Docket No. 50-353

September 28, 1992

Mr. George J. Beck
Manager-Licensing, MC 52A-5
Philadelphia Electric Company
Nuclear Group Headquarters
Correspondence Control Desk
P.O. Box No. 195
Wayne, Pennsylvania 19087-0195

Dear Mr. Beck:

SUBJECT: RELOCATION OF HYDRAULIC CONTROL UNIT (HCU) ISOLATION BOUNDARIES, LIMERICK GENERATING STATION, UNIT 2 (TSCR NO. 92-07-2) (TAC NO. M84060)

The Commission has issued the enclosed Amendment No. 22 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Unit 2. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 7, 1992.

This amendment revises the TSs to add new isolation valves on each common Control Rod Drive header to the table of primary containment isolation valves that must be operable and to delete the existing individual Hydraulic Control Unit isolation valves from the TSs. These are the same changes that we approved for Limerick, Unit 1 by Amendment No. 42 dated August 16, 1990.

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

Enclosures:
1. Amendment No. 22 to License No. NPF-85
2. Safety Evaluation

cc w/enclosures:
See next page

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

September 28, 1992

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Sincerely,

Richard J. Clark

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

Enclosures:
1. Amendment No. 22 to License No. NPF-85
2. Safety Evaluation

cc w/enclosures:
See next page

Mr. George J. Beck
Philadelphia Electric Company

Limerick Generating Station,
Units 1 & 2

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

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. 50-353

LIMERICK GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22
License No. NPF-85

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

   A. The application for amendment by Philadelphia Electric Company (the licensee) dated July 7, 1992, 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-85 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. 22 , are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented by February 28, 1993.

FOR THE NUCLEAR REGULATORY COMMISSION

Charles L. Miller

Charles L. Miller, Director
Project Directorate I-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 28, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 22

FACILITY OPERATING LICENSE NO. NPF-85

DOCKET NO. 50-353

Replace the following pages of the Appendix A Technical Specifications with the attached page. 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 6-23	3/4 6-23
3/4 6-24	3/4 6-24*
3/4 6-41	3/4 6-41
3/4 6-42	3/4 6-42*

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/O2 SAMPLE	SV57-233		5	B,H,R,S	11	57
			SV57-243	5	B,H,R,S	11	
			SV57-295	5	B,H,R,S	11	
030B-1	DRYWELL PRESSURE INSTRUMENTATION		HV42-247A	45		10	42
035B	TIP PURGE	59-2056(CK) (DOUBLE "O" RING)		NA			59
			HV59-231	7	B,H,S	16	
035C-G	TIP DRIVES	XV59-241A-E (DOUBLE "O" RING)		NA	B,H	11,16,21	59
			XV59-240A-E	NA		11,16	
037A-D	CRD INSERT LINES	BALL CHECK		NA		12	47
			46-2101	NA		12,22	46
			46-2102	NA		12,22	
			46-2108	NA		12,22	
			46-2109	NA		12,22	
038A-D	CRD WITHDRAW LINES SDV VENTS & DRAINS		46-2115	NA		12,22	46
			46-2116	NA		12,22	
			46-2122	NA		12,22	
			46-2123	NA		12,22	
			XV47-2F010	25		30	
			XV47-2F180	30		30	
			XV47-2F011	25		30	
			XV47-2F181	30		30	
039A(B)	DRYWELL SPRAY	HV51-2F021A(B)		160		4,11	51
			HV51-2F016A(B)	160		11	
040E	DRYWELL PRESSURE INSTRUMENTATION		HV42-247D	45		10	42
040F-2	CONTAINMENT INSTRUMENT GAS - SUCTION	HV59-201		45	C,H,S	5	59
			HV59-202	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	60-2057		NA		11	60
			60-2058	NA		11	
040G-2	ILRT DATA ACQUISITION	60-2071		NA		11	60
			60-2070	NA		11	
040H-1	CONTAINMENT INSTRUMENT GAS SUPPLY - HEADER 'A'	59-2005A(CK)		NA			59
			HV59-229A	7	C,H,S		
042	STANDBY LIQUID CONTROL	48-2F007(CK) (X-116)		NA			48
			HV48-2F006A	60		29	
043B	MAIN STEAM SAMPLE	HV41-2F084		10	B,D		41
			HV41-2F085	10	B,D		
044	RWCU ALTERNATE RETURN	41-2017		NA		5,31	41
			41-2016(X-9A, X-9B)	NA			
			PSV41-212	NA			
045A(B,C,D)	LPCI INJECTION 'A'(B,C,D)	HV51-2F041A(B,C,D)(CK)		NA		9,22	51
		HV51-242A(B,C,D)		7		9,22	
			HV51-2F017A (B,C,D)	38			
050A-1	DRYWELL PRESSURE INSTRUMENTATION		HV42-247B	45		10	42
053	DRYWELL CHILLED WATER SUPPLY - LOOP 'A'	HV87-228		60	C,H	11	87
			HV87-220A	60	C,H	11	
			HV87-225A	60	C,H	11	

