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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-295

ZION NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 105
License No. DPR-39

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

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated April 9, 1987, 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-39 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.105 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III, IV, V and Special Projects

Attachment:
Changes to the Technical Specifications

Date of Issuance: June 23, 1987

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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-304

ZION NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 95
License No. DPR-48

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

   A. The application for amendment by Commonwealth Edison Company (the licensee) dated April 9, 1987, and Supplemented March 3, 1987 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-48 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 95 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III, IV, V and Special Projects

Attachment:
Changes to the Technical Specifications

Date of Issuance: June 23, 1987

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 105 FACILITY OPERATING LICENSE NO. DPR-39

AMENDMENT NO. 95 FACILITY OPERATING LICENSE NO. DPR-48

DOCKET NOS. 50-295 AND 50-304

Revise Appendix A as follows:

Remove Pages	Insert Pages
iii	iii
viii	viii
ix	ix
x	x
xi	xi
	199a
	199b
200	200
201	201
202	202
203	203
204	204
205	205
	205a
206	206
207	207
	207a
	207b
	207c
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LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
3.9.3 CONTAINMENT ISOLATION VALVES	4.9.3 CONTAINMENT ISOLATION VALVES
A. The containment isolation valves specified in Tables 3.9-3a, 3.9-3b, 3.9-3c, and 3.9-3d* shall be OPERABLE.	A. The containment isolation valves specified in Tables 3.9-3a, 3.9-3b, 3.9-3c and 3.9-3d shall be demonstrated OPERABLE:
APPLICABILITY: Modes 1, 2, 3, 4 and 7	1. Prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit, by performance of a cycling test.
ACTION. With one or more of the isolation valves specified in Tables 3.9-3a, 3.9-3b, 3.9-3c and 3.9-3d* inoperable, maintain at least one valve OPERABLE in each affected penetration that is open and either:	2. At least once per 18 months by:
a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or	a. Verifying that on a Phase A containment isolation test signal, each Phase A isolation valve actuates to its isolation position.
b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position, or	b. Verifying that on a Phase B containment isolation test signal, each Phase B isolation valve actuates to its isolation position.
c. Isolate each affected penetration within 4 hours by use of at least one closed manual valve or blind flange, or	c. Verifying that upon a containment vent isolation signal, each containment vent valve actuates to its isolation position.
d. Be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.	
* Those valves identified with a + are considered to be dual function valves (ECCS or ESF/Containment isolation). For the purposes of this specification they are considered to be OPERABLE if they are capable of being manually or locally closed.	

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
3.9.3	4.9.3.A.2 (Continued) d. Verifying the closing time of each power-operated valve listed on Table 3.9-3a and 3.9-3b is equal to or less than 60 seconds, except for those valves noted as otherwise.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
3.9.4 MAIN STEAM ISOLATION VALVES & BYPASSES	4.9.4. MAIN STEAM ISOLATION VALVES & BYPASSES
A. The Main Steam Isolation Valves (MSIVs) specified in Table 3.9-4 shall be OPERABLE.	A. Surveillance and testing of the Main Steam Isolation Valves shall be performed as follows:
B. The Main Steam Isolation Valve Bypass Valves specified in Table 3.9-4 shall be OPERABLE or closed.*	
APPLICABILITY: Mode 1, 2, 3, and 7	
ACTION:	
MODE 1: With one MSIV inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise be in MODE 2 within the next 6 hours and in MODE 3 within the following 6 hours.	
MODES 2, 3 and 7: With one MSIV inoperable, subsequent operation in MODES 2, 3 or 7 may proceed provided:	
a) The isolation valve is maintained closed. Otherwise, be in HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.	
b) The provisions of Specification 3.0.4 are not applicable.	
* If a bypass valve is inoperable, it will be left closed and testing is not required.	

	Test	Frequency
1.	Partial valve closure (3-1/2 inch minimum)	Monthly
2.	Full valve closure (5 sec. maximum)	Refueling outage

