

Attachment No. 2

Containment Shielding and Radiation Survey
North Anna Unit 2
October 15, 1980

8109010184 810813
PDR ADOCK 05000339
P PDR

RECEIVED RECORDS ROOM

SAFETY RELATED
LIFETIME

JUN 04 1981 *RM*

Page 1 of ____

VIRGINIA ELECTRIC AND POWER COMPANY

2 -SU- 8
Revision No.: 0
Date: 05-03-79

STARTUP TEST PROCEDURE FOR NORTH ANNA POWER STATION UNIT # 2

TITLE: CONTAINMENT SHIELDING AND RADIATION SURVEY: (Plant
Condition)

Prepared By: J. P. SMITH Date: 04-25-79

Engineering Recommended Approval: *James McLean* Date: 04-26-79

STATION NUCLEAR SAFETY AND OPERATING COMMITTEE APPROVAL OF PROCEDURE:

Chairman's Signature: *J. Keenan* Date: 05-03-79

All personnel conducting actual testing in accordance with this procedure will verify by their signature that they have read it in its entirety prior to commencing any testing:

James L. Basse Jr. *Stephen R. ...* *W. C. ...*
Michael W. Myers *Raymond Roberts* _____
William ... *Ronald C. McKernon* _____

TEST RESULTS REVIEWED BY ENGINEERING: *J. P. Smith* Date: *5/2/81*

TEST RESULTS APPROVED BY STATION NUCLEAR SAFETY AND OPERATING COMMITTEE:

Chairman's Signature: *W. C. ...* Date: *6/3/81*

Comments: _____

COPY

NOT A CONTROLLED DOCUMENT

AUG 6 1981

NOR NECESSARILY THE LATEST REVISION

DISCREPANCIES (List by number): None DEC 29-81

8

RESOLUTION OF DISCREPANCIES (List by number corresponding to above: None DEC 29-81

9

CRITIQUE: Radiation levels are consistent with results of the 30% FR, 50% FR and 75% FR surveys. Acceptance criteria were met DEC 29-81

10

0700 - INFORMED SHIFT SUPERVISOR OF INTENT TO PERFORM SU-8 (100%) SURVEY

① INFORMED BY SHIFT SUPERVISOR THAT NEWTON FLUX MAPPING WAS IN PROGRESS AND WOULD BE COMPLETED ≈ 1300 HOURS.

0845 - ENTERED #2 CONTAINMENT (BETWEEN MAPS) FOR AIR SAMPLE, O₂ CONTENT, ETC.

1230 - CALIBRATION: RESPONSE CHECK OF INSTRUMENTS

1300 - INFORMED BY SHIFT SUPERVISOR THAT NEXT MAP WOULD BEGIN @ 1303

1315 - FIRST GROUP ENTERED #2 CONTAINMENT FOR SURVEY OF 291' + 262' ELEVATIONS.

1400 - FIRST GROUP EXITED #2 CONTAINMENT

1415 - SECOND GROUP ENTERED #2 CONTAINMENT FOR SURVEY OF 241', 216' ELEVATIONS AND RHR FLAT.

1500 - SECOND GROUP EXITED #2 CONTAINMENT

1515 - INFORMED #2 CONTROL ROOM THAT PORTION OF SURVEY INSIDE CONTAINMENT WAS COMPLETE.

1600 - PERFORMED SURVEY OF DESIGNATED POINTS OUTSIDE OF #2 CONTAINMENT, IN FUEL BURN ETC.

1730 - RESPONSE CHECKED INSTRUMENTS USED IN SURVEY

* 2 GROUP LEADERS WERE SELECTED AND PREPLANNED THE SURVEY WITH A DISCUSSION OF METHODS TO BE USED FOR BEST EFFICIENCY AND LEAST EXPOSURE.

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
UNIT 2

CONTAINMENT SHIELDING AND RADIATION SURVEY

REFERENCES:

1. Vepco Startup Procedure 2-SU-1
2. FSAR Table 14.1-2, II.2; III.12
3. Health Physics Radiation Protection Manual
4. ADMIN-5.0

1.0 Purpose

- 1.1 To measure the dose rate levels at pre-selected locations inside and outside the containment due to neutron and gamma radiation and to verify the effectiveness of the plant shielding at prior to criticality, hot zero power, 30%, 50%, 75%, and 100% conditions.

Initials

2.0 Initial Conditions

DL C

2.1 Immediately prior to the performance of this test, the Test Engineer has reviewed the latest revisions of the applicable references in order to improve his familiarity of this procedure of the test. (i.e. Changes to the system, equipment or component since the procedure was approved will not affect its testing.)

SM

2.2 Verify that all test equipment to be used in the performance of this test is operational and in calibration, and record on the attached TEST EQUIPMENT DATA SHEET.

SM

2.3 Notify the Shift Supervisor on duty of the impending test and coordinate its performance through him.

SM

2.4 The survey instruments response and battery condition shall be checked at the beginning and end of the survey.

SM

2.5 The plant is at the power level prescribed by Reference 1 (100 %) and has been in steady state conditions at this power level for at least 2 hours prior to the survey.

SM

2.6 Survey teams will consist of a minimum of two personnel, of which one must be a member of the Health Physics Department.

SM

2.7 Prior to performing the survey, the survey teams have reviewed the areas and locations to be surveyed.

SM

2.8 Air samples shall be obtained prior to the survey and analyzed for radioactive contamination levels.

SM (80-57-39)

2.9 A Radiation Work Permit has been issued (if applicable).

SM

2.10 The guidelines contained in Reference 3 shall be followed during the survey.

initials

SR
3.0 Precautions

- SR
- 3.1 Care shall be exercised at all times during the survey to minimize dose received by the surveyors. Whenever possible exposure to radiation shall be divided between the members of each survey team so that dose received by each member will be nearly the same.
- SR
- 3.2 Prior to entering any area the survey meters will be read while the surveyors are still shielded behind existing barriers.
- SR
- 3.3 The plant should remain a steady state conditions throughout the performance of the survey. If a change in plant power level is required, the survey team must be notified prior to the change.

Initials

4.0 Instructions

- 4.1 Utilizing Attachment 6.2 take neutron and gamma readings at the specified locations.
- 4.2 General area survey locations (designated by a \square) will be taken by scanning over 360 degrees at waist level and logging the maximum reading obtained. General area survey locations (designated by a \triangle) will be taken facing the reactor vessel. Contact area locations (designated by a \circ) will be taken at the single point designated.
- 4.3 All readings obtained will be logged on the enclosed survey maps (Attachment 6.2) adjacent to the numbered symbol described in step 4.2 in mr/hr for gamma and in mrem/hr for neutron.
- 4.4 At the completion of the survey enter the data obtained on the survey data sheets.
- 4.5 Recheck the calibration of the survey instruments used and record on Attachment 6.1.
- 4.6 Inform the Shift Supervisor that the radiation survey at this power level is complete.

