Public Service
Electric and Gas
Company

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FEB 18 1986

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Attention: Ms. Elinor Adensam, Director
Project Directorate 3
Division of BWR Licensing

Dear Ms. Adensam:

FEEDWATER VALVE CLASSIFICATION AND TESTING
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

As a result of discussions with the Nuclear Regulatory Commission (NRC) Staff, Public Service Electric and Gas Company (PSE&G) is providing specific information to detail the valve classifications and testing requirements for the feedwater lines. In summary, the major points of discussion include:

1. Classification of the third check valve in each feedwater line (AE-V001 and AE-V005) as a containment isolation valve and therefore, inclusion of these valves in FSAR Table 6.2-16 and Technical Specification Table 3.6.3-1.

2. Appendix J Type C testing of these third valves with water at 1.10 Pa and identification of the leakage criteria in Technical Specification 3.4.6.1.

3. Inclusion of the Appendix J Type C leakage for the first two check valves in each feedwater line (AE-V002, AE-V003, and AE-V006, AE-V007) in the 0.60 La acceptance criteria of Appendix J.

A001
1/1

With regard to the first point of discussion, in addition to classifying valves AE-V001 and AE-V005 as containment isolation valves, the first valve in each branch line between the second and third feedwater check valves will also be classified as containment isolation valves. The lines between the second and third check valves are from the RCIC system (BD-V005), the HPCI system (BJ-V059) and the RWCU system (AE-V021). Hence, these valves, as well as those in the feedwater lines, will be included in FSAR Tables 6.2-16 and 24 (see Attachment 1) and Technical Specification Table 3.6.3-1 (see Attachment 2).

With regard to the second point of discussion, the additional containment isolation valves identified above form the long-term containment boundary for the feedwater system by establishing a water seal on the third feedwater check valves. Since the leakage past valves BD-V005, BJ-V059 and AE-V021 will be into the RCIC, HPCI and RWCU systems, respectively, which are seismically qualified, water-filled, closed systems outside containment, there is no requirement to identify their specific leakage in the Technical Specifications. Therefore, leakage through the valves which form the long term seal boundary of the feedwater lines will be limited to 10 gpm as specified in the Technical Specifications (see Attachment 2).

Finally, regarding the third point of discussion, PSE&G previously submitted six 10CFR50 Appendix J Exemption Requests (letter from C.A. McNeill, Jr. to E. Adensam on December 12, 1985) in which Exemption Request 3 discussed feedwater valves AE-V002, AE-V003, AE-V006 and AE-V007. Specifically, deviation from paragraph III.C.3, which requires all penetrations and valves subject to Type B and C tests (except those sealed with fluid from a seal system) to have their combined leakage maintained less than 0.60 La, was requested on the basis of the response to Safety Evaluation Report (SER) Confirmatory Item #13 (Short-Term Feedwater System Analysis). However, the staff has concluded that since valve stem leakage may occur from the air-operators on valves AE-V002 and AE-V006 during the short-term feedwater system line-up, the leakage determined from the Type C air test on valves AE-V002, AE-V003, AE-V006 and AE-V007, should be appropriately included in the 0.60 La criteria. PSE&G will modify the Technical

Specifications accordingly (see Attachment 2). As a result, Exemption Request 3, transmitted in the December 12, 1985 PSE&G letter to NRC, is withdrawn.

Finally, Attachment 1 to this letter reflects the necessary revisions to the FSAR in support of the items summarized above while Attachment 2 provides a draft copy of the necessary revisions to the Technical Specifications.

Should you have any questions on the subject filing, please do not hesitate to call us.

Sincerely,

Attachments (2)

C D.H. Wagner
USNRC Licensing Project Manager

R.W. Borchardt
USNRC Senior Resident Inspector

ATTACHMENT 1

The MSIV sealing system is divided into two independent subsystems. The inboard subsystem maintains a seal between the two MSIVs, and the redundant outboard subsystem maintains a seal between the outboard MSIV and the MSSV. Sealing is accomplished by maintaining a higher pressure in the main steam lines than in the containment. The operation of the MSIV sealing system is discussed in Section 6.7.

A main steam drain line connects to the main steam lines between the two MSIVs on each main steam line outside of the primary containment. Isolation of this line is provided by the inboard MSIV and by a motor-operated globe valve in the drain line that automatically closes upon receipt of a containment isolation signal.

