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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 142
License No. DPR-19

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

   A. The application for amendment by the 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.

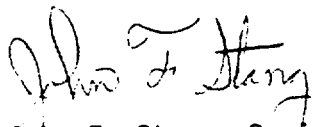
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-19 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 142 , 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



John F. Stang, Senior 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

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 136
License No. DPR-25

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

   A. The application for amendment by the 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-25 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 136 , 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

John F. Stang, Senior 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. 142 AND 136

FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25

DOCKET NOS. 50-237 AND 50-249

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 2 REMOVE	UNIT 3 REMOVE	INSERT
3/4.2-1	3/4.2-1	3/4.2-1
3/4.2-2	3/4.2-2	3/4.2-2
3/4.2-3	3/4.2-3	3/4.2-3
3/4.2-4	3/4.2-4	3/4.2-4
3/4.2-5	3/4.2-5	3/4.2-2
3/4.2-6	3/4.2-6	3/4.2-3
3/4.2-7	3/4.2-7	3/4.2-4
3/4.2-7a	3/4.2-7a	3/4.2-5
3/4.2-8	3/4.2-8	3/4.2-6
3/4.2-9	3/4.2-9	3/4.2-7
3/4.2-10	3/4.2-10	3/4.2-8
3/4.2-11	3/4.2-11	3/4.2-9
3/4.2-12	3/4.2-12	3/4.2-10
3/4.2-13	3/4.2-13	3/4.2-11
3/4.2-14	3/4.2-14	3/4.2-12
3/4.2-15	3/4.2-15	3/4.2-13
3/4.2-16	3/4.2-16	3/4.2-14
3/4.2-17	3/4.2-17	3/4.2-15
3/4.2-18	3/4.2-18	3/4.2-16
3/4.2-18a	3/4.2-18a	3/4.2-17
3/4.2-19	3/4.2-19	3/4.2-18
3/4.2-20	3/4.2-20	3/4.2-19
3/4.2-21	3/4.2-21	3/4.2-20
3/4.2-22	3/4.2-22	3/4.2-21
3/4.2-23	3/4.2-23	3/4.2-22
3/4.2-24	3/4.2-24	3/4.2-23
3/4.2-25	3/4.2-25	3/4.2-24
3/4.2-26	3/4.2-26	3/4.2-25
3/4.2-27	3/4.2-27	3/4.2-26
3/4.2-27a	3/4.2-27a	3/4.2-27
---	---	3/4.2-28
---	---	3/4.2-29
---	---	3/4.2-30
---	---	3/4.2-31
---	---	3/4.2-32
---	---	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
---	---	3/4.2-45
---	---	3/4.2-46
---	---	3/4.2-47
---	---	3/4.2-48
---	---	3/4.2-49
---	---	3/4.2-50
---	---	3/4.2-51
---	---	3/4.2-52
B 3/4.2-28	B 3/4.2-28	B 3/4.2-1
B 3/4.2-29	B 3/4.2-29	B 3/4.2-2
B 3/4.2-30	B 3/4.2-30	B 3/4.2-3
B 3/4.2-31	B 3/4.2-31	B 3/4.2-4
B 3/4.2-32	B 3/4.2-32	B 3/4.2-5
B 3/4.2-33	B 3/4.2-33	---
B 3/4.2-33a	B 3/4.2-33a	---
B 3/4.2-34	B 3/4.2-34	---
B 3/4.2-35	B 3/4.2-35	---
B 3/4.2-36	B 3/4.2-36	---
B 3/4.2-37	B 3/4.2-37	---
B 3/4.2-38	B 3/4.2-38	---

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[i]	Minimum CHANNEL(s) per TRIP SYSTEM[a]	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 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]	≥144 inches	2	1, 2, 3 & *	24
b. Drywell Pressure - High[c,d]	≤2 psig	2	1, 2, 3	24
c. Reactor Building Ventilation Exhaust Radiation - High[c]	≤4 mR/hr	2	1, 2, 3 & * *	24
d. Refueling Floor Radiation - High[c]	≤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]	≤3[g] x normal background	2	1, 2, 3	21
c. MSL Pressure - Low	≥825 psig	2	1	22
d. MSL Flow - High	≤120% 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[(l)]	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. ISOLATION CONDENSER ISOLATION				
a. Steam Flow - High	≤300% of rated steam flow	1	1, 2, 3	23
b. Return Flow - High	≤32 (Unit 2)/ ≤14.8 (Unit 3) inches water diff.	1	1, 2, 3	23
6. HIGH PRESSURE COOLANT INJECTION ISOLATION				
a. Steam Flow - High	≤300% of rated steam flow [(h)]	1	1, 2, 3	23
b. Reactor Vessel Pressure - Low	≥80 psig	2	1, 2, 3	23
c. Area Temperature - High	≤200°F	8	1, 2, 3	23

TABLE 3.2.A-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint[1]	Minimum CHANNEL(s) per TRIP SYSTEM[a]	Applicable OPERATIONAL MODE(s)	ACTION
7. SHUTDOWN COOLING ISOLATION				
a. Reactor Vessel Water Level - Low	≥144 inches	2	3, 4, 5	23
b. Recirculation Line Water Temperature - High (Cut-in Permissive)	≤350°F	2[e]	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 mechanical 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) Normal background is as measured during full power operation without hydrogen being injected. With Unit 2 operating above 20% RATED THERMAL POWER and hydrogen being injected into the feedwater, this Unit 2 setting may be as measured during full power operation with hydrogen being injected.

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

(i) 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.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]	S	M	E[a]	1, 2, 3 & *
b. Drywell Pressure - High[b,c]	NA	M	Q	1, 2, 3
c. Reactor Building Ventilation Exhaust Radiation - High[c]	S	M	E	1, 2, 3 & * *
d. Refueling Floor Radiation - High[c]	S	M	#	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	E	1, 2, 3
c. MSL Pressure - Low	NA	M	Q	1
d. MSL Flow - High	S	M	#	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. ISOLATION CONDENSER				
a. Steam Flow - High	NA	M	Q	1, 2, 3
b. Condensate Flow - High	NA	M	Q	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. SHUTDOWN COOLING ISOLATION				
a. Reactor Vessel Water Level - Low	S	M	E[a]	3, 4, 5
b. Recirculation Line Water Temperature - 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.

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 IC 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[b][f]	≤2 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)	≥750 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 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)	≥1000 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[a]	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 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]	≤15' 5" above bottom of chamber	2	1, 2, 3	35
e. Reactor Vessel Water Level - High (Trip)	≤194 inches	1	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 psig	2	1, 2, 3	30
c. Initiation Timer	≤120 sec	1	1, 2, 3	31
d. Low Low Level Timer	≤8.5 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 psig	2	1, 2, 3	30
c. Initiation Timer	≤120 sec	1	1, 2, 3	31
d. Low Low Level Timer	≤8.5 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
6. LOSS OF POWER				
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	2930 ± 146 volts decreasing voltage	2/bus	1, 2, 3, 4[e], 5[e]	36
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	≥ 3784 volts (Unit 2)[g][j] ≥ 3832 volts (Unit 3)[g][j]	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	Q	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	Q	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	Q	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 its 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[a] condition 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 inoperable.	
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 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. Isolation Condenser Actuation

The isolation condenser 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 an isolation condenser 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 isolation condenser system actuation instrumentation CHANNEL(s) inoperable, take the ACTION required by Table 3.2.D-1.

4.2 - SURVEILLANCE REQUIREMENTS

D. Isolation Condenser Actuation

1. Each isolation condenser 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

ISOLATION CONDENSER ACTUATION INSTRUMENTATION

Functional Unit	Trip Setpoint	Minimum CHANNEL(s) per TRIP SYSTEM[a]	ACTION
Reactor Vessel Pressure - High	≤1070 psig for ≤15 seconds	2	40

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 isolation condenser system inoperable.

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

---

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.

TABLE 4.2.D-1

ISOLATION CONDENSER ACTUATION INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Functional Unit	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION
Reactor Vessel Pressure - High	NA	M	#

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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[e]				
a. Upscale	As specified in the COLR	2	1[f]	50
b. Inoperative	NA	2	1[f]	50
c. Downscale	≥5/125 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[e]	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]	≥5/125 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[g]	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 control 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 drive 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 $x10^6$ lbs/hr.

(i) Shall 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[a]	Applicable OPERATIONAL MODE(s)
1. ROD BLOCK MONITORS				
a. Upscale	NA	S/U[b,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	#	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	#	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[e]	Applicable OPERATIONAL MODE(s)
4. INTERMEDIATE RANGE MONITORS				
a. Detector not full in[l]	NA	S/U[b], W	#	2[l], 5
b. Upscale	NA	S/U[b], W	#	2[l], 5
c. Inoperative	NA	S/U[b], W	NA	2[l], 5
d. Downscale[l]	NA	S/U[b], W	#	2[l], 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 control 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

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	#	1, 2
2. Reactor Vessel Water Level	M	#	1, 2
3 Torus Water Level	M	#	1, 2
4. Torus Water Temperature	M	#	1, 2
5. Drywell Pressure - Wide Range	M	#	1, 2
6. Drywell Pressure - Narrow Range	M	#	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	#	1, 2
11. (Source Range) Neutron Monitors	M	#	1, 2
12. Drywell Radiation Monitors	M	E[b]	1, 2, 3

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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].

---

a With IRM's on range 2 or below.

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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 Mixture Monitoring

The explosive monitoring nstrumentation 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 Commission 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 Mixture 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)	ACTION
MAIN CONDENSER OFFGAS TREATMENT SYSTEM EXPLOSIVE GAS MONITORING SYSTEM		
1. 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 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 instrumentation 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 and 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 - High (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 sprays 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 sprays inoperable.

