January , 1989

Docket No.: 50-352

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Mr. George A. Hunger, Jr.
Director-Licensing
Philadelphia Electric Company
Correspondence Control Desk
P. O. Box 7520
Philadelphia, Pennsylvania 19101

Dear Mr. Hunger:

SUBJECT: CHANGES TECHNICAL SPECIFICATIONS RE CONTAINMENT ISOLATION VALVES AND DELETES LICENSE CONDITIONS 2.C.10 AND 2.C.11 (TAC NO. 69394)

RE: LIMERICK GENERATING STATION, UNIT 1

The Commission has issued the enclosed Amendment No. 13 to Facility Operating License No. NPF-39 for the Limerick Generating Station, Unit 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated May 11, 1988.

This amendment revises the TSs to add new valves and controls to the existing list of containment isolation valves which require periodic surveillance. The amendment also deletes Note 28 from Table 3.6.3-1 on page 3/4 6-43 since it is no longer applicable.

The new valves and controls were installed during the first refueling outage as required by License Conditions 2.C.10 and 2.C.11 to NPF-39. The satisfactory completion of the modifications has been verified in inspection reports 50-352/87-16 and 50-352/87-19. With the completion of the modifications and incorporation of appropriate surveillance requirements in the TSs, License Conditions 2.C.10 and 2.C.11 are fully satisfied. Accordingly, this amendment also revises License NPF-39 to delete these two conditions.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by
Richard J. Clark

Richard J. Clark, Project Manager
Project Directorate I-2
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

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Enclosures:
1. Amendment No. 13 to License No. NPF-39
2. Safety Evaluation

cc w/enclosures:
See next page

[LI AMEND]

PDI-2/LA	PDI-2/PM	OGC	PDI-2/D
MO'Brien	RClark:mm	S H Lewis	WButler
1/10/89	11/29/88	12/13/88	1/10/88

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1/1

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

January 10, 1989

Docket No.: 50-352

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Richard J. Clark, Project Manager
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Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No.13 to License No. NPF-39
2. Safety Evaluation

cc w/enclosures:
See next page

cc:

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

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 13
License No. NPF-39

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

   A. The application for amendment by Philadelphia Electric Company (the licensee) dated May 11, 1988, 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. NPF-39 is hereby amended to read as follows:

   Technical Specifications

   The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 13 , are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

   Also the license is amended by deleting license conditions 2.C.10 and 2.C.11.

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PDR ADOCK 05000352
P PNU

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications and to the license

Date of Issuance: January 10, 1989

PDI-2/LA	PDI-2/PM	OGC	PDI-2/D
MO'Brien	RClark:mf	S H Lewis	WButler
1/ /88	11/29/88	12/13/88	1/10/88
10 89			

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FOR THE NUCLEAR REGULATORY COMMISSION

Walter R. Butler

Walter R. Butler, Director
Project Directorate I-2
Division of Reactor Projects I/II

Attachment:
Changes to the Technical
Specifications and to the license

Date of Issuance: January 10, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 13

FACILITY OPERATING LICENSE NO. NPF-39

DOCKET NO. 50-352

1. Replace the following pages of the Appendix A Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Overleaf pages are provided to maintain document completeness.*

Remove	Insert
3/4 6-21	3/4 6-21
3/4 6-22	3/4 6-22
3/4 6-23	3/4 6-23*
3/4 6-24	3/4 6-24
3/4 6-25	3/4 6-25
3/4 6-26	3/4 6-26
3/4 6-43	3/4 6-43
3/4 6-44	3/4 6-44*

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
016A	CORE SPRAY INJECTION	HV52-1F006A(CK)		NA		9,22	52
		HV52-1F039A		7		9,22	
			HV52-1F005	18			
016B	CORE SPRAY INJECTION	HV52-1F006B(CK)		NA		9,22	52
		HV52-1F039B		7		9,22	
			HV52-108(CK)	NA			
021	SERVICE AIR TO DRYWELL	15-1140		NA			15
			15-1139	NA			
022	DRYWELL PRESSURE INSTRUMENTATION		HV42-147C	45		10	42
023	RECW SUPPLY TO RECIRC PUMPS	HV13-106*		40	C,H	11,	13
			HV13-108*	30	C,H	11	
			HV13-109*	NA		11,13	
024	RECW RETURN FROM RECIRC PUMPS	HV13-107*		40	C,H	11	13
			HV13-111*	30	C,H	11	
			HV13-110*	NA		11,13	
017	RPV HEAD SPRAY	HV51-1F022		60	A,V	4,9,22	51
		PSV51-122		NA		9,22	
			HV51-1F023	135	A,V		