6.2.4.3.1.2 Feedwater Lines

CONTAINMENT ISOLATION

The portion of the feedwater system that forms part of the RCPB and penetrates the primary containment has three valves. The first valve, a check valve, is classified as a containment isolation valve and located inside the primary containment. The second valve, a positive-acting check valve, is classified as a containment isolation valve and located outside the primary containment as close as possible to the primary containment penetration. Upon a loss of water flow into the RPV, these valves close as normal check valves, and, in addition, the main control room operator can assist in starting the outboard valve closure by sending a signal to open two fail-open solenoid valves arranged in parallel, releasing air pressure from the operator cylinder. If a break occurs in the feedwater line, the two containment isolation valves prevent significant loss of inventory and offer immediate isolation. During the postulated LOCA, it is desirable to maintain reactor coolant makeup from all sources of supply. For this reason, the feedwater containment isolation valves do not automatically close on a primary containment isolation signal.

PER LINE

A third valve in the feedwater line is a motor-operated check valve located outside primary containment, and is capable of being remotely closed from the main control room. This valve provides redundant isolation and long-term leakage protection upon operator judgment that continued makeup through the feedwater line is unavailable.

IS CLASSIFIED A CONTAINMENT ISOLATION VALVE

After observing indication of low feedwater flow, the operator may close the third valve within 20 minutes after a postulated LOCA.

CONTAINMENT ISOLATION

In addition to the third valve, there are valves on the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) discharge lines, and on the reactor water cleanup system (RWCU) return lines that connect to the feedwater lines between the outside containment isolation valves. ~~and the third valve.~~ Those valves can be closed by operator action from the main control room.

TWO

See Section 5.4.9 for a further discussion of the design of the main steam lines and the feedwater lines.

6.2.4.3.1.3 Residual Heat Removal Shutdown Cooling Suction Line

The residual heat removal (RHR) shutdown cooling suction line penetrates primary containment and taps into one of the two recirculation loops. Isolation is provided by two normally closed motor-operated gate valves that are interlocked closed by a reactor high pressure signal during normal operation and are maintained closed during an accident by a low water level isolation signal. One containment isolation valve is located inside primary containment, and the second valve is located outside primary containment.

ADDITIONALLY, THE HPCI AND/OR RCIC VALVES CAN BE OPENED FROM THE MAIN CONTROL ROOM TO PROVIDE A WATER SEAL ON THE THIRD VALVE IN ADDITION TO SUPPLYING WATER TO THE RPV. SEE SECTION 6.2.3.2.3 FOR FURTHER DETAILS.

instrumentation, and those lines containing excess flow check valves, will have their leak tightness verified during the Type A test. These instrument lines were designed on an "other defined basis" of GDC 56 (see Sections 6.2.4.3.2.21 and 6.2.4.3.5) and hence are not capable of being Type C tested. Instrument lines are provided with a manual isolation valve outside containment for greater reliability. The systems they serve are closed systems outside containment, thereby providing reliable boundaries against containment leakage. The Type A test that will be conducted on these instrument lines serves to adequately assure integrity.

6.2.4.4.3 Feedwater Isolation Valves DELETED

~~10CFR50, Appendix J, Paragraph III.C.2(b) requires valves that are sealed with fluid from a seal system to be pressurized with that fluid to a test pressure not less than 1.10 Pa. The feedwater isolation valves, consisting of three check valves of which two are outside containment, will be sealed with water from the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems for at least 30 days following a LOCA. Leakage on the inboard and first outboard check valves will be determined from a Type C gas test conducted at Pa but will not be added to the 0.60La allowable leakage total. The design of the feedwater system includes two check valves serving as isolation valves, one inside containment and one outside containment with an air-operator, followed by another check valve outside containment with a motor-operator (see FSAR Figure 6.2-28, Sheet 2 of 48). In addition, a feedwater line fill network outside containment is used to maintain a water seal in the feedwater lines following a LOCA. The fill network consists of the HPCI and the RCIC jockey pump loops and utilizes the HPCI and RCIC injection lines to the feedwater piping to provide makeup water to the piping between the outboard check valves.~~

~~A Type C gas test will be performed at Pa on the two check valves classified as containment isolation valves, with leakage through the valves limited to 15 scf per hour. The leakage values obtained will not be included in the 0.60La allowable leakage because during the initial portion of a LOCA, water in the feedwater system piping downstream of the no. 3 feedwater heater will flash to steam. This steam will continue to flow toward the reactor pressure vessel until pressure in the feedwater line decreases to the containment pressure, at which time the isolation valves will be closed manually. In addition, a water seal will be maintained upstream of the third feedwater heater since the maximum water temperature is 221.9°F and the feedwater is in a no flow condition. These conditions prevent the outward~~

~~leakage of radioactive contaminants through the isolation valves during approximately a 1-hour period after the accident, i.e., until the water seal is reestablished; thus, no bypass leakage of the feedwater system is expected to occur.~~