Completed By: Steph W. McGary

Date: 10-15-80

5.0 Acceptance Criteria

5.1 Dose rate levels for the power level of concern have been obtained. Any inconsistencies in the obtained data shall be resolved by Health Physics and need not stop further testing unless deemed necessary by the Supervisor - Health Physics and Operating Supervisor.

6.0 Attachments

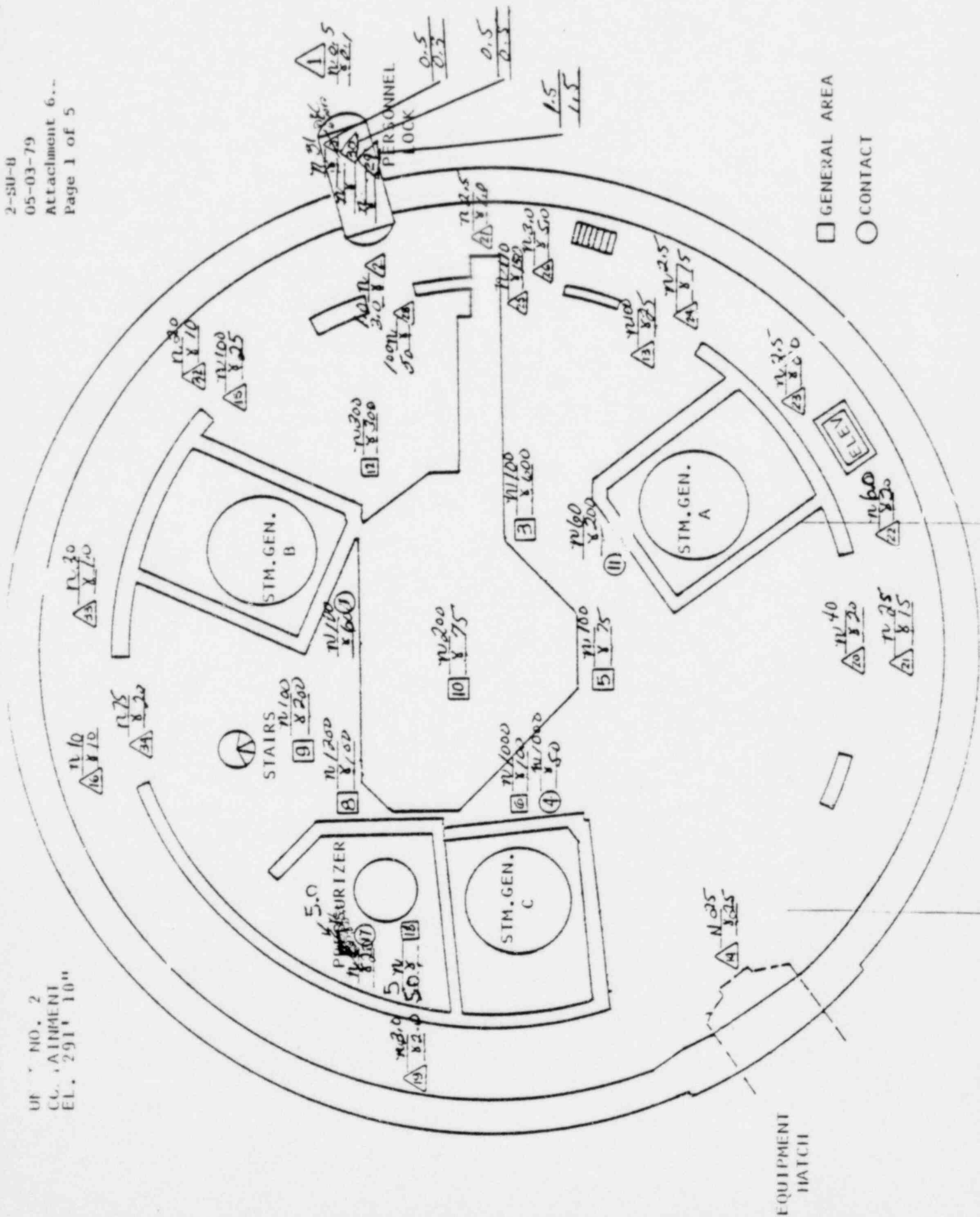
- 6.1 Test Equipment and Data Sheet
- 6.2 Survey Maps

TEST EQUIPMENT
DATA SHEET

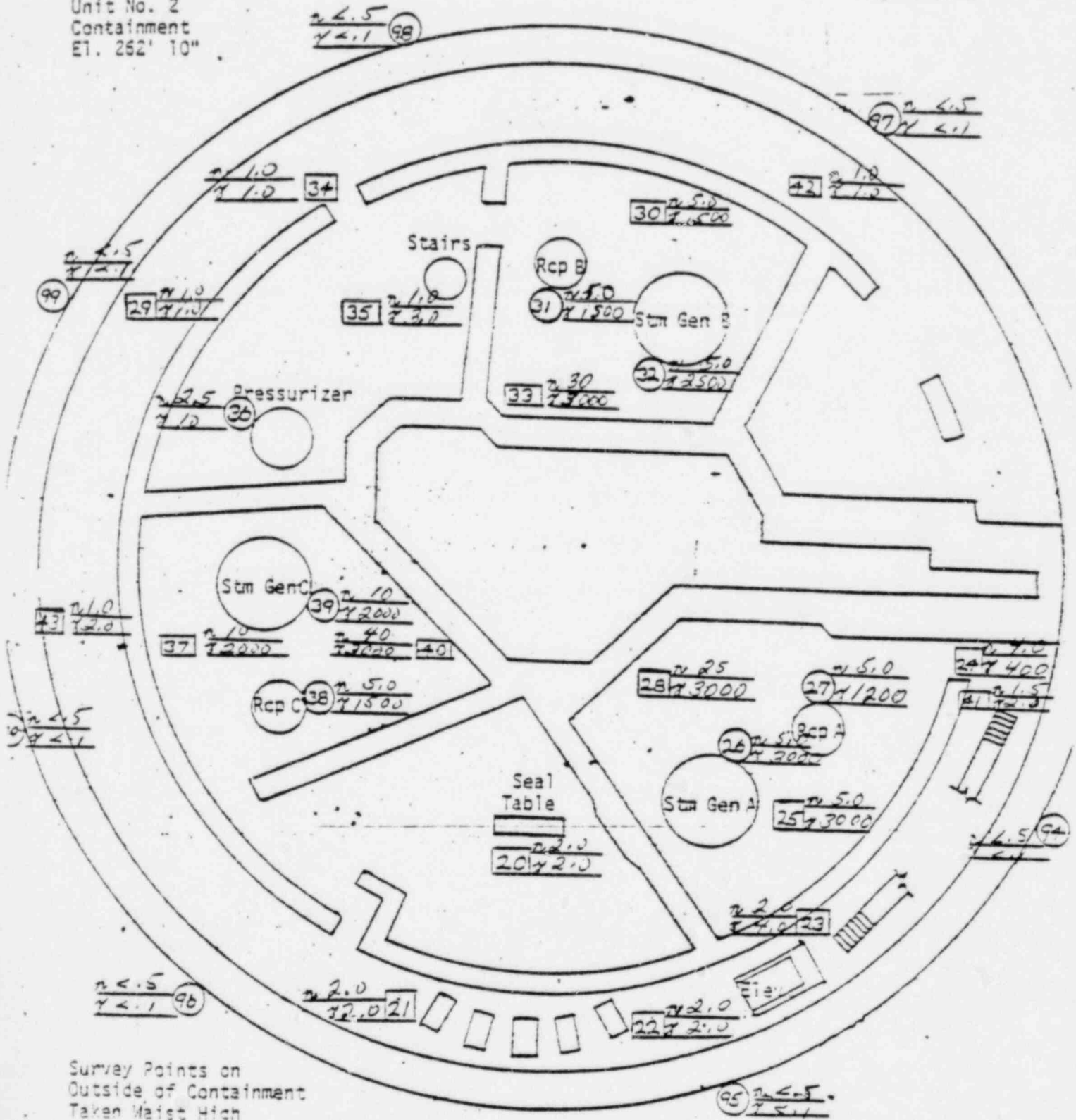
TEST EQUIPMENT DESCRIPTION*	MODEL NUMBER	VEPCO QA NUMBER
TELETECTOR	14784	NQC - 1661
PDR-4 (NEUTRON RATE MON.)	3457	NQC - 1572

