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SUBJECT

Issue CNS SLC revisions

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Remarks:

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Remove and Insert

Replace the following page(s) of Catawba Nuclear Station Selected Licensee Commitments (SLC) Manual with the attached revised page(s). The revised page(s) are identified by Section number and contains marginal lines indicating the areas of change.

REMOVE THESE PAGES	INSERT THESE PAGES
LIST OF EFFECTIVE SECTIONS	
Pages 1-5 Revision 102	Pages 1-5 Revision 103
TAB 16.5	
16.5-4, Pages 1-2 Revision 0	16.5-4, Pages 1-2 Revision 1
TAB 16.6	
16.6-3, Pages 1-2 Revision 1	16.6-3, Pages 1-2 Revision 2
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16.11-2, Pages 1-9 Revision 6	16.11-2, Pages 1-9 Revision 7
16.11-7, Pages 1-16 Revision 12	16.11-7, Pages 1-16 Revision 13

If you have any questions concerning the contents of this Catawba Nuclear Station Selected Licensee Commitments (SLC) Manual update, please contact Chris Courtenay (908) 373-1894.

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SECTION	REVISION NUMBER	REVISION DATE
16.13-3	Deleted	
16.13-4	4	10/04/21

16.5 REACTOR COOLANT SYSTEM

16.5-4 Pressurizer

COMMITMENT The pressurizer temperature shall be limited to:

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

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

APPLICABILITY: At all times.

REMEDIAL ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	----------NOTE---------- All Required Actions must be completed whenever this Condition is entered. ---------- Pressurizer temperature not within limits.	A.1	Restore pressurizer temperature to within limits. AND	30 minutes
		A.2	Perform engineering evaluation to determine effects of the out-of-limit condition on the structural integrity of the pressurizer. AND	72 hours
		A.3	Determine that the pressurizer remains acceptable for continued operation.	72 hours
B.	Required Action and associated Completion Time not met.	B.1	Initiate a Condition Report in accordance with the Corrective Action Program.	Immediately

TESTING REQUIREMENTS

	TEST	FREQUENCY
TR 16.5-4-1	----------NOTE---------- Only required to be performed during system heatup or cooldown operations. ----------	
	Verify pressurizer temperatures are within limits.	30 minutes

BASES The temperature and pressure changes during heatup and cooldown are limited to be consistent with the requirements given in the ASME Boiler and Pressure Vessel Code, Section III, Appendix G. Although the pressurizer operates in temperature ranges above those for which there is reason for concern of nonductile failure, operating limits are provided to assure compatibility of operation with the fatigue analysis performed in accordance with the ASME Code requirements.

REFERENCES

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

16.6 ENGINEERED SAFETY FEATURES

16.6-3 Inlet Door Position Monitoring System

COMMITMENT The Inlet Door Position Monitoring System shall be FUNCTIONAL.

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

REMEDIAL ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	Inlet Door Position Monitoring System non-functional.	A.1.1	Verify the Ice Bed Temperature Monitoring System is FUNCTIONAL.	Immediately
			AND	
		A.1.2	Verify ice bed temperature is $\leq$ 27°F.	Once per 4 hours
			AND	
		A.1.3	Restore the Inlet Door Position Monitoring System to FUNCTIONAL status.	14 days
		OR		
		A.2	Restore the Inlet Door Position Monitoring System to FUNCTIONAL status.	48 hours
B.	Required Action and associated Completion Time not met.	B.1	Initiate a Condition Report in accordance with the Corrective Action Program.	Immediately

TESTING REQUIREMENTS

	TEST	FREQUENCY
TR 16.6-3-1	Perform CHANNEL CHECK.	12 hours
TR 16.6-3-2	Perform TADOT.	18 months
TR 16.6-3-3	Verify the Inlet Door Position Monitoring System correctly indicates the status of each inlet door.	As the door is opened and reclosed during testing per Technical Specification 3.6.13

BASES The FUNCTIONALITY of the Inlet Door Position Monitoring System ensures that the capability is available for monitoring the individual inlet door position. In the event the system is non-functional, the REMEDIAL ACTION requirements provide assurance that the ice bed heat removal capacity will be maintained.

REFERENCES

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

16.7 INSTRUMENTATION

16.7-10 Radiation Monitoring for Plant Operations

COMMITMENT The radiation monitoring instrumentation channels for plant operations shown in Table 16.7-10-1 shall be FUNCTIONAL.

APPLICABILITY: As shown in Table 16.7-10-1.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more radiation monitoring channels Alarm/Trip setpoint for plant operations exceeding the value shown in Table 16.7-10-1.	A.1 Adjust the setpoint to within the limit. OR A.2 Declare the channel non-functional.	4 hours 4 hours

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One Containment Atmosphere – High Gaseous Radioactivity (EMF-39 – Low Range) channel non-functional.	B.1 ----------NOTE---------- In order to utilize Required Action B.1, the following conditions must be satisfied: 1. The affected unit is in MODES 5 or 6. 2. EMF-36 is FUNCTIONAL and in service for the affected unit. 3. The Reactor Coolant System for the affected unit has been vented. 4. Either the reactor vessel head is in place (bolts are not required), or if it is not in place, the lifting of heavy loads over the reactor vessel and the movement of irradiated fuel assemblies within containment have been suspended. ---------- Restore the non-functional channel to FUNCTIONAL status.	12 hours

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met. OR Required Action B.1 not utilized.	C.1 Close the Containment Purge Exhaust System (CPES) valves.	Immediately
D. One Control Room Air Intake – Radiation Level – High Gaseous Radioactivity (EMF-43A & B – Low Range) channel non-functional in one or both control room intakes.	D.1 Initiate action to restore non-functional channel(s) to FUNCTIONAL status. AND D.2 Ensure that one Control Room Area Ventilation System (CRAVS) train is in operation.	Immediately 1 hour
E. One Fuel Storage Pool Area – Radiation Level (1EMF-15, 2EMF-4) channel non-functional.	E.1 Provide a portable continuous monitor with the same Alarm Setpoint in the fuel storage pool area. AND E.2.1 Restore non-functional monitor to FUNCTIONAL status. OR E.2.2 Suspend all operations involving fuel movement in the fuel building.	Immediately 30 days 30 days

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One Fuel Storage Pool Area – High Gaseous Radioactivity (EMF-42) channel non-functional.	F.1.1 Initiate action to restore non-functional channel to FUNCTIONAL status. AND	Immediately
	F.1.2 ----------NOTE---------- Only applicable during fuel handling operations in the fuel building. ---------- Ensure one Fuel Handling Ventilation Exhaust System (FHVES) train is in operation and all operating FHVES trains are in the filtered mode.	Immediately
	OR	
	F.2 Suspend all operations involving fuel movement in the fuel building.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One Auxiliary Building Ventilation – High Gaseous Radioactivity (EMF-41) channel non-functional.	G.1.1 Initiate action to restore non-functional channel to FUNCTIONAL status. AND	Immediately
	G.1.2 Verify EMF-36 is FUNCTIONAL (reference SLC 16.11-7) and in service for any affected unit in MODE 1, 2, 3 or 4. AND	Immediately
	G.1.3 Restore non-functional channel to FUNCTIONAL status. OR	30 days
	G.2 Ensure all operating ABFVES trains are in the filtered mode for any affected unit in Mode 1, 2, 3 or 4.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
H.	One Component Cooling Water System (EMF-46A & B) channel non-functional.	H.1	Collect and analyze grab samples for principal gamma emitters (listed in Table 16.11-1-1, NOTE 3) at a lower limit of detection of no more than $5x10^{-7}$ μCi/ml.	Once per 12 hours
		AND		
		H.2	Restore non-functional channel to FUNCTIONAL status.	30 days
I.	One or more N-16 Leakage Monitor (EMF-71, 72, 73, & 74) channels non-functional.	I.1	Ensure that the Condenser Evacuation System Noble Gas Activity Monitor (EMF-33) is FUNCTIONAL and in operation.	Immediately
		OR		
		I.2	Ensure that Required Actions are met per SLC 16.11-7 if the Condenser Evacuation System Noble Gas Activity Monitor (EMF-33) is non-functional or not in operation.	Immediately
J.	One Auxiliary Building Cooling Water System (EMF-89) channel non-functional.	J.1	Collect and analyze grab samples for principal gamma emitters (listed in Table 16.11-1-1, NOTE 3) at a lower limit of detection of no more than $5x10^{-7}$ μCi/ml.	Once per 7 days
		AND		
		J.2	Restore non-functional channel to FUNCTIONAL status.	30 days

TESTING REQUIREMENTS

----------NOTE----------
Refer to Table 16.7-10-1 to determine which TRs apply for each Radiation Monitoring for Plant Operations channel.

TEST	FREQUENCY
TR 16.7-10-1 Perform CHANNEL CHECK.	12 hours
TR 16.7-10-2 Perform CHANNEL OPERATIONAL TEST.	18 months
TR 16.7-10-3 Perform CHANNEL CALIBRATION.	18 months

Table 16.7-10-1

Radiation Monitoring Instrumentation for Plant Operations

MONITOR	APPLICABLE MODES	REQUIRED CHANNELS	ALARM/TRIP SETPOINT	TESTING REQUIREMENTS
1. Containment Atmosphere – High Gaseous Radioactivity (EMF-39 – Low Range)	1, 2, 3, 4, 5, 6	1	Note (a)	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
2. Fuel Storage Pool Areas – High Gaseous Radioactivity (EMF-42)	With irradiated fuel in the fuel storage pool areas	1	$\leq 1.7 \times 10^{-4}$ µCi/ml	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
3. Fuel Storage Pool Areas – Radiation Level (Fuel Bridge – 1EMF-15, 2EMF-4)	With fuel in the fuel storage pool areas	1	$\leq$ 15 mR/h Note (d)	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
4. Control Room Air Intake – Radiation Level – High Gaseous Radioactivity (EMF-43A & B – Low Range)	At all times	2 (1/intake)	$\leq 1.7 \times 10^{-4}$ µCi/ml	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
5. Auxiliary Building Ventilation – High Gaseous Radioactivity (EMF-41)	1, 2, 3, 4	1	$\leq 1.7 \times 10^{-4}$ µCi/ml	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
6. Component Cooling Water System (EMF-46A & B)	At all times[e]	1[b]	$\leq 1 \times 10^{-3}$ µCi/ml	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
7. N-16 Leakage Monitor (EMF-71, 72, 73, & 74)	1 (40-100% reactor power)	4 (1/steamline)	Note (c)	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3
8. Auxiliary Building Cooling Water System (EMF-89)	At all times	1	$\leq 1 \times 10^{-3}$ µCi/ml	TR 16.7-10-1 TR 16.7-10-2 TR 16.7-10-3

Table 16.7-10-1 Notes

(a) When venting or purging from containment to the atmosphere, the trip setpoint shall not exceed the equivalent limits of SLC 16.11-6 in accordance with the methodology and parameters in the ODCM. When not venting or purging in Modes 5 or 6, the alarm setpoint concentration (μCi/ml) shall be such that the actual submersion dose rate would not exceed 5 mR/hr without alarm. When not venting or purging in Modes 1 through 4, the alarm setpoint shall be no more than 3 times the containment atmosphere activity as indicated by the radiation monitor.

(b) For EMF-46A & B: The EMF monitor associated with the operating Component Cooling Water System train shall be FUNCTIONAL. This requirement is based on the existence of an interlock which blocks the EMF loss of flow alarm from being received in the control room when the associated train pump motor(s) are not running.

(c) The setpoint is as required by the primary to secondary leak rate monitoring program.

