

ATTACHMENT 2

LIMERICK GENERATING STATION

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
(TS page markups only)

The affected Unit 1 and Unit 2 TS pages are identified within the
associated "group" in Attachment 1

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.1.3.1.4 The scram discharge volume shall be determined OPERABLE by demonstrating:

- a. The scram discharge volume drain and vent valves OPERABLE, when control rods are scram tested from a normal control rod configuration of less than or equal to 50% ROD DENSITY at least once per (24) months, by verifying that the drain and vent valves:
 1. Close within 30 seconds after receipt of a signal for control rods to scram, and
 2. Open when the scram signal is reset.
- b. Proper level sensor response by performance of a CHANNEL FUNCTIONAL TEST of the scram discharge volume scram and control rod block level instrumentation at least once per 31 days.

REACTIVITY CONTROL SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 31 days by:

1. Verifying the continuity of the explosive charge.
2. Determining by chemical analysis and calculation* that the available weight of sodium pentaborate is greater than or equal to 5389 lbs; the concentration of sodium pentaborate in solution is less than or equal to 13.8% and within the limits of Figure 3.1.5-1 and; the following equation is satisfied:

$$\frac{C}{13\% \text{ wt.}} \times \frac{Q}{86 \text{ gpm}} \geq 1$$

where

C = Sodium pentaborate solution (% by weight)

Q = Two pump flowrate, as determined per surveillance requirement 4.1.5.c.

3. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- c. Demonstrating that, when tested pursuant to Specification 4.0.5, the minimum flow requirement of 41.2 gpm per pump at a pressure of greater than or equal to 1190 psig is met.

d. At least once per 18 months during shutdown by:

1. Initiating at least one of the standby liquid control system loops, including an explosive valve, and verifying that a flow path from the pumps to the reactor pressure vessel is available by pumping demineralized water into the reactor vessel. The replacement charge for the explosive valve shall be from the same manufactured batch as the one fired or from another batch which has been certified by having one of that batch successfully fired. All injection loops shall be tested in 3 operating cycles.
2. **Demonstrating that all heat traced piping is unblocked by pumping from the storage tank to the test tank and then draining and flushing the piping with demineralized water.
3. Demonstrating that the storage tank heaters are OPERABLE by verifying the expected temperature rise of the sodium pentaborate solution in the storage tank after the heaters are energized.

*This test shall also be performed anytime water or boron is added to the solution or when the solution temperature drops below 70°F.

**This test shall also be performed whenever all three heat tracing circuits have been found to be inoperative and may be performed by any series of sequential, overlapping or total flow path steps such that the entire flow path is included.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor protection system instrumentation channels shown in Table 3.3.1-1 shall be OPERABLE with the REACTOR PROTECTION SYSTEM RESPONSE TIME as shown in Table 3.3.1-2.

APPLICABILITY: As shown in Table 3.3.1-1.

ACTION:

- a. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition* within 12 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within 1 hour and take the ACTION required by Table 3.3.1-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor protection system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.1.1-1.

4.3.1.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME of each reactor trip functional unit shown in Table 3.3.1-2 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip system.

* An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, the inoperable channel shall be restored to OPERABLE status within 6 hours or the ACTION required by Table 3.3.1-1 for that Trip Function shall be taken.

**The trip system need not be placed in the tripped condition if this would cause the Trip Function to occur. When a trip system can be placed in the tripped condition without causing the Trip Function to occur, place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TABLE 4.3.1.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
9. Turbine Stop Valve - Closure	N.A.	Q	R	1
10. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	N.A.	Q	R	1
11. Reactor Mode Switch Shutdown Position	N.A.	R	N.A.	1, 2, 3, 4, 5
12. Manual Scram	N.A.	W	N.A.	1, 2, 3, 4, 5

- (a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (b) The IRM and SRM channels shall be determined to overlap for at least 1/2 decades during each startup after entering OPERATIONAL CONDITION 2 and the IRM and APRM channels shall be determined to overlap for at least 1/2 decades during each controlled shutdown, if not performed within the previous 7 days.
- (c) Within 24 hours prior to startup, if not performed within the previous 7 days.
- (d) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER > 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 3.2.2 shall not be included in determining the absolute difference.
- (e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
- (f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH) using the TIP system.
- (g) Verify measured core flow (total core flow) to be greater than or equal to established core flow at the existing loop flow (APRM % flow). During the startup test program, data shall be recorded for the parameters listed to provide a basis for establishing the specified relationships. Comparisons of the actual data in accordance with the criteria listed shall commence upon the conclusion of the startup test program.
- (h) This function is not required to be OPERABLE when the reactor pressure vessel head is removed per Specification 3.10.1.
- (i) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.
- (j) If the RPS latching links are required to be removed per Specification 3.9.2, they may be reinstalled for up to 2 hours for required surveillance. During this time, CORE ALTERATIONS shall be suspended, and no control rod shall be moved from its existing position.
- (k) Required to be OPERABLE only prior to and during shutdown margin demonstrations as performed per Specification 3.10.3.

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- c. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within 1 hour and take the ACTION required by Table 3.3.2-1.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each isolation actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.2.1-1.

4.3.2.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.2.3 The ISOLATION SYSTEM RESPONSE TIME of each isolation trip function shown in Table 3.3.2-3 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months, where N is the total number of redundant channels in a specific isolation trip system.

** The trip system need not be placed in the tripped condition if this would cause the Trip Function to occur. When a trip system can be placed in the tripped condition without causing the Trip Function to occur, place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TABLE 4.3.2.1-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRE</u>
1. <u>MAIN STEAM LINE ISOLATION</u>				
a. Reactor Vessel Water Level ^{##}				
1) Low, Low, Level 2	S	Q	R	1, 2, 3
2) Low, Low, Low - Level 1	S	Q	R	1, 2, 3
b. Main Steam Line Radiation ^{###} - High	S	Q	R	1, 2, 3
c. Main Steam Line Pressure - Low	S	M	R	1
d. Main Steam Line Flow - High	S	M	R	1, 2, 3
e. Condenser Vacuum - Low	S	M	R	1, 2**, 3**
f. Outboard MSIV Room Temperature - High	S	M	R	1, 2, 3
g. Turbine Enclosure - Main Steam Line Tunnel Temperature - High	S	M	R	1, 2, 3
h. Manual Initiatl	N.A.	R	N.A.	1, 2, 3
2. <u>RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>				
a. Reactor Vessel Water Level ^{###} Low - Level 3	S	Q	R	1, 2, 3
b. Reactor Vessel (RHR Cut-In Permissive) Pressure ^{##} - High	S	Q	R	1, 2, 3
c. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
3. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. RWCS Δ Flow - High	S	H	R	1, 2, 3
b. RWCS Area Temperature - High	S	H	R	1, 2, 3
c. RWCS Area Ventilation Δ Temperature - High	S	H	R	1, 2, 3
d. SICCS Initiation	N.A.	R	N.A.	1, 2, 3
e. Reactor Vessel Water Level ^{##} Low, Low, - Level 2	S	Q	R	1, 2, 3
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3
4. HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION				
a. HPCI Steam Line Δ Pressure - High	S	H	R	1, 2, 3
b. HPCI Steam Supply Pressure - Low	S	H	R	1, 2, 3
c. HPCI Turbine Exhaust Diaphragm Pressure - High	S	H	R	1, 2, 3
d. HPCI Equipment Room Temperature - High	S	H	R	1, 2, 3
e. HPCI Equipment Room Δ Temperature - High	S	H	R	1, 2, 3
f. HPCI Pipe Routing Area Temperature - High	S	H	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. HPCI Steam Line Δ Pressure Timer	N.A.	H	R	1, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
5. <u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</u>				
a. RCIC Steam Line Δ Pressure - High	S	M	R	1, 2, 3
b. RCIC Steam Supply Pressure - Low	S	M	R	1, 2, 3
c. RCIC Turbine Exhaust Diaphragm Pressure - High	S	M	R	1, 2, 3
d. RCIC Equipment Room Temperature - High	S	M	R	1, 2, 3
e. RCIC Equipment Room Δ Temperature - High	S	M	R	1, 2, 3
f. RCIC Pipe Routing Area Temperature - High	S	M	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. RCIC Steam Line Δ Pressure Timer	N.A.	M	R	1, 2, 3

LIMERICK - UNIT 1

3/4 3-29

Amendment no. 33
CCI 3 0 189

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
6. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level ^{##}	S	Q	R	1, 2, 3
1) Low, Low - Level 2	S	Q	R	1, 2, 3
2) Low, Low, Low - Level 1				
b. Drywell Pressure ^{##} - High	S	Q	R	1, 2, 3
c. North Stack Effluent Radiation - High	S	Q	R	1, 2, 3
d. Deleted				
e. Reactor Enclosure Ventilation Exhaust Duct - Radiation - High	S	M	R	1, 2, 3
f. Outside Atmosphere to Reactor Enclosure A Pressure - Low	N.A.	M	Q	1, 2, 3
g. Deleted				
h. Drywell Pressure ^{##} - High/ Reactor Pressure ^{##} - Low	S	Q	R	1, 2, 3
i. Primary Containment Instrument Gas to Drywell A Pressure - Low	N.A.	M	Q	1, 2, 3
j. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.2.1-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
7. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level ^{##} Low, Low - Level 2	S	Q	R	1, 2, 3
b. Drywell Pressure ^{###} - High	S	Q	R	1, 2, 3
c. 1. Refueling Area Unit 1 Ventilation Exhaust Duct Radiation - High	S	M	R	* [#]
2. Refueling Area Unit 2 Ventilation Exhaust Duct Radiation - High	S	M	R	* [#]
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	M	R	1, 2, 3
e. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	N.A.	M	Q	1, 2, 3
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	N.A.	M	Q	*
g. Reactor Enclosure Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. Refueling Area Manual Initiation	N.A.	R	N.A.	*

*Required when (1) handling irradiated fuel in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

**When not administratively bypassed and/or when any turbine stop valve is open.

[#]During operation of the associated Unit 1 or Unit 2 ventilation exhaust system.

^{##}These trip functions (1a, 2b, 3e, 6a, 6h, and 7a) are common to the ECCS actuation trip function.

^{###}These trip functions (2a, 6b, and 7b) are common to the RPS and ECCS actuation trip functions.

^{####}This trip function (1b) is common to the RPS trip function.

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATIONLIMITING CONDITION FOR OPERATION

3.3.3 The emergency core cooling system (ECCS) actuation instrumentation channels shown in Table 3.3.3-1 shall be OPERABLE with their trip setpoint, set consistent with the values shown in the Trip Setpoint column of Table 3.3.3-2 and with EMERGENCY CORE COOLING SYSTEM RESPONSE TIME as shown in Table 3.3.3-3.

APPLICABILITY: As shown in Table 3.3.3-1.

ACTION:

- a. With an ECCS actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.3-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With one or more ECCS actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.3-1.
- c. With either ADS trip system subsystem inoperable, restore the inoperable trip system to OPERABLE status within:
 1. 7 days, provided that the HPCI and RCIC systems are OPERABLE.
 2. 72 hours.Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to less than or equal to 100 psig within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each ECCS actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.3.1-1.

4.3.3.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per ²⁴24 months.

4.3.3.3 The ECCS RESPONSE TIME of each ECCS trip function shown in Table 3.3.3-3 shall be demonstrated to be within the limit at least once per ²⁴24 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every H times ²⁴24 months where H is the total number of redundant channels in a specific ECCS trip system.

TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
1. <u>CORE SPRAY SYSTEM</u>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	Q	R	1, 2, 3, 4*, 5*
d. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
2. <u>LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM</u>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	Q	R	1, 2, 3
d. Injection Valve Differential Pressure - Low (Permissive)	S	Q	R	1, 2, 3, 4*, 5*
e. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
3. <u>HIGH PRESSURE COOLANT INJECTION SYSTEM***</u>				
a. Reactor Vessel Water Level - Low Low, Level 2	S	Q	R	1, 2, 3
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Condensate Storage Tank Level - Low	S	Q	R	1, 2, 3
d. Suppression Pool Water Level - High	S	Q	R	1, 2, 3
e. Reactor Vessel Water Level - High, Level 2	S	Q	R	1, 2, 3
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
4. <u>AUTOMATIC DEPRESSURIZATION SYSTEM</u>				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. ADS Timer	N.A.	Q	Q	1, 2, 3
d. Core Spray Pump Discharge Pressure - High	S	Q	R	1, 2, 3
e. RHR LPCI Mode Pump Discharge Pressure - High	S	Q	R	1, 2, 3
f. Reactor Vessel Water Level - Low, Level 3	S	Q	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. ADS Drywell Pressure Bypass Timer	N.A.	Q	Q	1, 2, 3
5. <u>LOSS OF POWER</u>				
a. 4.16 kV Emergency Bus Under-voltage (Loss of Voltage) ##	N.A.	R	N.A.	1, 2, 3, 4**, 5**
b. 4.16 kV Emergency Bus Under-voltage (Degraded Voltage)	S	M	R	1, 2, 3, 4**, 5**

* When the system is required to be OPERABLE per Specification 3.5.2.

** Required OPERABLE when ESF equipment is required to be OPERABLE.

*** Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 200 psig

Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.

Loss of Voltage Relay 127-11X is not field settable.

INSTRUMENTATION

3/4.3.4 RECIRCULATION PUMP TRIP ACTUATION INSTRUMENTATION

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.4.1 The anticipated transient without scram recirculation pump trip (ATWS-RPT) system instrumentation channels shown in Table 3.3.4.1-1 shall be OPERABLE with their trip setpoints set consistent with values shown in the Trip Setpoint column of Table 3.3.4.1-2.

