 2 Type E variable provided to indicate the rate of release of gaseous effluent from the reactor building. The Reactor Building Effluent Monitoring System flow rate monitors the reactor building ventilation exhaust used by the normal Reactor Building Ventilation System and the Standby Gas Treatment System. These systems assure that the

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BASES

REQUIREMENTS FOR OPERABILITY

19. Reactor Building Effluent Monitoring System Indication (continued)

reactor building (secondary containment) contains all system leakage and all effluents are discharged through this monitoring system.

20. DG Standby Power

Emergency electric power is provided by diesel generators (DG) and supplied through a safety related power distribution system. Monitoring the voltage and current of the DG power provides information about available post accident mitigating functions.

APPLICABILITY

The PAM instrumentation is required to be OPERABLE in MODES 1 and 2 with the Reactor Building Effluent Monitoring System indication also having to be OPERABLE in MODE 3. The variables being monitored are related to the diagnosis and preplanned actions required to mitigate design basis accidents (DBAs). The applicable DBAs are assumed to occur in MODES 1 and 2. In MODES 3, 4, and 5, plant conditions are such that the likelihood of an event that would require PAM instrumentation is extremely low; therefore, PAM instrumentation is not required to be OPERABLE in these MODES, except as described above.

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the PAM instrumentation channels. The Required Compensatory Measures provide appropriate measures for separate inoperable PAM instrumentation channels. As such, a Note has been provided to allow separate Condition entry for each inoperable PAM instrumentation channel instead of requiring that the Completion Time begin on initial entry into the Condition.

A.1

Required Compensatory Measure A.1 directs entry into the appropriate Condition referenced in Table 1.3.3.1-1. The applicable Condition referenced in the Table is Function dependent. Each time a PAM channel is discovered

(continued)

BASES

COMPENSATORY MEASURES

A.1 (continued)

inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition.

B.1, B.2, and B.3

With one or more SRV position indication channel inoperable, the SRV tailpipe temperature monitoring instrument must be verified OPERABLE within 48 hours. OPERABILITY of the SRV tailpipe temperature monitoring instrument may be established by verification that the 31 day CHANNEL CHECK and 18 month CHANNEL CALIBRATION surveillances are current. Daily CHANNEL CHECKS (after the initial 48 hour checks) ensure that the nonsafety grade SRV tailpipe temperature monitoring instrumentation will detect an open or leaking SRV. The 48 hour Completion Time is reasonable based on the relatively low probability of an event requiring SRV position indication operation and the availability of alternate means to obtain the required information.

In conjunction with Required Compensatory Measures B.1 and B.2, inoperable SRV position indication channel must be restored to OPERABLE status within 30 days. This Compensatory Measure provides an allowable outage time to restore the affected instrumentation to OPERABLE status. The 30 day Completion Time is based on: (1) the diverse alternative safety grade instrumentation that can be used for indicating an open or leaking SRV; (2) the backup capability of the SRV tailpipe monitoring instrumentation; (3) the passive nature of the SRV position indication instrumentation (no control or accident mitigating design features); and (4) the likelihood that the SRV valve stem position indication channel can be restored to OPERABLE status within the allowed outage time.

C.1

The Required Compensatory Measure for the failure of the post accident monitoring function is to restore the channel to OPERABLE status within 7 days. The Completion Time of 7 days is based on the classification of these measurements as non-Category 1 variables and the relatively low probability of an event requiring PAM instrument operation.

(continued)

BASES

COMPENSATORY MEASURES

C.1 (continued)

Variables identified as Category 1 are used as direct indications of conditions upon which post accident actions are based and as such, are subject to more stringent OPERABILITY requirements. Therefore, the allowed 7 days to restore the post accident monitoring function of the non-Category 1 variables is appropriate.

D.1

The Required Compensatory Measure for the failure of the post accident monitoring function is to restore the channel to OPERABLE status within 30 days. The Completion Time of 30 days is based on the classification of these measurements as non-Category 1 variables and the relatively low probability of an event requiring PAM instrument operation. Variables identified as Category 1 are used as direct indications of conditions upon which post accident actions are based and as such, are subject to more stringent OPERABILITY requirements. Therefore, the allowed 30 days to restore the post accident monitoring function of the non-Category 1 variables is appropriate.

E.1

In the event that any Required Compensatory Measure and associated Completion Time are not met, Compensatory Measure D.1 requires initiation of a Problem Evaluation Request (PER) within 24 hours to address why the PAM channel was not restored to OPERABLE status within the Completion Time. The PER should provide an accurate and concise description of the problem condition, an initial OPERABILITY assessment, the Required Compensatory Measure and Completion Time not complied with, the probable cause, corrective actions already taken and recommended further corrective actions, and a schedule for restoring the PAM channel to OPERABLE status. The intent of this Required Compensatory Measure is to utilize the plant PER process to assure prompt attention and adequate management oversight to minimize the additional time the channel is inoperable.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

As Noted at the beginning of the SRs, the SRs for each PAM instrumentation Function are located in the SRs column of Table 1.3.3.1-1.

The Surveillances are modified by a second Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Compensatory Measures taken. The 6 hour testing allowance is acceptable because it does not significantly reduce the probability of properly monitoring post accident parameters, when necessary.

SR 1.3.3.1.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels or instrument malfunction. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency of 31 days is based on plant operating experience with regard to channel OPERABILITY and drift. Plant experience has demonstrated that there is a relatively low probability of a failure occurring on more than one

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.3.3.1.1 (continued)

channel of a given function in any 31 day interval. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel displays during normal operational use.

SR 1.3.3.1.2

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with typical industry refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.
2. Letter, dated May 9, 1988, TE Murley (NRC) to RF Janecek (BWROG), "NRC Staff Review of Nuclear Steam Supply Vendor Owners Groups' Application of the Commission Interim Policy Statement Criteria to Standard Technical Specifications."
3. FSAR, Section 7.5.2.
4. TMI Action Plan Item II.D.3, "Direct Indication of Relief and Safety Valve Position," (NUREG-0737).
5. FSAR, Section 15.1.4.

B 1.3 INSTRUMENTATION

B 1.3.4.6 Reactor Coolant System (RCS) Interface Valves Leakage Pressure Monitors

BASES

BACKGROUND

There are several low pressure systems which have connections to the high pressure RCS. During normal plant operations, the RCS pressure boundary is provided by pressure isolation valves (PIV). To ensure that these valves do not allow leakage into the connecting low pressure systems they undergo testing and surveillances as required by Technical Specifications. The RCS interface valve leakage monitors, listed in Table 1.3.4.6-1 can be used to detect excessive leakage through the PIVs associated with Technical Specification 3.4.6.

PIVs are between the RCS and the following systems:

1. High Pressure Core Spray (HPCS)
2. Low Pressure Core Spray (LPCS)
3. Reactor Core Isolation Cooling (RCIC) System
4. Residual Heat Removal (RHR) System

APPLICABLE SAFETY ANALYSES

The high/low pressure interface valve leakage monitors do not necessarily relate directly to the leakage requirements of the RCS PIVs. The Boiling Water Reactor Standard Technical Specifications, NUREG-1434, does not specify indication-only or alarm-only equipment to be OPERABLE to support OPERABILITY of a system or component. The Component Classification Evaluation Record (CCER) for each monitor considers the alarm and indication functions to be non-safety related operator aids.

REQUIREMENTS FOR OPERABILITY

The RCS interface valves leakage pressure monitor functions shown in Table 1.3.4.6-1 shall be OPERABLE.

The required loop includes the following monitors, associated alarms, and power supply:

- RHR-PIS-22A, alarm on H13-P601.A4-3.1, RHR A PUMP DISCH PRESS HIGH/LOW.
- RHR-PIS-22B, alarm on H13-P601.A2-5.6, RHR B PUMP DISCH PRESS HIGH/LOW.

(continued)

BASES

REQUIREMENTS FOR OPERABILITY (continued)

- RHR-PIS-22C, alarm on H13-P601.A2-6.5, RHR C PUMP DISCH PRESS HIGH/LOW.
- RHR-PS-18, alarm on H13-P601.A4-1.1, RHR RPV SUCTION SHUTDOWN HDR PRESS HIGH.
- HPCS-PIS-3, alarm on H13-P601.A1-5.8, HPCS PUMP SUCTION PRESS HIGH/LOW.
- LPCS-PIS-5, alarm on H13-P601.A3-5.3, LPCS PUMP DISCH PRESS HIGH/LOW.
- RCIC-PS-21, alarm on H13-P601.A4-5.5, RCIC PUMP SUCTION PRESS HIGH.

APPLICABILITY

MODES 1, 2, and 3.

COMPENSATORY MEASURES

A.1.1

With one or more monitors inoperable restore the inoperable monitor to OPERABLE status within 7 days.

A.1.2

For each inoperable monitor verify that the pressure is less than the alarm setpoint. This is to be completed within 7 days and then once every 12 hours thereafter.

A.2

Restore each inoperable monitor to OPERABLE status within 30 days.

B.1

With the Required Compensatory Measure and associated Completion Time not met initiate a Problem Evaluation Request (PER) within 24 hours.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 1.3.4.6.1

Perform a CHANNEL FUNCTIONAL TEST every 31 days for each monitor listed in Table 1.3.4.6-1.

SR 1.3.4.6.2

Perform a CHANNEL CALIBRATION every 18 months for each monitor listed in Table 1.3.4.6-1.

REFERENCES

1. CCER No. C91-0535.
2. CCER No. C92-0898.
3. CCER No. C93-0048.
4. CCER No. C93-0368.
5. CCER No. C93-0369.
6. CCER No. C93-0370.

B 1.3 INSTRUMENTATION

B 1.3.5.2 Automatic Depressurization System (ADS) Inhibit

BASES

BACKGROUND

The Automatic Depressurization System (ADS) is an emergency system designed to relieve steam pressure in the main steam lines and the reactor vessel to allow the low pressure emergency core cooling systems to inject. The ADS automatic initiation logic signal is completed when low reactor vessel water level is detected (level 3 & 1), a 105 second time delay times out, and either a low pressure core spray (LPCS) pump or residual heat removal (RHR) low pressure coolant injection (LPCI) pump is verified (by ADS circuitry) as running. The automatic depressurization signal can be generated by either ADS logic channel "A" or logic channel "B".

There are certain accident scenarios in which it is desirable to prevent ADS from initiating. This can be accomplished by having a control room operator manually reset the ADS timer or with the ADS manual inhibit switches. Using the ADS manual inhibit switches is a one time action; therefore, the operator no longer has to remember to continually reset the ADS timer. There are two inhibit switches provided, one for each ADS logic division, so both switches must be placed in INHIBIT to inhibit both logic divisions.

Taking the ADS manual inhibit switch to the inhibit position will bring in a BISI alarm, ADS DIV 1(2) INHIBITED, on P601. This BISI alarm will then actuate the associated annunciator panel alarm, ADS DIV 1(2) OUT OF SERVICE.

The ADS manual inhibit switches were added during the first refueling outage as a requirement of Licensing Condition 2.C.(18) of the WNP-2 Operating License.

APPLICABLE SAFETY ANALYSES

The ADS manual inhibit switch allows the operator to defeat ADS actuation as directed by the emergency operating procedures under conditions for which ADS would not be desirable.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	The ADS manual inhibit switch is not part of a primary success path in the mitigation of a design basis accident (DBA) or transient. The inhibit feature was added to mitigate the consequences of an ATWS event, which is not a DBA or transient.
REQUIREMENTS FOR OPERABILITY	Two ADS inhibit switches shall be OPERABLE. Both ADS manual inhibit switches and their associated alarms are to be OPERABLE.
APPLICABILITY	MODES 1, 2, and 3 when reactor pressure vessel (RPV) pressure is > 150 psig. The ADS manual inhibit switches are required to be OPERABLE whenever the reactor coolant pressure is greater than the discharge pressure of the high volume, low pressure injection systems.
COMPENSATORY MEASURES	<u>A.1</u> With one or more ADS manual inhibit switches inoperable, verify that the associated ADS division is not inhibited by the inoperable switch(es). This must be completed within 8 days. If either high pressure core spray (HPCS) or reactor core isolation cooling (RCIC) is inoperable concurrent with discovery of an inoperable ADS manual inhibit switch(es), the verification that the associated ADS division is not inhibited must be completed within 96 hours. The shorter Completion Time with HPCS or RCIC inoperable reflects the increased need or potential for low pressure system injection. <u>B.1</u> If the Required Compensatory Measure and its associated Completion Time are not met, immediately declare the associated ADS division inoperable.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS	SR 1.3.5.2.1 Perform the LOGIC SYSTEM FUNCTIONAL TEST every 24 months. This test verifies that inhibit switches will interrupt the ADS initiation signal when in the inhibit position.
REFERENCES	1. Licensing Condition 2.C.(18), WNP-2 Operating License. 2. G02-95-224, dated October 20, 1995.