~~A Type C water test will be performed at 1.10Pa on the outermost check valve and its leakage included with all other hydrostatically tested valves. Once the water seal system is activated, any external leakage would be through this boundary valve via the seal fluid. The Type C water test will be sufficient to assure proper leakage verification. Also see Sections 5.4.9, 6.2.3.2.3, and 6.2.4.3.1.2.~~

6.2.4.4.4 Main Steam Isolation Valves

10CFR50, Appendix J, Paragraph III.C.2(b) requires valves that are sealed with fluid from a system to be pressurized with that fluid to a test pressure not less than 1.10Pa. The main steam isolation valves (MSIVs) will be leakrate tested by pressurizing between the inboard and outboard MSIVs and between the outboard MSIV and the main steam stop valve (MSSV) at a reduced pressure of 5 psig. The main steam isolation valve sealing system (MSIVSS) (see Section 6.7) is initiated manually approximately 20 minutes after the onset of a LOCA and only after main steam line pressure is below 20 psig. This latter restriction is necessary since the MSIVSS maintains the pressure between the valves at reactor vessel pressure plus 5 psig and because a back pressure differential of 25 psi will lift the MSIV disk, unseating the valve. Therefore, testing of the two MSIVs simultaneously, between the valves, at 1.10Pa would lift the disk at the inboard valve and result in a meaningless test. A test will be conducted at 5 psig (the seal system differential pressure) with the total observed leakage through both the outboard MSIV and the MSSV conservatively assigned to that penetration and limited to 11.5 scf per hour for any one main steam line.

6.2.4.4.5 Containment Air Locks

10CFR50, Appendix J, Paragraph III.D.2(b)(ii) requires air locks that have been used during periods when containment integrity is not required by the plant's Technical Specifications to be tested at the end of such periods at not less than Pa. In addition to the 6-month intervals, air locks will be subjected to an overall air lock leakage integrity test only when maintenance on the air lock has been performed that could affect the air lock's sealing capability. This is an exemption to Paragraph III.D.2(b)(ii)

All valves that are exposed to the primary containment atmosphere after a DBA are tested with air or nitrogen at primary containment peak accident pressure, P_a, as defined in Table 6.2-22.

All valves in lines designed to be filled with a liquid for a minimum of 30 days after a DBA are leakage-rate-tested with the same liquid at a minimum pressure of P_a.

Liquid leakage is not converted to equivalent air leakage, or added to the Type C testing total, but is reported separately as "liquid leakage" and included in the Technical Specifications. All the valves tested with liquid are identified in Table 6.2-24.

INSERT →

The Total Allowable Leakage acceptance criteria for penetrations and isolation valves subject to Type B and C tests are given in Chapter 16.

6.2.6.4 Scheduling and Reporting of Periodic Tests

The periodic leakage rate test schedules for Type A, B, and C testing are given in Chapter 16.

Type B and C tests are performed prior to initial criticality and periodically thereafter, during shutdown periods or normal plant operations.

The preoperational Type A test follows the preoperational ASME Section III pressure test. A primary containment isolation system functional test and Type B and C leakage tests are completed prior to the preoperational Type A test.

The procedure for reporting test results is given in Chapter 16.

Containment isolation of the feedwater lines represents a unique situation which requires a combination of air and water testing and therefore merits further discussion. During the short-term feedwater system line-up, isolation of the feedwater lines is provided by valves AE-V002, AE-V003, AE-V006 and AE-V007 and the water seal upstream of the third feedwater heaters (see Section 6.2.3.2.3). Hence, a Type C air test will be performed on these valves with their leakage appropriately included in the 0.60 La criteria. During the long-term feedwater system line-up, isolation of the feedwater lines is provided by a water seal on the third feedwater check valves, AE-V001, and AE-V005. Identification of these valves as containment isolation valves requires a similar classification for the first valve in each branch line between the second and third feedwater check valves, BD-V005, BJ-V059, and AE-V021. Since the leakage past these valves will be into the RCIC, HPCI and RWCU systems, respectively, which are seismically qualified, water-filled, closed systems outside containment, there is no requirement to identify their specific leakage in the Technical Specifications. However, leakage through the valves which form the long-term seal boundary of the feedwater lines (i.e., AE-V001, AE-V005, AE-V021, BD-V005 and BJ-V059) will be determined by a Type C water test and will be limited to 10 gpm as specified in the Technical Specifications. Since these valves are sealed with water, the leakage determined from their Type C test need not be included in the 0.60 La criteria per 10CFR50 Appendix J paragraph III.C.3.