APPLICABILITY: OPERATIONAL CONDITION 1.

ACTION:

- a. With an ATWS recirculation pump trip system instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.4.1-2, declare the channel inoperable until the channel is restored to OPERABLE status with the channel trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement for one or both trip systems, place the inoperable channel(s) in the tripped condition within 1 hour.
- c. With the number of OPERABLE channels two or more less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system and:
 1. If the inoperable channels consist of one reactor vessel water level channel and one reactor vessel pressure channel, place both inoperable channels in the tripped condition within 1 hour, or, if this action will initiate a pump trip, declare the trip system inoperable.
 2. If the inoperable channels include two reactor vessel water level channels or two reactor vessel pressure channels, declare the trip system inoperable.
- d. With one trip system inoperable, restore the inoperable trip system to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.
- e. With both trip systems inoperable, restore at least one trip system to OPERABLE status within 1 hour or be in at least STARTUP within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.3.4.1.1. Each ATWS recirculation pump trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.4.1-1.

4.3.4.1.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 24 months.

INSTRUMENTATION

SURVEILLANCE REQUIREMENTS

4.3.4.2.1 Each end-of-cycle recirculation pump trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.4.2.1-1.

✓ 4.3.4.2.2. LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once ²⁴18 months.

24 4.3.4.2.3 The END-OF-CYCLE RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME of each trip function shown in Table 3.3.4.2-3 shall be demonstrated to be within its limit at least once per ²⁴28 months. Each test shall include at least the logic of one type of channel input, turbine control valve fast closure or turbine stop valve closure, such that both types of channel inputs are tested at least once per ⁴⁸35 months. The measured time shall be added to the most recent breaker arc suppression time and the resulting END-OF-CYCLE-RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME shall be verified to be within its limit.

4.3.4.2.4 The time interval necessary for breaker arc suppression from energization of the recirculation pump circuit breaker trip coil shall be measured at least once per 60 months.

INSTRUMENTATION

3/4.3.5 REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.5 The reactor core isolation cooling (RCIC) system actuation instrumentation channels shown in Table 3.3.5-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.5-2.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3 with reactor steam dome pressure greater than 150 psi.

ACTION:

- a. With a RCIC system actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.5-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With one or more RCIC system actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.5-1.

SURVEILLANCE REQUIREMENTS

4.3.5.1 Each RCIC system actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.5.1-1.

4.3.5.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 12 months.

241

TABLE 4.3.5.1-1

REACTOR CORE ISOLATION SYSTEM ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNITS</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	
a. Reactor Vessel Water Level - Low Low, Level 2	S	Q	R	1
b. Reactor Vessel Water Level - High, Level 8	S	Q	R	1
c. Condensate Storage Tank Level - Low	S	Q	R	1
d. Manual Initiation	N.A.	R	N.A.	

TABLE 4.3.6-1

CONTROL ROOM BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION ^(a)	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. <u>ROD BLOCK MONITOR</u>				
a. Upscale	N.A.	S/U(b)(c), Q(c)	SA	1*
b. Inoperative	N.A.	S/U(b)(c), Q(c)	N.A.	1*
c. Downscale	N.A.	S/U(b)(c), Q(c)	SA	1*
2. <u>APRM</u>				
a. Flow Biased Neutron Flux - Upscale	N.A.	S/U(b), Q	SA	1
b. Inoperative	N.A.	S/U(b), Q	N.A.	1, 2, 5***
c. Downscale	N.A.	S/U(b), Q	SA	1
d. Neutron Flux - Upscale, Startup	N.A.	S/U(b), Q	SA	2, 5***
3. <u>SOURCE RANGE MONITORS</u>				
a. Detector not full in	N.A.	S/U(b), W	N.A.	2, 5
b. Upscale	N.A.	S/U(b), W	SA	2, 5
c. Inoperative	N.A.	S/U(b), W	N.A.	2, 5
d. Downscale	N.A.	S/U(b), W	SA	2, 5
4. <u>INTERMEDIATE RANGE MONITORS</u>				
a. Detector not full in	N.A.	S/U(b), W	N.A.	2, 5
b. Upscale	N.A.	S/U(b), W	SA	2, 5
c. Inoperative	N.A.	S/U(b), W	N.A.	2, 5
d. Downscale	N.A.	S/U(b), W	SA	2, 5
5. <u>SCRAM DISCHARGE VOLUME</u>				
a. Water Level-High	N.A.	Q	R	1, 2, 5**
6. <u>REACTOR COOLANT SYSTEM RECIRCULATION FLOW</u>				
a. Upscale	N.A.	S/U(b), Q	SA	1
b. Inoperative	N.A.	S/U(b), Q	N.A.	1
c. Comparator	N.A.	S/U(b), Q	SA	1
7. <u>REACTOR MODE SWITCH SHUTDOWN POSITION</u>	N.A.	R	N.A.	3, 4

LIMERICK - UNIT 1

3/4 3-61

Amendment No. 41, 53
DEC 17 1991

INSTRUMENTATION

REMOTE SHUTDOWN SYSTEM INSTRUMENTATION AND CONTROLS

LIMITING CONDITION FOR OPERATION

3.3.7.4 The remote shutdown system instrumentation and controls shown in Table 3.3.7.4-1 shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

- a. With the number of OPERABLE remote shutdown system instrumentation channels less than required by Table 3.3.7.4-1, restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.
- b. With the number of OPERABLE remote shutdown system controls less than required in Table 3.3.7.4-1, restore the inoperable control(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.4.1 Each of the above required remote shutdown monitoring instrumentation channels shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.7.4-1.

4.3.7.4.2 Each of the above remote shutdown control switch(es) and control circuits shall be demonstrated OPERABLE by verifying its capability to perform its intended function(s) at least once per 24 months.

24

INSTRUMENTATION3/4.3.9 FEEDWATER/MAIN TURBINE TRIP SYSTEM ACTUATION INSTRUMENTATIONLIMITING CONDITION FOR OPERATION

3.3.9 The feedwater/main turbine trip system actuation instrumentation channels shown in Table 3.3.9-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.9-2.

APPLICABILITY: As shown in Table 3.3.9-1.

ACTION:

- a. With a feedwater/main turbine trip system actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.9-2, declare the channel inoperable and either place the inoperable channel in the tripped condition until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value, or declare the associated system inoperable.
- b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement, restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours.
- c. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.3.9.1 Each feedwater/main turbine trip system actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.9.1-1.

4.3.9.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 24 months.

24

REACTOR COOLANT SYSTEMSURVEILLANCE REQUIREMENTS

4.4.1.1.1 Each pump discharge valve shall be demonstrated OPERABLE by cycling each valve through at least one complete cycle of full travel during each startup* prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER.

4.4.1.1.2 Each pump MG set scoop tube mechanical and electrical stop shall be demonstrated OPERABLE with overspeed setpoints less than or equal to 105% and 107%, respectively, of rated core flow, at least once per 18 months.

4.4.1.1.3 Establish a baseline APRM and LPRM** neutron flux noise value within the regions for which monitoring is required (Specification 3.4.1.1, ACTION c) within 2 hours of entering the region for which monitoring is required unless baselining has previously been performed in the region since the last refueling outage.

4.4.1.1.4 With one reactor coolant system recirculation loop not in operation, at least once per 12 hours verify that:

- a. Reactor THERMAL POWER is \leq 70% of RATED THERMAL POWER,
- b. The recirculation flow control system is in the Local Manual mode, and
- c. The speed of the operating recirculation pump is \leq 90% of rated pump speed.
- d. Core flow is greater than 39% when THERMAL POWER is within the restricted zone of Figure 3.4.1.1-1.

4.4.1.1.5 With one reactor coolant system recirculation loop not in operation, within 15 minutes prior to either THERMAL POWER increase or recirculation loop flow increase, verify that the following differential temperature requirements are met if THERMAL POWER is \leq 30% of RATED THERMAL POWER or the recirculation loop flow in the operating recirculation loop is \leq 50% of rated loop flow:

- a. \leq 145°F between reactor vessel steam space coolant and bottom head drain line coolant,
- b. \leq 50°F between the reactor coolant within the loop not in operation and the coolant in the reactor pressure vessel, and
- c. \leq 50°F between the reactor coolant within the loop not in operation and the operating loop.

The differential temperature requirements of Specification 4.4.1.1.5b. and c. do not apply when the loop not in operation is isolated from the reactor pressure vessel.

*If not performed within the previous 31 days.

**Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits by:

- a. Monitoring the primary containment atmospheric gaseous radioactivity at least once per 12 hours (not a means of quantifying leakage),
- b. Monitoring the drywell floor drain sump and drywell equipment drain tank flow rate at least once per eight (8) hours,
- c. Monitoring the drywell unit coolers condensate flow rate at least once per 12 hours,
- d. Monitoring the primary containment pressure at least once per 12 hours (not a means of quantifying leakage),
- e. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours, and
- f. Monitoring the primary containment temperature at least once per 24 hours (not a means of quantifying leakage).

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

- a. At least once per ²⁴18 months, and
- b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

4.4.3.2.3 The high/low pressure interface valve leakage pressure monitors shall be demonstrated OPERABLE with alarm setpoints set less than the allowable values in Table 3.4.3.2-1 by performance of a:

- a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
- b. CHANNEL CALIBRATION at least once per 18 months.

SURVEILLANCE REQUIREMENTS

4.5.1 The emergency core cooling systems shall be demonstrated OPERABLE by:

a. At least once per 31 days:

1. For the CSS, the LPCI system, and the HPCI system:
 - a) verifying by venting at the high point vents that the system piping from the pump discharge valve to the system isolation valve is filled with water.
 - b) 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.
2. For the LPCI system, verifying that both LPCI system subsystem cross-tie valves (HV-51-182 A, B) are closed with power removed from the valve operators.
3. For the HPCI system, verifying that the HPCI pump flow controller is in the correct position.
4. For the CSS and LPCI system, performance of a CHANNEL FUNCTIONAL TEST of the injection header ΔP instrumentation.

b. Verifying that, when tested pursuant to Specification 4.0.6:

1. Each CSS pump in each subsystem develops a flow of at least 3175 gpm against a test line pressure corresponding to a reactor vessel to primary containment differential pressure of ≥ 105 psid plus head and line losses.
2. Each LPCI pump in each subsystem develops a flow of at least 10,000 gpm against a test line pressure corresponding to a reactor vessel to primary containment differential pressure of ≥ 20 psid plus head and line losses.
3. The HPCI pump develops a flow of at least 5600 gpm against a test line pressure which corresponds to a reactor vessel pressure of 1000 psid plus head and line losses when steam is being supplied to the turbine at 1000, ± 20 , ± 20 psig.**

c. At least once per 12 months:

1. For the CSS, the LPCI system, and the HPCI system, performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded from this test.

*Except that an automatic valve capable of automatic return to its EOCSS position when an EOCSS signal is present may be in position for another mode of operation.

**The provisions of Specification 4.0.4 are not applicable, provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test. If OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam dome pressure to less than 200 psig within the following 72 hours.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. For the HPCI system, verifying that:
 - a) The system develops a flow of at least 5500 gpm against a test line pressure corresponding to a reactor vessel pressure of > 200 psig plus head and line losses, when steam is being supplied to the turbine at $200 \pm 15, - 0$ psig.**
 - b) The suction is automatically transferred from the condensate storage tank to the suppression chamber on a condensate storage tank water level - low signal and on a suppression chamber water level - high signal.
3. Performing a CHANNEL CALIBRATION of the CSS, LPCI, and HPCI system discharge line "keep filled" alarm instrumentation.
4. Performing a CHANNEL CALIBRATION of the CSS header ΔP instrumentation and verifying the setpoint to be \leq the allowable value of 4.4 psid.
5. Performing a CHANNEL CALIBRATION of the LPCI header ΔP instrumentation and verifying the setpoint to be \leq the allowable value of 3.0 psid.

4.5.1. d. For the ADS:

1. At least once per 31 days, performing a CHANNEL FUNCTIONAL TEST of the accumulator backup compressed gas system low pressure alarm system.
2. At least once per 15 months:
 - a) Performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence, but excluding actual valve actuation.
 - b) Manually opening each ADS valve when the reactor steam dome pressure is greater than or equal to 100 psig** and observing that either:
 - 1) The control valve or bypass valve position responds accordingly, or
 - 2) There is a corresponding change in the measured steam flow.
 - c) Performing a CHANNEL CALIBRATION of the accumulator backup compressed gas system low pressure alarm system and verifying an alarm setpoint of 90 ± 2 psig on decreasing pressure.

**The provisions of Specification 4.0 4 are not applicable, provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test. If HPCI or ADS OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam dome pressure to less than 200 psig or 100 psig, respectively within the following 72 hours.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- d. Type B and C tests shall be conducted with gas at P_a , 44.0 psig*, at intervals no greater than 24 months except for tests involving:
1. Air locks,
 2. Main steam line isolation valves,
 3. Containment isolation valves in hydrostatically tested lines which penetrate the primary containment, and
- e. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.3.
- 4.6.1.2.f. Main steam line isolation valves shall be leak tested at least once per 24 months, ~~NOT TO EXCEED THE REQUIREMENTS OF APPENDIX J, 10CFR 50.5~~
- 4.6.1.2.g. Containment isolation valves in hydrostatically tested lines which penetrate the primary containment shall be leak tested at least once per 24 months, ~~NOT TO EXCEED THE REQUIREMENTS OF APPENDIX J, 10CFR 50.5~~
- h. The provisions of Specification 4.0.2 are not applicable to Specifications 4.6.1.2a., 4.6.1.2b., 4.6.1.2c., 4.6.1.2d., and 4.6.1.2e.

