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 AUTH. NAME      AUTHOR AFFILIATION  
 HERING, R.F.      Indiana & Michigan Electric Co.  
 RECIP. NAME      RECIPIENT AFFILIATION  
 DENTON, H.R.      Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards addl info re NUREG-0737 Items II.F.1.4, II.F.1.5 &  
 II.F.1.6 re containment pressure, water level & hydrogen  
 monitors respectively, in response to 820316 request.

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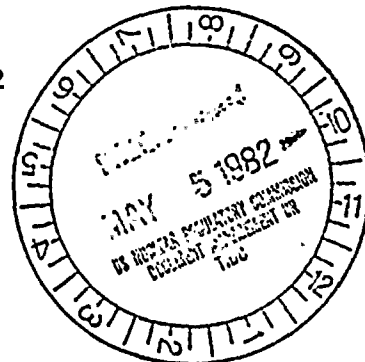
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# INDIANA & MICHIGAN ELECTRIC COMPANY

P. O. BOX 18  
BOWLING GREEN STATION  
NEW YORK, N. Y. 10004

April 29, 1982  
AEP:NRC:0677



Donald C. Cook Nuclear Plant Unit Nos. 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
REQUEST FOR ADDITIONAL INFORMATION ON TMI ACTION ITEMS  
II.F.1.4, 5 and 6

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Denton:

The Attachment to this letter responds to Mr. S. Varga's request of March 16, 1982 for additional information on TMI Action Items II.F.1.4, Containment Pressure Monitor, II.F.1.5, Containment Water Level Monitor, and II.F.1.6, Containment Hydrogen Monitor.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

R. F. Hering  
Vice President

RSH/os

cc: John E. Dolan - Columbus  
R. W. Jurgensen  
W. G. Smith, Jr. - Bridgman  
R. C. Callen  
G. Charnoff  
Joe Williams, Jr.  
NRC Resident Inspector at Cook Plant - Bridgman

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Attachment to AEP:NRC:0677

Our response follows the same format given in Enclosure 1 to Mr. S. Varga's letter of March 16, 1982.

- Q1.. In the submittals received to date you have not indicated that you plan to take exception to any of the requirements of NUREG-0737. Are you planning any exceptions of which we are not aware?
- A1. Subject to the successful completion of various equipment qualification tests currently being performed, we believe that we meet the requirements of NUREG-0737 on items II.F.1.4 (Containment Pressure Monitor), II.F.1.5 (Containment Water Level Monitor) and II.F.1.6 (Containment Hydrogen Monitor).
- Q2. (II.F.1.4) What is the accuracy of your pressure monitor? State this for both the indicator and the recorder.
- A2. Since the signals from the containment pressure sensors are indicated and/or recorded on several different devices this response reflects the accuracy of the instrument loop with the greatest deviation. The accuracy for the indicator is  $\pm 3.35\%$  with the recorder accuracy being  $\pm 3.08\%$ . The accuracies for all these responses are based on methodology presented in Westinghouse Reactor Protection System/Engineered Safety Features Actuation System Setpoint Methodology NS-TMA-1835. The percentages were developed using generic manufacturers literature.
- Q3. (II.F.1.4) What is the time response of your pressure monitor? State this for both the indicator and the recorder.
- A3. The time response for the containment pressure indicator is something less than 4 seconds full scale. The time response for the recorder is 1.6 seconds full scale. This response considers the readout device only since the transmitter is direct process connected with essentially no time lag.
- Q4. (II.F.1.5) What is the accuracy of your water level monitor? State this for both the wide range instrument and the narrow range instrument.
- A4. The accuracy of the containment water level monitor is  $\pm 3.35\%$  for both the wide and narrow range instruments.

Q5. (II.F.1.6) Where are the hydrogen sample ports placed?

A5. There are nine (9) locations within the containment building -- seven (7) in the upper compartment and two (2) in the lower compartment. These provide representative sampling of the containment atmosphere for hydrogen following a loss of coolant accident. The location of each area sampled is noted in the attached Figures 1, 2 and 3. The hydrogen sample locations (ports) are identified as ESR-1 to ESR-9 and are located at:

<u>Sample No./</u> <u>Compartment</u>	<u>Location</u>	<u>Approx.</u> <u>Elevation (Ft.)</u>
ESR-1(U)	Steam Generator No. 4 Outside Enclosure Wall	692
ESR-2(U)	East Recombiner Outlet	705
ESR-3(L)	Lower Containment - East	645
ESR-4(L)	Lower Containment - West	645
ESR-5(U)	Containment Dome - East	743
ESR-6(U)	Containment Dome - West	743
ESR-7(U)	Steam Generator No. 3 Outside Enclosure Wall	692
ESR-8(U)	West Recombiner Outlet	705
ESR-9(U)	Top of Containment Dome - Center	767