---

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 - High	NA	M	Q
2. Reactor Vessel Water Level -Low	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 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.

---

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

3/4.2 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). Retrofit 8x8 fuel has an active fuel length 1.24 inches longer than earlier fuel designs. However, present trip setpoints were used in the loss-of-coolant accident (LOCA) analysis for Dresden Units 2 & 3. 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.

BASES

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 the 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 the 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 the plant to this postulated event falls within the bounds of events studied in General Electric Company Topical Report NEDO-10349, dated March 1971 and NEDO24222, dated December 1979. Tripping the recirculation pumps adds negative reactivity from the increase in steam voiding in the core area as core flow decreases.

3/4.2.D Isolation Condenser Actuation Instrumentation

The isolation condenser 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 of 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 and STARTUP/HOT STANDBY OPERATIONAL MODE(s), 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. An 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 sufficiently sensitive. 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, and high water level rod block provide 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 the operators with the 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 (waste) 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 suppression chamber and drywell spray mode of the low pressure coolant injection/ containment cooling 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 that caused 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.

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
---	---	3/4.2-45
---	---	3/4.2-46
---	---	3/4.2-47
---	---	3/4.2-48
---	---	3/4.2-49
---	---	3/4.2-50
---	---	3/4.2-51
---	---	3/4.2-52
---	---	3/4.2-53
---	---	3/4.2-54
---	---	B 3/4.2-1
---	---	B 3/4.2-2
---	---	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[a]	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[f]	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[a]	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

Functional Unit	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][j] ≥3833 volts (Unit 2)[g][j]	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[g]	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[a]	Applicable OPERATIONAL MODE(s)
1. ROD BLOCK MONITORS				
a. Upscale	NA	S/U[b,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[i], 5
b. Upscale	NA	S/U[b], W	#	2[i], 5
c. Inoperative	NA	S/U[b], W	NA	2[i], 5
d. Downscale[i]	NA	S/U[b], W	#	2[i], 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].

---

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.

---

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.

---

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.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE NO. DPR-19,

AMENDMENT NO. 136 TO FACILITY OPERATING LICENSE NO. DPR-25,

AMENDMENT NO. 164 TO FACILITY OPERATING LICENSE NO. DPR-29,

AND AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-30

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

1.0 INTRODUCTION

By letter dated August 30, 1994, as supplemented by letter dated August 4, 1995, Commonwealth Edison Company (ComEd, the licensee) submitted an amendment requesting to upgrade sections of the Dresden Nuclear Power Station, Units 2 and 3, and the Quad Cities Nuclear Power Station, Units 1 and 2, Technical Specifications (TS). The changes have been requested as part of its Technical Specification Upgrade Program (TSUP).

As a result of findings by a Diagnostic Evaluation Team inspection performed by the NRC staff at the Dresden Nuclear Power Station in 1987, ComEd made a decision that both the Dresden Nuclear Power Station and sister site Quad Cities Nuclear Power Station, needed attention focused on the existing custom TS used at the sites.

The licensee made the decision to initiate a TSUP for both Dresden and Quad Cities. The licensee evaluated the current TS for both stations against the Standard Technical Specifications (STS), contained in NUREG-0123, "Standard Technical Specifications General Electric Plants BWR/4, Revision 4." Both Dresden and Quad Cities are BWR-3 designs and are nearly identical plants. The licensee's evaluation identified numerous potential improvements such as clarifying requirements, changing the TS to make them more understandable and to eliminate the need for interpretation, and deleting requirements that are no longer considered current with industry practice. As a result of the evaluation, ComEd elected to upgrade both the Dresden and Quad Cities TS to the STS contained in NUREG-0123.

The TSUP for Dresden and Quad Cities is not a complete adoption of the STS. The TSUP focuses on (1) integrating additional information such as equipment operability requirements during shutdown conditions, (2) clarifying requirements such as limiting conditions for operations (LCO) and action statements utilizing STS terminology, (3) deleting superseded requirements and modifications to the TS based on the licensee's responses to generic letters (GLs), and (4) relocating specific items to more appropriate TS locations or to licensee controlled documents.

The application dated August 30, 1994, as supplemented August 4, 1995, proposed to upgrade only those sections of the TS to be included in TSUP Section 3/4.2 (Instrumentation) of the Dresden and Quad Cities TS.

The staff reviewed the proposed changes and evaluated all deviations and changes between the proposed TS, the STS, and the current TS. In no case did the licensee propose a change in the TS that would result in the relaxation of the current design requirements as stated in the Updated Final Safety Analysis Reports (UFSAR) for Dresden or Quad Cities.

The licensee submitted identical TS for Quad Cities and Dresden except for plant-specific equipment and design differences. Technical differences between the units are identified as appropriate in the proposed amendment.

2.0 EVALUATION

Review Guidelines - The licensee's purpose for the TSUP was to reformat the existing Dresden and Quad Cities TS into the easier to use STS format. Plant-specific data, values, parameters, and equipment-specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the TSUP.

The STS contained in NUREG-0123 were developed by the NRC and industry because of the shortcomings associated with the custom TS which were issued to plants licensed in early 1970s (i.e., Dresden (1971) and Quad Cities (1972)). The STS developed by the NRC and industry provided an adequate level of protection for plant operation by assuring required systems are operable and have been proven to be able to perform their intended functions. The LCOs, the allowed out-of-service times, and the required surveillance frequencies were developed based on industry operating experience, equipment performance, and probabilistic risk assessment analysis during the 1970s. The STS were used as the licensing basis for plants licensed starting in the late 1970s.

For the most part, ComEd's adoption of the STS resulted in more restrictive LCOs and surveillance requirements (SR). In some cases, however, the STS provides relief from the Dresden and Quad Cities current TS requirements. In all these cases, the adoption of the STS requirements for LCOs or SR does not change the current design requirements of either plant as described in each plant's UFSAR. In addition, the success criteria for the availability and operability of all required systems contained in the current TS are maintained by the adoption of the STS requirements in the proposed TSUP TS.

In addition to adopting the STS guidelines and requirements in the TSUP, ComEd has also evaluated GLs concerning line-item improvements for TS. These GLs were factored into the TSUP to make the proposed TS reflect industry lessons learned in the 1980s and early 1990s.

Deviations between the proposed specifications, the STS, and the current TS were reviewed by the staff to determine if they were due to plant-specific features or if they posed a technical deviation from the STS guidelines. Plant-specific data, values, parameters, and equipment specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the upgraded TS.

Administrative Changes - Non-technical, administrative changes were intended to incorporate human factor principles into the form and structure of the STS so that they would be easier for plant operation's personnel to use. These changes are editorial in nature or involve the reorganization or reformatting of requirements without affecting technical content of the current TS or operational requirements. Every section of the proposed TS reflects this type of change.

More Restrictive Requirements - The proposed TSUP TS include certain more restrictive requirements than are contained in the existing TS. Examples of more restrictive requirements include the following: placing an LCO on plant equipment which is not required by the present TS to be operable; adding more restrictive requirements to restore inoperable equipment; and adding more restrictive SR.

Less Restrictive Requirements - The licensee provided a justification for less restrictive requirements on a case-by-case basis as discussed in this safety evaluation (SE). When requirements have been shown to provide little or no safety benefit, their removal from the TS may be appropriate. In most cases, these relaxations had previously been granted to individual plants on a plant-specific basis as the result of (a) generic NRC actions, and (b) new NRC staff positions that have evolved from technological advancements and operating experience.

The Dresden and Quad Cities plant designs were reviewed to determine if the specific design basis was consistent with the STS contained in NUREG-0123. All changes to the current TS and deviations between the licensee's proposed TS and the STS were reviewed by the staff for acceptability to determine if adequate justification was provided (i.e., plant-specific features, retention of existing operating values, etc.).

Deviations the staff finds acceptable include: (1) adding clarifying statements, (2) incorporating changes based on GLs, (3) reformatting multiple steps included under STS action statements into single steps with unique identifiers, (4) retaining plant-specific steps, parameters, or values, (5) moving action statements within a TS, (6) moving action statements from an existing TS to form a new TS section, and (7) omitting the inclusion of STS steps that are not in existing TS.

Relocation of Technical Specifications - The proposed TS may include the relocation of some requirements from the TS to licensee-controlled documents. Section 182a of the Atomic Energy Act (the "Act") requires applicants for nuclear power plant operating licenses to state TS to be included as part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The Commission has provided guidance for the contents of TS in its "Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors" 58 FR 39132 (July 22, 1993), in which the Commission indicated that compliance with the Final Policy Statement satisfies Section 182a of the Act. In particular, the Commission indicated that certain items could be relocated from the TS to licensee-controlled documents, consistent with the standard enunciated in *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263, 273 (1979). In that case, the Atomic Safety and Licensing Appeal Board indicated that "technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

The Final Policy Statement identified four criteria to be used in determining whether a particular matter is required to be included in the TS, as follows: (1) installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (3) a structure, system, or component that is part of a primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety. As a result, existing TS requirements which fall within or satisfy any of the criteria in the Final Policy Statement must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other, licensee-controlled documents. The Commission recently amended 10 CFR 50.36 to codify and incorporate these four criteria (60 FR 36953).

The following sections provide the staff's evaluations of the specific proposed TS changes.

3.0 EVALUATION OF TSUP PROPOSED TS SECTION 3/4.2

The following sections provide the staff's evaluation of the TS changes reflected in proposed TS Section 3/4.2. Proposed TS 3/4.2 incorporates the guidelines of STS Section 3/4.3 and requirements from current TS Section 3/4.2 for both Dresden and Quad Cities. The proposed TS has been reformatted based on STS guidelines. Deviations between the proposed TS and current TS and between the proposed TS and STS are discussed below.