TABLE 6.2-

CONTAINMENT PENE

Containment Penetration Number	Line Isolated	Fluid	Line Size, in.	NRC General Design Criterion	ESF System(11)	Valve Number and/or Orifice Plate	Valve Type(1)	Valve Location	Valve Arrangement(2) P&ID(8)	Type C Test
PROCESS LINE PENETRATIONS										
P-1A	Main Steam	Steam/ water	26	55	No	AB-V028	GB	Inside	1/A	No
			26			AB-V032	GB	Outside		No
			2			AB-V059	GB	Outside		No
			2			KP-V010	GB	Outside		No
P-1B	Main Steam	Steam/ water	26	55	No	AB-V029	GB	Inside	1/A	No
			26			AB-V033	GB	Outside		No
			2			AB-V060	GB	Outside		No
			2			KP-V009	GB	Outside		No
P-1C	Main Steam	Steam/ water	26	55	No	AB-V030	GB	Inside	1/A	No
			26			AB-V034	GB	Outside		No
			2			AB-V061	GB	Outside		No
			2			KP-V008	GB	Outside		No
P-1D	Main Steam	Steam/ water	26	55	No	AB-V031	GB	Inside	1/A	No
			26			AB-V035	GB	Outside		No
			2			AB-V062	GB	Outside		No
			2			KP-V007	GB	Outside		No
P-2A	Feedwater	Water	24	55	No	AE-V003	CK	Inside	2/B	Yes (19)
			24			AE-V002	CK	Outside		Yes (19)
P-2B	Feedwater	Water	24	55	No	AE-V007	CK	Inside	2/B	Yes (19)
			24			AE-V006	CK	Outside		Yes (19)
P-3	RHR Shutdown Cooling Suction	Water	20	55	Yes	BC-V071	GT	Inside	3/C	Yes
			1			BC-PSV-4425	PSV	Inside		Yes
			20			BC-V164	GT	Outside		Yes
P-4A	RHR Shutdown Cooling Return	Water	12	55	Yes	BC-V014	CK	Inside	4/D	Yes
			1			BC-V118	GB	Inside		Yes
			12			BC-V013	GB	Outside		Yes
P-4B	RHR Shutdown Cooling Return	Water	12	55	Yes	BC-V111	CK	Inside	4/D	Yes
			1			BC-V117	GB	Inside		Yes
			12			BC-V110	GB	Outside		Yes

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4	AE-V021	CK	OUTSIDE	YES (22)
6	BD-V005	GT	OUTSIDE	YES (22)
24	AE-V001	CK	OUTSIDE	YES (22)
4	AE-V024	CK	OUTSIDE	YES (22)
8	BJ-V059	GT	OUTSIDE	YES (22)
24	AE-V008	CK	OUTSIDE	YES (22)

RATIONS

Length of Pipe from Cont. to Outside Valves, ft.	Primary Mode of Operation(3)	Secondary Method of Actuation(12)	Normal Valve Position(4)	Shutdown Valve Position(10)	Post-Accident Position(9)	Power Failure Valve Position	Containment Isolation Signal(5)	Valve Closure Time, s	Power Source(6)	Remarks(7)
-	Instr. gas	Manual	O	C	C	C	B,D,E,F,G,K	5	W	a,t,y,cc
3.8	Compr. air	Manual	O	C	C	C	B,D,E,F,G,K	5	Z	a,t,y,cc
9.4	AC motor	Manual	O	C	C	AS IS	B,D,E,F,G,K	45	D	t,y,cc
16.5	AC motor	Manual	C	O	C	AS IS	A,H,I	45	D	t,x,y,cc
-	Instr. gas	Manual	O	C	C	C	B,D,E,F,G,K	5	W	a,t,y,cc
3.8	Compr. air	Manual	O	C	C	C	B,D,E,F,G,K	5	Z	a,t,y,cc
9.4	AC motor	Manual	O	C	C	AS IS	B,D,E,F,G,K	45	D	t,y,cc
14.1	AC motor	Manual	C	O	C	AS IS	A,H,I	45	D	t,x,y,cc
-	Instr. gas	Manual	O	C	C	C	B,D,E,F,G,K	5	W	a,t,y,cc
3.8	Compr. air	Manual	O	C	C	C	B,D,E,F,G,K	5	Z	a,t,y,cc
9.4	AC motor	Manual	O	C	C	AS IS	B,D,E,F,G,K	45	D	t,y,cc
16.4	AC motor	Manual	C	O	C	AS IS	A,H,I	45	D	t,x,y,cc
-	Instr. gas	Manual	O	C	C	C	B,D,E,F,G,K	5	W	a,t,y,cc
3.8	Compr. air	Manual	O	C	C	C	B,D,E,F,G,K	5	Z	a,t,y,cc
9.4	AC motor	Manual	O	C	C	AS IS	B,D,E,F,G,K	45	D	t,y,cc
14.9	AC motor	Manual	C	O	C	AS IS	A,H,I	45	D	t,x,y,cc
-	Flow	None	O	C	C	NA	-	NA	NA	s
4.5	Flow	Manual (17)	O	C	C	C	None	NA	N	s
0.5	Flow	None	O	C	C	NA	-	NA	NA	s
4.5	Flow	Manual (17)	O	C	C	C	None	NA	N	s
-	AC motor	Manual	C	O	C	AS IS	J	45	A	D,s
-	Spring	None	C	C	C	NA	-	NA	NA	s,z
0.5	AC motor	Manual	C	O	C	AS IS	J	45	D	D,s
-	Flow	None(16)	C	O	C	NA	-	NA	NA	s
-	Spring	Manual	C	C	C	C	None	NA	B	t
0.0	AC motor	Manual	C	O	C	AS IS	J	45	D	s
-	Flow	None(16)	C	O	C	NA	-	NA	NA	s
-	Spring	Manual	C	C	C	C	None	NA	A	t
0.0	AC Motor	Manual	C	O	C	AS IS	J	45	D	s

