UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 164
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated August 30, 1994, as supplemented by letter dated August 4, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 164 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 20, 1995

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160
License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated August 30, 1994, as supplemented by letter dated August 4, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 160 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 20, 1995

ATTACHMENT TO LICENSE AMENDMENT NOS. 164 AND 160

FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30

DOCKET NOS. 50-254 AND 50-265

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number.

UNIT 1 REMOVE	UNIT 2 REMOVE	INSERT
3.2/4.2-1	3.2/4.2-1	3/4.2-1
3.2/4.2-2	3.2/4.2-2	3/4.2-2
3.2/4.2-3	3.2/4.2-3	3/4.2-3
3.2/4.2-4	3.2/4.2-4	3/4.2-4
3.2/4.2-5	3.2/4.2-5	3/4.2-2
3.2/4.2-6	3.2/4.2-5a	3/4.2-3
3.2/4.2-7	3.2/4.2-6	3/4.2-4
3.2/4.2-8	3.2/4.2-6a	3/4.2-5
3.2/4.2-8a	3.2/4.2-7	3/4.2-6
3.2/4.2-9	3.2/4.2-8	3/4.2-7
3.2/4.2-10	3.2/4.2-9	3/4.2-8
3.2/4.2-11	3.2/4.2-10	3/4.2-9
3.2/4.2-12	3.2/4.2-10a	3/4.2-10
3.2/4.2-13	3.2/4.2-11	3/4.2-11
3.2/4.2-14	3.2/4.2-11a	3/4.2-12
3.2/4.2-15	3.2/4.2-12	3/4.2-13
3.2/4.2-16	3.2/4.2-13	3/4.2-14
3.2/4.2-17	3.2/4.2-14	3/4.2-15
3.2/4.2-18	3.2/4.2-14a	3/4.2-16
3.2/4.2-19	3.2/4.2-15	3/4.2-17
3.2/4.2-20	3.2/4.2-15a	3/4.2-18
3.2/4.2-21	3.2/4.2-15aa	3/4.2-19
3.2/4.2-22	3.2/4.2-15b	3/4.2-20
3.2/4.2-23	3.2/4.2-15c	3/4.2-21
3.2/4.2-24	3.2/4.2-15d	3/4.2-22
3.2/4.2-25	3.2/4.2-16	3/4.2-23
3.2/4.2-26	3.2/4.2-17	3/4.2-24
3.2/4.2-27	3.2/4.2-17a	3/4.2-25
3.2/4.2-28	3.2/4.2-18	3/4.2-26
3.2/4.2-29	3.2/4.2-18a	3/4.2-27
3.2/4.2-30	3.2/4.2-19	3/4.2-28
3.2/4.2-31	3.2/4.2-20	3/4.2-29
3.2/4.2-32	Figure 4.2-1	3/4.2-30
3.2/4.2-33	---	3/4.2-31
3.2/4.2-34	---	3/4.2-32
Figure 4.2-1	---	3/4.2-33
---	---	3/4.2-34
---	---	3/4.2-35
---	---	3/4.2-36
---	---	3/4.2-37
---	---	3/4.2-38

UNIT 2 REMOVE	UNIT 3 REMOVE	INSERT
---	---	3/4.2-39
---	---	3/4.2-40
---	---	3/4.2-41
---	---	3/4.2-42
---	---	3/4.2-43
---	---	3/4.2-44
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---	---	3/4.2-54
---	---	B 3/4.2-1
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---	---	B 3/4.2-3
---	---	B 3/4.2-4
---	---	B 3/4.2-5

3.2 - LIMITING CONDITIONS FOR OPERATION

A. Isolation Actuation

The isolation actuation instrumentation CHANNEL(s) shown in Table 3.2.A-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column.

APPLICABILITY:

As shown in Table 3.2.A-1.

ACTION:

1. With an isolation actuation instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.A-1, declare the CHANNEL inoperable until the CHANNEL is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
2. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM, place the inoperable CHANNEL(s) and/or TRIP SYSTEM in the tripped condition[a] within one hour.

4.2 - SURVEILLANCE REQUIREMENTS

A. Isolation Actuation

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 MODE(s) and at the frequencies shown in Table 4.2.A-1.
2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

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a 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 2 hours or the ACTION required by Table 3.2.A-1 for that trip function shall be taken.

3.2 - LIMITING CONDITIONS FOR OPERATION	4.2 - SURVEILLANCE REQUIREMENTS
3. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement for both TRIP SYSTEMS, place at least one TRIP SYSTEM[b] in the tripped condition[c] within one hour and take the ACTION required by Table 3.2.A-1.	

b If more CHANNEL(s) are inoperable in one TRIP SYSTEM than in the other, select the TRIP SYSTEM with the greater number of inoperable CHANNEL(s) to place in the tripped condition except when this would cause the trip function to occur; if both TRIP SYSTEM(s) have the same number of inoperable CHANNEL(s), place either TRIP SYSTEM in the tripped condition.

c 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 one hour or the ACTION required by Table 3.2.A-1 for that trip function shall be taken.

TABLE 3.2.A-1

ISOLATION ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[j]	Minimum CHANNEL(s) per TRIP SYSTEM[e]	Applicable OPERATIONAL MODE(s)	ACTION
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low	≥144 inches	2	1, 2, 3	20
b. Drywell Pressure - High[d]	≤2.5 psig	2	1, 2, 3	20
c. Drywell Radiation - High	≤100 R/hr	1	1, 2, 3	23
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low[c,k]	≥144 inches	2	1, 2, 3 & *	24
b. Drywell Pressure - High[c,d,k]	≤2.5 psig	2	1, 2, 3	24
c. Reactor Building Ventilation Exhaust Radiation - High[c,k]	≤3 mR/hr	2	1, 2, 3 & **	24
d. Refueling Floor Radiation - High[c,k]	≤100 mR/hr	2	1, 2, 3 & **	24
3. MAIN STEAM LINE (MSL) ISOLATION				
a. Reactor Vessel Water Level - Low Low	≥84 inches	2	1, 2, 3	21
b. MSL Tunnel Radiation - High[b]	≤15[h] x normal background	2	1, 2, 3	21
c. MSL Pressure - Low	≥825 psig	2	1	22
d. MSL Flow - High[k]	≤140% of rated	2/line	1, 2, 3	21
e. MSL Tunnel Temperature - High	≤200°F	#	1, 2, 3	21

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TABLE 3.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[j]	Minimum CHANNEL(s) per TRIP SYSTEM[a]	Applicable OPERATIONAL MODE(s)	ACTION
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. Standby Liquid Control System Initiation[f]	NA	NA	1, 2, 3	23
b. Reactor Vessel Water Level - Low	≥144 inches	2	1, 2, 3	23
5. REACTOR CORE ISOLATION COOLING ISOLATION				
a. Steam Flow - High	≤300% of rated steam flow[i]	1	1, 2, 3	23
b. Reactor Vessel Pressure - Low	≥60 psig	4[e]	1, 2, 3	23
c. Area Temperature - High	≤170°F	2	1, 2, 3	23
6. HIGH PRESSURE COOLANT INJECTION ISOLATION				
a. Steam Flow - High	≤300% of rated steam flow[i]	1	1, 2, 3	23
b. Reactor Vessel Pressure - Low	≥100 psig	2	1, 2, 3	23
c. Area Temperature - High	≤170°F	2	1, 2, 3	23

TABLE 3.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[d]	Minimum CHANNEL(s) per TRIP SYSTEM[e]	Applicable OPERATIONAL MODE(s)	ACTION
7. RHR SHUTDOWN COOLING MODE ISOLATION				
a. Reactor Vessel Water Level - Low	≥144 inches	2[g]	3, 4, 5	23
b. Reactor Vessel Pressure - High (Cut-in Permissive)	≤135 psig	2	1, 2, 3	23

TABLE 3.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

ACTION

ACTION 20 - Be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 21 - Be in at least STARTUP with the associated isolation valves closed within 8 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

ACTION 22 - Be in at least STARTUP within 8 hours.