(d) Catawba's Spent Fuel Pools were originally licensed for compliance with 10 CFR 70.24. The basis for the 15 mR/hr setpoint can be found in 10 CFR 70.24(a)(2) which states, in part, "... The monitoring devices in the system shall have a preset alarm point of not less than 5 millirems per hour (in order to avoid false alarms) nor more than 20 millirems per hour. ..." Although Catawba received exemption from 10 CFR 70.24 in 1997, the 15 mR/hr setpoint limit for detection of inadvertent criticality in the Spent Fuel Pool is still appropriate. Catawba is presently committed to compliance with 10 CFR 50.68 which requires, in part, "(6) Radiation monitors are provided in storage and associated handling areas when fuel is present to detect excessive radiation levels and initiate appropriate safety actions."

Therefore, the setpoint may be elevated, using approved plant procedures, above 15 mR/hr during Independent Spent Fuel Storage Installation (ISFSI) Transportable Storage Container (TSC) transfer activities when the loaded TSC may generate dose rates in excess of 15 mR/hr at the detector location. The setpoint shall be returned to $\leq$ 15 mR/hr upon completion of the TSC transfer.

(e) The Component Cooling Water (CCW) radiation monitors are not considered to be non-functional just because there is no CCW flow through their respective trains. The EMFs would be considered non-functional if one of the inlet/outlet CCW isolation valves to the EMF were closed, if the EMF itself was not functioning properly, or if preventive maintenance/calibration activities were being performed on the EMF rendering it out of service. For the situation where the associated train related CCW pumps are not running and a section of the CCW System (e.g., CCW heat exchanger) has been isolated and drained such that the associated radiation monitor has no process fluid to monitor, grab samples are not required.

BASES

The FUNCTIONALITY of the radiation monitoring instrumentation for plant operations ensures that: (1) the associated action will be initiated when the radiation level monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, and (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance. The radiation monitors for plant operations senses radiation levels in selected plant systems and locations and determines whether or not predetermined limits are being exceeded. The radiation monitors send actuation signals to initiate alarms or automatic isolation action and actuation of emergency exhaust or ventilation systems. Some of the final actuations are dependent on plant condition in addition to the actuation signals from the radiation monitors.

Operation of the Component Cooling Water (CCW) System Train A with the Train A Radiation Monitoring System (EMF) monitor non-functional and relying on the Train B EMF monitor for detection of radioactivity is not permissible. Likewise, operation of the CCW System Train B with the Train B EMF monitor non-functional and relying on the Train A EMF monitor for detection of radioactivity is not permissible. This is due to the interlock between the EMF monitor low-flow alarm and the operation of the CCW System pump motors on the same train. The EMF monitor in the operating CCW System pump train must be FUNCTIONAL, or the compensatory measures taken as specified.

In MODES 5 and 6, initiation of the Containment Purge Exhaust System (CPES) with EMF-39 non-functional is not permissible. The basis for Required Action B.1 is to allow the continued operation of the CPES with EMF-39 initially FUNCTIONAL. Continued operation of the CPES is contingent upon the ability of the affected unit to meet the requirements as noted in Required Action B.1.

REFERENCES

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

2. Letter from NRC to M. S. Tuckman, Duke, Issuance of Exemption to 10 CFR 70.24, Criticality Accident Requirements, July 29, 1997.

16.7 INSTRUMENTATION

16.7-15 Hydrogen Monitors

COMMITMENT The Hydrogen Monitors shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2.

REMEDIAL ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One Hydrogen Monitor channel non-functional.	A.1	Restore channel to FUNCTIONAL status.	30 days
~~B.~~	~~Required Action and associated Completion Time of Condition A not met.~~	~~B.1~~	~~Prepare and submit a Special Report to the Commission outlining the preplanned alternate method of monitoring, the cause of the non-functionality, and the plans and schedule for restoring the channel to FUNCTIONAL status.~~	~~14 days~~
~~C~~B.	Two Hydrogen Monitor channels non-functional.	~~C~~B.1	Restore one Hydrogen Monitor channel to FUNCTIONAL status.	72 hours
~~D~~C.	Required Action and associated Completion Time of Condition ~~C~~ A or B not met.	~~D~~C.1	~~Be in MODE 3~~Initiate a Condition Report in accordance with the Corrective Action Program.	~~6 hours~~Immediately
		~~AND~~		
		~~D.2~~	~~Be in MODE 4.~~	~~12 hours~~

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.7-15-1 Perform CHANNEL CHECK.	31 days
TR 16.7-15-2 Perform CHANNEL CALIBRATION.	92 days
TR 16.7-15-3 Perform CHANNEL CALIBRATION.	18 months

BASES

The Hydrogen Monitors are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion during accident conditions. With the elimination of the design basis LOCA hydrogen release (Ref. 5), the Hydrogen Monitors are no longer required to mitigate design basis accidents. The Hydrogen Monitors are now classified as Regulatory Guide 1.97, Category 3 instrumentation. The Hydrogen Monitors are used to assess the degree of core damage during a severe accident and confirm that random or deliberate ignition has taken place.

The FUNCTIONALITY of the Hydrogen Monitors ensures that there is sufficient information available on unit parameters to monitor and assess unit status and behavior following an accident. The availability of the Hydrogen Monitors is important so that responses to corrective actions can be observed and the need for, and the magnitude of, further actions can be determined. Two FUNCTIONAL channels ensure no single failure prevents operators from getting the information necessary for them to determine the safety status of the unit. If two Hydrogen Monitor channels are non-functional, grab samples of the Containment atmosphere can be obtained and analyzed for hydrogen concentration (Ref. 6).

A CHANNEL CALIBRATION is performed every 92 days on the Hydrogen Monitor channels. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor using hydrogen gas mixtures to obtain calibration points at 1 volume percent (v/o) and 4 v/o hydrogen. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. The Frequency is based on operating experience associated with these monitors.

These SLC requirements were relocated from the Technical Specifications as a result of License Amendments 219 and 214 for Units 1 and 2, respectively.

REFERENCES

1. Letter from NRC to D.M. Jamil, Duke, License Amendments 219 and 214 for Units 1 and 2, respectively, dated March 1, 2005.

2. Catawba Updated Final Safety Analysis Report Section 1.8.

3. Regulatory Guide 1.97, Rev. 2.

4. NUREG-0737, Supplement 1, "TMI Action Items."

5. 10 CFR 50.44, "Combustible gas control for nuclear power reactors."

6. Chemistry Management Procedure 3.4.12

16.8 ELECTRICAL POWER SYSTEMS

16.8-1 Containment Penetration Conductor Overcurrent Protective Devices (CPCOPDs)

COMMITMENT Primary and backup CPCOPDs shown in Table 16.8-1-1 and 16.8-1-2 shall be FUNCTIONAL.

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

REMEDIAL ACTIONS

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

1. Separate Condition entry is allowed for each penetration circuit.
2. Enter applicable Conditions and Required Actions for systems made inoperable or non-functional by CPCOPDs.
3. SLC 16.2-3 is not applicable to CPCOPDs in circuits which have their redundant devices tripped or removed, or their non-functional protective devices racked out or removed from the circuits.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more CPCOPD(s) non-functional.	A.1.1 De-energize the circuit(s) by tripping the associated redundant circuit breaker or removing the redundant fuse(s). AND	72 hours
	A.1.2 Verify the associated redundant protective device(s) to be tripped or removed.	Once per 7 days

(continued)

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	OR	
	A.2.1 De-energize the circuit(s) by racking out the non-functional circuit breaker or removing the non-functional protective device(s).	72 hours
	AND	
	A.2.2 Verify the non-functional device(s) are removed or racked out.	Once per 7 days
B. Required Action and associated Completion Time not met.	B.1 Initiate a Condition Report in accordance with the Corrective Action Program.	Immediately

TESTING REQUIREMENTS

----------NOTE----------
TR 16.8-1-1, 16.8-1-2, and 16.8-1-3 are only required to be performed for 10% of the circuit breakers within each voltage level on a rotating basis during each testing interval.

TEST		FREQUENCY
TR 16.8-1-1	Perform a CHANNEL CALIBRATION of the associated protective relays for medium voltage circuits (4-15 kV).	18 months

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.8-1-2	----------NOTE---------- For each circuit breaker found non-functional during these functional tests, an additional representative sample of ≥ 10% of all the circuit breakers of the non-functional type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested. --- Perform an integrated protective system functional test on each medium voltage (4-15 kV) circuit breaker which includes simulated automatic actuation of the system and verify that each relay and associated circuit breakers function as designed.	18 months
TR 16.8-1-3	----------NOTES---------- 1. Only required to be performed for 10% of each type of lower voltage circuit breakers on a rotating basis during each testing interval. 2. Circuit breakers found non-functional during functional testing shall be restored to FUNCTIONAL status prior to resuming operation of the circuit. 3. For each circuit breaker found non-functional during these functional tests, an additional representative sample of ≥ 10% of all the circuit breakers of the non-functional type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested. --- Inject a current in excess of the breaker's nominal setpoint, measure the response time, and verify that the measured response time is ≤ the manufacturer's specified response time.	18 months

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.8-1-4	Perform fuse inspection and maintenance program.	18 months
TR 16.8-1-5	Perform inspection and preventive maintenance on each circuit breaker in accordance with procedures prepared in conjunction with its manufacturer's recommendations.	60 months

BASES

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

The TESTING REQUIREMENTS applicable to lower voltage circuit breakers provide assurance of breaker reliability by testing at least one representative sample of each manufacturer's brand of circuit breaker. Each manufacturer's molded case circuit breakers are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers are tested. If a wide variety exists within any manufacturer's brand of circuit breakers, it is necessary to divide that manufacturer's breakers into groups and treat each group as a separate type of breaker for testing purposes.

Fuse testing is in accordance with IEEE Standard 242-1975 (Reference 2). This program will detect any significant degradation of the fuses or improperly sized fuses. Safety is further assured by the "fail-safe" nature of fuses; that is, if the fuse fails, the circuit will de-energize.

The lists of components for which this COMMITMENT is applicable exclude those circuits for which credible fault currents would not exceed the electrical penetration design rating.