B. Surveillance and testing of the Main Steam Isolation Valve Bypass Valves will be performed as follows:

	Test	Frequency
1.	Full valve closure	Quarterly

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
3.9.5. CONTAINMENT INTEGRITY	4.9.5. CONTAINMENT INTEGRITY
A. The CONTAINMENT INTEGRITY shall not be violated whenever a nuclear core is installed in the reactor unless the reactor is in the COLD SHUTDOWN condition and the shutdown margin is $\geq$ 1% $\Delta k/k$.	A. Not Applicable
B. The CONTAINMENT INTEGRITY shall not be violated when the reactor vessel head is removed unless the reactor is in the COLD SHUTDOWN condition and the shutdown margin is $\geq$ 10% $\Delta k/k$.	B. Not Applicable
C. Positive reactivity changes shall not be made by rod drive motion when the CONTAINMENT INTEGRITY is not intact except for rod drop tests and rod disconnecting and reconnecting provided the reactor is initially subcritical by at least 10% $\Delta k/k$.	C. Not Applicable
D. Positive reactivity changes shall not be made by boron dilution when the CONTAINMENT INTEGRITY is not intact unless the reactor is maintained subcritical by at least 10% $\Delta k/k$.	D. Not Applicable

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COMPONENT NAME	COMPONENT NUMBER
Isolation Valve Seal Water Tank	IW001
Isolation Valve Seal Water Header #1	IW031-1/2"-ER
Isolation Valve Seal Water Header #2	IW064-3/4"-XIN
Isolation Valve Seal Water Header #3	IW011-3/4"-AAR
Isolation Valve Seal Water Header #4	IW063-1/2"-EN
Isolation Valve Seal Water Header #5	IW013-3/4"X-1R
Seal Water Header #1 Isolation Valve	IW0192
Seal Water Header #2 Isolation Valve	IW0194
Seal Water Header #3 Isolation Valve	IW0190
Seal Water Header #4 Isolation Valve	IW0193
Seal Water Header #5 Isolation Valve	IW0191

ISOLATION SEAL WATER SYSTEM

TABLE 4.9-1

COMPONENT NAME	COMPONENT NUMBER
Penetration Pressurization Air Compressor #1	1PP001-#1
Penetration Pressurization Air Compressor #0	0PP001-#0
Penetration Pressurization Air Compressor #2	2PP001-#2

Penetration Pressurization System

TABLE 4.9-2

VALVE NUMBER	FUNCTION
AOV-BD0001	Blowdown from Steam Generator B
AOV-BD0002	Blowdown from Steam Generator B
AOV-BD0003	Blowdown from Steam Generator D
AOV-BD0004	Blowdown from Steam Generator D
AOV-BD0005	Blowdown from Steam Generator C
AOV-BD0006	Blowdown from Steam Generator C
AOV-BD0007	Blowdown from Steam Generator A
AOV-BD0008	Blowdown from Steam Generator A
FCV-BD17	Common Steam Generator Blowdown Line
AOV-CC9437	Cooling Water Return from Excess Letdown Hx
AOV-DT9157	Nitrogen to Reactor Coolant Drain Tank*
AOV-DT9159A & B	Reactor Coolant Drain Tank to Gas Analyzer
AOV-DT9160A & B	Reactor Coolant Drain Tank to Waste Gas
AOV-DT9170 & LCV-DT1003	Reactor Coolant Drain Tank Pump Discharges
FCV-FP08	Fire Protection to Containment
FCV-IA01A & B	Instrument Air Supply to Containment*
FCV-PR19A & B	Reactor Vessel Leak Detection Sample
FCV-PR20A & B	Reactor Vessel Leak Detection Sample
FCV-PR21A & B	Reactor Vessel Leak Detection Sample
FCV-PR22A & B	Reactor Vessel Leak Detection Sample
FCV-PR23A & B	Reactor Vessel Leak Detection Sample
FCV-PR24A & B	Reactor Vessel Leak Detection Sample
SOV-PR25A	Containment Air Particulate & Gas Monitor Inlet*
SOV-PR26A	Containment Air Sample*
SOV-PR25B	Containment Air Sample*
SOV-PR26B	Containment Air Sample*
SOV-PR25C	Containment Air Sample*
SOV-PR26C	Containment Air Sample*
SOV-PR25D	Containment Air Sample*
SOV-PR26D	Containment Air Sample*

* Indicates that Type C Local Leak Rate Testing is required.

