NRC FORM 195 (2-76)

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TO: Mr Rusche	FROM: Iowa Elec Light & Pwr Co Cedar Rapids, Ia L Liu	DATE OF DOCUMENT 11-3-76 DATE RECEIVED 11-8-76

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DESCRIPTION

Ltr notarized 11-3-76....trans the following:

PLANT NAME: Duane Arnold

ENCLOSURE

Amdt to OL/Change to Tech Specs: Consisting of revisions with regard to drywell-torus differential pressure control implementing procedures, differential pressure control system instrumentation and torus water level instrumentation as requested in our 9-30-76 ltr....(40 cys encl rec'd)

ACKNOWLEDGED

DO NOT REMOVE

FOR ACTION/INFORMATION ENVIRO 11-9-76 ehf

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NRC FORM 195 (2-76)

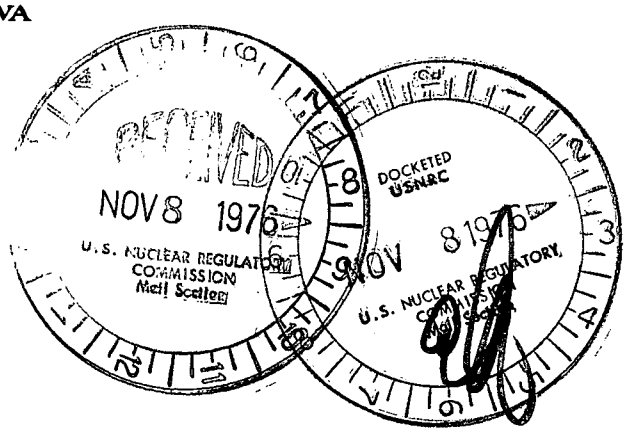
IOWA ELECTRIC LIGHT AND POWER COMPANY

General Office

CEDAR RAPIDS, IOWA

November 3, 1976
IE-76-1694

LEE LIU
VICE PRESIDENT - ENGINEERING



50 - 331

Mr. B. C. Rusche, Director
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D.C. 20545

Dear Mr. Rusche:

Transmitted herewith, in accordance with the requirements of 10CFR50.59 and 50.90, is an application for amendment of DPR-49 to incorporate a proposed change in the Technical Specifications (Appendix A to License) for the Duane Arnold Energy Center (DAEC), described in Enclosure 1 hereto.

This proposed change has been reviewed and approved by the DAEC Operations Committee and the DAEC Safety Committee and does not involve a significant hazards consideration.

Also included as Enclosure 2 is a description of the drywell-torus differential pressure control implementing procedures, differential pressure control system instrumentation and torus water level instrumentation as requested in your letter of September 30, 1976.

Three signed and notarized originals and 40 additional copies of this application are transmitted herewith. This application, consisting of the foregoing letter and enclosures hereto, is true and accurate to the best of my knowledge and belief.

Iowa Electric Light and Power Company

By: _____
Lee Liu
Vice President, Engineering

Sworn and Subscribed to before me on this 3rd day of November, 1976.

_____
Notary Public in and for the State of Iowa.

Jean R. Smith
NOTARY PUBLIC
STATE OF IOWA
Commission Expires
September 30, 1978

LL/KAM/ms
Encls.
cc: D. Arnold
R. Lowenstein
J. Keppler (NRC)
L. Root
File A-117

1134

ENCLOSURE 1 TO IE 75-1694

PROPOSED CHANGE RTS-75 TO DAEC TECHNICAL SPECIFICATIONS

I. Affected Technical Specifications

Appendix A of the Technical Specifications for the DAEC (DPR-49) provides as follows:

The present Technical Specifications do not contain Limiting Conditions for Operation and Surveillance Requirements for the differential pressure to be maintained between the drywell and the pressure suppression chamber.

II. Proposed Changes in Technical Specifications

The licensees of DPR-49 propose the following changes in the Technical Specifications set forth in I above:

Add new Limiting Conditions for Operation, Surveillance Requirements and Bases, Specifications 3.7.A.7 and 4.7.A.7, as shown in the attached, and add the Drywell/Torus ΔP transmitter to Tables 3.2-F and 4.2-F.

Change the numbering of the present Specification "3.7.A.7" to "3.7.A.8".