The STS requirements for trip setpoint have been incorporated into the applicable instrumentation system LCO tables discussed below. The proposed TS column labeled "Trip Setpoint" is equivalent to the current TS term "Trip Setting" which is equivalent to the STS term "Allowable Values." The STS values for "Trip Setpoint" have not been adopted in the proposed TS to maintain consistency with current requirements. The STS "Trip Setpoint" values are the result of channel-specific drift characteristics and represent information related to system design, purpose, and operations. These values are unnecessary as a TS requirement and are more appropriate in owner-controlled documents. This deviation from STS guidance is acceptable.

3.1 Section 3/4.2.A, Isolation Actuation

Proposed TS Section 3/4.2.A, "Isolation Actuation," incorporates the guidance of STS Section 3/4.3.2 and current TS Section 3/4.2.A and 3/4.2.D for both stations. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.1.1 LCO

Current TS Section 3/4.2.A contains the instrumentation requirements for primary containment isolation functions including instrumentation for isolation of the main steamlines (MSL), the reactor core isolation cooling system (Quad Cities only), the isolation condenser system (Dresden only), and the high pressure coolant injection system. Proposed TS Section 3/4.2.A incorporates these requirements and adds requirements for instruments which isolate secondary containment, the reactor water cleanup system, and the shutdown cooling system (residual heat removal (RHR) shutdown cooling mode at Quad Cities). In addition, the proposed TS add requirements for drywell radiation instruments to the instrumentation which isolates primary containment and adds reactor vessel pressure instruments to the instrumentation which actuates RCIC (for Quad Cities only). These changes are consistent with STS guidelines. The proposed TS are an enhancement of current TS and are therefore acceptable.

The current TS tables list each instrument which provides an isolation signal. The proposed TS arranges Tables 3.2.A-1 and 4.2.A-1 according to the system or component it isolates. This is an administrative change which provides a clearer delineation of requirements and is acceptable.

The proposed TS contain a new note (c) based on STS guidelines. The note modifies the secondary containment isolation functions by stating that these instruments initiates reactor building isolation and actuates the standby gas treatment system (SGTS). This note adds clarifying information which enhances the current TS and is acceptable.

Minimum Channel Requirement

The proposed TS contain a new note (a) based on STS guidance which allows a channel to be inoperable for up to 2 hours for required surveillance without placing the trip system in the tripped condition. The note also states that this relaxation can only be implemented if the functional unit maintains isolation capability. Because the functional unit continues to maintain isolation capability during the two hour period, the proposed note does not result in a significant decrease in safety and is acceptable.

The proposed requirement for minimum channels per trip system for the MSL flow instruments which actuate MSL isolation is 2 per line. The current Quad Cities TS specify 16 total channels (eight per trip system). Since MSL flow must be measured in each of the four MSLs and there are two channels per steam line for each trip system, the proposed TS provide a more accurate description of the requirements and do not change the current TS requirement. Therefore, the proposed TS are acceptable. The current Dresden TS require 2 channels per steamline so there is no change in the proposed TS.

The proposed requirement for minimum channels per trip system for the functional unit "MSL Tunnel Temperature - High" is 4 for Dresden and 8 for Quad Cities. The licensee has determined that the requirement proposed in the August 30, 1994, submittal does not adequately address the instrumentation logic for the trip function. The proposed TS requirement for number of operable channels should be "2 of 4 in each of 2 sets." This will be left as an open item pending resolution in the clean-up amendment.

The proposed minimum number of channels for the functional unit "HPCI Area Temperature - High" has been revised from the current Dresden requirement of four channels per trip system to the proposed requirement of eight channels per trip system. The proposed requirement accurately reflects the instrumentation logic at Dresden and is more conservative than the current TS. Therefore, this change is acceptable. The TS for Quad Cities is unchanged from the current requirement of two channels per trip system.

Setpoints

The proposed trip setpoint for the functional unit "MSL Pressure - Low" is greater than or equal to 825 psig. This is a revision of the current Dresden limit of greater than or equal to 850 psig and is equivalent to the current Quad Cities TS limit. The purpose of the low pressure isolation setpoint is to give protection against an excessive reactor depressurization which would result in rapid cooldown of the vessel and to assure that reactor power operation at pressures lower than that specified in the basis for the

thermal-hydraulic safety limit does not occur. The most limiting event, which takes credit for the MSL low pressure isolation setpoint is the pressure regulator failure transient. For this event the regulator is assumed to fail in the fully open position. Vessel pressure drops rapidly until steamline pressure falls to the low pressure isolation setpoint, which initiates closure of the MSL isolation valves (MSIV). The resulting pressurization and power increase transient is quickly terminated when the MSIVs reach 10 percent closed position causing a reactor scram. Lowering the setpoint from 850 psig to 825 psig will permit a somewhat lower pressure to be attained during the subject transient which will result in increased voiding prior to the effects of repressurization resulting from MSIV closure. The incremental increase on negative reactivity caused by the somewhat larger void content will effectively result in the pressurization phase of the transient initiating at a lower power level. Since pressurization transients are milder when initiated at lower power levels, the proposed change will lessen the decrease in Critical Power Ratio caused by a pressure regulator failure. No other potentially limiting transients or accidents take credit for this safety setting and the reduced setting provides adequate protection against violation of the lowest pressure specified in the basis for the thermal-hydraulic safety limit. Based on the above discussion, the proposed change is acceptable for Dresden. The current Quad Cities TS specify a setpoint of 825 psig, therefore, there is no change for Quad Cities.

The proposed trip setpoint for the functional unit "HPCI Reactor Vessel Pressure - Low" is a new requirement for Dresden. The proposed Dresden setpoint ($\geq$ 80 psig) deviates from the proposed and current Quad Cities setpoint ($\geq$100 psig). The proposed Dresden setpoint is consistent with the Dresden high-pressure coolant injection (HPCI) system design and is more conservative than the Quad Cities setpoint. The addition of this functional unit for Dresden is an enhancement of current TS and is acceptable.

3.1.2 Applicability

The current TS do not specify the applicable operational modes for each instrument but contain a general applicability of "when primary containment integrity is required" which is equal to MODES 1, 2, and 3 as defined in the current TS. The proposed TS specify applicability for each individual instrument. The proposed applicability is equivalent to the current requirements with the following exceptions:

Function - Primary Containment Isolation

The current Dresden TS contain a note which states that the high drywell pressure protective function may be bypassed when necessary during purging for containment inerting and deinerting. This note provided an unnecessary relaxation and has been deleted in the proposed TS. This is an enhancement of current Dresden TS and is acceptable.

Function - Secondary Containment Isolation

The current applicability for the Refueling Floor Radiation - High instrumentation is "whenever irradiated fuel or components are present in the fuel storage pool and during refueling or fuel movement operations". The proposed applicability is MODES 1, 2, 3 and when handling irradiated fuel in the secondary containment. The current TS would require applicability at all times. The current required action with one monitor inoperable, halt all fuel movement operations which could only be performed during refueling or fuel movement operations. Thus, the proposed applicability during handling of irradiated fuel in the secondary containment is consistent with the current required action and provides the additional applicability of MODES 1, 2, and 3. Therefore, the proposed applicability is acceptable.

The proposed TS add the additional requirement to the Reactor Vessel Level - Low instrumentation of applicability during core alterations or operations with a potential for draining the reactor vessel. This is more conservative than the current TS and is acceptable.

The current Quad Cities TS contain a note (5) which states that the reactor water level, drywell pressure, and MSL flow instruments also isolate the control room ventilation system. This note has been incorporated in the proposed TS as note (k) and is applied to the secondary containment isolation functions and the MSL isolation function actuated by the MSL flow instruments. There is no change in the instruments which isolate the control room ventilation system. The note provides clarifying information only which is most applicable to the secondary containment isolation function. The proposed note is acceptable.

Function - Shutdown Cooling Isolation (Dresden), RHR Shutdown Cooling Mode (Quad Cities)

These are new functions not in current TS. The proposed applicability for the instruments associated with this function deviates from STS guidelines. The STS guidelines specify applicability during MODES 1, 2, and 3 for all instruments. These requirements are inconsistent with mitigating an inadvertent drain-down event during operational MODES 1, 2, and 3. Isolation in MODES 1, 2, and 3 is provided by the Recirculation Line Water Temperature - High, Cut-in Permissive (for Dresden) and Reactor Vessel Pressure - High, Cut-in Permissive (for Quad Cities). The Reactor Vessel Water Level - Low function is designed to prevent an inadvertent drain-down event of the reactor vessel during shutdown cooling (SDC) operations and, therefore, applicability in MODES 3, 4, and 5 is more appropriate than the STS guideline of MODES 1, 2, and 3.

3.1.3 Required Actions

The proposed TS revises the current TS required ACTIONS A through D with ACTIONS 20 through 24. The proposed actions are equivalent to the current actions with the following exceptions.

The current TS specify required ACTION A for the primary containment isolation function associated with "Reactor Low Water Level" and "High Drywell Pressure" instruments. ACTION A requires the initiation of a shutdown in order to reach cold shutdown in 24 hours. The proposed action is consistent with STS guidelines and requires the plant to be in hot shutdown in 12 hours and cold shutdown in the following 24 hours. The proposed TS places the reactor in a safer condition (hot shutdown versus operating) in a more expeditious time period (12 hours versus 24 hours). In addition, the proposed TS allows for a more orderly reactor shutdown. Based on the above evaluation, the proposed action statement is acceptable.