TABLE 3.6.3-1 (Continued)
PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
025	DRYWELL PURGE SUPPLY	HV57-121(X-201A)		5**	B,H,S,U,W,R,T	3,11,14	57
		HV57-123		5**	B,H,S,U,W,R,T	3,11,14	
			HV57-109 (X-201A)	6**	B,H,S,U,W,R,T	11	
			HV57-131 (X-201A)	5**	B,H,S,U,W,R,T	11	
			HV57-135	6**	B,H,S,U,W,R,T	11	
	HYDROGEN RECOMBINER "B" INLET	HV57-163		9	B,H,R,S	3,11,14	
			FV-C-DO-101B	90	B,H,R,S	11	
026	DRYWELL PURGE EXHAUST	HV57-114		5**	B,H,S,U,W,R,T	3,11,14,33	57
		HV57-111		15**	B,H,S,U,R,T	5,11	
		SV57-139		5		10	
			HV57-115	6**	B,H,S,U,W,R,T	11,33	
			HV57-117	5**	B,H,S,U,R,T	11	
			SV57-145	5	B,H,R,S	11	
	HYDROGEN RECOMBINER "A" INLET	HV57-161		9	B,H,R,S	3,11,14	
			FV-C-DO-101A	90	B,H,R,S	11	
027A	CONTAINMENT INSTRUMENT GAS SUPPLY TO ADS VALVES H,M,&S	59-1128(CK)		NA			59
			HV59-151A	45	M		
028A-1	RECIRC LOOP SAMPLE	HV43-1F019		10	B,D		43
			HV43-1F020	10	B,D		
028A-2	DRYWELL H2/02 SAMPLE	SV57-132		5	B,H,R,S	11	57
			SV57-142	5	B,H,R,S	11	
028A-3	DRYWELL H2/02 SAMPLE	SV57-134		5	B,H,R,S	11	57
			SV57-144	5	B,H,R,S	11	

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
028B	DRYWELL H2/02 SAMPLE	SV57-133		5	B,H,R,S	11	57
			SV57-143	5	B,H,R,S	11	
			SV57-195	5	B,H,R,S	11	
030B-1	DRYWELL PRESSURE INSTRUMENTATION		HV42-147A	45		10	42
035A	TIP PURGE	59-1056(CK) (DOUBLE "O" RING)		NA			59
			HV59-131	7	B,H,S	16	
035C-G	TIP DRIVES	XV59-141A-E (DOUBLE "O" RING)		NA	B,H	11,16,21	59
			XV59-140A-E	NA		11,16	
037A-D	CRD INSERT LINES	BALL CHECK		NA		12	47
			HCU	NA		12	
038A-D	CRD WITHDRAW LINES SDV VENTS & DRAINS		HCU	NA		12	47
			XV47-1F010	25		30	
			XV47-1F180	30		30	
			XV47-1F011	25		30	
			XV47-1F181	30		30	
039A(B)	DRYWELL SPRAY	HV51-1F021A(B)		160		4,11	51
			HV51-1F016A(B)	160		11	
040E	DRYWELL PRESSURE INSTRUMENTATION		HV42-147D	45		10	42
040F-2	CONTAINMENT INSTRUMENT GAS -SUCTION	HV59-101		45	C,H,S	5	59
			HV59-102	7	C,H,S		