B 1.3 INSTRUMENTATION

B 1.3.5.3 Reactor Core Isolation Cooling (RCIC) Instrumentation

BASES

BACKGROUND

Turbine exhaust leaving the RCIC turbine passes through a check valve (RCIC-V-40) and a motor operated isolation valve (RCIC-V-68) before penetrating the primary containment and discharging into the suppression pool below water level. Following turbine operation, a vacuum will form in the exhaust piping as the steam condenses. To prevent water from being drawn from the suppression pool back into the turbine exhaust, two vacuum breaker check valves (RCIC-V-111 & 112) will open at less than 0.5 psid to allow air into the exhaust piping. There are two vacuum breaker isolation valves (RCIC-V-110 & 113) on this vacuum breaker line. These isolation valves will auto close if both low RCIC steam supply (74.5 psig) and Drywell Pressure—High (1.65 psig) signals are received.

There are two divisions for Drywell Pressure—High. Division 1 (MS-PS-48 A&C) provides a signal to RCIC-V-110 and Division 2 (MS-PS-48 B&D) provides a signal to RCIC-V-113. A high drywell pressure signal in conjunction with a RCIC low steam line pressure signal will isolate the valves.

APPLICABLE SAFETY ANALYSES

RCIC turbine exhaust vacuum line inboard and outboard isolation valves (RCIC-V-110 & 113) are normally open and are passive components that are part of primary containment. These valves are not primary containment isolation valves. Because these valves do not provide an active safety related close function, their isolation signal does not serve a safety related function.

It should be noted that the instruments providing the Drywell Pressure—High signal also provide this signal to other functions which are safety related.

REQUIREMENTS FOR OPERABILITY

The instruments required are MS-PS-48A, B, C & D and the signal provided to the associated valve.

(continued)

BASES (continued)

APPLICABILITY

Each trip system requires 2 channels to be OPERABLE in MODES 1, 2, and 3. Each isolation valve is considered to have its own trip system.

COMPENSATORY MEASURES

A.1

With one or more required channels inoperable, place the channel in trip within 24 hours.

The Completion Time of 24 hours is allowed because the trip circuitry requires a 1 out of 2 logic, so the trip function will still work with one channel out of service. Placing the channel in the trip condition will not cause the valve to isolate because the Drywell Pressure—High trip signal must be coincident with a RCIC low steam supply pressure signal.

B.1

With one or more automatic functions with isolation capability not maintained restore the isolation capability within 1 hour.

The automatic function is the closure of either RCIC vacuum breaker isolation valve (RCIC-V-110 or 113). If the failure of both pressure switches and/or associated signals in one channel is such that the valve will not close automatically, then only 1 hour is allowed to recover this capability.

C.1

With the Required Compensatory Measure and associated Completion Time of Condition A or B not met, close the affected system isolation valve and declare the affected system inoperable.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 1.3.5.3.1

Perform the CHANNEL FUNCTIONAL TEST every 92 days.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

SR 1.3.5.3.2

Perform the CHANNEL CALIBRATION every 18 months.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

SR 1.3.5.3.3

Perform the LOGIC SYSTEM FUNCTIONAL TEST every 24 months.

This Frequency was selected to be consistent with the testing requirements in the Technical Specification.

REFERENCES

1. FSAR, Section 7.4.1.1.
2. G02-88-098, dated April 28, 1988.
3. Technical Specifications 3.3.1.1 and 3.3.3.1.
4. CCER No. C91-0534.

B 1.3 INSTRUMENTATION

B 1.3.7.2 Seismic Monitoring Instrumentation

BASES

BACKGROUND

The Seismic Monitoring System includes several parts:

(1) The Triaxial Time-History Accelerograph Function consists of an electronic system consisting of a triaxial seismic trigger and three triaxial time-history channels. Each channel has an input stage (accelerometer) and an output stage (magnetic tape recorder). Actuation of the seismic trigger (SEIS-ST-1) on a minimum detectable earthquake energizes the instrument loops from control panel SEIS-SC-1 and annunciates in the control room. The trigger and one accelerometer (SEIS-SMA-1) are located on the reactor building foundation (R422). Accelerometer SEIS-SMA-2 is located in the reactor building mid level (522'floor) and accelerometer SEIS-SMA-3 is located 1000' NE of the reactor building in a covered pit. The magnetic tape recorders (SEIS-TR-1, 2, 3) are located in the control room. OPERABILITY of the magnetic tape recorders requires a minimum tape capacity of 25 minutes (Ref. 3). After the seismic data is stored on the magnetic tape, it can be displayed on a strip chart via the playback unit. The playback unit and strip chart recorder are not required for OPERABILITY of the Seismic Monitoring System.

(2) The Triaxial Peak Accelerograph Function consists of mechanical recorders. Each channel is a mechanical stand-alone instrument with no dependance on any other variable except its physical mounting. If these are subjected to an acceleration greater than operating basis earthquake (OBE), they are considered inoperable until the recording plates can be replaced. Once the plates are scratched, accelerations smaller than those previously recorded cannot be read. SEIS-TPA-1 is located on a valve support (530') reactor building; SEIS-TPA-2 is located on High Pressure Core Spray (HPCS) System injection piping (R507) and SEIS-TPA-3 is located in Standby Service Water (SW) System pumphouse 1A.

(continued)

BASES

BACKGROUND (continued)

(3) The Triaxial Seismic Switch Function is an electronic system consisting of a single accelerometer (SEIS-SS-1) mounted on the reactor building foundation (R422) with a chassis/power supply (SEIS-E/S-1) in the control room. Other than the power source and the building structure it has no connection with the other seismic components. This provides annunciation that the OBE has been exceeded.

(4) The Triaxial Response-Spectrum Recorder Function is met by one electromechanical channel and three mechanical channels. Each of these channels is actually a cluster of three instruments (one for each axis). The electromechanical channel (SEIS-RSRT-1/1, 1/2 & 1/3) is located on reactor building foundation (R422). It is a mechanical instrument with electrical contacts attached to the vibrating reeds. These electrical contacts drive red and amber lamps in the control room. The control room lamps provide remote indications but no annunciation. There are no annunciators associated with this instrument. Other than the power source (SEIS-RSA-1) and the building structure, it has no connection with the other seismic components. The other three triaxial response-spectrum recorders (clusters of three) are independent mechanical accelerometers. SEIS-RSR-1/1, 2, 3 is located on a HPCS injection line support (R471); SEIS-RSR-2/1, 2, 3 is located on the refuel floor (R606); SEIS-RSR-3/1, 2, 3 is located on the radwaste building foundation (W437). Other than the building structure, they have nothing in common with other seismic instrumentation.

APPLICABLE SAFETY ANALYSES

10 CFR 100, Appendix A (Ref. 1) requires that the structures, systems, or components of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public be designed to remain functional when subject to the OBE. Since the zero-period acceleration of the containment foundation design response spectra representing the OBE may not fully describe the seismic event, it is important to have a triaxial response-spectrum recorder installed at an appropriate location in the basement of the plant capable of providing immediate

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	signals for remote indication in the control room if any significant portion of the foundation design response spectra has been exceeded. This can provide additional basis for immediate administrative procedures or decision making following an earthquake. The effects of the seismic motion at a given elevation in a structure can be represented by calculated floor response spectra which are also used to design Seismic Category I systems and components. It is important to install triaxial response-spectrum recorders at the selected support (floor/foundation) locations to determine if the calculated floor response spectra have been exceeded. This information will be needed to verify the conservatism in the modeling and design assumptions made for the structure and design input motion to the supported systems and components. In addition, it will be used to determine the advisability of continuing the operation of the plant following an earthquake. The magnitude of the response of the systems and components supported on the containment structure is required to verify that the actual response of these parts has not exceeded the design basis. This can be monitored by installing triaxial peak accelerographs over selected locations on these parts. In addition, peak response data for these parts will be necessary to verify the conservatism in the modeling and design assumptions made for these systems and components. The Seismic Monitoring Instrumentation System is classified as Seismic Category 1, Quality Class 2. The system is not included in the instrument drift program.
REQUIREMENTS FOR OPERABILITY	OPERABILITY of the seismic monitoring instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and initiate evaluation of the seismic response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the plant. This comparison permits evaluation of seismic effects on structures and equipment and forms the basis for remodeling, detailed analyses, and physical inspection. This instrumentation is consistent with the recommendations of Regulatory Guide (RG) 1.12 (Ref. 2) as committed to in FSAR Section 3.7.4.1. RG 1.12

(continued)

BASES

REQUIREMENTS FOR OPERABILITY (continued)	stipulates that the instrumentation, specified in Section 4.1 of ANSI N18.5-1974 (Ref. 3) and supplemented by RG 1.12, satisfies the seismic instrumentation requirements of Paragraph VI (a) (3) of Appendix A to 10 CFR 100 (Ref. 1).
APPLICABILITY	The Seismic Monitoring Instrumentation is required to be OPERABLE at all times to ensure sufficient instrumentation capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the plant.
COMPENSATORY MEASURES	A Note has been provided to modify the COMPENSATORY MEASURES related to seismic monitoring instrumentation channels. The Required Compensatory Measure for inoperable seismic monitoring instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable seismic monitoring instrumentation channel rather than having the required Completion Time begin on initial entry into the Condition. A.1 With one or more channels inoperable, the channel must be restored to OPERABLE status within 30 days. The 30 day Completion Time is based on the passive nature of the instrumentation, i.e., no critical automatic action is assumed to occur from these instruments and the low probability of an event requiring seismic monitoring instrumentation. The Compensatory Measure provides an allowable outage time to restore the affected instrumentation to OPERABILITY after a seismic event and also provides adequate time to perform required Surveillances.

(continued)

BASES

COMPENSATORY MEASURES (continued)

B.1

In the event that Required Compensatory Measure A.1 and the associated Completion Time is not met, Compensatory Measure B.1 requires initiation of a Problem Evaluation Request (PER) within 24 hours to address why the seismic monitoring channel was not restored to OPERABLE status within the COMPLETION TIME. The PER should provide an accurate and concise description of the problem condition, an initial OPERABILITY assessment, the Required Compensatory Measure and Completion Time not complied with, the probable cause, corrective actions taken, recommended further corrective actions, and a schedule for restoring the seismic monitoring channel to OPERABLE status. The intent of this Required Compensatory Measure is to use the plant PER process (Ref. 5) to assure prompt attention and adequate management oversight to minimize the additional time the channel is inoperable.

As Noted at the beginning of the SRs, the SRs for each seismic monitoring instrumentation Function are located in the SRs column of Table 1.3.7.2-1.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.2.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. The CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST.

The Frequency of 31 days is based upon manufacturer recommendations (consistent with Ref. 3). The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

SR 1.3.7.2.2

A CHANNEL FUNCTIONAL TEST is based on the injection of a simulated signal into the channel at the sensor to verify OPERABILITY, including required alarms. The CHANNEL FUNCTIONAL TEST is performed such that the entire channel is tested.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.3.7.2.2 (continued)

The Frequency of 184 days is based upon manufacturer recommendations and is consistent with industry standards (Ref. 3).

SR 1.3.7.2.3

A CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. This test verifies that the channel responds to the measured parameter with the necessary range and accuracy.

The Frequency of 18 months is based upon manufacturer recommendations and is consistent with industry standards (Ref. 3).

REFERENCES

1. 10 CFR 100, Appendix A.

2. Regulatory Guide 1.12, Revision 1, April 1974.

3. ANSI N18.5-1974, "Earthquake Instrumentation Criteria for Nuclear Power Plants," 1974.

4. FSAR Section 3.7.4.1.

5. PPM 1.3.12, Problem Evaluation Request

B 1.3 INSTRUMENTATION

B 1.3.7.3 Explosive Gas Monitoring Instrumentation

BASES

BACKGROUND

The Off-Gas Treatment System is the principle pathway for the release of gaseous radioactivity to the environment during normal plant operations. The Off-Gas Treatment System is designed to limit dose to offsite persons from routine station releases to significantly less than the limits specified in 10 CFR Part 20 and Part 50 and to operate within the emission rate limits established in the Technical Specifications.

Hydrogen and oxygen are produced in a boiling water reactor (BWR) by the radiolysis of water. The hydrogen and oxygen produced, along with fission products and other noncondensible gases, are removed from the main condenser by a steam jet air ejector and exhausted to the Off-Gas Treatment System. The potential exists for hydrogen and oxygen to exist in flammable or explosive concentrations. The BWR industry has experienced a number of fires in the Off-Gas Treatment System. A catalytic recombiner is provided in the Off-Gas Treatment System to recombine hydrogen and oxygen.

The Off-Gas Treatment System is designed to maintain the hydrogen concentration upstream of the recombiner to less than the flammable limit (4% by volume) by steam dilution. The hydrogen recombiner is designed to ensure that the hydrogen concentration at the outlet is less than 1% on a dry basis.

There are two hydrogen analyzers (explosive gas monitors) to monitor the hydrogen concentration downstream of the hydrogen recombiner. The hydrogen concentration is measured in volume percent and is indicated and recorded in the control room. There is also an independent alarm annunciator for high hydrogen concentration (> 1%). Calibration checks are accomplished automatically at periodic intervals by isolating the off-gas process line and admitting a calibration gas.

