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June 25, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: Catawba Nuclear Station, Unit 1
Docket No. 50-413
Draft Technical Specifications

Dear Mr. Denton:

Attachments 1-5 of this letter contain proposed amendments to the Draft Technical Specifications for Catawba Unit 1. Each attachment contains the proposed changes and a discussion of the justification.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

RWO/rhs

Attachments

cc: Mr. James P. O'Reilly, Regional Administrator
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Table 4.3-2, page 3/4 3-46, Item 8.d needs to be revised to include a note (3) under TRIP ACTUATING DEVICE OPERATIONAL TEST. Note (3) would read: "(3) Monthly testing shall consist of relay testing exluding final actuation of the pumps or valves."

This is needed in order to avoid having to operate the Auxiliary Feedwater pumps and valves more often than is necessary. Specification 4.7.1.1.1.b calls for verification of these valves and pumps every 18 months. This is adequate to ensure operability of the system.

Item 8.f needs to be revised as shown since the installed instrumentation are pressure switches and do not contain an analog channel.

Page 3/4 3-47 items 10.a and 10.b need to be revised to include a note (2) under TRIP ACTUATING DEVICE OPERATION TEST. Note (2) should read: "(2) Monthly testing shall consist of voltage sensor relay testing excluding actuation of the load shedding diesel start and time delay timers."

This is needed in order to avoid having to operate the diesel generators from cold conditions. Monthly cold starting of the diesels will have an adverse impact on the diesels' components by causing unnecessary excessive wear.

Item 11.b should be revised as shown in order to provide consistency between item 11.b and Specification 4.7.6.e.2.

Page 3/4 3-48, Item 14.c needs to be revised as shown for the same reasons cited above. Specification 4.7.4.b calls for verification of the operability of the Nuclear Service Water System pumps and valves. Item 14.g needs to be revised as shown for the same reasons cited above for Item 8.f.

Page 3/4 4-49, Item 15.c needs to be revised as shown for the same reasons cited for Items 10.a and 10.b. Item 16.c should be deleted since there is realignment of the Auxiliary Building Filtered Ventilation Exhaust System upon receipt of a Loss-of-Offsite Power signal. Table 4.3-8, page 3/4 3-80, Items 2, 3.a and 3.b should be revised as shown for the same reason cited for Item 8.f on Table 4.3-2.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
8. Auxiliary Feedwater								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
b. Steam Generator Water Level-Low-Low	S	R	M	N.A.	N.A.	N.A	N.A	1, 2, 3
c. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
d. Loss-of-Offsite Power	N.A.	R	N.A.	M(3)	N.A.	N.A.	N.A	1, 2, 3
e. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2
f. Auxiliary Feedwater Suction Pressure-Low	~~S~~ NA	~~R~~ NA	~~M~~ NA	~~N.A.~~ R	N.A.	N.A..	N.A.	1, 2, 3
9. Containment Sump Recirculation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
b. Refueling Water Storage Tank Level - Low-Low Coincident With Safety Injection	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
	See Item 1. above for all Safety Injection Surveillance Requirements.							

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
10. Loss of Power								
a. 4 kV Bus Undervoltage-Loss of Voltage	N.A.	R	N.A.	M(2)	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 4 kV Bus Undervoltage-Grid Degraded Voltage	N.A.	R	N.A.	M(2)	N.A.	N.A.	N.A.	1, 2, 3, 4
11. Control Room Area Ventilation Operation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	All
b. Loss-of-Offsite Power	N.A.	R	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
c. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
12. Containment Air Return and Hydrogen Skimmer Operation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure-High-High	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
13. Annulus Ventilation Operation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
13. Annulus Ventilation Operation (Continued)								
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
14. Nuclear Service Water Operation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Loss-of-Offsite Power	N.A.	R	N.A.	M(3)	N.A.	N.A.	N.A.	1, 2, 3
d. Containment Spray	See Item 2. above for all Containment Spray Surveillance Requirements.							
e. Phase "B" Isolation	See Item 3.b. above for all Phase "B" Isolation Surveillance Requirements.							
f. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
g. Suction Transfer-Low Pit Level	~~S~~ NA	~~R~~ NA	~~M~~ NA	~~N.A.~~ R	N.A.	N.A.	N.A.	1, 2, 3
15. Emergency Diesel Generator Operation (Diesel Building Ventilation Operation, Nuclear Service Water Operation)								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
15. Emergency Diesel Generator Operation (Diesel Building Ventilation Operation Nuclear Service Water Operation) (Continued)								
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Loss-of-Offsite Power	N.A.	R	N.A.	M(2)	N.A.	N.A.	N.A.	1, 2, 3
d. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
16. Auxiliary Building Filtered Ventilation Exhaust Operation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
~~c. Loss-of-Offsite Power~~	~~N.A.~~	~~R~~	~~N.A.~~	~~M~~	~~N.A.~~	~~N.A.~~	~~N.A.~~	~~1, 2, 3~~
c. ~~d.~~ Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
17. Diesel Building Ventilation Operation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Emergency Diesel Generator Operation	See Item 15. above for all Emergency Diesel Generator Operation Surveillance Requirements							
18. Engineered Safety Features Actuation System Interlocks								
a. Pressurizer Pressure P-11	N.A.	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
b. Pressurizer Pressure, not P-11	N.A.	R	M	N.A.	N.A.	N.A.	N.A	1, 2, 3
c. Low-Low T_{avg}, P-12	N.A.	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Reactor Trip, P-4	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Generator Water Level, P-14	S	R	M	N.A.	M(1)	M(1)	Q	1, 2, 3

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TABLE NOTATION

(1) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(2) Monthly testing shall consist of voltage sensor relay testing excluding actuation of the load shedding, diesel start and time delay timers.

(3) Monthly testing shall consist of relay testing excluding final actuation of the pumps or valves

TABLE 4.3-8

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST
1. Radioactivity Monitors Providing Alarm and Automatic Termination of Release				
a. Waste Liquid Discharge Monitor (Low Range - EMF-49)	D	P	R(2)	Q(1)
b. Turbine Building Sump Monitor (Low Range - EMF-31)	D	M	R(2)	Q(1)
c. Steam Generator Water Sample Monitor (EMF-34)	D	M	R(2)	Q(1)
2. Continuous Composite Samplers and Sampler Flow Monitor				
Conventional Waste Water Treatment Line	D	N.A.	R	~~Q~~ NA
3. Flow Rate Measurement Devices				
a. Waste Liquid Effluent Line	D(3)	N.A.	R	~~Q~~ NA
b. Conventional Waste Water Treatment Line	D(3)	N.A.	R	~~Q~~ NA
c. Low Pressure Service Water Minimum Flow Interlock	D(3)	N.A.	R	Q

Attachment 2

Proposed Amendment to Catawba Unit 1 Draft
Technical Specification 4.5.2.d.1.b Concerning
ECCS Subsystems - $T_{avg} \geq 350°F$

The proposed revision would change the setting for the interlocks which cause the valves to automatically close from "less than or equal to 600 psig" to "less than or equal to 660 psig." The change is required to provide an allowance for possible drift and instrument error.

Station procedures specify a setting of 600 psig. Increasing the setting in the Technical Specifications will allow operating flexibility and avoid a Technical Specification violation if instrumentation drifts.

The setting will remain at 600 psig per the station procedures. The Surveillance Requirements to verify the setpoint will also remain the same.

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EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

b) With a simulated or actual Reactor Coolant System pressure signal less than or equal to ~~600~~ 660 psig the interlocks will cause the valves to automatically close.

2) A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months, during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on Safety Injection and Containment Sump Recirculation test signals, and

2) Verifying that each of the following pumps start automatically upon receipt of a Safety Injection test signal:

a) Centrifugal charging pump,

b) Safety Injection pump, and

c) Residual heat removal pump.

f. By verifying that each of the following pumps develops the indicated differential pressure when tested pursuant to Specification 4.0.5:

1) Centrifugal charging pump $\geq$ 2380 psid,

2) Safety Injection pump $\geq$ 1430 psid, and

3) Residual heat removal pump $\geq$ 165 psid.

g. By verifying the correct position of each electrical and/or mechanical stop for the following ECCS throttle valves:

1) Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE, and

2) At least once per 18 months.

Centrifugal Charging Pump ~~Boron~~ Injection Throttle Valve Number	Safety Injection Throttle Valve Number
1NI-14	1NI-164
1NI-16	1NI-166
1NI-18	1NI-168
1NI-20	1NI-170

Attachment 3

Proposed Amendment to Catawba Unit 1 Draft
Technical Specification 4.6.1.3.b Concerning
Containment Airlock Surveillance

Catawba Unit 1 Draft Technical Specification 4.6.1.3.b currently requires overall containment airlock leakage tests to be performed "...if opened when CONTAINMENT INTEGRITY was not required..." The proposed amendments would change this to require the overall airlock leakage test to be performed "...when maintenance has been performed on the air lock that could affect the air lock sealing capability." This proposed change constitutes an exemption to Appendix J of 10 CFR 50.

The proposed amendments are justified for several reasons:

(1) Opening the airlock, i.e., opening both doors simultaneously, is no different in terms of capability to reseal than opening one door at a time during normal entries.

(2) Test data taken on McGuire Unit 1 (Catawba and McGuire have the same air locks) on sixteen different occasions since June 1981 have not indicated any tendency of the airlock leakage rate to increase after opening both airlock doors simultaneously. (See the attached table.)

(3) The overall airlock leakage rate will be measured at least once per 6 months regardless of the airlock operating or maintenance history. Also, the test would be performed after maintenance activities potentially affecting the airlock sealing capability.

(4) A seal integrity test is performed prior to establishing containment integrity and once every 72 hours per Specification 4.6.1.3.a. This is a more meaningful and more conservative test for detecting seal problems than the overall airlock leakage rate test because it verifies the integrity of each seal on each door. Because the overall airlock leakage test involves pressurizing between the doors, this test only verifies that at least one of the two seals on each door is sealed. (The airlocks have four seals between containment and ouside.) The overall airlock leakage rate test might detect potential problems with the airlock not related to the door seals; however, such problems would not occur as a result of opening both doors simultaneously.

(5) The current requirement poses a significant burden. The airlocks will usually be opened during outages to facilitate equipment transport into and out of containment. Then just prior to entry into Mode 4, the overall airlock leakage test must be performed. Installing strongbacks, performing the test, and removing strongbacks will require at least 6 hours per airlock during which access through the airlock is prohibited. Any access and egress to lower containment during testing of the lower airlock will involve climbing through the emergency hatch between upper and lower containment. This will result in more contamination in upper containment which will usually be cleaner than lower containment. Similarly access to upper

containment while testing the upper airlock will require passing through lower containment where radiation levels will be higher, thus increasing radiation exposure to personnel and increasing contamination in upper containment. The proposed changes would allow better scheduling of the overall airlock leakage test during periods when the need for access to containment is minimal.

The proposed amendments would remove the requirement to test the overall airlock leakage after each opening of the airlock and add a requirement to test whenever the airlock sealing capability might have been affected by maintenance. Because any effect on the airlock sealing capability potentially caused by opening the doors would be detected by another required test and because the overall airlock leakage test will be performed every 6 months and after maintenance, the proposed changes are insignificant to safety.

