SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION

UNIT 3

PRIMARY REACTOR CONTAINMENT STRUCTURAL INTEGRITY TEST

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STRUCTURAL INTEGRITY TEST

FINAL REPORT

Prepared By

Bechtel Power Corporation

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1. INTRODUCTION

The Unit 3 Containment Structural Integrity Test was conducted in conjunction with the Preoperational Integrated Leakage Rate Test during the time period from March 30, 1982 through April 3, 1982. The primary purpose of the structural integrity test was to verify the design and structural integrity of the containment structure by imposing an internal pressure of 115 percent of design pressure for a period of not less than two hours.

In order to accomplish the intended test purpose, specialized measuring devices were employed on and in the containment structure to provide the data needed to evaluate structural response during pressurization and depressurization. The test was conducted in accordance with written procedure 3PE-101-03 detailing test requirements and instructions for acquiring test data (Reference 6.1). The test procedure incorporated the commitments contained in the Final Safety Analysis Report (Reference 6.2) and generally conformed to the guidelines set forth in USNRC Regulatory Guide 1.18 (Reference 6.3) and the NRC approved Bechtel Topical Report BC-TOP-5 (Reference 6.4).

2. SUMMARY AND CONCLUSIONS

The structural integrity test consisted of (1) proof of containment ability to contain 115 percent of design pressure and (2) measurement of structural response to changes in internal pressure. Test measurements included gross structural deformation and concrete crack growth. Measurement points were located along typical sections of the containment structure, at thickened sections, and at discontinuities. Test measurements were recorded at specific stages during the pressurization cycle.

The containment structure withstood the test pressure of 69 psig with no indications of structural overloading. Measured values of deformation and concrete crack growth were within design allowable values.

Deformations at 69 psig were reasonably close to the values predicted for maximum test pressure. Radial movements of the containment shell showed considerable variation between the monitored azimuths at each elevation; however, the net diametral growth across the three instrumented diameters was consistent at all elevations and is both linear with pressure and reasonably close to expected values. The variations in radial displacement with azimuth are attributed to (1) slight rotation of the interior structure which is used as a frame of reference for radial measurements, (2) the normal tendency of the single curvature cylindrical surface of the shell to round up under internal pressure and/or (3) the stiffening effect of the buttresses.

Average measured vertical growth of the cylinder wall was close to the predicted value with individual measurements tightly grouped about the average as expected for the uncurved vertical direction on the cylinder. Measured vertical movement of the dome was larger along the 336° azimuth than along the 156° azimuth. This relfects the rotation of the internal structure of which these measurements are referred. The average response of the dome across the two azimuths is close to that predicted for a rigid basemat model of the containment. Individual measured vertical movements of the dome showed a much smoother trend than the individual radial movements of the wall. This is the expected behavior for the doubly curved dome surface.

Radial movements near the equipment opening were consistent with values expected based on movements of the regular areas of the cylinder wall.

Surface cracks exceeding the threshold recordable width of 0.01 inches were found in only one of the seven surveillance areas. The area on the wall adjacent to the base mat contained two cracks which increased from the initial width of 0.010 in. to 0.012 in. The 0.002 in. increase is well below the allowable limit of 0.060 in.

Overall, the results of the structural integrity test provide direct experimental evidence that the containment structure can withstand the design internal pressure with a sufficient margin of safety and that the gross response to pressure is within allowable limits.

3. CONTAINMENT STRUCTURE AND PRESSURIZATION

The containment is a post-tensioned, reinforced concrete structure designed to withstand any accidental release of radioactivity from the reactor coolant system as defined in the Final Safety Analysis Report (Reference 6.2). The containment is designed for an internal accident pressure of 60 psig.

The structure consists of a cylindrical wall and hemispherical dome connected to and supported by a massive reinforced concrete base slab as shown in Figure 3-1. The cylinder wall and dome thickness is increased at three equally spaced locations to form vertical buttresses for end anchorage of the prestressing tendons. Reinforced openings in the cylinder wall are provided for equipment and personnel access as well as for electrical and mechanical system penetration. The structure is post-tensioned by two groups of stranded tendons. The circumferential group, which consists of overlapping tendons anchored at buttresses 240° apart, prestresses the wall and lower half of the dome in the hoop direction. The vertical group, which consists of inverted U tendons anchored in the tendon access gallery, prestresses the wall and dome in the vertical direction. The entire interior surface of the structure is lined with 1/4 inch thick welded steel plate which serves as a leak tight membrane.

Principal dimensions of the containment structure are:

Inside Diameter	150 ft
Inside Height of Cylinder	97 ft
Radius of Spherical Dome	75 ft
Vertical Wall Thickness	4 ft 4 in.
Dome Thickness	Tapering from 4 ft 4 in. at Springline to 3 ft 9 in. at Apex
Foundation Slab Thickness	9 ft

The containment structure was pressurized pneumatically to verify the required structural integrity and to measure overall leakage. The pressure cycle is shown in Figure 3-2. The proof pressure of 69 psig, equal to 1.15 times design pressure (Reference 6.2), was specified to assure that the test loading includes sufficient margin. Proof pressure was held for a period of two hours to record structural response data. Additional holds were included in the cycle to permit constant-pressure data acquisition at various intermediate pressure levels. Pressure was held constant for a minimum of one hour during these holds The long holds at 46.5 and 57.2 psig were as required to complete the integrated leakage rate test.