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
040G-1	ILRT DATA ACQUISITION	60-1057		NA		5,11	60
			60-1058	NA		11	
040G-2	ILRT DATA ACQUISITION	60-1071		NA		5,11	60
			60-1070	NA		11	
040H-1	CONTAINMENT INSTRUMENT GAS SUPPLY - HEADER 'A'	59-1005A(CK)		NA			59
			HV59-129A	7	C,H,S		
042	STANDBY LIQUID CONTROL	48-1F007(CK) (X-116)		NA			48
			HV48-1F006A	60		29	
043B	MAIN STEAM SAMPLE	HV41-1F084		10	B,D		41
			HV41-1F085	10	B,D		
044	RWCU ALTERNATE RETURN	41-1017		NA		5,31	41
			41-1016(X-9A, X-9B)	NA			
			PSV41-112	NA			
045A(B,C,D)	LPCI INJECTION 'A'(B,C,D)	HV51-1F041A*(B,C*, D*)(CK)		NA		9,22	51
		HV51-142A*(B,C*, D*)		7		9,22	
			HV51-1F017A* (B,C*,D*)	38			
050A-1	DRYWELL PRESSURE INSTRUMENTATION		HV42-147B	45		10	42
053	DRYWELL CHILLED WATER SUPPLY - LOOP 'A'	HV87-128*		60	C,H	11	87
			HV87-120A*	60	C,H	11	
			HV87-125A*	60	C,H	11	

TABLE 3.6.3-1 (Continued)

PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
054	DRYWELL CHILLED WATER RETURN - LOOP 'A'	HV87-129*		60	C,H	11	87
			HV87-121A*	60	C,H	11	
			HV87-124A*	60	C,H	11	
055	DRYWELL CHILLED WATER SUPPLY - LOOP 'B'	HV87-122*		60	C,H	11	87
			HV87-120B*	60	C,H	11	
			HV87-125B*	60	C,H	11	
056	DRYWELL CHILLED WATER RETURN - LOOP 'B'	HV87-123*		60	C,H	11	87
			HV87-121B*	60	C,H	11	
			HV87-124B*	60	C,H	11	
061-1	RECIRC PUMP 'A' SEAL PURGE	43-1004A(CK)		NA		15	43
			(XV43-103A - SEE PART B, THIS TABLE)	NA		1	
061-2	RECIRC PUMP 'B' SEAL PURGE	43-1004B*(CK)		NA		15	43
			(XV43-103B - SEE PART B, THIS TABLE)	NA		1	
062	DRYWELL H2/02 SAMPLE RETURN, N2 MAKE-UP	SV57-150(X-220A)		5	B,H,R,S	11	57
			SV57-159 (X-220A)	5	B,H,R,S	11	
			HV57-116 (X-220A)	30**	B,H,R,S	11	
			SV57-190 (X-220A)	5	B,H,R,S	11	

TABLE 3.6.3-1 (Continued)
PART A - PRIMARY CONTAINMENT ISOLATION VALVES

PENETRATION NUMBER	FUNCTION	INBOARD ISOLATION BARRIER	OUTBOARD ISOLATION BARRIER	MAX. ISOL. TIME. IF APP. (SEC)(26)	ISOL. SIGNAL(S), IF APP. (20)	NOTES	P&ID
			SV57-191 (X-220A)	5	B,H,R,S	11	
116	STANDBY LIQUID CONTROL	48-1F007(CK) (X-42)		NA			48
			HV48-1F006B	60		29	
117B-1	DRYWELL RADIATION MONITORING SUPPLY	SV26-190A		5	B,H,R,S	11	26
			SV26-190B	5	B,H,R,S	11	
117B-2	DRYWELL RADIATION MONITORING RETURN	SV26-190C		5	B,H,R,S	11	26
			SV26-190D	5	B,H,R,S	11	
201A	SUPPRESSION POOL PURGE SUPPLY	HV57-124		5**	B,H,S,U,W,R,T	3,11,14	57
		HV57-131(X-25)		5**	B,H,S,U,W,R,T	3,11,14	
			HV57-109(X-25)	6**	B,H,S,U,W,R,T	11	
			HV57-147	6**	B,H,S,U,W,R,T	11	
			HV57-121(X-25)	5**	B,H,S,U,W,R,T	11	
	HYDROGEN RECOMBINER "B" EXHAUST	HV57-164		9	B,H,R,S	3,11,14	
			HV57-169	9	B,H,R,S	11	
202	SUPPRESSION POOL PURGE EXHAUST	HV57-104		5**	B,H,S,U,W,R,T	3,11,14,33	57
		HV57-105		15**	B,H,S,U,R,T	11,5	
			HV57-112	6**	B,H,S,U,W,R,T	11, 33	
			HV57-118	5**	B,H,S,U,R,T	11	
			SV57-185	5	B,H,R,S	11	
	HYDROGEN RECOMBINER "A" EXHAUST	HV57-162		9	B,H,R,S	3,11,14	
			HV57-166	9	B,H,R,S	11	
203A(B,C,D)	RHR PUMP SUCTION		HV51-1F004A(B, C,D)	240		4,22, 19,29	51
			PSV51-1F030A (B,C,D)	NA		22	