TABLE 3.9-3a

CONTAINMENT ISOLATION VALVES

PHASE "A"

VALVE NUMBER	FUNCTION
AOV-RC8025 & RC8026	Pressurizer Relief Tank to Gas Analyzer
AOV-RC8028 & RC8029	Primary Water to Pressurizer Relief Tank
AOV-RC8033	Nitrogen to Pressurizer Relief Tank*
AOV-RV0001 & RV0002	Containment Purge Supply*#
AOV-RV0003 & RV0004	Containment Purge Exhaust*#
AOV-RV0005 & RV0006	Containment Vent Isolation#
FCV-RV111 & RV112	Heating Water Supply to Containment
FCV-RV113 & RV114	Heating Water Return from Containment
FCV-SA01A & B	Service Air Supply to Containment
AOV-SI8880	Nitrogen to Accumulators*
FCV-SS02	Steam Generator Blowdown Sample
FCV-SS03	Steam Generator Blowdown Sample
FCV-SS04	Steam Generator Blowdown Sample
FCV-SS05	Steam Generator Blowdown Sample
AOV-SS9354A & B	Pressurizer Steam Sample
AOV-SS9355A & B	Pressurizer Liquid Sample
AOV-SS9356A & B	Reactor Coolant Hot Leg Sample
AOV-SS9357A & B	Accumulator Sample
MOV-VC8100	RCP Seal Water Return
MOV-VC8105 & VC8106	Charging to Regenerative Heat Exchanger
AOV-VC8152 & VC8153	Letdown from Regenerative Heat Exchanger
FCV-VN02A & B	Aux. FW Pump Steamline Drain from Containment
FCV-VF01A & B	Hydrogen Recombiner Return to Containment
FCV-WD17A & B	Discharge from Containment Sump Pumps

* Indicates that Type C Local Leak Rate Testing is required.

\# Indicates a required valve closing time of less than 7 seconds.

TABLE 3.9-3a

CONTAINMENT ISOLATION VALVES

PHASE "A" (Continued)

VALVE NUMBER	FUNCTION
MOV-CC9413A & B	Cooling Water Supply to RCPs
MOV-CC9414	Cooling Water Return From RCP Oil Coolers
MOV-CC9438 & CC685	Cooling Water Return From RCP Thermal Barriers

TABLE 3.9-3b

CONTAINMENT ISOLATION VALVES

PHASE "B"

VALVE NUMBER	FUNCTION
BD-0009	Blowdown From Steam Generator B
BD-0010	Blowdown From Steam Generator B
BD-0011	Blowdown From Steam Generator D
BD-0012	Blowdown From Steam Generator D
BD-0013	Blowdown From Steam Generator C
BD-0014	Blowdown From Steam Generator C
BD-0015	Blowdown From Steam Generator A
BD-0016	Blowdown From Steam Generator A
CC-9486	Cooling Water Supply to RCPs (Check)
CC-9500	Cooling Water Supply to Excess Ltd. Hx (Check)
CS-0005	Containment Spray Header Isolation (Check)*
CS-0009	Containment Spray Header Isolation (Check)*
CS-0013	Containment Spray Header Isolation (Check)*
CS-0037	Containment Spray Pump A Recirc*
CS-0038	Containment Spray Header Drain*
CS-0040	Containment Spray Pump B Recirc*
CS-0041	Containment Spray Header Drain*
CS-0043	Containment Spray Pump C Recirc*
CS-0044	Containment Spray Header Drain*
CS-0052	Containment Pressure Sensor Isolation
CS-0053	Containment Pressure Sensor Isolation
CS-0054	Containment Pressure Sensor Isolation
CS-0055	Containment Pressure Sensor Isolation
CS-0056	Containment Pressure Sensor Isolation
CS-0057	Containment Pressure Sensor Isolation
CS-0058	Containment Pressure Sensor Isolation
CS-0059	Containment Pressure Sensor Isolation
DW-0030	Demineralized Flushing Water to Containment
DW-0038	Demineralized Flushing Water to Containment
DT-9158	Nitrogen to Reactor Coolant Drain Tank (Check)*

* Indicates that Type C Local Leak Rate Testing is required.