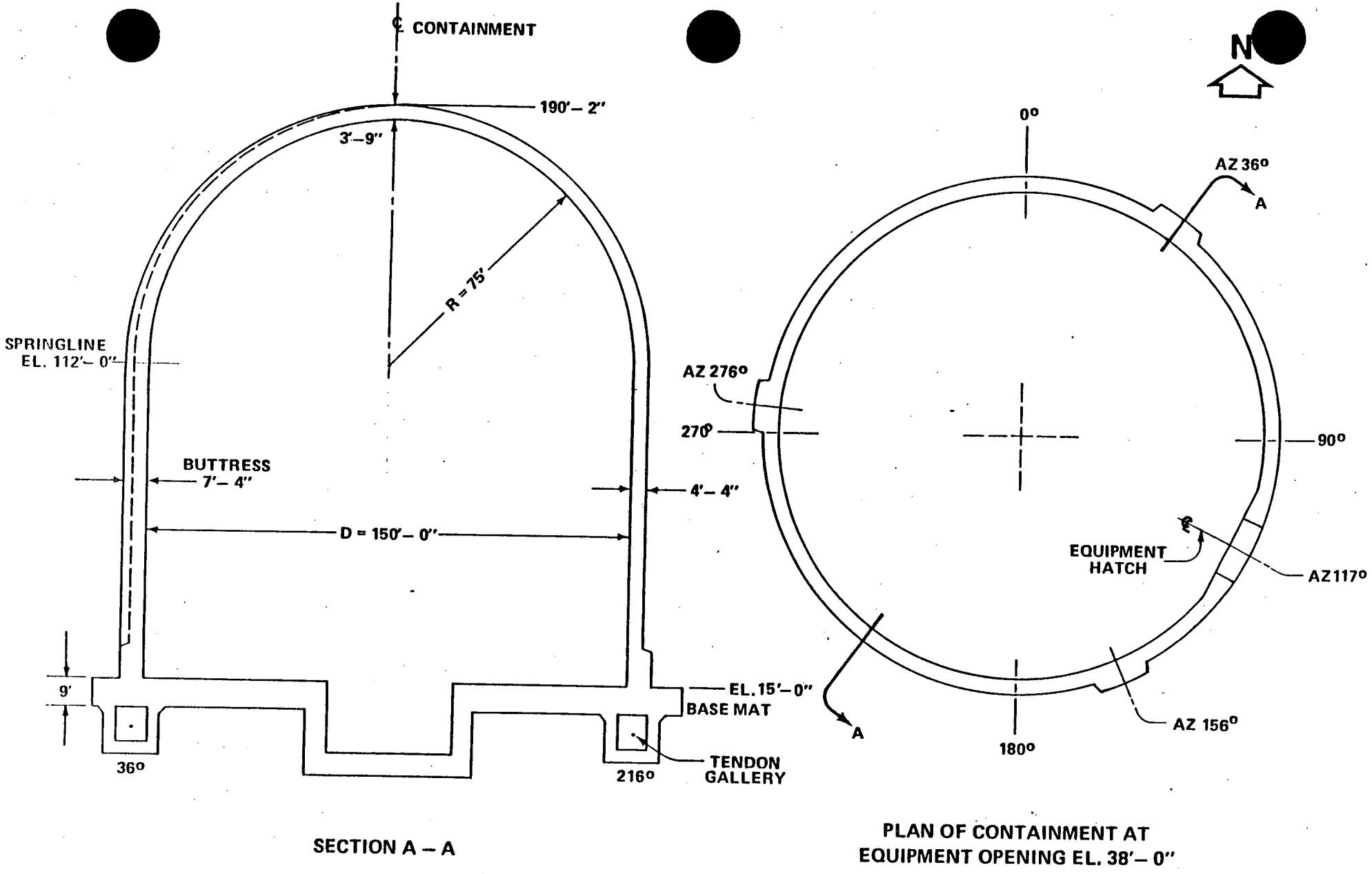


FIGURE 3.1 CONTAINMENT STRUCTURE

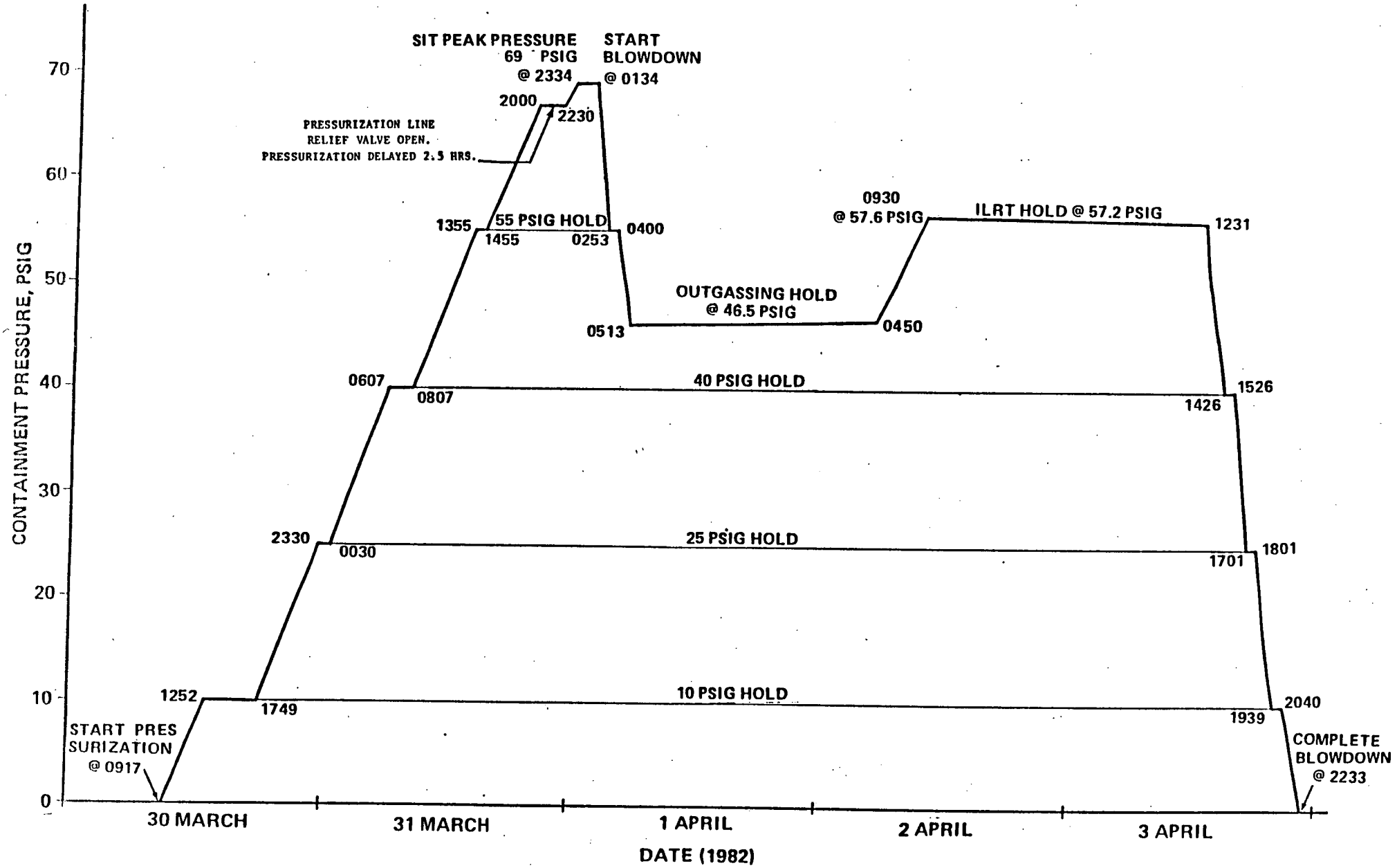


FIGURE 3.2 CONTAINMENT PRESSURE CYCLE

4. TEST PLAN AND PROCEDURES

To accomplish the objectives of the structural integrity test the containment was pressurized to 1.15 times design pressure and then depressurized with various intermediate pressure cycles and holds as needed to acquire structural test data and to satisfy the requirements of the concurrently conducted integrated leakage rate test. Pressurization to 1.15 times design pressure was specified to demonstrate that the containment has a margin of safety with respect to internal pressure loading. Containment response to internal pressure was measured in order to verify that the analytical technique used in the design could accurately define the behavior of the structural elements. The structural response measurements consisted of gross structural deformation and concrete surface crack growth.

4.1 DEFORMATION MEASUREMENTS

Gross structural deformations were measured using taut wire extensometers which spanned between points on the containment wall, dome, and springline, and fixed points within the structure. Radial and vertical movements of the containment shell were measured at the points shown in Figures 4.1 through 4.3. The indicated points are on regular areas of the containment shell as well as on the discontinuity regions represented by buttresses and the equipment opening. Movements were measured by taut wire extensometers attached to one point on the shell and spanning to an opposing point on the shell or to a point on the interior structure.

The extensometers, illustrated in Figure 4-4, consist of displacement transducer assemblies and low expansion alloy (invar) taut wires. A movement between opposing points on the containment shell or between a point on the containment shell and a fixed reference structure results in an almost equal movement between the core and body of the linear variable differential transformer (LVDT) which is housed in the transducer assembly. The LVDT output is a voltage which is proportional to the position of the core within the body. The spring in the transducer assembly maintains a nominal 20 lb tension on the wire to reduce sag and eliminate slack at threaded and swivel connections.