TABLE 3.6.3-1
PRIMARY CONTAINMENT ISOLATION VALVES
NOTATION

NOTES (Continued)

21. Automatic isolation signal causes TIP to retract; ball valve closes when probe is fully retracted.

22. Isolation barrier remains water filled or a water seal remains in the line post-LOCA. Isolation valve may be tested with water. Isolation valve leakage is not included in 0.60 La total Type B & C tests.

23. Valve does not receive an isolation signal. Valves will be open during Type A test. Type C test not required.

24. Both isolation signals required for valve closure.

25. Deleted

26. Valve stroke times listed are maximum times verified by testing per Specification 4.0.5 acceptance criteria. The closure times for isolation valves in lines in which high-energy line breaks could occur are identified with a single asterisk. The closure times for isolation valves in lines which provide an open path from the containment to the environs are identified with a double asterisk.

27. The reactor vessel head seal leak detection line (penetration 29A) excess flow check valve is not subject to OPERABILITY testing. This valve will not be exposed to primary system pressure except under the unlikely conditions of a seal failure where it could be partially pressurized to reactor pressure. Any leakage path is restricted at the source; therefore, this valve need not be OPERABILITY tested.

28. (DELETED)

29. Valve may be open during normal operation; capable of manual isolation from control room. Position will be controlled procedurally.

30. Valve normally open, closes on scram signal.

31. Valve 41-1016 is an outboard isolation barrier for penetrations X-9A, B and X-44. Leakage through valve 41-1016 is included in the total for penetration X-44 only.

32. Feedwater long-path recirculation valves are sealed closed whenever the reactor is critical and reactor pressure is greater than 600 psig. The valves are expected to be opened only in the following instances:

    a. Flushing of the condensate and feedwater systems during plant startup.

    b. Reactor pressure vessel hydrostatic testing, which is conducted following each refueling outage prior to commencing plant startup.

    Therefore, valve stroke timing in accordance with Specification 4.0.5 is not required.

33. Valve also constitutes a Refueling Area Secondary Containment Automatic Isolation Valve as shown in Table 3.6.5.2.2-1.

3/4.6.4 VACUUM RELIEF

SUPPRESSION CHAMBER - DRYWELL VACUUM BREAKERS

LIMITING CONDITION FOR OPERATION

3.6.4.1 Each pair of suppression chamber - drywell vacuum breakers shall be OPERABLE and closed.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

a. With one or more vacuum breakers in one pair of suppression chamber - drywell vacuum breakers inoperable for opening but known to be closed, restore the inoperable pair of vacuum breakers to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. With one suppression chamber - drywell vacuum breaker open, verify the other vacuum breaker in the pair to be closed within 2 hours; restore the open vacuum breaker to the closed position within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

c. With one position indicator of any suppression chamber - drywell vacuum breaker inoperable:

   1. Verify the other vacuum breaker in the pair to be closed within 2 hours and at least once per 15 days thereafter, or

   2. Verify the vacuum breaker(s) with the inoperable position indicator to be closed by conducting a test which demonstrates that the ΔP is maintained at greater than or equal to 0.7 psi for one hour without makeup within 24 hours and at least once per 15 days thereafter.

   Otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 13 TO FACILITY OPERATING LICENSE NO. NPF-39

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION, UNIT 1

DOCKET NO. 50-352

1.0 INTRODUCTION

By letter dated May 11, 1988, Philadelphia Electric Company (the licensee) requested an amendment to Facility Operating License No. NPF-39 for the Limerick Generating Station, Unit 1. The proposed amendment would revise the Technical Specifications (TSs) to add new valves and controls to the existing list of containment isolation valves which require periodic surveillance. The amendment also deletes Note 28 from Table 3.6.3-1 on page 3/4 6-43 since it is no longer applicable.