REFERENCES

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

2. IEEE Standard 242-1975, "IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems".

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1. 6900 VAC Swgr	
Primary Bkr RCP1A Backup Bkr 1TA-3	Reactor Coolant Pump 1A
Primary Bkr RCP1B Backup Bkr 1TB-3	Reactor Coolant Pump 1B
Primary Bkr RCP1C Backup Bkr 1TC-3	Reactor Coolant Pump 1C
Primary Bkr RCP1D Backup Bkr 1TD-3	Reactor Coolant Pump 1D
2. 600 VAC MCC	
1EMXC-F01B Primary Bkr Backup Fuse	Accumulator 1C Discharge Isol Vlv 1NI76A
1EMXC-F01C Primary Bkr Backup Fuse	Check Vlv Test Header Cont Isol Vlv 1NI95A
1EMXC-F02A Primary Bkr Backup Fuse	Train A Alternate Power to ND Letdn Vlv 1ND1B
1EMXC-F02B Primary Bkr Backup Fuse	Hot Leg Inj Check Vlv Test Isol Vlv 1NI153A
1EMXC-F03A Primary Bkr Backup Fuse	NC Pump 1C Thermal Barrier Outlet Isol Vlv 1KC345A
1EMXC-F03B Primary Bkr Backup Fuse	Nitrogen to PRT Cont Isol Inside Vlv 1NC54A
1EMXC-F03C Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 1NC33A
1EMXC-F05A Primary Bkr Backup Fuse	NCDT Vent Inside Cont Isol Vlv 1WL450A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1EMXC-F05B Primary Bkr Backup Fuse	Cont Sump Pumps Discharge Inside Cont Isol Vlv 1WL825A
1EMXC-F05C Primary Bkr Backup Fuse	Ventilation Unit Cond Drain Tnk Outside Cont Isol Vlv 1WL867A
1EMXC-F06A Primary Bkr Backup Fuse	NCDT Pumps Discharge Inside Cont Isol Vlv 1WL805A
1EMXC-F07B Primary Bkr Backup Fuse	Cont Hydrogen Purge Outlet Cont Isol Vlv 1VY17A
1EMXD-F01A Primary Bkr Backup Fuse	ND Pump 1A Suction from NC Loop B Vlv 1ND1B
1EMXD-F01B Primary Bkr Backup Fuse	Accumulator 1B Discharge Isol Vlv 1NI65B
1EMXD-F01C Primary Bkr Backup Fuse	NI Pump A to Hot Leg Check Vlv Test Isol Vlv 1NI122B
1EMXD-F02A Primary Bkr Backup Fuse	ND Pump 1B Suction from NC Loop C Vlv 1ND36B
1EMXD-F02B Primary Bkr Backup Fuse	ND to Hot Legs Chk 1NI125, 1NI129 Test Isol Vlv 1NI154B
1EMXD-F02C Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 1NC31B
1EMXD-F05A Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 1NC35B
1EMXD-F05B Primary Bkr	Rx Bldg Drain Hdr Inside Cont Isol Vlv 1KC429B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1EMXD-F05C Primary Bkr Backup Fuse	NCDT Hx Clng Water Return Inside Isol Vlv 1KC332B
1EMXD-F06A Primary Bkr Backup Fuse	NC Pump 1B Thermal Barrier Outlet Isol Vlv 1KC364B
1EMXD-F06B Primary Bkr Backup Fuse	NC Pumps Return Hdr Inside Cont Isol Vlv 1KC424B
1EMXK-F01C Primary Bkr Backup Fuse	Backup Nitrogen to PORV 1NC34A from Accum Tnk 1A Vlv 1NI438A
1EMXK-F02A Primary Bkr Backup Fuse	NC Pump 1A Thermal Barrier Outlet Isol Vlv 1KC394A
1EMXK-F02B Primary Bkr Backup Fuse	Lower Cont Ventilation Units Return Cont Isol Vlv 1RN484A
1EMXK-F02C Primary Bkr Backup Fuse	NV Supply to Pressurizer Vlv 1NV037A
1EMXK-F03A Primary Bkr Backup Fuse	S/G C Blowdown Line Sample Inside Cont Isol Vlv 1NM210A
1EMXK-F04A Primary Bkr Backup Fuse	S/G A Upper Shell Sample Inside Cont Isol Vlv 1NM187A
1EMXK-F04B Primary Bkr Backup Fuse	S/G A Blowdown Line Sample Inside Cont Isol Vlv 1NM190A
1EMXK-F04C Primary Bkr Backup Fuse	S/G C Upper Shell Sample Inside Cont Isol Vlv 1NM207A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1EMXK-F06A Primary Bkr Backup Fuse	Hydrogen Skimmer Fan 1A Inlet Vlv 1VX1A
1EMXK-F07C Primary Bkr Backup Fuse	Electric Hydrogen Recombiner Power Supply Panel 1A
1EMXK-F09A Primary Bkr Backup Fuse	Accum 1A Discharge Isol Vlv 1NI54A
1EMXK-F09C Primary Bkr Backup Fuse	NC Pump Oil Fill Header Cont Isol Vlv 1NC196A
1EMXK-F10A Primary Bkr Backup Fuse	Cont Air Return Damper 1ARF-D-2
1EMXK-F10B Primary Bkr Backup Fuse	VQ Fans Suction from Cont Isol Vlv 1VQ2A
1EMXK-F10C Primary Bkr Backup Fuse	Cont Air Addition Cont Isol Vlv 1VQ16A
1EMXK-F11A Primary Bkr Backup Fuse	Cont Air Return Fan Motor 1A
1EMXK-F11B Primary Bkr Backup Fuse	Hydrogen Skimmer Fan Motor 1A
1EMXL-F01B Primary Bkr Backup Fuse	Trn B Alternate Power to ND Letdn Vlv 1ND37A
1EMXL-F01C Primary Bkr Backup Fuse	NI Accum D Sample Line Inside Cont Isol Vlv 1NM81B
1EMXL-F02A Primary Bkr Backup Fuse	NC Pump 1D Thermal Barrier Outlet Isol Vlv 1KC413B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1EMXL-F02B Primary Bkr Backup Fuse	Air Handling Units Glycol Return Cont Isol Vlv 1NF233B
1EMXL-F02C Primary Bkr Backup Fuse	NI Accum C Sample Line Inside Cont Isol Vlv 1NM78B
1EMXL-F03A Primary Bkr Backup Fuse	S/G D Blowdown Sample Line Inside Cont Isol Vlv 1NM220B
1EMXL-F03B Primary Bkr Backup Fuse	NI Accum A Sample Line Inside Cont Isol Vlv 1NM72B
1EMXL-F03C Primary Bkr Backup Fuse	NI Accum B Sample Line Inside Cont Isol Vlv 1NM75B
1EMXL-F04A Primary Bkr Backup Fuse	S/G B Upper Shell Sample Inside Cont Isol Vlv 1NM197B
1EMXL-F04B Primary Bkr Backup Fuse	S/G B Blowdown Sample Line Inside Cont Isol Vlv 1NM200B
1EMXL-F04C Primary Bkr Backup Fuse	S/G D Upper Shell Sample Inside Cont Isol Vlv 1NM217B
1EMXL-F06A Primary Bkr Backup Fuse	Hydrogen Skimmer Fan 1B Inlet Vlv 1VX2B
1EMXL-F06B Primary Bkr Backup Fuse	Backup Nitrogen to PORV 1NC32B from Accum Tnk 1B Vlv 1NI439B
1EMXL-F07C Primary Bkr Backup Fuse	Electric Hydrogen Recombiner Power Supply Panel 1B
1EMXL-F09A Primary Bkr	Accum 1D Discharge Isol Vlv 1NI88B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1EMXL-F10A Primary Bkr Backup Fuse	Cont Air Return Damper 1ARF-D-4
1EMXL-F10B Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 1NC251B
1EMXL-F10C Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 1NC252B
1EMXL-F11A Primary Bkr Backup Fuse	Cont Air Return Fan Motor 1B
1EMXL-F11B Primary Bkr Backup Fuse	Hydrogen Skimmer Fan Motor 1B
1EMXS-F01B Primary Bkr Backup Fuse	NC Pumps Seal Return Inside Cont Isol Vlv 1NV89A
1EMXS-F02A Primary Bkr Backup Fuse	ND Pump 1B Suction from NC Loop C Vlv 1ND37A
1EMXS-F02B Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 1NC250A
1EMXS-F03D Primary Bkr Backup Fuse	ND Pump 1A Suction from NC Loop B Vlv 1ND2A
1EMXS-F03E Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 1NC253A
1EMXS-F04B Primary Bkr Backup Fuse	S/G D Blowdown Inside Cont Isol Vlv 1BB8A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1EMXS-F04C Primary Bkr Backup Fuse	S/G B Blowdown Inside Cont Isol Vlv 1BB19A
1EMXS-F05A Primary Bkr Backup Fuse	S/G A Blowdown Inside Cont Isol Vlv 1BB56A
1EMXS-F05B Primary Bkr Backup Fuse	S/G C Blowdown Inside Cont Isol Vlv 1BB60A
1EMXS-F05C Primary Bkr Backup Fuse	Pressurizer Liquid Sample Line Inside Cont Isol Vlv 1NM3A
1EMXS-F06A Primary Bkr Backup Fuse	Pressurizer Steam Sample Line Inside Cont Isol Vlv 1NM6A
1EMXS-F06B Primary Bkr Backup Fuse	NC Hot Leg A Sample Line Inside Cont Isol Vlv 1NM22A
1EMXS-F06C Primary Bkr Backup Fuse	NC Hot Leg C Sample Line Inside Cont Isol Vlv 1NM25A
1MXM-F01A Primary Bkr Backup Fuse	Reactor Coolant Pump Motor Drain Tnk Pump Motor
1MXM-F02A Primary Bkr Backup Fuse	NC Pump 1B Oil Lift Pump Motor 1
1MXM-F02B Primary Bkr Backup Fuse	NC Pump 1C Oil Lift Pump Motor 1
1MXM-F03A Primary Bkr Backup Fuse	Ice Condenser Power Transformer ICT1A
1MXM-F03B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B6 Fan Motor A & B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1MXM-F03C Primary Bkr Backup Fuse	Ice Condenser Equipment Access Door Hoist Motor 1A
1MXM-F04D Primary Bkr Backup Fuse	Lighting Transformer 1LR10
1MXM-F04E Primary Bkr Backup Fuse	Lighting Transformer 1LR13
1MXM-F05A Primary Bkr Backup Fuse	175 Ton Polar Crane and 25 Ton Aux Crane No. R013 and R015
1MXM-F05C Primary Bkr Backup Fuse	Upper Containment Welding Feeder
1MXM-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A7 Fan Motor A & B
1MXM-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B8 Fan Motor A & B
1MXM-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A9 Fan Motor A & B
1MXM-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B10 Fan Motor A & B
1MXM-F07B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A13 Fan Motor A & B
1MXM-F07C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B14 Fan Motor A & B
1MXM-F08D Primary Bkr	Ice Condenser Refrigeration Floor Cool Defrost Heater 1A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1MXM-F09A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A1 Fan Motor A & B
1MXM-F09B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B2 Fan Motor A & B
1MXM-F09C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A3 Fan Motor A & B
1MXM-F09D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B4 Fan Motor A & B
1MXM-F10A Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 1A1
1MXM-F10B Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 1B1
1MXN-F01F Primary Bkr Backup Fuse	Stud Tensioner Hoist 1B
1MXN-F02A Primary Bkr Backup Fuse	NC Pump 1B Oil Lift Pump Motor 2
1MXN-F02B Primary Bkr Backup Fuse	NC Pump 1C Oil Lift Pump Motor 2
1MXN-F02E Primary Bkr Backup Fuse	Stud Tensioner Hoist 1C
1MXN-F03A Primary Bkr Backup Fuse	Ice Condenser Power Transformer ICT1B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1MXN-F03B Primary Bkr Backup Fuse	Ice Condenser Bridge Crane 1 Crane No. R011
1MXN-F03E Primary Bkr Backup Fuse	Stud Tensioner Hoist 1A
1MXN-F04D Primary Bkr Backup Fuse	Lighting Transformer 1LR5
1MXN-F04E Primary Bkr Backup Fuse	Lighting Transformer 1LR6
1MXN-F05A Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Defrost Heater 1B
1MXN-F05B Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Pump Motor 1B
1MXN-F05C Primary Bkr Backup Fuse	Ice Condenser Equipment Access Door Hoist Motor 1B
1MXN-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B1 Fan Motor A & B
1MXN-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A2 Fan Motor A & B
1MXN-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B3 Fan Motor A & B
1MXN-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A4 Fan Motor A & B
1MXN-F07B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B5 Fan Motor A & B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1MXN-F07C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A6 Fan Motor A & B
1MXN-F08A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B7 Fan Motor A & B
1MXN-F08B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A8 Fan Motor A & B
1MXN-F08C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B9 Fan Motor A & B
1MXN-F08D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A10 Fan Motor A & B
1MXN-F09A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B11 Fan Motor A & B
1MXN-F09B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A12 Fan Motor A & B
1MXN-F09C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B13 Fan Motor A & B
1MXN-F09D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A14 Fan Motor A & B
1MXN-F10A Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 1A2
1MXN-F10B Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 1B2
1MXN-F10C Primary Bkr	Incore Instrumentation Sump Pump Motor 1