(U) - Upper Containment Compartment

(L) - Lower Containment Compartment

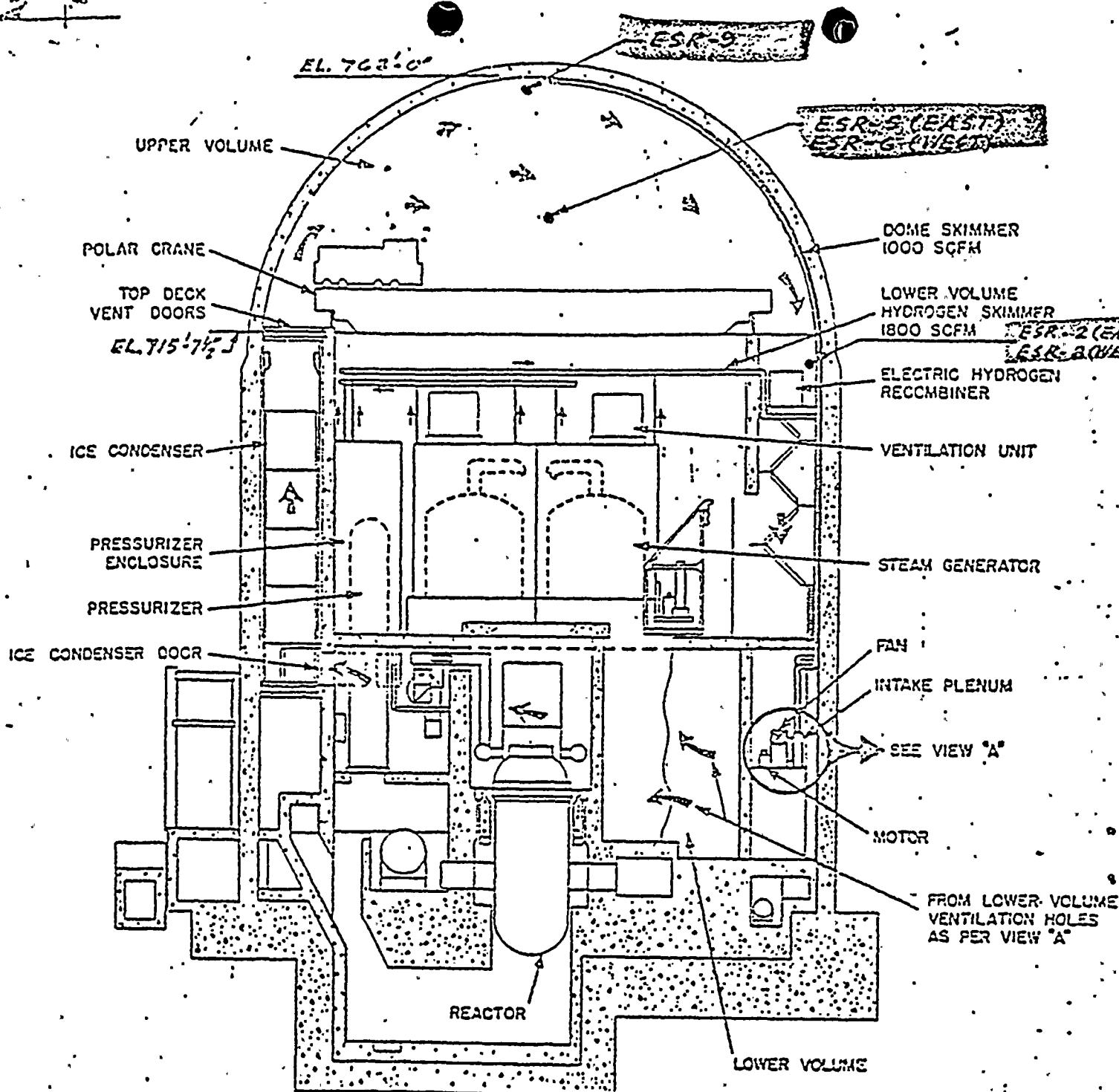
Q6. (II.F.1.6) Is there any obstruction which would prevent hydrogen from the core reaching the hydrogen sample ports reasonably quickly?

A.6 Following a loss of coolant accident (LOCA), hydrogen generated within the core should reach the hydrogen sample ports reasonably quickly since there are no major obstructions to prevent flow to the sample ports. During a LOCA air from the lower compartment of the containment will be directed through the ice condenser to the upper compartment. During post LOCA conditions, the Containment Recirculation/Hydrogen Skimmer System provides recirculation of the containment air between the upper and lower compartments and prevents the improbable pocketing of hydrogen within the containment building. The system provides a forced recirculation pattern from the upper to the lower compartment as shown in the Cook Plant FSAR

(Figure 5.5-3) and aids in mixing of the containment air and in transporting air to a sampling port.