2.0 DISCUSSION

As discussed in the NRC staff's Safety Evaluation Report (SER) related to the operation of Limerick Generating Station, Units 1 and 2, NUREG-0991, the staff concluded that the Limerick Containment Isolation System met the requirements of General Design Criterion 56 except in certain instances pertaining to the Hydrogen Recombiners, the Drywell Chilled Water System (DCW) and the Reactor Enclosure Cooling Water Systems (RECW). The applicable cases are discussed further below.

- Lines to and from the Hydrogen Recombiners penetrating containment did not contain two isolation valves in series

  The original Limerick design included a single motor-operated butterfly valve as a containment isolation valve in each recombiner supply and discharge line. The recombiners were originally considered closed systems outside containment and therefore, required only one isolation valve.

  The design was reviewed by the NRC staff in the Limerick SER, page 6-39, and SSER-1, page 6-2. The staff did not accept the licensee's rationale for the single isolation valve in the recombiner inlet and exhaust lines because (1) maintenance on the recombiners during plant operation would be prohibited, (2) the limited reduction in equipment availability that may be attributable to the installation of a second isolation valve does not warrant deviation from the requirements of GDC 56, and (3) NRC practice was to accept closed systems outside containment as the second isolation barrier only for ECCS systems which operate during an accident and only for the suction penetrations on these systems, which terminate below the minimum suppression pool water level.

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The NRC staff found that a second containment isolation valve in each line was required. Therefore, License Condition 2.C.11 of NPF-39 stipulated that:

> "The Licensee shall, prior to startup following the first refueling outage, install and test an additional automatic isolation valve in each of the hydrogen recombiner lines penetrating the primary containment."

° Remote -manual isolation valves were used instead of automatic isolation valves in the RECW and DCW systems

The Reactor Enclosure Cooling Water (RECW) supply and return lines and the outboard Drywell Chilled Water (DCW) supply and return lines were isolated only by remote-manual isolation valves. Although the NRC staff determined that deviation from the requirements of SRP 6.2.4 during the first cycle of operation was acceptable, License Condition 2.C.10 of NPF-39 stipulated that:

> "The Licensee shall, prior to startup following the first refueling outage, provide automatic and diverse isolation signals to the reactor enclosure cooling water inboard and outboard isolation valves in the supply and return lines to the recirculation pumps, and the drywell chilled water outboard isolation valves in the supply and return lines."

2.1 Reactor Enclosure Cooling Water System

The Reactor Enclosure Cooling Water (RECW) System supplies cooling to the reactor recirculation pump seal and motor oil coolers. This system is shown in the Final Safety Analysis Report (FSAR) Figure 9.2-25. The RECW system piping penetrates the primary containment in two locations; penetration 023 for the supply and penetration 024 for the return piping. The penetrations are four inches in diameter with three inch piping welded to them by use of piping reducers.

Containment isolation valves for these penetrations are motor-operated gate valves. The inboard isolation valve for each RECW penetration is a four inch gate valve welded directly to the containment penetration (valves HV-13-106 and HV-13-107, respectively). The outboard isolation valves are three inch motor-operated gate valves welded close to the containment penetration, meeting the requirements of Regulatory Guide 1.141. The piping between the isolation valves is designed to ASME Section III, Class 2, and is Seismic Category I.

The reactor enclosure cooling water supply and return lines are designed with both containment isolation valves located outside containment because an adverse environment is experienced inside the containment when most of the valves may be needed, and the location of the valves outside containment allows inspections and maintenance to be performed during

normal operation when the primary containment is inerted. The NRC staff previously found the placement of these valves acceptable, as documented in the Staff's SER (NUREG-0991), page 6-39.

The NRC review found the overall system design acceptable in the SER, page 6-41. The NRC qualified its acceptance of the RECW system design on the condition that the licensee add automatic diverse isolation signals to the RECW isolation valves prior to restart after the first refueling outage. The NRC also granted a schedular exemption to the requirements of 10 CFR 50, Appendix A, GDC 56 until restart following completion of the first refueling outage as discussed in SSER-3, page 6-3.