The current TS specify ACTION A (cold shutdown in 24 hours) for the primary containment isolation function associated with the Reactor Low Low Water Level instrumentation. The proposed TS associates this instrument with the MSL isolation function. The required action has been revised to provide explicit requirements for the MSL isolation function. The proposed action requires that the reactor be in startup with the associated isolation valves closed in 8 hours, or be in hot shutdown in 12 hours and cold shutdown in the following 24 hours. The proposed action provides operational flexibility to the current MSL isolation requirements while providing an equivalent margin of safety. The two-part proposed action allows for the reduction of power to the point that the MSIVs can be closed, thus eliminating the applicability of the instrument with respect to MSL isolation.

The current TS specify ACTION B (hot standby (MODE 2) in 8 hours) for the primary containment isolation function associated with the High Flow MSL, High Radiation MSL tunnel, and High Temperature MSL tunnel instruments. The proposed TS enhance the required action by requiring that the reactor be in startup (MODE 2) with the associated isolation valves closed in 8 hours, or be in hot shutdown in 12 hours and cold shutdown in the following 24 hours. By requiring that the MSIVs be closed, the proposed action eliminates the applicability of the instruments with respect to MSL isolation and is an enhancement of the current TS. The second part of the proposed action is an additional requirement which enhances the current TS and is acceptable.

The current TS required action for the secondary containment isolation function associated with the refueling floor radiation instrumentation specifies an allowed outage time (AOT) of 24 hours prior to isolating the reactor building ventilation system and operating SGTS. The proposed TS require the trip system to be placed in the tripped condition and secondary containment integrity established with SGTS in one hour. Therefore, the proposed TS are more conservative than the current requirements and are acceptable.

3.1.4 Surveillance Requirements

Current TS 4.2.D which requires isolation of reactor building ventilation and initiation of the SGTS once per operation cycle has been relocated to proposed TS 4.7.P.4.b.1 and 2 which are addressed in a separate submittal. This will

remain an open item pending issuance of the amendments for proposed TS Section 3/4.7.

Current TS contain a note which states that a time delay setting shall be verified each refueling outage for the steam line high flow instrumentation associated with the HPCI isolation function. This requirement was deleted in the proposed TS. The requirement was added to the current TS in response to GL 83-02, "NUREG-0737 Technical Specification." The NRC has approved the relocation of selected response time testing requirements from the TS to the FSAR in an SER dated December 28, 1994, for Licensing Topical Report NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements." The proposed TS is consistent with the guidance of GL 93-08, "Relocation of Technical Specification Tables of Instrument Response Time Limits." The staff has determined that this requirement is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four criteria discussed in Section 2.0, above. In addition, the staff finds that sufficient regulatory controls exist under 10 CFR 50.59. This change is acceptable.

The current TS require a channel calibration of the main steam high flow instrumentation associated with the MSL isolation function and the refueling floor radiation instrumentation associated with secondary containment isolation every 3 months. The proposed frequency is every 18 months. Based on a review of calibration test data for Quad Cities, the licensee has found that minimal instrument drift occurred during each quarter and that calibration every 18 months would provide adequate indication of any drift. An 18 month frequency is consistent with STS guidelines. Because the instrument settings are not expected to vary significantly during the 18 month period, the increase in the surveillance interval will not significantly impact plant safety and is acceptable for Quad Cities. The licensee had not evaluated the historical data for Dresden at the time of the initial submittals. This will remain an open item for Dresden pending the licensee's evaluation of historical data and will be addressed in the clean-up amendment.

The current Dresden TS require a channel calibration of the MSL tunnel radiation instrumentation every 3 months with a footnote stating that the instrument channels are to be calibrated using simulated electrical signals every 3 months and a calibration including the sensors will be performed during each refueling outage (approximately 18 months). The current Quad Cities TS contain the same requirements but list the calibration frequency as every refueling outage with a footnote stating that a calibration using simulated electrical signals must be performed every 3 months. The proposed requirement is to conduct a calibration including the sensors every 18 months. The proposed frequency should be modified by a footnote to reflect that, in addition to the calibration every 18 months, a calibration is performed every 3 months using simulated electrical signals, consistent with the current TS. This will remain an open item pending its resolution in the clean-up amendment.

3.2 Section 3/4.2.B, Emergency Core Cooling Systems (ECCS) Actuation

Proposed TS Section 3/4.2.B, "ECCS Actuation," incorporates the guidance of STS Section 3/4.3.3 and current TS Section 3/4.2.B for both stations. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.2.1 LCO

Proposed Table 3.2.B-1 has been reformatted to the STS format. The current TS are organized by trip function with a clarifying column defining the systems initiated by the trip function. The proposed format is organized by systems with the trip functions listed for each system. The proposed format provides a clearer delineation of requirements and is an enhancement of current TS.

The current Dresden TS specify the minimum number of channels per trip system. This has been revised to specify the minimum number of channels per trip function. The number of required channels for each function defined in the current Dresden TS has been revised to reflect that there are two trip systems with the exception of automatic depressurization system (ADS) actuation instrumentation and loss-of-power actuation instrumentation.

The proposed trip level settings are consistent with the current TS settings with the following exceptions:

The level setting for the low pressure coolant injection (LPCI) pump discharge pressure instrumentation associated with the ADS protective function for Dresden has been revised from the current range of 50 to 100 psig to the proposed range of 100 to 150 psig which is consistent with the current Quad Cities setting. The discharge piping for the LPCI system is required to be filled and vented in order for the subsystem to be considered operable. A keep-filled system is used to ensure that the LPCI discharge lines remain pressurized. The ECCS discharge pipe keep-filled system operates in the 50 to 100 psig range. Therefore, the proposed setpoints for the ADS permissive hold (100-150 psig) provide sufficient margin above that range to assure the keep-filled system is not actuating the permissive hold. The proposed setpoints provide that necessary margin, while still ensuring that the protective function is able to meet the design objective. Therefore, the proposed setpoints are acceptable.

The level settings for the degraded voltage protected function have been revised for both stations. The current TS specify a voltage setting of 3840 volts $\pm$2 percent for Quad Cities and 3708 volts $\pm$2 percent for Dresden. The proposed TS specify a minimum voltage requirement of 3845 volts for Quad Cities Unit 1, 3833 volts for Quad Cities Unit 2, 3784 volts for Dresden Unit 2, and 3832 volts for Dresden Unit 3. This change reinforces that the setpoint applies to a decreasing voltage condition. The proposed minimum values are greater than the current allowed minimum value and are, therefore, more conservative. The current TS also contain clarifying time delay information which has been relocated to notes in proposed TS Table 3.2.B-1.

The proposed TS contain additional ECCS actuation instrumentation requirements relative to the current TS. These include requirements for the following instruments: Core Spray Pump Discharge Flow, LPCI Pump Discharge Flow, Condensate Storage Tank Level, Suppression Chamber Water Level, HPCI Pump Discharge Flow, HPCI Manual Initiation, ADS Low Low Level Timer, and Core Spray Pump Discharge Pressure. These additional requirements are an enhancement to the current TS and are acceptable.

3.2.2 Applicability

The proposed TS Table 3.2.B-1 revises the current TS by specifying applicable operational modes for each instrument. The current TS state that the instrumentation must be operable whenever the system it initiates or controls is required to be operable as specified in TS Section 3.5. The proposed applicability requirements are equivalent to the current TS and are, therefore, acceptable.

3.2.3 Required Actions

The current Dresden TS require that if the minimum channel requirement can not be met for one trip system, that trip system shall be tripped and if the minimum channel requirement can not be met for both trip systems, an orderly shutdown must be immediately initiated. The current Quad Cities TS require that if the minimum channel requirement can not be met for one or both of the trip system, the actuated system shall be declared inoperable, and TS 3.5 or 3.9 shall govern (current TS 3.5 requires an orderly shutdown to cold conditions within 24 hours for Core Spray, LPCI, and Containment Cooling and a shutdown to less than 150 psig in 24 hours for HPCI and ADS). The proposed TS contains specific required actions for each functional unit.

The proposed actions for Dresden reflect the change from the current minimum channels per trip system requirement to the proposed minimum channels per trip function requirement.

The proposed TS are consistent with current required actions with the following exceptions:

The required actions for several trip functions are consistent with the current Dresden TS but are a deviation from the current Quad Cities TS. Proposed ACTION 30 states that if the minimum channel requirement for one trip system can not be met, that trip system shall be tripped within one hour, or the associated ECCS system shall be declared inoperable. The current Quad Cities TS would require a shutdown if the minimum channel requirements can not be met for one trip system (and if it is tripped). The proposed action provides operational flexibility without a significant reduction in safety. When one trip system is placed in the tripped condition, the other trip system is available to actuate the associated ECCS system with a non-coincident logic, thus providing the same level of safety as two operable trip systems. The one hour time period is consistent with STS guidance and minimizes risk while allowing time for restoration of channels. This change applies to the

Reactor Vessel Water Level and Drywell Pressure instruments associated with Core Spray, LPCI, HPCI, and ADS actuation.

The required actions for the Initiation Timer and LPCI Pump Discharge Pressure instruments associated with ADS actuation deviate from the current Quad Cities TS when one trip system is inoperable. The proposed action requires that the inoperable trip system be tripped which provides more operational flexibility than the current Quad Cities TS which require a shutdown. When one trip system is tripped, the other trip system is available to actuate the ADS function. Therefore, the proposed action is not a significant reduction in the margin of safety and is acceptable. The proposed action is consistent with the current Dresden TS.

The proposed TS contains actions which are more specific to the applicable modes. The proposed action for the reactor pressure instrumentation associated with Core Spray and LPCI actuation deviates from the current TS in MODES 4 and 5. The proposed action requires that if the minimum channel requirement for the trip function can not be met, the inoperable channel shall be placed in the tripped condition within one hour. The current TS would require shutdown in this situation. The proposed action is more appropriate for the specific operational condition. In MODES 4 and 5, the reactor is already shutdown and in a cold condition. The proposed action to trip the inoperable channel will result in an actuation of the one-out-of-two twice logic for the permissive signal, thus ensuring the safety function. The proposed action is more appropriate to the applicable modes and does not represent a reduction in safety and is acceptable.