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1MXN-F10D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B15 Fan Motor A & B
1MXO-F01A Primary Bkr Backup Fuse	Upper Cont Air Return Fan Motor 1C
1MXO-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 1A
1MXO-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1C Fan Motor
1MXO-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 1C Fan Motor
1MXO-F05C Primary Bkr Backup Fuse	Cont Pipe Tunnel Booster Fan Motor 1A
1MXP-F01A Primary Bkr Backup Fuse	Upper Cont Return Air Fan 1B
1MXP-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 1B
1MXP-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1B Fan Motor
1MXP-F04D Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 1B Fan Motor
1MXP-F05C Primary Bkr Backup Fuse	Cont Pipe Tunnel Booster Fan Motor 1B
1MXQ-F01A	Upper Cont Return Air Fan Motor 1A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Primary Bkr Backup Fuse	
1MXQ-F01B Primary Bkr Backup Fuse	Incore Instrument Room Ventilation Unit 1A Fan Motor
1MXQ-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 1C
1MXQ-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1A Fan Motor
1MXQ-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 1A Fan Motor
1MXR-F01A Primary Bkr Backup Fuse	Upper Cont Return Air Fan Motor 1D
1MXR-F01B Primary Bkr Backup Fuse	Incore Instrument Room Ventilation Unit 1B Fan Motor
1MXR-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 1D
1MXR-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1D Fan Motor
1MXR-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 1D Fan Motor
1MXY-F02A Primary Bkr Backup Fuse	NC Pump 1A Oil Lift Pump Motor 1
1MXY-F02B Primary Bkr Backup Fuse	NC Pump 1D Oil Lift Pump Motor 1

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1MXY-F02C Primary Bkr Backup Fuse	Rx Bldg Lower Cont Welding Machine Receptacle 1RCPL0185
1MXY-F02D Primary Bkr Backup Fuse	Upper Cont Rx Bldg Welding Receptacle 1RCPL0193
1MXY-F03A Primary Bkr Backup Fuse	Reactor Coolant Drain Tnk Pump Motor 1A
1MXY-F03D Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Pump Motor 1A
1MXY-F05A Primary Bkr Backup Fuse	Lighting Transformer 1LR8
1MXY-F05B Primary Bkr Backup Fuse	Lighting Transformer 1LR11
1MXY-F05C Primary Bkr Backup Fuse	Lighting Transformer 1LR14
1MXY-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A5 Fan Motor A & B
1MXY-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A11 Fan Motor A & B
1MXY-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B12 Fan Motor A & B
1MXY-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1A15 Fan Motor A & B
1MXY-F08A Primary Bkr Backup Fuse	Incore Drive Assembly Motor 1A

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1MXY-F08B Primary Bkr Backup Fuse	Incore Drive Assembly Motor 1C
1MXY-F08C Primary Bkr Backup Fuse	Incore Drive Assembly Motor 1E
1MXY-F08D Primary Bkr Backup Fuse	Lower Cont Auxiliary Charcoal Filter Unit Fan Motor 1A
1MXZ-F02A Primary Bkr Backup Fuse	NC Pump 1A Oil Lift Pump Motor 2
1MXZ-F02B Primary Bkr Backup Fuse	NC Pump 1D Oil Lift Pump Motor 2
1MXZ-F03A Primary Bkr Backup Fuse	Reactor Coolant Drain Tnk Pump Motor 1B
1MXZ-F04B Primary Bkr Backup Fuse	Lighting Transformer 1LR1
1MXZ-F04C Primary Bkr Backup Fuse	Lighting Transformer 1LR2
1MXZ-F04D Primary Bkr Backup Fuse	Lighting Transformer 1LR3
1MXZ-F05A Primary Bkr Backup Fuse	Reactor Coolant Pump Jib Hoist No. R019 through R022
1MXZ-F05C Primary Bkr Backup Fuse	Lower Cont Auxiliary Charcoal Filter Unit Fan Motor 1B
1MXZ-F06A Primary Bkr	Incore Drive Assembly Motor 1B

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1MXZ-F06B Primary Bkr Backup Fuse	Incore Drive Assembly Motor 1D
1MXZ-F06C Primary Bkr Backup Fuse	Incore Drive Assembly Motor 1F
1MXZ-F06D Primary Bkr Backup Fuse	Lower Cont Rx Bldg Welding Receptacle 1RCPL0194
1MXZ-F07B Primary Bkr Backup Fuse	Lighting Transformer 1LR4
1MXZ-F07C Primary Bkr Backup Fuse	5 Ton Jib Crane in Cont Crane No. R005
1MXZ-F07D Primary Bkr Backup Fuse	Reactor Cavity Manipulator Crane No. R007 and R027
1MXZ-F08A Primary Bkr Backup Fuse	S/G Drain Pump Motor 1
1MXZ-F08C Primary Bkr Backup Fuse	15 Ton Equipment Access Hatch Hoist Crane No. R009
1MXZ-F08D Primary Bkr Backup Fuse	Control Rod Drive 2 Ton Jib Hoist Crane No. R017
1MXZ-F08E Primary Bkr Backup Fuse	Reactor Side Fuel Handling Control Console
SMXG-F01C Primary Bkr Backup Fuse	Standby Makeup Pump Drain Isol Vlv 1NV876
SMXG-F05C	Pressurizer Heaters 28, 55, and 56

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Primary Bkr Backup Fuse	
SMXG-F06A Primary Bkr Backup Fuse	Standby Makeup Pump to Seal Water Line Isol Vlv 1NV877
3. 600 VAC Pressurizer Heater Power Panels	
PHP1A-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 1, 2, and 22
PHP1A-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 5, 6, and 27
PHP1A-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 9, 10, and 32
PHP1A-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 11, 12, and 35
PHP1A-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 13, 14, and 37
PHP1A-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 17, 18, and 42
PHP1B-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 21, 47, and 48
PHP1B-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 26, 53, and 54
PHP1B-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 36, 65, and 66
PHP1B-F02D	Pressurizer Heaters 41, 71, and 72

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Primary Bkr Backup Fuse	
PHP1B-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 46, 77, and 78
PHP1C-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 7, 8, and 30
PHP1C-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 19, 20, and 45
PHP1C-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 23, 49, and 50
PHP1C-F01D Primary Bkr Backup Fuse	Pressurizer Heaters 29, 57, and 58
PHP1C-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 34, 61, and 62
PHP1C-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 39, 69, and 70
PHP1C-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 44, 75, and 76
PHP1D-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 3, 4, and 25
PHP1D-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 15, 16, and 40
PHP1D-F01C Primary Bkr Backup Fuse	Spare

Table 16.8-1-1
Unit 1 CPCOPDs

	DEVICE NUMBER AND LOCATION	SYSTEM POWERED
	PHP1D-F02C Primary Bkr Backup Fuse	Spare
	PHP1D-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 38, 67, and 68
	PHP1D-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 43, 73, and 74
4.	250 VDC Reactor Building Deadlight Panelboard	
	1DLD-2 Primary Bkr Backup Fuse	Lighting Panelboard No. 1LR1, 1LR2, 1LR3, 1LR4
	1DLD-3 Primary Bkr Backup Fuse	Lighting Panelboard No. 1LR13, 1LR14
	1DLD-4 Primary Bkr Backup Fuse	Lighting Panelboard No. 1LR5, 1LR6
	1DLD-5 Primary Bkr Backup Fuse	Lighting Panelboard No. 1LR10, 1LR11
	1DLD-10 Primary Bkr Backup Fuse	Lighting Panelboard No. 1LR8
5.	120 VAC Panelboards	
	1ELB-5 Primary Bkr Backup Fuse	Emergency AC Lighting
	1ELB-7 Primary Bkr Backup Fuse	Emergency AC Lighting
	1ELB-13 Primary Bkr	Emergency AC Lighting

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
1ELB-15 Primary Bkr Backup Fuse	Emergency AC Lighting
1ELB-17 Primary Bkr Backup Fuse	Emergency AC Lighting
1KPM-1 Primary Bkr Backup Fuse	NC Pump Motor 1A Space Heater
1KPM-2 Primary Bkr Backup Fuse	NC Pump Motor 1C Space Heater
1KPM-7-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1A Fan Motor Space Heater
1KPM-8-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1C Fan Motor Space Heater
1KPM-24 Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 1A, 1B, 1C, 1D Space Heaters
1KPM-24-10 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 1A Space Heaters
1KPM-24-11 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 1B Space Heaters
1KPM-24-12 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 1C Space Heaters
1KPM-24-13 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 1D Space Heaters

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1KPM-33 Primary Bkr Backup Fuse	NI Temperature Transmitters 1NITT5800, 1NITT5810, 1NITT5820, 1NITT5830
1KPM-33-04 Primary Fuse	NI Temperature Transmitter 1NITT5800
1KPM-33-05 Primary Fuse	NI Temperature Transmitter 1NITT5810
1KPM-33-06 Primary Fuse	NI Temperature Transmitter 1NITT5820
1KPM-33-07 Primary Fuse	NI Temperature Transmitter 1NITT5830
1KPN-1 Primary Bkr Backup Fuse	NC Pump Motor 1B Space Heater
1KPN-2 Primary Bkr Backup Fuse	NC Pump Motor 1D Space Heater
1KPN-7-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1B Fan Motor Space Heater
1KPN-08 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 1D Fan Motor Space Heater, NC Pump Seal Standpipe Vent and Drain Vlvs 1NV105, 1NV106, 1NV110, 1NV111, 1NV115, 1NV116, 1NV120, 1NV121
1KPN-08-01 Primary Fuse Backup Fuse	Lower Cont Ventilation Unit 1D Fan Motor Space Heater
1KPN-08-02 Primary Fuse Backup Fuse	NC Pump 1A Standpipe Drain and Overflow Vlvs 1NV105 and 1NV106
1KPN-08-03 Primary Fuse Backup Fuse	NC Pump 1B Standpipe Drain and Overflow Vlvs 1NV110 and 1NV111

Table 16.8-1-1
Unit 1 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1KPN-08-04 Primary Fuse Backup Fuse	NC Pump 1C Standpipe Drain and Overflow Vlvs 1NV115 and 1NV116
1KPN-08-05 Primary Fuse Backup Fuse	NC Pump 1D Standpipe Drain and Overflow Vlvs 1NV120 and 1NV121
1KPN-11 Primary Bkr Backup Fuse	Misc Control Power for 1ATC24
6. DC Welding Circuits	
1EQCB0001 Primary Bkr – AA Backup Bkr – AB	Spare
1EQCB0002 Primary Bkr – AA Backup Bkr – AB	Spare