(continued)

BASES

BACKGROUND (continued)	The Off-Gas Treatment System design eliminates ignition sources, so that a hydrogen detonation is highly unlikely in the event of a recombiner failure. Also the system is designed to be detonation resistant.
APPLICABLE SAFETY ANALYSES	The explosive gas monitoring instrumentation is not used for, nor is capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary. The explosive gas monitoring instrumentation is not used to monitor any process variable that is an initial condition of a design basis accident (DBA) or transient. Excessive system hydrogen is not an indication of a DBA or transient. The explosive gas monitoring instrumentation is not part of a primary success path in the mitigation of a DBA or transient.
REQUIREMENTS FOR OPERABILITY	One Main Condenser Off-Gas Treatment System hydrogen monitor shall be OPERABLE. An OPERABLE hydrogen monitor consists of a hydrogen analyzer skid (A or B), the recorder channel in the main control room (MCR) on OG-H2R-605 (A or B), the high hydrogen alarm in the MCR for the corresponding channel and the common support equipment. The support equipment consists of the chilled water supply (each analyzer has its own chiller but in the event of a water chiller failure there is a cross-connection so that one chiller can serve both analyzers), and the nitrogen calibration gas supply.
APPLICABILITY	During Main Condenser Off-Gas Treatment System operation (steam jet-air ejectors are in operation).

(continued)

BASES (continued)

COMPENSATORY MEASURES

A.1

If there are no OPERABLE explosive gas monitor instruments and the Main Condenser Off-gas Treatment System is in operation, then monitor (Chemistry will take grab sample and analyze) the Main Condenser Off-gas Treatment System hydrogen concentration within 8 hours, and once per 24 hours thereafter, and within 8 hours from discovery of each change in recombiner temperature or THERMAL POWER.

A Note has been provided that states RFO 1.0.3 is not applicable because adequate Compensatory Measures are provided in the RFO.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.3.1

Performance of the CHANNEL CHECK once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on the other channel. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels, or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.3.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 31 days is based on reliability of the equipment.

SR 1.3.7.3.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. Technical Specification 5.5.8.
2. Technical Specification 3.7.5.
3. FSAR, Section 11.3.

B 1.3 INSTRUMENTATION

B 1.3.7.4 New Fuel Storage Vault Radiation Monitoring Instrumentation

BASES

BACKGROUND

The area radiation monitors (ARM-RIS-3 and ARM-RIS-3A) are located in the reactor building new fuel area. The monitors meet the requirements of 10 CFR 70.24.a which requires the monitoring system to signal (audible alarm) if an accidental criticality occurs in each area where licensed special nuclear material is handled, used, or stored.

10 CFR 70.24.a.1 requires that the monitoring system be capable of detecting a criticality that produces an absorbed dose in soft tissue of 20 rads of combined neutron and gamma radiation at an unshielded distance of 2 meters from the reacting material within one minute. The alarm setpoint was determined by calculational methods using the gamma to gamma plus neutron ratios from ANSI/ANS 8.3-1979, Criticality Accident Alarm System, Appendix B and assuming a critical mass was formed from a seismic event, with a volume of 6 ft x 6 ft x 6 ft at a distance of 27.7 feet from the two detectors. The calculated dose rate using the methodology is 5.05 R/hr. The allowable value for the alarm setpoint was, therefore, established at 5 R/hr.

APPLICABLE SAFETY ANALYSES

The New Fuel Vault Radiation Monitoring Instruments are used to indicate when the radiation levels in the area have exceeded their allowable setpoint. There are no automatic functions that are performed by these instruments. The instruments are not used to mitigate a design basis accident or transient. Information provided by these instruments on the radiation levels within secondary containment would have limited or no use in identifying or assessing core damage.

REQUIREMENTS FOR OPERABILITY

The new fuel vault criticality monitor shall be OPERABLE.

The OPERABILITY of the new fuel storage vault requires that both radiation instruments (ARM-RIS-3 and ARM-RIS-3A) be OPERABLE.

Each average range monitor consists of a sensor and converter unit, a combined indicator and trip unit, a shared power supply, a shared multipoint recorder, and a local meter and visual alarm auxiliary unit.

(continued)

BASES (continued)

APPLICABILITY	When fuel is stored in the new fuel storage vault.

COMPENSATORY MEASURES

A.1

With the new fuel storage vault monitor inoperable, radiation protection is to provide a portable continuous monitor in the vicinity prior to moving fuel in the new fuel storage vault. The setpoint for the portable monitor is to be the same as for the installed monitor. The portable monitor is only required while fuel movements are occurring.

B.1

With the new fuel storage vault monitor inoperable and no fuel being moved, an area survey is to be performed once per 24 hours.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.4.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.4.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 31 days is based on reliability analysis.

SR 1.3.7.4.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. 10 CFR Part 70.24.

2. FSAR, Section 12.3.4.

3. G02-87-079, dated March 10, 1987.

B 1.3 INSTRUMENTATION

B 1.3.7.5 Spent Fuel Storage Pool Radiation Monitoring Instrumentation

BASES

BACKGROUND	The area radiation monitor (ARM-RIS-2) is located in the reactor building 606 elevation near the spent fuel storage pool. Because of the shielding provided by the water in the spent fuel storage pool, the requirements of 10 CFR 70.24 "Criticality Accident Requirements" are not applicable. This average range monitor is to warn of excessive radiation levels in areas where nuclear fuel is stored and handled.
APPLICABLE SAFETY ANALYSES	The Spent Fuel Storage Pool Radiation Monitoring Instrument is used to indicate when the radiation levels in the area has exceeded its allowable setpoint. There are no automatic functions that are performed by this instrument. The instrument is not used to mitigate a design basis accident or transient. Information provided by this instrument on the radiation levels within secondary containment would have limited or no use in identifying or assessing core damage.
REQUIREMENTS FOR OPERABILITY	The Spent Fuel Storage Pool Radiation Monitoring Instrumentation shall be OPERABLE. This monitor consists of a sensor and converter unit, a combined indicator and trip unit, a shared power supply, a shared multipoint recorder, and a local meter and visual alarm auxiliary unit.
APPLICABILITY	When fuel is stored in the spent fuel storage pool.
COMPENSATORY MEASURES	<u>A.1</u> With the spent fuel storage pool monitor inoperable, radiation protection is to provide a portable continuous monitor in the vicinity prior to moving fuel in the spent fuel storage pool. The setpoint for the portable monitor is to be the same as for the installed monitor. The portable monitor is only required while fuel movements are occurring.

(continued)

BASES

COMPENSATORY MEASURES (continued)

B.1

With the spent fuel storage pool monitor inoperable and no fuel being moved, an area survey is to be performed once per 24 hours.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.5.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrument continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside of its limit.

The Frequency is based upon operating experience that demonstrates less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the RFO.

SR 1.3.7.5.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Frequency of 31 days is based on reliability analysis.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.5.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

REFERENCES

1. 10 CFR Part 70.24.
2. FSAR, Section 12.3.4.

B 1.3 INSTRUMENTATION

B 1.3.7.6 Turbine Overspeed Protection System

BASES

BACKGROUND

The main turbine is a tandem-compound unit consisting of one double-flow high pressure turbine and three double-flow low pressure turbines, running at 1800 rpm with 47 inch last-stage blades. The concern is that an overspeed condition could lead to the destruction of turbine components and generation of high speed missiles which could impact and damage safety related components, equipment, or structures.

The four methods of turbine overspeed protection are:

a. Governor digital electrohydraulic (DEH) control system

b. Overspeed protection controller (OPC)

c. Electrical overspeed trip

d. Mechanical overspeed trip mechanism

The governor digital electrohydraulic (DEH) control system is designed to maintain turbine speed within 2-3 rpm; although after the turbine has been synchronized to the grid, the grid controls turbine speed. The speed is maintained as long as the load demand does not exceed the capability of the turbine generator unit.

The overspeed protection controller's (OPCs) primary function is to avoid excessive turbine overspeed such that a turbine trip is avoided. At 103% of rated speed, the OPC solenoids open, closing the governor and intercept valves to arrest the overspeed before it reaches the trip setting.

If the turbine accelerates, the mechanical overspeed trip mechanism trips the turbine prior to 111% of rated speed. Tripping is accomplished by the outward movement of the mechanical trip mechanism weight due to high centrifugal forces caused by excessive turbine speed. The mechanical trip mechanism causes the high pressure hydraulic trip fluid

(continued)

BASES

BACKGROUND (continued)

to be released to drain. All of the steam valves will trip closed, thereby excluding all steam from entering the turbine. The turbine speed is maintained below 120% of rated speed and the unit will coastdown to turning gear operation.

An electrical overspeed trip is set at approximately 4 rpm lower than the mechanical overspeed. The electrical overspeed trip will also energize the solenoid trip which dumps the high pressure hydraulic fluid to drain. The results are the same as the mechanical overspeed trip.

The multiple layers for the Turbine Overspeed Protection System have a dual purpose. One is to protect the turbine (economic) and the second is to prevent turbine missiles (safety related). The electrical and mechanical trip functions are the protection layers for prevention of turbine missiles.

APPLICABLE SAFETY ANALYSES

There are three turbine overspeed cases of increasing severity which may occur as a result of equipment malfunction or failure. They are design overspeed, intermediate overspeed, and destructive overspeed. The events leading to each of the overspeed cases is described below:

The turbine will reach design overspeed if:

a. During normal operation load is lost, the output breakers open and a turbine trip does not occur at event onset.

b. Both the speed control and overspeed protection systems fail to close at one or more governor valves or one or more interceptor valves.

c. The emergency trip system functions properly and interrupts the steam flow into the turbine.

The conditions that lead to intermediate overspeed (130% of rated speed), given a full-load system separation are:

a. All throttle or governor valves are closed before design overspeed is reached.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

b. One or more steam lines from the moisture separator/reheaters to the low pressure turbines remain open after the unit trips.

The turbine speed may reach destructive overspeed if the following events occur simultaneously:

a. System separation with sufficient steam supply into the turbines, e.g., this can happen if the load is lost and the breaker opens during normal operation, and

b. A combination of failures in the overspeed protection and emergency trip systems, causing a high pressure turbine inlet to be kept open.

Postulated turbine missile target areas have been evaluated for capability to protect safety related equipment, components, and systems. While WNP-2 has an "unfavorable orientated" turbine, the reinforced shield wall acts as a barrier for protection of some safety related targets.

A probabilistic evaluation of significant damage to a safety related component, equipment or system due to a turbine missile has determined that the risk is acceptably low and is not considered to be a credible accident.

Given the fact that the probability of turbine missile damage is acceptably low, the transient due to the actuation of the turbine stop valves in response to the overspeed event (load rejection) should be considered. For this event the closure of the turbine stop valves initiates the design basis transient (load rejection) and not the turbine overspeed itself. The overspeed instruments do not perform a subsequent function to mitigate the effects of the transient.

REQUIREMENTS FOR OPERABILITY

One Turbine Overspeed Protection System shall be OPERABLE.

The Turbine Overspeed Protection System consists of the Overspeed Protection Control System, the electrical overspeed trip, the mechanical overspeed trip mechanism, and all 20 associated valves necessary for isolating the turbine from the steam supply.

(continued)

BASES (continued)

APPLICABILITY — MODES 1 and 2.

COMPENSATORY MEASURES

A.1

Having one high pressure turbine valve inoperable creates the potential of a turbine overspeed if a load rejection and turbine trip were to occur. The allowed Completion Time does not significantly increase the risk of damage due to a turbine missile.

B.1

Having one low pressure turbine valve inoperable creates the potential of a turbine overspeed if a load rejection and turbine trip were to occur. The allowed Completion Time does not significantly increase the risk of damage due to a turbine missile.

C.1

If the inoperable valve cannot be brought to an OPERABLE status within the allowed Completion Time, the affected steam line must be isolated within 6 hours, if power operations is to continue.

C.2

If the affected steam line cannot be isolated or the required Turbine Overspeed Protection System is inoperable, the plant must be in MODE 3 with the main turbine isolated from the steam supply within 6 hours.

SURVEILLANCE REQUIREMENTS

SR 1.3.7.6.1

Cycling each valve from its running position ensures that the valve will function as required to protect the turbine from an overspeed condition.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.3.7.6.2

Performance of the CHANNEL CALIBRATION ensures that the trip points are set properly and essentially acts as a functional test for the system.

SR 1.3.7.6.3

Disassembly and inspection of each type of valve ensures that no common degradation mechanism is occurring and that the valves will continue to function properly during the inspection interval.

REFERENCES

1. FSAR, Section 10.2.
2. FSAR, Section 3.5.1.3.
3. Licensing Condition 7, WNP-2 Operating License.

B 1.3 INSTRUMENTATION

B 1.3.7.7 Traversing In-Core Probe (TIP) System

BASES

BACKGROUND

The purpose of the Traversing In-Core Probe System (TIP) is to provide a normalized flux measurement at each local power range monitor (LPRM) location that can be used to calibrate the LPRMs. The system allows calibration of the LPRM signals by correlating the TIP signals to LPRM signals as the TIP is positioned in various radial and axial locations in the core. The LPRMs provide information to the process computer to permit the determination of the core power distribution. They also provide information to the Average Power Range Monitoring System (APRM) to permit the determination of core power. The combination of core power and core power distribution permit the monitoring of core thermal limits.