*Unless a hydrostatic test is required per Table 3.6.3-1.

CONTAINMENT SYSTEMS

MSIV LEAKAGE CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.4 Two independent MSIV leakage control system (LCS) subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one MSIV leakage control system subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 Each MSIV leakage control system subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 1. Starting the blower(s) from the control room and operating the blower(s) for at least 15 minutes.
 2. Energizing the heaters and verifying a temperature rise indicating heater operation on downstream piping.
- b. During each COLD SHUTDOWN, if not performed within the previous 92 days, by cycling each motor operated valve through at least one complete cycle of full travel.
- c. At least once per ~~18~~²⁴ months by:
 1. Performance of a functional test which includes simulated actuation of the subsystem throughout its operating sequence, and verifying that each interlock and timer operates as designed, each automatic valve actuates to its correct position and the blower starts.
 2. Verifying that the blower(s) develops at least the below required vacuum at the rated capacity:
 - a) Inboard valves, 15" H₂O at 100 scfm.
 - b) Outboard valves, 15" H₂O at 200 scfm.
- d. By verifying the operating instrumentation to be OPERABLE by performance of a:
 1. CHANNEL CHECK at least once per 24 hours,
 2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
 3. CHANNEL CALIBRATION at least once per 18 months.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- c. By verifying at least two suppression chamber water level indicators and at least 8 suppression pool water temperature indicators in at least 8 locations, OPERABLE by performance of a:

1. CHANNEL CHECK at least once per 24 hours,
2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
3. CHANNEL CALIBRATION at least once per 18 months,

with the water level and temperature alarm setpoint for:

1. High water level $\leq 24'1\frac{1}{2}"$
2. High water temperature:
 - a) First setpoint $\leq 95^{\circ}\text{F}$
 - b) Second setpoint $\leq 105^{\circ}\text{F}$
 - c) Third setpoint $\leq 110^{\circ}\text{F}$
 - d) Fourth setpoint $\leq 120^{\circ}\text{F}$

4.6.2.1. d.

At least once per ~~18~~²⁴ months by conducting a drywell-to-suppression chamber bypass leak test at an initial differential pressure of 4 psi and verifying that the A/\sqrt{k} calculated from the measured leakage is within the specified limit. If any drywell-to-suppression chamber bypass leak test fails to meet the specified limit, the test schedule for subsequent tests shall be reviewed and approved by the Commission. If two consecutive tests fail to meet the specified limit, a test shall be performed at least every ~~6~~²⁴ months until two consecutive tests meet the specified limit, at which time the ~~18~~²⁴ month test schedule may be resumed.

CONTAINMENT SYSTEMSSURVEILLANCE REQUIREMENTS

4.6.3.1 Each primary containment isolation valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.

24 4.6.3.2 Each primary containment automatic isolation valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE during COLD SHUTDOWN or REFUELING at least once per ~~18~~ months by verifying that on a containment isolation test signal each automatic isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each primary containment power operated or automatic valve shown in Table 3.6.3-1 shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

4.6.3.4 Each reactor instrumentation line excess flow check valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE at least once per ~~18~~ months by verifying that the valve checks flow. 24

4.6.3.5 Each traversing in-core probe system explosive isolation valve shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying the continuity of the explosive charge.
- b. At least once per ~~18~~ months by removing the ¹²⁰ explosive squib from the explosive valve, such that each explosive squib in each explosive valve will be tested at least once per ~~90~~ months, and initiating the explosive squib. The replacement charge for the exploded squib shall be from the same manufactured batch as the one fired or from another batch which has been certified by having at least one of that batch successfully fired. No squib shall remain in use beyond the expiration of its shelf-life and/or operating life, as applicable.

CONTAINMENT SYSTEMS3/4.6.5 SECONDARY CONTAINMENTREACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITYLIMITING CONDITION FOR OPERATION

3.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be maintained.
APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the reactor enclosure secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All reactor enclosure secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the reactor enclosure secondary containment is closed.
 3. All reactor enclosure secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per 24 months:
 1. Verifying that one standby gas treatment subsystem will draw down the reactor enclosure secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds with the reactor enclosure radco system in operation, and
 2. Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the reactor enclosure secondary containment at a flow rate not exceeding 1250 cfm with wind speeds of < 7.0 mph as measured on the wind instrument on Tower 1 elevation 30' or, if that instrument is unavailable, Tower 2, elevation 159'.

CONTAINMENT SYSTEMS

3901000402

3/4.6.5 SECONDARY CONTAINMENT

REFUELING AREA SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be maintained.
APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

Without REFUELING AREA SECONDARY CONTAINMENT INTEGRITY, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the refueling area secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All refueling area secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the refueling area secondary containment is closed.
 3. All refueling area secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per ²⁴18 months:
Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the refueling area secondary containment at a flow rate not exceeding 754 cfm.

*Required when (1) irradiated fuel is being handled in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel, with the vessel head removed and fuel in the vessel.

CONTAINMENT SYSTEMSREACTOR ENCLOSURE SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVESLIMITING CONDITION FOR OPERATION

3.6.5.2.1 The reactor enclosure secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one or more of the reactor secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve, blind flange or slide gate damper.

Otherwise, in OPERATIONAL CONDITION 1, 2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.2.1 Each reactor enclosure secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.1-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per ²⁴24 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

CONTAINMENT SYSTEMSREFUELING AREA SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVESLIMITING CONDITION FOR OPERATION

3.6.5.2.2 The refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.2-1.

APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

With one or more of the refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve, blind flange or slide gate damper.

Otherwise, in OPERATIONAL CONDITION *, suspend handling of irradiated fuel in the refueling area secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.2.2 Each refueling area secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.2-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per 24 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

*Required when (1) irradiated fuel is being handled in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

CONTAINMENT SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

- 4.6.5.3 b. At least once per 12 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 subsystem by:
1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 3000 cfm \pm 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 0.175%; and
 3. Verify that when the fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III) when tested in accordance with ANSI N510-1980.
 4. Verify that the pressure drop across the refueling area to SGT6 prefilter is less than 0.25 inches water gage while operating at a flow rate of 2400 cfm \pm 10%.
- 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 0.175%.
- d. At least once per 12 months by:
1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 9.1 inches water gauge while operating the filter train at a flow rate of 8400 cfm \pm 10%.

* SURVEILLANCE INTERVAL IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN REGULATORY GUIDE 1.52, REVISION 2, MARCH 1978.

SURVEILLANCE REQUIREMENTS (Continued)

- 4.6.5.3.d. 2. Verifying that the fan starts and isolation valves necessary to draw a suction from the refueling area or the reactor enclosure recirculation discharge open on each of the following test signals:
- a) Manual initiation from the control room, and
 - b) Simulated automatic initiation signal.
3. Verifying that the temperature differential across each heater is $\geq 15^{\circ}\text{F}$ when tested in accordance with ANSI N510-1980.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of 3000 cfm \pm 10%.
 - f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 3000 cfm \pm 10%.
 - g. After any major system alteration:
 1. Verify that when the SGTS fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III).
 2. Verify that one standby gas treatment subsystem will drawdown reactor enclosure Zone I secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds with the reactor enclosure recirculation system in operation and the adjacent reactor enclosure and refueling area zones are in their isolation modes.

CONTAINMENT SYSTEMSREACTOR ENCLOSURE RECIRCULATION SYSTEMLIMITING CONDITION FOR OPERATION

3.6.5.4 Two independent reactor enclosure recirculation subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one reactor enclosure recirculation subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With both reactor enclosure recirculation subsystems inoperable, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.4 Each reactor enclosure recirculation subsystem 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 subsystem operates properly.
- b. At least once per ~~24~~^{24*} 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 subsystem by:
 1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 60,000 cfm \pm 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
 3. Verifying a subsystem flow rate of 60,000 cfm \pm 10% during system operation when tested in accordance with ANSI NS10-1980.

* SURVEILLANCE INTERVAL IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN
Regulatory Guide 1.52, Revision 2, March 1978.

CONTAINMENT SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

- 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 ²⁴~~18~~ months by:
1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the filter train at a flow rate of 60,000 cfm \pm 10%, verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.
 2. Verifying that the filter train starts and the isolation valves which take suction on and return to the reactor enclosure open on each of the following test signals:
 - a. Manual initiation from the control room, and
 - b. Simulated automatic initiation signal.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the in-place penetration and leakage testing acceptance criteria of less than 0.03% in accordance with ANSI NS10-1980 while operating the system at a flow rate of 60,000 cfm \pm 10%.
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the in-place penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI NS10-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 60,000 cfm \pm 10%.

CONTAINMENT SYSTEMS3/4.6.6 PRIMARY CONTAINMENT ATMOSPHERE CONTROLPRIMARY CONTAINMENT HYDROGEN RECOMBINER SYSTEMSLIMITING CONDITION FOR OPERATION

3.6.6.1 Two independent primary containment hydrogen recombiner syst. shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

With one primary containment hydrogen recombiner system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

VEILLANCE REQUIREMENTS

4.6.6.1 Each primary containment hydrogen recombiner system shall be demonstrated OPERABLE:

a. At least once per 6 months by performance of:

1. A CHANNEL CHECK of all Control Room Recombiner Instrumentation.
2. A Trickle Heat Circuit check.
3. A Heater Coil Check.
4. A verification of valve operation by stroking all the valves to their proper positions.

b. At least once per ²⁴18 months by:

1. Performing a CHANNEL CALIBRATION of all control room recombiner instrumentation and control circuits.
2. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test within 30 minutes following the below required functional test. The resistance to ground for any heater phase shall be greater than or equal to one(1) megohm.
3. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiner enclosure; i.e., loose wiring or structural connections, deposits of foreign materials, etc.
4. Verifying during a recombiner system functional test that the minimum heater outlet gas temperature increases to greater than or equal to 1150°F within 120 minutes and maintained for at least one hour.

c. By measuring the system leakage rate:

1. As a part of the overall integrated leakage rate test required by Specification 3.6.1.2, or
2. By measuring the leakage rate of the system outside of the containment isolation valves at P_2 , 44.0 mm Hg, on the schedule required by Specification 4.6.1.2, and including the measured leakage as a part of the leakage determined in accordance with Specification 4.6.1.2.

PLANT SYSTEMSLIMITING CONDITION FOR OPERATION (Continued)ACTION: (Continued)

4. With three ESW pump/diesel generator pairs** inoperable, restore at least one inoperable ESW pump/diesel generator pair** to OPERABLE status within 72 hours, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
5. With four ESW pump/diesel generator pairs** inoperable, restore at least one inoperable ESW pump/diesel generator pair** to OPERABLE status within 8 hours, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4 or 5:
 1. With only one emergency service water pump and its associated flowpath OPERABLE, restore at least two pumps with at least one flow path to OPERABLE status within 72 hours or declare the associated safety related equipment inoperable and take the ACTION required by Specifications 3.5.2 and 3.8.1.2.
- c. In OPERATIONAL CONDITION*
 1. With only one emergency service water pump and its associated flow path OPERABLE, restore at least two pumps with at least one flow path to OPERABLE status within 72 hours or verify adequate cooling remains available for the diesel generators required to be OPERABLE or declare the associated diesel generator(s) inoperable and take the ACTION required by Specification 3.8.1.2. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 At least the above required emergency service water system loop(s) shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. At least once per ²⁴18 months by verifying that:
 1. Each automatic valve actuates to its correct position on its appropriate ESW pump start signal.
 2. Each pump starts automatically when its associated diesel generator starts.

*When handling irradiated fuel in the secondary containment.

**An ESW pump/diesel generator pair consists of an ESW pump and its associated diesel generator. If either an ESW pump or its associated diesel generator becomes inoperable, then the ESW pump/diesel generator pair is inoperable.

PLANT SYSTEMS3/4.7.2 CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM - COMMON SYSTEMLIMITING CONDITION FOR OPERATION

3.7.2 Two independent control room emergency fresh air supply system subsystems shall be OPERABLE.

APPLICABILITY: All OPERATIONAL CONDITIONS and *.

ACTION:

- a. In OPERATIONAL CONDITION 1, 2, or 3 with one control room emergency fresh air supply subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4, 5, or *:
 1. With one control room emergency fresh air supply subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days or initiate and maintain operation of the OPERABLE subsystem in the radiation isolation mode of operation.
 2. With both control room emergency fresh air supply subsystems inoperable, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- c. The provisions of Specification 3.0.3 are not applicable in OPERATIONAL CONDITION *.

SURVEILLANCE REQUIREMENTS

4.7.2 Each control room emergency fresh air supply subsystem shall be demonstrated OPERABLE:

- a. At least once per 12 hours by verifying the control room air temperature to be less than or equal to 85°F effective temperature.
- b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates with the heaters OPERABLE.
- c. At least once per ~~18 months~~ ^{24**} 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 subsystem by:
 1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 3000 cfm \pm 10%.

*When irradiated fuel is being handled in the secondary containment.

**SURVEILLANCE INTENSIFICATION IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN REGULATORY GUIDE 1.52, REVISION 2, 3/4.7-6 MARCH 1978.