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
1. 6900 VAC Swgr	
Primary Bkr RCP2A Backup Bkr 2TA-3	Reactor Coolant Pump 2A
Primary Bkr RCP2B Backup Bkr 2TB-3	Reactor Coolant Pump 2B
Primary Bkr RCP2C Backup Bkr 2TC-3	Reactor Coolant Pump 2C
Primary Bkr RCP2D Backup Bkr 2TD-3	Reactor Coolant Pump 2D
2. 600 VAC MCC	
2EMXC-F01B Primary Bkr Backup Fuse	Accumulator 2C Discharge Isol Vlv 2NI76A
2EMXC-F01C Primary Bkr Backup Fuse	Check Vlv Test Header Cont Isol Vlv 2NI95A
2EMXC-F02A Primary Bkr Backup Fuse	Train A Alternate Power to ND Letdn Vlv 2ND1B
2EMXC-F02B Primary Bkr Backup Fuse	Hot Leg Inj Check Vlv Test Isol Vlv 2NI153A
2EMXC-F03A Primary Bkr Backup Fuse	NC Pump 2C Thermal Barrier Outlet Isol Vlv 2KC345A
2EMXC-F03B Primary Bkr Backup Fuse	Nitrogen to PRT Cont Isol Inside Vlv 2NC54A
2EMXC-F03C Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 2NC33A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXC-F05A Primary Bkr Backup Fuse	NCDT Vent Inside Cont Isol Vlv 2WL450A
2EMXC-F05B Primary Bkr Backup Fuse	Cont Sump Pumps Discharge Inside Cont Isol Vlv 2WL825A
2EMXC-F05C Primary Bkr Backup Fuse	Ventilation Unit Cond Drain Tnk Outside Cont Isol Vlv 2WL867A
2EMXC-F06A Primary Bkr Backup Fuse	NCDT Pumps Discharge Inside Cont Isol Vlv 2WL805A
2EMXC-F07B Primary Bkr Backup Fuse	Cont Hydrogen Purge Outlet Cont Isol Vlv 2VY17A
2EMXD-F01A Primary Bkr Backup Fuse	ND Pump 2A Suction from NC Loop B Vlv 2ND1B
2EMXD-F01B Primary Bkr Backup Fuse	Accumulator 2B Discharge Isol Vlv 2NI65B
2EMXD-F01C Primary Bkr Backup Fuse	NI Pump A to Hot Leg Check Vlv Test Isol Vlv 2NI122B
2EMXD-F02A Primary Bkr Backup Fuse	ND Pump 2B Suction from NC Loop C Vlv 2ND36B
2EMXD-F02B Primary Bkr Backup Fuse	ND to Hot Legs Chk 2NI125, 2NI129 Test Isol Vlv 2NI154B
2EMXD-F02C Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 2NC31B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXD-F05A Primary Bkr Backup Fuse	Pressurizer Power Operated Relief Isol Vlv 2NC35B
2EMXD-F05B Primary Bkr Backup Fuse	Rx Bldg Drain Hdr Inside Cont Isol Vlv 2KC429B
2EMXD-F05C Primary Bkr Backup Fuse	NCDT Hx Clng Water Return Inside Isol Vlv 2KC332B
2EMXD-F06A Primary Bkr Backup Fuse	NC Pump 2B Thermal Barrier Outlet Isol Vlv 2KC364B
2EMXD-F06B Primary Bkr Backup Fuse	NC Pumps Return Hdr Inside Cont Isol Vlv 2KC424B
2EMXK-F01C Primary Bkr Backup Fuse	Backup Nitrogen to PORV 2NC34A from Accum Tnk 2A Vlv 2NI438A
2EMXK-F02A Primary Bkr Backup Fuse	NC Pump 2A Thermal Barrier Outlet Isol Vlv 2KC394A
2EMXK-F02B Primary Bkr Backup Fuse	Lower Cont Ventilation Units Return Cont Isol Vlv 2RN484A
2EMXK-F02C Primary Bkr Backup Fuse	NV Supply to Pressurizer Vlv 2NV037A
2EMXK-F03A Primary Bkr Backup Fuse	S/G C Blowdown Line Sample Inside Cont Isol Vlv 2NM210A
2EMXK-F04A Primary Bkr Backup Fuse	S/G A Upper Shell Sample Inside Cont Isol Vlv 2NM187A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXK-F04B Primary Bkr Backup Fuse	S/G A Blowdown Line Sample Inside Cont Isol Vlv 2NM190A
2EMXK-F04C Primary Bkr Backup Fuse	S/G C Upper Shell Sample Inside Cont Isol Vlv 2NM207A
2EMXK-F06A Primary Bkr Backup Fuse	Hydrogen Skimmer Fan 2A Inlet Vlv 2VX1A
2EMXK-F07C Primary Bkr Backup Fuse	Electric Hydrogen Recombiner Power Supply Panel 2A
2EMXK-F09A Primary Bkr Backup Fuse	Accum 2A Discharge Isol Vlv 2NI54A
2EMXK-F09C Primary Bkr Backup Fuse	NC Pump Oil Fill Header Cont Isol Vlv 2NC196A
2EMXK-F10A Primary Bkr Backup Fuse	Cont Air Return Damper 2ARF-D-2
2EMXK-F10B Primary Bkr Backup Fuse	VQ Fans Suction from Cont Isol Vlv 2VQ2A
2EMXK-F10C Primary Bkr Backup Fuse	Cont Air Addition Cont Isol Vlv 2VQ16A
2EMXK-F11A Primary Bkr Backup Fuse	Cont Air Return Fan Motor 2A
2EMXK-F11B Primary Bkr Backup Fuse	Hydrogen Skimmer Fan Motor 2A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXL-F01B Primary Bkr Backup Fuse	Trn B Alternate Power to ND Letdn Vlv 2ND37A
2EMXL-F01C Primary Bkr Backup Fuse	NI Accum D Sample Line Inside Cont Isol Vlv 2NM81B
2EMXL-F02A Primary Bkr Backup Fuse	NC Pump 2D Thermal Barrier Outlet Isol Vlv 2KC413B
2EMXL-F02B Primary Bkr Backup Fuse	Air Handling Units Glycol Return Cont Isol Vlv 2NF233B
2EMXL-F02C Primary Bkr Backup Fuse	NI Accum C Sample Line Inside Cont Isol Vlv 2NM78B
2EMXL-F03A Primary Bkr Backup Fuse	S/G D Blowdown Sample Line Inside Cont Isol Vlv 2NM220B
2EMXL-F03B Primary Bkr Backup Fuse	NI Accum A Sample Line Inside Cont Isol Vlv 2NM72B
2EMXL-F03C Primary Bkr Backup Fuse	NI Accum B Sample Line Inside Cont Isol Vlv 2NM75B
2EMXL-F04A Primary Bkr Backup Fuse	S/G B Upper Shell Sample Inside Cont Isol Vlv 2NM197B
2EMXL-F04B Primary Bkr Backup Fuse	S/G B Blowdown Sample Line Inside Cont Isol Vlv 2NM200B
2EMXL-F04C Primary Bkr Backup Fuse	S/G D Upper Shell Sample Inside Cont Isol Vlv 2NM217B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXL-F06A Primary Bkr Backup Fuse	Hydrogen Skimmer Fan 2B Inlet Vlv 2VX2B
2EMXL-F06B Primary Bkr Backup Fuse	Backup Nitrogen to PORV 2NC32B from Accum Tnk 2B Vlv 2NI439B
2EMXL-F07C Primary Bkr Backup Fuse	Electric Hydrogen Recombiner Power Supply Panel 2B
2EMXL-F09A Primary Bkr Backup Fuse	Accum 2D Discharge Isol Vlv 2NI88B
2EMXL-F10A Primary Bkr Backup Fuse	Cont Air Return Damper 2ARF-D-4
2EMXL-F10B Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 2NC251B
2EMXL-F10C Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 2NC252B
2EMXL-F11A Primary Bkr Backup Fuse	Cont Air Return Fan Motor 2B
2EMXL-F11B Primary Bkr Backup Fuse	Hydrogen Skimmer Fan Motor 2B
2EMXS-F01B Primary Bkr Backup Fuse	NC Pumps Seal Return Inside Cont Isol Vlv 2NV89A
2EMXS-F02A Primary Bkr Backup Fuse	ND Pump 2B Suction from NC Loop C Vlv 2ND37A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2EMXS-F02B Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 2NC250A
2EMXS-F03D Primary Bkr Backup Fuse	ND Pump 2A Suction from NC Loop B Vlv 2ND2A
2EMXS-F03E Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 2NC253A
2EMXS-F04B Primary Bkr Backup Fuse	S/G D Blowdown Inside Cont Isol Vlv 2BB8A
2EMXS-F04C Primary Bkr Backup Fuse	S/G B Blowdown Inside Cont Isol Vlv 2BB19A
2EMXS-F05A Primary Bkr Backup Fuse	S/G A Blowdown Inside Cont Isol Vlv 2BB56A
2EMXS-F05B Primary Bkr Backup Fuse	S/G C Blowdown Inside Cont Isol Vlv 2BB60A
2EMXS-F05C Primary Bkr Backup Fuse	Pressurizer Liquid Sample Line Inside Cont Isol Vlv 2NM3A
2EMXS-F06A Primary Bkr Backup Fuse	Pressurizer Steam Sample Line Inside Cont Isol Vlv 2NM6A
2EMXS-F06B Primary Bkr Backup Fuse	NC Hot Leg A Sample Line Inside Cont Isol Vlv 2NM22A
2EMXS-F06C Primary Bkr Backup Fuse	NC Hot Leg C Sample Line Inside Cont Isol Vlv 2NM25A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXM-F01A Primary Bkr Backup Fuse	Reactor Coolant Pump Motor Drain Tnk Pump Motor
2MXM-F02A Primary Bkr Backup Fuse	NC Pump 2B Oil Lift Pump Motor 1
2MXM-F02B Primary Bkr Backup Fuse	NC Pump 2C Oil Lift Pump Motor 1
2MXM-F03A Primary Bkr Backup Fuse	Ice Condenser Power Transformer ICT2A
2MXM-F03B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B6 Fan Motor A & B
2MXM-F03C Primary Bkr Backup Fuse	Ice Condenser Equipment Access Door Hoist Motor 2A
2MXM-F04D Primary Bkr Backup Fuse	Lighting Transformer 2LR10
2MXM-F04E Primary Bkr Backup Fuse	Lighting Transformer 2LR13
2MXM-F05A Primary Bkr Backup Fuse	175 Ton Polar Crane and 25 Ton Aux Crane No. R014 and R016
2MXM-F05C Primary Bkr Backup Fuse	Upper Containment Welding Feeder
2MXM-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A7 Fan Motor A & B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXM-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B8 Fan Motor A & B
2MXM-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A9 Fan Motor A & B
2MXM-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B10 Fan Motor A & B
2MXM-F07B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A13 Fan Motor A & B
2MXM-F07C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B14 Fan Motor A & B
2MXM-F08D Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Defrost Heater 2A
2MXM-F09A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A1 Fan Motor A & B
2MXM-F09B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B2 Fan Motor A & B
2MXM-F09C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A3 Fan Motor A & B
2MXM-F09D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B4 Fan Motor A & B
2MXM-F10A Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 2A1

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXM-F10B Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 2B1
2MXN-F01F Primary Bkr Backup Fuse	Stud Tensioner Hoist 2B
2MXN-F02A Primary Bkr Backup Fuse	NC Pump 2B Oil Lift Pump Motor 2
2MXN-F02B Primary Bkr Backup Fuse	NC Pump 2C Oil Lift Pump Motor 2
2MXN-F02E Primary Bkr Backup Fuse	Stud Tensioner Hoist 2C
2MXN-F03A Primary Bkr Backup Fuse	Ice Condenser Power Transformer ICT2B
2MXN-F03B Primary Bkr Backup Fuse	Ice Condenser Bridge Crane 2 Crane No. R012
2MXN-F03E Primary Bkr Backup Fuse	Stud Tensioner Hoist 2A
2MXN-F04D Primary Bkr Backup Fuse	Lighting Transformer 2LR5
2MXN-F04E Primary Bkr Backup Fuse	Lighting Transformer 2LR6
2MXN-F05A Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Defrost Heater 2B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXN-F05B Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Pump Motor 2B
2MXN-F05C Primary Bkr Backup Fuse	Ice Condenser Equipment Access Door Hoist Motor 2B
2MXN-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B1 Fan Motor A & B
2MXN-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A2 Fan Motor A & B
2MXN-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B3 Fan Motor A & B
2MXN-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A4 Fan Motor A & B
2MXN-F07B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B5 Fan Motor A & B
2MXN-F07C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A6 Fan Motor A & B
2MXN-F08A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B7 Fan Motor A & B
2MXN-F08B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A8 Fan Motor A & B
2MXN-F08C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B9 Fan Motor A & B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXN-F08D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A10 Fan Motor A & B
2MXN-F09A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B11 Fan Motor A & B
2MXN-F09B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A12 Fan Motor A & B
2MXN-F09C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B13 Fan Motor A & B
2MXN-F09D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A14 Fan Motor A & B
2MXN-F10A Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 2A2
2MXN-F10B Primary Bkr Backup Fuse	Cont Floor and Equipment Sump Pump Motor 2B2
2MXN-F10C Primary Bkr Backup Fuse	Incore Instrumentation Sump Pump Motor 2
2MXN-F10D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B15 Fan Motor A & B
2MXO-F01A Primary Bkr Backup Fuse	Upper Cont Air Return Fan Motor 2C
2MXO-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 2A