McGuire Unit 1
Containment Air Lock Leakage Data

The following test data from June 1981 to April 1983 show the containment air lock leakage rates measured after the air locks had been opened. Note that all tests met the acceptance criterion of 0.05 L_a (4530 sccm).

Upper Airlock		Lower Airlock	
Date	Leakage (sccm)	Date	Leakage (sccm)
04/23/83	580	04/25/83	655
11/18/82	412	11/20/82	410
07/13/82	290	07/14/82	115
03/12/82	865	03/13/82	225
12/29/81	193	12/28/81	417
11/20/81	258	11/22/81	751
06/06/81	45	10/02/81	492
		08/03/81	951
		06/11/81	259

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SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

a. Within 72 hours following each closing, except when the air lock is being used for multiple entries, then at least once per 72 hours, by verifying that the seal leakage is less than 0.01 L_a as determined by precision flow measurements when measured for at least 30 seconds with the volume between the seals at a constant pressure of 14.7 psig;

b. By conducting overall air lock leakage tests at not less than P_a, 14.7 psig, and verifying the overall air lock leakage rate is within its limit:

1) At least once per 6 months,# and

2) Prior to establishing CONTAINMENT INTEGRITY ~~if opened when CONTAINMENT INTEGRITY was not required.~~ when maintenance has been performed on the air lock that could affect the air lock sealing capability.##

c. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

d. At least once per 6 months by conducting a pressure test at not less than P_a, 14.7 psig, to verify door seal integrity, with a measured leak rate of less than 15 sccm per door seal.

#The provisions of Specification 4.0.2 are not applicable.

##This constitutes an exemption to Appendix J of 10 CFR 50.

Attachment 4

Proposed Amendment to Catawba Unit 1 Draft
Technical Specifications Concerning
Radiation Monitoring Instrumentation

The proposed change would allow radiation monitor EMF-39 to not be operable prior to initial criticality.

In Inspection Report 50-413/84-50, a Region II inspector identified an Inspector Follow-up Item 84-50-01 concerning unsatisfactory installation of EMFs 38, 39, and 40. In order to resolve this item a Nuclear Station Modification (NSM) has been written. The work required will not be able to be completed until prior to initial criticality.

EMF-39 is a high gaseous radioactivity containment atmosphere monitor. Since there will not be any appreciable radioactivity in the containment prior to initial criticality, an exemption in the form of the proposed Technical Specification change is requested.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

FUNCTIONAL UNIT	CHANNELS TO TRIP/ALARM	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1. Containment					
a. Containment Atmosphere - High Gaseous Radioactivity (Low Range - EMF-39)	1	1	All#	***	30
b. Reactor Coolant System Leakage Detection					
1) Particulate Radioactivity (Low Range - EMF-38)	N.A.	1	1, 2, 3, 4	N.A.	33
2) Gaseous Radioactivity (Low Range - EMF-39)	N.A.	1	1, 2#, 3#, 4#	N.A.	33
2. Fuel Storage Pool Areas					
a. High Gaseous Radioactivity (Low Range - EMF-42)	1	1	**	≤ 1.7×10^{-4} μCi/ml	34
b. Criticality-Radiation Level (Fuel Bridge - Low Range - EMF-15)	1	1	*	≤ 15 mR/h	32
3. Control Room					
Air Intake-Radiation Level - High Gaseous Radioactivity (Low Range - EMF-43 A & B)	1/~~intake~~ station	2/~~intake~~ station	All	≤ 1.7×10^{-4} μCi/ml	31
4. Auxiliary Building Ventilation High Gaseous Radioactivity (Low Range - EMF-41)	1	1	All	≤ 1.70×10^{-4} μCi/ml	35
5. Component Cooling Water System (EMF-46 A&B)	1	1	All	≤ 1×10^{-2} μCi/ml	36

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TABLE 3.3-6 (Continued)

TABLE NOTATIONS

* With fuel in the fuel storage pool areas.
** With irradiated fuel in the fuel storage pool areas.
*** Trip Setpoint concentration value (μCi/ml) is to be established such that the actual submersion dose rate would not exceed 2 mR/h in the containment building. The Setpoint value may be increased up to the equivalent limits of Specification 3.11.2.1 in accordance with the methodology and parameters in the ODCM during containment purge or vent provided the Setpoint value does not exceed twice the maximum concentration activity in the containment determined by the sample analysis performed prior to each release in accordance with Table 4.11-2.

Not applicable prior to initial criticality.

ACTION STATEMENTS

ACTION 30 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 31 - With the number of operable channels one less than the Minimum Channels OPERABLE requirement, within 1 hour isolate the affected Control Room Ventilation System intake from outside air with recirculating flow through the HEPA filters and charcoal adsorbers.

ACTION 32 - With less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided an appropriate portable continuous monitor with the same Alarm Setpoint is provided in the fuel storage pool area. Restore the inoperable monitors to OPERABLE status within 30 days or suspend all operations involving fuel movement in the fuel building.

ACTION 33 - Must satisfy the ACTION requirement for Specification 3.4.6.1.

ACTION 34 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided the Fuel Handling Ventilation Exhaust System is operating and discharging through the HEPA filters and charcoal adsorbers. Otherwise, suspend all operations involving fuel movement in the fuel building.

ACTION 35 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided the Auxiliary Building Filtered Ventilation Exhaust System is operating and discharging through the HEPA filter and charcoal adsorbers.

ACTION 36 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided that, at least once per 12 hours, grab samples are collected and analyzed for radioactivity (gross gamma) at a lower limit of detection of no more than 10^{-7} μCi/ml.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Containment				
a. Containment Atmosphere - High Gaseous Radioactivity (Low Range - EMF-39)	S	R	M	All#
b. Reactor Coolant System Leakage Detection (Low Range - EMF-38 and Low Range - EMF-39)	S	R	M	1, 2#, 3#, 4#
2. Fuel Storage Pool Areas				
a. High Gaseous Radioactivity (Low Range - EMF-42)	S	R	M	**
b. Criticality-Radiation Level (Fuel Bridge - Low Range - EMF-15)	S	R	M	*
3. Control Room				
Air Intake Radiation Level - High Gaseous Radioactivity - (Low Range - EMF-43 A & B)	S	R	M	All
4. Auxiliary Building Ventilation				
High Gaseous Radioactivity (Low Range - EMF-41)	S	R	M	All
5. Component Cooling Water System (EMF-46 A&B)	S	R	M	All

TABLE NOTATIONS

* With fuel in the fuel storage pool area.
** With irradiated fuel in the fuel storage pool areas.
# Not applicable prior to initial criticality.

Attachment 5

Proposed Amendment to Catawba Unit 1 Draft
Technical Specifications Supplying
Infor·ation and Correcting Errors

SECTION PAGE

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SECTION PAGE

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TABLE 2.2-1 (Continued)

TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE ΔT

$$\Delta T \frac{(1 + \tau_1 S)}{(1 + \tau_2 S)} \left(\frac{1}{1 + \tau_3 S}\right) \leq \Delta T_o \left\{K_1 - K_2 \frac{(1 + \tau_4 S)}{(1 + \tau_5 S)} \left[T \left(\frac{1}{1 + \tau_6 S}\right) - T'\right] + K_3(P - P') - f_1(\Delta I)\right\}$$

Where:

ΔT	=	Measured ΔT by RTD Manifold Instrumentation;
$\frac{1 + \tau_1 S}{1 + \tau_2 S}$	=	Lead-lag compensator on measured ΔT;
τ_1, τ_2	=	Time constants utilized in lead-lag compensator for ΔT, $\tau_1 = 8$ s, $\tau_2 = 3$ s;
$\frac{1}{1 + \tau_3 S}$	=	Lag compensator on measured ΔT;
τ_3	=	Time constant utilized in the lag compensator for ΔT, τ_3 = ~~2~~ 0 s;
ΔT_o	=	Indicated ΔT at RATED THERMAL POWER;
K_1	=	1.411;
K_2	=	0.02401/°F;
$\frac{1 + \tau_4 S}{1 + \tau_5 S}$	=	The function generated by the lead-lag compensator for T_{avg} dynamic compensation;
τ_4, τ_5	=	Time constants utilized in the lead-lag compensator for T_{avg}, $\tau_4 = 28$ s, $\tau_5 = 4$ s;
T	=	Average temperature, °F;
$\frac{1}{1 + \tau_6 S}$	=	Lag compensator on measured T_{avg};
τ_6	=	Time constant utilized in the measured T_{avg} lag compensator, τ_6 = ~~[illegible]~~ 0 s;

Intermediate and Source Range, Neutron Flux

or automatically blocked when P-10 becomes active.

The Intermediate and Source Range, Neutron Flux trips provide core protection during reactor STARTUP to mitigate the consequences of an uncontrolled rod cluster control assembly bank withdrawal from a subcritical condition. These trips provide redundant protection to the Low Setpoint trip of the Power Range, Neutron Flux channels. The Source Range channels will initiate a Reactor trip at about 10^5 counts per second unless manually blocked when P-6 becomes active. The Intermediate Range channels will initiate a Reactor trip at a current level equivalent to approximately 25% of RATED THERMAL POWER unless manually blocked when P-10 becomes active.

Overtemperature ΔT

The Overtemperature ΔT trip provides core protection to prevent DNB for all combinations of pressure, power, coolant temperature, and axial power distribution, provided that the transient is slow with respect to piping transit delays from the core to the temperature detectors (about 4 seconds), and pressure is within the range between the Pressurizer High and Low Pressure trips. The Setpoint is automatically varied with: (1) coolant temperature to correct for temperature-induced changes in density and heat capacity of water and includes dynamic compensation for piping delays from the core to the loop temperature detectors, (2) pressurizer pressure, and (3) axial power distribution. With normal axial power distribution, this Reactor trip limit is always below the core Safety Limit as shown in Figure 2.2-1. If axial peaks are greater than design, as indicated by the difference between top and bottom power range nuclear detectors, the Reactor trip is automatically reduced according to the notations in Table 2.2-1.

Overpower ΔT

The Overpower ΔT trip provides assurance of fuel integrity (e.g., no fuel pellet melting and less than 1% cladding strain) under all possible overpower conditions, limits the required range for Overtemperature ΔT trip, and provides a backup to the High Neutron Flux trip. The Setpoint is automatically varied with: (1) coolant temperature to correct for temperature-induced changes in density and heat capacity of water, and (2) rate of change of temperature for dynamic compensation for piping delays from the core to the loop temperature detectors, to ensure that the allowable heat generation rate (kW/ft) is not exceeded. The Overpower ΔT trip provides protection to mitigate the consequences of various size steam breaks as reported in WCAP-9226, "Reactor Core Response to Excessive Secondary Steam Releases."

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 As a minimum, one of the following borated water source(s) shall be OPERABLE as required by Specification 3 1.2.2:

a. A Boric Acid Storage System with:

1) A minimum contained borated water volume of 19500 gallons,

2) A minimum boron concentration of 7000 ppm, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank with:

1) A contained borated water volume of at least ~~350,000~~ 363,513 gallons,

2) A minimum boron concentration of 2000 ppm,

3) A minimum solution temperature of 70°F, and

4) A maximum solution temperature of [illegible]0°F.

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

ACTION:

a. With the Boric Acid Storage System inoperable and being used as one of the above required borated water sources, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F; restore the Boric Acid Storage System to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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3/4.2.3 REACTOR COOLANT SYSTEM FLOW RATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR

LIMITING CONDITION FOR OPERATION

3.2.3 The combination of indicated Reactor Coolant System total flow rate and R shall be maintained within the region of allowable operation shown on Figure 3.2-3 for four loop operation.