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34.0	FLOW	MANUAL (13)	O	C	C	C	NONE	NA	D	t
33.3	DC MOTOR	MANUAL	C	C	C	AS IS	NONE	NA	B	s
40.12	FLOW	MANUAL (13)	O	C	C	C	NONE	NA	B	s
34.0	FLOW	MANUAL (13)	O	C	C	C	NONE	NA	D	t
31.5	DC MOTOR	MANUAL	C	C	O	AS IS	NONE	NA	A	s
40.1	FLOW	MANUAL (13)	O	C	C	C	NONE	NA	A	s

TABLE 6.2-16 (Cont'd)

(9) Post-Accident valve position (open or closed) is the position during the initial 10 minutes after an accident.

(10) Shutdown valve position (open or closed) is the position beyond the initial 10 minutes after an accident.

(11) The ESF System designation is applied to primary containment penetrations that are a part of an ESF System and where that part of the system provides or aids a function that is characteristic of an ESF System. Although reactivity control systems are not usually characterized as being ESF Systems, in this table reactivity control system penetrations are given the ESF system designation.

(12) Manual indicates remote manual initiation of valve closure from the main control room.

(13) The secondary mode of operation is AC motor.

(14) Operation is by local manual hand wheel.

(15) Deleted

(16) The valve actuator is only used to exercise the valve disk during testing.

(17) This is a spring loaded piston-actuated check valve. When the valve operator is in the open position, it will not resist valve closure. In this position the valve will function much like a simple check valve. In the de-energized position, the spring-loaded piston will assist in closing the valve. However, it will not close the valve against flow from the normal direction.

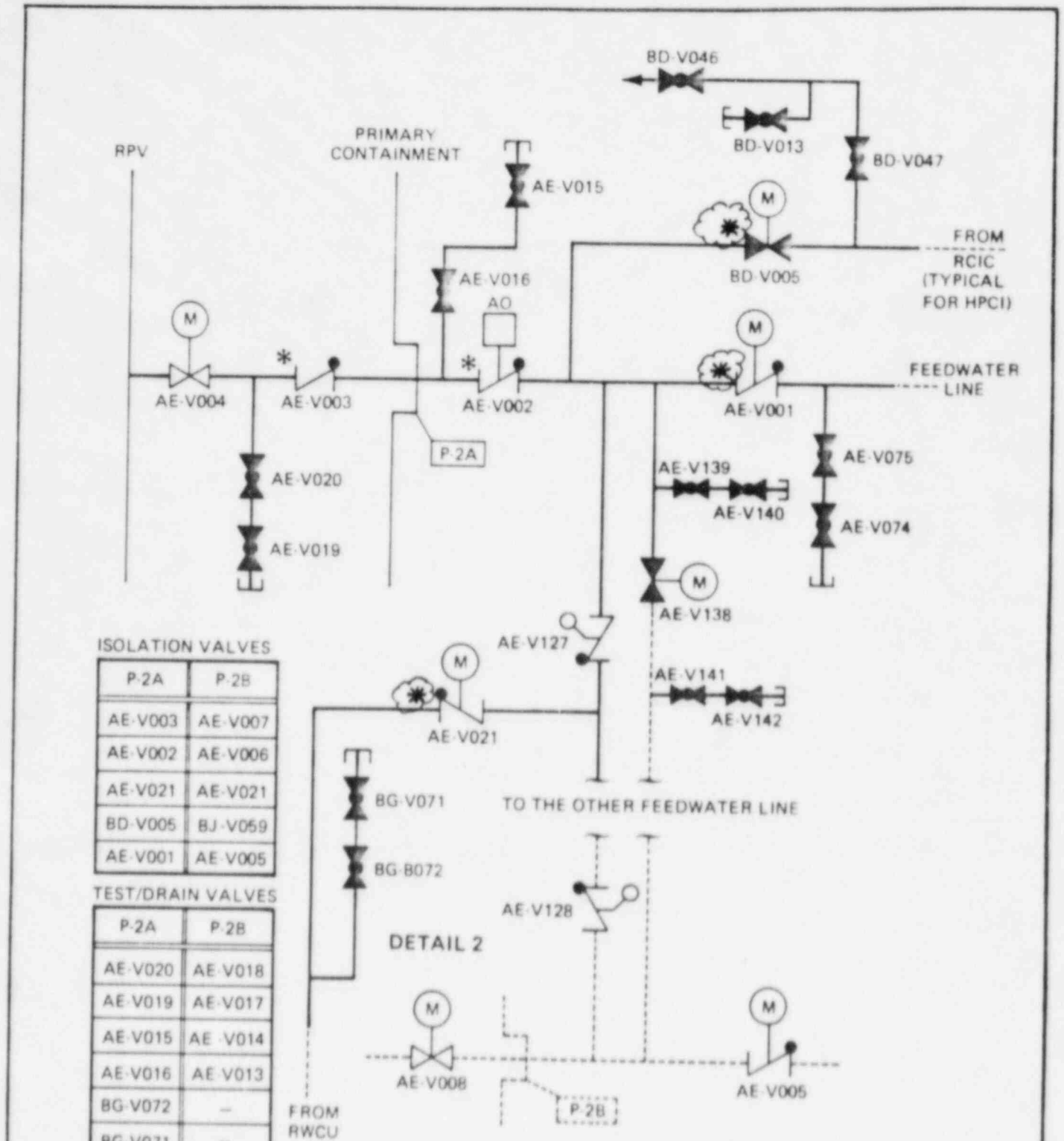
(18) The isolation signals for his valve are generated to provide proper system alignment for ECCS injection. By assuming the ECCS injection position, the valves also provide a containment isolation function.