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXO-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2C Fan Motor
2MXO-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 2C Fan Motor
2MXO-F05C Primary Bkr Backup Fuse	Cont Pipe Tunnel Booster Fan Motor 2A
2MXP-F01A Primary Bkr Backup Fuse	Upper Cont Return Air Fan 2B
2MXP-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 2B
2MXP-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2B Fan Motor
2MXP-F04D Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 2B Fan Motor
2MXP-F05C Primary Bkr Backup Fuse	Cont Pipe Tunnel Booster Fan Motor 2B
2MXQ-F01A Primary Bkr Backup Fuse	Upper Cont Return Air Fan Motor 2A
2MXQ-F01B Primary Bkr Backup Fuse	Incore Instrument Room Ventilation Unit 2A Fan Motor
2MXQ-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 2C

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXQ-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2A Fan Motor
2MXQ-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 2A Fan Motor
2MXR-F01A Primary Bkr Backup Fuse	Upper Cont Return Air Fan Motor 2D
2MXR-F01B Primary Bkr Backup Fuse	Incore Instrument Room Ventilation Unit 2B Fan Motor
2MXR-F02B Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 2D
2MXR-F03A Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2D Fan Motor
2MXR-F04C Primary Bkr Backup Fuse	Upper Cont Ventilation Unit 2D Fan Motor
2MXY-F02A Primary Bkr Backup Fuse	NC Pump 2A Oil Lift Pump Motor 1
2MXY-F02B Primary Bkr Backup Fuse	NC Pump 2D Oil Lift Pump Motor 1
2MXY-F02C Primary Bkr Backup Fuse	Rx Bldg Lower Cont Welding Machine Receptacle 2RCPL0185
2MXY-F02D Primary Bkr Backup Fuse	Upper Cont Rx Bldg Welding Receptacle 2RCPL0193

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2MXY-F03A Primary Bkr Backup Fuse	Reactor Coolant Drain Tnk Pump Motor 2A
2MXY-F03D Primary Bkr Backup Fuse	Ice Condenser Refrigeration Floor Cool Pump Motor 2A
2MXY-F05A Primary Bkr Backup Fuse	Lighting Transformer 2LR8
2MXY-F05B Primary Bkr Backup Fuse	Lighting Transformer 2LR11
2MXY-F05C Primary Bkr Backup Fuse	Lighting Transformer 2LR14
2MXY-F06A Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A5 Fan Motor A & B
2MXY-F06B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A11 Fan Motor A & B
2MXY-F06C Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2B12 Fan Motor A & B
2MXY-F06D Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 2A15 Fan Motor A & B
2MXY-F07C Primary Bkr Backup Fuse	Rx Bldg Receptacles 2RCPL0186 and 2RCPL0187
2MXY-F08A Primary Bkr Backup Fuse	Incore Drive Assembly Motor 2A
2MXY-F08B	Incore Drive Assembly Motor 2C

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Primary Bkr Backup Fuse	
2MXY-F08C Primary Bkr Backup Fuse	Incore Drive Assembly Motor 2E
2MXY-F08D Primary Bkr Backup Fuse	Lower Cont Auxiliary Charcoal Filter Unit Fan Motor 2A
2MXZ-F02A Primary Bkr Backup Fuse	NC Pump 2A Oil Lift Pump Motor 2
2MXZ-F02B Primary Bkr Backup Fuse	NC Pump 2D Oil Lift Pump Motor 2
2MXZ-F03A Primary Bkr Backup Fuse	Reactor Coolant Drain Tnk Pump Motor 2B
2MXZ-F04B Primary Bkr Backup Fuse	Lighting Transformer 2LR1
2MXZ-F04C Primary Bkr Backup Fuse	Lighting Transformer 2LR2
2MXZ-F04D Primary Bkr Backup Fuse	Lighting Transformer 2LR3
2MXZ-F05A Primary Bkr Backup Fuse	Reactor Coolant Pump Jib Hoist No. R023 through R026
2MXZ-F05C Primary Bkr Backup Fuse	Lower Cont Auxiliary Charcoal Filter Unit Fan Motor 2B
2MXZ-F06A Primary Bkr	Incore Drive Assembly Motor 2B

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
2MXZ-F06B Primary Bkr Backup Fuse	Incore Drive Assembly Motor 2D
2MXZ-F06C Primary Bkr Backup Fuse	Incore Drive Assembly Motor 2F
2MXZ-F06D Primary Bkr Backup Fuse	Lower Cont Rx Bldg Welding Receptacle 2RCPL0194
2MXZ-F07B Primary Bkr Backup Fuse	Lighting Transformer 2LR4
2MXZ-F07C Primary Bkr Backup Fuse	5 Ton Jib Crane in Cont Crane No. R006
2MXZ-F07D Primary Bkr Backup Fuse	Reactor Cavity Manipulator Crane No. R008 and R028
2MXZ-F08A Primary Bkr Backup Fuse	S/G Drain Pump Motor 2
2MXZ-F08C Primary Bkr Backup Fuse	15 Ton Equipment Access Hatch Hoist Crane No. R010
2MXZ-F08D Primary Bkr Backup Fuse	Control Rod Drive 2 Ton Jib Hoist Crane No. R018
2MXZ-F08E Primary Bkr Backup Fuse	Reactor Side Fuel Handling Control Console
SMXG-F06B Primary Bkr Backup Fuse	Standby Makeup Pump Drain Isol Vlv 2NV876

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
SMXG-R05B Primary Bkr Backup Fuse	Pressurizer Heaters 28, 55, and 56
SMXG-F06C Primary Bkr Backup Fuse	Standby Makeup Pump to Seal Water Line Isol Vlv 2NV877
3. 600 VAC Pressurizer Heater Power Panels	
PHP2A-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 1, 2, and 22
PHP2A-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 5, 6, and 27
PHP2A-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 9, 10, and 32
PHP2A-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 11, 12, and 35
PHP2A-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 13, 14, and 37
PHP2A-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 17, 18, and 42
PHP2B-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 26, 53, and 54
PHP2B-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 31, 59, and 60
PHP2B-F02C	Pressurizer Heaters 36, 65, and 66

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION Primary Bkr Backup Fuse	SYSTEM POWERED
PHP2B-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 21, 41, and 71
PHP2B-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 46, 77, and 78
PHP2C-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 7, 8, and 30
PHP2C-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 19, 20, and 45
PHP2C-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 24, 51, and 52
PHP2C-F01D Primary Bkr Backup Fuse	Pressurizer Heaters 29, 57, and 58
PHP2C-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 34, 63, and 64
PHP2C-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 39, 69, and 70
PHP2C-F02E Primary Bkr Backup Fuse	Pressurizer Heaters 44, 74, and 76
PHP2D-F01A Primary Bkr Backup Fuse	Pressurizer Heaters 3, 4, and 25
PHP2D-F01B Primary Bkr	Pressurizer Heaters 15, 16, and 40

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
PHP2D-F01C Primary Bkr Backup Fuse	Pressurizer Heaters 23, 49, and 50
PHP2D-F02C Primary Bkr Backup Fuse	Pressurizer Heaters 33, 61, and 62
PHP2D-F02D Primary Bkr Backup Fuse	Pressurizer Heaters 38, 67, and 68
PHP2D-F02E Primary Bkr Backup Fuse	Spare
4. 250 VDC Reactor Building Deadlight Panelboard	
2DLD-2 Primary Bkr Backup Fuse	Lighting Panelboard No. 2LR1, 2LR2, 2LR3, 2LR4
2DLD-3 Primary Bkr Backup Fuse	Lighting Panelboard No. 2LR13, 2LR14
2DLD-4 Primary Bkr Backup Fuse	Lighting Panelboard No. 2LR5, 2LR6
2DLD-5 Primary Bkr Backup Fuse	Lighting Panelboard No. 2LR10, 2LR11
2DLD-10 Primary Bkr Backup Fuse	Lighting Panelboard No. 2LR8
5. 120 VAC Panelboards	
2ELB-5 Primary Bkr	Emergency AC Lighting

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
2ELB-7 Primary Bkr Backup Fuse	Emergency AC Lighting
2ELB-13 Primary Bkr Backup Fuse	Emergency AC Lighting
2ELB-15 Primary Bkr Backup Fuse	Emergency AC Lighting
2ELB-17 Primary Bkr Backup Fuse	Emergency AC Lighting
2KPM-1 Primary Bkr Backup Fuse	NC Pump Motor 2A Space Heater
2KPM-2 Primary Bkr Backup Fuse	NC Pump Motor 2C Space Heater
2KPM-7-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2A Fan Motor Space Heater
2KPM-8-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2C Fan Motor Space Heater
2KPM-24 Primary Bkr Backup Fuse	Control Rod Drive Ventilation Fan Motor 2A, 2B, 2C, 2D Space Heaters
2KPM-24-10 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 2A Space Heaters
2KPM-24-11 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 2B Space Heaters

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
2KPM-24-12 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 2C Space Heaters
2KPM-24-13 Primary Fuse Backup Fuse	Control Rod Drive Ventilation Fan Motor 2D Space Heaters
2KPM-33 Primary Bkr Backup Fuse	NI Temperature Transmitters 2NITT5800, 2NITT5810, 2NITT5820, 2NITT5830
2KPM-33-06 Primary Fuse	NI Temperature Transmitter 2NITT5800
2KPM-33-07 Primary Fuse	NI Temperature Transmitter 2NITT5810
2KPM-33-08 Primary Fuse	NI Temperature Transmitter 2NITT5820
2KPM-33-09 Primary Fuse	NI Temperature Transmitter 2NITT5830
2KPN-1 Primary Bkr Backup Fuse	NC Pump Motor 2B Space Heater
2KPN-2 Primary Bkr Backup Fuse	NC Pump Motor 2D Space Heater
2KPN-7-1 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2B Fan Motor Space Heater
2KPN-08 Primary Bkr Backup Fuse	Lower Cont Ventilation Unit 2D Fan Motor Space Heater, NC Pump Seal Standpipe Vent and Drain Vlvs 2NV105, 2NV106, 2NV110, 2NV111, 2NV115, 2NV116, 2NV120, 2NV121
2KPN-08-01 Primary Fuse	Lower Cont Ventilation Unit 2D Fan Motor Space Heater

Table 16.8-1-2
Unit 2 CPCOPDs

DEVICE NUMBER AND LOCATION	SYSTEM POWERED
Backup Fuse	
2KPN-08-02 Primary Fuse Backup Fuse	NC Pump 2A Standpipe Drain and Overflow Vlvs 2NV105 and 2NV106
2KPN-08-03 Primary Fuse Backup Fuse	NC Pump 2B Standpipe Drain and Overflow Vlvs 2NV110 and 2NV111
2KPN-08-04 Primary Fuse Backup Fuse	NC Pump 2C Standpipe Drain and Overflow Vlvs 2NV115 and 2NV116
2KPN-08-05 Primary Fuse Backup Fuse	NC Pump 2D Standpipe Drain and Overflow Vlvs 2NV120 and 2NV121
2KPN-11 Primary Bkr Backup Fuse	Misc Control Power for 2ATC24
6. DC Welding Circuits	
2EQCB0001 Primary Bkr – AA Backup Bkr – AB	Spare
2EQCB0002 Primary Bkr – AA Backup Bkr – AB	Spare

16.11 RADIOLOGICAL EFFLUENTS CONTROLS

16.11-2 Radioactive Liquid Effluent Monitoring Instrumentation

COMMITMENT The Radioactive Liquid Effluent Monitoring Instrumentation channels shown in Table 16.11-2-1 shall be FUNCTIONAL with their Alarm/Trip Setpoints set to ensure that the limits of SLC 16.11-1 are not exceeded.