ACTION 23 - Close the affected system isolation valves within one hour and declare the affected system inoperable.

ACTION 24 - Establish SECONDARY CONTAINMENT INTEGRITY with the standby gas treatment system operating within one hour.

TABLE 3.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TABLE NOTATION

* During CORE ALTERATIONS or operations with a potential for draining the reactor vessel.

** When handling irradiated fuel in the secondary containment.

(a) A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the CHANNEL in the tripped condition provided the Functional Unit maintains isolation actuation capability.

(b) Also trips the mechancal vacuum pump and isolates the steam jet air ejectors.

(c) Isolates the reactor building ventilation system and actuates the standby gas treatment system.

(d) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(e) Only one TRIP SYSTEM.

(f) Closes only reactor water cleanup system isolation valves.

(g) Only one trip system requied in OPERATIONAL MODE(s) 4 and 5 with RHR Shutdown Cooling System integrity maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system.

(h) Normal background is as measured during full power operation without hydrogen being injected.

(i) Includes a time delay of $3 \leq t \leq 9$ seconds.

(j) Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

(k) Also isolates the control room ventilation system.

TABLE 4.2.A-1

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	Applicable OPERATIONAL MODE(s)
1. PRIMARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low	S	M	E[a]	1, 2, 3
b. Drywell Pressure - High[b]	NA	M	Q	1, 2, 3
c. Drywell Radiation - High	S	M	E	1, 2, 3
2. SECONDARY CONTAINMENT ISOLATION				
a. Reactor Vessel Water Level - Low[c,d]	S	M	E[a]	1, 2, 3 & *
b. Drywell Pressure - High[b,c,d]	NA	M	Q	1, 2, 3
c. Reactor Building Ventilation Exhaust Radiation - High[c,d]	S	M	E	1, 2, 3 & **
d. Refueling Floor Radiation - High[c,d]	S	M	E	1, 2, 3 & **
3. MAIN STEAM LINE (MSL) ISOLATION				
a. Reactor Vessel Water Level - Low Low	S	M	E[a]	1, 2, 3
b. MSL Tunnel Radiation - High	S	M	#	1, 2, 3
c. MSL Pressure - Low	NA	M	Q	1
d. MSL Flow - High[d]	S	M	E	1, 2, 3
e. MSL Tunnel Temperature - High	NA	E	E	1, 2, 3

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TABLE 4.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	Applicable OPERATIONAL MODE(s)
4. REACTOR WATER CLEANUP SYSTEM ISOLATION				
a. Standby Liquid Control System Initiation	NA	E	NA	1, 2, 3
b. Reactor Vessel Water Level - Low	S	M	E[a]	1, 2, 3
5. REACTOR CORE ISOLATION COOLING ISOLATION				
a. Steam Flow - High	NA	M	Q	1, 2, 3
b. Reactor Vessel Pressure - Low	NA	M	Q	1, 2, 3
c. Area Temperature - High	NA	E	E	1, 2, 3
6. HIGH PRESSURE COOLANT INJECTION ISOLATION				
a. Steam Flow - High	NA	M	Q[a]	1, 2, 3
b. Reactor Vessel Pressure - Low	NA	M	Q[a]	1, 2, 3
c. Area Temperature - High	NA	E	E	1, 2, 3
7. RHR SHUTDOWN COOLING MODE ISOLATION				
a. Reactor Vessel Water Level - Low	S	M	E[a]	3, 4, 5
b. Reactor Vessel Pressure - High (Cut-in Permissive)	NA	M	Q	1, 2, 3

TABLE 4.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

TABLE NOTATION

* During CORE ALTERATIONS or operations with a potential for draining the reactor vessel.

** When handling irradiated fuel in the secondary containment.

(a) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

(b) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(c) Isolates the reactor building ventilation system and actuates the standby gas treatment system.

(d) Also isolates the control room ventilation system.

3.2 - LIMITING CONDITIONS FOR OPERATION

B. Emergency Core Cooling Systems (ECCS) Actuation

The ECCS actuation instrumentation CHANNEL(s) shown in Table 3.2.B-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column.

APPLICABILITY:

As shown in Table 3.2.B-1.

ACTION:

1. With an ECCS actuation instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.B-1, declare the CHANNEL inoperable until the CHANNEL is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
2. With one or more ECCS actuation instrumentation CHANNEL(s) inoperable, take the ACTION required by Table 3.2.B-1.
3. With either ADS TRIP SYSTEM inoperable, restore the inoperable TRIP SYSTEM to OPERABLE status within:
   a. 7 days provided that both the HPCI and RCIC systems are OPERABLE, or
   b. 72 hours.

   With the above provisions of this ACTION not met, be in at least HOT

4.2 - SURVEILLANCE REQUIREMENTS

B. ECCS Actuation

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 MODE(s) and at the frequencies shown in Table 4.2.B-1.
2. LOGIC SYSTEM FUNCTIONAL TESTS and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

3.2 - LIMITING CONDITIONS FOR OPERATION	4.2 - SURVEILLANCE REQUIREMENTS
SHUTDOWN within the next 12 hours and reduce reactor steam dome pressure to ≤150 psig within the following 24 hours.	

TABLE 3.2.B-1

EMERGENCY CORE COOLING SYSTEMS ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[h]	Minimum CHANNEL(s) per Trip Function[a]	Applicable OPERATIONAL MODE(s)	ACTION
1. CORE SPRAY (CS) SYSTEM				
a. Reactor Vessel Water Level - Low Low[b]	≥84 inches	4	1, 2, 3, 4[c], 5[c]	30
b. Drywell Pressure - High[f][b]	≤2.5 psig	4	1, 2, 3	30
c. Reactor Vessel Pressure - Low (Permissive)	≥300 psig & ≤350 psig	2	1, 2, 3 4[c], 5[c]	31 32
d. CS Pump Discharge Flow - Low (Bypass)	≥500 gpm	1/loop	1, 2, 3, 4[c], 5[c]	33
2. LOW PRESSURE COOLANT INJECTION (LPCI) SUBSYSTEM				
a. Reactor Vessel Water Level - Low Low	≥84 inches	4	1, 2, 3, 4[c], 5[c]	30
b. Drywell Pressure - High[f]	≤2.5 psig	4	1, 2, 3	30
c. Reactor Vessel Pressure - Low (Permissive)	≥300 psig & ≤350 psig	2	1, 2, 3 4[c], 5[c]	31 32
d. LPCI Pump Discharge Flow - Low (Bypass)	≥2400 gpm	1/loop	1, 2, 3, 4[c], 5[c]	33