LIMERICK - UNIT 1

Amendment No. 20

MAY 30 1990

SURVEILLANCE REQUIREMENTS (Continued)

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
 3. Verifying a subsystem flow rate of 3000 cfm \pm 10% during subsystem operation when tested in accordance with ANSI N510-1980.
- d. 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%.
- 4.7.2. e. At least once per ~~12~~²⁴ months by:
1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the subsystem at a flow rate of 3000 cfm \pm 10%; verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.
 2. Verifying that on each of the below chlorine isolation mode actuation test signals, the subsystem automatically switches to the chlorine isolation mode of operation and the isolation valves close within 5 seconds:
 - a) Outside air intake high chlorine, and
 - b) Manual initiation from the control room.
 3. Verifying that on each of the below radiation isolation mode actuation test signals, the subsystem automatically switches to the radiation isolation mode of operation and the control room is maintained at a positive pressure of at least 1/8 inch water gauge relative to the turbine enclosure and auxiliary equipment room and outside atmosphere during subsystem operation with an outdoor air flow rate less than or equal to 525 cfm:
 - a) Outside air intake high radiation, and
 - b) Manual initiation from control room.

PLANT SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)

4.7.3. c. At least once per ²⁴24 months by:

1. Performing a system functional test which includes simulated automatic actuation and restart and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded.
2. Verifying that the system will develop a flow of greater than or equal to 600 gpm in the test flow path when steam is supplied to the turbine at a pressure of 150 ± 15 , - 0 psig.*
3. Verifying that the suction for the RCIC system is automatically transferred from the condensate storage tank to the suppression pool on a condensate storage tank water level-low signal.
4. Performing a CHANNEL CALIBRATION of the RCIC system discharge line "keep filled" level alarm instrumentation.

*The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the tests. If OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam pressure to less than 150 psig within the following 72 hours.

PLANT SYSTEMS

3891002560

HALON SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.6.4 The following Halon systems shall be OPERABLE with the storage tanks having at least 95% of full charge weight and 90% of full charge pressure:

- a. Remote Shutdown Panel Area 540, EL 289' (Raised Floor), and
- b. Auxiliary Equipment Room 542, EL 289' (Raised Floor).

APPLICABILITY: Whenever equipment protected by the Halon systems is required to be OPERABLE.

ACTION:

- a. With one or more of the above required Halon 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 Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.6.4 Each of the above required Halon systems 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 is in its correct position.
- b. At least once per 6 months by verifying Halon storage tank weight and pressure.
- c. At least once per 18 months by:
 1. Performance of a functional test of the general alarm circuit and associated alarm and interlock devices, and
 2. ~~Performance of a system flow test to assure no blockage.~~

d. AT LEAST ONCE PER 24 MONTHS BY :

1. PERFORMANCE OF A SYSTEM FLOW TEST TO ASSURE NO BLOCKAGE.

PLANT SYSTEMS

3891002560

3/4.7.7 FIRE RATED ASSEMBLIES

LIMITING CONDITION FOR OPERATION

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

APPLICABILITY: At all times.

ACTION:

- a. With one or more of the above required fire rated assemblies and/or sealing devices inoperable, within 1 hour establish a continuous fire watch on at least one side of the affected assembly(s) and/or sealing device(s) or verify the OPERABILITY of fire detectors on at least one side of the inoperable assembly(s) and sealing device(s) and establish an hourly fire watch patrol.
- b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.7.1 Each of the above required fire rated assemblies and penetration sealing devices shall be verified OPERABLE at least once per 18 months by performing a visual inspection of:

- a. The exposed surfaces of each fire rated assembly.
- b. Each fire window, fire damper, and associated hardware.
- c. At least 10% of each type of sealed penetration, except internal conduit seals. If apparent changes in appearance or abnormal degradations are found, a visual inspection of an additional 10% of each type of sealed penetration shall be made. This inspection process shall continue until a 10% sample with no apparent changes in appearance or abnormal degradation is found. Samples shall be selected such that each penetration seal will be inspected at least once per 18 years.

PLANT SYSTEMS

3/4.7.8 MAIN TURBINE BYPASS SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.8 The main turbine bypass system shall be OPERABLE as determined by the number of operable main turbine bypass valves being greater than or equal to that specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION: With the main turbine bypass system inoperable, restore the system to OPERABLE status within 1 hour or take the ACTION required by Specification 3.2.3.c.

SURVEILLANCE REQUIREMENTS

4.7.8 The main turbine bypass system shall be demonstrated OPERABLE at least once per:

- a. 31 days by cycling each turbine bypass valve through at least one complete cycle of full travel,
- b. ^{24 MONTHS} ~~refueling cycle~~ by performing a system functional test which includes simulated automatic actuation, and by verifying that each automatic valve actuates to its correct position, and
- c. ^{24 MONTHS} ~~refueling cycle~~ by determining TURBINE BYPASS SYSTEM RESPONSE TIME less than or equal to the value specified in the CORE OPERATING LIMITS REPORT.

ELECTRICAL POWER SYSTEMSSURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per ²⁴10 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.1.1.2-1 on a STAGGERED TEST BASIS by:
 - 1. Verifying the fuel level in the day fuel tank.
 - 2. Verifying the fuel level in the fuel storage tank.
 - 3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day fuel tank.
 - 4. Verify that the diesel can start* and gradually accelerate to synchronous speed with generator voltage and frequency at 4285 ± 420 volts and 60 ± 1.2 HZ.
 - 5. Verify diesel is synchronized, gradually loaded* to an indicated 2700-2800 KW** and operates with this load for at least 60 minutes.
 - 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
 - 7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 225 psig.

*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading and shutdown recommendations.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1. The parameters in Table 4.8.2.1-1 meet the Category B limits,
2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohm, and
3. The average electrolyte temperature of each sixth cell is $\geq 60^{\circ}\text{F}$.

4.8.2.1

- c. At least once per ²⁴16 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,
2. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anticorrosion material,
3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm excluding cable intercell connections, and
4. The battery chargers will supply the currents listed below at a minimum of 132 volts for at least 8 hours:

<u>Charger</u>	<u>Current (Amperes)</u>
1BCA1	300
1BCA2	300
1BCB1	300
1BCB2	300
1BCC	75
1BCD	75

4.8.2.1

- d. At least once per ²⁴16 months, during shutdown, by verifying that either:

1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for the design duty cycle when the battery is subjected to a battery service test, or
2. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage greater than or equal to 105 volts for the nominal 125-volt batteries and 210 volts for the nominal 125/250-volt batteries:

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

<u>Division</u>	<u>Battery</u>	<u>LOAD CYCLE (amps)</u>		
		<u>0-1 Min.</u>	<u>1-239 Min.</u>	<u>239-240 Min.</u>
I	1A1	546	168	187
	1A2	449	129	147
II	1B1	889	158	321
	1B2	823	119	282
III	1C	193	31	31
IV	1D	169	21	21

Each 125/250-volt battery is rated at 1500 ampere-hours at an 8-hour discharge rate, based on a terminal voltage of 1.75 volts-per-cell at 77°F.

Each 125-volt battery is rated at 250 ampere-hours at an 8-hour discharge rate, based on a terminal voltage of 1.75 volts-per-cell at 77°F.

- 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. At this once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test (Specification 4.8.2.1.d).

4.8.2.1

- f. At least once per ²⁴18 months during shutdown performance discharge tests of battery capacity shall be given 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.

ELECTRICAL POWER SYSTEMS

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION

LIMITING CONDITION FOR OPERATION

3.8.4.2 The thermal overload protection of all Class 1E motor operated valves shall be either:

- a. Continuously bypassed for all valves with maintained position control switches; or,
- b. Bypassed only under accident conditions for all valves with spring-return-to-normal control switches.

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

ACTION:

With the thermal overload protection for one or more of the above required valves not bypassed continuously or only under accident conditions, as applicable, restore the thermal overload bypass within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION statement(s) for the affected system(s).

SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves which are continuously bypassed and temporarily placed in force only when the valve motor is undergoing periodic or maintenance testing shall be verified to be bypassed following periodic or maintenance testing during which the thermal overload protection was temporarily placed in force.

✓ 4.8.4.2.2 At least once per 12 months, a CHANNEL FUNCTIONAL TEST of all these valves which are bypassed only under accident conditions (valves with spring-return-to-normal control switches) shall be performed to verify that the thermal overload protection will be bypassed under accident conditions.

BASES3/4.6.5 SECONDARY CONTAINMENT

Secondary containment is designed to minimize any ground level release of radioactive material which may result from an accident. The Reactor Enclosure and associated structures provide secondary containment during normal operation when the drywell is sealed and in service. At other times the drywell may be open and, when required, secondary containment integrity is specified.

Establishing and maintaining a vacuum in the reactor enclosure secondary containment with the standby gas treatment system once per 12 months, along with the surveillance of the doors, hatches, dampers and valves, is adequate to ensure that there are no violations of the integrity of the secondary containment.

The OPERABILITY of the reactor enclosure recirculation system and the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA or refueling accident (SGTS only). The reduction in containment iodine inventory reduces the resulting SITE BOUNDARY radiation doses associated with containment leakage. The operation of this system and resultant iodine removal capacity are consistent with the assumptions used in the LOCA and refueling accident analyses. Provisions have been made to continuously purge the filter plenums with instrument air when the filters are not in use to prevent buildup of moisture on the adsorbers and the HEPA filters.

Although the safety analyses assumes that the reactor enclosure secondary containment draw down time will take 135 seconds, these surveillance requirements specify a draw down time of 121 seconds. This 14 second difference is due to the diesel generator starting and sequence loading delays which is not part of this surveillance requirement.

The reactor enclosure secondary containment draw down time analyses assumes a starting point of 0.25 inch of vacuum water gauge and worst case SGTS dirty filter flow rate of 2800 cfm. The surveillance requirements satisfy this assumption by starting the drawdown from ambient conditions and connecting the adjacent reactor enclosure and refueling area to the SGTS to split the exhaust flow between the three zones and verifying a minimum flow rate of 2800 cfm from the test zone. This simulates the worst case flow alignment and verifies adequate flow is available to drawdown the test zone within the required time. The Technical Specification Surveillance Requirement 4.6.5.3.b.3 is intended to be a multi-zone air balance verification without isolating any test zone.

The SGTS fans are sized for three zones and therefore, when aligned to a single zone or two zones, will have excess capacity to more quickly drawdown the affected zones. There is no maximum flow limit to individual zones or pairs of zones and the air balance and drawdown time are verified when all three zones are connected to the SGTS.

The three zone air balance verification and drawdown test will be done after any major system alteration, which is any modification which will have an effect on the SGTS flowrate such that the ability of the SGTS to drawdown the reactor enclosure to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds could be affected.

3901038720
Substations" except the
test will be performed at
least once every 24 months

A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

"Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977 except for paragraphs C.2.a(3), C.2.c(1), C.2.c(2), C.2.d(3) and C.2.d(4). The exceptions to Regulatory Guide 1.108 allow for gradual loading of diesel generators during testing and decreased surveillance test frequencies (in response to Generic Letter 84-15).

The surveillance requirements for demonstrating the OPERABILITY of the unit batteries are in accordance with the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978 and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8.2.11 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8.2.1-1 is permitted for up to 7 days. During this 7-day period: (1) the allowable value for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

ADMINISTRATIVE CONTROLS

PROCEDURES AND PROGRAMS (Continued)

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include the core spray, high pressure coolant injection, reactor core isolation cooling, residual heat removal, post-accident sampling system, safeguard piping fill system, control rod drive scram discharge system, and containment air monitor systems. The program shall include the following:

1. Preventive maintenance and periodic visual inspection requirements, and
2. Integrated leak test requirements for each system at refueling cycle intervals or less.

No wording change

b. In-Plant Radiation Monitoring

A program which will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. This program shall include the following:

1. Training of personnel,
2. Procedures for monitoring, and
3. Provisions for maintenance of sampling and analysis equipment.

c. Post-accident Sampling

A program which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

1. Training of personnel,
2. Procedures for sampling and analysis, and
3. Provisions for maintenance of sampling and analysis equipment.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.1.3.1.4 The scram discharge volume shall be determined OPERABLE by demonstrating:

- a. The scram discharge volume drain and vent valves OPERABLE, when control rods are scram tested from a normal control rod configuration of less than or equal to 50% ROD DENSITY at least once per ~~24~~ 18 months, by verifying that the drain and vent valves:
 1. Close within 30 seconds after receipt of a signal for control rods to scram, and
 2. Open when the scram signal is reset.
- b. Proper level sensor response by performance of a CHANNEL FUNCTIONAL TEST of the scram discharge volume scram and control rod block level instrumentation at least once per 31 days.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 31 days by:
1. Verifying the continuity of the explosive charge.
 2. Determining by chemical analysis and calculation* that the available weight of sodium pentaborate is greater than or equal to 5389 lbs; the concentration of sodium pentaborate in solution is less than or equal to 13.8% and within the limits of Figure 3.1.5-1 and; the following equation is satisfied:

$$\frac{C}{13\% \text{ wt.}} \times \frac{Q}{86 \text{ gpm}} \geq 1$$

where

C = Sodium pentaborate solution (% by weight)

Q = Two pump flowrate, as determined per surveillance requirement 4.1.5.c.

3. Verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.
- c. Demonstrating that, when tested pursuant to Specification 4.0.5, the minimum flow requirement of 41.2 gpm per pump at a pressure of greater than or equal to 1190 psig is met.

- d. At least once per ²⁴18 months during shutdown by:

1. Initiating at least one of the standby liquid control system loops, including an explosive valve, and verifying that a flow path from the pump to the reactor pressure vessel is available by pumping demineralized water into the reactor vessel. The replacement charge for the explosive valve shall be from the same manufactured batch as the one fired or from another batch which has been certified by having one of that batch successfully fired. All injection loops shall be tested in 3 operating cycles.
2. **Demonstrating that all heat traced piping is unblocked by pumping from the storage tank to the test tank and then draining and flushing the piping with demineralized water.
3. Demonstrating that the storage tank heaters are OPERABLE by verifying the expected temperature rise of the sodium pentaborate solution in the storage tank after the heaters are energized.