NOTES

1. Instrumentation line isolation provisions consist of an orifice and excess flow-check valve or remote manual isolation valve. The excess flow-check valve is subjected to operability testing, but no Type C test is performed or required. The line does not isolate during a LOCA and can leak only if the line or instrument should rupture. Leaktightness of the line is verified during the integrated leak rate test (Type A test).

2. Penetration is sealed by a blind flange or door with double O-ring seals. These seals are leakage rate tested by pressurizing between the O-rings.

3. Inboard butterfly valve tested in the reverse direction.

4. Inboard gate valve tested in the reverse direction.

5. Inboard globe valve tested in the reverse direction.

6. The MSIVs and this penetration are tested by pressurizing between the valves. Testing of the inboard valve in the reverse direction tends to unseat the valve and is therefore conservative. The valves are Type C tested at a test pressure of 22 psig.

7. Gate valve tested in the reverse direction.

8. Electrical penetrations are tested by pressurizing between the seals.

9. The isolation provisions for this penetration consist of two isolation valves and a closed system outside containment. Because a water seal is maintained in these lines by the safeguard piping fill system, the inboard valve may be tested with water. The outboard valve will be pneumatically tested.

10. The valve does not receive an isolation signal but remains open to measure containment conditions post-LOCA. Leaktightness of the penetration is verified during the Type A test. Type C test is not required.

11. All isolation barriers are located outside containment.

12. Leakage monitoring of the control rod drive insert and withdraw line is provided by Type A leakage rate test. The outboard isolation provisions for the control rod insert and withdraw lines consist of two redundant Type C tested simple check valves located on each main water header (i.e. charging, cooling, drive and exhaust). Type C test is not required for the ball check valve.

13. The motor operators on HV-13-209 and HV-13-210 are not connected to any power supply.

14. Valve is provided with a separate testable seal assembly, with double concentric O-ring seals installed between the pipe flange and valve flange facing primary containment. Leakage through these seals is included within the Type C leakage rate for this penetration.

TABLE 3.6.3-1
PRIMARY CONTAINMENT ISOLATION VALVES
NOTATION

NOTES (Continued)

15. Check valve used instead of flow orifice.

16. Penetration is sealed by a flange with double O-ring seals. These seals are leakage rate tested by pressurizing between the O-rings. Both the TIP Purge Supply (Penetration 35B) and the TIP Drive Tubes (Penetrations 35C thru G) are welded to their respective flanges. Leakage through these seals is included in the Type C leakage rate total for this penetration. The ball valves (XV-241A thru E) are Type C tested. It is not practicable to leak test the shear valves (XV-240A thru E) because squib firing is required for closure. Shear valves (XV-240A thru E) are normally open.