III. Justification for Proposed Change

This change is proposed in response to a request from the Nuclear Regulatory Commission (Letter; Mr. G. Lear, Chief, Operating Reactors Branch #3, Division of Operating Reactors to Mr. D. Arnold, President, Iowa Electric Light and Power Company; dated September 30, 1976).

IV. Review Procedure

This proposed change has been reviewed by the DAEC Operations Committee and Safety Committee which have found that this proposed change does not involve a significant hazards consideration.

TABLE 3.2-F

SURVEILLANCE INSTRUMENTATION

Minimum No. of Operable Instrument Channels	Instrument	Type Indication and Range	Action
2	Reactor Water Level	Recorder, Indicator 0-60"	(1) (2) (3)
2	Reactor Pressure	Recorder, Indicator 0-1200 psig Indicator	(1) (2) (3)
2	Drywell Pressure	Recorder, 0-80 psia Indicator	(1) (2) (3)
2	Drywell Temperature	Recorder 0-400°F Indicator	(1) (2)
2	Suppression Chamber Temperature	Recorder, 0-400°F Indicator	(1) (2) (3)
2	Suppression Chamber Water Level	Recorder 0-32"	(1) (2) (3)
1	Control Rod Position	Process Computer, Full Travel	
1	Neutron Monitoring	SRM, IRM, LPRM 0 to 100% power	(1) (2) (3) (4)
1	Drywell/Torus ΔP	Alarm	
1	Drywell Pressure	Indicator, 0-50 psig	
1	Torus Pressure	Indicator, 0-100 psig	

TABLE 4.2-F

MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

	Instrument Channel	Calibration Frequency	Instrument Check
1)	Reactor Level	Once/6 months	Once Each Shift
2)	Reactor Pressure	Once/6 months	Once Each Shift
3)	Drywell Pressure	Once/6 months	Once Each Shift
4)	Drywell Temperature	Once/6 months	Once Each Shift
5)	Suppression Chamber Temperature	Once/6 months	Once Each Shift
6)	Suppression Chamber Water Level	Once/6 months	Once Each Shift
7)	Control Rod Position	NA	Once Each Shift
8)	Neutron Monitoring	Prior to Reaching 20% Power and once per day when in Run Mode (APRM Gain Adjust when in Run Mode)	Once Each Shift (When in Startup or Run Mode)
9)	Drywell/Torus ΔP	Once/6 months	Once Each Shift
10)	Drywell Pressure	Once/Operating Cycle	Once Each Shift
11)	Torus Pressure	Once/Operating Cycle	Once Each Shift

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
must be taken out of power operation.	functionally tested once per operating cycle in conjunction with specification 4.7.A.6.a. Should one of the two H_2 or O_2 analyzers serving the drywell or suppression pool be found inoperable, the remaining analyzer of the same type serving the same compartment shall be tested for operability once per week until the defective analyzer is made operable.
7. Drywell-Suppression Chamber Differential Pressure	7. Drywell-Suppression Chamber Differential Pressure
a. Differential pressure between the drywell and suppression chamber shall be maintained at equal to or greater than 1.30 psid except as specified in (1) and (2) below:	a. The pressure differential between the drywell and suppression chamber shall be recorded at least once each shift.
(1) This differential shall be established within 12 hours of reaching less than 4% oxygen concentration during startup. The differential may be decreased to less than 1.30 psid 24 hours prior to a shutdown.	
(2) This differential may be decreased to less than 1.30 psid for a maximum of two hours during required operability testing of the HPCI system pump, the RCIC system pump, the drywell-pressure suppression chamber vacuum breakers, and the suppression chamber to reactor building vacuum breakers.	
b. If the differential pressure of specification 3.7.A.7.a cannot be maintained, an orderly shutdown shall be initiated and the reactor shall be in the Hot Shutdown condition within 12 hours and the Cold Shutdown condition within the following 24 hours.	
8. If the specifications of 3.7.A.1 through 3.7.A.5 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 24 hours.	

Due to the nitrogen addition, the pressure in the containment after a LOCA could possibly increase with time. Under the worst expected conditions the containment pressure will reach 30 psig in approximately 70 days. If and when that pressure is reached, venting from the containment shall be manually initiated. The venting path will be through the Standby Gas Treatment System in order to minimize the offsite dose.