APPLICABLE SAFETY ANALYSES

The methodology used in the safety analysis considers both radial and local power (bundle and nodal) uncertainties for establishing applicable safety and operating thermal limits. This methodology has established 6% (standard deviation) as the maximum allowable measured TIP uncertainty (Refs. 1, 2, and 3).

REQUIREMENTS FOR OPERABILITY

The TIP System consists of five channels each of which provides access to a number of LPRM detector assemblies and a control detector assembly location within the core. Each channel consists of one TIP, one drive mechanism, one indexing mechanism, a control system that provides for both manual and semi-automatic operation, and instrumentation and recorders to allow mapping of the core. Each machine allows access to 7 to 9 LPRM locations not normally accessed by another machine and a common location accessible by all machines.

When all five TIP channels are OPERABLE, every LPRM in the core can be directly calibrated with data obtained from the TIP. If a TIP channel becomes inoperable due to failure of a component or inability to access one or more assigned LPRM locations, the LPRMs at the location(s) cannot be directly calibrated. Under certain conditions, the TIP System remains OPERABLE and calibration of the LPRM for which

(continued)

BASES

REQUIREMENTS FOR OPERABILITY (continued)

a direct calibration cannot be accomplished is permitted by using TIP data from a symmetric LPRM detector assembly location.

Indirect calibration of an unaccessed LPRM detector assembly or for which data is not available due to equipment or instrumentation failure, may be accomplished if the core power distribution is symmetrical. To ensure core power distribution is symmetrical, the following conditions must be met:

a) The control rod pattern in use is an A-type pattern and symmetrical with respect to the LPRM strings;

b) The total core TIP asymmetry is less than 6% (standard deviation). Demonstration of the TIP asymmetry is based on an evaluation of TIP System data obtained at a time in the current cycle when all TIP channels were operating; and

c) At least four of the required TIP channels are OPERABLE, i.e., only one TIP channel is inoperable.

APPLICABILITY

This Specification is applicable whenever the TIP is required for LPRM calibration. OPERABILITY of the TIP System is not required during other plant conditions.

COMPENSATORY MEASURES

A.1 and A.2

With one required moveable detector inoperable, an inaccessible LPRM string may be calibrated using a TIP scan from a symmetric string provided that an A-type control rod pattern (with symmetric LPRM strings) is in use and that the total core TIP symmetry is < 6% (standard deviation).

B.1

When the TIP System is inoperable, (less than four TIP channels operating to provide calibration information,) suspend use of the system for LPRM calibration.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

Prior to submitting the TIP System information to Powerplex for LPRM calibrations, OPERABILITY is demonstrated by normalizing each of the TIP machines (channels) and then comparing the individual machine normalization constant to the average of all OPERABLE machines. If a machine normalization constant is not within 10% of the average of the OPERABLE machines, the machine sensitivity may require adjustment.

Normalization is required within 72 hours of using the TIP channel data for LPRM calibration. The 72 hour interval is established to minimize uncertainty that could result if the core radial and axial power conditions have changed significantly due to fuel burnup or control rod manipulation. If the LPRM calibration is not completed within the 72 hour Surveillance interval, the calibration can continue without another performance of the Surveillance. However, following completion of the LPRM calibration, sufficient new TIP channel information must be obtained to confirm the acceptability of the completed LPRM calibration results.

The Frequency of TIP normalization is based on the requirement of Technical Specification SR 3.3.1.1.7.

REFERENCES

1. XN-NF-80-19(P)(A), Volume 1, Supplement 3, Advanced Nuclear Fuels Methodology for Boiling Water Reactors: Benchmark Results for the CASMO-3G/MICROBURN-B Calculation Methodology, November 27, 1990.

2. XN-NF-80-19(P)(A), Volume 1, Supplement 4, Advanced Nuclear Fuels Methodology for Boiling Water Reactors: NRC Correspondence, November 27, 1990.

3. Letter, KVW:96:046, K.V. Walters, Siemens to R.A. Vopalensky, Supply System, Subject: SUBTIP and Failed LPRM Uncertainties for C-Lattice Plants, dated March 1, 1996.

4. Letter GI2-86-001, Elinor G. Adensen, NRC to G.L. Sorensen, Supply System, Subject: Issuance of Amendment No. 20 to Facility Operating License NPF-21, WPPSS Nuclear Project No. 2, dated January 7, 1986.

B 1.4 REACTOR COOLANT SYSTEM

B 1.4.1 Reactor Coolant System (RCS) Chemistry

BASES

BACKGROUND

The origin of reactor coolant water chemistry limits was to mitigate stress corrosion cracking. Stress corrosion cracking requires 3 factors:

1. Susceptible Material,

2. Stress (Residual, Applied, and Internal), and

3. Aggressive chemical environment (oxygen and aggressive impurities such as chloride).

By removing any one of these factors, stress corrosion cracking can be minimized. By limiting the chemical impurities, stress corrosion cracking would be mitigated or slowed such that it could be detected prior to failure.

The chloride limit was primarily established to prevent transgranular stress corrosion cracking. Testing showed that this type of cracking mechanism was dependent on both oxygen and chloride concentrations. The boiling water reactor (BWR) reactor coolant will have an oxygen concentration of about 200 ppb during power operations from radiolytic decomposition of water. At this oxygen concentration and at normal operating temperatures, transgranular stress corrosion cracking will not occur when chloride concentrations are at or below 0.200 ppm.

When the chloride limit was established, the analytical capability for detecting low levels of chloride was very limited. To compensate for this, a relationship between chloride concentration and conductivity was established. If the only impurity in the coolant was chloride in the form of hydrochloric acid, then a concentration of 0.200 ppm chloride would yield a conductivity of about 1.0 micromhos/cm. By monitoring conductivity from an in-line meter, reasonable assurance was provided that the chloride concentration was within the required limits. It was also felt that by maintaining a conductivity of less than or equal to 1.0 micromhos, intergranular stress corrosion cracking could be prevented.

(continued)

BASES

BACKGROUND (continued)	For a solution with a conductivity of 1.0, the maximum theoretical pH range is 5.6 to 8.6. This was used as a check on the conductivity range. Some BWRs have deleted the requirement for monitoring pH, since it serves no real purpose and is difficult to accurately measure in high purity water. The high reactor coolant temperatures which exist during plant operation can accelerate stress corrosion cracking through two mechanisms. The higher the temperature, the faster the rate of reaction and at higher temperatures there is a greater temperature differential across the primary coolant boundary. When temperatures are lowered, both the reaction rate and the stress are lowered. Since the risk of stress corrosion cracking is reduced and higher levels of impurities may be allowed.
APPLICABLE SAFETY ANALYSES	By maintaining reactor coolant chemistry parameters within the specified limits, stress corrosion cracking is either prevented or its growth rate limited such that it would be detected prior to complete failure of the component. Methods of detection could include leak detection or inspection of reactor vessel components When a chemistry limit is exceeded, action should be taken to return the reactor coolant to within the required limit in order to minimize the stress corrosion cracking. If chemistry parameters cannot be brought within the required limit within a reasonable amount of time, then RCS temperature should be lowered to minimize the amount of stress corrosion cracking. Stress corrosion cracking resulting in reactor coolant boundary leakage would be bounded by existing loss of coolant accident (LOCA) analyses.
REQUIREMENTS FOR OPERABILITY	Reactor coolant chemistry parameters (chloride, conductivity, and pH) are maintained within the limits specified by Table 1.4.1-1 to ensure that reactor vessel components do not experience rapid failure due to stress corrosion cracking.

(continued)

BASES (continued)

APPLICABILITY

Chemistry limits are applicable at all times; however, the limit values will vary according to plant conditions as specified in Table 1.4.1-1.

COMPENSATORY MEASURES

A.1

If the chemistry limits specified in Table 1.4.1-1 have not been met while in MODE 1, 2 or 3; and chloride did not exceed 0.5 ppm; and conductivity did not exceed 10.0 micromho/cm, the limits must be restored within 72 hours

The transitory limit is to allow operational flexibility since significant cracking should not occur within this time period.

B.1 and B.2

If in MODE 1, 2 or 3, with conductivity greater than 10 micromho/cm; chloride greater than 0.5 ppm; or the Required Compensatory Measure and associated Completion Time of Condition A not met, then be in MODE 3 within 12 hours and MODE 4 within 36 hours.

If the concentration of the aggressive impurities is too great, then in order to limit the extent of the stress corrosion cracking, the plant is placed in a condition of lower temperature and stress.

C.1

In MODE 4 or 5 restore the RCS chemistry to within the limits of Table 1.4.1-1 within 72 hours.

D.1

If the Required Compensatory Measure and associated Completion Time of Condition C were not met, then prior to entering MODE 2 or 3, determine if the RCS is acceptable for operation.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 1.4.1.1

This SR is performed to ensure that RCS conductivity is within the limits of Table 1.4.1-1. The requirement that this SR be performed once every 24 hours is sufficient to detect any changes in RCS chemistry

This SR is modified by a Note that allows this not to be performed if SR 1.4.1.3 is met.

SR 1.4.1.2

This SR is performed to verify that each parameter (chloride, pH, and conductivity) is within the limits specified by Table 1.4.1-1. The Frequency of once every 7 days is sufficient because of the more frequent verifications of conductivity by SR 1.4.1.1 or 1.4.1.3.

SR 1.4.1.3

This SR is performed to verify the OPERABILITY of the continuously recording on-line conductivity monitor. This monitor will alarm in the control room prior to RCS conductivity exceeding any limit in Table 1.4.1-1. The Frequency of once every 7 days is sufficient to ensure reliable operation of the instrument.

REFERENCES

1. FSAR, Sections 5.2.3, 5.4.8, 9.3.2, 10.4.6.7 and 15.6.5.
2. G02-88-164, Response to GL 88-01, July 26, 1988.
3. EPRI TR-103515, Revision 1, BWR Water Chemistry Guidelines.

B 1.6 CONTAINMENT SYSTEMS

B 1.6.1.5 Suppression Pool Spray

BASES

BACKGROUND	Containment spray is designed to be used following a loss of coolant accident (LOCA) to aid in cooling and depressurizing the containment. Containment spray has two subsystems: drywell spray and suppression pool spray. Suppression pool spray can be operated from either residual heat removal (RHR) loop A or B or both loops simultaneously. Motor operated valves allow the use of different combinations of these spray headers. Suppression pool spray requires manual initiation by operations department personnel.
APPLICABLE SAFETY ANALYSES	There is no auto initiation of suppression pool spray. Suppression pool spray operation is controlled by procedural guidance. No credit was taken for suppression pool spray cooling in any design basis accident (DBA) or transient.
REQUIREMENTS FOR OPERABILITY	The suppression pool spray mode of the RHR System shall be OPERABLE with two independent loops, each loop consisting of: a. One OPERABLE RHR pump (A or B). b. An OPERABLE flow path capable of recirculating water from the suppression pool chamber through an RHR service water heat exchanger and the suppression pool spargers.
APPLICABILITY	MODES 1, 2, and 3.
COMPENSATORY MEASURES	<u>A.1</u> With one RHR suppression pool spray subsystem inoperable restore the RHR suppression pool spray subsystem to OPERABLE status within 7 days.

(continued)

BASES

COMPENSATORY MEASURES (continued)

B.1

With two RHR suppression pool spray subsystems inoperable restore one RHR suppression pool spray subsystem to OPERABLE status within 8 hours.

C.1

With the Required Compensatory Measure and associated Completion Time not met initiate a Problem Evaluation Request (PER) immediately.

SURVEILLANCE REQUIREMENTS

SR 1.6.1.5.1

Every 31 days verify that each suppression pool spray subsystem manual and power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is in the correct position or can be aligned to the correct position.

SR 1.6.1.5.2

Verify each RHR suppression pool spray subsystem pump develops a flow of at least 450 gpm on recirculation flow through the RHR heat exchanger and suppression pool spray sparger. This testing will be done in accordance with the Inservice Testing Program.

REFERENCES

1. FSAR, Section 6.5.2.

2. G02-96-172, dated August 30, 1996.

B 1.7 PLANT SYSTEMS

B 1.7.1 Area Temperature Monitoring

BASES

BACKGROUND

Area temperature monitoring provides for indication of temperatures in areas of the plant that contain safety related equipment having environmental qualification requirements. Limitations on area temperatures ensure that this safety related equipment will not be subjected to temperatures in excess of that used in the environmental qualification (EQ) evaluations.

Environmental qualification of safety related equipment is performed using an expected value for the normal operating temperature (Ref 1). When actual temperatures exceed this expected value, the EQ analysis is affected, and the resulting qualified life of the equipment may change.

Elevated temperatures affect the electrical life and therefore the performance of equipment. The electrical characteristics of equipment have been shown to exhibit age related degradation. The mechanical characteristics of equipment generally experience use related degradation not affected by external temperature. This electrical degradation is generally a function of the temperature and the time that the temperature was applied. The temperature can be applied by the heat generated in energized equipment along with the temperature from the external environment. In addition, certain time dependent aging is applicable regardless of the energized or OPERABLE state of the equipment.