*This test shall also be performed anytime water or boron is added to the solution or when the solution temperature drops below 70°F.

**This test shall also be performed whenever all three heat tracing circuits have been found to be inoperable and may be performed by any series of sequential, overlapping or total flow path steps such that the entire flow path is included.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR PROTECTION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor protection system instrumentation channels shown in Table 3.3.1-1 shall be OPERABLE with the REACTOR PROTECTION SYSTEM RESPONSE TIME as shown in Table 3.3.1-2.

APPLICABILITY: As shown in Table 3.3.1-1.

ACTION:

- a. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system, place the inoperable channel(s) and/or that trip system in the tripped condition* within 12 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within 1 hour and take the ACTION required by Table 3.3.1-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor protection system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.1.1-1.

4.3.1.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months. 24

4.3.1.3 The REACTOR PROTECTION SYSTEM RESPONSE TIME of each reactor trip functional unit shown in Table 3.3.1-2 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip system. 24

* An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur. In these cases, the inoperable channel shall be restored to OPERABLE status within 6 hours or the ACTION required by Table 3.3.1-1 for that Trip Function shall be taken.

**The trip system need not be placed in the tripped condition if this would cause the Trip Function to occur. When a trip system can be placed in the tripped condition without causing the Trip Function to occur, place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TABLE 4.3.1.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
9. Turbine Stop Valve - Closure	N.A.	Q	R	1
10. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	N.A.	Q	R	1
11. Reactor Mode Switch Shutdown Position	N.A.	R	N.A.	1, 2, 3, 4, 5
12. Manual Scram	N.A.	W	N.A.	1, 2, 3, 4, 5

- (a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (b) The IRM and SRM channels shall be determined to overlap for at least 1/2 decades during each startup after entering OPERATIONAL CONDITION 2 and the IRM and APRM channels shall be determined to overlap for at least 1/2 decades during each controlled shutdown, if not performed within the previous 7 days.
- (c) Within 24 hours prior to startup, if not performed within the previous 7 days.
- (d) This calibration shall consist of the adjustment of the APRM channel to conform to the power values calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER > 25% of RATED THERMAL POWER. Adjust the APRM channel if the absolute difference is greater than 2% of RATED THERMAL POWER. Any APRM channel gain adjustment made in compliance with Specification 3.2 shall not be included in determining the absolute difference.
- (e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
- (f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH) using the TIP system.
- (g) Verify measured core flow (total core flow) to be greater than or equal to established core flow at the existing loop flow (APRM % flow). During the startup test program, data shall be recorded for the parameters listed to provide a basis for establishing the specified relationships. Comparisons of the actual data in accordance with the criteria listed shall commence upon the conclusion of the startup test program.
- (h) This function is not required to be OPERABLE when the reactor pressure vessel head is removed per Specification 3.10.1.
- (i) With any control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.
- (j) If the RPS shorting links are required to be removed per Specification 3.9.2, they may be reinstalled for up to 2 hours for required surveillance. During this time, CORE ALTERATIONS shall be suspended, and no control rod shall be moved from its existing position.
- (k) Required to be OPERABLE only prior to and during shutdown margin demonstrations as performed per Specification 3.10.3.

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- c. With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip System requirement for both trip systems, place at least one trip system** in the tripped condition within 1 hour and take the ACTION required by Table 3.3.2-1.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each isolation actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CAPABILITY operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.2.1-1.

4.3.2.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months. (24)

4.3.2.3 The ISOLATION SYSTEM RESPONSE TIME of each isolation trip function shown in Table 3.3.2-3 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months, where N is the total number of redundant channels in a specific isolation trip system. (24)

** The trip system need not be placed in the tripped condition if this would cause the Trip Function to occur. When a trip system can be placed in the tripped condition without causing the Trip Function to occur, place the trip system with the most inoperable channels in the tripped condition; if both systems have the same number of inoperable channels, place either trip system in the tripped condition.

TABLE 4.3.2.1-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
<u>1. MAIN STEAM LINE ISOLATION</u>				
a. Reactor Vessel Water Level ^{##}				
1) Low, Low, Level 2	S	Q	R	1, 2, 3
2) Low, Low, Low - Level 1	S	Q	R	1, 2, 3
b. Main Steam Line Radiation ^{###} - High	S	Q	R	1, 2, 3
c. Main Steam Line Pressure - Low	S	M	R	1
d. Main Steam Line Flow - High	S	M	R	1, 2, 3
e. Condenser Vacuum - Low	S	M	R	1, 2**, 3**
f. Outboard MSIV Room Temperature - High	S	M	R	1, 2, 3
g. Turbine Enclosure - Main Steam Line Tunnel Temperature - High	S	M	R	1, 2, 3
h. Manual Initiation	N.A.	R	N.A.	1, 2, 3
<u>2. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>				
a. Reactor Vessel Water Level ^{###} Low - Level 3	S	Q	R	1, 2, 3
b. Reactor Vessel (RHR Cut-In Permissive) Pressure ^{##} - High	S	Q	R	1, 2, 3
c. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
3. <u>REACTOR WATER CLEANUP SYSTEM ISOLATION</u>				
a. RWCS Δ Flow - High	S	M	R	1, 2, 3
b. RWCS Area Temperature - High	S	M	R	1, 2, 3
c. RWCS Area Ventilation Δ Temperature - High	S	M	R	1, 2, 3
d. SLCS Initiation	N.A.	R	N.A.	1, 2, 3
e. Reactor Vessel Water Level ^{##} Low, Low, - Level 2	S	Q	R	1, 2, 3
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3
4. <u>HIGH PRESSURE COOLANT INJECTION SYSTEM ISOLATION</u>				
a. HPCI Steam Line Δ Pressure - High	S	M	R	1, 2, 3
b. HPCI Steam Supply Pressure - Low	S	M	R	1, 2, 3
c. HPCI Turbine Exhaust Diaphragm Pressure - High	S	M	R	1, 2, 3
d. HPCI Equipment Room Temperature - High	S	M	R	1, 2, 3
e. HPCI Equipment Room Δ Temperature - High	S	M	R	1, 2, 3
f. HPCI Pipe Routing Area Temperature - High	S	M	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. HPCI Steam Line Δ Pressure Timer	N.A.	M	R	2, 3

TABLE 4 3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	<u>OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED</u>
5. <u>REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION</u>				
a. RCIC Steam Line Δ Pressure - High	S	M	R	1, 2, 3
b. RCIC Steam Supply Pressure - Low	S	M	R	1, 2, 3
c. RCIC Turbine Exhaust Diaphragm Pressure - High	S	M	R	1, 2, 3
d. RCIC Equipment Room Temperature - High	S	M	R	1, 2, 3
e. RCIC Equipment Room Δ Temperature - High	S	M	R	1, 2, 3
f. RCIC Pipe Routing Area Temperature - High	S	M	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. RCIC Steam Line Δ Pressure Timer	N.A.	M	R	1, 2, 3

TABLE 4.3.2.1-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
6. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level ^{##}	S	Q	R	1, 2, 3
1) Low, Low - Level 2	S	Q	R	1, 2, 3
2) Low, Low, Low - Level 1				
b. Drywell Pressure ^{###} - High	S	Q	R	1, 2, 3
c. North Stack Effluent Radiation - High	S	Q	R	1, 2, 3
d. Deleted				
e. Reactor Enclosure Ventilation Exhaust Duct - Radiation - High	S	H	R	1, 2, 3
f. Outside Atmosphere to Reactor Enclosure A Pressure - Low	N.A.	H	Q	1, 2, 3
g. Deleted				
h. Drywell Pressure ^{##} - High/ Reactor Pressure ^{##} - Low	S	Q	R	1, 2, 3
i. Primary Containment Instrument Gas to Drywell A Pressure - Low	N.A.	H	Q	1, 2, 3
j. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.2.1-1 (Continued)
ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
7. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level ^{##} Low, Low - Level 2	S	Q	R	1, 2, 3
b. Drywell Pressure ^{###} - High	S	Q	R	1, 2, 3
c. 1. Refueling Area Unit 1 Ventilation Exhaust Duct Radiation - High	S	M	R	*#
2. Refueling Area Unit 2 Ventilation Exhaust Duct Radiation - High	S	M	R	*#
d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High	S	M	R	1, 2, 3
e. Outside Atmosphere To Reactor Enclosure Δ Pressure - Low	N.A.	M	Q	1, 2, 3
f. Outside Atmosphere To Refueling Area Δ Pressure - Low	N.A.	M	Q	*
g. Reactor Enclosure Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. Refueling Area Manual Initiation	N.A.	R	N.A.	*

*Required when (1) handling irradiated fuel in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

**When not administratively bypassed and/or when any turbine stop valve is open.

#During operation of the associated Unit 1 or Unit 2 ventilation exhaust system.

##These trip functions (1a, 2b, 3e, 6a, 6h, and 7a) are common to the ECCS actuation trip function.

###These trip functions (2a, 6b, and 7b) are common to the RPS and ECCS actuation trip functions.

####This trip function (1b) is common to the RPS trip function.

INSTRUMENTATION

3/4.3.3 EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3 The emergency core cooling system (ECCS) actuation instrumentation channels shown in Table 3.3.3-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.3-2 and with EMERGENCY CORE COOLING SYSTEM RESPONSE TIME as shown in Table 3.3.3-3.

APPLICABILITY: as shown in Table 3.3.3-1.

ACTION:

- a. With an ECCS actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.3-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With one or more ECCS actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.3-1.
- c. With either ADS trip system subsystem inoperable, restore the inoperable trip system to OPERABLE status within:
 1. 7 days, provided that the HPCI and RCIC systems are OPERABLE.
 2. 72 hours.

Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to less than or equal to 100 psig within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each ECCS actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.3.1-1.

4.3.3.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months. ²⁴

4.3.3.3 The ECCS RESPONSE TIME of each ECCS trip function shown in Table 3.3.3-3 shall be demonstrated to be within the limit at least once per 18 months. Each test shall include at least one channel per trip system such that all channels are tested at least once every N times 18 months where N is the total number of redundant channels in a specific ECCS trip system. ²⁴

TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. CORE SPRAY SYSTEM				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	Q	R	1, 2, 3, 4*, 5*
d. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
2. LOW PRESSURE COOLANT INJECTION MOVE OF RHR SYSTEM				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Reactor Vessel Pressure - Low	S	Q	R	1, 2, 3
d. Injection Valve Differential Pressure - Low (Permissive)	S	Q	R	1, 2, 3, 4*, 5*
e. Manual Initiation	N.A.	R	N.A.	1, 2, 3, 4*, 5*
3. HIGH PRESSURE COOLANT INJECTION SYSTEM***				
a. Reactor Vessel Water Level - Low Low, Level 2	S	Q	R	1, 2, 3
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. Condensate Storage Tank Level - Low	S	Q	R	1, 2, 3
d. Suppression Pool Water Level - High	S	Q	R	1, 2, 3
e. Reactor Vessel Water Level - High, Level B	S	Q	R	1, 2, 3
f. Manual Initiation	N.A.	R	N.A.	1, 2, 3

TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
4. AUTOMATIC DEPRESSURIZATION SYSTEM [#]				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	Q	R	1, 2, 3
b. Drywell Pressure - High	S	Q	R	1, 2, 3
c. ADS Timer	N.A.	Q	Q	1, 2, 3
d. Core Spray Pump Discharge Pressure - High	S	Q	R	1, 2, 3
e. RHR LPCI Mode Pump Discharge Pressure - High	S	Q	R	1, 2, 3
f. Reactor Vessel Water Level - Low, Level 3	S	Q	R	1, 2, 3
g. Manual Initiation	N.A.	R	N.A.	1, 2, 3
h. ADS Drywell Pressure Bypass Timer	N.A.	Q	Q	1, 2, 3
5. LOSS OF POWER				
a. 4.16 kV Emergency Bus Under- voltage (Loss of Voltage) ^{##}	N.A.	R	N.A.	1, 2, 3, 4**, 5**
b. 4.16 kV Emergency Bus Under- voltage (Degraded Voltage)	S	M	R	1, 2, 3, 4**, 5**

* When the system is required to be OPERABLE per Specification 3.5.2.

** Required OPERABLE when ESF equipment is required to be OPERABLE.

*** Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 200 psig.

Not required to be OPERABLE when reactor steam dome pressure is less than or equal to 100 psig.

Loss of Voltage Relay 127-11X is not field settable.

INSTRUMENTATION

3/4.3.4 RECIRCULATION PUMP TRIP ACTUATION INSTRUMENTATION

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.4.1 The anticipated transient without scram recirculation pump trip (ATWS-RPT) system instrumentation channels shown in Table 3.3.4.1-1 shall be OPERABLE with their trip setpoints set consistent with values shown in the Trip Setpoint column of Table 3.3.4.1-2.

APPLICABILITY: OPERATIONAL CONDITION 1.

ACTION:

- a. With an ATWS recirculation pump trip system instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.4.1-2, declare the channel inoperable until the channel is restored to OPERABLE status with the channel trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels per Trip System requirement for one or both trip systems, place the inoperable channel(s) in the tripped condition within 1 hour.
- c. With the number of OPERABLE channels two or more less than required by the Minimum OPERABLE Channels per Trip System requirement for one trip system and:
 1. If the inoperable channels consist of one reactor vessel water level channel and one reactor vessel pressure channel, place both inoperable channels in the tripped condition within 1 hour, or, if this action will initiate a pump trip, declare the trip system inoperable.
 2. If the inoperable channels include two reactor vessel water level channels or two reactor vessel pressure channels, declare the trip system inoperable.
- d. With one trip system inoperable, restore the inoperable trip system to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.
With both trip systems inoperable, restore at least one trip system to OPERABLE status within 1 hour or be in at least STARTUP within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.3.4.1.1. Each ATWS recirculation pump trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.4.1.