Each extensometer is calibrated to establish its displacement - voltage characteristics and spring constant (nominally 2 lb/in). The spring constant is used to correct for the small changes in wire length which result from transducer displacement. The transducers were calibrated prior to shipment to the San Onofre Nuclear Generating Station.

The transducer's swivels and opposing taut wire ends were secured to fittings which were affixed to the containment liner and internal structures. Following initial attachment, the transducers were aligned with the wires to eliminate LVDT core side loading and the core positions were adjusted to provide the desired travel.

The LVDTs were wired to excitation power supplies and a scanning data acquisition system which converted LVDT output voltage to a digital format for register display, printed record, and direct entry into a microcomputer. The computer was programmed with extensometer calibration constants and a routine which converted raw voltage data into displacement units. Displacement values printed by the computer are corrected for taut wire/spring interaction and for wire angle relative to the specified direction (radial or vertical) of measurement.

Containment gage pressure was measured by a calibrated ($\pm$ 0.1 psig) bourdon tube gage. In-containment temperature and humidity were recorded by the leakage rate test data acquisition equipment. Outside ambient conditions were measured using conventional weather instrumentation.

4.2 CONCRETE SURFACE SURVEILLANCE

Concrete surface cracking was monitored in seven areas as shown on Figure 4.5. Each area covered 40 or more square feet and was divided into one foot squares by snapped-on chalk lines. Each observed crack was measured using a 30 power magnifier with an etched scale in the optical system. Cracks which were .01 inches or more in width were detailed on data sheets.