* NOTE: This applies only to temporarily installed test equipment or instrumentation. Permanent instrumentation which is part of the system and shown on drawings should not be included.

Completed By: Stephen W. Montgomery
 Date: 10-15-80



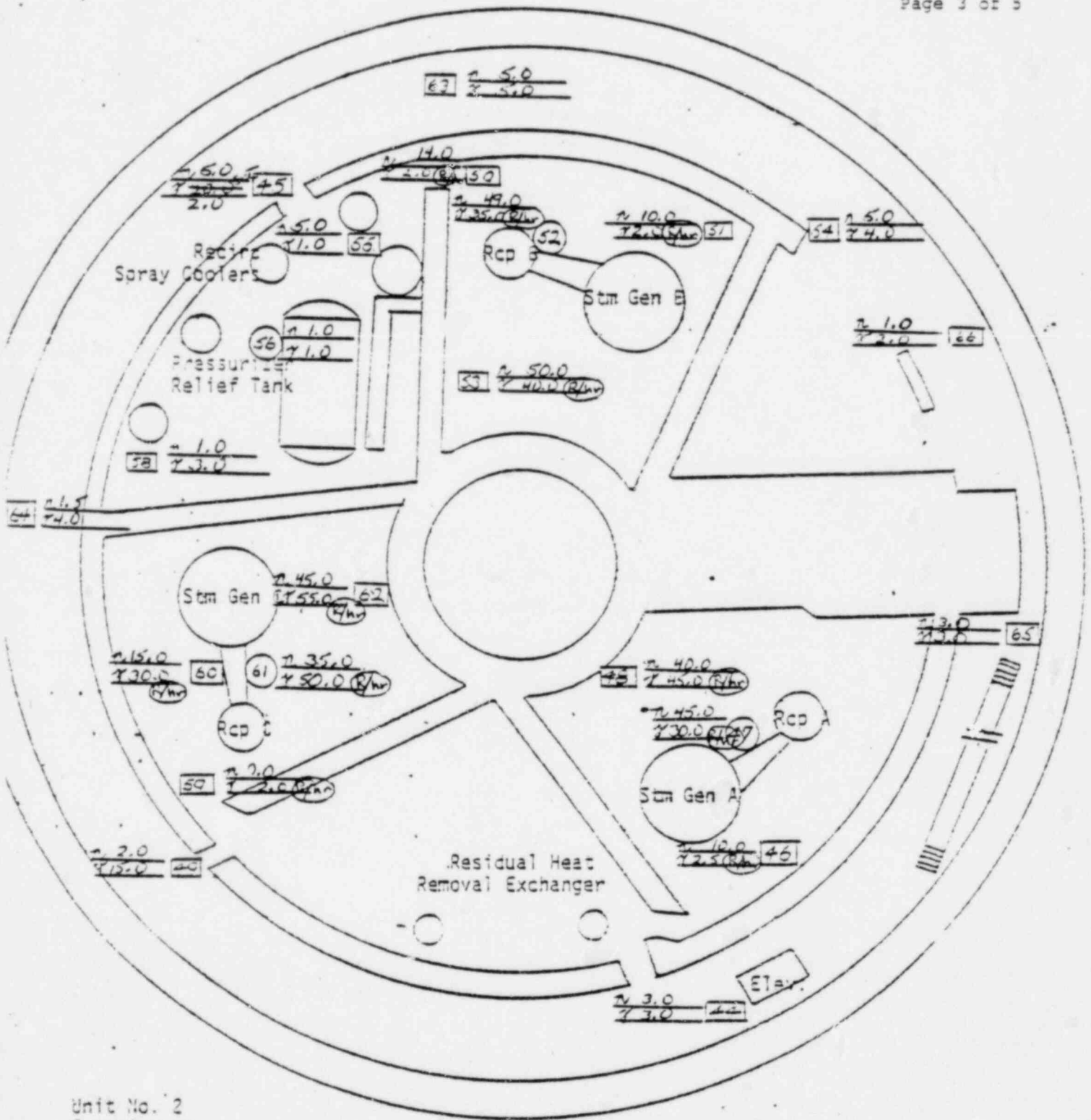
Unit No. 2
 Containment
 El. 262' 10"