Limerick Unit 1 was shutdown from May 15, 1987 to August 31, 1987 for the first refueling outage. During the outage the licensee installed the following automatic diverse isolation signals to the RECW valves:

- High Drywell Pressure or
- Low Reactor Vessel Water Level (Level 1). These isolation signals meet the requirements of SRP6.2.4, paragraph II.1, and NUREG-0737, Item II.E.4.2

2.2 Drywell Chilled Water System

The Drywell Chilled Water (DCW) System provides cooling water to the drywell unit coolers and to the recirculation pump motor air coolers. The DCW system is discussed in the FSAR in Section 9.2.10 and is also shown schematically in the FSAR, Figure 9.2.27. The DCW is a dual-loop system, penetrating the primary containment in four locations; at penetrations 053 and 055 for the supply lines for each loop and penetrations 054 and 056 for the return of each loop. The DCW penetrations are each eight inches in diameter. The DCW system is a closed loop inside containment.

The inboard isolation valve for each containment penetration is a motor-operated eight inch gate valve welded directly to the penetration. These valves are designated as HV-87-122, HV-87-123, HV-87-128 and HV-87-129. The original Limerick design previously provided only one containment isolation valve on each penetration, since the DCW system was considered a closed system inside containment. However, the closed system did not meet the piping design criteria specified in SRP 6.2.4, Item II.O. The licensee reclassified the DCW/RECW selection valves, HV-87-120(A) and (B); HV-87-121(A) and (B); HV-87-124(A) and (B); and HV-87-125(A) and (B) which are motor-operated gate valves, designating them as the outboard containment isolation valves.

The drywell chilled water supply and return lines are designed with both containment isolation valves located outside containment because an adverse environment is experienced inside the containment when most of

the valves may be needed, and the location of the valves outside containment allows inspections and maintenance to be performed during normal operation when the primary containment is inerted. The NRC staff previously found the placement of these valves acceptable, as documented in the staff's SER, page 6-39.

The inboard isolation valves on the DCW/RECW were equipped with automatic diverse containment isolation signals, upon receipt of either triple-low reactor water level or high drywell pressure. They are also equipped with a keylocked bypass switch to allow reopening of the valves, if required, under plant administration control. The NRC accepted the DCW/RECW design in the SER, page 6-41.

The NRC staff, however, qualified its acceptance of the DCW/RECW design with the condition that automatic diverse isolation signals were to be added to the outboard valves prior to restart following the end of the first refueling outage. The NRC granted, in the SSER-3, page 6-3, this schedular exemption from GDC-56 only for the first cycle of operation.

During the first refueling outage the licensee installed the following automatic diverse isolation signals to the outboard isolation valves in penetrations 053 through 056:

- High drywell pressure, or
- Low Reactor Vessel Water Level (Level 1)

A keylocked isolation signal bypass switch was also provided to allow reopening of these valves to re-establish drywell cooling if needed. Use of the keylocked feature requires operator action and was installed in accordance with NUREG-0737, Item II.E.4.2, position 4.

2.3 Hydrogen Recombiner System

The Containment Hydrogen Recombiner system is part of the Containment Atmospheric Control system, and is discussed in FSAR Sections 6.2.5, and 9.4.5.1 and shown schematically in FSAR Figure 9.4-5. In an inerted containment the purpose of the recombiner system is to control the quantity of oxygen postulated to be generated inside the containment following a LOCA, by recombining it with hydrogen.

Recombiner piping from the containment consists of four inch pipes connected to the twenty-four inch diameter drywell purge supply and exhaust lines. The recombiner discharges through six inch pipes connected to the suppression pool purge supply and exhaust lines. The recombiner isolation valves are automatically closed upon receipt of reactor low water level (Level 2); high drywell pressure; high radiation in the refueling floor exhaust ducts, and high radiation in the reactor enclosure exhaust ducts.

The recombiner design was reviewed by the NRC in the staff's SER, page 6-39, and SSER-1, page 6-2. The NRC conditioned the Unit 1 operating license by stipulating that the licensee install a second isolation valve in each line prior to restart after the first refueling outage.