4.3 DATA ACQUISITION

During the structural integrity test the deformation data were recorded at 5 psig pressure increments and decrements, at the beginning and end of all constant pressure holds, and at regular intervals during extended holds. At each data acquisition point all voltages were recorded three times in rapid succession to provide a two-out-of-three basis for identifying spurious values caused by electrical transients. Only the first of the three records was entered into the computer. The recording of three complete records required about two minutes.

Concrete surface crack inspections were performed prior to the start of pressurization, at 40 psig during initial pressurization, at peak test pressure and following the completion of final blowdown.

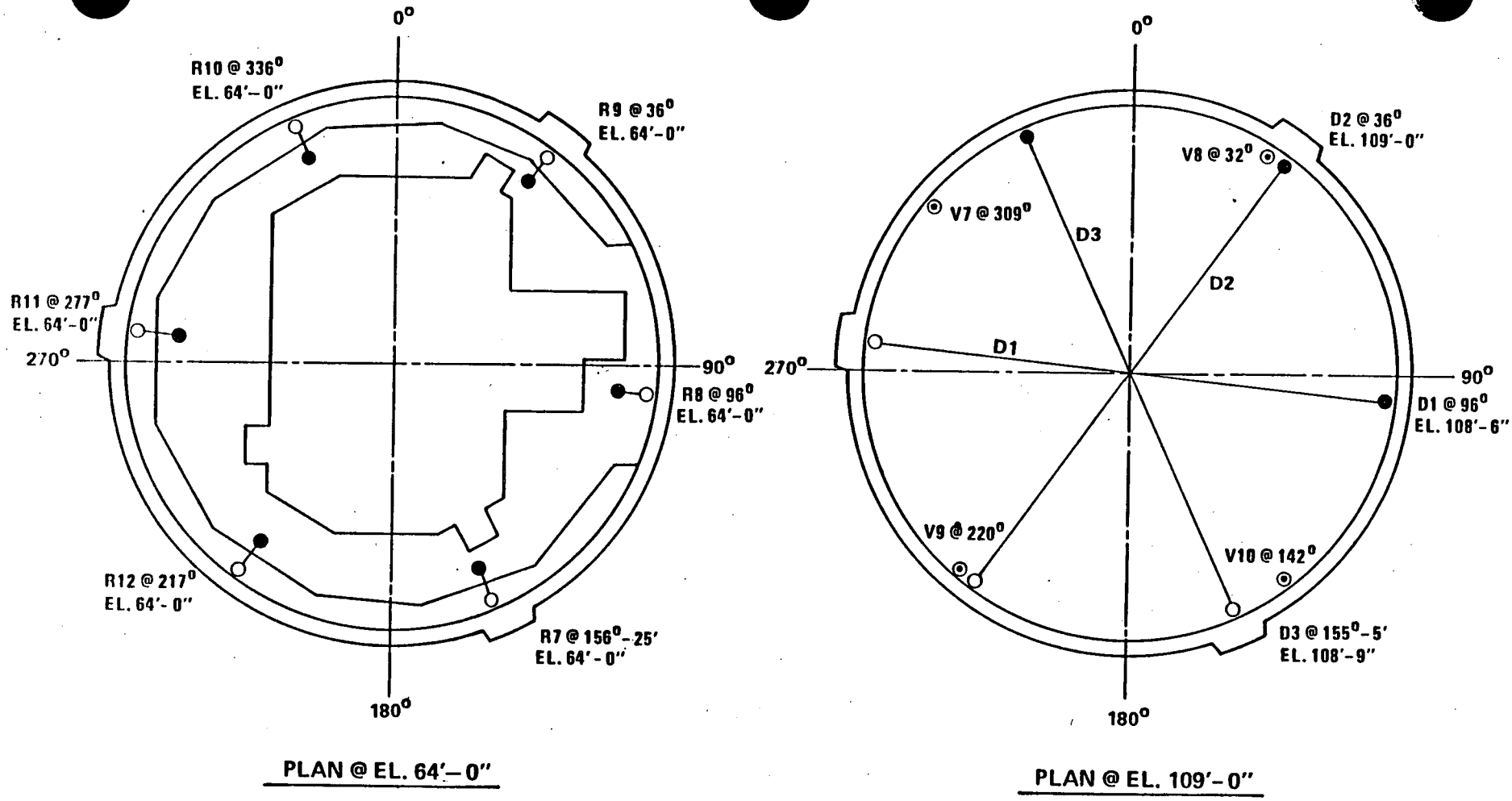
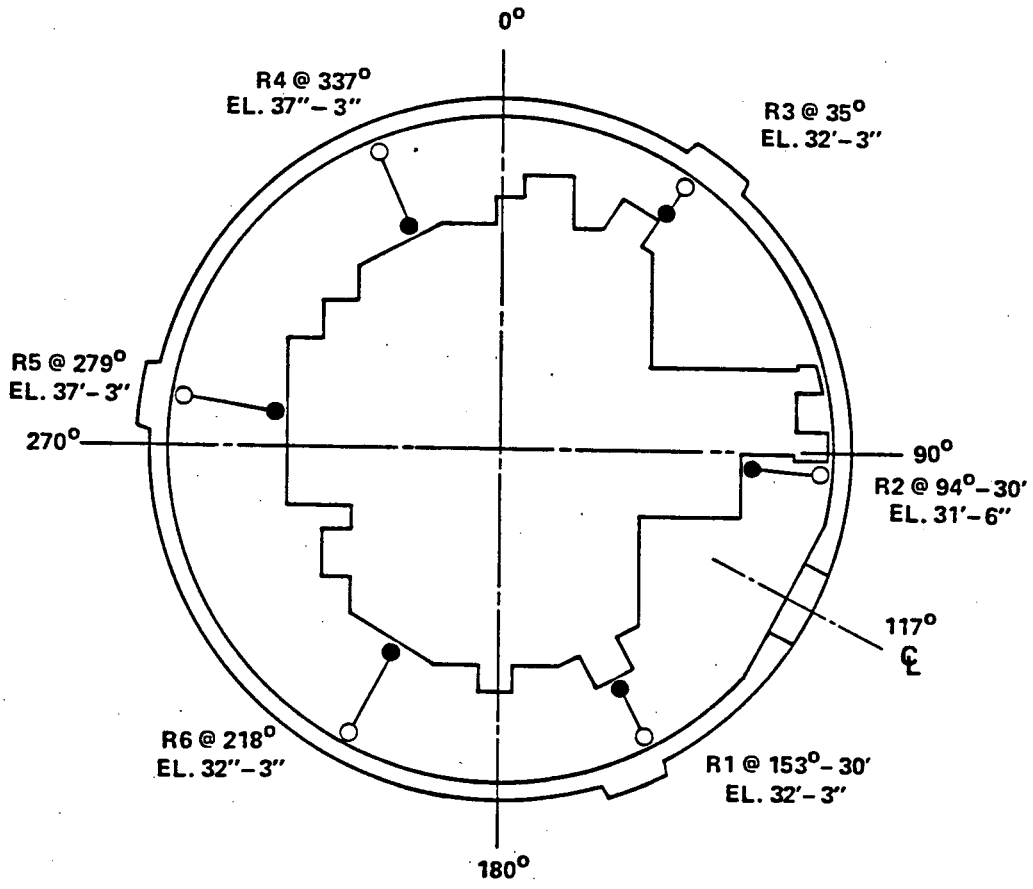