Survey Points on
 Outside of Containment
 Taken Waist High
 from Ground Level

Incore Instrumentation
 & Drive Assembly

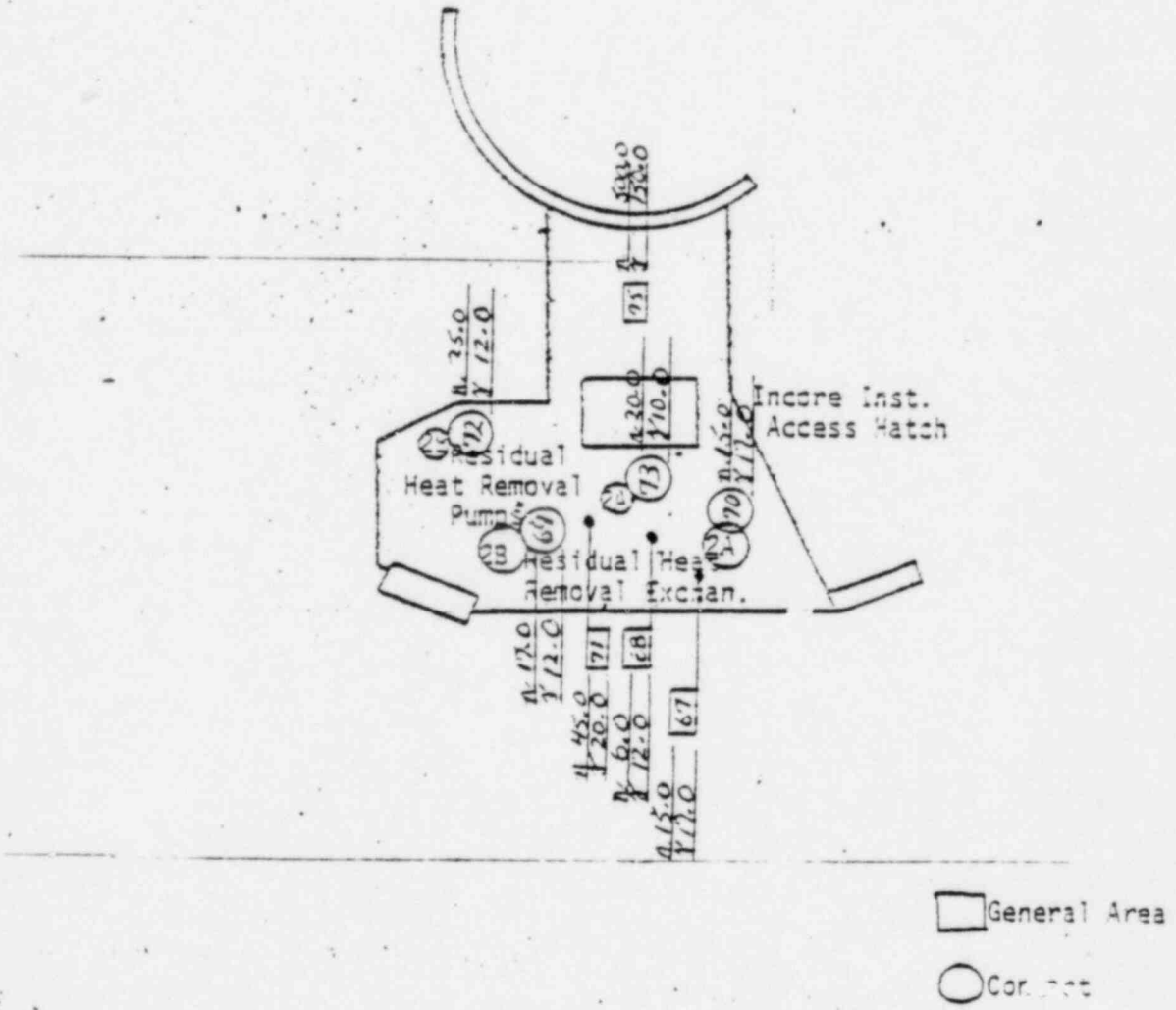
□ General Area
 ○ Contact

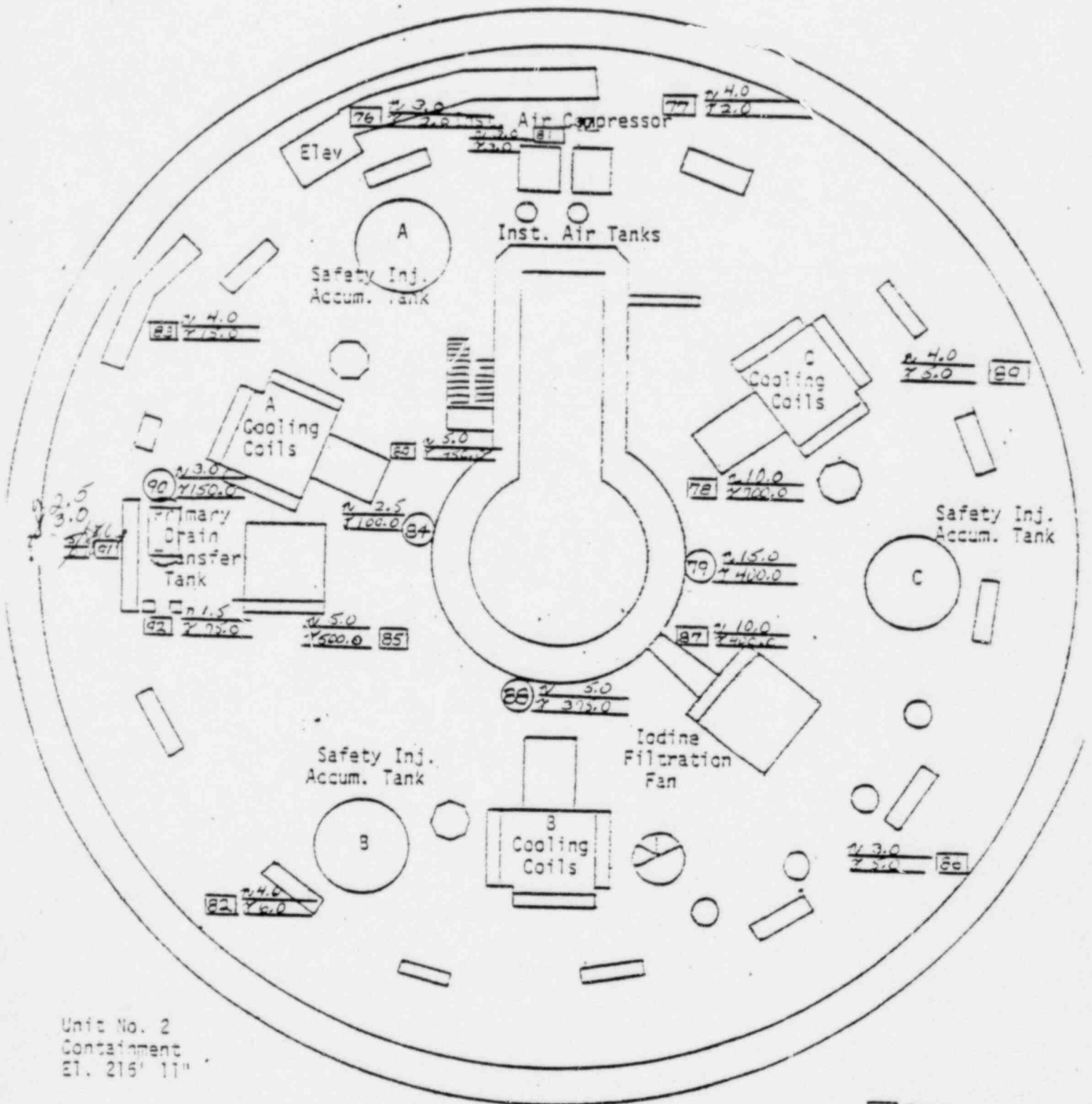


Unit No. 2
 Containment
 EL. 241' 0"

□ General Area
 ○ Contact

Unit No. 2
Containment
El. 231' 6"





Unit No. 2
 Containment
 El. 215' 11"

SURVEY INSTRUMENT CALIBRATION

INSTRUMENT: PNL-4 SERIAL #: 3457 (NYC-1512)

CALIBRATION METHOD: Associated M.I. - 3, 3, 3, 3

RESPONSE CHECKED: YES NO SOURCE USED: Am-241/ie SERIAL #: None

INSTRUMENT CALIBRATED FOR: CW MR/hr nRcm/hr

DATE	x .01		x .1		x 1		x 10		x 100		x 1000		DEVI CAL. INF.	SIGNATURE	
	INIT.	ADJUSTED	INIT.	ADJUSTED	INIT.	ADJUSTED	INIT.	ADJUSTED	INIT.	ADJUSTED	INIT.	ADJUSTED			
3/16/42	-	N/A	4	-	-	40	400	4000	4000	3750	-	-	-	N/A	N/A
3/16/42	-	N/A	4	-	-	40	400	4000	4000	4000	-	-	-	N/A	N/A

REMARKS WITH DATE: Calibration done for SA. for 100% given for "2 Cont.