Several of the areas listed in Table 1.7.1-1 include equipment that is environmentally qualified per the requirements of 10 CFR 50.49. Safety related equipment in these environmentally "harsh" areas must be qualified to perform their safety function through a design basis event after being aged at normal ambient conditions. The EQ analysis is documented in the qualification information documents (QIDs) and is based on normal operating temperatures given in Table 3.11-1 of the Final Safety Analysis Report (FSAR). The temperature limitations provided in Table 1.7.1-1 ensure that the conditions assumed in the EQ analysis will not be exceeded.

(continued)

BASES

BACKGROUND (continued)	The balance of areas listed have equipment whose temperature capabilities have been established by the components manufacturer. These assessments were done based on specifications which provided the ambient temperatures for these areas. The temperature limitations provided in Table 1.7.1-1 ensure that these temperatures are not exceeded.
APPLICABLE SAFETY ANALYSES	The area temperature monitoring instrumentation supports the operation of safety related equipment located in the areas listed. The applicable safety analyses of the equipment is located in the various QID files developed to support the environmental qualification of the equipment. The QID files are developed in accordance with the qualification procedure listed in Reference 1 according to the specific plant location. Different plant locations are subject to different environmental conditions during normal operations and post accident. In addition, the requirement for operation to prevent or mitigate the consequences of a design basis accident are unique for the different plant equipment.
REQUIREMENTS FOR OPERABILITY	Area temperatures shall be maintained below the upper temperature limit listed. Maintaining the temperature below the limit provides assurance that the environmental qualification of the equipment in that area is maintained. Maintaining the environmental qualification of the equipment is necessary to provide assurance that the equipment is available and will function as designed to prevent and mitigate the consequences of a design basis accident.
APPLICABILITY	Area temperature limits are required to not be exceeded when the equipment in the affected area is required to be OPERABLE. In practice, the area temperature limit is required at all times unless the environmental qualification evaluation of the equipment in the area will be re-done prior to the need for the equipment to be OPERABLE. Should the temperature limits be exceeded even when the equipment is not required to be OPERABLE, the environmental qualification of the

(continued)

BASES

APPLICABILITY (continued)

safety related equipment may be affected, and would have to be re-evaluated to consider the reduction in qualified life attributable to the time the equipment was subjected to elevated temperature.

COMPENSATORY MEASURES

A Note has been provided to modify the Compensatory Measures related to the area temperature monitoring. The Required Compensatory Measures provide appropriate measures for separate inoperable areas. As such, a Note has been provided to allow separate Condition entry for each area instead of requiring that the Completion Time begin on initial entry into the Condition.

A.1 and B.1

Required Compensatory Measures A.1 and B.1 require that the equipment in the area having temperature not within the limits be declared inoperable within 4 hours after discovering that the temperature has exceeded the limit by greater than 30°F. Required Compensatory Measures also require the area temperature be restored to within the limits within 8 hours.

C.1

If the temperature cannot be restored to within limits within 8 hours, Required Compensatory Measure C.1 requires that a Problem Evaluation Request (PER) be initiated within 24 hours providing a record of the amount by which and the cumulative time the temperature in the affected area exceeded its limit and an analysis to demonstrate the continued OPERABILITY of the affected equipment.

SURVEILLANCE REQUIREMENTS

SR 1.7.1.1

Verifying that the area temperatures are within limits once each 12 hours ensures that the area temperatures are consistent with the environmental qualification of the equipment, and that the equipment will not be inoperable due to environmental conditions.

(continued)

BASES (continued)

REFERENCES

1. EQES-2 Technical Requirements for Electrical Equipment Environmental Qualification.
2. FSAR, Section 3.11 Environmental Design of Mechanical and Electrical Equipment.
3. FSAR, Table 3.11-1.

B 1.7 PLANT SYSTEMS

B 1.7.2 Control Room Emergency Chillers

BASES

BACKGROUND

The design basis for the Control Room HVAC System provides for the use of the radwaste chillers during normal operation to maintain control room ambient conditions at 75°F ± 3° dry bulb temperature.

Chilled water is normally supplied to the main control room by the Radwaste Chilled Water System which is not an engineered safety feature system. When the Radwaste Chilled Water System is inoperable (emergency condition), standby service water (SSW) and control room chillers provide emergency and backup emergency cooling for the control room coolers. The control room temperature will be maintained below 85°F by the control room emergency chillers or below 104°F by SSW.

The chillers are not primarily designed to protect equipment; the SSW System would maintain the control room below 104°F for equipment OPERABILITY.

A potential exists that the Final Safety Analysis Report (FSAR) and Technical Specification (3/4.7.2, Control Room Emergency Filtration System) limit may be exceeded if abnormally high spray pond temperatures are experienced, for several days, concurrent with the design basis accident and loss of emergency chillers.

APPLICABLE SAFETY ANALYSES

The design basis provides additional cooling capacity for personnel comfort to maintain control room temperature less than 85°F. Supply System calculations verify that the SSW System alone can provide sufficient cooling for equipment OPERABILITY with control room temperature less than 104°F with some electrical load shedding. Control room load shedding requirements are administratively controlled.

(continued)

BASES (continued)

REQUIREMENTS FOR OPERABILITY

The emergency chillers maintain control room temperature within the FSAR and Technical Specification limit for control room habitability (85°F). The SSW System alone provides sufficient cooling for control room equipment OPERABILITY by maintaining control room temperature less than 104°F.

The 85°F limit is a subjective limit that needs to be related to humidity levels to be a realistic indicator of human tolerance to high temperature environments.

Industrial ventilation guidelines provide the highest effective temperature of 84°F for control room temperatures of 104°F dry bulb and 71°F wet bulb (~19.5% RH) and indicates that personnel could tolerate the highest expected effective temperature while performing light work.

A licensing commitment exists to identify allowed emergency chiller outage times. Permissible outage times of 30 and 14 days have been identified for one or two emergency chillers inoperable, respectively. These outage times are based on administrative controls and commitments to maintain this equipment OPERABLE. These outage times are acceptable because the chillers are used for control room habitability purposes and are not credited in the accident analyses. Equipment qualification requirements for control room equipment are met by the SSW System which has the capability of maintaining control room temperature to a maximum of 104°F to ensure the functionality of Class 1E equipment.

APPLICABILITY

The control room emergency chillers are required to be OPERABLE and capable of removing control room heat load whenever the Control Room Emergency Filtration System (Technical Specification 3/4.7.2) is required to be OPERABLE.

The chillers are required at all times to ensure control room habitability requirements.

COMPENSATORY MEASURES

If the chillers are not available to provide the additional cooling to maintain the control room temperature at less than 85°F, personnel rotation will be used to reduce personnel exposure to the higher temperatures. Although it

(continued)

BASES

COMPENSATORY MEASURES (continued)

is expected that personnel could tolerate elevated control room temperatures for several days with minimal performance degradation, personnel rotation would provide an added level of assurance.

The plant could also restore radwaste chilled water or other cooling water supplies to reduce the control room temperature.

SURVEILLANCE REQUIREMENTS

A conservative monthly Surveillance Requirement has been identified to establish a data base of equipment failure rates. Acquisition of sufficient data may be used at a future time to revise the surveillance interval based on equipment reliability and operability trends.

The monthly surveillance consists of operating each control room chiller with the control room heat load applied for 24 hours. The chillers are required to maintain the control room temperature at 75°F ± 3° dry bulb to satisfy the habitability limit of 85°F.

The monthly chiller OPERABILITY check is performed under the preventive maintenance process and scheduled and tracked in accordance with PPM 1.5.13 and 1.3.71. In addition, PPM 7.4.0.5.52 provides assurance of control chilled water pump OPERABILITY.

REFERENCES

1. System Description No. 82-RSY-13-5-T6, Control Room, Cable Room and Critical Switchgear Rooms - HVAC (CR-HVAC), dated 2/17/91.

2. FSAR Section 6.4.2.2, Ventilation System Design, Amendment No. 48.

3. FSAR Section 9.4.1.1(a), Main Control Room/Cable Spreading Room/Critical Switchgear Area HVAC Systems - Design Bases, Amendment No. 48.

4. NUREG/CR-3786, A Review of Regulatory Requirements Governing Control Room Habitability Systems, Sandia National Laboratories, dated August 1984.

(continued)

BASES

REFERENCES (continued)

5. Industrial Ventilation, Manual of Recommended Practices, High Environmental Dry and Wet Bulb Temperatures That Can Be Tolerated In Daily Work By Healthy Acclimatized Men Wearing Warm Weather Clothing, 14th edition.

6. Supply System to NRC letter No. G02-94-126, Reply to Notice of Violation 94-12, dated May 27, 1994.

7. Supply System calculation number ME-02-93-52, Cooling Loads for the Control Room Under Normal and Accident Conditions, Rev. 0.

8. WNP-2, PPM 1.3.71, Work Closeout Activities.

9. WNP-2, PPM 1.5.13, Scheduled Maintenance System.

10. WNP-2 PPM 4.10.2.5, Control Room High Temperature.

11. WNP-2, PPM 7.4.0.5.52, Control Room Chilled Water Pump Operability.

B 1.7 PLANT SYSTEMS

B 1.7.3 Snubbers

BASES

BACKGROUND

Each required snubber shall be OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads. Snubbers excluded from this inspection program are those installed on nonsafety related systems and then only if their failure or failure of the system on which they are installed would have no adverse effect on any safety related system. During shutdown snubbers can be removed for maintenance or testing, if justified by engineering analysis, and are excluded from the OPERABILITY requirements.

Snubbers are classified and grouped by design and manufacturer but not by size. For example, mechanical snubbers utilizing the same design features of the 2-kip, 10-kip, and 100-kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured by Company "B" for the purposes of this Specification would be of a different type, as would hydraulic snubbers from either manufacturer.

A list of all safety related snubbers is included in the WNP-2 Inservice Inspection Program Plan.

The visual inspection schedule is based on the number of unacceptable snubbers found during the previous inspection in proportion to the sizes of the various snubber populations or categories. A snubber is considered unacceptable if it fails the acceptance criteria of the visual inspection. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. The decision to examine these categories separately or jointly shall be made and documented before the examination begins, and can not be changed during the examination. The inspection interval is based on a fuel cycle of up to 24 months and may be as long as two fuel cycles, or 48 months for other fuel cycles, depending on the number of unacceptable snubbers found during the previous visual inspection. The examination interval may vary by ± 25 percent to coincide with the actual outage.

(continued)

BASES

BACKGROUND (continued)

To provide assurance of snubber functional reliability, one of two functional testing methods are used with the stated acceptance criteria:

1. Functionally test 10% of a type of snubber with an additional 5% tested for each functional testing failure, or

2. Functionally test a sample size and determine sample acceptance or continue testing using Figure B 1.7.3-1.

Figure B 1.7.3-1 was developed using "Wald's Sequential Probability Ratio Plan" as described in "Quality Control and Industrial Statistics" by Acheson J. Duncan.

Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubbers for the applicable design conditions at either the completion of their fabrication or at a subsequent date. Snubbers so exempted shall be listed in the list of individual snubbers indicating the extent of the exemptions.

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubbers, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

APPLICABLE SAFETY ANALYSES

The snubbers are required to be OPERABLE to ensure that the structural integrity of the Reactor Coolant System and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads.

(continued)

BASES (continued)

REQUIREMENTS FOR OPERABILITY	Each required hydraulic and mechanical snubbers shall be OPERABLE in MODES 1, 2, and 3. In MODES 4 and 5, all snubbers located on systems required OPERABLE are required to be OPERABLE unless the removal of snubber(s) for maintenance or testing is justified by engineering analysis.
APPLICABILITY	All snubbers are required in MODES 1, 2, and 3. During MODES 4 and 5, snubbers can be removed for maintenance or testing, if justified by engineering analysis, and are excluded from the OPERABILITY requirements.

COMPENSATORY MEASURES

A.1.1, A.1.2, and A.2

Within 72 hours, any snubber found to be inoperable must be restored or replaced and an engineering evaluation shall be performed on the attached component to ensure that the component remains capable of meeting the designed service.

B.1

If the inoperable snubber is not returned to service or engineering evaluations have not been performed within the allowable outage time of 72 hours, the supported system must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection and test program:

a. Inspection Types

As used in this Specification, type of snubber shall mean snubbers of the same design and manufacturer, irrespective of capacity.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program) (continued)

b. Visual Inspections

Snubbers are categorized as inaccessible or accessible during reactor operation. Each of these categories (inaccessible and accessible) may be inspected independently according to the schedule determined by Table B 1.7.3-1. The visual inspection interval for each type of snubber shall be determined based upon the criteria provided in Table B 1.7.3-1.

c. Visual Inspection Acceptance Criteria

Visual inspections shall verify that: (1) the snubber has no visible indications of damage or impaired OPERABILITY; (2) attachments to the foundation or supporting structure are functional; and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional. Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that: (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per section f. All snubbers found connected to an inoperable common hydraulic fluid reservoir shall be counted as unacceptable for determining the next inspection interval. A review and evaluation shall be performed and documented to justify continued operation with an unacceptable snubber. If continued operation can not be justified, the snubber shall be declared inoperable and the Required Compensatory Measures shall be taken.

d. Transient Event Inspection

An inspection shall be performed of all hydraulic and mechanical 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

d. Transient Event Inspection (continued)

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; (2) evaluation of in place snubber piston setting; or (3) stroking the mechanical snubber through its full range of travel.

e. Functional Tests

During the first refueling shutdown and at least once per 18 months thereafter during shutdown, a representative sample of snubbers shall be tested using one of the following sample plans. The sample plan shall be selected prior to the test period and can not be changed during the test period. The NRC Regional Administrator shall be notified in writing of the sample plan selected prior to the test period or the sample plan used in the prior test period shall be implemented:

1) At least 10% of the total of each type of snubber shall be functionally tested either in place or in a bench test. For each snubber of a type that does not meet the functional test acceptance criteria of section f., an additional 5% of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested; or

2) A representative sample of 37 snubbers shall be functionally tested in accordance with Figure B 1.7.3-1. "C" is the total number of snubbers found not meeting the acceptance requirements of section f. The cumulative number of snubbers of a type tested is denoted by "N". If at any time the point plotted falls in the "Accept" region, testing of snubbers may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers shall be tested until

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

e. Functional Tests (continued)

the point falls in the "Accept" region or all the snubbers have been tested. Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time provided all snubbers tested with the failed equipment during the day of equipment failure are retested.