Where:

a. $R = \dfrac{F^N_{\Delta H}}{1.49\ [1.0 + 0.3\ (1.0 - P)]}$,

b. $P = \dfrac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$, and

c. $F^N_{\Delta H}$ = Measured values of $F^N_{\Delta H}$ obtained by using the movable incore detectors to obtain a power distribution map. The measured values of $F^N_{\Delta H}$ shall be used to calculate R since Figure 3.2-3 includes penalties for undetected feedwater venturi fouling of 0.1% and for measurement uncertainties of 2.1% for flow and 4% for incore measurement of $F^N_{\Delta H}$.

APPLICABILITY: MODE 1.

ACTION:

With the combination of Reactor Coolant System total flow rate and R outside the region of acceptable operation shown on Figure 3.2-3:

a. Within 2 hours either:

   1. Restore the combination of Reactor Coolant System total flow rate and R to within the above limits, or

   2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER and reduce the Power Range Neutron Flux - High Trip Setpoint to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

b. Within 24 hours of initially being outside the above limits, verify through incore flux mapping and Reactor Coolant System total flow rate comparison that the combination of R and Reactor Coolant System total flow rate are restored to within the above limits, or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 2 hours.

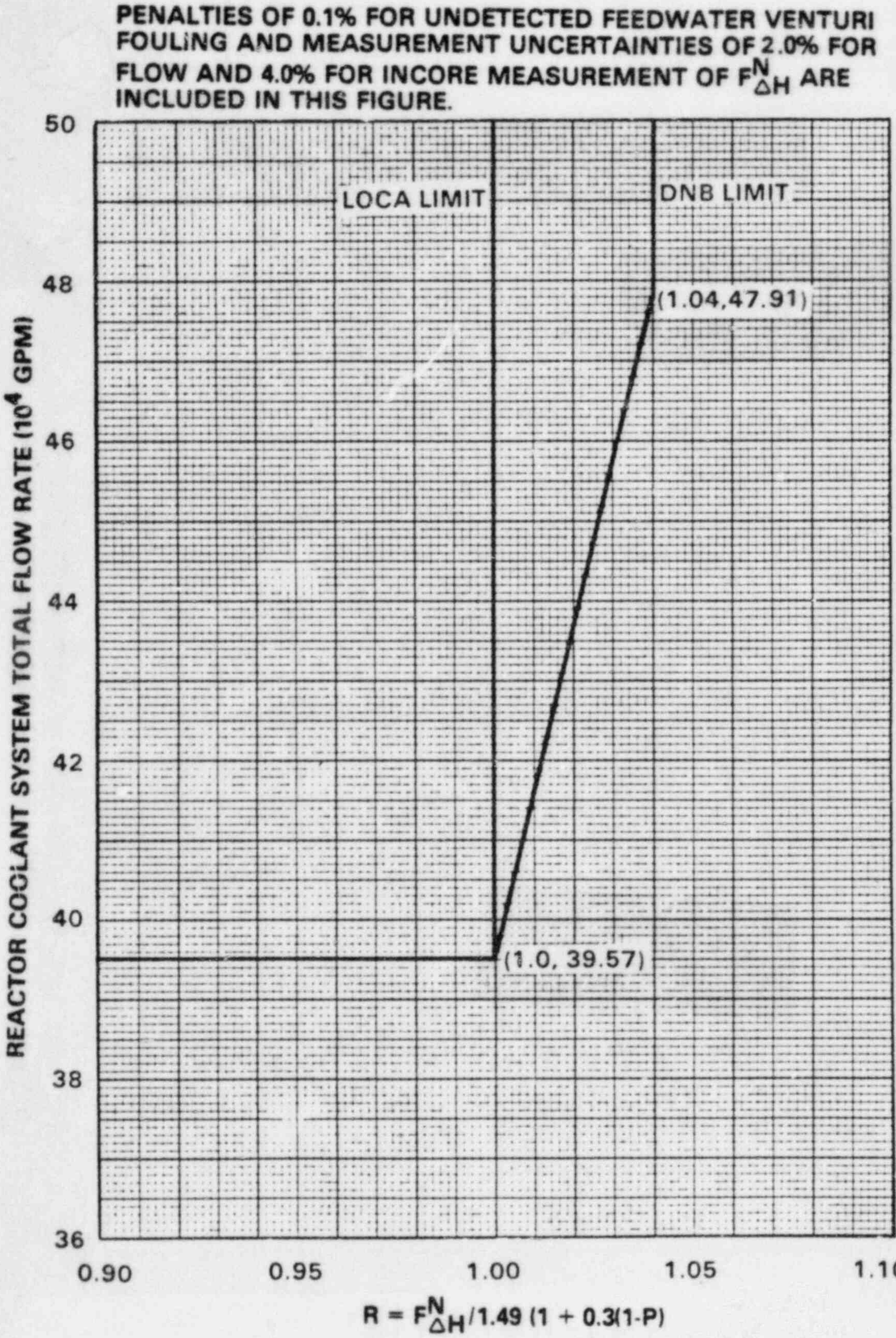

FIGURE 3.2-3

REACTOR COOLANT SYSTEM TOTAL FLOW RATE VERSUS R - FOUR LOOPS IN OPERATION

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
8. Auxiliary Feedwater (Continued)					
g. Auxiliary Feedwater Suction Pressure-Low					
1) 1 CAPS 5220, 5221, 5222	6-3/pump	2/pump	2/pump	1, 2, 3	15
2) 1 CAPS 5230, 5231, 5231	6-3/pump	2/pump	2/pump	1, 2, 3	15
9. Containment Sump Recirculation					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
b. Refueling Water Storage Tank Level-Low~~Low~~	4	2	3	1, 2, 3, 4	16
Coincident With Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
10. Loss of Power					
a. 4 kV Bus Undervoltage-Loss of Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	15*
b. 4 kV Bus Undervoltage-Grid Degraded Voltage	3/Bus	2/Bus	2/Bus	1, 2, 3, 4	15*
11. Control Room Area Ventilation Operation					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	All	24

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
6. Turbine Trip					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Steam Generator Water Level-High-High (P-14)	5.4	2.18	1.5	≤ 82.4% of narrow range instrument span	≤ 84.2% of narrow range instrument span
d. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	N.A.	N.A.
e. Doghouse Water Level-High	1.0	0	0.5	11 inches above 577' floor level	12 inches above 577' floor level
f. Safety Injection	See Item 1. above for all Safety Injection Setpoints and Allowable Values.				
7. Containment Pressure Control System					
a. Start Permissive	N.A.	N.A.	N.A.	≤ 0.4 psid	≤ 0.45 psid
b. Termination	N.A.	N.A.	N.A.	≥ 0.25 psid	≥ 0.3 psid
8. Auxiliary Feedwater					
a. Manual Initiation	N.A	N.A.	N.A.	N.A	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
8. Auxiliary Feedwater (Continued)					
c. Steam Generator Water Level - Low-Low	15	12.18	1.5	≥ 17% of span from 0% to 30% RTP increasing linearly to ≥ 54.9% of span from 30% to 100% RTP	≥ 10.25% of span from 0% to 30% RTP increasing linearly to ≥ 53.2% of span from 30% to 100% RTP
d. Safety Injection	See Item 1. above for all Safety Injection Setpoints and Allowable Values.				
e. Loss-of-Offsite Power	N.A.	N.A.	N.A.	≥ 3500 V	≥ 3200 V
f. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	N.A.	N.A.
g. Auxiliary Feedwater Suction Pressure-Low					
1) 1 CAPS 5220, 5221, 5222	N.A.	N.A.	N.A.	≥ 9.6 psig	≥ 9.5 psig
2) 1 CAPS 5230, 5231, 5232	N.A.	N.A.	N.A.	≥ 10 psig	≥ 9.9 psig
9. Containment Sump Recirculation					
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
b. Refueling Water Storage Tank Level-Low Coincident With Safety Injection	N.A.	N.A.	N.A.	≥ 177.15 inches	≥ 162.4 inches
	See Item 1. above for all Safety Injection Setpoints and Allowable Values.				

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TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
13. Annulus Ventilation Operation					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Safety Injection	See Item 1. above for all Safety Injection Setpoints and Allowable Values.				
14. Nuclear Service Water Operation					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	N.A.
c. Loss-of-Offsite Power	N.A.	N.A.	N.A.	$\geq$ 3500 V	$\geq$ 3200 V
d. Containment Spray	See Item 2. above for all Containment Spray Setpoints and Allowable Values.				
e. Phase "B" Isolation	See Item 3.b. above for all Phase "B" Isolation Setpoints and Allowable Values.				
f. Safety Injection	See Item 1. above for all Safety Injection Setpoints and Allowable Values.				
g. Suction Transfer-Low Pit Level	NA	NA	NA	$\geq$ Elevation 554.4'	$\geq$ Elevation 552.9'
15. Emergency Diesel Generator Operation (Diesel Building Ventilation Operation, Nuclear Service Water Operation)					
a. Manual Initiation	N.A	N.A.	N.A.	N.A.	N.A.

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TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATION SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual Initiation	
a. Safety Injection (ECCS)	N.A.
b. Containment Spray	N.A.
c. Phase "A" Isolation	N.A.
d. Phase "B" Isolation	N.A.
e. Purge and Exhaust Isolation	N.A.
f. Steam Line Isolation	N.A.
g. Diesel Building Ventilation Operation	N.A.
h. Nuclear Service Water Operation	N.A.
i. Turbine Trip	N.A.
j. Component Cooling Water	N.A.
k. Annulus Ventilation Operation	N.A.
~~l. Control Room Area Ventilation Operation~~	~~N.A.~~
l ~~m.~~ Auxiliary Building Filtered Ventilation Exhaust Operation	N.A.
m ~~n.~~ Reactor Trip	N.A.
n ~~o.~~ Emergency Diesel Generator Operation	N.A.
o ~~p.~~ Containment Air Return and Hydrogen Skimmer Operation	N.A.
p ~~q.~~ Auxiliary Feedwater	N.A.
2. Containment Pressure-High	
a. Safety Injection (ECCS)	$\leq 27^{(1)}/12^{(3)}$
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 7
3) Phase "A" Isolation(2)	$\leq 18^{(3)}/28^{(4)}$
4) Purge and Exhaust Isolation	$\leq$ 6
5) Auxiliary Feedwater(5)	N.A.
6) Nuclear Service Water Operation	$\leq 65^{(3)}/76^{(4)}$
7) Turbine Trip	N.A.
8) Component Cooling Water	$\leq 65^{(3)}/76^{(4)}$
9) Emergency Diesel Generator Operation	≤ 11
10) Control Room Area Ventilation Operation	N.A.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
2. Containment Pressure-High (Continued)	
11) Annulus Ventilation Operation	≤ 23
12) Auxiliary Building Filtered Ventilation Exhaust Operation	N.A.
13) Containment Sump Recirculation	N.A.
3. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	≤ 27(1)/12(3)
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 7
3) Phase "A" Isolation(2)	≤ 18(3)/28(4)
4) Purge and Exhaust Isolation	≤ 6
5) Auxiliary Feedwater(5)	N.A.
6) Nuclear Service Water Operation	≤ 65(3)/76(4)
7) Turbine Trip	N.A.
8) Component Cooling Water	≤ 65(3)/76(4)
9) Emergency Diesel Generator Operation	≤ 11
10) Control Room Area Ventilation Operation	N.A.
11) Annulus Ventilation Operation	≤ 23
12) Auxiliary Building Filtered Ventilation Exhaust Operation	N.A.
13) Containment Sump Recirculation	N.A.
4. Steam Line Pressure-Low	
a. Safety Injection (ECCS)	≤ 12(3)/22(4)
1) Reactor Trip	≤ 2
2) Feedwater Isolation	≤ 7
3) Phase "A" Isolation(2)	≤ 18(3)/28(4)
4) Purge and Exhaust Isolation	≤ 6
5) Auxiliary Feedwater(5)	≤ 60
6) Nuclear Service Water Operation	≤ 65(3)/76(4)
7) Turbine Trip	N.A.
8) Component Cooling Water	≤ 65(3)/76(4)
9) Emergency Diesel Generator Operation	≤ 11