AND

The Alarm/Trip Setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: Conditions A, B, and G are applicable at all times. Conditions C, D, E, and F are applicable at all times, except when the effluent pathway is mechanically isolated; thus a release to the environment is not possible.

REMEDIAL ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Radioactive Liquid Effluent Monitoring Instrumentation channel(s) Alarm/Trip Setpoint less conservative than required.	A.1 Suspend the release of radioactive liquid effluents monitored by the affected channel(s). OR A.2 Declare the channel(s) non-functional.	Immediately Immediately
B. One or more Radioactive Liquid Effluent Monitoring Instrumentation channel(s) non-functional.	B.1 Enter the applicable Conditions and Required Actions specified in Table 16.11-2-1 for the channel(s). AND B.2.1 Restore channel to FUNCTIONAL status. OR B.2.2 Restore channel to FUNCTIONAL status.	Immediately 14 Days (*Note 1) 30 Days (*Note 1)

*Note 1 – Required Action B.2.1 Applies to Instruments 1.a and 1.c ONLY. (continued)
Required Action B.2.2 Applies to the remainder of required Instruments listed in Table 16.11-2-1.

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One channel non-functional.	C.1.1 Analyze two independent samples per Testing Requirement 16.11-1-1.	Prior to initiating a release
	AND	
	C.1.2 Perform independent verification of the discharge line valving.	Prior to initiating a release
	AND	
	C.1.3.1 Perform independent verification of manual portion of the computer input for release rate calculations performed by computer.	Prior to initiating a release
	OR	
	C.1.3.2 Perform independent verification of entire calculations for release rate calculations performed manually.	Prior to initiating a release
	OR	
	C.2 Suspend release of radioactive effluents via this pathway.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One flow rate measurement device channel non-functional.	D.1 ----------NOTE---------- Pump performance curves generated in place may be used to estimate flow. ---------- Estimate the flow rate of the release.	Once per 4 hours during releases
E. One channel non-functional.	E.1 Perform an analysis of grab samples for radioactivity at a lower limit of detection of 10^{-7} microCurie/ml.	Once per 12 hours during releases when secondary specific activity is > 0.01 microCurie/gm DOSE EQUIVALENT I-131 AND Once per 24 hours during releases when secondary specific activity is $\leq$ 0.01 microCurie/gm DOSE EQUIVALENT I-131

(continued)

REMEDIAL ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
F.	One channel non-functional.	F.1	Collect and analyze grab samples for principal gamma emitters (listed in Table 16.11-1-1, NOTE 3) at a lower limit of detection of no more than $5x10^{-7}$ microCurie/ml.	Once per 12 hours
G.	Required Action and associated Completion Time of Condition B not met.	G.1	Explain why the non-functionality was not corrected within the specified Completion Time.	In the next scheduled Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3

TESTING REQUIREMENTS

----------NOTE----------
Refer to Table 16.11-2-1 to determine which TRs apply for each Radioactive Liquid Effluent Monitoring Instrumentation channel.

	TEST	FREQUENCY
TR 16.11-2-1	Perform CHANNEL CHECK.	24 hours
TR 16.11-2-2	----------NOTE---------- The CHANNEL CHECK shall consist of verifying indication of flow. --- Perform CHANNEL CHECK.	24 hours during periods of release
TR 16.11-2-3	Perform SOURCE CHECK.	Prior to each release
TR 16.11-2-4	Perform SOURCE CHECK.	31 days
TR 16.11-2-5	Perform COT.	182 days
TR 16.11-2-6	----------NOTE---------- For Instrument 1, the COT shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation (for EMF-57, alarm annunciation is in the Monitor Tank Building control room and on the Monitor Tank Building control panel remote annunciator panel) occur if any of the following conditions exist: a. Instrument indicates measured levels above the Alarm/Trip Setpoint, or b. Circuit failure/instrument downscale failure (alarm only) --- Perform COT.	18 months

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.11-2-7	----------NOTE---------- For Instrument 1, the initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. --- Perform CHANNEL CALIBRATION.	18 months

Table 16.11-2-1

Radioactive Liquid Effluent Monitoring Instrumentation

INSTRUMENT	REQUIRED CHANNELS	CONDITIONS	TESTING REQUIREMENTS
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release			
1.a Waste Liquid Discharge Monitor (EMF-49 – Low Range)	1 per station	A, B, C, G	TR 16.11-2-1 TR 16.11-2-3 TR 16.11-2-6 TR 16.11-2-7
1.b Turbine Building Sump Monitor (EMF-31)	1	A, B, E, G	TR 16.11-2-1 TR 16.11-2-4 TR 16.11-2-6 TR 16.11-2-7
1.c Monitor Tank Building Liquid Discharge Monitor (EMF-57 – Low Range)	1 per station	A, B, C, G	TR 16.11-2-1 TR 16.11-2-3 TR 16.11-2-6 TR 16.11-2-7
2. Continuous Composite Samplers and Sampler Flow Monitor			
2.a Conventional Waste Water Treatment Line (no alarm/trip function)	1 per station	B, E, G	TR 16.11-2-2 TR 16.11-2-7
3. Flow Rate Measurement Devices			
3.a Waste Liquid Effluent Line (no alarm/trip function)	1 per station	B, D, G	TR 16.11-2-2 TR 16.11-2-7
3.b Conventional Waste Water Treatment Line (no alarm/trip function)	1 per station	B, D, G	TR 16.11-2-2 TR 16.11-2-7
3.c Low Pressure Service Water Minimum Flow Interlock	1 per station	B, D, G	TR 16.11-2-2 TR 16.11-2-5 TR 16.11-2-7
3.d Monitor Tank Building Waste Liquid Effluent Line (no alarm/trip function)	1 per station	B, D, G	TR 16.11-2-2 TR 16.11-2-7
4. Radioactivity Monitors Providing Alarm			
4.a Service Water Monitor on Containment Spray Heat Exchanger (EMF-45 A & B – Low Range)	1 per heat exchanger	A, B, F, G	TR 16.11-2-1 TR 16.11-2-4 TR 16.11-2-6 TR 16.11-2-7

BASES

The Radioactive Liquid Effluent Monitoring Instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The Alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the Alarm/Trip will occur prior to exceeding the limits of 10 CFR Part 20. The FUNCTIONALITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

Regarding the COMMITMENT APPLICABILITY, isolation of the effluent pathway is to be by mechanical means (e.g., valve closure). Electrical or pneumatic isolation is not required, unless the isolation is designed to receive an automatic signal to open.

REFERENCES

1. Catawba Offsite Dose Calculation Manual.
2. 10 CFR Part 20.
3. 10 CFR Part 50, Appendix A.

16.11 RADIOLOGICAL EFFLUENTS CONTROLS

16.11-7 Radioactive Gaseous Effluent Monitoring Instrumentation

COMMITMENT

The Radioactive Gaseous Effluent Monitoring Instrumentation channels shown in Table 16.11-7-1 shall be FUNCTIONAL with their Alarm/Trip Setpoints set to ensure that the limits of SLC 16.11-6 are not exceeded.

AND

The Alarm/Trip Setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: Conditions B and K are applicable at all times. All other Conditions are applicable as shown in Table 16.11-7-1.

REMEDIAL ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Radioactive Gaseous Effluent Monitoring Instrumentation channel(s) Alarm/Trip Setpoint less conservative than required.	A.1 Suspend the release of radioactive gaseous effluents monitored by the affected channel(s). OR A.2 Declare the channel(s) non-functional.	Immediately Immediately
B. One or more Radioactive Gaseous Effluent Monitoring Instrumentation channel(s) non-functional.	B.1 Enter the applicable Conditions and Required Actions specified in Table 16.11-7-1 for the channel(s). AND B.2.1 Restore channel to FUNCTIONAL status. OR B.2.2 Restore channel to FUNCTIONAL status.	Immediately 14 Days (*Note 1) 30 Days (*Note 1)

*Note 1 – Required Action B.2.1 applies to Instrument 1.a ONLY. (continued)
Required Action B.2.2 applies to Instruments 1.b, 2, 3.a, 3.c, 3.d, 3.e, 5, 6.a, and 6.b listed in Table 16.11-7-1.

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One channel non-functional.	C.1 Verify that EMF-36 (Low Range) is FUNCTIONAL.	Prior to initiating a release
	OR	
	C.2.1 Analyze two independent samples of the tank's contents.	Prior to initiating a release
	AND	
	C.2.2 Perform independent verification of the discharge line valving.	Prior to initiating a release
	AND	
	C.2.3.1 Perform independent verification of manual portion of the computer input for release rate calculations performed by computer.	Prior to initiating a release
	OR	
	C.2.3.2 Perform independent verification of entire calculations for release rate calculations performed manually.	Prior to initiating a release
	OR	
	C.3 Suspend release of radioactive effluents via this pathway.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more flow rate measurement device channel(s) non-functional.	D.1 Estimate the flow rate of the release.	Once per 4 hours during releases
E. One or more Noble Gas Activity Monitor channel(s) non-functional.	----------NOTE---------- **IF** 0EMF41 is NON-FUNCTIONAL **AND** either 1EMF36 **OR** 2EMF36 is NON-FUNCTIONAL, perform SLC 16.7-10, Required Action G.2 ----------	
	E.1 Obtain grab samples from effluent pathway.	Once per 12 hours during releases
	AND	
	E.2 Perform an analysis of grab samples for radioactivity.	Within 24 hours of obtaining the sample

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Noble Gas Activity Monitor (EMF-39 – Low Range) providing automatic termination of release via the Containment Purge Exhaust System (CPES) non-functional.	F.1 ----------NOTE---------- In order to utilize Required Action F.1, the following conditions must be satisfied: 1. The affected unit is in MODES 5 or 6. 2. EMF-36 is FUNCTIONAL and in service for the affected unit. 3. The Reactor Coolant System for the affected unit has been vented. 4. Either the reactor vessel head is in place (bolts are not required), or if it is not in place, the lifting of heavy loads over the reactor vessel and the movement of irradiated fuel assemblies within containment have been suspended. ---------- Restore the non-functional channel to FUNCTIONAL status.	12 hours
G. Required Action and associated Completion Time of Condition F not met. OR Required Action F.1 not utilized.	G.1 Suspend PURGING of radioactive effluents via this pathway.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION		REQUIRED ACTION		COMPLETION TIME
H.	One or more sampler channel(s) non-functional.	H.1	Perform sampling with auxiliary sampling equipment as required by Table 16.11-6-1.	Continuously
I.	One Condenser Evacuation System Noble Gas Activity Monitor (EMF-33) channel non-functional.	I.1	----------NOTE---------- Applicable to effluent releases via the Condenser Steam Air Ejector (ZJ) System. ----------	
			Obtain grab samples from effluent pathway.	Once per 12 hours during releases
		AND		
		I.2	----------NOTE---------- Applicable to effluent releases via the Condenser Steam Air Ejector (ZJ) System. ----------	
			Perform an analysis of grab samples for radioactivity.	Within 24 hours of obtaining the sample
		AND		

(continued)

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. (continued)	I.3 ----------NOTE---------- Applicable to effluent releases via the Steam Generator Blowdown (BB) System atmospheric vent valve (BB-27) in the off-normal mode. ---------- Perform an analysis of grab samples for radioactivity at a lower limit of detection of 10^{-7} microCurie/ml.	Once per 12 hours during releases when secondary specific activity is > 0.01 microCurie/gm DOSE EQUIVALENT I-131 AND Once per 24 hours during releases when secondary specific activity is ≤ 0.01 microCurie/gm DOSE EQUIVALENT I-131
J. Noble Gas Activity Monitor (EMF-39 – Low Range) providing automatic termination of release via the Containment Air Release and Addition System non-functional.	J.1 Verify that EMF-36 is FUNCTIONAL. OR J.2.1 Analyze two independent samples of the containment atmosphere. AND	Prior to initiating a release Prior to initiating a release

(continued)

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. (continued)	J.2.2 Perform independent verification of the discharge line valving.	Prior to initiating a release
	AND	
	J.2.3.1 Perform independent verification of manual portion of the computer input for release rate calculations performed by computer.	Prior to initiating a release
	OR	
	J.2.3.2 Perform independent verification of entire calculations for release rate calculations performed manually.	Prior to initiating a release

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
K. Required Action and associated Completion Time of Condition B or F not met.	K.1 Explain why the non-functionality was not corrected within the specified Completion Time.	In the next scheduled Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3

TESTING REQUIREMENTS

----------NOTE----------
Refer to Table 16.11-7-1 to determine which TRs apply for each Radioactive Gaseous Effluent Monitoring Instrumentation channel.