The representative sample selected for the functional test sample plans shall be randomly selected from the snubbers of each type and reviewed before beginning the testing. The review shall ensure, as far as practicable, that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers of each type. Snubbers placed in the same location as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the sample plan. If during the functional testing, additional testing is required due to failure of snubbers, the unacceptable snubbers may be categorized into test failure mode group(s). A test failure mode group shall include all unacceptable snubbers that have a given failure mode and all other snubbers subject to the same failure mode. Once a test failure mode group has been established, it can be separated for continued testing apart from the general population of snubbers. However, all the unacceptable snubbers in this failure mode group shall be counted as one unacceptable snubber for additional testing in the general population. Testing in the failure mode group shall be based on the number of unacceptable snubbers and shall continue until no more failures are found or all snubbers in the failure mode group have been tested. Any additional unacceptable snubbers found in the test failure mode group shall be counted for continued testing only for that test failure mode group.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program) (continued)

f. Functional Test Acceptance Criteria

The snubber functional test shall verify that:

1) Activation (restraining action) is achieved within the specified range in both tension and compression;

2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;

3) Where required, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel; and

4) For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

g. Functional Test Failure Analysis

An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of type which may be subject to the same failure mode.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

g. Functional Test Failure Analysis (continued)

snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause will be evaluated and, if caused by manufacturer or design deficiency or unexpected transient event, all snubbers of the same type subject to the same defect shall be evaluated in a manner (stroking, testing, replacement etc.) to ensure their OPERABILITY. This evaluation requirement shall be independent of the requirements stated in section e. for snubbers not meeting the functional test acceptance criteria.

h. Functional Testing of Repaired and Replaced Snubbers

Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test results shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom of motion test must have been performed within 12 months before being installed in the unit.

i. Snubber Service Life Program

The service life of hydraulic and mechanical snubbers shall be monitored to ensure that the service life is not exceeded between surveillance inspections. The maximum expected service life for various seals, springs, and other critical parts shall be determined and established based on engineering information and shall be extended or shortened based on monitored test results and failure history. Critical parts shall be replaced so that the maximum service life will not be

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.7.3.1 (Augmented Inservice Inspection and Testing Program)

i. Snubber Service Life Program (continued)

exceeded during a period when the snubber is required to be OPERABLE. The parts replacement shall be documented and the documentation shall be retained in accordance with record retention requirements of the Operational Quality Assurance Program Description.

REFERENCES

None.

Table B 1.7.3-1 (page 1 of 1)
Snubber Visual Inspection Interval

Population or Category (Notes 1 and 2)	NUMBER OF UNACCEPTABLE SNUBBERS Column A Extended Interval (Notes 3 and 6)	Column B Repeat Interval (Notes 4 and 6)	Column C Reduce Interval (Notes 5 and 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1000 or greater	29	56	109

Note 1: The next visual inspection interval for a snubber population or category size shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. However, the licensee must make and document that decision before any inspection and shall use that decision as the basis upon which to determine the next inspection interval for that category.

Note 2: Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B, or C if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.

Note 3: If the number of unacceptable snubbers is equal to or less than the number in Column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

Note 4: If the number of unacceptable snubbers is equal to or less than the number in Column B but greater than the number in Column A, the next inspection interval shall be the same as the previous interval.

Note 5: If the number of unacceptable snubbers is equal to or greater than the number in Column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in column C but greater than the number in Column B, the next interval shall be reduced proportionally by interpolation, that is, the previous interval shall be reduced by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in Column B to the difference in numbers in Columns B and C.

Note 6: The provisions of SR 1.0.2 are applicable for all inspection intervals up to and including 48 months.

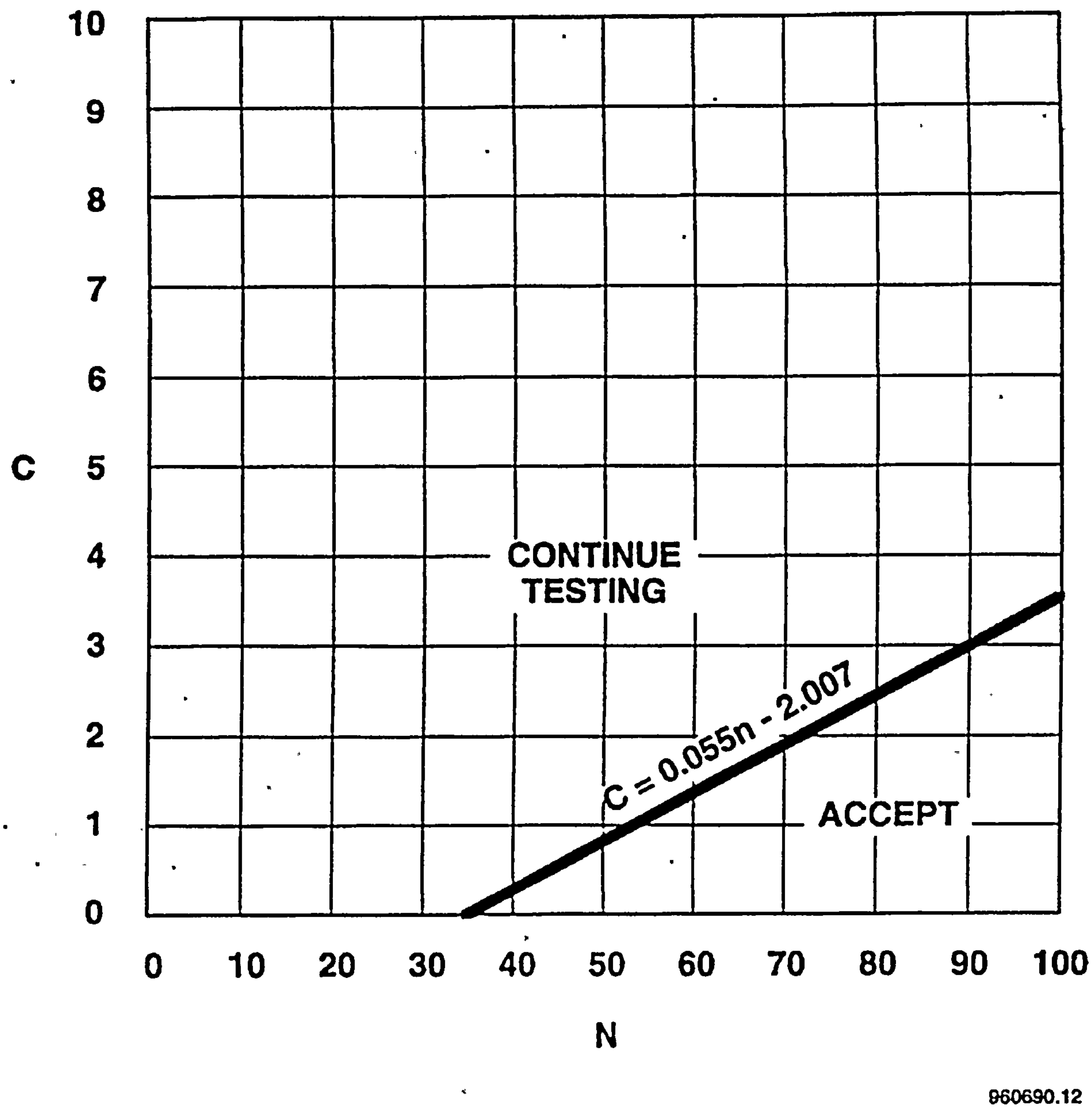

Figure B 1.7.3-1
Sample Plan 2) For Snubber Functional Test

B 1.7 PLANT SYSTEMS

B 1.7.8 Sealed Source Contamination

BASES

BACKGROUND	The requirement for testing sealed sources for contamination which has leaked out of the container originates in 10 CFR 70.39. This testing was for sealed sources which contain special nuclear material. The limit of 0.005 microcurie of removable activity was based on plutonium to ensure that allowable intake values would not be exceeded. The scope of the sealed source contamination surveys has been expanded beyond just containers with special nuclear material to also include sealed sources with byproduct or source material. If a radiography source is brought on site by a vendor, this source is, by definition, a sealed source; however, the requirements for testing are provided in 10 CFR 34. The responsibility for leak testing and reporting abnormal conditions rests with the holder of the license for the particular radiographic source.
APPLICABLE SAFETY ANALYSES	The limitation on sealed source contamination is intended to ensure that the total body or individual organ irradiation dose does not exceed allowable limits in the event of ingestion or inhalation.
REQUIREMENTS FOR OPERABILITY	Each sealed source containing greater than 100 microcuries of beta and/or gamma emitting material or greater than 5 microcuries of alpha emitting material shall be free of removable contamination.
APPLICABILITY	At all times.
COMPENSATORY MEASURES	A.1, A.2, and A.3 If a sealed source is found to have removable contamination in excess of 0.005 microcuries remove the sealed source from use immediately. The source must be repaired and decontaminated prior to return to service or it must be

(continued)

BASES

COMPENSATORY MEASURES

A.1, A.2, and A.3 (continued)

disposed of in accordance with regulatory requirements. A report shall be submitted on an annual basis if contamination in excess of the established limit is detected.

SURVEILLANCE REQUIREMENTS

NOTE: The test method shall have a detection sensitivity of at least 0.005 microcurie per test sample.

SR 1.7.8.1

Verify each sealed startup source and fission detector is within limits. This verification is to occur within 31 days of being installed in the core or being subjected to core flux.

This verification also needs to occur within 31 days following repair or maintenance.

SR 1.7.8.2

Every 6 months verify each sealed source which is in use and has a half-life greater than 30 days, is within the limit. This Frequency is sufficient to detect possible degradation of the sealed source through use.

This SR is modified by a Note excluding verification of sealed sources containing only tritium or gases and startup sources and fission detectors which have been subjected to core flux.

SR 1.7.8.3

Each sealed source and fission detector not in use must be verified to be within the limit within 6 months prior to use or transfer to another licensee.

This SR is modified by a Note excluding verification of startup sources and fission detectors which have been previously subjected to core flux.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 30.
2. 10 CFR 70.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.4 24 VDC Sources

BASES

BACKGROUND

The 24 VDC Power System provides power to portions of the Nuclear Instrumentation System, portions of the Radiation Monitoring System, and the Bypass and Inoperable Status Indication (BISI) System.

A separate Division 1 and a Division 2 24 VDC Power System is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure.

Each 24 VDC battery has two 12-cell 24 volt banks connected in series with the common point grounded. Each bank is provided with a solid state battery charger which receives 120 VAC input power from its respective Division 1 or 2 120 VAC vital power panel. The 24 VDC power panel DP-SO-A supplies source range monitor (SRM) channels A and C and intermediate range monitor (IRM) Systems channels A, C, E, G, process radiation monitor (PRM) System bus A and BISI displays. The 24 VDC power panel DP-SO-B supplies SRM channels B and D and IRM Systems channels B, D, F, H, PRM System bus B and BISI displays.

During normal operation, the 24 VDC loads are powered from the battery chargers with the batteries floating on the system. Each charger is capable of carrying the largest combined demand of the various steady state DC loads while simultaneously restoring the battery from (1.75 volts per cell) to its fully charged state in 24 hours. In case of loss of normal power to the battery charger, the DC loads are powered from the batteries.

Each 24 VDC battery is sized to produce required capacity at 80% of nameplate rating (Ref. 3). The applied battery loads are less than half the battery rating for half the rated time. The batteries have the capacity to carry designed load at 77°F without decreasing battery voltage below 1.75 V/cell with loss of output from the battery chargers during a specified period.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The 24 VDC power systems supply power to the IRM and SRM instrumentation, as well as portions of the PRM System. The IRM provides inputs to the Reactor Protection System (RPS) to trip the reactor on high neutron flux or inoperable channel. The applicable accident analysis for the IRM trips is discussed in the Technical Specifications for the RPS System (Ref 2).

The IRM inputs to the RPS System are designed to initiate a trip on failure of the channel. This design provides for safe operation of the system because loss or failure of the 24 VDC Power System will result in protective system action.