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
4. Steam Line Pressure-Low (Continued)	
10) Control Room Area Ventilation Operation	N.A.
11) Annulus Ventilation Operation	≤ 23
12) Auxiliary Building Filtered Ventilation Exhaust Isolation	N.A.
13) Containment Sump Recirculation	N.A.
b. Steam Line Isolation	≤ 7
5. Containment Pressure-High-High	
a. Containment Spray	≤ 45
b. Phase "B" Isolation	$\leq 65^{(3)}/76^{(4)}$
Nuclear Service Water Operation	N.A.
c. Steam Line Isolation	≤ 7
d. Containment Air Return and Hydrogen Skimmer Operation	≤ 600
6. Steam Line Pressure - Negative Rate-High	
Steam Line Isolation	≤ 7
7. Steam Generator Water Level-High-High	
a. Turbine Trip	≤ 3
b. Feedwater Isolation	≤ 7
8. T_{avg}-Low	
Feedwater Isolation	N.A.
9. Doghouse Water Level-High	
a. Feedwater Isolation	N.A.
b. Turbine Trip	N.A.
10. Start Permissive	
Containment Pressure Control System	N.A.
11. Termination	
Containment Pressure Control System	N.A.

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TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
12. Steam Generator Water Level-Low-Low	
a. Motor-Driven Auxiliary Feedwater Pumps	≤ 60
b. Turbine-Driven Auxiliary Feedwater Pump	≤ 60
13. Loss-of-Offsite Power	N.A.
a. Motor-Driven Auxiliary Feedwater Pumps	≤ 60
b. Turbine-Driven Auxiliary Feedwater Pumps	≤ 60
c. Control Room Area Ventilation Operation	N.A.
d. Emergency Diesel Generator Operation	≤ 11
1) Diesel Building Ventilation Operation	N.A.
2) Nuclear Service Water Operation	≤ $65^{(3)}/76^{(4)}$
e. Auxiliary Building Filtered Ventilation Exhaust Operation	N.A.
14. Trip of All Main Feedwater Pumps	
a. Motor-Driven Auxiliary Feedwater Pumps	≤ 60
b. Turbine Trip	N.A.
15. Auxiliary Feedwater Suction Pressure-Low	
Auxiliary Feedwater (Suction Supply Automatic Realignment)	≤ $15^{(6)}$
16. Refueling Water Storage Tank Level-Low~~-Low~~	
Coincident with Safety Injection Signal (Automatic Switchover to Containment Sump)	≤ 60
17. Loss of Power	
a. 4 kV Bus Undervoltage - Loss of Voltage	≤ 8.5
b. 4 kV Bus Undervoltage-Grid Degraded Voltage	≤ ~~N~~ 600
18. Suction Transfer-Low Pit Level	
Nuclear Service Water Operation	N.A.

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TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
8. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level-Low-Low	S	R	M	N.A.	N.A.	N.A	N.A	1, 2, 3
d. Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
e. Loss-of-Offsite Power	N.A.	R	N.A.	M	N.A.	N.A.	N.A	1, 2, 3
f. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2
g. Auxiliary Feedwater Suction Pressure-Low	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3
9. Containment Sump Recirculation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
b. Refueling Water Storage Tank Level - Low-Low Coincident With Safety Injection	S	R	M	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
	See Item 1. above for all Safety Injection Surveillance Requirements.							

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TABLE 3.3-10

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENT	TOTAL NO. OF CHANNELS	MINIMUM CHANNELS OPERABLE
1. Containment Pressure	2	1
2. Reactor Coolant Outlet Temperature - T_{HOT} (Wide Range)	2	1
3. Reactor Coolant Inlet Temperature - T_{COLD} (Wide Range)	2	1
4. Reactor Coolant Pressure - Wide Range	2	1
5. Pressurizer Water Level	2	1
6. Steam Line Pressure	2/steam generator	1/steam generator
7. Steam Generator Water Level - Narrow Range	2/steam generator	1/steam generator
8. Refueling Water Storage Tank Water Level	2	1
9. Auxiliary Feedwater Flow Rate	2/steam generator	1/steam generator
10. Reactor Coolant System Subcooling Margin Monitor	1	1
11. PORV ~~Flow~~ Position Indicator*	2/Valve	1/Valve
12. PORV Block Valve Position Indicator**	2/Valve	1/Valve
13. Pressurizer Safety Valve Position Indicator	1 → ~~2~~/Valve	1/Valve
14. Containment Sump Water Level (Wide Range)	2	1

INSTRUMENTATION

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FIRE DETECTION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.8 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3-11 shall be OPERABLE.

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

ACTION:

a. With any, but not more than one-half the total in any fire zone, Function A fire detection instruments shown in Table 3.3-11 inoperable, restore the inoperable instrument(s) to OPERABLE status within 14 days or within 1 hour establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside the containment, then inspect that containment zone at least once per 8 hours or monitor the containment air temperature at least once per hour at the locations listed in Specification 4.6.1.5.

b. With more than one-half of the Function A fire detection instruments in any fire zone shown in Table 3.3-11 inoperable, or with any Function B fire detection instruments shown in Table 3.3-11 inoperable, or with any two or more adjacent fire detection instruments shown in Table 3.3-11 inoperable, within 1 hour establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside the containment, then inspect that containment zone at least once per 8 hours or monitor the containment air temperature at least once per hour at the locations listed in Specification 4.6.1.5.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.8.1 Each of the above required fire detection instruments which are accessible during plant operation, shall be demonstrated OPERABLE at least once per 6 months by performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST. Fire detectors which are not accessible during plant operation shall be demonstrated OPERABLE by the performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 6 months.

4.3.3.8.2 Each of the above required fixed temperature/rate of rise detection instruments shall be demonstrated OPERABLE as follows:

a. For nonrestorable spot-type detectors, at least two detectors out of every hundred, or fraction thereof, shall be removed every 5 years and functionally tested. For each failure that occurs on the detectors removed, two additional detectors shall be removed and tested; and

b. For restorable spot-type heat detectors, at least one detector on each signal initiating circuit shall be demonstrated OPERABLE at least once per 6 months by performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST. Different detectors shall be selected for each test. Fire detectors which are not accessible during plant operation shall be demonstrated OPERABLE by the performance of a TRIP ACTUATING DEVICE OPERATIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 6 months.

4.3.3.8.3 The NFPA Standard 72D supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

TABLE 3.3-11

FIRE DETECTION INSTRUMENTS

MINIMUM INSTRUMENTS OPERABLE*

FIRE ZONE	DESCRIPTION	LOCATION		SMOKE	FLAME	HEAT	FUNCTION**
1	R.H.R. Pump 1B	GG-53	El.522 + 0	1	0	1	A
2	R.H.R. Pump 1A	FF-53	El.522 + 0	1	0	1	A
3	Cont. Spray Pump 1B	GG-54	El.522 + 0	3	0	3	A
4	Cont. Spray Pump 1A	GG-55	El.522 + 0	2	0	2	A
9	Aux. F. W. Pumps	BB-51	El.543 + 0	13	0	11(6)	A(B)
10	Mech. Pene. Room	JJ-52	El.543 + 0	3	0	3	A
11	Corridor/Cables	NN-51	El.543 + 0	6	0	3	A
12	Recip. Chg. Pump	JJ-53	El.543 + 0	1	0	6	A
13	Safety Inj Pump 1B	HH-53	El.543 + 0	1	0	1	A
14	Safety Inj Pump 1A	GG-53	El.543 + 0	1	0	1	A
15	Cent. Chg. Pump 1B	JJ-54	El.543 + 0	2	0	1	A
16	Cent. Chg. Pump 1A	JJ-55	El.543 + 0	2	0	2	A
17	Aisles/Cables	KK-56	El.543 + 0	18	0	2	A
18	Aisles/Cables	EE-55	El.543 + 0	6	0	18	A
21	Aisles/Cables	NN-61	El.543 + 0	6	0	6	A
27	Aisles/Cables	KK-59	El.543 + 0	15	0	6	A
28	Aisles/Cables	EE-58	El.543 + 0	1	0	15	A
29	SW Gear Equip. Room	AA-50	El.560 + 0	7	0	1	A
30	Elect. Pene. Room	CC-50	El.560 + 0	8	0	0	A
31	Corridor/Cables	EE-53	El.560 + 0	5	0	0	A
32	Corridor/Cables	KK-52	El.560 + 0	8	0	5	A
33	Corridor/Cables	NN-54	El.560 + 0	10	0	8	A
34	Aisles/Cables	JJ-56	El.560 + 0	14	0	10	A
35	Motor Control Centers	GG-56	El.560 + 0	2	0	14	A
36	Cable Tray Access	FF-56	El.568 + 0	2	0	2	A
37	Equip. Batteries	DD-55	El.554 + 0	5	0	2	A
38	Equip. Batteries	CC-55	El.554 + 0	5	0	4	A
39	Battery Room	CC-56	El.554 + 0	17	0	4	A
45	Aisles/Cables	NN-60	El.560 + 0	13	0	0	A
46	Aisles/Cables	HH-59	El.560 + 0	~~8~~ 7	0	13	A

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TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTS

MINIMUM INSTRUMENTS OPERABLE*

FIRE ZONE	DESCRIPTION	LOCATION		SMOKE	FLAME	HEAT	FUNCTION**
53	SW Gear Equip. Room	AA-49	El.577 + 0	7	0	0	A
54	Aisles/Cables	CC-50	El.577 + 0	10	0	0	A
55	Aisles/Cables	NN-52	El.577 + 0	9	0	9	A
56	Aisles/Cables	PP-55	El.577 + 0	13	0	13	A
57	Aisles/Cables	LL-55	El.577 + 0	11	0	11	A
58	Aisles/Cables	HH-55	El.577 + 0	21	0	21	A
59	Motor Control Center	EE-54	El.577 + 0	2	0	2	A
60	Cable Room	CC-56	El.574 + 0	18	0	15	A
65	Aisles/Cables	PP-59	El.577 + 0	15	0	15	A
66	Aisles/Cables	LL-59	El.577 + 0	4	0	4	A
71	Elect Pene. Room	CC-51	El.594 + 0	10	0	0	A
72	Control Room	CC-56	El.594 + 0	23	0	6	A
73	Vent. Equip. Room	FF-56	El.594 + 0	9	0	0	A
74	Aisles/Cables	LL-56	El.594 + 0	25	0	25	A
76	Aisles/Cables	PP-54	El.594 + 0	15	0	15	A
80	Control Room	BB-59	El.594 + 0	22	0	6	A
81	Ven. Equip. Room	FF-58	El.594 + 0	12	0	0	A
82	Aisles/Cables	KK-58	El.594 + 0	23	0	23	A
84	Aisles/Cables	NN-58	El.594 + 0	79	0	79	A
89	Fuel Pool Area #1	PP-50	El.605 + 10	19	7	19	A
128	UHI Bldg.	HH-44	El.550 + 0	2	3	2	A
129	Fuel Pool Purge Room	NN-50	El.631 + 6	6	0	6	A
131	Reactor Bldg.	Bel.0°-45°	El.565 + 3	4	0	0	A
132	Reactor Bldg.	Bel.45°-90°	El.565 + 3	3	0	0	A
133	Reactor Bldg.	Bel.90°-135°	El.565 + 3	4	0	0	A
134	Reactor Bldg.	Bel.135°-180	El.565 + 3	5	0	0	A
135	Reactor Bldg.	Bel.180°-225°	El.565 + 3	4	0	0	A
136	Reactor Bldg.	Bel.270°-315°	El.565 + 3	3	0	0	A
137	Reactor Bldg.	Bel.315°-0°	El.565 + 3	8	0	0	A
138	Reactor Bldg.	Bel.0°-45°	El.586 + 3	6	0	0	A
139	Reactor Bldg.	Bel.45°-90°	El.586 + 3	4	0	0	A
140	Reactor Bldg.	Bel.90°-135°	El.565 + 3	3	0	0	A
141	Reactor Bldg.	Bel.135°-180	El.586 + 3	8	0	0	A

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TABLE 3.3-11 (Continued)

FIRE DETECTION INSTRUMENTS

MINIMUM INSTRUMENTS OPERABLE*

FIRE ZONE	DESCRIPTION	LOCATION	SMOKE	FLAME	HEAT	FUNCTION**
~~154~~	~~Seal Water Heater Exchanger~~	~~54-GG, 560 + 0~~	1(Duct)	0	0	A
~~155~~	~~Waste Gas Decay Tanks~~ ~~Waste Gas Hydrogen Recombiner~~ ~~Waste Gas Compressor Package A&B~~	~~61-NN, 5 + 0~~	1(Duct)	0	0	A
~~156~~	~~Boric Acid Transfer Pumps 1A, 1B, 2A & 2B~~	~~59-pp, 560+0~~	1(Duct)	0	0	A
RF1A	Diesel Generator 1A	EE-41, 556 + 0	0	0	0(10)	A(B)
RF1B	Diesel Generator 1B	AA-41, 556 + 0	0	0	0(10	A(B)

*The fire detection instruments located within the containment are not required to be OPERABLE during the performance of Type A Containment Leakage Rate tests.

**Function A: Early warning fire detection and notification only.
Function B: Actuation of fire suppression system and early warning and notification.

184	HVAC Duct for Rooms 331 and 332	FF-53, 543 +0
185	HVAC Duct for Rooms 203, 205, 205A, 206A, 206B, 207 and 207A	MM-60, 543 +0
186	HVAC Duct for Rooms 301, 302, 305 and 307	NN-60, 560 +0

HOT STANDBY

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LIMITING CONDITION FOR OPERATION

3.4.1.2 At least ~~two~~ three of the reactor coolant loops listed below shall be OPERABLE and at least ~~one~~ two of these reactor coolant loops shall be in operation:*

a. Reactor Coolant Loop A and its associated steam generator and reactor coolant pump,

b. Reactor Coolant Loop B and its associated steam generator and reactor coolant pump,

c. Reactor Coolant Loop C and its associated steam generator and reactor coolant pump, and

d. Reactor Coolant Loop D and its associated steam generator and reactor coolant pump.

APPLICABILITY: MODE 3.

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required reactor coolant loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 The required steam generators shall be determined OPERABLE by verifying secondary side water level to be greater than or equal to 12% at least once per 12 hours.

4.4.1.2.3 At least one reactor coolant loop shall be verified in operation and circulating reactor coolant at least once per 12 hours.

*All reactor coolant pumps may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

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3/4.5.4 REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.5.4 The refueling water storage tank shall be OPERABLE with:

a. A minimum contained borated water volume of ~~350,000~~ 363,513 gallons,

b. A boron concentration of between 2000 and 2100 ppm of boron,

c. A minimum solution temperature of 70°F, and

d. A maximum solution temperature of 100°F.

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

ACTION:

With the refueling water storage tank inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.4 The refueling water storage tank shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1) Verifying the contained borated water level in the tank, and

2) Verifying the boron concentration of the water.

b. At least once per 24 hours by verifying the refueling water storage tank temperature when the outside air temperature is less than 70°F or greater than 100°F.

TABLE 3.6-1 (Continued)

SECONDARY CONTAINMENT BYPASS LEAKAGE PATHS

PENETRATION NUMBER	SERVICE	RELEASE LOCATION	TEST TYPE
M386	Containment Air Release	Auxiliary Building	Type C
M204	Containment Air Addition	Auxiliary Building	Type C
M316	Int. Fire Protection Header - Hose Racks	Auxiliary Building	Type C
M337	Demineralized Water	Auxiliary Building	Type C
M220	Instrument Air	Auxiliary Building	Type C
M219	Station Air	Auxiliary Building	Type C
M215	Breathing Air	Auxiliary Building	Type C
M329	Reactor Coolant Pump Motor Oil Fill	Auxiliary Building	Type C
M361	Int. Fire Protection Header - Sprinklers	Auxiliary Building	Type C
M119	Containment Purge Exhaust	Auxiliary Building	Type C
M331	Nitrogen Supply to Cold Leg Accumulators	Auxiliary Building	Type C
M322	Safety Injection Test Line	Auxiliary Building	Type C
M454	UHI Test Line	Auxiliary Building	Type C

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CONTAINMENT ~~VENTILATION~~ PURGE SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.1.9 Each containment purge supply and exhaust isolation valve shall be OPERABLE and:

a. Each containment purge supply and/or exhaust isolation valve for the lower compartment (24-inch), instrument room (12-inch), and the Hydrogen Purge System (4-inch) shall be sealed closed,

b. The containment purge supply and/or exhaust isolation valve(s) for the upper compartment (24-inch) may be open for up to 250 hours during a calendar year provided no more than two penetrations are open at one time, and

c. The Containment Air Release and Addition System (4-inch) isolation valve(s) may be open for up to 2000 hours during a calendar year.

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

ACTION:

a. With any containment purge supply and/or exhaust isolation valve for the lower compartment, or instrument room, or Hydrogen Purge System open or not sealed closed, close and/or seal closed that valve or isolate the penetrations(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the containment purge supply and/or exhaust isolation valve(s) for the upper compartment open for more than 250 hours during a calendar year, close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

c. With the Containment Air Release and Addition System isolation valve(s) open for more than 2000 hours during a calendar year, close the open valve(s) or isolate the penetration(s) within 4 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

d. With a containment purge supply and/or exhaust isolation valve(s) having a measured leakage rate in excess of the limits of Specifications 4.6.1.9.3 and/or 4.6.1.9.4, restore the inoperable valve(s) to OPERABLE status within 24 hours, otherwise be in at least HOT STANDBY within the next 6 hours, and in COLD SHUTDOWN within the following 30 hours.

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3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2 Two independent Containment Spray Systems shall be OPERABLE with each Spray System capable of taking suction from the refueling water storage tank and transferring suction to the containment sump.

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

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMEN.S

4.6.2 Each Containment Spray System shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;

b. By ~~verifying~~, that on recirculation flow, each pump develops a ~~discharge~~ differential pressure of greater than or equal to 185 psi~~g~~d when tested pursuant to Specification 4.0.5;

c. At least once per 18 months during shutdown, by:

1) Verifying that each automatic valve in the flow path actuates to its correct position on a Phase "B" Isolation test signal, and

2) Verifying that each spray pump starts automatically on a Phase "B" Isolation test signal.

3) Verifying that each spray pump is prevented from starting by the Containment Pressure Control System when the containment atmosphere pressure is less than or equal to 0.~~25~~4 psid,

SURVEILLANCE REQUIREMENTS (Continued)

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4) Verifying that each spray pump discharge valve is prevented from opening by the Containment Pressure Control System when the containment atmosphere pressure is less than or equal to 0.~~25~~ 4 psid, and

5) Verifying that each spray pump is automatically deenergized by the Containment Pressure Control System when the containment atmosphere pressure is reduced to less than or equal to 0.~~25~~ 4 psid.

d. At least once per 5 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

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SURVEILLANCE REQUIREMENTS (Continued)

4.6.3.2 Each isolation valve specified in Table 3.6-2 shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months by:

a. Verifying that on a Phase "A" Isolation test signal, each Phase "A" isolation valve actuates to its isolation position;

b. Verifying that on a Phase "B" Isolation test signal, each Phase "B" isolation valve actuates to its isolation position;

c. Verifying that on a Containment Radioactivity-High test signal, each purge and exhaust valve actuates to its isolation position; and

d. Verifying that on a High Relative Humidity (≥70%) isolation test signal, each purge and exhaust valve actuates to its isolation position.

supply

4.6.3.3 The isolation time of each power-operated or automatic valve of Table 3.6-2 shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

upper and lower containment

TABLE 3.6-2 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	MAXIMUM ISOLATION TIME (s)
1. Phase "A" Isolation (Continued)		
NI-266A	UHI Check Valve Test Line Inside Containment Isolation	≤10
NI-267A	UHI Check Valve Test Line Inside Containment Isolation	≤10
NI-153A#	Hot Leg Injection Check NI156, NI159 Test Isolation	≤10
NM-3A	Pressurizer Liquid Sample Line Inside Containment Isolation	≤10
NM-6A	Pressurizer Steam Sample Line Inside Containment Isolation	≤10
NM-7B	Pressurizer Sample Header Outside Containment Isolation	≤10
NM-22A	NC Hot Leg A Sample Line Inside Containment Isolation	≤10
NM-25A	NC Hot Leg B Sample Line Inside Containment Isolation	≤10
NM-26B	NC Hot Leg Sample Hdr Outside Containment Isolation	≤10
NM-72B	NI Accumulator 1A Sample Line Inside Containment Isolation	≤10
NM-75B	NI Accumulator 1B Sample Line Inside Containment Isolation	≤10
NM-78B	NI Accumulator 1C Sample Line Inside Containment Isolation	≤10
NM-81B	NI Accumulator 1D Sample Line Inside Containment Isolation	≤10
NM-82A	NI Accumulator Sample Hdr Outside Containment Isolation	≤10
NM-187A#	SG 1A Upper Shell Sample Containment Isolation Inside	≤10
NM-190A#	SG 1A Blowdown Line Sample Containment Isolation Inside	≤10
NM-191B#	SG 1A Sample Hdr Containment Isolation Outside	≤10
NM-197B#	SG 1B Upper Shell Sample Containment Isolation Inside	≤10
NM-200B#	SG 1B Blowdown Line Sample Containment Isolation Inside	≤10
NM-201A#	SG 1B Sample Hdr Containment Isolation Outside	≤10
NM-207A#	SG 1C Upper Shell Sample Containment Isolation Inside	≤10
NM-210A#	SG 1C Blowdown Line Sample Containment Isolation Inside	≤10
NM-211B#	SG 1C Sample Hdr Containment Isolation Outside	≤10
NM-217B#	SG 1D Upper Shell Sample Containment Isolation Inside	≤10
NM-220B#	SG 1D Blowdown Line Sample Containment Isolation Inside	≤10
NM-221A#	SG 1D Sample Hdr Containment Isolation Outside	≤10
NV-15B	Letdown Containment Isolation Outside	≤10
NV-89A	NC Pumps Seal Return Containment Isolation Inside	≤10
NV-91B	NC Pumps Seal Return Containment Isolation Outside	≤10
NV-314B#	Charging Line Containment Isolation Outside	≤10

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3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,

b. Flow channels through the ice condenser,

c. A maximum ice bed temperature of less than or equal to 27°F,

d. A total ice weight of at least 2,368,652 pounds at a 95% level of confidence, and

e. 1944 ice baskets.