Q7. (II.F.1.6) What is the accuracy of your hydrogen monitor?

A7. The accuracy of the hydrogen monitor is  $\pm 4.05\%$ .

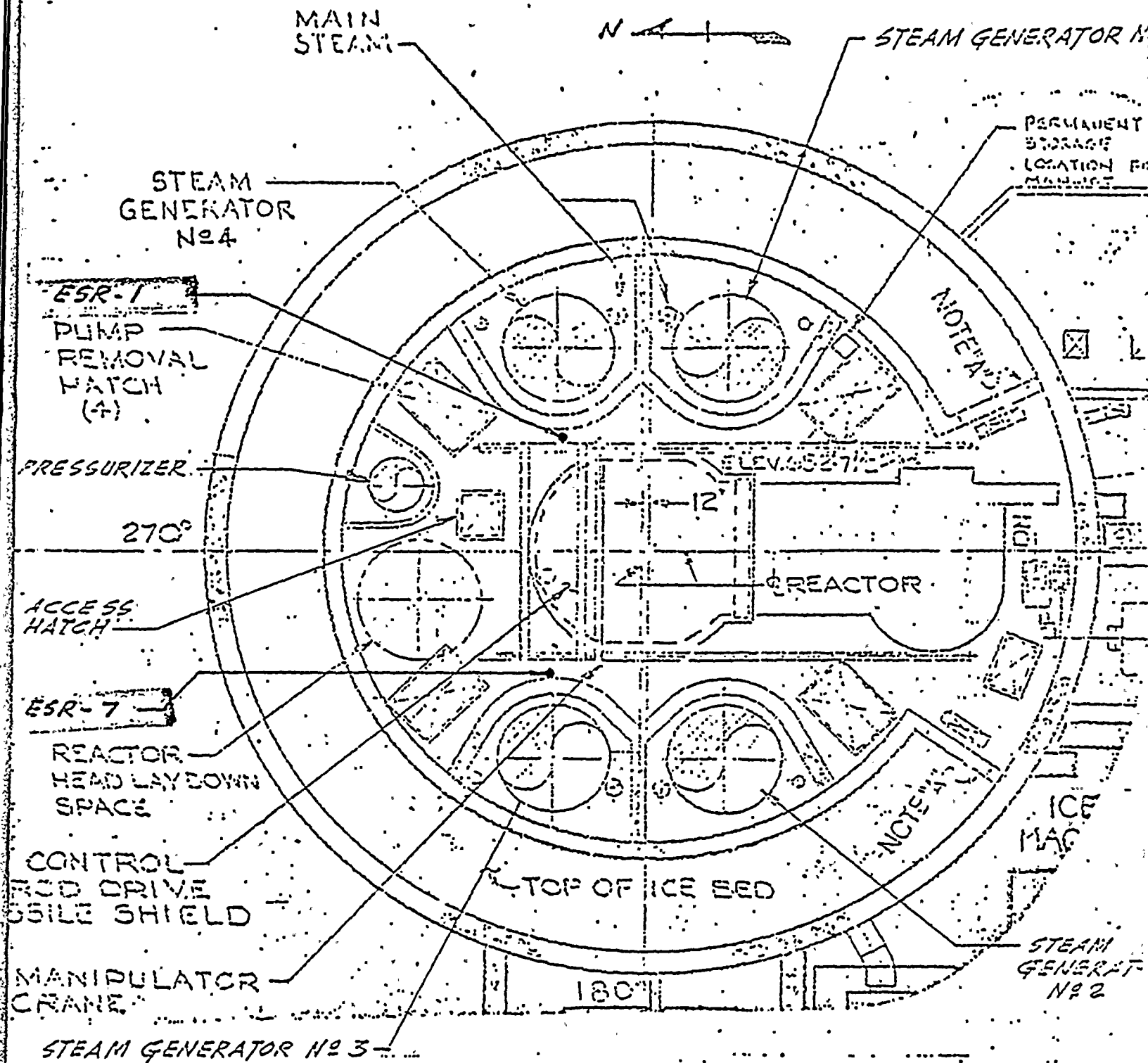


**FIGURE - 1** SECTION OF CONTAINMENT DETAILING  
LOCATION OF HYDROGEN MONITORING  
SAMPLE PORTS ESR-2, 5, 6, 8, 9

**NOTES:** (1) UNIT NO 1 SHOWN (UNIT NO 2 OPPOSITE HAND)  
(2) REFERENCE FSAR FIG. 5.5-3







**FIGURE-2. PLAN ELEVATION OF CONTAINMENT (ELEVATION - 65'0"-0") DETAILING LOCATION OF HYDROGEN MONITORING SAMPLE PORTS ESR-1 & 7**