TABLE 3.9-3c

CONTAINMENT ISOLATION VALVES

MANUALLY OPERATED

VALVE NUMBER	FUNCTION
PP-0101	Penetration Pressurization Header Isolation
PP-0102	Penetration Pressurization Header Isolation
PP-0103	Penetration Pressurization Header Isolation
PP-0104	Penetration Pressurization Header Isolation
PR-0029	Containment Air Sample Return (Check)*
PR-0030	Containmen Air Sample Return*
RC-0002	Pressurizer Dead Weight Calibrator
RC-8045	Nitrogen to Pressurizer Relief Tank*
RC-8079	Relief Valve Header to Pressurizer Relief Tank (Check)
SF-0010	Purification Pump to Refueling Cavity
OSF-0011(U1)	Refueling Cavity to Purification Pump
OSF-0012(U2)	Refueling Cavity to Purification Pump
SF-8767	Refueling Cavity to Purification Pump
SF-8787	Purification Pump to Refueling Cavity
2SI-0003(U2)	SIS Test Line Grab Sample Stop
1PI-933 Root Valve (U1)	Root Valve (U1) SIS Test Line Press. Inst. Root
SI-8933	Nitrogen to Accumulators (Check)
SI-8957A & B	Residual Heat Loop Return (Checks)
SI-8961	Accumulator Test Line Isolation
SI-9032	BIT Cold Leg Injection (Check)
VC-8224	Reactor Coolant Loop Fill Header (Check)
VC-8246	Charging to Regenerative Heat Exchanger (Check)
VC-8369A	RCP Seal Water Supply
VC-8372A	RCP Seal Water Supply
VC-8369B	RCP Seal Water Supply
VC-8372B	RCP Seal Water Supply
VC-8369C	RCP Seal Water Supply
VC-8372C	RCP Seal Water Supply
VC-8369D	RCP Seal Water Supply
VC-8372D	RCP Seal Water Supply
VC-8368A	RCP Seal Water Supply (Check)
VC-8368B	RCP Seal Water Supply (Check)
VC-8368C	RCP Seal Water Supply (Check)
VC-8368D	RCP Seal Water Supply (Check)
VC-8480A & B	Reactor Coolant Loop Fill Header

* Indicates that Type C Local Leak Rate Testing is required.

TABLE 3.9-3c

CONTAINMENT ISOLATION VALVES

MANUALLY OPERATED (Continued)

VALVE NUMBER	FUNCTION
MOV-CS0002	Containment Spray Header Isolation
MOV-CS0004	Containment Spray Header Isolation
MOV-CS0006	Containment Spray Header Isolation
MOV-FW0016	Feedwater to Steam Generator B
MOV-FW0017	Feedwater to Steam Generator C
MOV-FW0018	Feedwater to Steam Generator A
MOV-FW0019	Feedwater to Steam Generator D
MOV-FW0050	Aux Feed to Steam Generator B
MOV-FW0051	Aux Feed to Steam Generator B
MOV-FW0052	Aux Feed to Steam Generator C
MOV-FW0053	Aux Feed to Steam Generator C
MOV-FW0054	Aux Feed to Steam Generator A
MOV-FW0055	Aux Feed to Steam Generator A
MOV-FW0056	Aux Feed to Steam Generator D
MOV-FW0057	Aux Feed to Steam Generator D
+MOV-MS0005	Steam to Auxiliary Feedwater Pump
+MOV-MS0006	Steam to Auxiliary Feedwater Pump
+MOV-MS0011	Steam to Auxiliary Feedwater Pump
MOV-RH8701	Residual Heat Loop Outlet
+MOV-RH9000	Hot Leg Safety Injection
+MOV-SI8801A & B	Boron Injection Tank Discharge
+MOV-SI8802	Cold Leg Safety Injection
+MOV-SI8809A & B	Residual Heat Removal to Loops
+MOV-SI9011A & B	Hot Leg Safety Injection
+MOV-SW0001	Service Water to Fan Coolers
+MOV-SW0002	Service Water to Fan Coolers
+MOV-SW0003	Service Water to Fan Coolers
+MOV-SW0004	Service Water to Fan Coolers

* Indicates that Type C Local Leak Rate Testing is required.

TABLE 3.9-3d

CONTAINMENT ISOLATION VALVES

OTHER

VALVE NUMBER	FUNCTION
+MOV-SW0005	Service Water to Fan Coolers
+MOV-SW0006	Service Water to Fan Coolers
+MOV-SW0007	Service Water Return From Fan Coolers
+MOV-SW0008	Service Water Return From Fan Coolers
+MOV-SW0009	Service Water Return from Fan Coolers
+MOV-SW0010	Service Water Return from Fan Coolers
+MOV-SW0011	Service Water Return from Fan Coolers

TABLE 3.9-3d

CONTAINMENT ISOLATION VALVES

OTHER (Continued)

VALVE NUMBER	FUNCTION
HOV-MS0001	Main Steam Isolation Valve - Loop 1
HOV-MS0002	Main Steam Isolation Valve - Loop 2
HOV-MS0003	Main Steam Isolation Valve - Loop 3
HOV-MS0004	Main Steam Isolation Valve - Loop 4
FCV-MS82	MSIV Bypass Valve - Loop 1
FCV-MS83	MSIV Bypass Valve - Loop 2
FCV-MS84	MSIV Bypass Valve - Loop 3
FCV-MS85	MSIV Bypass Valve - Loop 4

TABLE 3.9-4

CONTAINMENT ISOLATION VALVES

MAIN STEAM ISOLATION VALVES

Basis:

3.9 The isolation valve seal water system interposes water inside the penetrating line between two isolation points located outside of containment. The water is introduced at a pressure of at least 50 psig which is slightly higher than the containment post accident pressure. (1) The possibility of leakage from a containment or reactor coolant system past the first isolation point is thus prevented by assuring that if leakage does exist, it will be from the seal water system into the containment.