TABLE 3.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[h]	Minimum CHANNEL(s) per Trip Function[e]	Applicable OPERATIONAL MODE(s)	ACTION
3. HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEM[d]				
a. Reactor Vessel Water Level - Low Low	≥84 inches	4	1, 2, 3	35
b. Drywell Pressure - High[f]	≤2.5 psig	4	1, 2, 3	35
c. Condensate Storage Tank Level - Low[i]	≥10,000 gal	2	1, 2, 3	35
d. Suppression Chamber Water Level - High[i]	≤14'8" above bottom of chamber	2	1, 2, 3	35
e. Reactor Vessel Water Level - High (Trip)	≤201 inches	2	1, 2, 3	31
f. HPCI Pump Discharge Flow - Low (Bypass)	≥600 gpm	1	1, 2, 3	33
g. Manual Initiation	NA	1/system	1, 2, 3	34
4. AUTOMATIC DEPRESSURIZATION SYSTEM - TRIP SYSTEM 'A' [d]				
a. Reactor Vessel Water Level - Low Low	≥84 inches	2	1, 2, 3	30
b. Drywell Pressure - High[f]	≤2.5 psig	2	1, 2, 3	30
c. Initiation Timer	≤120 sec	1	1, 2, 3	31
d. Low Low Level Timer	≤9.0 min	1	1, 2, 3	31
e. CS Pump Discharge Pressure - High (Permissive)	≥100 psig & ≤150 psig	1/pump	1, 2, 3	31
f. LPCI Pump Discharge Pressure - High (Permissive)	≥100 psig & ≤150 psig	1/pump	1, 2, 3	31

TABLE 3.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[h]	Minimum CHANNEL(s) per Trip Function[a]	Applicable OPERATIONAL MODE(s)	ACTION
5. AUTOMATIC DEPRESSURIZATION SYSTEM - TRIP SYSTEM 'B' [d]				
a. Reactor Vessel Water Level - Low Low	≥84 inches	2	1, 2, 3	30
b. Drywell Pressure - High[f]	≤2.5 psig	2	1, 2, 3	30
c. Initiation Timer	≤120 sec	1	1, 2, 3	31
d. Low Low Level Timer	≤9.0 min	1	1, 2, 3	31
e. CS Pump Discharge Pressure - High (Permissive)	≥100 psig & ≤150 psig	1/pump	1, 2, 3	31
f. LPCI Pump Discharge Pressure - High (Permissive)	≥100 psig & ≤150 psig	1/pump	1, 2, 3	31
	Trip Setpoint	Minimum CHANNEL(s) per Trip Function	Applicable OPERATIONAL MODE(s)	ACTION
6. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	3045 ± 152 volts decreasing voltage	2/bus	1, 2, 3, 4[e], 5[e]	36
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	≥3845 volts (Unit 1)[g][i] ≥3833 volts (Unit 2)[g][i]	2/bus	1, 2, 3, 4[e], 5[e]	36

TABLE 3.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION

ACTION

ACTION 30 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement:

a. With one CHANNEL inoperable, place the inoperable CHANNEL in the tripped condition within one hour or declare the associated ECCS system(s) inoperable.

b. With more than one CHANNEL inoperable, declare the associated ECCS system(s) inoperable.

ACTION 31 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement:

a. For ADS, declare the associated ADS TRIP SYSTEM inoperable.

b. For CS, LPCI or HPCI, declare the associated ECCS system(s) inoperable.

ACTION 32 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, place the inoperable CHANNEL in the tripped condition within one hour.

ACTION 33 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, place the inoperable CHANNEL in the tripped condition within one hour; restore the inoperable CHANNEL to OPERABLE status within 7 days or declare the associated ECCS system(s) inoperable.

ACTION 34 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, restore the inoperable CHANNEL to OPERABLE status within 8 hours or declare the associated ECCS system(s) inoperable.

ACTION 35 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, place at least one inoperable CHANNEL in the tripped condition within one hour or declare the HPCI system inoperable.

ACTION 36 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, place the inoperable CHANNEL in the tripped condition within one hour, or declare the associated emergency diesel generator inoperable and take the ACTION required by Specification 3.9.A or 3.9.B, as appropriate.

TABLE 3.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION

TABLE NOTATION

(a) A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the CHANNEL in the tripped condition provided the associated Functional Unit maintains ECCS initiation capability.

(b) Also actuates the associated emergency diesel generator.

(c) When the system is required to be OPERABLE per Specification 3.5.B.

(d) Not required to be OPERABLE when reactor steam dome pressure is ≤150 psig.

(e) Required when the associated diesel generator is required to be OPERABLE per Specification 3.9.B.

(f) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(g) With no LOCA signal present, there is an additional time delay of 5 ± 0.25 minutes.

(h) Reactor water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

(i) Provides signal to pump suction valves only.

(j) There is an inherent time delay of 7 ± 1.4 seconds on degraded voltage.

TABLE 4.2.B-1

ECCS ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	Applicable OPERATIONAL MODE(s)
1. CORE SPRAY (CS) SYSTEM				
a. Reactor Vessel Water Level - Low Low	S	M	E	1, 2, 3, 4[b], 5[b]
b. Drywell Pressure - High[d]	NA	M	Q	1, 2, 3
c. Reactor Vessel Pressure - Low (Permissive)	NA	M	Q	1, 2, 3, 4[b], 5[b]
d. CS Pump Discharge Flow - Low (Bypass)	NA	M	E[e]	1, 2, 3, 4[b], 5[b]
2. LOW PRESSURE COOLANT INJECTION (LPCI) SUBSYSTEM				
a. Reactor Vessel Water Level - Low Low	S	M	E	1, 2, 3, 4[b], 5[b]
b. Drywell Pressure - High[d]	NA	M	Q	1, 2, 3
c. Reactor Vessel Pressure - Low (Permissive)	NA	M	Q	1, 2, 3, 4[b], 5[b]
d. LPCI Pump Discharge Flow - Low (Bypass)	NA	M	E[e]	1, 2, 3, 4[b], 5[b]
3. HIGH PRESSURE COOLANT INJECTION (HPCI) SYSTEM[a]				
a. Reactor Vessel Water Level - Low Low	S	M	E	1, 2, 3
b. Drywell Pressure - High[d]	NA	M	Q	1, 2, 3
c. Condensate Storage Tank Level - Low	NA	M	NA	1, 2, 3
d. Suppression Chamber Water Level - High	NA	M	NA	1, 2, 3
e. Reactor Vessel Water Level - High (Trip)	NA	M	E	1, 2, 3
f. HPCI Pump Discharge Flow - Low (Bypass)	NA	M	E	1, 2, 3
g. Manual Initiation	NA	E	NA	1, 2, 3

TABLE 4.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	Applicable OPERATIONAL MODE(s)
4. AUTOMATIC DEPRESSURIZATION SYSTEM[a]				
a. Reactor Vessel Water Level - Low Low	S	M	Q	1, 2, 3
b. Drywell Pressure - High[d]	NA	M	Q	1, 2, 3
c. Initiation Timer	NA	E	E	1, 2, 3
d. Low Low Level Timer	NA	E	E	1, 2, 3
e. CS Pump Discharge Pressure - High (Permissive)	NA	M	Q	1, 2, 3
f. LPCI Pump Discharge Pressure - High (Permissive)	NA	M	Q	1, 2, 3
5. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	NA	E	E	1, 2, 3, 4[c], 5[c]
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	NA	E	E	1, 2, 3, 4[c], 5[c]

TABLE 4.2.B-1 (Continued)

ECCS ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TABLE NOTATION

(a) Not required to be OPERABLE when reactor steam dome pressure is ≤150 psig.