3.2.4 Surveillance Requirements

The proposed surveillance requirements are consistent with the current TS with the following exceptions.

The channel check for the Loss of Power functional unit instruments has been deleted in the proposed TS, consistent with STS guidelines. The current TS specify a monthly channel check for the degraded voltage instrumentation and the current Dresden TS specify a quarterly channel check for the loss of voltage instrumentation. A channel check consists of a comparison of the channel indication with that of other independent channels monitoring the same parameter. However, the Dresden and Quad Cities design for this instrumentation does not meet the definition for a channel check. The instrumentation is a switch, as opposed to an indicator. As such, it is not possible to perform a comparison of the channel indication with that of other independent channels monitoring the same parameter. The proposed deletion of this surveillance does not change any current procedures and will not affect the current margin of safety.

3.3 Section 3/4.2.C, ATWS - RPT

Proposed TS Section 3/4.2.C, "ATWS - RPT," incorporates the guidance of STS Section 3.3.4.1 and current TS Section 3/4.2.H for Dresden Station. Quad

Cities current TS do not contain this TS section. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.3.1 LCO

Proposed TS 3.2.C is consistent with the current Dresden TS requirements and STS guidelines with the following exception:

The current TS setpoint for the Reactor Vessel Pressure instrumentation is "greater than or equal to 1230 psig and less than or equal to 1250 psig." The proposed setpoint is "less than or equal to 1250 psig." The lower bound of the current setpoint is designed to prevent inadvertent trips and has no automatic protection function. Therefore, this value is unnecessary as a TS requirement and is more appropriately controlled in an owner-controlled procedure. The staff has determined that the requirements for a minimum setpoint for the reactor vessel pressure instrumentation is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four criteria discussed in Section 2.0, above. This change is acceptable.

3.3.2 Applicability

The proposed applicability of MODE 1 is consistent with the current Dresden TS applicability and is acceptable.

3.3.3 Required Actions

The current required actions have been revised consistent with STS guidelines. The current TS allow one trip system to be inoperable for up to 14 days after which the reactor must be placed in at least startup/hot standby (MODE 2) within the next 8 hours. The current action statement has been incorporated in proposed TS 3.2.C ACTIONS 1 through 5 discussed below. The proposed TS deviates from the current TS by specifying a required number of channels rather than a required number of trip systems. Proposed ACTION 1 requires that an instrument channel with a setpoint less conservative than the TS required value be declared inoperable. This is an enhancement of current TS and is acceptable.

Proposed ACTION 2 includes a 14 day AOT if one or both trip systems has less than the required operable channels. The anticipated transient without scram (ATWS) mitigation system automatically initiates a recirculation pump trip on a two-out-of-two trip logic in either of two channels. With one channel inoperable, the trip system is still able to function and, therefore, an AOT of 14 days does not significantly affect the margin of safety.

Proposed ACTION 3 discusses the requirements when the number of operable channels is two or more channels less than the TS minimum. If one pressure channel and one level channel are inoperable, the inoperable channels must be placed in the tripped condition within one hour. Because the channels operate on a two-out-of-two logic (two high reactor pressure signals or two low

reactor level signals), it is necessary to place the inoperable channels in the tripped condition to ensure that the channel will function. If two pressure or two level channels are inoperable, the trip system must be declared inoperable. This proposed action is consistent with system design and is acceptable.

Proposed ACTION 4 states that if one trip system is inoperable, a 72 hour AOT is provided to restore the inoperable trip system or be in startup within the next 8 hours. This is more conservative than the current AOT of 14 days for one trip system inoperable and is acceptable.

Proposed ACTION 5 states that if both trip systems are inoperable, a 1 hour AOT is provided to restore one trip system or be in MODE 2 within 8 hours. This is consistent with current TS except that the current TS do not contain a specified AOT. The proposed 1 hour AOT is a reasonable period of time to restore a trip system and possibly avoid an unnecessary reactor trip. This change does not significantly affect the margin of safety and is acceptable.

3.3.4 Surveillance Requirements

The proposed surveillance frequency for instrument functional tests is an enhancement of the current requirements. The current frequency of quarterly has been revised to monthly. In addition, the current requirement for daily channel checks has been revised to shiftly (approximately every 8 hours). The proposed TS is more conservative and is acceptable.

3.4 Section 3/4.2.D, Isolation Condenser Actuation (Dresden)
Section 3/4.2.D, Reactor Core Isolation Cooling Actuation (Quad Cities)

Proposed TS Section 3/4.2.D incorporates the guidance of STS Section 3/4.3.5 and current TS Tables 3.2.2 and 4.2.1 for Dresden. This is a new requirement for Quad Cities. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.4.1 LCO

Proposed TS Section 3/4.2.D is a new TS section for Quad Cities not in the current TS. The proposed TS is based on STS guidance with the following exceptions. The proposed TS do not incorporate STS notes (b), (c), and (d). These notes provide design information which is more appropriate for owner-controlled documents. The proposed TS add notes (b) and (c) which are not in STS guidance. These notes provide necessary clarification of the minimum operable channels requirements and the reference point for reactor water level setpoints. This is an enhancement of current TS and is acceptable.

Proposed TS 3/4.2.D for Dresden is consistent with the current Dresden TS in terms of trip setpoint and minimum required channels per trip system and is, therefore, acceptable.

3.4.2 Applicability

The proposed TS applicability is a revision of the current Dresden applicability requirement. The current requirement is "fuel in the vessel and reactor pressure greater than 150 psig." The proposed applicability is "MODES 1, 2, and 3 with reactor pressure greater than 150 psig." The current and proposed applicabilities are equivalent since in MODES 4 and 5, the temperature limitations eliminate the possibility of a high pressure condition (greater than 150 psig). There are no current requirements for Quad Cities, therefore this is an enhancement of the current Quad Cities TS.

3.4.3 Required Actions

The proposed required actions for Dresden are consistent with the current TS requirements and with STS guidelines and are, therefore, acceptable. The proposed required actions for Quad Cities are an enhancement of the current TS which contain no requirements and are, therefore, acceptable.

3.4.4 Surveillance Requirements

The current Dresden TS require a channel calibration of the Reactor Vessel Pressure instruments every 3 months. The channel calibration frequency proposed for this instrument is every 18 months. The licensee has determined that a discrepancy exists with respect to the proposed frequency. This will remain an open item pending resolution in the clean-up amendment. The proposed Quad Cities TS do not contain surveillance requirements for reactor vessel pressure instruments as they do not initiate RCIC.

The proposed Quad Cities surveillance requirements are consistent with STS guidelines and are enhancement of current TS, and are therefore acceptable.

3.5 Section 3/4.2.E, Control Rod Block Actuation

Proposed TS Section 3/4.2.E, "Control Rod Block Actuation," incorporates the guidance of STS Section 3/4.3.6 and current TS Section 3/4.2.C.1 for both stations. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.5.1 LCO

Current TS 3.2.C.2 provides a relaxation from the minimum operable channel requirements for the rod block monitor during maintenance or testing. This TS has been deleted from the proposed TS. The current TS is inconsistent with STS guidance, and the deletion of the less stringent requirement represents a more conservative operating practice. Therefore, the deletion of current TS 3.2.C.2 is acceptable.

The current TS Table has been reformatted in accordance with STS. The current TS Table is organized by individual instrument. The proposed table is organized by the monitors which actuate control rod block and provides clearer

guidance to operations personnel. The proposed trip setpoints and minimum required channels are consistent with current TS with the following exceptions.

The proposed TS contains additional control rod block instrumentation requirements not in the current TS. These include intermediate-range monitor (IRM) inoperative, average power range monitor (APRM) inoperative, source range monitor (SRM) inoperative, Scram Discharge Volume (SDV) Switch in Bypass (this is new for Dresden only), and IRM Inoperative. The additional instrumentation requirements are an enhancement of the current TS and are acceptable.

The proposed TS also contain a requirement for SRM Downscale instrumentation which is an addition to the Dresden TS (Quad Cities TS currently has this requirement). In the August 4, 1995, submittal, the licensee stated that the proposed additional requirements for SRM Downscale do not adequately address the current Dresden and Quad Cities design. The Trip Setpoint, minimum channels per trip function, applicability, required actions, and the associated notes (d) and (i) will be considered an open item to be addressed in the clean-up amendment.

The proposed requirements for the SRM Detector not full in function have also been determined by the licensee to not adequately address the current Dresden and Quad Cities design. The Trip Setpoint, minimum channels per trip function, applicability, required actions, and the associated note (b) will be considered an open item to be addressed in the clean-up amendment.

The current requirement of minimum channels required per trip system has been revised, consistent with STS guidance, to minimum channels per trip function. The proposed TS reflect the fact that most of the trip functions consist of two trip systems and, therefore, the proposed TS double the current TS minimum. The proposed TS maintains current requirements and is, therefore, acceptable.

The trip setpoints for APRM Flow Biased Neutron Flux - High have been modified in the proposed TS to remove the modifying multiplier of (FRP/MFLPD) for Quad Cities and (1/FDLRC) for Dresden. This change is consistent with the requirements of TSUP Section 3.11 that was approved by Amendment Nos. 134, 128, 155, and 151 to the Dresden and Quad Cities TS. The requirements of TSUP 3.11 will ensure that the multipliers are greater than or equal to one. Therefore, the proposed setpoint will always be conservative to the multiplied value and the inclusion of the multiplier is unnecessary.