FIGURE 4.1A TAUT WIRE EXTENSOMETER LOCATIONS
WALL RADIAL/DIAMETRAL AND VERTICAL UNITS

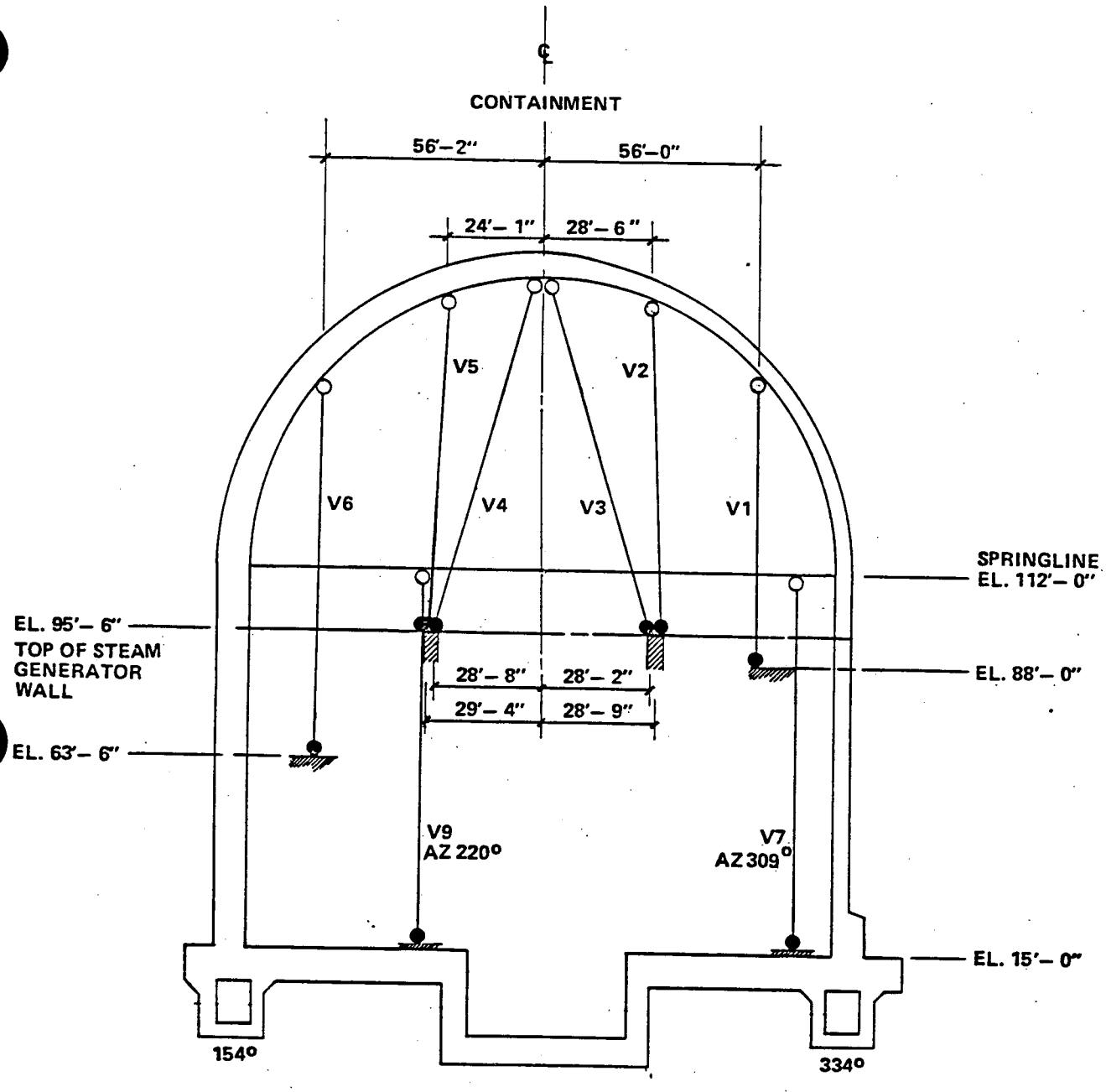


PLAN @ EL. 32'–0"