(b) When the system is required to be OPERABLE per Specification 3.5.B.

(c) Required when the associated diesel generator is required to be OPERABLE per Specification 3.9.B.

(d) This function is not required to be OPERABLE when PRIMARY CONTAINMENT INTEGRITY is not required.

(e) Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

3.2 - LIMITING CONDITIONS FOR OPERATION

C. ATWS - RPT

The anticipated transient without scram recirculation pump trip (ATWS - RPT) instrumentation CHANNEL(s) shown in Table 3.2.C-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column.

APPLICABILITY:

OPERATIONAL MODE 1.

ACTION:

1. With an ATWS - RPT instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.C-1, declare the CHANNEL inoperable until the CHANNEL is restored to OPERABLE status with the CHANNEL trip setpoint adjusted consistent with the Trip Setpoint value.
2. With the number of OPERABLE CHANNEL(s) one less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for one or both TRIP SYSTEM(s), restore the inoperable CHANNEL(s) to OPERABLE status within 14 days or be in at least STARTUP within the next 8 hours.
3. With the number of OPERABLE CHANNEL(s) two or more less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM and:

4.2 - SURVEILLANCE REQUIREMENTS

C. ATWS - RPT

1. Each ATWS - RPT 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 4.2.C-1.
2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

3.2 - LIMITING CONDITIONS FOR OPERATION	4.2 - SURVEILLANCE REQUIREMENTS
a. If the inoperable CHANNEL(s) consist of one reactor vessel water level CHANNEL and one reactor vessel pressure CHANNEL, place both inoperable CHANNEL(s) in the tripped condition[a] within one hour or declare the TRIP SYSTEM inoperable.	
b. If the inoperable CHANNEL(s) include two reactor vessel water level CHANNEL(s) or two reactor vessel pressure CHANNEL(s), declare the TRIP SYSTEM inioperable.	
4. 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 8 hours.	
5. With both TRIP SYSTEM(s) inoperable, restore at least one TRIP SYSTEM to OPERABLE status within one hour or be in at least STARTUP within the next 8 hours.	

a The inoperable CHANNEL(s) need not be placed in the tripped condition where this would cause the Trip Function to occur.

TABLE 3.2.C-1

ATWS - RPT INSTRUMENTATION

Functional Unit	Trip Setpoint[c]	Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM[a]
1. Reactor Vessel Water Level - Low Low	≥84 inches[b]	2
2. Reactor Vessel Pressure - High	≤1250 psig	2

a A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the TRIP SYSTEM in the tripped condition provided at least one OPERABLE CHANNEL in the same TRIP SYSTEM is monitoring that parameter.

b Includes a time delay of $8 \leq t \leq 10$ seconds.

c Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

TABLE 4.2.C-1

ATWS - RPT INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
1. Reactor Water Level - Low Low	S	M	E[a]
2. Reactor Vessel Pressure - High	S	M	E[a]

a Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency identified in the table.

3.2 - LIMITING CONDITIONS FOR OPERATION

D. Reactor Core Isolation Cooling Actuation

The reactor core isolation cooling (RCIC) system actuation instrumentation CHANNEL(s) shown in Table 3.2.D-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2 and 3 with the reactor steam dome pressure >150 psig.

ACTION:

1. With a RCIC system actuation instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.D-1, declare the CHANNEL inoperable until the CHANNEL is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.
2. With one or more RCIC system actuation instrumentation CHANNEL(s) inoperable, take the ACTION required by Table 3.2.D-1.

4.2 - SURVEILLANCE REQUIREMENTS

D. Reactor Core Isolation Cooling Actuation

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 4.2.D-1.
2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

TABLE 3.2.D-1

REACTOR CORE ISOLATION COOLING ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[c]	Minimum CHANNEL(s) per Trip Function[a]	ACTION
1. Reactor Vessel Water Level - Low Low	≥84 inches	4	40
2. Reactor Vessel Level - High (Trip)	≤201 inches	2	41
3. Condensate Storage Tank Level - Low	≥598' El.	2[b]	42
4. Suppression Chamber Water Level - High	≤14'8" above bottom of chamber	2[b]	42
5. Manual Initiation	NA	1/system	43

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a A CHANNEL may be placed in an inoperable status for up to 2 hours for required surveillance without placing the CHANNEL in the tripped condition provided the Functional Unit maintains RCIC actuation capability.

b Provides signal to pump suction valves only.

c Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

TABLE 4.2.D-1(Continued)

REACTOR CORE ISOLATION COOLING ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

ACTION

ACTION 40 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement:

a. With one CHANNEL inoperable, place the inoperable CHANNEL in the tripped condition within one hour or declare the RCIC system inoperable.

b. With more than one CHANNEL inoperable, declare the RCIC system inoperable.

ACTION 41 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement, declare the RCIC system inoperable.

ACTION 42 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per TRIP SYSTEM requirement, place at least one inoperable CHANNEL in the tripped condition within one hour or declare the RCIC system inoperable.

ACTION 43 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement, restore the inoperable CHANNEL to OPERABLE status within 8 hours or declare the RCIC system inoperable.

TABLE 4.2.D-1

REACTOR CORE ISOLATION COOLING ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
1. Reactor Vessel Water Level - Low Low	S	M	E
2. Reactor Vessel Water Level - High (Trip)	S	M	E
3. Condensate Storage Tank Level - Low	NA	M	NA
4. Suppression Chamber Water Level - High	NA	M	NA
5. Manual Initiation	NA	E	NA

3.2 - LIMITING CONDITIONS FOR OPERATION

E. Control Rod Block Actuation

The control rod block actuation instrumentation CHANNEL(s) shown in Table 3.2.E-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column.

APPLICABILITY:

As shown in Table 3.2.E-1.

ACTION:

1. With a control rod block actuation instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.E-1, declare the CHANNEL inoperable until the CHANNEL is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

2. With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, take the ACTION required by Table 3.2.E-1.

4.2 - SURVEILLANCE REQUIREMENTS

E. Control Rod Block Actuation

Each of the required control rod block actuation TRIP SYSTEM(s) and instrumentation CHANNEL(s) shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION operations for the OPERATIONAL MODE(s) and at the frequencies shown in Table 4.2.E-1.