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

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

a. At least once per 12 hours by using the Ice Bed Temperature Monitoring System to verify that the maximum ice bed temperature is less than or equal to 27°F,

b. At least once per 9 months by:

1) Chemical analyses which verify that at least nine representative samples of stored ice have a boron concentration of at least 1800 ppm as sodium tetraborate and a pH of 9.0 to 9.5 at 20°C; 25

2) Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1218 lbs of ice. The representative sample shall include six baskets from each of the 24 ice condenser bays and shall be constituted of

3/4.7.3 COMPONENT COOLING WATER SYSTEM

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LIMITING CONDITION FOR OPERATION

3.7.3 At least two independent component cooling water loops shall be OPERABLE.

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

ACTION:

With only one component cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.3 At least two component cooling water loops shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed, or otherwise secured in position is in its correct position; and

b. At least once per 18 months during shutdown, by verifying that:

1) Each automatic valve servicing safety-related equipment actuates to its correct position on a Safety Injection test signal, and

2) Each Component Cooling Water System pump starts automatically on a Safety Injection test signal.

, Phase "A" isolation or Phase "B" isolation

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3/4.7.7 AUXILIARY BUILDING FILTERED ~~VENTILATION~~ EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.7 The Auxiliary Building Filtered ~~Ventilation~~ Exhaust System shall be OPERABLE.

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

ACTION:

With the Auxiliary Building Filtered ~~Ventilation~~ Exhaust System inoperable, restore the inoperable system to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.7 The Auxiliary Building Filtered ~~Ventilation~~ Exhaust System shall be demonstrated OPERABLE:

a. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

   1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is 30,000 cfm ± 10%;

   2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%; and

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SURVEILLANCE REQUIREMENTS (Continued)

3) Verifying a system flow rate of 30,000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980.

c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%;

d. At least once per 13 months by:

1) Verifying that the pressure drop across the combined HEPA filters, charcoal adsorber banks, and moisture separators of less than 8 inches Water Gauge while operating the system at a flow rate of 30,000 cfm ± 10%,

2) Verifying that the system starts on a Safety Injection ~~or Loss-of-Offsite Power~~ test signal, and directs its exhaust flow through the HEPA filters and charcoal adsorbers,

3) Verifying that the system maintains the ECCS pump room at a negative pressure relative to the ~~outside atmosphere~~, adjacent areas

4) Verifying that the filter cooling bypass valves can be manually opened, and

5) Verifying that the heaters dissipate ~~30 ± 3~~ 40 ± 4 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of 30,000 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 30,000 cfm ± 10%.

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SPRAY AND/OR SPRINKLER SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.10.2 The following Spray and/or Sprinkler Systems shall be OPERABLE:

a. Elevation 522 + 0 ft - Auxiliary Building

Room No.	Equipment
100	RHR & Containment Spray ~~Room &~~ Sump Pump~~s~~ Area
101	Corridor
104	RHR Pump 1B
105	RHR Pump 1A
106	Corridor
~~111~~ 112	Corridor

b. Elevation 543 + 0 ft - Auxiliary Building

230	Cent. Chg. Pump 1A
231	Cent. Chg. Pump 1B
250	Unit 1 Aux. Feedwater Pump Room

c. Elevation 554 + 0 ft - Auxiliary Building

350	Battery Room Corridor (DD-EE)

d. Elevation 560 + 0 ft - Auxiliary Building

300	Component Cooling Pumps 1A1, 1A2, 1B1 &1B2

e. Elevation 574 + 0 ft - Auxiliary Building

490	Cable Room Corridor (DD-EE)

f. Reactor Building

-	Annulus
-	Pipe Corridor

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

ACTION:

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

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

(Proposed SSS Specification)

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

4.7.14.2 The Standby Makeup Pump water supply shall be demonstrated OPERABLE by:

a. Verifying at least once per 7 days:

1. That the requirements of Specification 3.9.10 are met, or

2. That a contained water volume of at least 112,320 gallons is available and capable of being aligned to the Standby Makeup Pump.

b. Verifying on a quarterly basis that the Standby Makeup Pump develops a flow of greater than or equal to ~~24.5~~ 26 gpm at a pressure greater than or equal to 2488 psig.

2) Verifying the fuel level in the fuel storage tank,

3) Verifying the fuel transfer valve can be operated to allow fuel to be transferred from the storage system to the day tank,

4) Verifying the diesel starts from ambient condition and accelerates to at least ~~450~~ 441 rpm in less than or equal to 11 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 11 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:

   a) Manual, or

   b) Simulated loss of offsite power by itself, or

   c) Simulated loss of offsite power in conjunction with an ESF Actuation test signal, or

   d) An ESF Actuation test signal by itself.

5) Verifying the generator is synchronized, loaded to greater than or equal to 7000 kW in less than or equal to 60 seconds, and operates for at least 60 minutes, and

6) Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank;

c. At least once per 31 days by checking for and removing accumulated water from the fuel oil storage tanks;

d. By verifying that the Cathodic Protection System is OPERABLE by verifying:

   1) At least once per 60 days that cathodic protection rectifiers are OPERABLE and have been inspected in accordance with the manufacturer's inspection procedures, and

   2) At least once per 12 months that adequate protection from corrosion is provided in accordance with manufacturer's inspection procedures.

e. By sampling new fuel oil in accordance with ASTM-D4057 prior to addition to storage tanks and:

1) By verifying in accordance with the tests specified in ASTM-D975-81 prior to addition to the storage tanks that the sample has:

   a) An API Gravity of within 0.3 degrees at 60°F, or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate, or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89, or an API gravity of greater than or equal to 27 degrees but less than or equal to 39 degrees;

   b) A kinematic viscosity at 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes, (alternatively, Saybolt viscosity, SUS at 100 °F of greater than or equal to 32.6, but less than or equal to 40.1) if gravity was not determined by comparison with the supplier's certification;

   c) A flash point equal to or greater than 125°F; and

   d) A clear and bright appearance with proper color when tested in accordance with ASTM-D4176-82.

2) By verifying within 30 days of obtaining the sample that the other properties specified in Table 1 of ASTM-D975-81 are met when tested in accordance with ASTM-D975-81 except that the analysis for sulfur may be performed in accordance with ASTM-D1552-79 or ASTM-D2622-82.

f. At least once every 31 days by obtaining a sample of fuel oil in accordance with ASTM-D2276-78, and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM-D2276-78, Method A;

g. At least once per 18 months, during shutdown, by:

1) Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service;

2) Verifying the generator capability to reject a load of greater than or equal to 825 kW while maintaining voltage at 4160 ± 420 volts and frequency at 60 ± 1.2 Hz;

3) Verifying the generator capability to reject a load of 7000 kW without tripping. The generator speed shall not exceed 500 rpm during and following the load rejection;

4) Simulating a loss-of-offsite power by itself, and:

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses, and limits during this test. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2g.6)b);*

8) Verifying that the auto-connected loads to each diesel generator do not exceed the 2-hour rating of 7700 kW;

9) Verifying the diesel generator's capability to:

a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Be restored to its standby status.

10) Verifying that with the diesel generator operating in a test mode, connected to its bus, a simulated Safety Injection signal overrides the test mode by: (1) returning the diesel generator to standby operation, and (2) automatically energizing the emergency loads with offsite power;

11) Verifying that the fuel transfer valve transfers fuel from each fuel storage tank to the day tank of each diesel via the installed cross-connection lines;

12) Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within the tolerances given in Table 4.8-2;

13) Verifying that the voltage and ~~frequency~~ diesel speed tolerances for the accelerated sequencer permissives are ~~92.5 ± 1% and 98 + 1%~~, respectively, with a minimum time delay of 2 ± ~~0.2~~ 0.2 s; and

14) Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

a) Turning gear engaged, or

b) Maintenance mode.

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*If Specification 4.8.1.1.2g.6)b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at 7000 kW for 1 hour or until operating temperature has stabilized.

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h. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least ~~450~~ 441 rpm in less than or equal to 11 seconds; and

i. At least once per 10 years by:

1) Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite solution or its equivalent, and

2) Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code at a test pressure equal to 110% of the system design pressure.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported in a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests (on a per nuclear unit basis) is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

4.8.1.1.4 Diesel Generator Batteries - Each diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

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

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

2) The overall battery voltage is greater than or equal to 125 volts on float charge.

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110 volts, or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1) There is no visible corrosion at either terminals or connectors~~, or the connection resistance of these items is less than (150) x 10^{-6} ohm, and~~

2) The average electrolyte temperature of six connected cells is above 60°F.

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4) The battery charger will supply at least 200 amperes at a minimum of 125 volts for at least 8 hours.

d. At least once per 18 months during shutdown, by verifying that the battery capacity is adequate to either:

1) Supply and maintain in OPERABLE status all of the actual emergency loads for 1 hour when the battery is subjected to a battery service test; or

2) Supply a dummy load from Batteries 1EBA and 1EBD* of greater than or equal to ~~466.4~~ 373 amperes for the first minute of the first hour, greater than or equal to ~~265.8~~ 213 amperes for the next 59 minutes of the first hour and greater than or equal to ~~262.9~~ 210 amperes for the second hour while maintaining the battery terminal voltage greater than or equal to 105 volts

e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval this performance discharge test may be performed in lieu of the battery service test required by Specification 4.8.2.1.1d.; and

f. At least once per 18 months, during shutdown, by giving performance discharge tests of battery capacity to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

4.8.2.1.2 Each D.C. channel shall be determined OPERABLE and energized with tie breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts.