The indication portion of the IRM and the remaining systems are used for post accident monitoring and are described in the Post Accident Monitoring Licensee Controlled Specification.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not assumed to function during a design basis loss of offsite power accident.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used for or capable of detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used to monitor a process variable that is an initial condition of a DBA or a transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not part of a primary success path in the mitigation of a DBA or transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are a non-significant risk contributor to core damage and offsite releases.

(continued)

BASES (continued)

REQUIREMENTS FOR OPERABILITY	The Division 1 and Division 2 24 VDC electrical power subsystems shall be OPERABLE to support equipment required to be OPERABLE. The OPERABILITY requirements of the supported equipment is found in the appropriate equipment specification. OPERABILITY of the IRM System is discussed in the RPS Technical Specification. OPERABILITY of the remaining supported systems is discussed in the Post Accident Monitoring Technical Specification.
APPLICABILITY	When supported equipment is required to be OPERABLE, the applicability requirements of the supported equipment is found in the appropriate equipment specification.
COMPENSATORY MEASURES	With one or more 24 VDC electrical power subsystem inoperable, immediately declare required supported equipment inoperable.
SURVEILLANCE REQUIREMENTS	<u>SR 1.8.4.1</u> The normal system status is the battery charger supplying load current at a voltage that is higher than the battery terminal voltage, thereby providing a float charge to the battery. Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations (Ref. 3). The 7 day Frequency is conservative when compared with the manufacturers recommendations and IEEE-450 (Ref. 4).

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 1.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each inter-cell, inter-rack, and inter-tier connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

For inter-cell connectors, the limits are ≤ 137 E-6 ohms. For inter-tier and inter-rack connectors, the limits are ≤ 20% above the resistance as measured during installation.

The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

SR 1.8.4.3, SR 1.8.4.4, and SR 1.8.4.5

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

Visual inspection and resistance measurements of inter-cell, inter-rack, and inter-tier connections provides an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anti-corrosion material is used to ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection.

The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR, provided visible corrosion is removed during performance of this Surveillance.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.8.4.3, SR 1.8.4.4, and SR 1.8.4.5 (continued)

For inter-cell connectors, the limits are ≤ 137 E-6 ohms for the 24 VDC batteries. For inter-tier and inter-rack connectors, the limits are ≤ 20% above the resistance as measured during installation.

The 12 month Frequency of these SRs is consistent with IEEE-450 (Ref. 4), which recommends detailed visual inspection of cell condition and inspection of cell to cell and terminal connection resistance on a yearly basis.

SR 1.8.4.6

Battery charger capability requirements are based on the capacity of the chargers to supply the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state (Ref. 3). The minimum required amperes and duration ensure that these requirements can be satisfied. The charger shall be loaded at three separate and sequential load ratings, GE 50%, 75%, and 100% for GE 30 minitues at each load rating, maintaining a minimum of 24 volts for a total of GE 1.5 hours. The 100% load rating for the 24V battery chargers is 25 amps. The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

SR 1.8.4.7

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length correspond to the design duty cycle requirements.

The Surveillance Frequency of 24 months is acceptable, given unit conditions required to perform the test and the other requirements existing to ensure adequate battery performance

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.8.4.7 (continued)

during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The Note allows the performance of a modified performance discharge test in lieu of a service test once per 60 months. This substitution is acceptable because a modified performance discharge test represents a more severe test of battery capacity than SR 1.8.4.7.

SR 1.8.4.8

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage. A battery modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance discharge test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed at a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery performance discharge test for the duration of time equal to that of the battery performance discharge test.

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a performance discharge test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 1.8.4.8 (continued)

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 1.8.4.8; however, only the modified performance discharge test may be used to satisfy SR 1.8.4.8 while satisfying the requirements of SR 1.8.4.7 at the same time.

The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 4) and IEEE-485 (Ref. 5) for the 24V batteries. These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating, since IEEE-485 (Ref. 5) recommends using an aging factor of 125% in the battery sizing calculations. A capacity of 80% for the 24V battery shows that the battery is getting old and capacity will decrease more rapidly, even if there is ample capacity to meet the load requirements.

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450, 1975 (Ref. 6), when the battery capacity drops by more than 10% relative to its average on previous performance tests or when it is below 90% of the manufacturer's rating. The 12 month and 60 month Frequencies are consistent with the recommendations in IEEE-450 (Ref. 4). The 24 month Frequency is derived from the recommendations in IEEE-450 (Ref. 4).

REFERENCES

1. FSAR, Section 8.3.2.1.2 ±24 Volt DC Power System

2. Technical Specification 3.3.1.1, Reactor Protection System.

3. WNP-2 Calculation 2.05.01, Rev. 8, February 1990.

4. IEEE Standard 450, 1987.

(continued)

BASES

REFERENCES (continued)

5. IEEE Standard 485, 1983.

6. IEEE Standard 450, 1975.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.6 24 VDC Battery Parameters

BASES

BACKGROUND	This RFO delineates the limits on electrolyte temperature, level, float voltage, and specific gravity for the 24 VDC power source batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCS 1.8.4, 24 VDC Sources.
APPLICABLE SAFETY ANALYSES	The 24 VDC battery supports the 24 VDC Power System. The 24 VDC Power System and the related safety analyses is described in the basis for LCS 1.8.4.
REQUIREMENTS FOR OPERABILITY	The battery cell parameters of the 24 volt batteries shall be within the limits of Table 1.8.6-1. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with limits not met.
APPLICABILITY	The battery cell parameters are required solely for the support of the associated DC electrical power subsystem. Therefore, these cell parameters are only required when the associated DC electrical power subsystem is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCS 1.8.4.
COMPENSATORY MEASURES	<u>A.1, A.2, and A.3</u> With parameters of one or more cells in one or more batteries not within limits (i.e., Category A limits not met, Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table 1.8.6-1, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met, and continued operation is permitted for a limited period.

(continued)

BASES

COMPENSATORY MEASURES

A.1, A.2, and A.3 (continued)

The pilot cell(s) electrolyte level and float voltage are required to be verified to meet Category C limits within 1 hour (Required Compensatory Measure A.1). This check provides an indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cell(s). One hour is considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Compensatory Measure A.2) provides assurance that, during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A and B limits. This periodic verification is consistent with the normal Frequency of pilot cell Surveillances.

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. Taking into consideration that while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable for operation prior to declaring the DC batteries inoperable.

B.1

When any battery parameter is outside the Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, any Required Compensatory Measure

(continued)

BASES

COMPENSATORY MEASURES

B.1 (continued)

of Condition A and associated Completion Time not met or average electrolyte temperature of representative cells ≤ 60°F, also are cause for immediately declaring the associated DC electrical power subsystem inoperable.

SURVEILLANCE REQUIREMENTS

SR 1.8.6.1

The SR verifies that Category A battery cell parameters are consistent with IEEE-450 (Ref. 2), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte temperature of pilot cells.

SR 1.8.6.2

The quarterly inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 2). In addition, within 24 hours of a battery discharge < 22 V, or a battery overcharge > 31 V, the battery must be demonstrated to meet Category B limits. This inspection is also consistent with IEEE-450 (Ref. 2), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge.

SR 1.8.6.3

This Surveillance verification that the average temperature of representative cells is > 60°F is consistent with a recommendation of IEEE-450 (Ref. 2), which states that the temperature of electrolytes in representative cells (i.e., one-sixth of the cells) should be determined on a quarterly basis.

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer's recommendations and battery sizing calculations.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Table 1.8.6-1

This Table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer's recommendations and are consistent with the guidance in IEEE-450 (Ref. 2), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote a to Table 1.8.6-1 permits the electrolyte level to be temporarily above the specified maximum level during and following an equalizing charge (i.e., for up to 3 days following the completion of an equalize charge), provided it is not overflowing. These limits ensure that the plates suffer no physical damage and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 2) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on manufacturer's recommendations, and on the recommendation of IEEE-450 (Ref. 2), which states that prolonged operation of cells below 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.200 (0.015 below the manufacturer's fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 2), the specific gravity readings are based on a temperature of 77°F (25°C).

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 1.8.6-1 (continued)

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation. Level correction will be in accordance with manufacturer's recommendations.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ 1.195 (0.020 below the manufacturer's fully charged, nominal specific gravity) with the average of all connected cells > 1.205 (0.010 below the manufacturer's fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

Category C defines the limit for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limit, the assurance of sufficient capacity described above no longer exists and the battery must be declared inoperable.

The Category C limit specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limit for float voltage is based on IEEE-450, Appendix C (Ref. 2), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 1.8.6-1 (continued)

The Category C limit of average specific gravity (≥ 1.195), is based on manufacturer's recommendations (0.020 below the manufacturer's recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

The footnotes to Table 1.8.6-1 that apply to specific gravity are applicable to Category A, B, and C specific gravity. Footnote b requires the above mentioned correction for electrolyte level and temperature, with the exception that level correction is not required when battery charging current is < 2 amps on float charge. This current provides, in general, an indication of acceptable overall battery condition. Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charging current is an acceptable alternative to specific gravity measurement for determining the state of charge. This phenomenon is discussed in IEEE-450 (Ref. 2). Footnote c allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within 7 days each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as an equalizing charge that does not follow a deep discharge), specific gravity gradients are not significant, and confirming measurements may be made in less than 7 days.

REFERENCES

1. FSAR, Section 8.3.2.1.2 ±24 Volt DC Power System.

2. IEEE Standard 450, 1987.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.7 24 VDC Distribution System

BASES

BACKGROUND

The 24 VDC Power System provides power to portions of the Nuclear Instrumentation System, portions of the Radiation Monitoring System, and the Bypass and Inoperable Status Indication (BISI) System.

A separate Division 1 and a Division 2 24 VDC Power System is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure.

The 24 VDC Distribution System supplies power to source range monitors (SRMs), intermediate range monitors (IRMs), process radiation monitor (PRM) System buses and BISI displays. Specifically, 24 VDC power panel DP-SO-A supplies SRM channels A and C, IRM Systems channels A, C, E, G, PRM System bus A, and BISI displays. 24 VDC power panel DP-SO-B supplies SRM channels B and D, IRM Systems channels B, D, F, H, PRM System bus B, and BISI displays.

APPLICABLE SAFETY ANALYSES

The 24 VDC power systems supply power to the IRM and SRM instrumentation, as well as portions of the PRM. The IRM provides inputs to the Reactor Protection System (RPS) to trip the reactor on high neutron flux or inoperable channel. The applicable accident analysis for the IRM trips is discussed in the Technical Specifications for the RPS (Ref 2).

The IRM inputs to the RPS are designed to initiate a trip on failure of the channel. This design provides for safe operation of the system because loss or failure of the 24 VDC Power System will result in protective system action.

The indication portion of the IRM and the remaining systems are used for post accident monitoring and are described in the Post Accident Monitoring Licensee Controlled Specification.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not assumed to function during a design basis loss of offsite power accident.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used for or capable of detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not used to monitor a process variable that is an initial condition of a DBA or a transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are not part of a primary success path in the mitigation of a DBA or transient.

The 24 VDC Power System and the systems it supports, with the exception of the IRM trips, are a non-significant risk contributor to core damage and offsite releases.

REQUIREMENTS FOR OPERABILITY

The Division 1 and Division 2 24 VDC electrical power subsystems shall be OPERABLE to support equipment required to be OPERABLE. The OPERABILITY requirements of the supported equipment is found in the appropriate equipment specification.

OPERABILITY of the IRM System is discussed in the RPS Technical Specification. OPERABILITY of the remaining supported systems is discussed in the Post Accident Monitoring Specification.

APPLICABILITY.

When supported equipment is required to be OPERABLE. The applicability requirements of the supported equipment is found in the appropriate equipment specification.

COMPENSATORY MEASURES

A Note has been provided to modify the Required Compensatory Measures related to the 24 VDC electrical power subsystem. The Required Compensatory Measures provide appropriate measures for separate inoperable subsystems. As such, a Note has been provided to allow separate Condition entry for each 24 VDC electrical power subsystem instead of requiring that the Completion Time begin on initial entry into the Condition.

(continued)

BASES

COMPENSATORY MEASURES (continued)	With one or more 24 VDC electrical power subsystem inoperable, immediately declare required supported equipment inoperable. OPERABLE DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage.
SURVEILLANCE REQUIREMENTS	SR 1.8.7.1 This Surveillance verifies that the DC electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained and power is available to each required bus. The verification of energization of the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. This may be performed by verification of absence of low voltage alarms or by verifying a load powered from the bus is operating. The 7 day Frequency takes into account the redundant capability of the DC electrical power distribution subsystems and other indications available in the control room that alert the operator to subsystem malfunctions.
REFERENCES	1. FSAR, Section 8.3.2.1.2 ±24 Volt DC Power System. 2. Technical Specification 3.3.1.1, Reactor Protection System.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.9 Circuits Inside Primary Containment

BASES

BACKGROUND	Primary containment electrical penetrations and penetration conductors are protected by either deenergizing power circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection devices by periodic surveillances. Those AC circuits inside primary containment, which are kept normally deenergized, do not participate in plant safety actions. These circuits are primarily for lighting, utility outlets, and convenience power to be used for plant walkdowns, maintenance, and in-situ tests and/or observations. These circuits are non Class 1E.
APPLICABLE SAFETY ANALYSES	The AC circuits inside primary containment are kept normally deenergized and do not participate in plant safety actions. Thus, these circuits have no impact on plant safety systems.
REQUIREMENTS FOR OPERABILITY	The following AC circuits shall be deenergized: a. Circuits off of breakers 2AR and 8AR of E-MC-8C. b. Circuits off of panel E-LP-6BAG. c. Circuits off of panel E-LP-3DAG. d. Circuits off of breakers 2BL, 1D, and 2CR of E-MC-3DA.
APPLICABILITY	MODES 1, 2, and 3, except during entries into the drywell. This is consistent with the applicability of other primary containment requirements. Primary containment OPERABILITY is not required in MODES 4 and 5. Additionally, these circuits may be energized to support maintenance activities during outages.