Response checked 100% on temp. 48X

SURVEY INSTRUMENT CALIBRATION

INSTRUMENT: T. L. Tech SERIAL #: 1445.A (1445-1661)

CALIBRATION METHOD: Procedure H.P. - 3.3.3.2

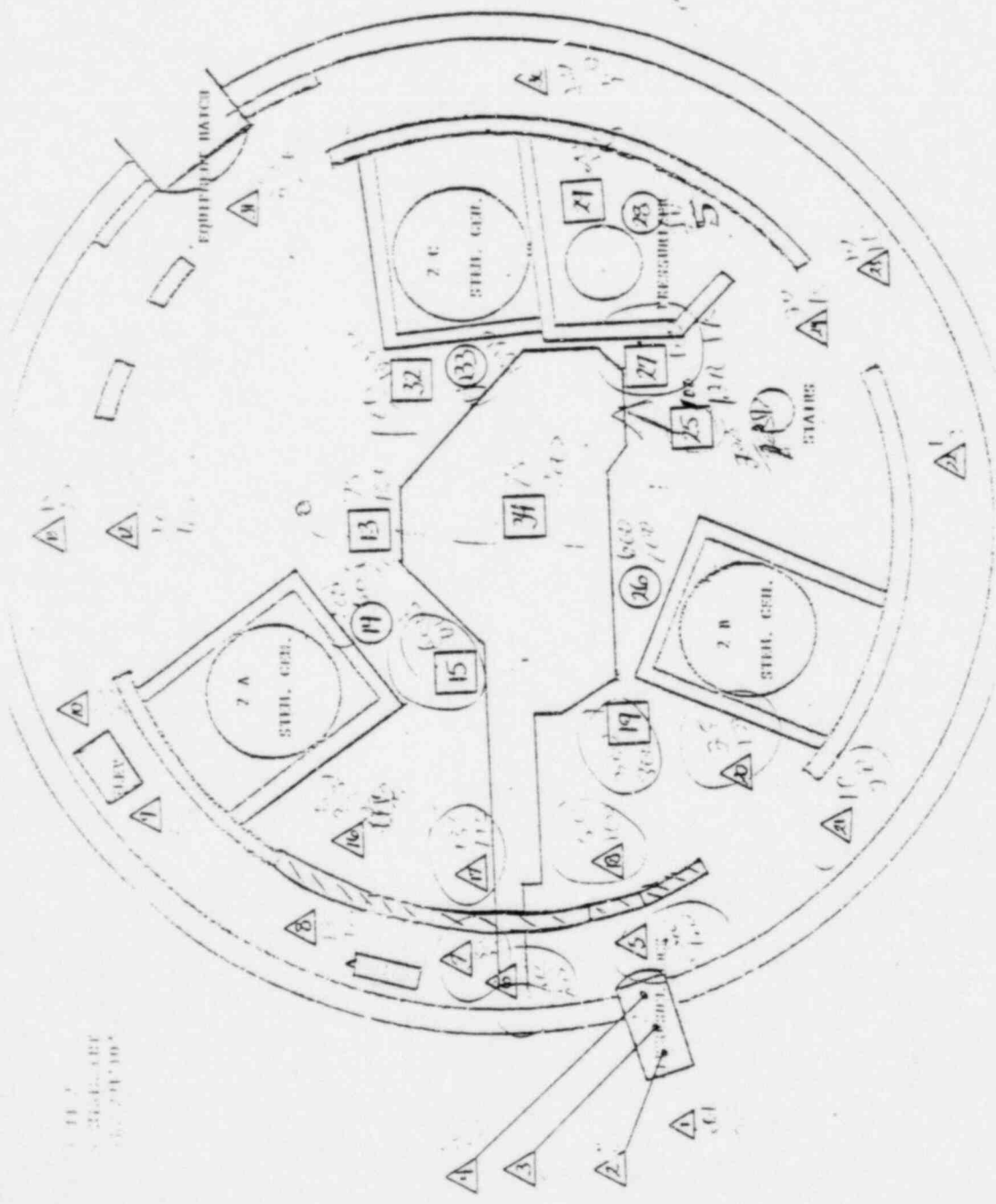
REFERENCE CHECKED: YES NO SOURCE USED: Cs-137 SERIAL #: Cs-3651547

INSTRUMENT CALIBRATED FOR: CFM mtr/hr mRem/hr

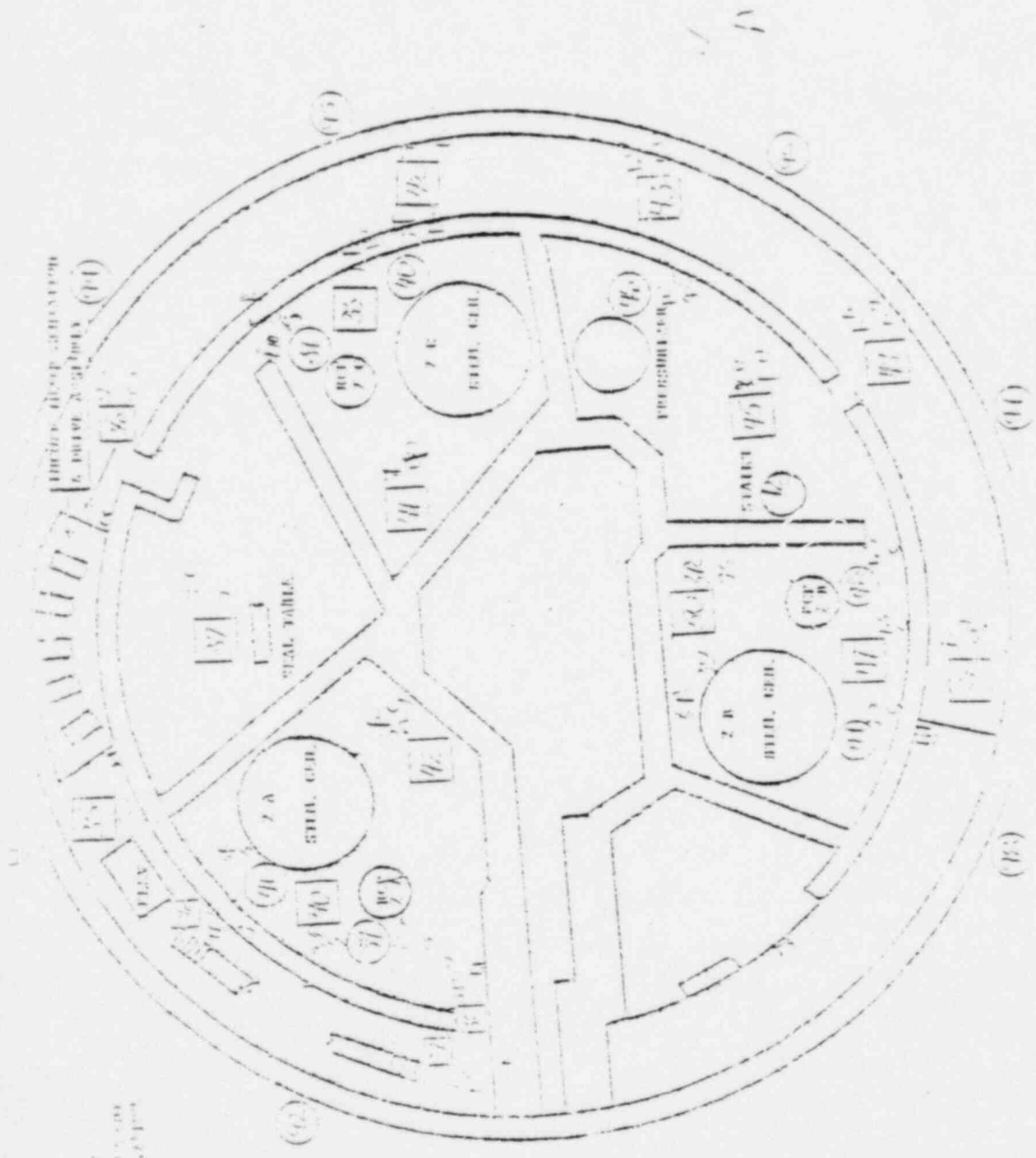
DATE	X-01 IHT, ADJUSTED	X-1 IHT, ADJUSTED	X-10 IHT, ADJUSTED	X-100 IHT, ADJUSTED	X-1000 IHT, ADJUSTED	HEAT CAL. DUE	SIGNATURE
1-14-89	1.5	1.3	2.9	40	600		<i>[Signature]</i>
2-16-89	1.5	1.5	30	50	750		<i>[Signature]</i>
3							
4							
5							
6							
7							
8							
9							
10							