Following a LOCA, periodic operation of the drywell and torus sprays may be used to assist the natural convection and diffusion mixing of hydrogen and oxygen.

The drywell/torus differential pressure is implemented to provide a load to capacity ratio of no greater than 0.5 for the torus support structure for post-LOCA hydrodynamic loads. Design details are described in References 5 and 6.

7. Standby Gas Treatment System and Secondary Containment

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment when the reactor is shut down and the drywell is

3.7.A & 4.7.A REFERENCES

1. Section 14.6 of the FSAR.

2. ASME Boiler and Pressure Vessel Code, Nuclear Vessels, Section III, maximum allowable internal pressure is 62 psig.

3. Staff Safety Evaluation of DAEC, USAEC, Directorate of Licensing, January 23, 1973.

4. 10 CFR 50.54, Appendix J, Reactor Containment Testing Requirements, Federal Register, August 27, 1971.

5. DAEC Short-Term Program Plant Unique Analysis, NUTECH Doc. No. IOW-01-065, August 1976.

6. Supplement to DAEC Short-Term Program Plant Unique Analysis, NUTECH Doc. No. IOW-01-071, October 1976.

ENCLOSURE 2 TO IE-76-1694

The method used to establish and maintain drywell/torus differential pressure control requires minimal operator action. The drywell and torus are inerted with nitrogen in the normal manner. Upon completion of inerting the pressure in the drywell and torus is about 1 psig and both compressors are started. A minimum differential pressure of 1.3 psid is established in approximately two hours. Once the differential pressure is established, CV 4316 (see Sketch A) will close down to maintain 1.3 psid. This results in a back pressure to the compressors. Each compressor has a load and unload sequence. Compressor A loads and unloads in the range of 95 to 105 lbs and Compressor B loads and unloads in the range of 85 to 95 psig. Compressor B will also commence a shutdown cycle at 95 psig in which it will shutdown at the end of five minutes if not loaded. If during normal operation the discharge pressure drops to 85 psig, the B Compressor will restart with a resultant alarm to alert the operator. The A Compressor runs throughout normal operations. No other operator actions are normally required.

In order to utilize this system, Amendment 20 to the Plant Technical Specifications was issued to change two containment isolation valves from normally closed to normally opened and from stays closed to goes closed on containment isolation.

The nitrogen makeup system for the containment is designed to admit nitrogen to the containment whenever pressure in the drywell is less than one psig. With a differential pressure of 1.3 psid we do not have an automatic nitrogen makeup capability. Methods to restore automatic nitrogen makeup capability are presently being evaluated.

The instrumentation utilized to control the drywell/torus differential pressure is shown on Sketch A. The two functions provided by the instrumentation are control of CV4316 and the alarm. There is a single channel provided for the instrumentation functions. The alarm location is panel 1C35 in the control room.

Ranges and accuracies of the instruments as listed in their instruction manuals are:

ΔP Transmitter	0-20" W.C., 10-50 ma	$\pm$0.4%
Square Root Converter	10-50 ma	$\pm$2.0%
Power Supply	52.5 VDC, 0-50 ma	$\pm$0.1%
E/P Transducer	10-50 ma, 3-15 psi	$\pm$1.0%
Alarm	10-50 ma	$\pm$0.5%

Direct pressure readout instrumentation is used to monitor the drywell/torus differential pressure. The pressure indicators are precision, digital display instruments having the following ranges and accuracies:

Drywell Pressure	0-50 psi	±0.015%
Torus Pressure	0-100 psi	±0.015%

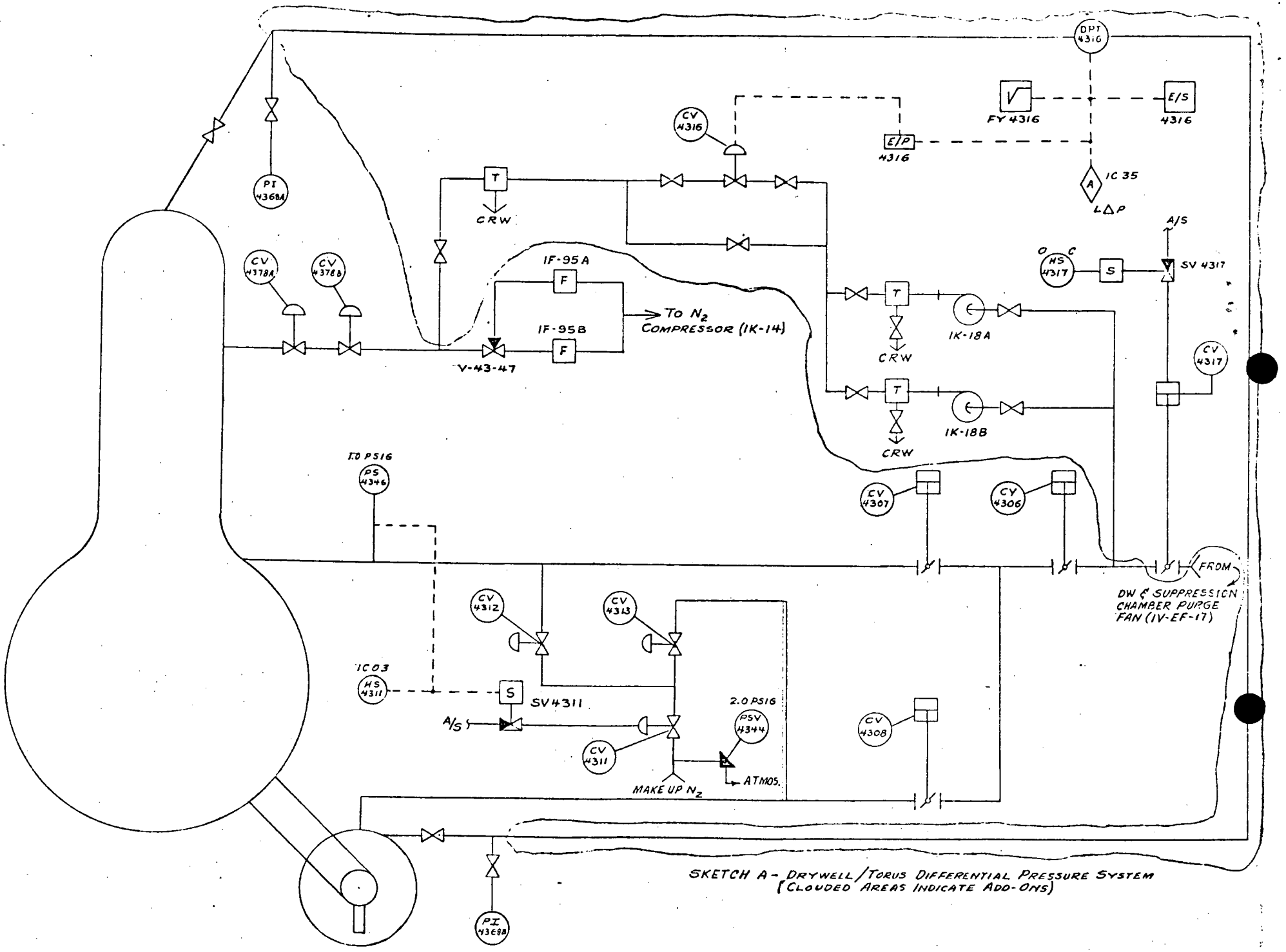
Proposed Technical Specifications for the above instrumentation are being forwarded with this transmittal.

As stated in our letter number IE-76-1565 dated October 13, 1976 the results of the plant unique analysis are applicable for the range of torus water levels specified in the Technical Specifications.