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NOTES: (1) UNIT No 1 SHOWN (UNIT No 2 OPPOSITE HAND)  
(2) REFERENCE FSAR FIG. 5.5-2A



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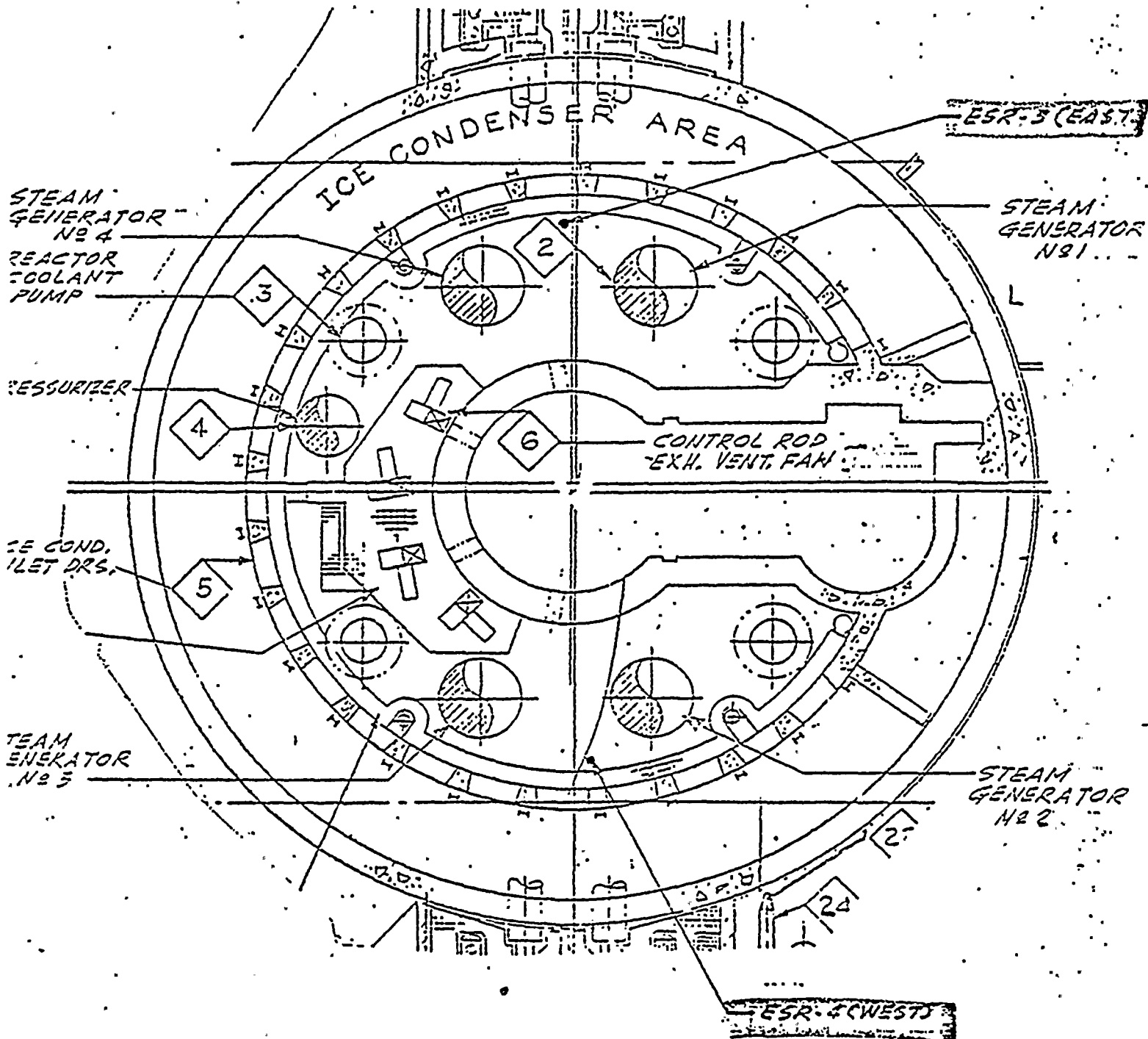


FIGURE -3 PLAN ELEVATION OF CONTAINMENT  
(ELEVATION 633'-0") DETAILING LOCATION  
OF HYDROGEN MONITORING SAMPLE PORTS ESR-3 & 4

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NOTES: (1) UNIT NO 1 SHOWN (UNIT NO 2 OPPOSITE HAND)  
(2) REFERENCE DWG. NO 12-5169