TEST		FREQUENCY
TR 16.11-7-1	Perform CHANNEL CHECK.	Prior to each release
TR 16.11-7-2	----------NOTE---------- For Instruments 1a, 4, and 5, a SOURCE CHECK for these channels shall be the qualitative assessment of channel response when the channel sensor is exposed to a light-emitting diode. --- Perform SOURCE CHECK.	Prior to each release
TR 16.11-7-3	Perform CHANNEL CHECK.	12 hours
TR 16.11-7-4	Perform CHANNEL CHECK.	24 hours
TR 16.11-7-5	Perform CHANNEL CHECK.	7 days

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.11-7-6	----------NOTE---------- For Instruments 2 and 3a, a SOURCE CHECK for these channels shall be the qualitative assessment of channel response when the channel sensor is exposed to a light-emitting diode. ---------- Perform SOURCE CHECK.	31 days
TR 16.11-7-7	----------NOTE---------- For Instruments 1a, 3a, 3c, 5, and 6a, the COT shall also demonstrate, as applicable, that automatic isolation of this pathway and control room alarm annunciation (for EMF-58, alarm annunciation is in the Monitor Tank Building control room and on the Monitor Tank Building control panel remote annunciator panel) occur if any of the following conditions exist: a. Instrument indicates measured levels above the Alarm/Trip Setpoint, or b. Circuit failure/instrument downscale failure (alarm only) ---------- Perform COT.	189 months
TR 16.11-7-8	----------NOTE---------- For Instruments 2 and 4, the COT shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exist: a. Instrument indicates measured levels above the Alarm/Trip Setpoint, or b. Circuit failure/instrument downscale failure (alarm only) ---------- Perform COT.	18 months

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.11-7-9	----------NOTE---------- For Instruments 1a, 2, 3a, 3c, 4, 5, and 6a, the initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used. ----------	
	Perform CHANNEL CALIBRATION.	18 months

Table 16.11-7-1

Radioactive Gaseous Effluent Monitoring Instrumentation (page 1 of 2)

INSTRUMENT	REQUIRED CHANNELS	CONDITIONS	APPLICABLE MODES	TESTING REQUIREMENTS
1. Waste Gas Holdup System				
1.a Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (EMF-50 – Low Range)	1 per station	A, B, C, K	At all times except when the isolation valve is closed and locked	TR 16.11-7-1 TR 16.11-7-2 TR 16.11-7-7 TR 16.11-7-9
1.b Effluent System Flow Rate Measuring Device	1 per station	B, D, K	At all times except when the isolation valve is closed and locked	TR 16.11-7-1 TR 16.11-7-9
2. Condenser Evacuation System Noble Gas Activity Monitor (EMF-33) (BB-27 is only isolation function required) (Note 1)	1	A, B, I, K	When air ejectors are in operation (Apply Required Action I.3 when air ejectors are not in operation)	TR 16.11-7-3 TR 16.11-7-6 TR 16.11-7-8 TR 16.11-7-9
3. Vent System				
3.a Noble Gas Activity Monitor (EMF-36 – Low Range)	1	A, B, E, K	At all times	TR 16.11-7-4 TR 16.11-7-6 TR 16.11-7-7 TR 16.11-7-9
3.b Deleted.				
3.c Particulate Sampler (EMF-35)	1	A, B, H, K	At all times (Note 2)	TR 16.11-7-4 TR 16.11-7-6 TR 16.11-7-7 TR 16.11-7-9
3.d Unit Vent Stack Flow Rate Meter (no alarm/trip function)	1	B, D, K	At all times (Note 2)	TR 16.11-7-4 TR 16.11-7-9
3.e Unit Vent Radiation Monitor Flow Meter	1	B, E, K	At all times (Note 2)	TR 16.11-7-4 TR 16.11-7-9
4. Containment Purge System Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (EMF-39 – Low Range)	1	A, F, G, K	5, 6	TR 16.11-7-2 TR 16.11-7-3 TR 16.11-7-8 TR 16.11-7-9

(continued)

Table 16.11-7-1

Radioactive Gaseous Effluent Monitoring Instrumentation (page 2 of 2)

INSTRUMENT	REQUIRED CHANNELS	CONDITIONS	APPLICABLE MODES	TESTING REQUIREMENTS
5. Containment Air Release and Addition System Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (EMF-39 – Low Range)	1	A, B, J, K	1, 2, 3, 4, 5, 6	TR 16.11-7-2 TR 16.11-7-3 TR 16.11-7-7 TR 16.11-7-9
6. Monitor Tank Building HVAC				
6.a Noble Gas Activity Monitor – Providing Alarm (EMF-58 – Low Range)	1 per station	A, B, E, K	At all times (Note 2)	TR 16.11-7-4 TR 16.11-7-6 TR 16.11-7-7 TR 16.11-7-9
6.b Effluent Flow Rate Measuring Device	1 per station	B, D, K	At all times (Note 2)	TR 16.11-7-4 TR 16.11-7-9

Note 1: The setpoint is as required by the primary to secondary leak rate monitoring program.

Note 2: Except when the effluent pathway is mechanically isolated; thus, a release to the environment is not possible.

BASES

The Radioactive Gaseous Effluent Monitoring Instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The Alarm/Trip Setpoints for these instruments shall be calculated in accordance with the methodology and parameters in the ODCM to ensure that the Alarm/Trip will occur prior to exceeding the limits of 10 CFR Part 20. Conservative Alarm/Trip Setpoints may be used during a release provided they are less than or equal to the setpoints determined by the methodology and parameters of the ODCM. The FUNCTIONALITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. The sensitivity of any noble gas activity monitor used to show compliance with the gaseous effluent release requirements of SLC 16.11-8 shall be such that concentrations as low as 1×10^{-6} µCi/cc are measurable.

Regarding Note 2 of Table 16.11-7-1, isolation of the effluent pathway is to be by mechanical means (e.g., valve closure). Electrical or pneumatic isolation is not required, unless the isolation is designed to receive an automatic signal to open.

In MODES 5 and 6, initiation of the Containment Purge Exhaust System (CPES) with EMF-39 non-functional is not permissible. The basis for Required Action F.1 is to allow the continued operation of the CPES with EMF-39 initially FUNCTIONAL. Continued operation of the CPES is contingent upon the ability of the affected unit to meet the requirements as noted in Required Action F.1.

TR 16.11-7-7 requires the performance of a COT on the applicable Radioactive Gaseous Effluent Radiation Monitors. The test ensures that a signal from the control room module can generate the appropriate alarm and actuations. The required actuations/isolations for a High Radiation condition (i.e., radiation level above its Trip 2 setpoint) are listed below for each monitor.

0EMF-50 - Waste Gas Discharge Monitor
1WG160 closes when EMF-50 detects radiation level above its setpoint.

1/2EMF-36 - Unit Vent Noble Gas Monitor
The following actuations occur when EMF-36 detects radiation level above its setpoint:

1. Containment Air Release and Addition System fans discharge to unit vent valve VQ10 closes.
2. Auxiliary Building unfiltered ventilation exhaust fans A and B stop.
3. Fuel Handling Ventilation Exhaust System (FHVES) exhaust trains align to the filter units.
4. (For 1EMF-36 only) 1WG160 closes.

1/2EMF-35 - Unit Vent Particulate Monitor (Sampler)
The following actuations occur when EMF-35 detects radiation level above its setpoint:

1. Containment Air Release and Addition System fans discharge to unit vent valve VQ10 closes.
2. Auxiliary Building unfiltered ventilation exhaust fans A and B stop.

BASES (continued)

3. Fuel Handling Ventilation Exhaust System (FHVES) exhaust trains align to the filter units.
4. ((For 1EMF-35 only) 1WG160 closes.

1/2EMF-39 - Containment Noble Gas Monitor
The following actuations occur when EMF-39 detects radiation level above its setpoint:

1. Signals are provided to both trains of the Solid State Protection System (SSPS) to initiate a CPES isolation. This is verified by observing that Relays K615 in the SSPS A output cabinet and the SSPS B output cabinet are latched.
2. EMF-39 isolates the CPES without going through the SSPS by stopping CPES supply fans A and B, CPES exhaust fans A and B, and by closing the appropriate valves and dampers.
3. Containment Evacuation Alarm, unless the source range trip is blocked.

0EMF-58
This monitor provides no control function.

TR 16.11-7-8 requires the performance of a COT on the Condensate Steam Air Ejector Exhaust Monitor, 1/2EMF-33 and Containment Noble Gas Monitor, 1/2EMF-39. The test ensures that a signal from the control room module can generate the appropriate alarm and actuations. The required actuations/isolations for a High Radiation condition (i.e., radiation level above its Trip 2 setpoint) are listed below.

1/2EMF-33 - Condensate Steam Air Ejector Exhaust Monitor
The following actuations occur when EMF-33 detects radiation level above its setpoint:

1. Closure of BB27 is required in order to isolate the Blowdown Tank from the environment. Because of plant limitations/restrictions:
   a. Opening the valve (in order to verify it goes closed on a High Radiation signal) is only possible during outages due to the negative effects on the Blowdown System with the unit at power.
   b. Testing during innages will be by verification of relay contacts opening in the valve circuit.
2. Closure of BB24, BB65, BB69, and BB73 is required to minimize the amount of potentially contaminated material being delivered to the Blowdown Tank.
3. Closure of NM269, NM270, NM271, and NM272 is required to minimize the amount of potentially contaminated material being delivered to the
4. Conventional Sampling System. Closure of NM267 is required to minimize the amount of potentially contaminated material being delivered to the Condensate Storage Tank by isolating flow through EMF-34.
5. Closure of BB48 is required to minimize the amount of potentially contaminated material being delivered from the Blowdown System discharge to the Turbine Building sump.

1/2EMF-39 - Containment Noble Gas Monitor
BASES (continued)

The following actuations occur when EMF-39 detects radiation level above its setpoint:

1. Signals are provided to both trains of the Solid State Protection System (SSPS) to initiate a Containment Air Release and Addition System isolation. This is verified by observing that relays K615 in the SSPS Train A output cabinet and the SSPS Train B output cabinet are latched.
2. Containment Evacuation Alarm, unless the source range trip is blocked.

REFERENCES

1. Catawba Offsite Dose Calculation Manual.
2. 10 CFR Part 20.