The current Quad Cities setpoint for IRM Detector not full in has been deleted in the proposed TS consistent with STS guidelines and current Dresden TS. The current Quad Cities setpoint provides design information which is more appropriate for plant administrative controls and has been relocated to plant procedures. The staff has determined that the requirements for IRM detector setpoint is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four

criteria discussed in Section 2.0, above. Therefore, this change is acceptable. The current Dresden TS do not include this setpoint, therefore, there is no change for Dresden.

3.5.2 Applicability

The proposed TS applicability is consistent with current requirements with the following exceptions:

The current applicability for the Rod Block Monitor Upscale function is MODES 1 and 2 with an exception below 30 percent power. The proposed applicability is MODE 1 as modified by note (f) which states that thermal power must be greater than 30 percent power. The proposed TS is consistent with current TS since reactor power can not be increased above 30 percent in MODES 2 and 3.

The current applicability of the SRM and IRM functions is MODE 2. This has been expanded in the proposed TS to MODES 2 and 5. In addition, the current applicability for the SDV High Water Level function has been expanded from MODES 1 and 2 to MODES 1, 2, and 5. This is an enhancement of current TS and is acceptable.

The current Quad Cities TS specify an applicability of MODES 1 and 2 for the SDV Switch in Bypass function. The proposed applicability is MODE 5. In its August 4, 1995, submittal, the licensee stated that this proposed applicability does not adequately address the actual required applicability for this function and should include MODES 1 and 2. It will remain an open item pending resolution in the clean-up amendment.

Proposed note (j) for Quad Cities (note (k) for Dresden) is a new note which modifies the MODE 5 applicability of the APRM Inoperative and APRM Startup Neutron Flux - High functions. The proposed note requires operability of the function in MODE 5 only during shutdown margin demonstrations performed per TS 3.12.B. The APRM rod block function provides gross core protection, i.e., limits the gross withdrawal of control rods in the normal withdrawal sequence. In MODE 5, no rods are normally removed except during shutdown margin demonstrations performed per TS 3.12.B. Therefore, this function is not required in MODE 5 except during these tests. Inadvertent control rod withdrawal is sufficiently controlled by the SRM and IRM instruments which are required to be operable at all times in MODE 5. Therefore, the proposed change is acceptable.

3.5.3 Required Actions

The current Dresden TS require that if the minimum channel requirement can not be met for both trip systems, the systems shall be tripped. The current Quad Cities TS require that if the minimum channel requirement can not be met for one trip system, the condition may exist for up to 7 days provided the operable channel is functionally tested immediately and daily thereafter. After 7 days the system shall be tripped. If the minimum channel requirements

can not be met for both systems, the systems shall be tripped. The proposed TS provide more specific actions to address the various types of monitors as discussed below.

For the Rod Block Monitor functions, the proposed TS require that the monitor be immediately declared inoperable and the actions of TS 3.3.M taken if one channel is inoperable. TS 3.3.M requires immediate verification that there is not a limiting control rod pattern, and provides a 24 hour AOT after which time, the inoperable channel must be tripped within 1 hour. If both channels are inoperable, TS 3.3.M requires a trip of at least one inoperable channel within 1 hour. The 1 hour time period is consistent with STS guidance and current operating experience. The proposed TS are consistent with current TS for both trip systems unable to meet the minimum channel requirements. For one trip system inoperable, the proposed AOT (24 hours) is more conservative than the current Quad Cities AOT (7 days). The current Dresden TS do not address one inoperable channel and, therefore, the proposed TS provides more guidance.

For the APRM, SRM, and IRM rod block functions, the proposed TS provide a 7 day AOT if one channel is inoperable. If two or more channels are inoperable, the proposed action requires a trip of at least one inoperable channel in 1 hour. The proposed TS for one inoperable channel is consistent with current Quad Cities requirements with the exception of the redundant testing requirement and additional hour to trip the inoperable channel. The current Dresden TS do not address the condition of one inoperable channel and, therefore, the proposed TS provide enhanced guidance. The 1 hour time period is consistent with STS guidelines and current operating experience and provides adequate time to trip the inoperable channel while minimizing risk. The requirement for demonstrating operability of the redundant equipment was originally chosen because there was a lack of plant operating history and a lack of sufficient equipment failure data. Since that time, plant operating experience has demonstrated that testing of the redundant equipment when companion equipment is inoperable, is not necessary to provide adequate assurance of system operability. In addition, removal of the redundant system from service for testing removes the operable channel from monitoring the safety parameter, and creates the risk that the redundant system will fail. Industry experience of this type of configuration has indicated that failures of the redundant equipment are related to repeated testing itself and not an indication that the system would have failed should it have been needed. Therefore, these deviations from the current TS do not reduce the level of safety and are acceptable.

For the SDV rod block functions, the current TS require that if the minimum number of channels per trip system can not be met for both trip systems, the system shall be tripped. The proposed TS require that if the number of channels is less than the required number for either trip system, the inoperable channel shall be tripped in 1 hour. This action is more conservative than the current TS and is acceptable.

3.5.4 Surveillance Requirements

The current Dresden TS require a daily channel check of the APRM Upscale, IRM Upscale, and IRM Downscale functions when the instrument is required to be operable. These requirements have been deleted in the proposed TS consistent with STS guidelines. The current Quad Cities TS do not contain requirements for a channel check of these instruments. The rod block initiated by these instruments have no impact on safety function. For this reason all requirements for these instruments have been deleted in the improved STS guidelines. The staff has determined that the requirements for these channel checks are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0, above. Therefore, the deletion of the channel check does not have a significant impact on safety and is acceptable.

The current TS require a channel calibration of the APRM Flow Variable (called Flow Biased Neutron Flux - High in the proposed TS) at every refueling outage. This has been increased to semiannually in the proposed TS. This is an enhancement of current requirements and is acceptable.

The channel calibration frequency for the ARPM Downscale function has been relaxed in the proposed Quad Cities TS from quarterly to semiannually to be consistent with the calibration frequency for the APRM Flow Biased Neutron Flux function. Historical data for Quad Cities has shown that the proposed semiannual surveillance frequency does not significantly reduce the margin of safety. Therefore, the proposed surveillance frequency is acceptable for Quad Cities. Based on discrepancies identified by the licensee with respect to the proposed surveillance frequency for Dresden, the channel calibration of the ARPM Downscale function is an open item for Dresden station.

The licensee has determined that the proposed surveillance frequencies (channel check, functional test, and calibration) for the SRM Detector not Full In and SRM Downscale functions do not adequately address the current plant designs. These functions will be considered an open item, including the associated notes (f) and (h) from proposed Table 4.2.E-1. In addition, the following surveillances are considered open items based on discrepancies identified by the licensee with respect to the proposed surveillance frequencies: channel functional test of the SDV Switch in Bypass function, and the channel calibration of the IRM Detector Not Full In and SRM Upscale function (Dresden only).

Current TS require calibration at startup and shutdown for APRM startup neutron flux (Dresden only), IRM upscale and IRM downscale instrumentation. The proposed TS frequency is semiannual for APRM startup neutron flux instrumentation and every 18 months for the IRM upscale and IRM downscale instrumentation. During discussions with the licensee, the licensee stated that it is evaluating the proposed frequencies for these surveillances. They will remain open items to be addressed in a clean-up amendment.

The proposed TS contain additional surveillance requirements not in the current TS for the following functions: Rod Block Monitor Inoperative, APRM Inoperative, SRM Inoperative, SRM Downscale (new for Dresden, currently in the Quad Cities TS), IRM Inoperative, and SDV Switch in Bypass (new for Dresden, currently in the Quad Cities TS). These surveillances are an enhancement of current TS and are acceptable.

3.6 Section 3/4.2.F, Accident Monitoring

Proposed TS Section 3/4.2.F, "Accident Monitoring," incorporates the guidance of STS 3/4.3.7.5 and current TS Section 3/4.2.E for both stations. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

The following instruments in the current Dresden TS have not been retained in the proposed TS: Containment Monitoring - Torus Water Level Indicator - Narrow Range and Torus Water Level - Sight Glass. These instruments do not meet the criteria for inclusion in Table 3.2.F-1 and 4.2.F-1 as a post-accident monitoring instrument (Regulatory Guide (RG) 1.97, Category 1, Type A variable instrument). The primary purpose of post-accident monitoring instrumentation is to display plant variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis events. The instruments that monitor these variables are designated as Type A, Category I, and non-Type A, Category I, in accordance with RG 1.97. Based on the information submitted by ComEd on August 1, 1985, for Dresden and Quad Cities Station and approved by the NRC by SERs dated August 16, 1988, and September 1, 1988, the deleted instruments do not meet the criteria for inclusion in the proposed TS table. The staff has determined that the requirements for these instruments are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0, above. Therefore, their deletion is acceptable.

The current TS requirements for the torus pressure instrumentation were not retained in the proposed TS. This function is considered to be a post-accident monitoring instrument. As such, this function should have been incorporated into the proposed TS. This item will remain open pending its inclusion in the clean-up amendment.

The current TS function of Torus to Drywell Differential Pressure has been relocated to proposed TS Section 3.7.H. This instrument does not meet the criteria for inclusion in proposed TS Table 3.2.F-1 as a Post-Accident Monitoring instrument per RG 1.97. This will remain an open item pending issuance of amendments for proposed TS Section 3/4.7.

3.6.1 LCO

The proposed number of required channels and minimum channels are consistent with the current TS with the following exceptions:

The current TS tables contain columns labeled "Instrument Readout Location" and "Instrument Range." The proposed TS have deleted these columns consistent with STS format and GL 91-08. These columns contain information which is not necessary for inclusion in the TS. The staff has determined that the requirements for instrument readout location and instrument range are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0, above. Therefore, the deletion of this information is acceptable.

The proposed TS add requirements for the drywell oxygen concentration monitor and analyzer. This is an enhancement of current TS and is acceptable.