LEGEND:

- ● TRANSDUCER END
- ○ DEAD END

FIGURE 4.1B
TAUT WIRE EXTENSOMETER LOCATIONS
WALL RADIAL UNITS



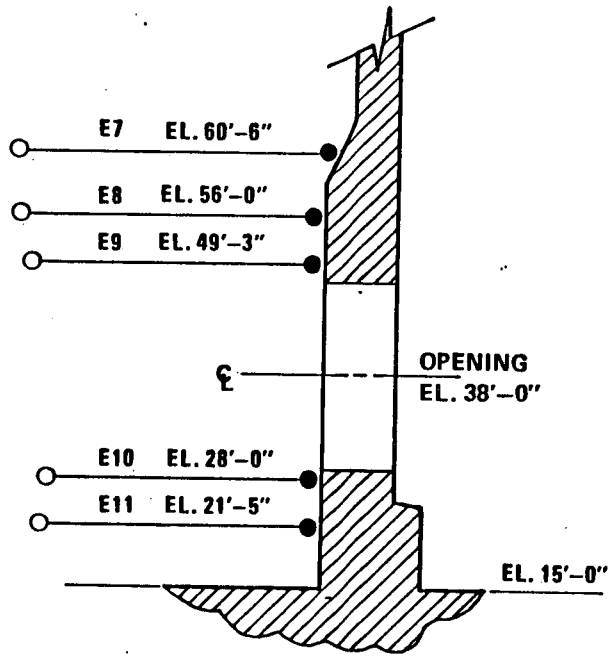
VERTICAL SECTION
THROUGH CONTAINMENT AT
154° / 334°

LEGEND:

● TRANSDUCER END

○ DEAD END

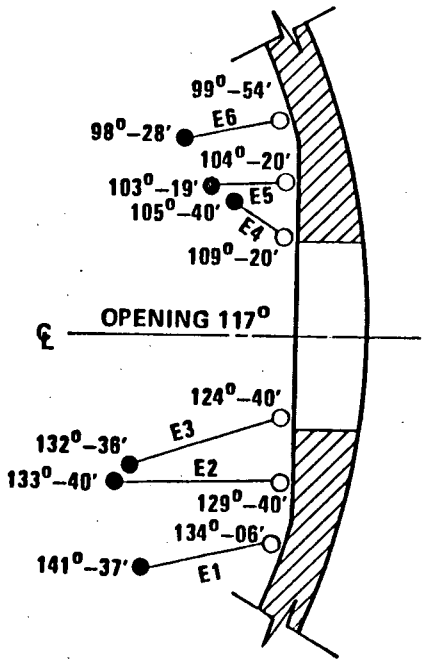
FIGURE 4.2
TAUT WIRE EXTENSOMETER LOCATIONS
VERTICAL UNITS



VERTICAL SECTION AT EQUIPMENT OPENING
℄ AZ 117°

ELGEND:

● TRANSDUCER END
○ DEAD END



SECTIONAL PLAN AT EQUIPMENT OPENING
℄ EL. 38'–0"