4.3.4.1.2.1. SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

INSTRUMENTATION

SURVEILLANCE REQUIREMENTS

4.3.4.2.1 Each end-of-cycle recirculation pump trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.4.2.1-1.

4.3.4.2.2. LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

4.3.4.2.3 The END-OF-CYCLE RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME of each trip function shown in Table 3.3.4.2-3 shall be demonstrated to be within its limit at least once per 18 months. Each test shall include at least the logic of one type of channel input, turbine control valve fast closure or turbine stop valve closure, such that both types of channel inputs are tested at least once per 18 months. The measured time shall be added to the most recent breaker arc suppression time and the resulting END-OF-CYCLE-RECIRCULATION PUMP TRIP SYSTEM RESPONSE TIME shall be verified to be within its limit.

4.3.4.2.4 The time interval necessary for breaker arc suppression from energization of the recirculation pump circuit breaker trip coil shall be measured at least once per 60 months.

INSTRUMENTATION

3/4.3.5 REACTOR CORE ISOLATION COOLING SYSTEM ACTUATION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.5 The reactor core isolation cooling (RCIC) system actuation instrumentation channels shown in Table 3.3.5-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.5-2.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3 with reactor steam dome pressure greater than 150 psig.

ACTION:

- a. With a RCIC system actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.5-2, declare the channel inoperable until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
- b. With one or more RCIC system actuation instrumentation channels inoperable, take the ACTION required by Table 3.3.5-1.

SURVEILLANCE REQUIREMENTS

4.3.5.1 Each RCIC system actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.5.1-1.

4.3.5.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 24 months.

TABLE 4.3.5.1-1

REACTOR CORE ISOLATION SYSTEM ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>FUNCTIONAL UNITS</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>
a. Reactor Vessel Water Level - Low Low, Level 2	S	Q	R
b. Reactor Vessel Water Level - High, Level 8	S	Q	R
c. Condensate Storage Tank Level - Low	S	Q	R
d. Manual Initiation	N.A.	R	N.A.

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION ^(a)	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
1. <u>ROD BLOCK MONITOR</u>				
a. Upscale	N.A.	S/U ^(b) (c), Q ^(c)	SA	1*
b. Inoperative	N.A.	S/U ^(b) (c), Q ^(c)	N.A.	1*
c. Downscale	N.A.	S/U ^(b) (c), Q ^(c)	SA	1*
2. <u>APRM</u>				
a. Flow Biased Neutron Flux - Upscale	N.A.	S/U ^(b) , Q	SA	1
b. Inoperative	N.A.	S/U ^(b) , Q	N.A.	1, 2, 5***
c. Downscale	N.A.	S/U ^(b) , Q	SA	1
d. Neutron Flux - Upscale, Startup	N.A.	S/U ^(b) , Q	SA	2, 5***
3. <u>SOURCE RANGE MONITORS</u>				
a. Detector not full in	N.A.	S/U ^(b) , W	N.A.	2, 5
b. Upscale	N.A.	S/U ^(b) , W	SA	2, 5
c. Inoperative	N.A.	S/U ^(b) , W	N.A.	2, 5
d. Downscale	N.A.	S/U ^(b) , W	SA	2, 5
4. <u>INTERMEDIATE RANGE MONITORS</u>				
a. Detector not full in	N.A.	S/U ^(b) , W	N.A.	2, 5
b. Upscale	N.A.	S/U ^(b) , W	SA	2, 5
c. Inoperative	N.A.	S/U ^(b) , W	N.A.	2, 5
d. Downscale	N.A.	S/U ^(b) , W	SA	2, 5
5. <u>SCRAM DISCHARGE VOLUME</u>				
a. Water Level-High	N.A.	Q	R	1, 2, 5**
6. <u>REACTOR COOLANT SYSTEM RECIRCULATION FLOW</u>				
a. Upscale	N.A.	S/U ^(b) , Q	SA	1
b. Inoperative	N.A.	S/U ^(b) , Q	N.A.	1
c. Comparator	N.A.	S/U ^(b) , Q	SA	1
7. <u>REACTOR MODE SWITCH SHUTDOWN POSITION</u>	N.A.	R	N.A.	3, 4

INSTRUMENTATION

REMOTE SHUTDOWN SYSTEM INSTRUMENTATION AND CONTROLS

LIMITING CONDITION FOR OPERATION

3.3.7.4 The remote shutdown system instrumentation and controls shown in Table 3.3.7.4-1 shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

- a. With the number of OPERABLE remote shutdown system instrumentation channels less than required by Table 3.3.7.4-1, restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.
- b. With the number of OPERABLE remote shutdown system controls less than required in Table 3.3.7.4-1, restore the inoperable control(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.7.4.1 Each of the above required remote shutdown monitoring instrumentation channels shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3.7.4-1.

4.3.7.4.2 Each of the above remote shutdown control switch(es) and control circuits shall be demonstrated OPERABLE by verifying its capability to perform its intended function(s) at least once per 12 months.

241

INSTRUMENTATION

3/4.3.9 FEEDWATER/MAIN TURBINE TRIP SYSTEM ACTUATION INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.9 The feedwater/main turbine trip system actuation instrumentation channels shown in Table 3.3.9-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3.9-2.

APPLICABILITY: As shown in Table 3.3.9-1.

ACTION:

- a. With a feedwater/main turbine trip system actuation instrumentation channel trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3.9-2, declare the channel inoperable and either place the inoperable channel in the tripped condition until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value, or declare the associated system inoperable.
- b. With the number of OPERABLE channels one less than required by the Minimum OPERABLE Channels requirement, restore the inoperable channel to OPERABLE status within 7 days or be in at least STARTUP within the next 6 hours.
- c. With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels requirement, restore at least one of the inoperable channels to OPERABLE status within 72 hours or be in at least STARTUP within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.3.9.1 Each feedwater/main turbine trip system actuation instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION operations for the OPERATIONAL CONDITIONS and at the frequencies shown in Table 4.3.9.1-1.

4.3.9.2 LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all channels shall be performed at least once per 18 months.

24

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.1.1.1 Each pump discharge valve shall be demonstrated OPERABLE by cycling each valve through at least one complete cycle of full travel during each startup* prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER.

4.4.1.1.2 Each pump MG set scoop tube mechanical and electrical stop shall be demonstrated OPERABLE with overspeed setpoints less than or equal to 109% and 107% respectively, of rated core flow, at least once per 18 months.

4.4.1.1.3 Establish a baseline APRM and LPRM** neutron flux noise value within the regions for which monitoring is required (Specification 3.4.1.1, ACTION c) within 2 hours of entering the region for which monitoring is required unless baselining has previously been performed in the region since the last refueling outage.

4.4.1.1.4 With one reactor coolant system recirculation loop not in operation, at least once per 12 hours verify that:

- Reactor THERMAL POWER is $\leq 70\%$ of RATED THERMAL POWER;
- The recirculation flow control system is in the Local Manual mode, and
- The speed of the operating recirculation pump is $\leq 90\%$ of rated pump speed.
- Core flow is greater than 39% when THERMAL POWER is within the restricted zone of Figure 3.4.1.1-1.

4.4.1.1.5 With one reactor coolant system recirculation loop not in operation, within 15 minutes prior to either THERMAL POWER increase or recirculation loop flow increase, verify that the following differential temperature requirements are met if THERMAL POWER is $\leq 30\%$ of RATED THERMAL POWER or the recirculation loop flow in the operating recirculation loop is $\leq 30\%$ of rated loop flow:

- 145°F between reactor vessel steam space coolant and bottom head main line coolant;
- $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and the coolant in the reactor pressure vessel, and
- $\leq 50^\circ\text{F}$ between the reactor coolant within the loop not in operation and the operating loop.

The differential temperature requirements of Specification 4.4.1.1.5b. and c. do not apply when the loop not in operation is isolated from the reactor pressure vessel.

*If not performed within the previous 31 days.

**Detector Levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 The reactor coolant system leakage shall be demonstrated to be within each of the above limits by:

- a. Monitoring the primary containment atmospheric gaseous radioactivity at least once per 12 hours (not a means of quantifying leakage),
- b. Monitoring the drywell floor drain sump and drywell equipment drain tank flow rate at least once per eight (8) hours,
- c. Monitoring the drywell unit coolers condensate flow rate at least once per 12 hours,
- d. Monitoring the primary containment pressure at least once per 12 hours (not a means of quantifying leakage),
- e. Monitoring the reactor vessel head flange leak detection system at least once per 24 hours, and
- f. Monitoring the primary containment temperature at least once per 24 hours (not a means of quantifying leakage).

4.4.3.2.2 Each reactor coolant system pressure isolation valve specified in Table 4.4.3.2-1 shall be demonstrated OPERABLE by leak testing pursuant to Specification 4.0.5 and verifying the leakage of each valve to be within the specified limit:

- a. At least once per ²⁴18 months, and
- b. Prior to returning the valve to service following maintenance, repair or replacement work on the valve which could affect its leakage rate.

The provisions of Specification 4.0.4 are not applicable for entry into OPERATIONAL CONDITION 3.

4.4.3.2.3 The high/low pressure interface valve leakage pressure monitors shall be demonstrated OPERABLE with alarm setpoints set less than the allowable values in Table 3.4.3.2-1 by performance of a:

- a. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
- b. CHANNEL CALIBRATION at least once per 18 months.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.1 The emergency core cooling systems shall be demonstrated OPERABLE by:

- a. At least once per 31 days:
 1. For the CSS, the LPCI system, and the HPCI system:
 - a) Verifying by venting at the high point vents that the system piping from the pump discharge valve to the system isolation valve is filled with water.
 - b) 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.
 2. For the LPCI system, verifying that both LPCI system subsystem cross-tie valves (HV-51-282 A, B) are closed with power removed from the valve operators.
 3. For the HPCI system, verifying that the HPCI pump flow controller is in the correct position.
 4. For the CSS and LPCI system, performance of a CHANNEL FUNCTIONAL TEST of the injection header ΔP instrumentation.
- b. Verifying that, when tested pursuant to Specification 4.0.5:
 1. Each CSS pump in each subsystem develops a flow of at least 3175 gpm against a test line pressure corresponding to a reactor vessel to primary containment differential pressure of ≥ 105 psid plus head and line losses.
 2. Each LPCI pump in each subsystem develops a flow of at least 10,000 gpm against a test line pressure corresponding to a reactor vessel to primary containment differential pressure of ≥ 20 psid plus head and line losses.
 3. The HPCI pump develops a flow of at least 5600 gpm against a test line pressure which corresponds to a reactor vessel pressure of 1000 psig plus head and line losses when steam is being supplied to the turbine at 1000, +20, -80 psig.**
- c. At least once per 18 months:
 1. For the CSS, the LPCI system, and the HPCI system, performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded from this test.

*Except that an automatic valve capable of automatic return to its ECCS position when an ECCS signal is present may be in position for another mode of operation.

**The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test. If OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam dome pressure to less than 200 psig within the following 72-hours.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. For the HPCI system, verifying that:
 - a) The system develops a flow of at least 5600 gpm against a test line pressure corresponding to a reactor vessel pressure of ≥ 200 psig plus head and line losses, when steam is being supplied to the turbine at 200 ± 15 , $- 0$ psig.**
 - b) The suction is automatically transferred from the condensate storage tank to the suppression chamber on a condensate storage tank water level - low signal and on a suppression chamber water level - high signal.
3. Performing a CHANNEL CALIBRATION of the CSS, LPCI, and HPCI system discharge line "keep filled" alarm instrumentation.
4. Performing a CHANNEL CALIBRATION of the CSS header ΔP instrumentation and verifying the setpoint to be \leq the allowable value of 4.4 psid.
5. Performing a CHANNEL CALIBRATION of the LPCI header ΔP instrumentation and verifying the setpoint to be \leq the allowable value of 3.0 psid.

4.5.1.d. For the ADS:

1. At least once per 31 days, performing a CHANNEL FUNCTIONAL TEST of the accumulator backup compressed gas system low pressure alarm system.
2. At least once per 15 months:
 - a) Performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence, but excluding actual valve actuation.
 - b) Manually opening each ADS valve when the reactor steam dome pressure is greater than or equal to 100 psig** and observing that either:
 - 1) The control valve or bypass valve position responds accordingly, or
 - 2) There is a corresponding change in the measured steam flow.
 - c) Performing a CHANNEL CALIBRATION of the accumulator backup compressed gas system low pressure alarm system and verifying an alarm setpoint of 90 ± 2 psig on decreasing pressure.

**The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test. If ADS or HPCI OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam dome pressure to less than 100 psig or 200 psig, respectively, within the following 72 hours.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

d. Type B and C tests shall be conducted with gas at P_a , 44.0 psig*, at intervals no greater than 24 months except for tests involving:

1. Air locks, _____
2. Main steam line isolation valves, _____
3. Containment isolation valves in hydrostatically tested lines which penetrate the primary containment, and _____

e. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.3.