The current TS terminology of "Number Provided" has been revised to the STS terminology "Required Channels" and the number has been revised to the STS requirement of two channels. The number has been decreased for the following instruments: Reactor Pressure (currently four required for Dresden and three for Quad Cities), Drywell Air Temperature (currently six) and Source Range Neutron Monitors (currently four). The proposed TS contain two levels of requirements, Required Channels and Minimum Channels. The number of Required Channels is greater than or equal to the number of Minimum Channels. Operability of the instrument is impacted when the number of channels becomes less than the Minimum Channels requirement. Decreasing the number of Required Channels only provides the licensee with additional margin, but does not impact the safety function of the instruments. The reduction in the number of required channels does not reduce the margin of safety because the minimum channels requirement is the more important of the two required values. In addition, these instruments do not actuate any safety systems, but merely provide information to the operators to complete appropriate mitigation actions. Therefore, the change in the number of Required Channels is acceptable.

3.6.2 Applicability

The proposed applicability for each of the functions is consistent with the current TS requirement and is, therefore, acceptable.

3.6.3 Required Actions

The proposed TS replace table notes with action statements. Proposed ACTION 60 replaces current TS notes (1), (3) and (4) for Dresden and (3), (4), and (6) for Quad Cities. Proposed ACTION 60.a provides a 30 day AOT for less than the Required Channels prior to bringing the plant to hot shutdown in the next 12 hours. This is an enhancement of current TS which do not specify a shutdown requirement following the AOT. Proposed ACTION 60.b provides a

48 hour AOT to restore the number of Minimum Channels or be in hot shutdown in the next 12 hours. This is a relaxation of the current TS which requires indication to be restored in 6 hours or be in cold shutdown in 24 hours. Because the applicable modes for the proposed TS are MODES 1 and 2, bringing the plant to hot shutdown is sufficient because it places the plant in a condition for which the instrumentation is no longer required. It is unnecessary to bring the plant to cold shutdown. The proposed 48 hour AOT is consistent with industry accepted requirements and is acceptable based on the diverse instrumentation available for guiding the operators should an accident occur.

Proposed ACTION 63 replaces current Dresden TS note (2) and Quad Cities note (5) and applies to the Safety and Relief Valve Position Indicator function. The proposed action deviates from the current action when the number of channels is less than the Minimum Channel requirement. The current TS require an orderly shutdown with the reactor depressurized to less than 90 psig in 24 hours if indication can not be restored within 30 days. The proposed TS require indication to be restored within 30 days or be in hot shutdown within the next 12 hours. Because the applicable modes for the proposed TS are MODES 1 and 2, bringing the plant to hot shutdown is sufficient because it places the plant in a condition for which the instrumentation is no longer required. It is unnecessary to bring the plant to cold shutdown. In addition, the 12 hour period is more conservative than the proposed 24 hour period. This change is acceptable.

Proposed ACTION 62 replaces current Dresden TS note (5) and Quad Cities note (8) and applies to the Drywell Hydrogen and Oxygen Concentration function. The proposed action is consistent with current TS and enhances the current required action by providing specific shutdown requirements (hot shutdown within the following 12 hours) following the 30 day AOT. This change is acceptable.

Proposed ACTION 61 applies to the Drywell Radiation Monitor instrumentation and requires that if the number of operable channels is less than the minimum number required, preplanned alternate monitoring must be established within 72 hours and a 7 day AOT must be entered, with implementation of a 30-day special report if the AOT expires. Current Dresden TS specify a 30 day AOT if the number of operable channels is reduced to the minimum required number and a 6 hour AOT if all indication of the specified parameter is inoperable. Therefore, the current Dresden TS require a shutdown after 30 days if the number of operable channels is reduced to the minimum even if indication of the parameter is available as opposed to the proposed TS which only require a special report. Since alternate means of primary containment area radiation monitoring have been developed and tested, the required action is not to shut down the plant, but rather to follow the reporting requirements established in the Administrative Controls specification. These alternate means may be temporarily installed if the normal post-accident monitoring channel can not be restored to operable status within the allotted time. The report provided to the NRC will discuss the alternate means used, describe the degree to which the alternate means are equivalent to the installed post-accident monitoring

channels, justify the areas in which they are not equivalent, and provide a schedule for restoring the normal post-accident monitoring channels. The proposed Dresden action is consistent with STS guidelines. Based on the above discussion, proposed ACTION 61 is not a significant reduction in the level of safety and is acceptable. The proposed action is equivalent to the required action in the current Quad Cities TS and is, therefore, acceptable for Quad Cities.

3.6.4 Surveillance Requirements

The proposed TS is consistent with STS guidelines except that the proposed TS deletes the current requirement for a functional test of the post-accident instrumentation. The associated current TS do not specify a functional test requirement with the exception of the Main Steam Relief Valve Position Indicator, Acoustic Monitor. The proposed TS delete the current requirement for a functional test of the main steam safety and relief valve position indicator acoustic monitors. The plant-specific design for this instrumentation does not meet the definition for a channel functional test. The instrumentation is an indicator, as opposed to a switch or trip function and it is not possible to perform a channel functional test. The current requirements are ambiguous and have not been retained.

The frequency of channel checks has been relaxed in the proposed TS from daily to monthly for the following functions: Reactor Pressure, Reactor Water Level, Torus Water Temperature, Torus Air Temperature (Quad Cities only), Drywell Pressure (narrow and wide range), Drywell Temperature, and Neutron Monitors. The proposed surveillance frequency of monthly is consistent with STS guidelines. A monthly channel check frequency is consistent with the duration of the AOT of 30 days for these functions. Because the current and proposed TS allow operation for up to 30 days with the number of operable channels less than the required number of channels, if a channel becomes inoperable during the 30 days between required channel checks, there is no decrease in the margin of safety. Therefore, the proposed surveillance frequency is acceptable.

The frequency of channel calibration has been relaxed in the proposed Quad Cities TS from quarterly, semiannually, or annually to every 18 months for instruments which measure the following parameters: Reactor Pressure, Reactor Water Level, Torus Water Temperature, Torus Air Temperature, Drywell Pressure (narrow and wide range), Drywell Temperature, and Neutron Monitoring. The proposed calibration frequency is consistent with STS guidelines and NUREG-1433 requirements. In addition, historical instrument calibration data has demonstrated that instrument drift is insignificant for periods shorter than every 18 months. Therefore, the proposed surveillance frequency is acceptable.

The licensee also proposed a relaxed frequency of channel calibration in the Dresden TS from quarterly, semiannually, or annually to every 18 months for the following instruments: Reactor Pressure, Reactor Water Level, Torus Water Temperature, Torus Water Level, Drywell Pressure (narrow and wide range),

Neutron Monitors, Safety and Relief Valve Position Indicators. The licensee had not evaluated the historical calibration data for Dresden at the time of the initial submittals. These will remain open items pending the licensee's evaluation and will be addressed in the clean-up amendment.

The proposed TS contain an additional note which modifies the Neutron Monitor calibration frequency by stating that the neutron detectors may be excluded from the channel calibration. The neutron detectors are excluded because they are passive devices with minimal drift, and because of the difficulty of simulating a meaningful signal. In addition, detector failure will cause a total loss of signal, rather than instrument drift to a wrong indication. Therefore, the proposed footnote does not impact the level of safety and is acceptable.

3.7 Section 3/4.2.G, Source Range Monitoring

Proposed TS Section 3/4.2.G, "Source Range Monitoring," incorporates the guidance of STS Section 3/4.3.7.6 and is based on current TS Section 4.3.B.4 for Dresden. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.7.1 LCO

This is a new requirement, not in current TS and is, therefore, an enhancement of current requirements. The proposed LCO is consistent with STS guidelines and applicable to Dresden and Quad Cities design and is, therefore, acceptable.

3.7.2 Applicability

The proposed applicability is consistent with STS guidelines. This is a new requirement which enhances the current TS and is, therefore, acceptable.

3.7.3 Required Actions

The proposed required actions are consistent with STS guidelines. These are new requirements which enhance the current TS and are, therefore, acceptable.

3.7.4 Surveillance Requirements

Current Dresden TS 4.3.B.4 requires verification that at least two source range channels have an observed count rate of at least 3 counts per second prior to control rod withdrawal for startup or during refueling. Proposed TS 4.2.G.1 is consistent with the current TS with the following exception: The proposed TS includes a note (b) which allows the minimum SRM count rate to be reduced from 3 counts per second to 0.7 counts per second provided that the signal to noise ratio is greater than or equal to 2.0. The inclusion of this provision would represent a relaxation of the current Dresden TS. In addition, the licensee has proposed to remove this footnote from TSUP 4.10.B.3

in its application dated September 15, 1995, to close TSUP open items. This will remain an open item to be addressed in a clean-up amendment.

Proposed TS 4.2.G.2, 4.2.G.3, and 4.2.G.4 are new requirements not in current TS and are based on STS guidelines with the following exception. The proposed TS deviates from STS guidelines by adding a note (c) which states that the provisions of TS 4.0.D are not applicable for entry into the applicable operational modes from operations in MODE 1, provided the required surveillance is performed within 12 hours after such entry. This note is applicable to the monthly channel functional test and the channel calibration performed every 18 months. The proposed note is necessary in order to verify operability when exiting MODE 1. These surveillance requirements are additional requirements which enhance current TS and are acceptable.

3.8 Section 3/4.2.H, Explosive Gas Monitoring

Proposed TS Section 3/4.2.H, "Explosive Gas Monitoring," is a new TS section not in the current Dresden or Quad Cities TS. Proposed TS 3/4.2.H is based on the guidance of GL 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program." The proposed TS requires the operability of the main condenser offgas treatment system explosive gas monitoring system during offgas holdup system operation. The proposed TS is an enhancement of current TS and is acceptable.