The system includes one 160 gallon seal water tank for each unit which is capable of supplying the total requirements of the system. The tank is filled with water from the primary make-up water system and pressurized with air from the Penetration Pressurization header. To ensure an adequate supply of seal water a back-up source of make-up water for the tank is provided by a connection to the service water system. The high pressure nitrogen supply used to provide a backup source of pressure in the seal water tank does not require any external power source to maintain the required driving pressure.

The low limit of 70 gallons is based upon having an initial supply of water prior to make-up. The low limit of 68 psig is based on a pressure of 50 psig between the isolation valves. Low tank level and pressure are alarmed in the control room.

The function of the containment penetration and weld channel pressurization system is to prevent leakage of containment air through penetrations and liner welds under all conditions by supplying air above the containment post accident pressure to the positive pressure zones incorporated in the penetration and weld channel design (2).

Flow sensing devices are connected to each quadrant header of a pressurization system and to the main header. Pressure sensors are also connected to each quadrant header. Flow is recorded from each quadrant and the main header, and is alarmed in the control room. Low pressure is also alarmed. A leak would be expected to build up slowly and would therefore be noted before leakage became excessive. (2)

In the unlikely event of a loss of coolant accident the containment atmosphere will be isolated from the environment by the use of isolation valves and other barriers for all pipelines which penetrate the containment unless such lines are required for service during the accident. All lines for which isolation is required are provided with two barriers so that no single failure will prevent isolation. No manual operation is required for immediate isolation. Automatic isolation is initiated by a safety injection signal. (3)

In lines where two automatic isolation valves are required, each valve operator will be actuated by an independant signal. Each valve operator is also supplied from a separate emergency supply. (3)

The main steam isolation valves serve to limit an excessive Reactor Coolant System cooldown rate and resultant reactivity insertion following a main steam line break accident. Their ability to close fully shall be verified at each refueling outage. A closure time of 5 sec. was selected since this is the closure time assumed in the safety evaluation. (4) The partial valve stroke test will take place to verify the freedom of the valve disc to function as required. A limit switch in the test circuit prevents the valve disc from entering the flow stream and slamming the valve shut during in-service testing.

The main steam bypass valves and lines are sized so that the reactor will remain subcritical after reactor trip for a spurious opening of a bypass valve or a double-ended rupture of a bypass line. (4)

Containment integrity requirements are based on reactor coolant system conditions. Cold shutdown assures that no steam will be formed and hence there would be no pressure buildup in the containment if the reactor coolant system ruptures.

The shutdown conditions of a reactor are selected based on the type of activities that are being carried out. When a reactor head is not to be removed, the specified cold shutdown margin of 1% ΔK/K precludes criticality under any occurrence. During refueling a reactor is subcritical by 10% ΔK/K. This precludes criticality under any circumstances even though fuel is being moved or control rods withdrawn. Positive reactivity addition by rod motion from an initial 10% ΔK/K subcritical reactor condition precludes criticality because the reactor would be substantially subcritical even if all control rods were completely withdrawn. Positive reactivity changes by boron dilution may be required or small fluctuations may occur during preparation for, recovery from, or during refueling, but maintaining the rector subcritical by at least 10% ΔK/K precludes criticality under any circumstances. (5)

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(1) FSAR Section 6.6.5
(2) FSAR Section 6.6.6
(3) FSAR Section 6.6.1
(4) FSAR Section 14.2.5
(5) FSAR Table 3.2.1-1

Basis:

4.9 The isolation valve seal water system and penetration pressurization systems are essentially static systems during normal operation; abnormal condition within the systems are alarmed in the control room. The limiting conditions within the systems are checked monthly to determine long-term gradual degradation of system status. In addition, the penetration air compressors are load tested following maintenance to ensure operability; and the headers are pressure checked following maintenance to ensure system integrity.

Periodic testing of containment isolation valves assures their continued operability. More frequent instrument channel checks result in increased reliability. In addition, valve movement is timed to ensure proper closure times.

The main steam isolation valves are functionally tested on a more frequent interval to establish freedom of movement of the valve disc.