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TABLE 3.8-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & 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 1B Discharge Isol Vlv 1NI76A
1EMXC-F01C Primary Bkr Backup Fuse	Check Valve Test Header Cont Isol Vlv 1NI95A
1EMXC-F02A Primary Bkr Backup Fuse	Train A Alternate Power To ND LTDN Vlv 1ND1B
1EMXC-F02B Primary Bkr Backup Fuse	Hot Leg Inj. Check Vlv Test Isol Vlv 1NI 153A
1EMXC-F02C Primary Bkr Backup Fuse	Cont Isol at 134 Deg Annulus Area Vlv 1VI312A
1EMXC-F03A Primary Bkr Backup Fuse	NC Pump 1C Thermal Barrier Outlet Isol Vlv 1KC345A
1EMXC-F03B Primary Bkr Backup Fuse	N_2 to Prt Cont Isol Inside Vlv 1NC54A
1EMXC-F03C Primary Bkr Backup Fuse	Pressurizer Power-Operated Relief Isol Vlv 1NC33A

TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & LOCATION	SYSTEM POWERED
2. 600 VAC MCC (Continued)	
1EMXC-F05A Primary Bkr Backup Fuse	NCDT Vent Inside Cont Isol Vlv 1WL450A
1EMXC-F05B Primary Bkr Backup Fuse	Cont Sump Pumps Discharge Inside Cont Isol Vlv 1WL825A
1EMXC-F05C Primary Bkr Backup Fuse	Vent Unit Cond Drn Tank Outside Cont Isol Vlv 1WL867A
1EMXC-[illegible] Primary Bkr Backup Fuse	NCDT Pumps Disch Inside Cont Isol Vlv 1WL805A
1EMXC-F07B Primary Bkr Backup Fuse	Cont H_2 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

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TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & LOCATION	SYSTEM POWERED
2. 600 VAC MCC (Continued)	
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	Containment 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 Rtn 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-F03C Primary Bkr Backup Fuse	ND Pump 1A Suction from NC Loop B Vlv 1ND2A
1EMXS-F03D Primary Bkr Backup Fuse	Reactor Vessel Head Vent Vlv 1NC253A
1EMXS-F04~~C~~ B Primary Bkr Backup Fuse	S/G 1D Blowdown Inside Cont Isol Vlv 1BB8A
1EMXS-F04~~D~~ C Primary Bkr Backup Fuse	S/G 1B Blowdown Inside Cont Isol Vlv 1BB19A

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TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & LOCATION	SYSTEM POWERED
2. 600 VAC MCC (Continued)	
1EMXS-F05A Primary Bkr Backup Fuse	S/G 1A Blowdown Inside Cont Isol Vlv 1BB56A
1EMXS-F05B Primary Bkr Backup Fuse	S/G 1C Blowdown Inside Cont Isol Vlv 1BB60A
1EMXS-F05C Primary Bkr Backup Fuse	Pzr Liquid Sample Line Inside Cont Isol Vlv 1NM3A
1EMXS-F06A Primary Bkr Backup Fuse	Pzr 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 Tank 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 1CT1A
1MXM-F03B Primary Bkr Backup Fuse	Ice Condenser Air Handling Unit 1B6 Fan Motor A & B

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TABLE 3.8-1 (Continued)

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & LOCATION	SYSTEM POWERED
2. 600 VAC MCC (Continued)	
1MXN-F03A Primary Bkr Backup Fuse	Ice Condenser Power Transformer 1CT1B
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

TABLE 3.8-1 (Continued) DRAFT

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

DEVICE NUMBER & LOCATION	SYSTEM POWERED
2. 600 VAC MCC (Continued)	
1MXZ-F07D Primary Bkr Backup Fuse	Reactor Cavity Manipulator Crane No. R007 & R027
1MXZ-F08A Primary Bkr Backup Fuse	Steam Generator Drain Pump Morot 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 Primary Bkr Backup Fuse	Pressurizer Heaters 28, 55 & 56
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, & 22
PHP1A-F01B Primary Bkr Backup Fuse	Pressurizer Heaters 5, 6, & 27

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3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

a. The equipment hatch closed and held in place by a minimum of four bolts,

b. A minimum of one door in each airlock is closed, and

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:

1) Closed by an isolation valve, blind flange, or manual valve, or

2) Exhausting through an OPERABLE Reactor Building Containment Purge System HEPA filters and charcoal adsorbers.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4.1 Each of the above required containment building penetrations shall be determined to be either in its closed/isolated condition or exhausting through an OPERABLE Reactor Building Containment Purge System with the capability of being automatically isolated upon heater failure within 72 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by:

a. Verifying the penetrations are in their closed/isolated condition, or

b. Verifying the upper and lower containment purge supply and exhaust isolation valves close upon a High Relative Humidity test signal.

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SURVEILLANCE REQUIREMENTS (Continued)

4.9.4.2 The Reactor Building Containment Purge System shall be demonstrated OPERABLE:

a. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedures guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is ~~28,000~~ 25,000 cfm ± 10% (both exhaust fans operating);

2) Verifying within 31 days after removal, that a laboratory analysis of a presentative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.5.2 Revision 2, March 1978, for a methyl iodide penetration of less than 6%; and

3) Verifying a system flow rate of ~~28,000~~ 25,000 cfm ± 10% (both exhaust fans operating) during system operation when tested in accordance with ANSI N510-1980.

c. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 6%;

d. At least once per 18 months by:

1) Verifying that the pressure drop across the [prefilters] combined HEPA filters, charcoal adsorber banks, and ~~moisture separators~~ is less than 8 inches Water Gauge while operating the system at a flow rate of ~~28,000~~ 25,000 cfm ± 10% (both exhaust fans operating);

~~2) Verifying that the filter cooling bypass valves can be opened by operator action~~; and filter train duct

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2 X) Verifying that the heaters dissipates 120 ± 12 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 ~~for a~~ DOP test aerosol while operating the system at a flow rate of ~~28,000~~ 25,000 cfm ± 10% (both exhaust fans operating); and

f. After each complete or partial replacement of a charcoal adsorber bank, by verifying that the cleanup system bank satisifies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a halogenated hydrocarbon ~~refrigerant~~ test gas while operating the system at a flow rate of ~~28,000~~ 25,000 cfm ± 10% (both exhaust fans operating).

3/4.9.11 FUEL HANDLING VENTILATION EXHAUST SYSTEM

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LIMITING CONDITION FOR OPERATION

3.9.11 At least one train of the Fuel Handling Ventilation Exhaust System shall be OPERABLE.

APPLICABILITY: Whenever irradiated fuel is in the storage pool.

ACTION:

a. With both trains of the Fuel Handling Ventilation Exhaust System inoperable, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until the Fuel Handling Ventilation Exhaust System is restored to OPERABLE status.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.11.1 One train of the Fuel Handling Ventilation Exhaust System shall be determined to be operating and discharging through the HEPA filter and charcoal adsorbers at least once per 12 hours whenever irradiated fuel is being moved in the storage pool and during crane operation with loads over the storage pool.

4.9.11.2 Both trains of the Fuel Handling Ventilation Exhaust System shall be demonstrated OPERABLE:

a. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

   1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the system flow rate is ~~10,000~~ cfm ± 10%;

   16,565

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SURVEILLANCE REQUIREMENTS (Continued)

2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Positions C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%; and

3) Verifying a system flow rate of ~~18,000~~ 16,565 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980.

c. After every 720 hours of charcoal adsorber operation in any train by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%.

d. At least once per 18 months for each train by:

1) Verifying that the pressure drop across the combined HEPA filters, charcoal adsorber banks, and moisture separators is less than 8 inches Water Gauge while operating the system at a flow rate of ~~18,000~~ 16,565 cfm ± 10%.

2) Verifying that the system maintains the spent fuel storage pool area at a negative pressure of greater than or equal to ¼ inch Water Gauge relative to the outside amosphere during system operation,

3) Verifying that the filter cooling bypass valves can be manually opened, and

4) Verifying that the heaters dissipate 80 ± 8 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank in any train, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the system at a flow rate of ~~18,000~~ 16,565 cfm ± 10%; and

f. After each complete or partial replacement of a charcoal adsorber bank in any train, by verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of ~~18,000~~ 16,565 cfm ± 10%.

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TABLE 3.12-1 (Continued)

TABLE NOTATIONS

(1) Specific parameters of distance and direction sector from the centerline of ~~one reactor~~ the station and additional description where pertinent, shall be provided for each and every sample location in Table 3.12-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to circumstances such as hazardous conditions, seasonal unavailability, and malfunction of automatic sampling equipment. If specimens are unobtainable due to sampling equipment malfunction, effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.6. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable specific alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the Radiological Environmental Monitoring Program given in the ODCM. Pursuant to Specification 6.14, submit in the next Semiannual Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table for the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples for that pathway and justifying the selection of the new location(s) for obtaining samples.

(2) One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The 40 stations is not an absolute number. The number of direct radiation monitoring stations may be reduced according to geographical limitations; e.g., at an ocean site, some sectors will be over water so that the number of dosimeters may be reduced accordingly. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading.

(3) Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

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HEAT FLUX HOT CHANNEL FACTOR, and REACTOR COOLANT SYSTEM FLOW RATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR (Continued)

When Reactor Coolant System flow rate and $F^N_{\Delta H}$ are measured, no additional allowances are necessary prior to comparison with the limits of Figure 3.2-3. Measurement errors of 2.2% for Reactor Coolant System total flow rate and 4% for $F^N_{\Delta H}$ have been allowed for in determination of the design DNBR value.

The measurement error for Reactor Coolant System total flow rate is based upon performing a precision heat balance and using the result to calibrate the Reactor Coolant System flow rate indicators. Potential fouling of the feedwater venturi which might not be detected could bias the result from the precision heat balance in a nonconservative manner. Therefore, a penalty of 0.1% for undetected fouling of the feedwater venturi is included in Figure 3.2-3. Any fouling which might bias the Reactor Coolant System flow rate measurement greater than 0.1% can be detected by monitoring and trending various plant performance parameters. If detected, action shall be taken before performing subsequent precision heat balance measurements, i.e., either the effect of the fouling shall be quantified and compensated for in the Reactor Coolant System flow rate measurement or the venturi shall be cleaned to eliminate the fouling.

The 12-hour periodic surveillance of indicated Reactor Coolant System flow is sufficient to detect only flow degradation which could lead to operation outside the acceptable region of operation shown on Figure 3.2-3.

3/4.2.4 QUADRANT POWER TILT RATIO

The QUADRANT POWER TILT RATIO limit assures that the radial power distribution satisfies the design values used in the power capability analysis. Radial power distribution measurements are made during STARTUP testing and periodically during power operation.

The limit of 1.02, at which corrective action is required, provides DNB and linear heat generation rate protection with x-y plane power tilts. A limit of 1.02 was selected to provide an allowance for the uncertainty associated with the indicated power tilt.

The 2-hour time allowance for operation with a tilt condition greater than 1.02 but less than 1.09 is provided to allow identification and correction of a dropped or misaligned control rod. In the event such action does not correct the tilt, the margin for uncertainty on F_Q is reinstated by reducing the maximum allowed power by 3% for each percent of tilt in excess of 1.

For purposes of monitoring QUADRANT POWER TILT RATIO when one excore detector is inoperable, the moveable incore detectors are used to confirm that the normalized symmetric power distribution is consistent with the QUADRANT POWER TILT RATIO. The incore detector monitoring is done with a full incore

PRESSURE/TEMPERATURE LIMITS (Continued)

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.

LOW TEMPERATURE OVERPRESSURE PROTECTION

The OPERABILITY of two PORVs or a Reactor Coolant System vent opening of at least 4.5 square inches ensures that the Reactor Coolant System will be protected from pressure transients which could exceed the limits of Appendix G to 10 CFR Part 50 when one or more of the cold legs are less than or equal to 285°F. Either PORV has adequate relieving capability to protect the Reactor Coolant System from overpressurization when the transient is limited to either: (1) the start of an idle reactor coolant pump with the secondary water temperature of the steam generator less than or equal to 50°F above the cold leg temperatures, or (2) the start of a Safety Injection pump and its injection into a water solid Reactor Coolant System.