REMARKS WITH DATE: Calibration done for 300.8 for 1000 p.p.m. on 10/1/89

REVISED



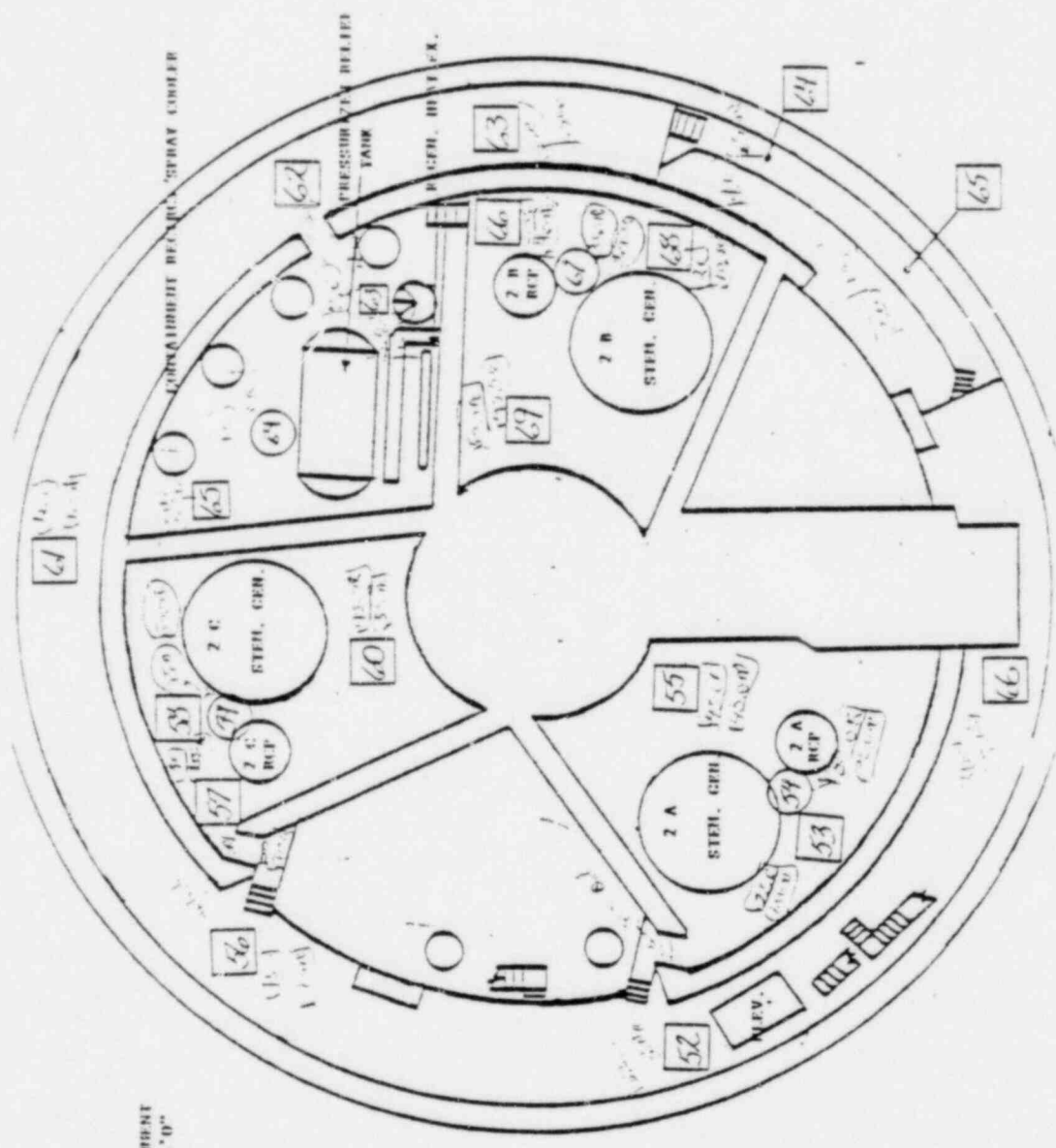
11 7
21.4.47
10. 21.4.47



SEHU. CHH. Z A
SEHU. CHH. Z B
SEAL TABLE
START

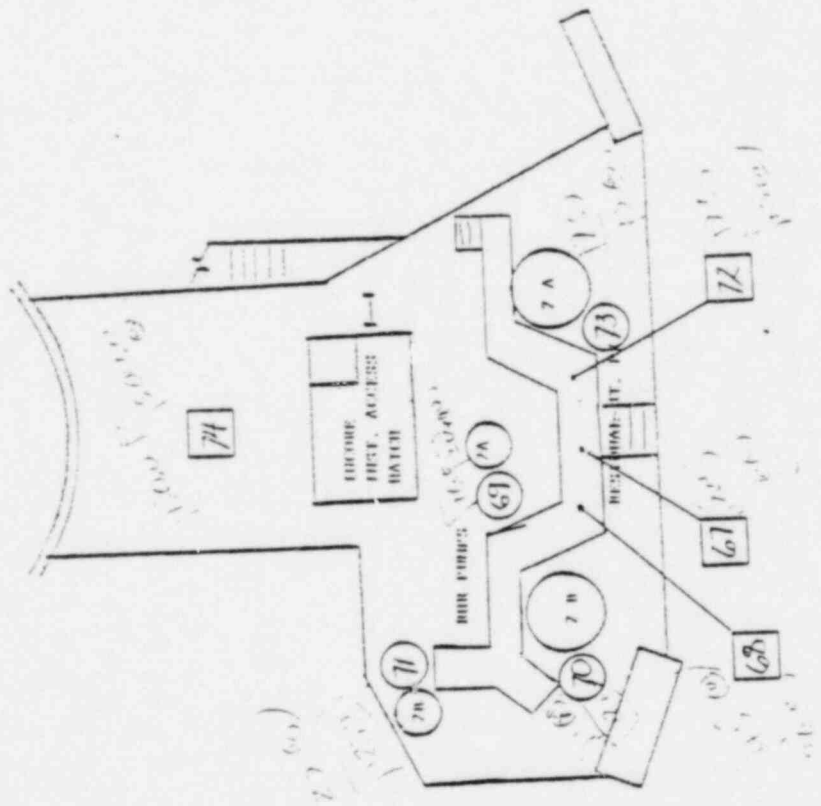
SEHU. CHH. Z A
SEHU. CHH. Z B
SEAL TABLE
START

UNIT 7
CONTAINMENT
ELEV. 261'0"