TABLE 3.2.E-1

CONTROL ROD BLOCK INSTRUMENTATION

Functional Unit	Trip Setpoint	Minimum CHANNEL(s) per Trip Function	Applicable OPERATIONAL MODE(s)	ACTION
1. ROD BLOCK MONITORS[a]				
a. Upscale	As specified in COLR	2	1[f]	50
b. Inoperative	NA	2	1[f]	50
c. Downscale	≥3/125 of full scale	2	1[f]	50
2. AVERAGE POWER RANGE MONITORS				
a. Flow Biased Neutron Flux - High				
1. Dual Recirculation Loop Operation	≤(0.58W + 50)[h]	4	1	51
2. Single Recirculation Loop Operation	≤(0.58W + 46.5)[h]	4	1	51
b. Inoperative	NA	4	1, 2, 5[j]	51
c. Downscale	≥3/125 of full scale	4	1	51
d. Startup Neutron Flux - High	≤12/125 of full scale	4	2, 5[j]	51

TABLE 3.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

Functional Unit	Trip Setpoint	Minimum CHANNEL(s) per Trip Function	Applicable OPERATIONAL MODE(s)	ACTION
3. SOURCE RANGE MONITORS				
a. Detector not full in[b]		LEFT INTENTIONALLY BLANK		
b. Upscale[c]	≤1 x 10^5 cps	3	2	51
		2	5	51
c. Inoperative[c]	NA	3	2	51
		2	5	51
d. Downscale[d]		LEFT INTENTIONALLY BLANK		
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	6	2, 5	51
b. Upscale	≤108/125 of full scale	6	2, 5	51
c. Inoperative	NA	6	2, 5	51
d. Downscale[e]	≥3/125 of full scale	6	2, 5	51

TABLE 3.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

Functional Unit	Trip Setpoint	Minimum CHANNEL(s) per Trip Function	Applicable OPERATIONAL MODE(s)	ACTION
5. SCRAM DISCHARGE VOLUME (SDV)				
a. Water Level - High	≤25 gal	1 per bank	1, 2, 5(a)	52
b. SDV Switch in Bypass	NA	1	#	52

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TABLE 3.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION

ACTION 50 - Declare the rod block monitor inoperable and take the ACTION required by Specification 3.3.M.

ACTION 51- With the number of OPERABLE CHANNEL(s):

a. One less than required by the Minimum CHANNEL(s) per Trip Function requirement, restore the inoperable CHANNEL to OPERABLE status within 7 days or place the inoperable CHANNEL in the tripped condition within the next hour.

b. Two or more less than required by the Minimum CHANNEL(s) per Trip Function requirement, place at least one inoperable CHANNEL in the tripped condition within one hour.

ACTION 52 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) per Trip Function requirement, place the inoperable CHANNEL in the tripped condition within one hour.

TABLE 3.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

TABLE NOTATION

(a) The RBM shall be automatically bypassed when a peripheral control rod is selected or the reference APRM channel indicates less than 30% of RATED THERMAL POWER.

(b) This function shall be automatically bypassed if detector count rate is >100 cps or the IRM channels are on range 3 or higher.

(c) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

(d) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

(e) This function shall be automatically bypassed when the IRM channels are on range 1.

(f) With THERMAL POWER ≥30% of RATED THERMAL POWER.

(g) With more than one contol rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

(h) The Average Power Range Monitor rod block function is varied as a function of recirculation loop flow (W). The trip setting of this function must be maintained in accordance with Specification 3.11.B. W is equal to the percentage of the drive flow required to produce a rated core flow of 98×10^6 lbs/hr.

(i) May be ≥0.7 cps provided signal-to-noise ratio is ≥2.0.

(j) Required to be OPERABLE only during SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

TABLE 4.2.E-1

CONTROL ROD BLOCK INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[e]	Applicable OPERATIONAL MODE(s)
1. ROD BLOCK MONITORS				
a. Upscale	NA	S/U[h,c], M[c]	Q	1[d]
b. Inoperative	NA	S/U[b,c], M[c]	NA	1[d]
c. Downscale	NA	S/U[b,c], M[c]	Q	1[d]
2. AVERAGE POWER RANGE MONITORS				
a. Flow Biased Neutron Flux - High				
1. Dual Recirculation Loop Operation	NA	S/U[b], M	SA	1
2. Single Recirculation Loop Operation	NA	S/U[b], M	SA	1
b. Inoperative	NA	S/U[b], M	NA	1, 2, 5[k]
c. Downscale	NA	S/U[b], M	SA	1
d. Startup Neutron Flux - High	NA	S/U[b], M	#	2, 5[k]
3. SOURCE RANGE MONITORS				
a. Detector not full in[f]	#	#	#	#
b. Upscale[g]	NA	S/U[b], W	E	2[j], 5
c. Inoperative[g]	NA	S/U[b], W	NA	2[j], 5
d. Downscale[h]	#	#	#	#

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TABLE 4.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION[a]	Applicable OPERATIONAL MODE(s)
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in	NA	S/U[b], W	#	2[j], 5
b. Upscale	NA	S/U[b], W	#	2[j], 5
c. Inoperative	NA	S/U[b], W	NA	2[j], 5
d. Downscale[i]	NA	S/U[b], W	#	2[j], 5
5. SCRAM DISCHARGE VOLUME (SDV)				
a. Water Level - High	NA	Q	NA	1, 2, 5[e]
b. SDV Switch in Bypass	NA	#	NA	5[e]

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TABLE 4.2.E-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

TABLE NOTATION

(a) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(b) Within 7 days prior to startup.

(c) Includes reactor manual control "relay select matrix" system input.

(d) With THERMAL POWER ≥30% of RATED THERMAL POWER.

(e) With more than one contol rod withdrawn. Not applicable to control rods removed per Specification 3.10.I or 3.10.J.

(f) This function shall be automatically bypassed if detector count rate is >100 cps or the IRM channels are on range 3 or higher.

(g) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

(h) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

(i) This function shall be automatically bypassed when the IRM channels are on range 1.

(j) The provisions of Specification 4.0.D are not applicable to the CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION surveillances for entry into the applicable OPERATIONAL MODE(s) from OPERATIONAL MODE 1 provided the surveillances are performed within 12 hours after such entry.

(k) Required to be OPERABLE only during SHUTDOWN MARGIN demonstrations performed per Specification 3.12.B.

3.2 - LIMITING CONDITIONS FOR OPERATION

F. Accident Monitoring

The accident monitoring instrumentation CHANNEL(s) shown in Table 3.2.F-1 shall be OPERABLE.

APPLICABILITY:

As shown in Table 3.2.F-1.

ACTION:

With one or more of the required number of accident monitoring instrumentation CHANNEL(s) inoperable, take the ACTION shown by Table 3.2.F-1.

4.2 - SURVEILLANCE REQUIREMENTS

F. Accident Monitoring

Each of the required accident monitoring instrumentation CHANNEL(s) shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations for the OPERATIONAL MODE(s) and at the frequencies shown in Table 4.2.F-1.

TABLE 3.2.F-1

ACCIDENT MONITORING INSTRUMENTATION

INSTRUMENTATION	Required CHANNEL(s)	Minimum CHANNEL(s)	Applicable OPERATIONAL MODE(s)	ACTION
1. Reactor Vessel Pressure	2	1	1, 2	60
2. Reactor Vessel Water Level	2	1	1, 2	60
3 Torus Water Level - Wide Range	2	1	1, 2	60
4. Torus Water Temperature	2	1	1, 2	60
5. Drywell Pressure - Wide Range	2	1	1, 2	60
6. Drywell Pressure - Narrow Range	2	1	1, 2	60
7. Drywell Air Temperature	2	1	1, 2	60
8. Drywell Oxygen Concentration - Analyzer and Monitor	2	1	1, 2	62
9. Drywell Hydrogen Concentration - Analyzer and Monitor	2	1	1, 2	62
10. Safety & Relief Valve Position Indicators - Acoustic & Temperature	2/valve (1 each)	1/valve	1, 2	63
11. (Source Range) Neutron Monitors	2	2	1, 2	60
12. Drywell Radiation Monitors	2	2	1, 2, 3	61
13. Torus Air Temperature	2	1	1, 2	60

TABLE 3.2.F-1 (Continued)

ACCIDENT MONITORING INSTRUMENTATION

ACTION

ACTION 60 - a. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Required CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

b. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.