(19) THESE VALVES ARE TESTED WITH AIR TO A PRESSURE OF Pa AND THE LEAKAGE IS INCLUDED IN THE 0.60La CRITERIA OF APPENDIX J.

(20) THESE VALVES FORM THE BOUNDARY FOR THE LONG-TERM SEAL OF THE FEEDWATER LINES AND HENCE ARE TESTED WITH WATER AT 1.10 Pa. LEAKAGE FROM ALL VALVES IS LIMITED TO 10 GPM.

CONTAINMENT PENETRATIONS/ISOLATION VALVE COMPLIANCE WITH 10 CFR 50, APPENDIX J

Penet Number	P&ID Number	System Description	Test Type	Inboard Isolation Barrier Description/ Valve Number	Notes	Outboard Isolation Barrier Description/ Valve Number	Notes
P 1A	M-41	Main steam line A	-	AB V028	6	AB-V032, AB-V059, KP-V010	6
P 1B	M-41	Main steam line B	-	AB V029	6	AB-V033, AB-V060 KP-V009	6
P 1C	M-41	Main steam line C	-	AB V030	6	AB-V034, AB-V061, KP-V008	6
P 1D	M-41	Main steam line D	-	AB-V031	6	AB-V035, AB-V062 KP-V007	6
P 2A	M-41	Feedwater	C	AE-V003	-	AE-V002, AE-V001 AE-V021, BD-V005	-
P 2B	M-41	Feedwater	C	AE-V007	-	AE-V006, AE-V005 AE-V021, BJ-V059	-
P 3	M-51	RHR shutdown cooling suction	C A,C	BC-V071 BC-PSV-4425	- 7,17	BC-V164	14
P 4A	M-51	RHR shutdown cooling return	C C	BC-V014 BC-V118	- -	BC-V013	-
P 4B	M-51	RHR shutdown cooling return	C C	BC-V111 BC-V117	- -	BC-V110	-
P 5A	M-52	Core spray to reactor	C C	BE-V002 BE-V072	- -	BE-V003	-
P 5B	M-52	Core spray to reactor	C C	BE-V006 BE-V071	- -	BE-V007 BJ-V001	- -
P 6A	M-51	LPCI	C	BC-V005, BC-V122	-	BC-V004	-
P 6B		LPCI	C	BC-V017, BC-V120	-	BC-V016	-
P 6C		LPCI	C	BC-V114, BC-V119	-	BC-V113	-
P 6D		LPCI	C	BC-V102, BC-V121	-	BC-V101	-
P 7	M-55	HPCI turbine steam supply	C	FD-V001 FD-V051	8 -	FD-V002	8