17. Instrument line isolation provisions consist of an excess flow check valve. Because the instrument line is connected to a closed cooling water system inside containment, no flow orifice is provided. The excess flow check valves are subject to operability testing, but no Type C test is performed nor required. The line does not isolate during a LOCA and can leak only if the line or instrument should rupture. Leaktightness of the line is verified during the integrated leak rate test (Type A test).

18. In addition to double "O" ring seals, this penetration is tested by pressurizing volume between doors per Specification 4.6.1.3.

19. The RHR system safety pressure relief valves are flanged to facilitate removal and are equipped with double O-ring seal assemblies on the flange closest to primary containment. These seals will be leak rate tested by pressurizing between the O-rings, and the results added into the Type C total for this penetration.

20. See Specification 3.3.2, Table 3.3.2-1, for a description of the PCRVICS isolation signal(s) that initiate closure of each automatic isolation valve. In addition, the following non-PCRVICS isolation signals also initiate closure of selected valves:

    EA Main steam line high pressure, high steam line leakage flow, low MSIV-LCS dilution air flow

    LFHP With HPCI pumps running, opens on low flow in associated pipe, closes when flow is above setpoint

    LFRC With RCIC pump running, opens on low flow in associated pipe, closes when flow is above setpoint

    LFCH With CSS pump running, opens on low flow in associated pipe, closes when flow is above setpoint

    LFCC Steam supply valve fully closed or RCIC turbine stop valve fully closed

All power operated isolation valves may be opened or closed remote manually.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED AMENDMENT NO. 22 TO FACILITY OPERATING LICENSE NO. NPF-85

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION, UNIT 2

DOCKET NO. 50-353

1.0 INTRODUCTION

By letter dated July 7, 1992, the Philadelphia Electric Company (PECo or the licensee) submitted a request for changes to the Limerick Generating Station, Unit 2, Technical Specifications (TS). The requested changes would revise the TSs to add new isolation valves to the table of primary containment isolation valves that must be operable and to delete the presently designated valves on the same lines. Limerick, Unit 2, is scheduled to shutdown for the second refueling outage on January 23, 1993. During the refueling outage, the licensee plans to install eight new check valves (four pairs of valves) on the control rod drive (CRD) supply headers to the hydraulic control units (HCUs). These new valves will constitute a new isolation boundary for the Integrated Leak Rate Test (ILRT), replacing the existing HCU isolation boundary valves. The proposed changes to the TS are to include the new valves in Table 3.6.3-1, "Part A - Primary Containment Isolation Valves" and to remove the current HCU valves as boundaries. The same change was approved for Limerick, Unit 1, by Amendment No. 42, dated August 16, 1990. The safety evaluation supporting Amendment No. 42 is incorporated herein by reference.

2.0 DISCUSSION

The ILRT is a pressurization of primary containment and measurement of total leakage from all isolation boundaries. The current method of testing the isolation boundaries of the CRD system is to collect leakage through the HCUs at the vent valves on each of four supply headers during an ILRT. If the total leakage exceeds specified limits, approximately 1300 individual check valves or solenoid valves must be examined to find and repair leak paths.

To minimize critical path outage time, new check valves will be installed in the CRD supply headers in four locations, effectively extending the isolation boundary from the HCUs to these new valves. These eight new valves (4 pairs) will reduce the number of testable CRD penetrations from approximately 1300 to four.

The licensee included a sketch of the proposed arrangement which is enclosed (Attachment 1). As shown, the licensee proposes to install two lift check valves, a manually controlled block valve and two test connections on each of the four CRD headers to the HCUs (drive, cooling, charging and exhaust). The general process diagram for the CRD hydraulic system is shown in figure 4.6.7 in the Limerick Updated Final Safety Analysis Report (UFSAR), which is also enclosed (Attachment 2). The new valves will be installed between the main control station and the existing vent valve shown in Attachment 1.