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3/4.4.10 STRUCTURAL INTEGRITY

The inservice inspection and testing programs for ASME Code Class 1, 2, and 3 components ensure that the structural integrity and operational readiness of these components will be maintained at an acceptable level throughout the life of the plant. These programs are in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

Components of the Reactor Coolant System were designed to provide access to permit inservice inspections in accordance with Section XI of the ASME Boiler and Pressure Vessel Code, and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

DUKE POWER COMPANY

Form 00184 (6.81)

Dev./Station ______ Unit ______ File No. ______

Subject ______

______ By ______ Date ______

Sheet No. ___ of ___ Problem No. ______ Checked By ______ Date ______

The Maximum Allowed PORV Setpoint for the [redacted] Low Temperature Overpressure [redacted] Protection System ([redacted]) LTOP is derived by analysis which models the performance of the [redacted] LTOP System assuming various mass input and heat input transients. Operation with a PORV setpoint less than or equal to the maximum setpoint ensures that Appendix G criteria will not be violated with consideration for [redacted] a maximum pressure overshoot beyond the PORV setpoint which can occur as a result of time delays in signal processing and valve opening, [redacted] instrument uncertainties, and [redacted] single failure. To ensure that mass and heat input transients more severe than those assumed cannot occur, technical specifications require lockout of both safety injection pumps and all but one centrifugal charging pump while in MODES 4, 5 and 6 with the reactor vessel head installed and disallow start of a RCP if secondary temperature is more than 50°F above primary temperature. [redacted]

The Maximum Allowed PORV setpoint for the [redacted] Low Temperature Overpressure [redacted] Protection System will be updated based on the results of examinations of reactor vessel material irradiation surveillance specimens performed as required by 10 CFR 50, Appendix H and in accordance with the schedule in Table 4.4-5.

ECCS SUBSYSTEMS (Continued)

The limitation for a maximum of one centrifugal charging pump and one Safety Injection pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and Safety Injection pumps except the required OPERABLE centrifugal charging pump to be inoperable below 285°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The Surveillance Requirements provided to ensure OPERABILITY of each component ensures that at a minimum, the assumptions used in the safety analyses are met and that subsystem OPERABILITY is maintained. Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.4 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core, and (2) the reactor will remain subcritical in the cold condition following mixing of the refueling water storage tank and the Reactor Coolant System water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analyses.

The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the refueling water storage tank also ensure a pH value of between 8.5 and 10.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

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3/4.6.1.8 ANNULUS VENTILATION SYSTEM

The OPERABILITY of the Annulus Ventilation System ensures that during LOCA conditions, containment vessel leakage into the annulus will be filtered through the HEPA filters and charcoal adsorber trains prior to discharge to the atmosphere. Operation of the system with the heaters operating to maintain low humidity using automatic control for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. This requirement is necessary to meet the assumptions used in the safety analyses and limit the SITE BOUNDARY radiation doses to within the dose guideline values of 10 CFR Part 100 during LOCA conditions. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

3/4.6.1.9 CONTAINMENT ~~VENTILATION~~ PURGE SYSTEMS

The containment purge supply and exhaust isolation valves for the lower compartment (24-inch), and instrument room (12-inch), and the Hydrogen Purge System (4-inch) are required to be sealed closed during plant operation since these valves have not been demonstrated capable of closing during a LOCA. Maintaining these valves sealed closed during plant operations ensures that excessive quantities of radioactive materials will not be released via the Containment Purge System. To provide assurance that these containment valves cannot be inadvertently opened, the valves are sealed closed in accordance with Standard Review Plan 6.2.4 which includes mechanical devices to seal or lock the valve closed, or prevents power from being supplied to the valve operator.

The use of the containment purge lines is restricted to the 24-inch purge supply and exhaust isolation valves for the upper compartment and the 4-inch Containment Air Release and Addition System valves since, unlike the lower compartment, instrument room, and the Hydrogen Purge System valves, these 24-inch valves and 4-inch valves are capable of closing during a LOCA. Therefore, the SITE BOUNDARY dose guideline values of 10 CFR Part 100 would not be exceeded in the event of an accident during containment purging operation. Operation with the line open will be limited to 250 hours during a calendar year for the 24-inch valves and 2000 hours during a calendar year for the 4-inch valves. The total time the containment purge (vent) system isolation valves may be open during MODES 1, 2, 3, and 4 in a calendar year is a function of anticipated need and operating experience. Only safety-related reasons; e.g., containment pressure control or the reduction of airborne radioactivity to facilitate personnel access for surveillance and maintenance activities, may be used to support the additional time requests.

Leakage integrity tests with a maximum allowable leakage rate for containment purge supply and exhaust valves will provide early indication of resilient material seal degradation and will allow opportunity for repair before gross leakage failures could develop. The 0.60 L_a leakage limit of Specification 3.6.1.2b. shall not be exceeded when the leakage rates determined by the leakage integrity tests of these valves are added to the previously determined total for all valves and penetrations subject to Type B and C tests.

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3/4.7.7 AUXILIARY BUILDING FILTERED ~~VENTILATION~~ EXHAUST SYSTEM

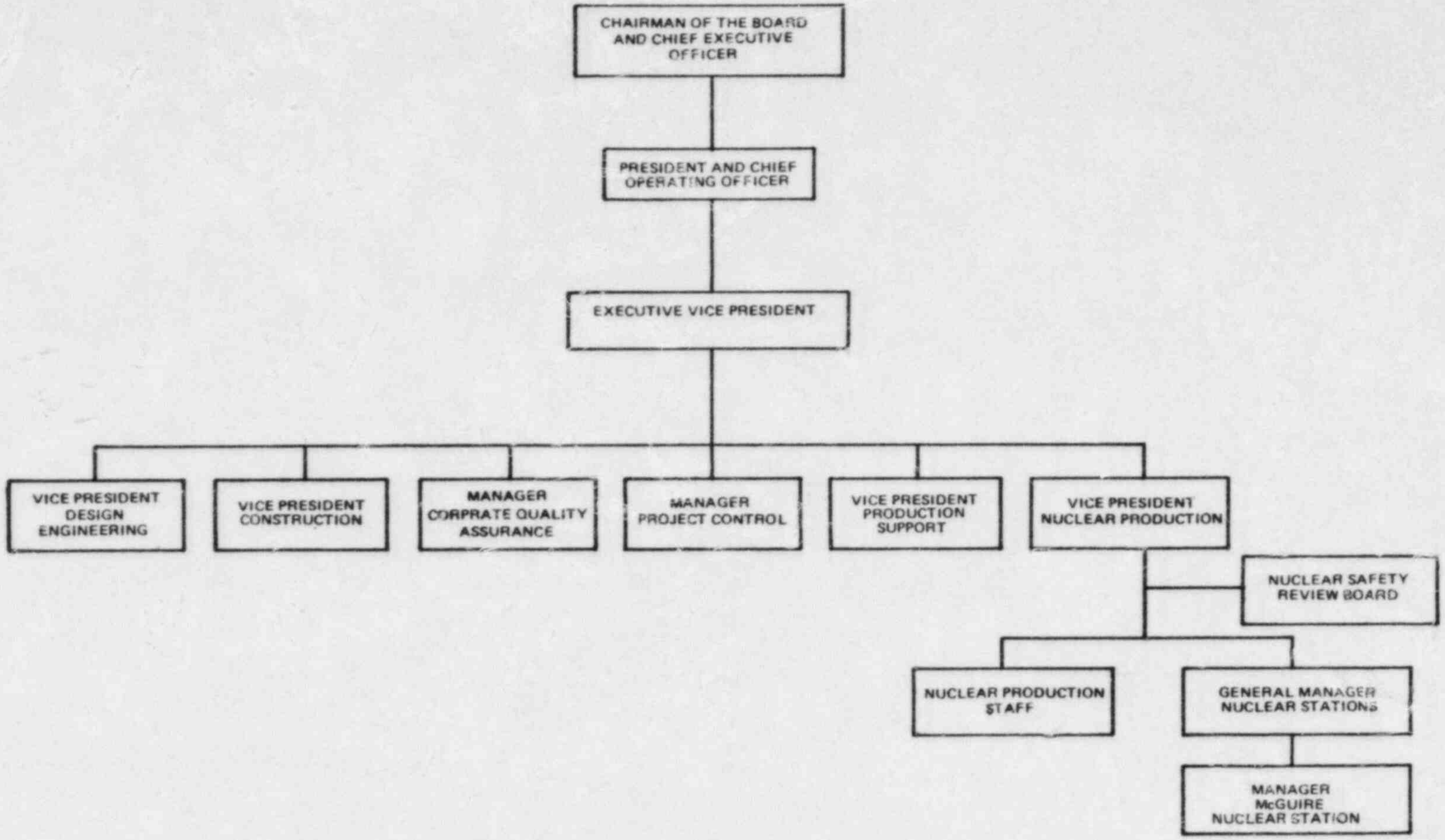
The OPERABILITY of the Auxiliary Building Filtered ~~Ventilation~~ Exhaust System ensures that radioactive materials leaking from the ECCS equipment within the auxiliary building following a LOCA are filtered prior to reaching the environment. Operation of the system with the heaters operating to maintain low humidity using automatic control for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The operation of this system and the resultant effect on offsite dosage calculations was assumed in the safety analyses. ANSI N510-1980 will be used as a procedural guide for surveillance testing.

3/4.7.8 SNUBBERS

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

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

A list of individual snubbers with detailed information of snubber location and size and of system affected shall be available at the plant in accordance with Section 50.71(c) of 10 CFR Part 50. The accessibility of each snubber shall be determined and approved by the Catawba Safety Review Group. The determination shall be based upon the existing radiation levels and the expected time to perform a visual inspection in each snubber location as well as other factors associated with accessibility during plant operations (e.g., temperature, atmosphere, location etc.), and the recommendations of Regulatory Guides 8.8 and 8.10. The addition or deletions of any hydraulic or mechanical snubber shall be made in accordance with Section 50.59 of 10 CFR Part 50.



DUKE POWER CORPORATE ORGANIZATION

CATAWBA NUCLEAR STATION

Figure 6.2-1

RECORD RETENTION (Continued)

m. Records of secondary water sampling and water quality; and

n. Records of analyses required by the Radiological Environmental Monitoring Program that would permit evaluation of the accuracy of the analysis at a later date. This should include procedures effective at specified times and QA records showing that these procedures were followed.

6.11 RADIATION PROTECTION PROGRAM

6.11 Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained, and adhered to for all operations involving personnel radiation exposure.

6.12 HIGH RADIATION AREA

is such that the dose rate is greater than or equal to 100 mR/hr at 45cm (18 in.) and

6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR Part 20, each high radiation area, as defined in 10 CFR Part 20, in which the intensity of radiation is equal to or less than 1000 mR/h at 45 cm (18 in.) from the radiation source or from any surface which the radiation penetrates shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (RWP). Individuals qualified in radiation protection procedures (e.g., Health Physics Technician) or personnel continuously escorted by such individuals may be exempt from the RWP issuance requirement during the performance of their assigned duties in high radiation areas with exposure rates equal to or less than 1000 mR/h, provided they are otherwise following plant radiation protection procedures for entry into such high radiation areas. Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area; or

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate levels in the area have been established and personnel have been made knowledgeable of them; or

c. An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the Station Health Physicist in the RWP.