3.9 Section 3/4.2.I, Suppression Chamber and Drywell Spray Actuation

Proposed TS Section 3/4.2.I, "Suppression Chamber and Drywell Spray Actuation," incorporates the guidance of STS Section 3/4.3.7.9 and specific items from current TS Tables 3.2.2 and 4.2.1 for both stations. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR. Proposed Section 3/4.2.I contains the functions, Containment Spray Interlock - 2/3 Core Height and Containment High Pressure from the current TS and adds requirements for the Suppression Chamber and Drywell Spray Actuation instrumentation.

3.9.1 LCO

The proposed LCO is consistent with current TS and STS guidelines with the following exception:

The current TS setpoint for "Containment Spray Interlock - 2/3 Core Height" (called Reactor Vessel Water Level - Low (Permissive) in the proposed TS) has been modified from the current setpoint of "> 2/3 core height" to reflect the actual reactor water level, relative to the top of active fuel ($\geq$ -48"). The actual setpoint has not changed and, therefore, this change is administrative and is acceptable.

3.9.2 Applicability

The proposed applicability is based on the current TS. The current requirement is "fuel in the vessel and reactor water temperature greater than 212 degrees Fahrenheit." The proposed Quad Cities TS also requires operability "prior to startup from cold shutdown." The proposed applicability is operational MODES 1, 2, and 3. Because the temperature limitations in MODES 4 and 5 prevent the possibility of water temperature exceeding 212 degrees Fahrenheit, the proposed applicability is equivalent to the current TS and is acceptable.

3.9.3 Required Actions

The required actions for these trip functions are consistent with the current Dresden TS, but are a deviation from the current Quad Cities TS. The proposed action states that if the minimum channel requirement for one trip system can not be met, that trip system shall be tripped within 1 hour, or the associated ECCS system shall be declared inoperable. The current Quad Cities TS would require a shutdown if only one trip system is inoperable (and if it is tripped). The proposed action provides operational flexibility without a significant reduction in safety. When one trip system is placed in the tripped condition, the other trip system is available to actuate the interlock with a non-coincident logic, thus providing the same level of safety as two operable trip systems (four operable channels). The 1 hour time period is consistent with STS guidance. The proposed AOT will minimize the risk associated with unnecessary trips while allowing time for restoration of channels. The proposed action is acceptable.

3.9.4 Surveillance Requirements

The proposed TS are consistent with current requirements and enhance the current TS by adding a channel calibration of the reactor water vessel level instrumentation.

The proposed TS do not incorporate the STS guidance for a channel check for drywell high pressure. This instrument is a pressure switch that does not provide indication. Therefore, the instrumentation is unable to meet the requirements of a channel check as defined in TS Section 1.0. This deviation from STS guidelines is acceptable.

The proposed frequency for the reactor vessel water level channel calibration (every 18 months) deviates from the STS guidance of quarterly. The proposed TS also contain a requirement to calibrate the trip units every 31 days. The proposed TS is consistent with the current requirement and is acceptable.

3.10 Section 3/4.2.J, Feedwater Pump Trip

Proposed TS Section 3/4.2.J, "Feedwater Pump Trip," contains new requirements not currently included in the Dresden or Quad Cities TS. Proposed TS Section

3/4.2.J incorporates the guidance of portions of STS Section 3/4.3.9. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.10.1 LCO

The proposed LCO is based on STS guidelines with plant-specific setpoints and is acceptable. The proposed LCO is an enhancement of current TS and is, therefore, acceptable.

3.10.2 Applicability

The proposed applicability of MODE 1 is consistent with STS guidelines and enhances current TS. Therefore, it is acceptable.

3.10.3 Required Actions

The proposed TS deviates from STS guidance by requiring the reactor to be in startup within 8 hours if the required channels can not be re-established with the AOT. STS guidance specifies a 6 hour shutdown time. The proposed time frame is commensurate with the safety significance of the trip setpoint and does not represent a significant reduction in safety from the STS guidance.

The proposed required actions are an enhancement of current TS which contain no requirements and are therefore acceptable.

3.10.4 Surveillance Requirements

The proposed TS enhances STS guidelines by adding a daily channel check. The proposed TS also modifies the frequency of the channel functional test from the STS guideline of monthly to once every 18 months. Because the current TS do not contain these surveillances, the proposed TS is an enhancement of current TS requirements and is, therefore, acceptable.

3.11 Section 3/4.2.K, Toxic Gas Monitoring (Quad Cities only)

Proposed TS Section 3/4.2.K, "Toxic Gas Monitoring," incorporates the guidance of STS Section 3.3.7.8 and current TS Section 3/4.2.F.2 for Quad Cities. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR.

3.11.1 LCO

The current TS contain a statement that the provisions of TS 3.0.A are not applicable. This provision has been deleted in the proposed TS. The deletion makes the TS more conservative and it is therefore acceptable.

3.11.2 Applicability

The current TS do not contain an applicability statement. The proposed applicability of all operational modes is consistent with STS guidelines and is an enhancement of current TS and is therefore acceptable.

3.11.3 Required Actions

The current TS do not contain an explicit action statement. The proposed TS require that, within 1 hour of the toxic gas monitoring system becoming inoperable, operation of the control room ventilation system in the isolation mode must be initiated. The proposed TS is consistent with STS guidelines and is an enhancement of current TS and is acceptable.

3.11.4 Surveillance Requirements

The proposed TS is consistent with current requirements with the following exception. The proposed TS requires a channel check once per 12 hours. This is an enhancement of the current requirement for a once per day channel check and is acceptable.

3.12 Relocated Requirements

Current Dresden TS Section 3/4.2.F and Quad Cities TS Section 3/4.2.G, "Radioactive Liquid Effluent Instrumentation" and current Dresden TS Section 3/4.2.G and Quad Cities TS Section 3/4.2.H, "Radioactive Gaseous Effluent Instrumentation" have been relocated to the Offsite Dose Calculation Manual with the exception of the four parameters discussed below. This change is consistent with the guidance provided in GL 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program." The staff has determined that these requirements are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0, above.

The requirements for the following instruments will be deleted from the current Dresden TS and will not be added to the Offsite Dose Calculation Manual: Mobile Volume Reduction System (MVRS) Process Exhaust Radiation Monitor and Particulate Sampler and the MVRS HVAC Exhaust Iodine Sampler and Particulate Sampler. These instruments were added to the Dresden current TS in order to utilize a MVRS for the treatment of licensed material by incineration. This system has never been installed nor made operational at Dresden and, therefore, the instrumentation associated with MVRS is no longer applicable.

3.13 Open Items

The following proposed TS table items will remain open pending their review and approval in a clean-up amendment.

1. Table 3.2.A-1: MSL Tunnel Temperature - High (Item 3.e) - the minimum channel requirement.

2. Table 4.2.A-1 (for Dresden only): Main Steam High Flow (Item 3.d) and Refueling Floor Radiation (Item 2.d) - channel calibration frequency.

3. Table 4.2.A-1: MSL Tunnel Radiation (Item 3.b) - calibration frequency.

4. Relocation of current TS 4.2.D to TSUP 4.7.P.4.b.1 and 4.7.P.4.b.2.

5. Table 4.2.D-1 (Dresden only): Reactor Vessel Pressure - calibration frequency.

6. Table 3.2.E-1: SRM Downscale (Item 3.d) - trip setpoint, minimum channels, applicability, actions, and notes (d) and (i).

7. Table 3.2.E-1: SRM Detector Not Full in (Item 3.a) - trip setpoint, minimum channels, applicability, actions, and note (b).

8. Table 3.2.E-1: SDV Switch in Bypass (Item 5.b) - applicability.

9. Table 4.2.E-1 (Dresden only): APRM Downscale (Item 2.c) - calibration frequency.

10. Table 4.2.E-1: SRM Detector Not Full In (Item 3.a) and SRM Detector Downscale (Item 3.d) - channel check frequency, functional test frequency, calibration frequency, and notes (f) and (h).

11. Table 4.2.E-1: SDV Switch in Bypass (Item 5.b) - functional test.

12. Table 4.2.E-1: IRM Detector Not Full In (Item 4.a) - channel calibration.

13. Table 4.2.E-1 (Dresden only): SRM Upscale (Item 3.b) - channel calibration.

14. Table 4.2.E-1: APRM Startup Neutron Flux (Item 2.d) - channel calibration.

15. Table 4.2.E-1: IRM Upscale (Item 4.b) - channel calibration.

16. Table 4.2.E-1: IRM Downscale (Item 4.d) - channel calibration.

17. Table 3.2.F-1 and Table 4.2.F-1: include Torus Pressure instrumentation.

18. Table 4.2.F-1 (Dresden only) - channel calibrations for the following instruments: Reactor Vessel Pressure (Item 1), Reactor Vessel Water Level (Item 2), Torus Water Level (Item 3), Torus Water Temperature (Item 4), Drywell Pressure - Wide Range (Item 5), Drywell Pressure - Narrow Range (Item 6), Safety and Relief Valve Position Indicators (Item 10), Source Range Neutron Monitors (Item 11).

19. TS 4.2.G.1 - footnote (b).

20. Relocate requirements for the Torus to Drywell differential pressure instrumentation to TSUP 3.7.H.

4.0 SUMMARY

The proposed TS for Section 3/4.2 will be clearer and easier to use as a result of the adaptation of the STS format. The changes result in additional limitations, restrictions, or changes based on generic guidance. It is the staff's assessment that the changes proposed in this amendment do not pose any decrease in safety, or an increase in the probability of an analyzed or unanalyzed accident. The revised TS changes do not reduce the existing margin of safety set forth by the current TS. Therefore, the staff finds the proposed TS changes acceptable.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 45177). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such

activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Skay

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