FIGURE 4.3 TAUT WIRE EXTENSOMETER LOCATIONS EQUIPMENT OPENING UNITS

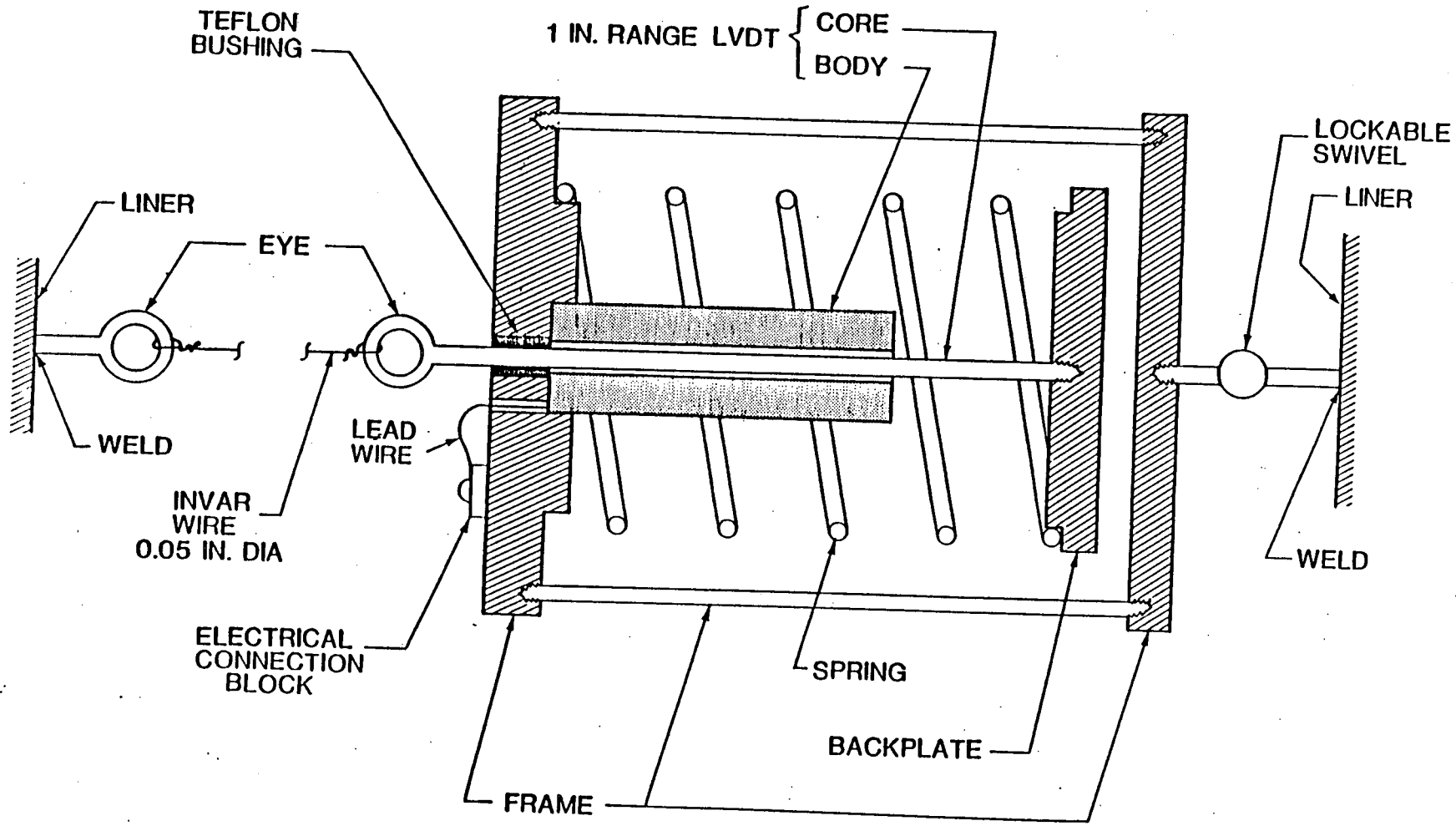
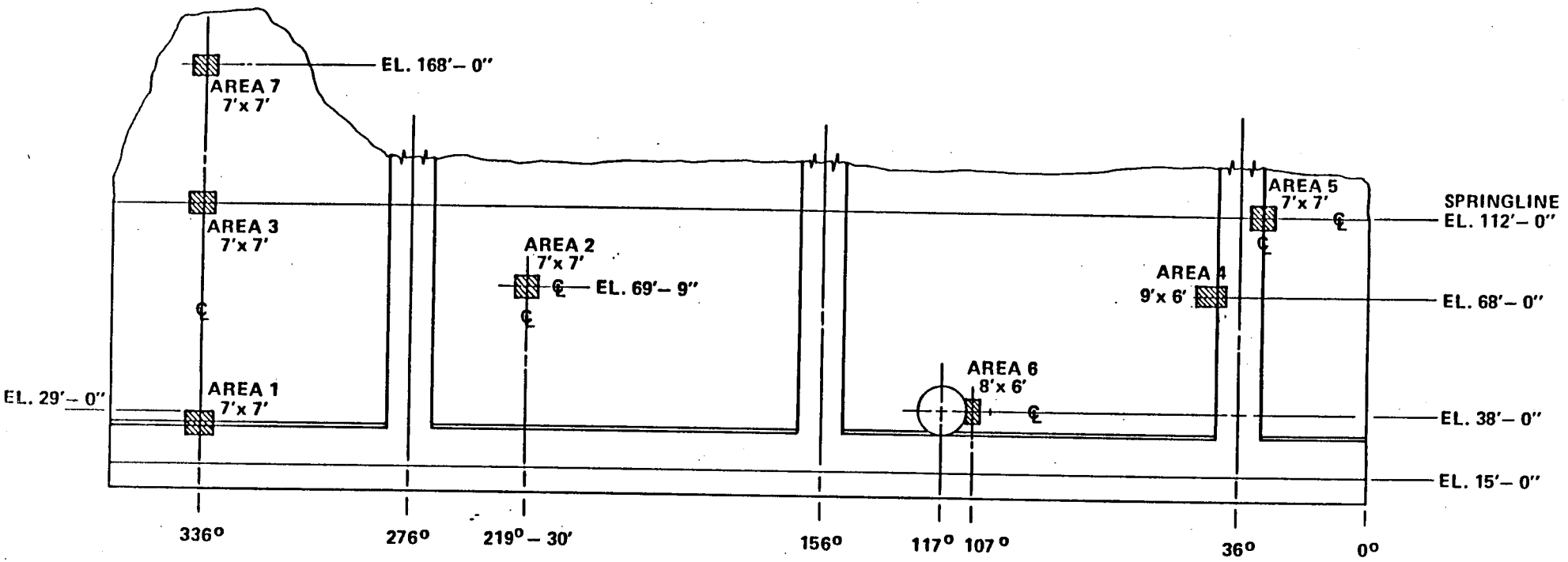


FIGURE 4·4
SCHEMATIC REPRESENTATION OF TAUT WIRE EXTENSOMETER



DEVELOPED ELEVATION OF CONTAINMENT

FIGURE 4.5 CONCRETE SURFACE SURVEILLANCE AREAS

5. TEST RESULTS

5.1 CONTAINMENT DEFORMATIONS

Figure 5-1 illustrates the growth of the containment at peak test pressure (69 psig). The figure shows the predicted(1) response of the structure, the average of the radial movements measured at each elevation (EL. 32', EL. 64', and EL. 109'), and the average of the vertical movements measured at each radius (centerline, R = 28', R = 56', and R = 75'). In all cases the average measured values are close to the predicted values, which verifies the correctness of the methods used to calculate containment response. The figure does not show the radial movements adjacent to the equipment opening. These are discussed separately.