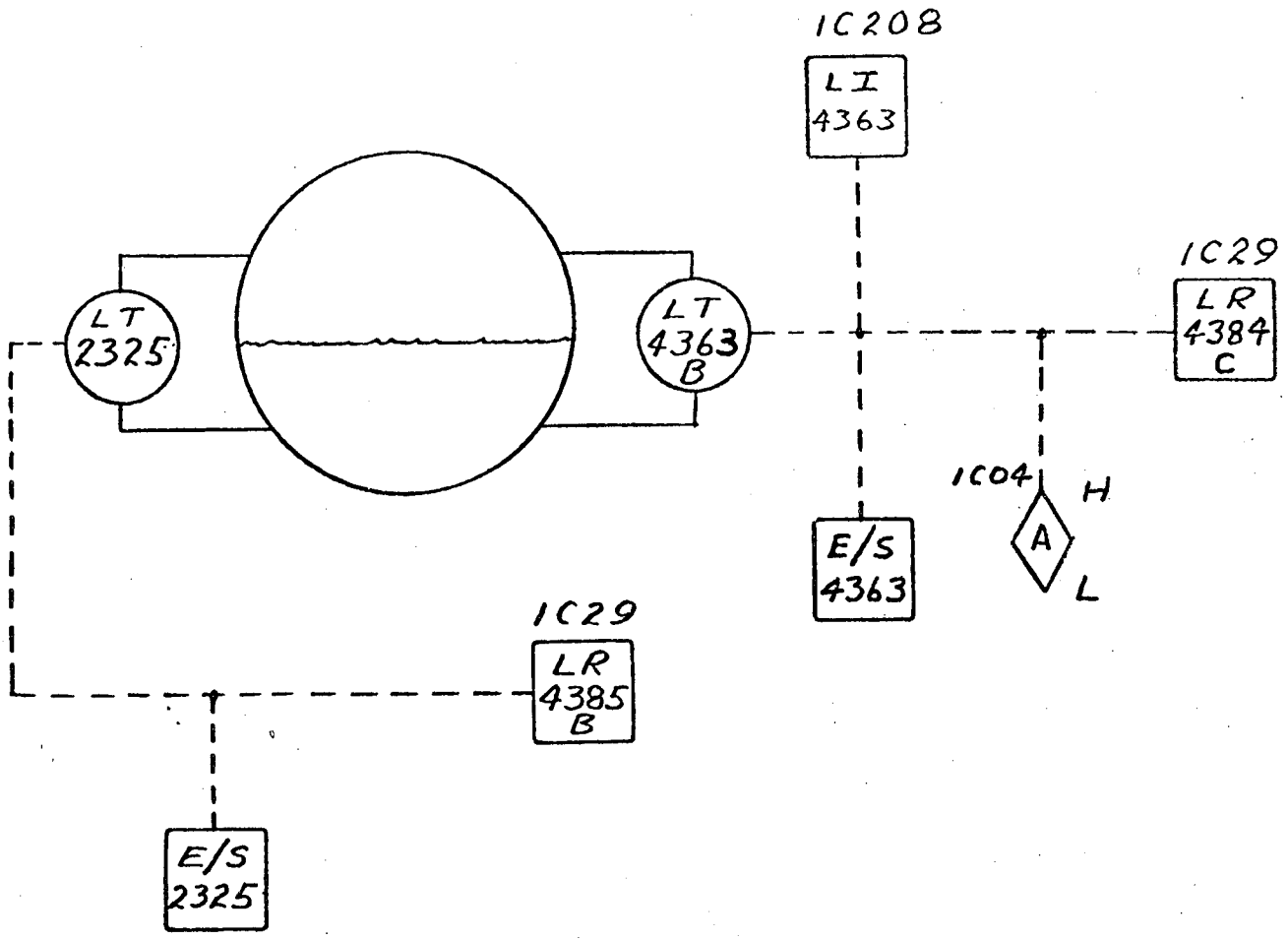
Two channels of level instrumentation as shown in Sketch B are provided. This provides a two channel level readout in the Control Room and a single channel high-low alarm in the Control Room. Ranges and accuracy of the instruments are:

Level Transmitter	-15" to + 15" W.C., 10-50 ma	± 1.0% (4363B)
Level Transmitter	-25" to + 25" W.C., 10-50 ma	± 1.0% (2325)
Power Supply	10-50 ma	± 0.1%
Level Recorder	10-50 ma	± 0.5%
Alarm	10-50 ma	± 0.5%

Torus water level instrumentation surveillance requirements and test and calibration requirements are as indicated in Tables 3.2-F and 4.2-F of the plant Technical Specifications. Torus water volume is specified in Section 3.7.A.1 of the plant Technical Specifications.



SKETCH A - DRYWELL/TORUS DIFFERENTIAL PRESSURE SYSTEM
(CLOUDED AREAS INDICATE ADD-ONS)



Sketch B - Torus Level Instrumentation