(continued)

BASES (continued)

COMPENSATORY MEASURES	A.1 With one or more required circuits energized, deenergize the required circuit within 4 hours. This Completion Time is consistent with other primary containment requirements.
SURVEILLANCE REQUIREMENTS	SR 1.8.9.1 and SR 1.8.9.2 Every 24 hours verify that each required circuit that is not locked, sealed, or otherwise secured in the deenergized condition is deenergized. Every 31 days verify that each required circuit that is locked, sealed, or otherwise secured in the deenergized position has remained deenergized. The 31 day Frequency is acceptable considering the additional administrative controls to assure the required deenergized position is maintained.
REFERENCES	1. FSAR, Section 3.8.2.2.4.7. 2. FSAR, Section 7.1.2.3. 3. FSAR, Section 8.3.1.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.10 Primary Containment Penetration Conductor Overcurrent Protection

BASES

BACKGROUND	Primary containment electrical penetrations and penetration conductors are protected by either deenergizing power circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overprotection devices by periodic surveillances. The primary feature of these protective devices is to open the control or power circuit whenever the load conditions exceed the present current demands. This is to protect the circuit conductors against damage or failure due to overcurrent heating effects. This ensures the integrity of the containment penetration.
APPLICABLE SAFETY ANALYSES	With failure of the overcurrent protection device it is postulated that the wire insulation will degrade resulting in a containment leak path during a loss of coolant accident (LOCA). Containment overcurrent protection is not a process variable and is not considered as part of the primary success path in the mitigation of a design basis accident (DBA) or transient. However, the failure of a penetration would impact the OPERABILITY of primary containment, which is addressed by Technical Specifications. The specific circuits containing the overcurrent protection devices are not used to monitor a process variable that is an initial condition of a DBA or transient. These specific circuits are not part of a primary success path in the mitigation of a DBA or transient.
REQUIREMENTS FOR OPERABILITY	Each primary containment penetration conductor device shown in Table 1.8.10-1 shall be OPERABLE.
APPLICABILITY	The applicability in MODES 1, 2, and 3 is consistent with requirement for primary containment OPERABILITY requirements.

(continued)

BASES (continued)

COMPENSATORY MEASURES

A.1, A.2, and A.3

With one or more required primary containment penetration overcurrent protection devices inoperable, immediately declare the affected component inoperable and deenergize the associated circuit within 72 hours. The associated circuit is to be verified as deenergized every 7 days.

SURVEILLANCE REQUIREMENTS

SR 1.8.10.1

Perform CHANNEL CALIBRATION of the associated protective relays for a representative sample of ≥ 10% on a rotating basis, of the required 6.9 kV circuit breakers every 18 months.

The SR is modified by a Note that for each circuit breaker that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all circuit breakers have been tested.

SR 1.8.10.2

Perform LOGIC SYSTEM FUNCTIONAL TEST for a representative sample of ≥ 10% on a rotating basis, of the required 6.9 kV circuit breakers, including breaker actuation, every 18 months.

The SR is modified by a Note that for each circuit breakers that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all circuit breakers have been tested.

SR 1.8.10.3

Functionally test a representative sample of ≥ 10% on a rotating basis of the required 480 V circuit breakers every 18 months.

The SR is modified by a Note that for each circuit breaker that is found inoperable, another representative sample shall be tested until no more inoperabilities are found or until all circuit breakers have been tested.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)	<u>SR 1.8.10.4</u> Inspect and perform preventive maintenance on each associated circuit breaker every 60 months.
REFERENCES	1. FSAR, Sections 7.1.2.3 and 8.3.1.

B 1.8 ELECTRICAL POWER SYSTEMS

B 1.8.11 Motor Operated Valve (MOV) Thermal Overload Protection

BASES

BACKGROUND	For valves with thermal overload protection (i.e., trip on overload condition), the valve function should be accomplished prior to overload trip. The overload protection for these valves is meant to take precedence over the valve function. If the overload condition occurs during valve operation, the electric circuit will open to protect the equipment. In case of failure of the overload protection operation to disconnect the load, the equipment may suffer potential damage. Motor thermal overloads for Class 1E MOVs are selected two sizes larger than the normally selected thermal overload. (This approximates 140% of motor full load amperage.) Selection of overloads in this range permits Class 1E MOVs to operate for extended periods of time at moderate overloads; tripping occurs just prior to motor damage.
APPLICABLE SAFETY ANALYSES	The bypassing of the MOV thermal overload protection continuously or during accident conditions ensures that the thermal overload protection will not prevent safety related valves from performing their function. The Surveillance Requirements for demonstrating the bypassing of the thermal overload protection continuously and during accident conditions are in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves," Revision 1, March 1977.
REQUIREMENTS FOR OPERABILITY	The thermal overload protection for each MOV shown in Table 1.8.11-1 shall be OPERABLE.
APPLICABILITY	Whenever the MOV is required to be OPERABLE.

(continued)

BASES (continued)

COMPENSATORY MEASURES	A.1 and B.1 With one or more MOV thermal overloads inoperable, continuously bypass the inoperable MOV thermal overload within 8 hours. If the thermal overload is not bypassed, the MOV must be declared inoperable and any applicable Required Compensatory Measures (because the MOV is inoperable) must be taken.
SURVEILLANCE REQUIREMENTS	SR 1.8.11.1 Every 18 months perform a CHANNEL CALIBRATION of a representative sample of ≥ 25% on a rotating basis, on the MOV thermal overloads.
REFERENCES	1. FSAR, Section 8.3.1.1.10.

B 1.9 REFUELING OPERATIONS

B 1.9.1 Refueling Platform

BASES

BACKGROUND

The interlocks designed to restrict the operation of the refueling equipment to prevent the reactor from achieving criticality during refueling are described in the Technical Specifications. Other interlocks are provided on the refueling platform to prevent damage to the refueling equipment, fuel, and core internals. A detailed discussion of these interlocks and limits is contained in Reference 1.

To prevent damage to the refueling platform hoists (main, frame mounted auxiliary, and monorail hoists), the fuel and the vessel internals, the hoists have a load limit cutoff. These cutoffs will stop upward hoist movement when the load is greater than the limit setting. This prevents lifting a load that is in excess of the design of the hoist. This also prevents damage to vessel internals or fuel being lifted should it become stuck. In addition, the setpoint for the frame mounted auxiliary and the monorail hoist load limit cutoffs are set low enough so that fuel can not physically be raised with these hoists.

To prevent inadvertently lifting radioactive material out of the water, the frame mounted and monorail hoists have upward travel limits. These upward travel limits will stop the upward movement of the hoist while there is still adequate water shielding between the load and the refueling pool surface.

To prevent lowering the mast and damaging reactor internal components, the main hoist has a lower travel limit. The main hoist has a telescoping mast that could come in contact with reactor internals if allowed to extend too far. The limit on main hoist travel prevents the operator from extending the mast into reactor internal equipment.

To prevent inadvertently un-grappling a stuck fuel assembly and to prevent damage to the cable by unwinding it from the drum by continuing to lower it after the load is removed from the cable, a slack cable cutoff is provided on the main hoist.

(continued)

BASES

BACKGROUND (continued)

To provide the interlocks that prevent rod motion with fuel on the refueling hoist with the bridge over the core (described in Technical Specifications), there are load sensing switches on all of the hoists, with redundant switches on the main hoist. These interlocks are used to sense a load on the hoists which is indicative of moving fuel. These interlocks are used to provide a signal to the Reactor Manual Control System that will block rod movement with the refueling platform over the core or prevent moving the refueling platform over the core with a rod withdrawn. Note: Because the load limit cutoff for the frame mounted auxiliary and monorail hoists are set below the weight of a fuel bundle, the hoists can not be "fuel loaded" the hoist interlock need not be operational per SR 3.9.1.1.d or SR 3.9.1.1.e and therefore are not tested in RFO 1.9.1 Surveillance Requirements.

The applicable refueling platform interlocks are checked prior to use for refueling as described in Reference 3.

APPLICABLE SAFETY ANALYSES

The refueling interlocks are explicitly assumed in the Final Safety Analysis Report (FSAR) analysis of the control rod removal error during refueling (Ref 4). The Technical Specification Bases discuss the safety analyses for the refueling platform interlocks that prevent a rod removal error. This section will discuss the refueling platform interlocks that are provided to protect the equipment from damage due to an operational error.

The refueling platform interlocks are not used for or capable of detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

The refueling platform and associated instrumentation is not used to monitor a process variable that is an initial condition of a DBA or a transient.

The refueling platform and associated instrumentation is not part of a primary success path in the mitigation of a DBA or transient.

The refueling platform and associated instrumentation was found to be a non-significant risk contributor to core damage and offsite releases.

(continued)

BASES (continued)

REQUIREMENTS FOR OPERABILITY	Any functions of the refueling platform being used to move fuel assemblies or control rods shall be OPERABLE.
APPLICABILITY	The refueling platform and associated interlocks are required to be OPERABLE for the hoist being used during movement of fuel assemblies or control rods within the reactor pressure vessel. Equipment that is not being used is not required to be OPERABLE.
COMPENSATORY MEASURES	With the refueling platform and associated interlocks inoperable, immediately suspend all movement of fuel assemblies and control rods within the reactor pressure vessel with the refueling platform. (NOTE: This measure does NOT prevent placing the load in a safe location prior to suspension).
SURVEILLANCE REQUIREMENTS	SR 1.9.1.1 through SR 1.9.1.7 Verifying that the refueling platform interlocks function once within 7 days of using the equipment ensures that the equipment will be protected against improper operation. This Frequency is based on engineering judgement and equipment history.
REFERENCES	1. Letter G02-93-191, dated July 29, 1993, "Refueling Platform Load Limits". 2. FSAR, Section 9.1.4 Fuel Handling System. 3. FSAR, Section 9.1.4.2.10.2.1.4 Equipment Preparation. 4. FSAR, Section 15.4.1.1.

B 1.9 REFUELING OPERATIONS

B 1.9.2 Crane Travel

BASES

BACKGROUND

To prevent transporting loads over the spent fuel storage pool that are greater than the allowed load limit, the crane travel is restricted by interlocks (Ref 1). These interlocks are established so that the crane will stop if an attempt is made to transport material over the spent fuel storage pool.

The interlocks are bypassed only when it is necessary to operate the crane in the fuel pool area in conjunction with activities associated with fuel handling and storage. During the occasions when the interlocks are bypassed, administrative controls are used to prevent the crane from carrying loads that are not necessary for fuel handling or storage, and which are in excess of the rack design drop load (one fuel assembly at four feet above the top of the fuel rack) (Ref 2). Load limits are applied to the loads carried over the spent fuel. Loads over a given weight are limited as to the height that they can be carried over the spent fuel storage pool.

APPLICABLE SAFETY ANALYSES

The restriction on movement of loads in excess of the nominal weight of a fuel assembly 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 assumed in the fuel handling accident (Ref. 3); 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. The most severe fuel handling accident from a radiological viewpoint is dropping a fuel assembly onto the top of the core. This accident analysis bounds the accident for a dropped fuel assembly over the spent fuel pool (Ref 3).

The ability to withstand a dropped fuel bundle is included in the design of the spent fuel racks (Ref 4).

REQUIREMENTS FOR OPERABILITY

The load and height of a load over the spent fuel pool shall be within the limits of the graph (Figure 1.9.2-1).

(continued)

BASES (continued)

APPLICABILITY	The load and load height limits are required whenever there is irradiated fuel in the spent fuel pool.
COMPENSATORY MEASURES	A note has been added to state that the requirements of RFO 1.0.3 are not applicable. When the load and height limitations are not met, immediately initiate actions to move the crane load from over the spent fuel storage pool racks.
SURVEILLANCE REQUIREMENTS	SR 1.9.2.1 The system functional test involves demonstrating that the crane interlocks and physical stops that prevent crane travel with loads in excess of 1500 pounds over fuel assemblies in the pent fuel pool rack are OPERABLE. This Surveillance Requirement is only required when the crane is in use. Verifying crane travel limits function every 7 days when the crane is in use ensures that the equipment will be protected against improper operation.
REFERENCES	1. FSAR, Section 9.1.2.3.3 Spent Fuel and Cask Handling. 2. FSAR, Section 9.1.2.3.2 Spent Fuel Storage Rack Structural Design. 3. FSAR, 15.7.4 Fuel Handling Accident. 4. FSAR 9.1.2.1.1.1 Spent Fuel Storage Design Basis.