4.6.1.2. f. Main steam line isolation valves shall be leak tested at least once per 18 months, ~~NOT TO EXCEED THE REQUIREMENTS OF APPENDIX J, 10CFR 50.~~
(24)

4.6.1.2. g. Containment isolation valves in hydrostatically tested lines which penetrate the primary containment shall be leak tested at least once per 18 months, ~~NOT TO EXCEED THE REQUIREMENTS OF APPENDIX J, 10CFR 50.~~
(24)

h. The provisions of Specification 4.0.2 are not applicable to Specifications 4.6.1.2a, 4.6.1.2b, 4.6.1.2c, 4.6.1.2d, and 4.6.1.2e.

*Unless a hydrostatic test is required per Table 3.6.3-1.

CONTAINMENT SYSTEMS

MSIV LEAKAGE CONTROL SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.4 Two independent MSIV leakage control system (LCS) subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one MSIV leakage control system subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.4 Each MSIV leakage control system subsystem shall be demonstrated OPERABLE:

- a. At least once per 31 days by:
 1. Starting the blower(s) from the control room and operating the blower(s) for at least 15 minutes.
 2. Energizing the heaters and verifying a temperature rise indicating heater operation on downstream piping.
- b. During each COLD SHUTDOWN, if not performed within the previous 92 days, by cycling each motor operated valve through at least one complete cycle of full travel.
- c. At least once per ²⁴18 months by:
 1. Performance of a functional test which includes simulated actuation of the subsystem throughout its operating sequence, and verifying that each interlock and timer operates as designed, each automatic valve actuates to its correct position and the blower starts.
 2. Verifying that the blower(s) develops at least the below required vacuum at the rated capacity:
 - a) Inboard valves, 15" H₂O at 100 scfm.
 - b) Outboard valves, 15" H₂O at 200 scfm.
- d. By verifying the operating instrumentation to be OPERABLE by performance of a:
 1. CHANNEL CHECK at least once per 24 hours,
 2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
 3. CHANNEL CALIBRATION at least once per 18 months.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- c. By verifying at least two suppression chamber water level indicators and at least 8 suppression pool water temperature indicators in at least 8 locations, OPERABLE by performance of a:

1. CHANNEL CHECK at least once per 24 hours,
2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
3. CHANNEL CALIBRATION at least once per 18 months,

with the water level and temperature alarm setpoint for:

1. High water level $\leq 24'1\frac{1}{2}"$
2. High water temperature:
 - a) First setpoint $\leq 95^{\circ}\text{F}$
 - b) Second setpoint $\leq 105^{\circ}\text{F}$
 - c) Third setpoint $\leq 110^{\circ}\text{F}$
 - d) Fourth setpoint $\leq 120^{\circ}\text{F}$

4.6.2.1.d. At least once per ²⁴18 months by conducting a drywell-to-suppression chamber bypass leak test at an initial differential pressure of 4 psi and verifying that the A/\sqrt{k} calculated from the measured leakage is within the specified limit. If any drywell-to-suppression chamber bypass leak test fails to meet the specified limit, the test schedule for subsequent tests shall be reviewed and approved by the Commission. If two consecutive tests fail to meet the specified limit, a test shall be performed at least every ²⁴2 months until two consecutive tests meet the specified limit, at which time the ²⁴18 month test schedule may be resumed.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.3.1 Each primary containment isolation valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.

24 4.6.3.2 Each primary containment automatic isolation valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE during COLD SHUTDOWN or REFUELING at least once per 24 months by verifying that on a containment isolation test signal each automatic isolation valve actuates to its isolation position.

4.6.3.3 The isolation time of each primary containment power operated or automatic valve shown in Table 3.6.3-1 shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

4.6.3.4 Each instrumentation line excess flow check valve shown in Table 3.6.3-1 shall be demonstrated OPERABLE at least once per 24 months by verifying that the valve checks flow.

4.6.3.5 Each traversing in-core probe system explosive isolation valve shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying the continuity of the explosive charge.
- b. At least once per 24 months by removing the explosive squib from the explosive valve, such that each explosive squib in each explosive valve will be tested at least once per 120 months, and initiating the explosive squib. The replacement charge for the exploded squib shall be from the same manufactured batch as the one fired or from another batch which has been certified by having at least one of that batch successfully fired. No squib shall remain in use beyond the expiration of its shelf-life and/or operating life, as applicable.

CONTAINMENT SYSTEMS

4.6.5 SECONDARY CONTAINMENT

REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

Without REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY, restore REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1.1 REACTOR ENCLOSURE SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the reactor enclosure secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All reactor enclosure secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the reactor enclosure secondary containment is closed.
 3. All reactor enclosure secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per ²⁴18 months:
 1. Verifying that one standby gas treatment subsystem will draw down the reactor enclosure secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds with the reactor enclosure recirc system in operation, and
 2. Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the reactor enclosure secondary containment at a flow rate not exceeding 1250 cfm with wind speeds of < 7.0 mph as measured on the wind instrument on Tower 1 elevation 30' or, if that instrument is unavailable, Tower 2, elevation 159'.

CONTAINMENT SYSTEMS

3/4.6.5 SECONDARY CONTAINMENT

REFUELING AREA SECONDARY CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

Without REFUELING AREA SECONDARY CONTAINMENT INTEGRITY, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.1.2 REFUELING AREA SECONDARY CONTAINMENT INTEGRITY shall be demonstrated by:

- a. Verifying at least once per 24 hours that the pressure within the refueling area secondary containment is greater than or equal to 0.25 inch of vacuum water gauge.
- b. Verifying at least once per 31 days that:
 1. All refueling area secondary containment equipment hatches and blowout panels are closed and sealed.
 2. At least one door in each access to the refueling area secondary containment is closed.
 3. All refueling area secondary containment penetrations not capable of being closed by OPERABLE secondary containment automatic isolation dampers/valves and required to be closed during accident conditions are closed by valves, blind flanges, slide gate dampers or deactivated automatic dampers/valves secured in position.
- c. At least once per 18 months:
Operating one standby gas treatment subsystem for one hour and maintaining greater than or equal to 0.25 inch of vacuum water gauge in the refueling area secondary containment at a flow rate not exceeding 764 cfm.

*Required when (1) irradiated fuel is being handled in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel with the vessel head removed and fuel in the vessel.

CONTAINMENT SYSTEMS

REACTOR ENCLOSURE SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.5.2.1 The reactor enclosure secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.1-1.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With one or more of the reactor secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.1-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve, blind flange or slide gate damper.

Otherwise, in OPERATIONAL CONDITION 1, 2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.2.1 Each reactor enclosure secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.1-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per ²⁴18 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

CONTAINMENT SYSTEMS

REFUELING AREA SECONDARY CONTAINMENT AUTOMATIC ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.5.2.2 The refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 shall be OPERABLE with isolation times less than or equal to the times shown in Table 3.6.5.2.2-1.

APPLICABILITY: OPERATIONAL CONDITION *.

ACTION:

With one or more of the refueling area secondary containment ventilation system automatic isolation valves shown in Table 3.6.5.2.2-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and within 8 hours either:

- a. Restore the inoperable valves to OPERABLE status, or
- b. Isolate each affected penetration by use of at least one deactivated valve secured in the isolation position, or
- c. Isolate each affected penetration by use of at least one closed manual valve, blind flange or slide gate damper.

Otherwise, in OPERATIONAL CONDITION *, suspend handling of irradiated fuel in the refueling area secondary containment, CORE ALTERATIONS and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.6.5.2.2 Each refueling area secondary containment ventilation system automatic isolation valve shown in Table 3.6.5.2.2-1 shall be demonstrated OPERABLE:

- a. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by cycling the valve through at least one complete cycle of full travel and verifying the specified isolation time.
- b. At least once per ²⁴18 months by verifying that on a containment isolation test signal each isolation valve actuates to its isolation position.
- c. By verifying the isolation time to be within its limit at least once per 92 days.

*Required when (1) irradiated fuel is being handled in the refueling area secondary containment, or (2) during CORE ALTERATIONS, or (3) during operations with a potential for draining the reactor vessel with the vessel head removal and fuel in the vessel.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- 4.6.5.3.b. At least once per ~~18~~²⁴ 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 subsystem by:
1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 3000 cfm \pm 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 0.175%; and
 3. Verify that when the fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III) when tested in accordance with ANSI N510-1980.
 4. Verify that the pressure drop across the refueling area to SGTS prefilter is less than 0.25 inches water gage while operating at a flow rate of 2400 cfm \pm 10%.

- 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 0.175%.

- d. At least once per ~~18~~²⁴ months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 9.1 inches water gauge while operating the filter train at a flow rate of 8400 cfm \pm 10%.

* SURVEILLANCE INTERVALS IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN REGULATORY GUIDE 1.52, REVISION 2, MARCH 1978.1

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- 4.6.5.3.d. 2. Verifying that the fan starts and isolation valves necessary to draw a suction from the refueling area or the reactor enclosure recirculation discharge open on each of the following test signals:
- Manual initiation from the control room, and
 - Simulated automatic initiation signal.
3. Verifying that the temperature differential across each heater is $\geq 15^{\circ}\text{F}$ when tested in accordance with ANSI N510-1980.
- After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of $3000 \text{ cfm} \pm 10\%$.
 - After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of $3000 \text{ cfm} \pm 10\%$.
 - After any major system alteration:
 - Verify that when the SGTS fan is running the subsystem flowrate is 2800 cfm minimum from each reactor enclosure (Zones I and II) and 2200 cfm minimum from the refueling area (Zone III).
 - Verify that one standby gas treatment subsystem will drawdown reactor enclosure Zone II secondary containment to greater than or equal to 0.25 inch of vacuum water gauge in less than or equal to 121 seconds with the reactor enclosure recirculation system in operation and the adjacent reactor enclosure and refueling area zones are in their isolation modes.

CONTAINMENT SYSTEMS

REACTOR ENCLOSURE RECIRCULATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 Two independent reactor enclosure recirculation subsystems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With one reactor enclosure recirculation subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With both reactor enclosure recirculation subsystems inoperable, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.4 Each reactor enclosure recirculation subsystem 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 subsystem operates properly.
- b. At least once per 24 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 subsystem by:
 1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 60,000 cfm \pm 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
 3. Verifying a subsystem flow rate of 60,000 cfm \pm 10% during system operation when tested in accordance with ANSI N510-1980.

* SURVEILLANCE INTERVAL IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN REGULATORY GUIDE 1.52, REVISION 2, MARCH 1978.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- 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 ¹²⁴³18 months by:
1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the filter train at a flow rate of 60,000 cfm \pm 10%, verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.
 2. Verifying that the filter train starts and the isolation valves which take suction on and return to the reactor enclosure open on each of the following test signals:
 - a. Manual initiation from the control room, and
 - b. Simulated automatic initiation signal.
- e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 while operating the system at a flow rate of 60,000 cfm \pm 10%.
- f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorber bank satisfies the inplace penetration and leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a halogenated hydrocarbon refrigerant test gas while operating the system at a flow rate of 60,000 cfm \pm 10%.

CONTAINMENT SYSTEMS

3/4.6.6 PRIMARY CONTAINMENT ATMOSPHERE CONTROL

PRIMARY CONTAINMENT HYDROGEN RECOMBINER SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.6.1 Two independent primary containment hydrogen recombiter systems shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

With one primary containment hydrogen recombiter system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.6.6.1 Each primary containment hydrogen recombiter system shall be demonstrated OPERABLE:

- a. At least once per 6 months by performance of:
 1. A CHANNEL CHECK of all Control Room Recombiner Instrumentation.
 2. A Trickle Heat Circuit check.
 3. A Heater Coil Check.
 4. A verification of valve operation by stroking all the valves to their proper positions.
- b. At least once per 18 months by:
 1. Performing a CHANNEL CALIBRATION of all control room recombiter instrumentation and control circuits.
 2. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test within 30 minutes following the below required functional test. The resistance to ground for any heater phase shall be greater than or equal to one (1) megohm.
 3. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiter enclosure; i.e., loose wiring or structural connections, deposits of foreign materials, etc.
 4. Verifying during a recombiter system functional test that the minimum heater outlet gas temperature increases to greater than or equal to 1150°F within 120 minutes and maintained for at least one hour.
- c. By measuring the system leakage rate:
 1. As a part of the overall integrated leakage rate test required by Specification 3.6.1.2, or
 2. By measuring the leakage rate of the system outside of the containment isolation valves at P_a , 44.0 psig, on the schedule required by Specification 4.6.1.2, and including the measured leakage as a part of the leakage determined in accordance with Specification 4.6.1.2.

PLANT SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

4. With three ESW pump/diesel generator pairs** inoperable, restore at least one inoperable ESW pump/diesel generator pair** to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
5. With four ESW pump/diesel generator pairs** inoperable, restore at least one inoperable ESW pump/diesel generator pair** to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 4 or 5:
 1. With only one emergency service water pump and its associated flow path OPERABLE, restore at least two pumps with at least one flow path to OPERABLE status within 72 hours or declare the associated safety related equipment inoperable and take the ACTION required by Specifications 3.5.2 and 3.8.1.2.
- c. In OPERATIONAL CONDITION *
 1. With only one emergency service water pump and its associated flow path OPERABLE, restore at least two pumps with at least one flow path to OPERABLE status within 72 hours or verify adequate cooling remains available for the diesel generators required to be OPERABLE or declare the associated diesel generator(s) inoperable and take the ACTION required by Specification 3.8.1.2. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.2 At least the above required emergency service water system loop(s) shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) that is not locked, sealed, or otherwise secured in position, is in its correct position.
- b. At least once per 18 months by verifying that:
 1. Each automatic valve actuates to its correct position on its appropriate ESW pump start signal.
 2. Each pump starts automatically when its associated diesel generator starts.

*When handling irradiated fuel in the secondary containment.