ISOLATION VALVES

P-2A	P-2B
AE-V003	AE-V007
AE-V002	AE-V006
AE-V021	AE-V021
BD-V005	BJ-V059
AE-V001	AE-V005

TEST/DRAIN VALVES

P-2A	P-2B
AE-V020	AE-V018
AE-V019	AE-V017
AE-V015	AE-V014
AE-V016	AE-V013
BG-V072	--
BG-V071	--
AE-V075	--
AE-V074	--
BD-V047	BJ-V018
BD-V046	BJ-V017
AE-V004	AE-V008
AE-V127	AE-V128

* (SEE LEGEND)

HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

FEEDWATER LINES

FIGURE 6.2-28
SHEET 2 OF 48

Amendment 14, 01/86

ATTACHMENT 2

PRIMARY CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

3.6.1.2 Primary containment leakage rates shall be limited to:

a. An overall integrated leakage rate of less than or equal to L_a, 0.5 percent by weight of the containment air per 24 hours at P_a, 48.1 psig.

b. A combined leakage rate of less than or equal to 0.60 L_a for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves*, and valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests when pressurized to P_a, 48.1 psig. — OTHER

VALVES WHICH FORM THE BOUNDARY FOR THE LONG-TERM SEAL OF THE FEEDWATER LINES

c. *Less than or equal to 11.5 scf per hour for any one main steam line through the isolation valves when tested at 5 psig (seal system ΔP).

INSERT A

~~d.~~ e. A combined leakage rate of less than or equal to 10 gpm for all containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which penetrate the primary containment, when tested at 1.10 Pa, 52.9 psig. — OTHER

APPLICABILITY: When PRIMARY CONTAINMENT INTEGRITY is required per Specification 3.6.1.1.

ACTION:

With:

a. The measured overall integrated primary containment leakage rate exceeding 0.75 L_a or

b. The measured combined leakage rate for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves*, and valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests exceeding 0.60 L_a, or — OTHER

c. The measured leakage rate exceeding 11.5 scf per hour for any one main steam line isolation valves, or

INSERT B

~~d.~~ e. The measured combined leakage rate for all containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which penetrate the primary containment exceeding 10 gpm, — OTHER

restore:

a. The overall integrated leakage rate(s) to less than or equal to 0.75 L_a, and

*Exemption to Appendix "J" of 10 CFR 50.

SEP 3 0 1985

LIMITING CONDITION FOR OPERATION (Continued)

ACTION (Continued)

VALVES WHICH FORM THE BOUNDARY FOR THE LONG-TERM SEAL OF THE FEEDWATER LINES

b. The combined leakage rate for all penetrations and all valves listed in Table 3.6.3-1, except for main steam line isolation valves, and valves which are hydrostatically tested per Table 3.6.3-1, subject to Type B and C tests to less than or equal to 0.60 L_a, and ← OTHER

c. The leakage rate to less than or equal to 11.5 scf per hour for any one main steam line through the isolation valve(s), and

INSERT C

d. The combined leakage rate for all containment isolation valves in hydrostatically tested lines in Table 3.6.3-1 which pentrate the primary containment to less than or equal to 10 gpm, ← OTHER

prior to increasing reactor coolant system temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.2 The primary containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR 50 using the methods and provisions of ANSI N45.4 - 1972:

a. Three Type A Overall Integrated Containment Leakage Rate tests shall be conducted at 40 ± 10 month intervals during shutdown at P_a, 48.1 psig, during each 10-year service period. The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection.

b. If any periodic Type A test fails to meet 0.75 L_a, the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. It two consecutive Type A tests fail to meet 0.75 L_a, a Type A test shall be performed at least every 18 months until two consecutive Type A tests meet 0.75 L_a, at which time the above test schedule may be resumed.

c. The accuracy of each Type A test shall be verified by a supplemental test which:

1. Confirms the accuracy of the test by verifying that the difference between the supplemental data and the Type A test data is within 0.25 L_a.
2. Has duration sufficient to establish accurately the change in leakage rate between the Type A test and the supplemental test.
3. Requires the quantity of gas injected into the containment or bled from the containment during the supplemental test to be between 0.75 L_a and 1.25 L_a.

INSERT A

d. A combined leakage rate of less than or equal to 10 gpm for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1, when tested at 1.10 Pa, 52.9 psig.