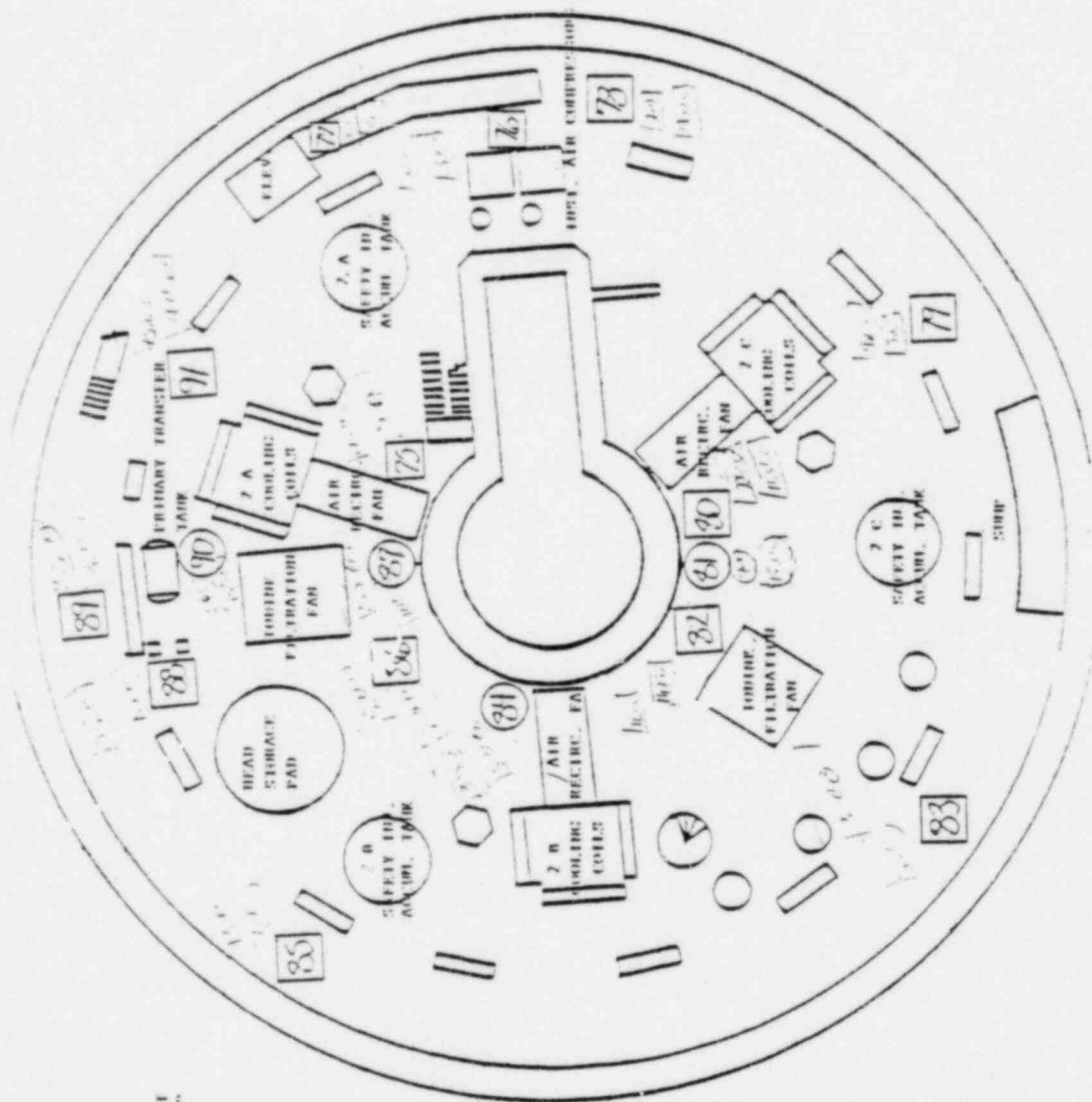


11.2
11.3
11.4

REF. 7
CONFIDENTIAL
E.E. 70060

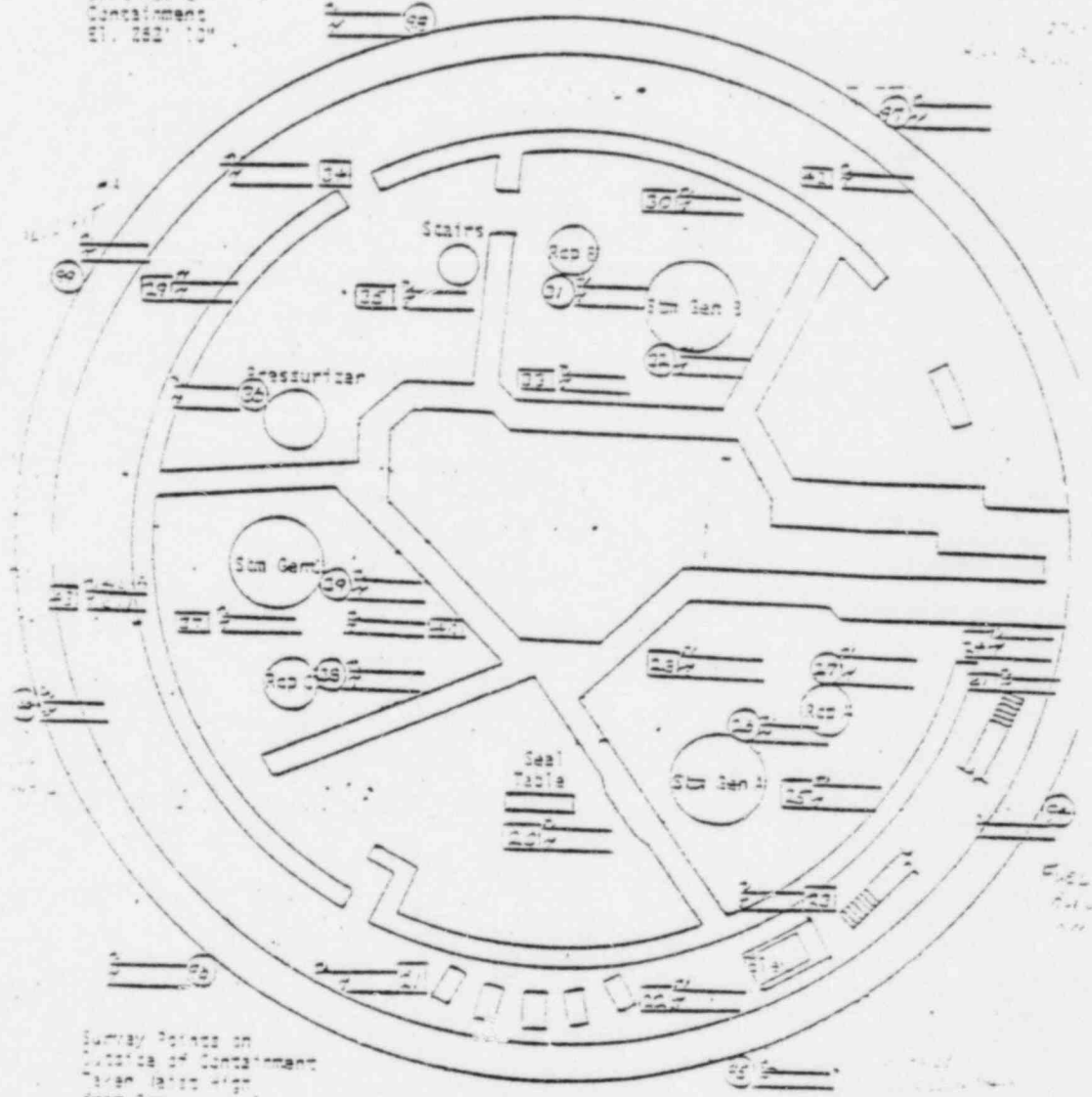


UNIT 7
CONTAINMENT
FL. 716.11"



1-60-4
 10-10-70
 10-10-70
 10-10-70

10-10-70
 10-10-70
 10-10-70
 10-10-70

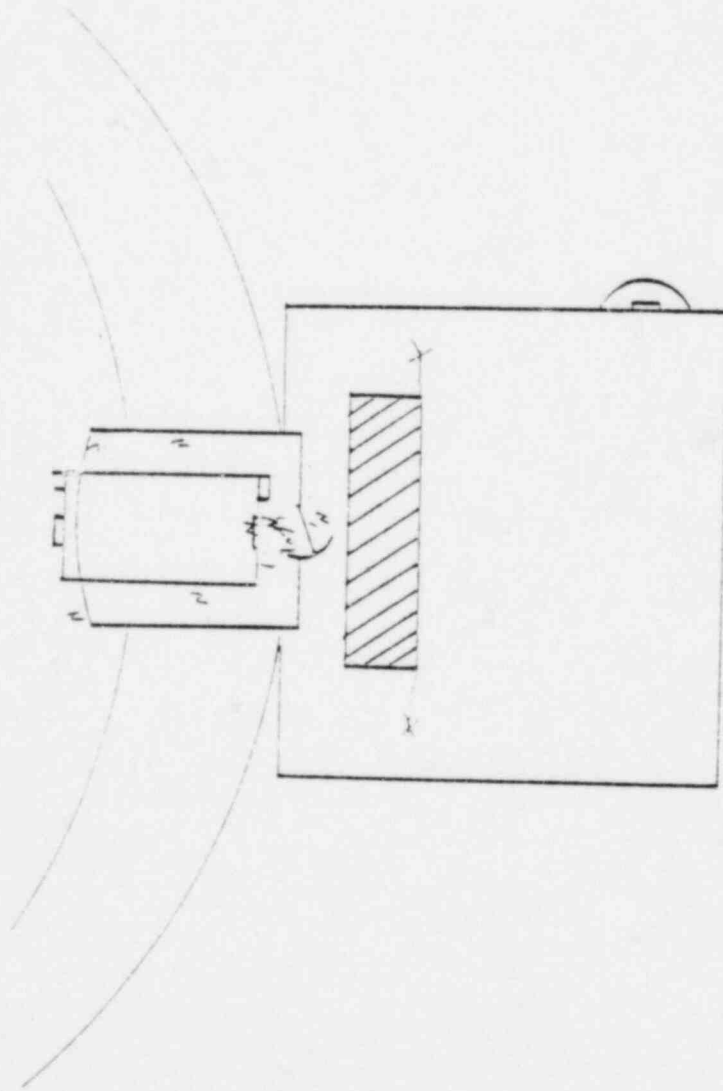


Curved Panels on
 Surface of Containment
 Level 1000 ft
 1000 ft Level

Incore Instrumentation
& Drive Assembly

□ General Area
 ○ Contact

Containment # 2



Equipment Hatch Platform

TYPE OF SURVEY

GENERAL AREA

SHEARS HEDDERS

AIR SAMPLE

REACTOR TOWER #1, 2, 3, 4, 5, 6, 7

INSTRUMENTS

MODEL #

SERIAL #

10111.41

14-114

1788-1

14-114

DATE: 11/11/66

TIME: 4:11

BY: J. J. / P. J.

REMARKS:

ALL READINGS BR/BR

ALL SHEARS 1000 IPT/100CH²

ALL SHEARS 1000 IPT/100CH² EXCEPT AS NOTED ON MAP

AIR PARTICULATE - MEC

hp-1 - 10111.41 - 1788-1

GENERAL AREA SHEARS

CONTACT BARRIER