**An ESW pump/diesel generator pair consists of an ESW pump and its associated diesel generator. If either an ESW pump or its associated diesel generator becomes inoperable, then the ESW pump/diesel generator pair is inoperable.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.2 Each control room emergency fresh air supply subsystem shall be demonstrated OPERABLE:

- a. At least once per 12 hours by verifying the control room air temperature to be less than or equal to 85°F effective temperature.
- b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates with the heaters OPERABLE.
- c. At least once per ~~18~~²⁴ 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 subsystem by:
 1. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% 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 3000 cfm \pm 10%.

* SURVEILLANCE INTERVAL IS AN EXCEPTION TO THE GUIDANCE PROVIDED IN REGULATORY GUIDE 1.52, REVISION 2, MARCH 1978.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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

3. Verifying a subsystem flow rate of $3000 \text{ cfm} \pm 10\%$ during subsystem operation when tested in accordance with ANSI NS10-1980.

d. 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%.

4.7.2.

e. At least once per 24 months by:

1. Verifying that the pressure drop across the combined prefilter, upstream and downstream HEPA filters, and charcoal adsorber banks is less than 6 inches water gauge while operating the subsystem at a flow rate of $3000 \text{ cfm} \pm 10\%$; verifying that the prefilter pressure drop is less than 0.8 inch water gauge and that the pressure drop across each HEPA is less than 2 inches water gauge.

2. Verifying that on each of the below chlorine isolation mode actuation test signals, the subsystem automatically switches to the chlorine isolation mode of operation and the isolation valves close within 5 seconds:

- a) Outside air intake high chlorine, and
- b) Manual initiation from the control room.

3. Verifying that on each of the below radiation isolation mode actuation test signals, the subsystem automatically switches to the radiation isolation mode of operation and the control room is maintained at a positive pressure of at least $1/8$ inch water gauge relative to the turbine enclosure and auxiliary equipment room and outside atmosphere during subsystem operation with an outdoor air flow rate less than or equal to 525 cfm:

- a) Outside air intake high radiation, and
- b) Manual initiation from control room.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.7.3.

c. At least once per ³²⁴18 months by:

1. Performing a system functional test which includes simulated automatic actuation and restart and verifying that each automatic valve in the flow path actuates to its correct position. Actual injection of coolant into the reactor vessel may be excluded.
2. Verifying that the system will develop a flow of greater than or equal to 600 gpm in the test flow path when steam is supplied to the turbine at a pressure of 150 ± 15 , - 0 psig.*
3. Verifying that the suction for the RCIC system is automatically transferred from the condensate storage tank to the suppression pool on a condensate storage tank water level-low signal.
4. Performing a CHANNEL CALIBRATION of the RCIC system discharge line "keep filled" level alarm instrumentation.

*The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the tests. If OPERABILITY is not successfully demonstrated within the 12-hour period, reduce reactor steam dome pressure to less than 150 psig within the following 72 hours.

PLANT SYSTEMS

HALON SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.6.4 The following Halon systems shall be OPERABLE with the storage tanks having at least 95% of full charge weight and 90% of full charge pressure:

- a. Remote Shutdown Panel Area 540, EL 289' (Raised Floor), and
- b. Auxiliary Equipment Room 542, EL 289' (Raised Floor).

APPLICABILITY: Whenever equipment protected by the Halon systems is required to be OPERABLE.

ACTION:

- a. With one or more of the above required Halon 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 Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.6.4 Each of the above required Halon systems 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 is in its correct position.
- b. At least once per 6 months by verifying Halon storage tank weight and pressure.
- c. At least once per 18 months by:
 1. Performance of a functional test of the general alarm circuit and associated alarm and interlock devices, and

~~2. Performance of a system flow test to assure no blockage.~~

d. AT LEAST ONCE PER 24 MONTHS BY:

1. PERFORMANCE OF A SYSTEM FLOW TEST TO ASSURE NO BLOCKAGE.

PLANT SYSTEMS

3/4.7.7 FIRE RATED ASSEMBLIES

LIMITING CONDITION FOR OPERATION

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

APPLICABILITY: At all times.

ACTION:

- a. With one or more of the above required fire rated assemblies and/or sealing devices inoperable, within 1 hour establish a continuous fire watch on at least one side of the affected assembly(s) and/or sealing device(s) or verify the OPERABILITY of fire detectors on at least one side of the inoperable assembly(s) and sealing device(s) and establish an hourly fire watch patrol.
- b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.7.1 Each of the above required fire rated assemblies and penetration sealing devices shall be verified OPERABLE at least once per 18 months by performing a visual inspection of:

- a. The exposed surfaces of each fire rated assembly.
- b. Each fire window, fire damper, and associated hardware.
- c. At least 10% of each type of sealed penetration, except internal conduit seals. If apparent changes in appearance or abnormal degradations are found, a visual inspection of an additional 10% of each type of sealed penetration shall be made. This inspection process shall continue until a 10% sample with no apparent changes in appearance or abnormal degradation is found. Samples shall be selected such that each penetration seal will be inspected at least once per 18 years.

PLANT SYSTEMS

3/4.7.8 MAIN TURBINE BYPASS SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.8 The main turbine bypass system shall be OPERABLE as determined by the number of operable main turbine bypass valves being greater than or equal to that specified in the CORE OPERATING LIMITS REPORT.

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION: With the main turbine bypass system inoperable, restore the system to OPERABLE status within 1 hour or take the ACTION required by Specification 3.2.3.c.

SURVEILLANCE REQUIREMENTS

4.7.8 The main turbine bypass system shall be demonstrated OPERABLE at least once per:

- a. 31 days by cycling each turbine bypass valve through at least one complete cycle of full travel,
- b. ~~24 MONTHS~~ ^{24 MONTHS} ~~refueling cycle~~ by performing a system functional test which includes simulated automatic actuation, and by verifying that each automatic valve actuates to its correct position, and
- c. ~~24 MONTHS~~ ^{24 MONTHS} ~~refueling cycle~~ by determining TURBINE BYPASS SYSTEM RESPONSE TIME to be less than or equal to the value specified in the CORE OPERATING LIMITS REPORT.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per ²⁴18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.1.1.2-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the day fuel tank.
 2. Verifying the fuel level in the fuel storage tank.
 3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day fuel tank.
 4. Verify that the diesel can start* and gradually accelerate to synchronous speed with generator voltage and frequency at 4285 ± 420 volts and 60 ± 1.2 Hz.
 5. Verify diesel is synchronized, gradually loaded* to an indicated 2700-2800 kW** and operates with this load for at least 60 minutes.
 6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
 7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 225 psig.

*This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading and shutdown recommendations.

**This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 105 volts or battery overcharge with battery terminal voltage above 150 volts, by verifying that:

1. The parameters in Table 4.8.2.1-1 meet the Category B limits,
2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohm, and
3. The average electrolyte temperature of each sixth cell is $\geq 60^{\circ}\text{F}$.

4.8.2.1

- c. At least once per ²⁴18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,
2. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anticorrosion material,
3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohm excluding cable intercell connections, and
4. The battery chargers will supply the currents listed below at a minimum of 132 volts for at least 8 hours:

<u>Charger</u>	<u>Current (Amperes)</u>
2BCA1	300
2BCA2	300
2BCB1	300
2BCB2	300
2BCC	75
2BCD	75

4.8.2.1

- d. At least once per ²⁴18 months, during shutdown, by verifying that either:

1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for the design duty cycle when the battery is subjected to a battery service test, or
2. The battery capacity is adequate to supply a dummy load of the following profile while maintaining the battery terminal voltage greater than or equal to 105 volts for the nominal 125-volt batteries and 210 volts for the nominal 125/250-volt batteries:

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

Division	Battery	LOAD CYCLE (amps)		
		0-1 Min.	1-239 Min.	239-240 Min.
I	2A1	546	168	187
	2A2	449	129	147
II	2B1	889	158	321
	2B2	823	119	282
III	2C	193	31	31
IV	2D	169	21	21

Each 125/250-volt battery is rated at 1500 ampere hours at an 8-hour discharge rate, based on a terminal voltage of 1.75 volts-per-cell at 77°F.

Each 125-volt battery is rated at 250 ampere-hours at an 8-hour discharge rate, based on a terminal voltage of 1.5 volts-per-cell at 77°F.

- 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. At least once per 60 months interval, this performance discharge test may be performed in lieu of the battery service test (Specification 4.8.2.1).

- 4.8.2.1 f. At least once per ²⁴18 months during shutdown performance discharge tests of battery capacity shall be given 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.

ELECTRICAL POWER SYSTEMS

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION

LIMITING CONDITION FOR OPERATION

3.8.4.2 The thermal overload protection of all Class 1E motor operated valves shall be either:

- a. Continuously bypassed for all valves with maintained position control switches; or,
- b. Bypassed only under accident conditions for all valves with spring-return-to-normal control switches.

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

ACTION:

With the thermal overload protection for one or more of the above required valves not bypassed continuously or only under accident conditions, as applicable, restore the thermal overload bypass within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION statement(s) for the affected system(s).

SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves which are continuously bypassed and temporarily placed in force only when the valve motor is undergoing periodic or maintenance testing shall be verified to be bypassed following periodic or maintenance testing during which the thermal overload protection was temporarily placed in force.

4.8.4.2.2 At least once per 18 months, a CHANNEL FUNCTIONAL TEST of all those valves which are bypassed only under accident conditions (valves with spring-return-to-normal control switches) shall be performed to verify that the thermal overload protection will be bypassed under accident conditions.

ELECTRICAL POWER SYSTEMS

BASES

Substations" except the test will be performed at least once every 24 months.

A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

Supplies," March 10, 1971, Regulatory Guide 1.137 "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979 and Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977, except for paragraphs C.2.a(3), C.2.c(1), C.2.c(2), C.2.d(3) and C.2.d(4). The exceptions to Regulatory Guide 1.108 allow for gradual loading of diesel generators during testing and decreased surveillance test frequencies (in response to Generic Letter 84-15).

The surveillance requirements for demonstrating the OPERABILITY of the unit batteries are in accordance with the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978 and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8.2.1-1 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and 0.015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than 0.020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than 0.010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8.2.1-1 is permitted for up to 7 days. During this 7-day period: (1) the allowable value for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than 0.020 below the manufacturer's recommended full charge specific gravity ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than 0.040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

CONTAINMENT SYSTEMS

BASES

3/4.6.5 SECONDARY CONTAINMENT

Secondary containment is designed to minimize any ground level release of radioactive material which may result from an accident. The Reactor Enclosure and associated structures provide secondary containment during normal operation when the drywell is sealed and in service. At other times the drywell may be open and, when required, secondary containment integrity is specified.

Establishing and maintaining a vacuum in the reactor enclosure secondary containment with the standby gas treatment system once per ²⁴~~15~~ months, along with the surveillance of the doors, hatches, dampers and valves, is adequate to ensure that there are no violations of the integrity of the secondary containment.

The OPERABILITY of the reactor enclosure recirculation system and the standby gas treatment systems ensures that sufficient iodine removal capability will be available in the event of a LOCA or refueling accident (SGTS only). The reduction in containment iodine inventory reduces the resulting SITE BOUNDARY radiation doses associated with containment leakage. The operation of this system and resultant iodine removal capacity are consistent with the assumptions used in the LOCA and refueling accident analyses. Provisions have been made to continuously purge the filter plenums with instrument air when the filters are not in use to prevent buildup of moisture on the adsorbers and the HEPA filters.

Although the safety analyses assumes that the reactor enclosure secondary containment draw down time will take 135 seconds, these surveillance requirements specify a draw down time of 121 seconds. This 14 second difference is due to the diesel generator starting and sequence loading delays which is not part of this surveillance requirement.

The reactor enclosure secondary containment draw down time analyses assumes a starting point of 0.25 inch of vacuum water gauge and worst case SGTS dirty filter flow rate of 2800 cfm. The surveillance requirements satisfy this assumption by starting the drawdown from ambient conditions and connecting the adjacent reactor enclosure and refueling area to the SGTS to split the exhaust flow between the three zones and verifying a minimum flow rate of 2800 cfm from the test zone. This simulates the worst case flow alignment and verifies adequate flow is available to drawdown the test zone within the required time. The Technical Specification Surveillance Requirement 4.6.5.3.b.3 is intended to be a multi-zone air balance verification without isolating a test zone.

The SGTS is common to Unit 1 and 2 and consists of two independent subsystems. The power supplies for the common portions of the subsystems are from Unit 1 safeguard busses, therefore the inoperability of these Unit 1 supplies are addressed in the SGTS ACTION statements in order to ensure adequate onsite power sources to SGTS for its Unit 2 function during a loss of offsite power event. The allowable out of service times are consistent with those in the Unit 1 Technical Specifications for SGTS and AC electrical power supply out of service condition combinations.

ADMINISTRATIVE CONTROLS

PROCEDURES AND PROGRAMS (Continued)

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include the core spray, high pressure coolant injection, reactor core isolation cooling, residual heat removal, post-accident sampling system, safeguard piping fill system, control rod drive scram discharge system, and containment air monitor systems. The program shall include the following:

1. Preventive maintenance and periodic visual inspection requirements, and
2. Integrated leak test requirements for each system at refueling cycle intervals or less.

*No wording
change*

b. In-Plant Radiation Monitoring

A program which will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. This program shall include the following:

1. Training of personnel,
2. Procedures for monitoring, and
3. Provisions for maintenance of sampling and analysis equipment.

c. Post-accident Sampling

A program which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

1. Training of personnel,
2. Procedures for sampling and analysis, and
3. Provisions for maintenance of sampling and analysis equipment.