INSERT B

d. The measured combined leakage rate for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1 exceeding 10 gpm, or

INSERT C

d. The combined leakage rate for all containment isolation valves which form the boundary for the long-term seal of the feedwater lines in Table 3.6.3-1 to less than or equal to 10 gpm, and

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
(b) DLD-RMS Return Isolation Valves				M-25-1
Outside:				
HV-4957 (SK-V008)	J5A	45	3	
HV-4981 (SK-V009)	J5A	45	3	
b. Manual Isolation Valves				
1. Group 21 - Feedwater System				
(a) Feedwater Isolation Valves				M-41-1
Outside:				
Check Valves				
HV-F074B (AE-V002)	P2A → P2A		2 → 2, 3	
HV-F074A (AE-V006)	P2B → P2B		2 → 2, 3	
2. Group 22 - High Pressure Coolant Injection (HPCI) System				
(a) Core Spray Discharge Valve				
Outside:				
HV-F006 (BJ-V001)	P5B		4	M-55-1
(b) Turbine Exhaust Valve				
Outside:				
HV-F071 (FD-V006)	P201		5	M-55-1
(c) HPCI Minimum Return Line Valve				
Outside:				
HV-F012 (BJ-V016)	P203		5	M-55-1
3. Group 23 - Reactor Core Isolation Cooling (RCIC) System				
(a) RCIC Turbine Exhaust Valve				
Outside:				
HV-F059 (FC-V005)	P207		5	M-49-1

HV-F032B (AE-V001)

HV-F032A (AE-V005)

INSERT F

INSERT D

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TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
Outside:				
(b) RCIC Pump Suction Isolation Valve				
HV-F031 (BD-V003)	P208		5	M-49-1
Outside:				
(c) RCIC Minimum Return Line Isolation Valve				
SV-F019 (BD-V007)	P209		5	M-49-1
Outside:				
(d) RCIC Vacuum Pump Discharge				
HV-F060 (FC-V011)	P210		5	M-49-1
4. Group 25 - Core Spray System				
(a) Core Spray Injection Valves				M-52-1
Outside:				
Loop A&C HV-V005A (BE-V007)	P5B		4	
Loop B&D HV-F005B (BE-V003)	P5A		4	
(b) Core Spray Suppression Pool Suction Valves				M-52-1
Outside:				
Loop A HV-F001A (BE-V017)	P216D		5	
Loop B HV-F001B (BE-V019)	P216A		5	
Loop C HV-F001C (BE-V018)	P216C		5	
Loop D HV-F001D (BE-V020)	P216B		5	
(c) Core Spray Minimum Flow Valves				M-52-1
Outside:				
Loop A&C HV-F031A (BE-V035)	P217B		5	
Loop B&D HV-F031B (BE-V036)	P217A		5	
(d) Core Spray Injection Line Bypass Valves				M-52-1
Inside:				
HV-F039A (BE-V071)	P5B		4	
HV-F039B (BE-V072)	P5A		4	

INSERT E

INSERT D

(d) Feedwater Line Discharge Valve

Outside:			
HV-8278 (BJ-V059)	P2B	2	M-55-1

INSERT E

(e) Feedwater Line Discharge Valve

Outside:			
HV-F013 (BD-V005)	P2A	2	M-49-1

INSERT F

(b) Reactor Water Cleanup System Return

Outside:			
HV-F039 (AE-V021)	P2A&B	2	M-44-1

TABLE 3.6.3-1

PRIMARY CONTAINMENT ISOLATION VALVES

NOTES

NOTATION

1. Main Steam Isolation Valves are sealed with a seal system that maintains a positive pressure of 5 PSIG above reactor pressure. Leakage is in-leakage and is not added to 0.60 La allowable leakage.

2. ~~Feedwater~~ CONTAINMENT Isolation Valves are sealed with a water seal from the HPCI AND/OR ~~and~~ RCIC system. ~~Isolation valves are gas type C tested to evaluate seat leakage condition. Leakage is not added to 0.60 La allowable leakage.~~ The ~~water seal boundary~~ valves are tested with water at 1.10 Pa, ~~48.1~~ psig, to ensure seal boundary will prevent by-pass leakage. Seal boundary liquid leakage will be ~~added to the Type C, water test leakage.~~ LIMITED TO 10 GPM.

TO FORM THE LONG-TERM SEAL BOUNDARY OF THE FEED-WATER LINES

52.9

THE

3. Containment Isolation Valve, Type C gas test at Pa, 48.1 psig. Leakage added to 0.60La allowable leakage.

4. ECCS Isolation Valve, Type C gas test. Leakage test to determine valve leakage condition. Leakage is not added to 0.60La allowable leakage.

5. Containment Isolation Valve, Type C water test at Pa, 48.1 psig Δ P. Leakage added to 10 gpm allowable leakage.

6. Containment isolation is discharge nozzle or relief valve, leakage tested during Type A test.

7. Drywell and suppression chamber pressure and level instrument root valves, leakage tested during Type A.

8. Explosive shear valves (SE-V021 through SE-V025) not Type C tested.

9. Surveillances to be performed per Specification 4.6.1.8.1.

10. All valve I.D. numbers are preceded by a numeral 1 which represents an Unit 1 valve.

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