In a BWR 4 such as Limerick, Units 1 and 2, there are 185 control rods, each of which has an HCU. As shown on Figure 4.6.8 in the UFSAR (Attachment 3), and in Attachment 1, there are 3 check valves and 4 directional control valves on each HCU for a total of 1295 valves. The ILRT is a pressurization of primary containment and measurement of total leakage from all isolation boundaries. The current method of testing the isolation boundary of the CRD system is to place a bucket under the vent valves shown in Attachment 1 and to collect leakage through the HCUs at the vent valves on each of the four supply headers during an ILRT. If the total leakage exceeds specified limits, approximately 1300 individual check valves or solenoid valves must be examined to find and repair leak paths. Experience has shown that the total leakage is usually due to a drop or two of water leakage from many of the ball check valves rather than failure of one or two valves. To avoid these problems, the licensee proposes to relocate the isolation boundary on the headers to and from the HCUs rather than on the HCUs.

Although a TS change is not required prior to installation of the new valves, a TS change is required to take credit for these new isolation boundaries, and also to remove the current HCU valve boundaries from the TS. Therefore, the licensee is proposing that TS Table 3.6.3-1, "Part A-Primary Containment Isolation Valves," be revised to remove the existing HCU isolation boundary valves and replace them with the newly installed isolation boundary valves. Note 12 of that table also has to be revised to reflect the addition of the new valves. Also since the affected CRD lines are water filled and would remain water filled for a minimum of 30 days after a Loss of Coolant Accident (LOCA), Note 22 applies to these isolation valves.

3.0 EVALUATION

The proposed TS change will take credit for the new valves installed in each of the CRD headers to the HCUs (drive, cooling, charging, exhaust) between the main control station and the vent valve. These valves constitute a new isolation boundary. Each check valve station consists of two check valves, a block valve and two test connections. This enables each check valve to be tested individually instead of during the critical path ILRT. The change will move the isolation boundary out on the CRD headers. A new access platform has been installed in order to facilitate local testing of the added check valves. The new platform was designed to the American Institute of Steel Construction (AISC) and Category I requirements.

The licensee has provided analyses to demonstrate that the new design does not change the design criteria previously approved in the staff's Safety Evaluation (SE), NUREG-0991, Section 6.2.4.1. The present method of leakage monitoring was accepted by the staff in Section 6.2.6.3 of the SE.

The piping to be included within the new isolation boundary complies with the same standards and specifications as the original boundary. The number of active components making up the boundary will be reduced from approximately 1300 to four. The current CRD isolation boundary includes the insert and withdraw lines, the scram discharge volume and the HCUs. The relocation of the boundary will add some of the supply header piping but will not affect the existing equipment. The added piping is small diameter (2" or less) comparable to the previously analyzed scram discharge drain line. The consequences of a pipe failure inside the isolation boundary remain within the envelope analyzed in NUREG-0803.

An analysis has been performed on the piping being upgraded for inclusion in the extended ILRT boundary. The piping and related pipe supports are designed to meet the criteria of Seismic Category I and American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Class 2 or 3 as appropriate. Analysis has shown that the existing piping and the modified piping is within the ASME Code allowables. Piping supports have been evaluated and modified as necessary to accommodate the newly analyzed loads.

The licensee has evaluated the hydraulic effect of the new valves. The additional pressure drop will not introduce significant line loss and is well within the CRD pump capacity. The calculations and test performed by the licensee show that there will be adequate flow in each of the headers to meet required design flows. The performance of the CRD system is well within the system capability for normal operation, and control rod scram performance is unaffected.

As discussed in the Safety Evaluation supporting Amendment No. 42 for Limerick, Unit 1, the NRC staff evaluated the potential impact if one or more of the new check valves were to fail closed. The assessment concluded even if one of the new or existing check valves were to fail closed, it would not affect the ability to scram the reactor.