During the first refueling outage a redundant motor-operated containment isolation valve on the outlet of each recombiner was installed as a plant modification. These new isolation valves are powered from the same electrical division as the existing isolation valves. An existing motor-operated valve on each of the recombiner inlet lines has also been provided with a containment isolation signal to isolate the recombiners by closure of the valves in the event of an accident. To permit the recombiners to operate after an accident, each recombiner train has a keylocked isolation bypass hand switch in the control room.

In order to meet ASME Code Section III, Article NC-7000 requirements, a safety grade pressure relief valve with its discharge routed to a Dirty Radwaste (DRW) system open floor drain was installed in both hydrogen recombiner discharge lines upstream of the outboard containment isolation valves.

3.0 EVALUATION

Table 3.6.3-1 lists the "Primary Containment Isolation Valves" that are required to be operable, along with their function and, if applicable, the maximum isolation time and isolation signal. As discussed above, the licensee was required by two License Conditions to add certain valves and isolation signals/controls to three systems during the first refueling outage. The purpose of this amendment is to add the new valves and controls to Table 3.6.3-1 so they will be included in the surveillance program. The Table has 33 notes applicable to one or more of the hundreds of valves listed. Note 28 reads:

> "Automatic isolation logic to be added by the end of the first refueling outage."

This note was referenced for the Drywell Chilled Water supply and return valves. Since the automatic isolation logic was added during the refueling outage, the note is no longer applicable and is being deleted from the table. For the DCW valves, reference to Note 29 is also being deleted (since the valves are no longer controlled procedurally) and the applicable isolation signals are being added to the Table for these valves.

As evaluated in Section 6.2.4.3 of the Limerick FSAR, the main objective of the containment isolation system is to prevent release to the environment of radioactive materials. This is accomplished by isolation of system lines penetrating the primary containment. Redundancy is provided so that active failure of any single valve or component does not prevent containment isolation.

The evaluation in Section 15.6.5 of the FSAR concludes that the primary containment is designed to maintain pressure integrity in the event of an instantaneous rupture of the largest single primary system piping within the structure, while also accommodating the dynamic effects of the pipe break. Therefore, any postulated LOCA would not exceed the containment design limits. The additional automatic features and valves to be installed in the primary containment isolation system will enhance the plants ability to isolate the primary containment in the event of an accident.

The containment Isolation System design was evaluated in the FSAR and staff's SER. In the FSAR, the system design was evaluated as follows:

- Code Class and Seismic Design - Section 3.2
- Missile Protection - Section 3.5
- Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping - Section 3.6
- Environmental Design - Section 3.11
- Valve Endurance/Operability - Section 3.9.3
- Leakage - Manual Valves - Section 5.2.5
- Containment Isolation - Section 6.2.4
- Leakage Testing - Section 6.2.6
- Essential/Non-Essential Classification - Table 6.2-27
- Normal/Accident Environmental Conditions - Section 3.11
- Control/Automatic Systems - Section 7.3.1.1.2

Further, the design and implementation of this modification has no effect on the ability to safely shutdown the Plant in the event of a fire, as required by Appendix R of Title 10 CFR Section 50.

The staff had previously reviewed and accepted (and in fact required) the proposed modifications. The staff has reviewed the modification and has determined that they meet the provisions of Standard Review Plan 6.2.4 and Regulatory Guide 1.141. The modifications were inspected by the resident inspectors and by a region-based inspector who verified that the modifications and testing were performed in accordance with NRC requirements (see inspection reports 50-352/87-16 and 50-352/87-19 dated August 5, 1987 and October 9, 1987, respectively). The licensee has satisfactorily complied with License Conditions 2.C.10 and 2.C.11 to NPF-39. The proposed changes to the TSs to incorporate the valves and controls into the surveillance program are acceptable and fully resolve these license conditions.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to 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. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets 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 nor environmental assessment need be prepared in connection with the issuance of this amendment.

5.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (53 FR 40994) on October 19, 1988 and consulted with the State of Pennsylvania. No public comments were received and the State of Pennsylvania did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and the security nor to the health and safety of the public.

Principal Contributor: Richard Clark

Dated: January 10, 1989