ACTION 61- With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1, initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours, and:

a. Either restore the inoperable CHANNEL(s) to OPERABLE status within 7 days of the event, or

b. Prepare and submit a Special Report to the Commission pursuant to Specification 6.6.C.3 within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

ACTION 62- a. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) one less than the Required CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

b. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1; and provided the high radiation sampling system (HRSS) combustible gas monitoring capability for the drywell is OPERABLE; restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

c. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1; and the HRSS combustible gas monitoring capability for the drywell inoperable; restore at least one inoperable CHANNEL to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.

TABLE 3.2.F-1 (Continued)

ACCIDENT MONITORING INSTRUMENTATION

ACTION 63 - a. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Required CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status prior to startup from a COLD SHUTDOWN of longer than 72 hours.

b. With the number of OPERABLE accident monitoring instrumentation CHANNEL(s) less than the Minimum CHANNEL(s) shown in Table 3.2.F-1, restore the inoperable CHANNEL(s) to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

TABLE 4.2.F-1

ACCIDENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

INSTRUMENTATION	CHANNEL CHECK	CHANNEL CALIBRATION	Applicable OPERATIONAL MODE(s)
1. Reactor Vessel Pressure	M	E	1, 2
2. Reactor Vessel Water Level	M	E	1, 2
3 Torus Water Level - Wide Range	M	E	1, 2
4. Torus Water Temperature	M	E	1, 2
5. Drywell Pressure - Wide Range	M	E	1, 2
6. Drywell Pressure - Narrow Range	M	E	1, 2
7. Drywell Air Temperature	M	E	1, 2
8. Drywell Oxygen Concentration - Analyzer and Monitor	M	E	1, 2
9. Drywell Hydrogen Concentration - Analyzer and Monitor	M	Q[a]	1, 2
10. Safety & Relief Valve Position Indicators - Acoustic & Temperature	M	E	1, 2
11. (Source Range) Neutron Monitors	M	E[c]	1, 2
12. Drywell Radiation Monitors	M	E[b]	1, 2, 3
13. Torus Air Temperature	M	E	1, 2

TABLE 4.2.F-1 (Continued)

ACCIDENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

TABLE NOTATION

(a) Using sample gas containing:
   a. One volume percent hydrogen, balance nitrogen.
   b. Four volume percent hydrogen, balance nitrogen.

(b) CHANNEL CALIBRATION shall consist of an electronic calibration of the CHANNEL, not including the detector, for range decades above 10 R/hr and a one point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

(c) Neutron detectors may be excluded from the CHANNEL CALIBRATION.

3.2 - LIMITING CONDITIONS FOR OPERATION

G. Source Range Monitoring

At least the following source range monitor (SRM) channels shall be OPERABLE:

a. In OPERATIONAL MODE 2[a], three.

b. In OPERATIONAL MODE 3 and 4, two.

APPLICABILITY:

OPERATIONAL MODE(s) 2[a], 3, and 4.

ACTION:

1. In OPERATIONAL MODE 2[a] with one of the above required source range monitor CHANNEL(s) inoperable, at least 3 source range monitor CHANNEL(s) shall be restored to OPERABLE status within 4 hours or the reactor shall be in at least HOT SHUTDOWN within the next 12 hours.

2. In OPERATIONAL MODE(s) 3 or 4 with one or more of the above required source range monitor CHANNEL(s) inoperable, verify all insertable control rods to be fully inserted in the core and lock the reactor mode switch in the Shutdown position within one hour.

4.2 - SURVEILLANCE REQUIREMENTS

G. Source Range Monitoring

Each of the required source range monitor CHANNEL(s) shall be demonstrated OPERABLE by:

1. Verifying, prior to withdrawal of the control rods, that the SRM count rate is≥3 cps[b] with the detector fully inserted.

2. Performance of a CHANNEL CHECK at least once per:

   a. 12 hours in OPERATIONAL MODE 2[a], and

   b. 24 hours in OPERATIONAL MODE(s) 3 or 4.

3. Performance of a CHANNEL FUNCTIONAL TEST:

   a. Within 7 days prior to startup, and

   b. At least once per 31 days[c].

4. Performance of a CHANNEL CALIBRATION[d] at least once per 18 months[c].

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a With IRM's on range 2 or below.

b LEFT INTENTIONALLY BLANK

c The provisions of Specification 4.0.D are not applicable for entry into the applicable OPERATIONAL MODE(s) from OPERATIONAL MODE 1, provided the surveillance is performed within 12 hours after such entry.

d Neutron detectors may be excluded from the CHANNEL CALIBRATION.

3.2 - LIMITING CONDITIONS FOR OPERATION

H. Explosive Gas Monitoring

The explosive gas monitoring instrumentation CHANNEL(s) shown in Table 3.2.H-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.8.H are not exceeded.

APPLICABILITY:

During offgas holdup system operation.

ACTION:

1. With an explosive gas monitoring instrumentation CHANNEL alarm/trip setpoint less conservative than required by the above specification, declare the CHANNEL inoperable and take the ACTION shown in Table 3.2.H-1.
2. With less than the minimum number of explosive gas monitoring instrumentation CHANNEL(s) OPERABLE, take the ACTION shown in Table 3.2.H-1. Restore the inoperable instrumentation to OPERABLE status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commision pursuant to Specification 6.6.C.3 to explain why this inoperability was not corrected in a timely manner.
3. The provisions of Specification 3.0.C are not applicable.

4.2 - SURVEILLANCE REQUIREMENTS

H. Explosive Gas Monitoring

Each explosive gas monitoring 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 4.2.H-1.

TABLE 3.2.H-1

EXPLOSIVE GAS MONITORING INSTRUMENTATION

Functional Unit	Minimum CHANNEL(s) OPERABLE	ACTION
MAIN CONDENSER OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MONITORING SYSTEM		
Hydrogen Monitor	1	70

ACTION

ACTION 70 - With the number of OPERABLE CHANNEL(s) less than required by the Minimum CHANNEL(s) OPERABLE requirement, operation of the main condenser offgas treatment system may continue provided grab samples are collected at least once per 4 hours and analyzed within the following 4 hours. If the recombiner(s) temperature remains constant and THERMAL POWER has not changed, the grab sample collection frequency may be changed to 8 hours.

TABLE 4.2.H-1

EXPLOSIVE GAS MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
MAIN CONDENSER OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MONITORING SYSTEM			
Hydrogen Monitor	D	M	Q[a]

a The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:
1. One volume percent hydrogen, balance nitrogen, and
2. Four volume percent hydrogen, balance nitrogen.

3.2 - LIMITING CONDITIONS FOR OPERATION

I. Suppression Chamber and Drywell Spray Actuation

The Suppression Chamber and Drywell Spray Actuation instumentation CHANNEL(s) shown in Table 3.2.I-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.2.I-1.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2 & 3.

ACTION:

With a Suppression Chamber and Drywell Spray Actuation instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.I-1, declare the CHANNEL inoperable and take the ACTION shown in Table 3.2.I-1.