Based on our evaluation, we have concluded that the new isolation boundaries will continue to meet all design requirements and will not adversely affect safety. The proposed changes to the TSs are acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 the amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 34589). Accordingly, the 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 or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Clark

Date: September 28, 1992

Attachments: Three Figures

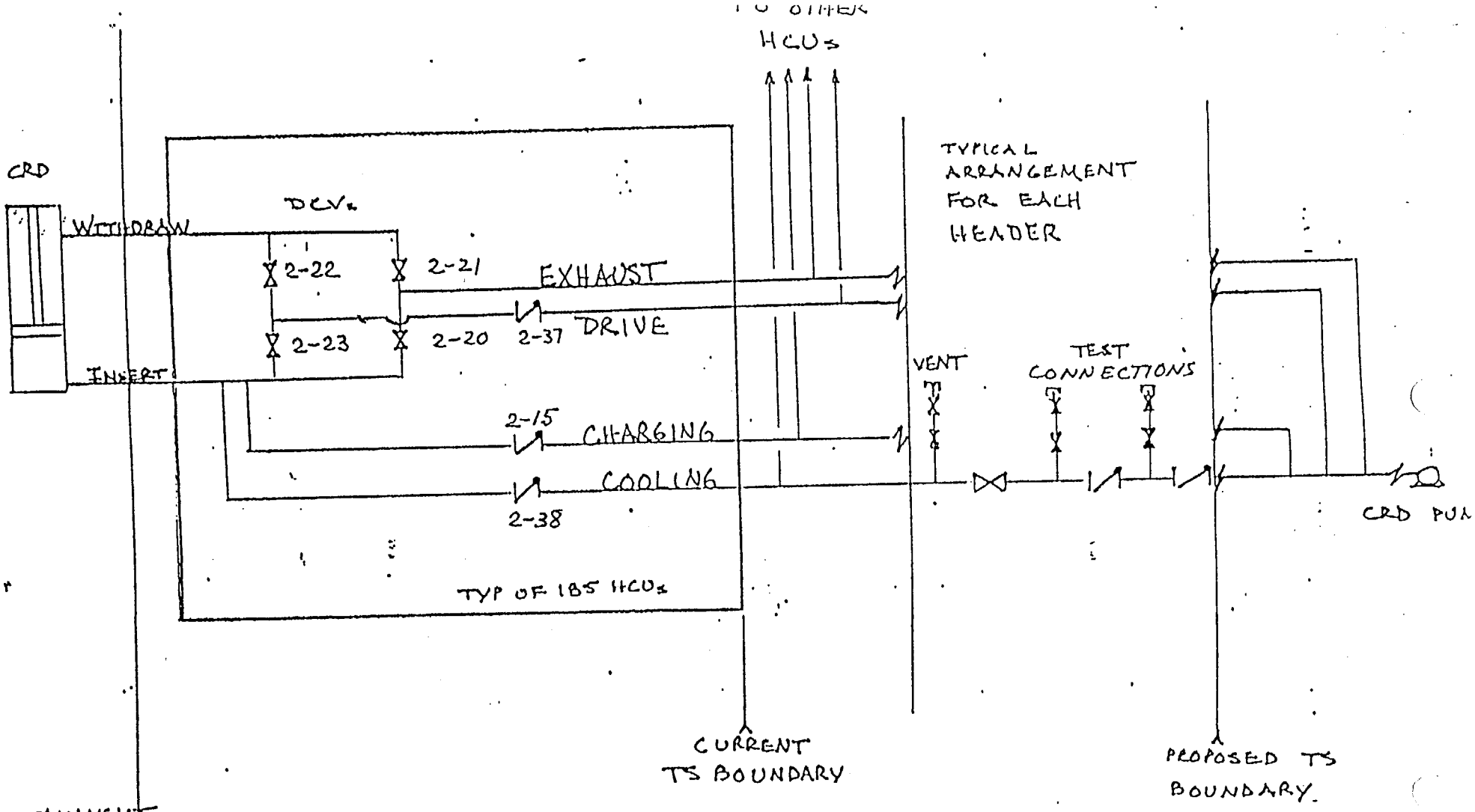
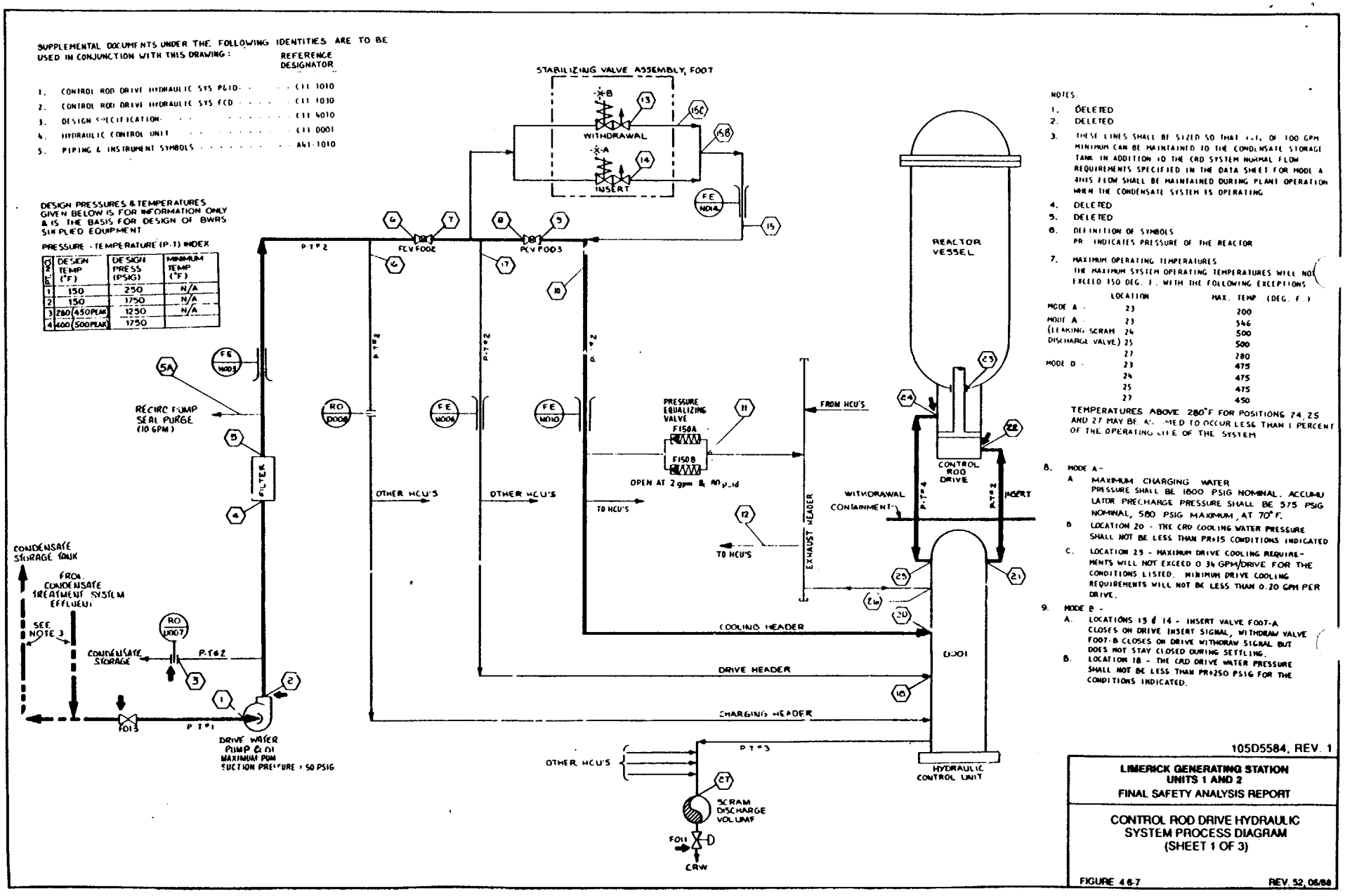
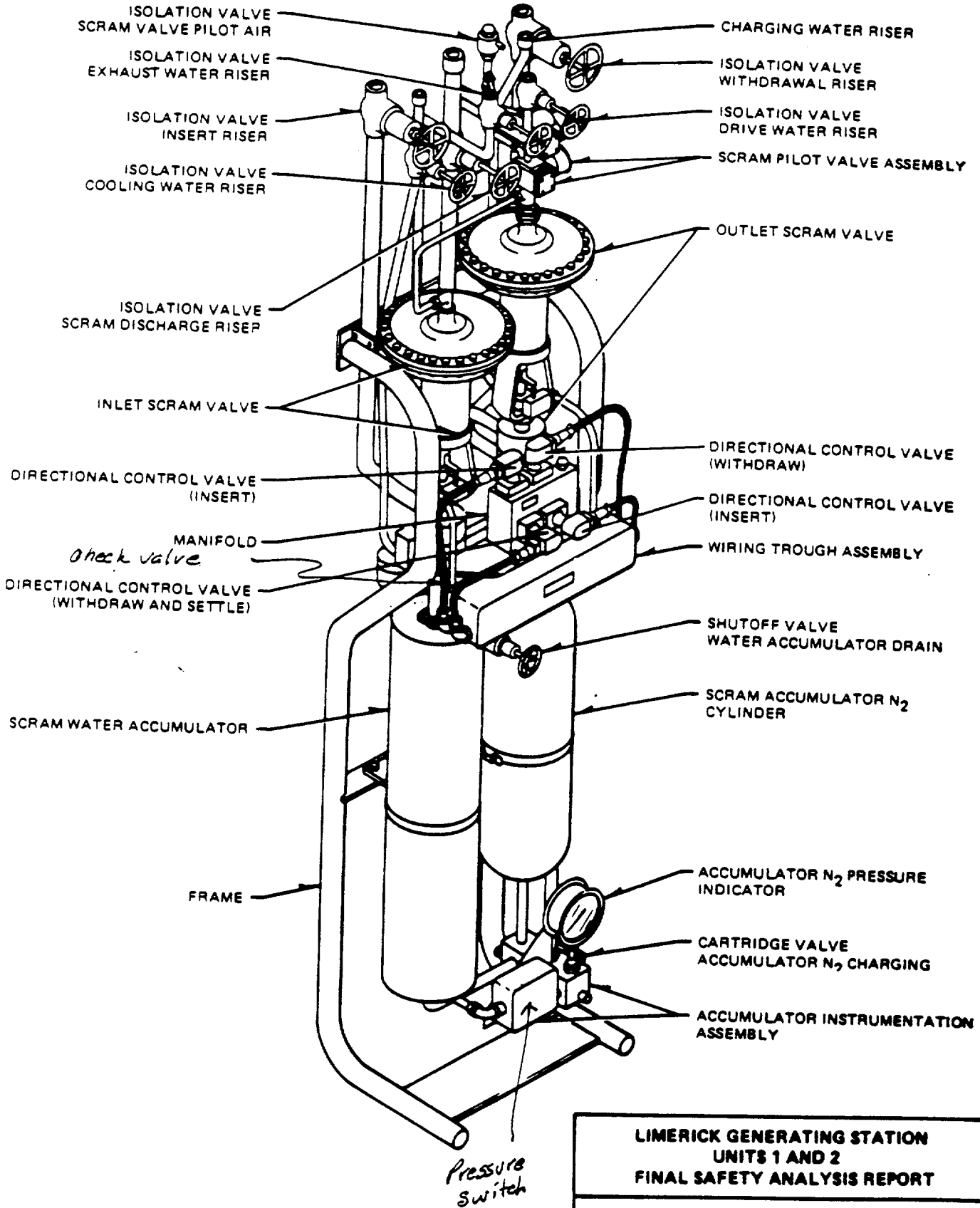


FIGURE 1

ATTACHMENT 1



ATTACHMENT 2



LIMERICK GENERATING STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

CONTROL ROD DRIVE HYDRAULIC CONTROL UNIT

FIGURE 4.6-8