4.2 - SURVEILLANCE REQUIREMENTS

I. Suppression Chamber and Drywell Spray Actuation

1. Each Suppression Chamber and Drywell Spray 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 4.2.I-1.

2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

TABLE 3.2.I-1

SUPPRESSION CHAMBER AND DRYWELL SPRAY ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[a]	Minimum CHANNEL(s) per TRIP SYSTEM	ACTION
1. Drywell Pressure - (Permissive)	0.5≤ ρ ≤1.5 psig	2	80
2. Reactor Vessel Water Level - Low (Permissive)	≥ -48 inches	1	80

ACTION

ACTION 80 - a. With the number of OPERABLE CHANNEL(s) less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for one TRIP SYSTEM, place at least one inoperable CHANNEL in the tripped condition[b] within one hour or declare the Suppression Chamber and Drywell Spray Actuation mode of the Residual Heat Removal system inoperable.

b. With the number of OPERABLE CHANNEL(s) less than required by the Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM requirement for both TRIP SYSTEM(s), declare the Suppression Chamber and Drywell Spray Actuation mode of the Residual Heat Removal system inoperable.

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a Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

b If an instrument is inoperable, it shall be placed (or simulated) in a tripped condition so that it will not prevent a containment spray.

TABLE 4.2.I-1

SUPPRESSION CHAMBER AND DRYWELL SPRAY ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
1. Drywell Pressure - (Permissive)	NA	M	Q
2. Reactor Vessel Water Level - Low (Permissive)	D	M	E[a]

a Trip units are calibrated at least once per 31 days and transmitters are calibrated at the frequency indicated in the table.

3.2 - LIMITING CONDITIONS FOR OPERATION

J. Feedwater Pump Trip

The feedwater pump trip instrumentation CHANNEL(s) shown in Table 3.2.J-1 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.2.J-1.

APPLICABILITY:

OPERATIONAL MODE 1.

ACTION:

With a feedwater pump trip instrumentation CHANNEL trip setpoint less conservative than the value shown in the Trip Setpoint column of Table 3.2.J-1, declare the CHANNEL inoperable and take the ACTION shown in Table 3.2.J-1

4.2 - SURVEILLANCE REQUIREMENTS

J. Feedwater Pump Trip

1. Each feedwater pump trip 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 4.2.J-1.

2. LOGIC SYSTEM FUNCTIONAL TEST(s) and simulated automatic operation of all CHANNEL(s) shall be performed at least once per 18 months.

TABLE 3.2.J-1

FEEDWATER PUMP TRIP INSTRUMENTATION

Functional Unit	Trip Setpoint[a]	Minimum CHANNEL(s)	ACTION
Reactor Vessel Water Level -High	≤201 inches	2	90

ACTION

ACTION 90 - a. With the number of OPERABLE CHANNEL(s) one less than required by the Minimum CHANNEL(s) requirement, restore the inoperable CHANNEL to OPERABLE status within 7 days or place the inoperable CHANNEL in the tripped condition within the next 8 hours.

b. With the number of OPERABLE CHANNEL(s) two less than required by the Minimum CHANNEL(s) requirement, restore at least one of the inoperable CHANNEL(s) to OPERABLE status within 72 hours or be in at least STARTUP within the next 8 hours.

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a Reactor vessel water level settings are expressed in inches above the top of active fuel (which is 360 inches above vessel zero).

TABLE 4.2.J-1

FEEDWATER PUMP TRIP INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
Reactor Vessel Water Level - High	D	E	E

3.2 - LIMITING CONDITIONS FOR OPERATION

K. Toxic Gas Monitoring

The toxic gas monitoring system shall be OPERABLE with the alarm/trip setpoints adjusted to actuate at an ammonia concentration of less than or equal to 50 ppm.

APPLICABILITY:

All OPERATIONAL MODE(s).

ACTION:

1. With the toxic gas monitoring system inoperable, within one hour initiate and maintain operation of the control room ventilation system in the isolation mode of operation.

4.2 - SURVEILLANCE REQUIREMENTS

K. Toxic Gas Monitioring

The toxic gas monitoring system shall be demonstrated OPERABLE by performance of a:

1. CHANNEL CHECK at least once per 12 hours,
2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
3. CHANNEL CALIBRATION at least once per 18 months.

3/4.2 INSTRUMENTATION

In addition to reactor protection instrumentation which initiates a reactor scram (Sections 2.2 and 3/4.1), protective instrumentation has been provided which initiates action to mitigate the consequences of accidents which are beyond the operator's ability to control, or which terminates operator errors before they result in serious consequences. The objectives of these specifications are to assure the effectiveness of the protective instrumentation when required and to prescribe the trip settings required to assure adequate performance. As indicated, one CHANNEL may be required to be made inoperable for brief intervals to conduct required surveillance. Some of the settings have tolerances explicitly stated where the high and low values are both critical and may have a substantial effect on safety. It should be noted that the setpoints of other instrumentation, where only the high or low end of the setting has a direct bearing on safety, are chosen at a level away from the normal operating range to prevent inadvertent actuation of the safety system involved and exposure to abnormal situations. Surveillance requirements for the instrumentation are selected in order to demonstrate proper function and OPERABILITY. Additional instrumentation for REFUELING operations is identified in Sections 3/4.10.B.

3/4.2.A Isolation Actuation Instrumentation

The isolation actuation instrumentation automatically initiates closure of appropriate isolation valves and/or dampers, which are necessary to prevent or limit the release of fission products from the reactor coolant system, the primary containment and the secondary containment in the event of a loss-of-coolant accident or other reactor coolant pressure boundary (RCPB) leak. The parameters which result in isolation of the secondary containment also actuate the standby gas treatment system. The isolation instrumentation includes the sensors, relays, and switches that are necessary to cause initiation of primary and secondary containment and RCPB system isolation. Functional diversity is provided by monitoring a wide range of dependent and independent parameters. Redundant sensor input signals for each parameter are provided for initiation of isolation (one exception is standby liquid control system initiation).

The reactor low level instrumentation is set to trip at greater than or equal to 144 inches above the top of active fuel (which is defined to be 360 inches above vessel zero). This trip initiates closure of Group 2 and 3 primary containment isolation valves but does not trip the recirculation pumps. For this trip setting and a 60-second valve closure time, the valves will be closed before perforation of the cladding occurs, even for the maximum break.

3/4.2.B Emergency Core Cooling System Actuation Instrumentation

The emergency core cooling system (ECCS) instrumentation generates signals to automatically actuate those safety systems which provide adequate core cooling in the event of a design basis transient or accident. The instrumentation which actuates the ECCS is generally arranged in a one-out-of-two taken twice logic circuit. The logic circuit is composed of four CHANNEL(s) and each CHANNEL contains the logic from the functional unit sensor up to and including all relays

which actuate upon a signal from that sensor. For core spray and low pressure coolant injection, the divisionally powered actuation logic is duplicated and the redundant components are powered from the other division's power supply. The single-failure criterion is met through provisions for redundant core cooling functions, e.g., sprays and automatic blowdown and high pressure coolant injection. Although the instruments are listed by system, in some cases the same instrument is used to send the actuation signal to more than one system at the same time.

For effective emergency core cooling during small pipe breaks, the high pressure coolant injection (HPCI) system must function since reactor pressure does not decrease rapidly enough to allow either core spray or the low pressure coolant injection (LPCI) system to operate in time. The automatic pressure relief function is provided as a backup to HPCI, in the event HPCI does not operate. The arrangement of the tripping contacts is such as to provide this function when necessary and minimize spurious operation. The trip settings given in the specification are adequate to assure the above criteria are met. The specification preserves the effectiveness of the system during periods of maintenance, testing or calibration and also minimizes the risk of inadvertent operation, i.e., only one instrument CHANNEL out-of-service.

3/4.2.C ATWS - RPT Instrumentation

The anticipated transient without scram (ATWS) recirculation pump trip (RPT) provides a means of limiting the consequences of the unlikely occurrence of a failure to scram concurrent with the associated anticipated transient. The response of this plant to this postulated event falls within the bounds of study events in General Electric Company Topical Report NEDO-10349, dated March 1971 and NEDO24222, dated December 1979. Tripping the recirculation pumps adds negative reactivity by increasing steam voiding in the core area as core flow decreases.

3/4.2.D Reactor Core Isolation Cooling Actuation Instrumentation

The reactor core isolation cooling system actuation instrumentation is provided to initiate actions to assure adequate core cooling in the event of reactor isolation from its primary heat sink and the loss of feedwater flow to the reactor vessel without providing actuation of any of the emergency core cooling equipment.

3/4.2.E Control Rod Block Actuation Instrumentation

The control rod block functions are provided to prevent excessive control rod withdrawal so that the MINIMUM CRITICAL POWER RATIO (MCPR) does not go below the MCPR fuel cladding integrity Safety Limit. During shutdown conditions, control rod block instrumentation initiates withdrawal blocks to ensure that all control rods remain inserted to prevent inadvertent criticality.

The trip logic for this function is one-out-of-n; e.g., any trip on one of the six average power range monitors (APRMs), eight intermediate range monitors (IRMs), or four source range monitors

(SRMs), will result in a rod block. The minimum instrument CHANNEL requirements assure sufficient instrumentation to assure that the single failure criterion is met. The minimum instrument CHANNEL requirements for the rod block monitor may be reduced by one for a short period of time to allow for maintenance, testing, or calibration.

The APRM rod block function is flow-biased and prevents a significant reduction in MCPR, especially during operation at reduced flow. The APRM provides gross core protection, i.e., limits the gross withdrawal of control rods in the normal withdrawal sequence.

In the REFUEL MODE during SHUTDOWN MARGIN demonstrations and the STARTUP/HOT STANDBY OPERATIONAL MODE, the APRM rod block function setpoint is significantly reduced to provide the same type of protection in the REFUEL and STARTUP/HOT STANDBY OPERATIONAL MODE(s) as the APRM flow-biased rod block does in the RUN OPERATIONAL MODE, i.e., prevents control rod withdrawal before a scram is reached.

The rod block monitor (RBM) function provides local protection of the core, i.e., the prevention of transition boiling in a local region of the core for a single rod withdrawal error. The trip setting is flow-biased. At low power, the worst-case withdrawal of a single control rod without rod block action will not violate the fuel cladding integrity Safety Limit. Thus the RBM rod block function is not required below the specified power level. The worst-case single control rod withdrawal error is analyzed for each reload to assure that, with the specific trip settings, rod withdrawal is blocked before the MCPR reaches the fuel cladding integrity Safety Limit. RBM "inoperative" actuates on several inputs including: (1) nulling, (2) failure to null, (3) $<50\%$ assigned inputs, (4) card pulled, (5) no rod selected, (6) >1 rod selected and (7) switch not in operate.

The IRM rod block function provides local as well as gross core protection. The scaling arrangement is such that the trip setting is less than a factor of ten above the indicated level. Analysis of the worst-case accident results in rod block action before MCPR approaches the MCPR fuel cladding integrity Safety Limit.

A downscale indication on an APRM is an indication that the instrument has failed or is not sensitive enough. In either case, the instrument will not respond to changes in control rod motion, and the control rod motion is thus prevented.

The SRM rod blocks of low count rate and the detector not fully inserted assure that the SRMs are not withdrawn from the core prior to commencing rod withdrawal for startup. The scram discharge volume, high water level rod block provides annunciation for operator action. The alarm setpoint has been selected to provide adequate time to allow for the determination of the cause for the level increase and corrective action prior to automatic scram initiation.

3/4.2.F Accident Monitoring Instrumentation

Instrumentation is provided to monitor sufficient accident conditions to adequately assess important variables and provide operators with necessary information to complete the appropriate

mitigation actions. OPERABILITY of the instrumentation listed provides adequate monitoring of the containment following a loss-of-coolant accident. Information from this instrumentation will provide the operator with a detailed knowledge of the conditions resulting from the accident; based on this information, the operator can make logical decisions regarding post accident recovery. Allowable outage times are based on diverse instrumentation availability for guiding the operator should an accident occur, and on the low probability of an instrument being out-of-service concurrent with an accident. This instrumentation is identified in response to Generic Letter 82-33 and the associated NRC Safety Evaluation Report, and some instrumentation is included in accordance with the response to Generic Letter 83-36.

3/4.2.G Source Range Monitoring Instrumentation

The source range monitors (SRM) provide the operator with the status of the neutron flux in the core at very low power levels during startup and shutdown. The consequences of reactivity accidents are functions of the initial neutron flux. Therefore, the requirements for a minimum count rate assures that any transient, should it occur, begins at or above the initial value used in the analyses of transients from cold conditions. Two OPERABLE SRM CHANNEL(s) are adequate to monitor the approach to criticality using homogeneous patterns of scattered control rod withdrawal. Three OPERABLE SRMs provide an added conservatism. When the intermediate range monitors are on scale, adequate information is available without the SRMs and they can be retracted.

3/4.2.H Explosive Gas Monitoring Instrumentation

Instrumentation is provided to monitor the concentrations of potentially explosive mixtures in the off-gas holdup system to prevent a possible uncontrolled release via this pathway. This instrumentation is included in accordance with Generic Letter 89-01.

3/4.2.I Suppression Chamber and Drywell Spray Actuation Instrumentation

Instrumentation is provided to monitor the parameters which are necessary to permit initiation of the containment cooling mode of the residual heat removal system to condense steam in the containment atmosphere. The spray mode does not significantly affect the rise of drywell pressure following a loss of coolant accident, but does result in quicker depressurization following completion of the blowdown.

3/4.2.J Feedwater Trip System Actuation

The feedwater trip system actuation instrumentation is designed to detect a potential failure of the feedwater control system which causes excessive feedwater flow. If undetected, this would lead to reactor vessel water carryover into the main steam lines and to the main turbine. This instrumentation is included in response to Generic Letter 89-19.

3/4.2.K Toxic Gas Monitoring

Toxic gas monitoring instrumentation is provided in or near the control room ventilation system intakes to allow prompt detection and the necessary protective actions to be initiated. Isolation from high toxic chemical concentration has been added to the station design as a result of the "Control Room Habitability Study" submitted to the NRC in December 1981 in response to NUREG-0737 Item III D.3.4. As explained in Section 3 of this study, ammonia, chlorine, and sulphur dioxide detection capability has been provided. In a report generated by Sargent and Lundy in April 1991, justification was provided to delete the chlorine and sulphur dioxide detectors from the plant. The setpoints chosen for the control room ventilation isolation are based on early detection in the outside air supply at the odor threshold, so that the toxic chemical will not achieve toxicity limit concentrations in the Control Room.