TABLE 5.1 WALL RADIAL MOVEMENTS 64' AT 69 PSIG

Elevation 32'		Elevation 64'		Elevation 108'-9"	
Azimuth	Movement	Azimuth	Movement	Azimuth	Movement
35° B	.088 in.	36° B	.204 in.	96°/276° WB	.148(2)
218° W	.138	217° W	.223	216°/36° WB	.127(2)
32°/218° A	.113	36°/217° A	.214	156°/336° BW	.141(2)
94°-30' W	.180	96° W	.330		
279° B	.083	277° B	.112		
94°-30'/279° A	.132	96°/277° A	.221		
153° B	.095	156° B	.235		
337° W	.179	336° W	.283		
153°/337° A	.137	156°/336° A	.259		
MEAN PREDICTED	.127 .11		.231 .22		.139 .16

W - Wall Section

B - Buttress Section

A - Average Radial Movement of Opposite Wall/Buttress Points

(1) Predicted displacements were computed for an axisymmetric finite element model of the containment.

(2) Extensometer data corrected for initial lag due to friction.

Table 5.1 lists the individual radial movements (except those adjacent to the equipment opening) measured at 69 psig. The individual movements follow several trends which are typical for posttensioned containment. These are discussed below:

- Close to the base mat the outward movement of the shell is resisted by bending movements. The buttress sections of the shell have a much greater bending stiffness than the normal wall sections and are expected to show correspondingly less outward movement. The data listed in the EL. 32' column of the table confirm this trend. Buttress section movement varies from 0.083 in. to 0.095 in. while normal wall section movement varies from 0.138 in. to 0.180 in.

- At the mid-height of the cylinder the shell exhibits essentially membrane response, and bending restraint to outward movement is not expected to be significant. However, the internal structure (shield walls and floors) to which the radial measurements are referenced can rotate due to bending of the base mat and cause a significant shift in individual radial movements. This rotation effect is evident in the data for the 96° and 277° azimuths at EL. 64'. Radial movement at 96° is 0.330 in. and the movement at 277° is 0.112 in. The Unit 2 containment, tested in late 1980, produced similar data with a 0.392 in. movement at 107° and a 0.098 in. movement at 264° which shows that the two structures are responding in an almost identical manner. At the other azimuths the Unit 3 buttress sections moved between 0.204 and 0.235 in. while the normal wall sections moved between 0.223 and 0.283 in. For Unit 2 the corresponding variations were 0.175 to 0.234 in. at buttress sections and 0.207 to 0.274 in. at normal wall sections.

- The mean radial movement across a diameter connecting a buttress section and a normal wall section is expected to vary with azimuth due to roundout of small variations in the as-built curvature of the containment shell. This trend is evident at all three elevations with the largest diameter change ranging from 1.17 to 1.21 times the smallest.

TABLE 5.2 VERTICAL MOVEMENTS AT 69 PSIG

Wall	Vertical	Dome at R = 56'		Dome at R = 28"-6"		Dome at Apex R = 0'-6"	
Azimuth	Movement	Azimuth	Movements	Azimuth	Movements	Azimuth	Moveme nts
309°	0.099"	336°-09'	0.327"	337°-31'	0.379"	331°	0.367"(1)
220°	0.127"						
142°	0.080"	155°-43'	0.254"	159°-18'	0.324"	156°	0.299"(1)
32°	0.084"						
Mean	0.088**		0.291		0.352		0.333
Predicted	0.096		0.56/0.25*		0.66/0.35*		0.67/0.36*

W - Wall Section B - Buttress Section

* First Figure - Flexible Mat; Second Figure - Rigid Mat

**Excluding Measurement at 220°

(1) Extensometer data corrected for wire angle off vertical

Individual vertical movement data are listed in Table 5.2. The measured vertical growth of the cylinder wall between base mat and springline varies between 0.080 and 0.127 in. with three of the measurements indicating significantly less growth than the fourth. Since the vertical growth of the cylinder is not influenced by roundout and since shear lag effects between the buttress sections and normal wall sections are small, it is probable that the 0.127 in. measurement is reflecting a slight rotation of the extensometer archorage and is not accurately representing wall movement. Anchorage rotation can result from the closure, under internal pressure of a small gap between the liner and concrete at the anchorage location. The 0.127 in. measurement is not included in the mean value listed in Table 5.2.

The measured vertical movements of the dome are significantly lower on the 156°(±) azimuth than on the 336°(±) azimuth. This variation is consistent with the previously discussed east to west rotation of the internal structure to which the dome measurements are referenced. The west edge of the structure rotated to a lower position which increased the measured movements along the 336°(±) azimuth. The east edge rose, decreasing the measurements along the 156°(±) azimuth. The apex measurements are affected by this rotation since the lower ends of the apex extensometers are approximately 28 ft out from the containment centerline (see Figure 4-2).

The differences between the Unit 2 dome measurements were less pronounced. The Unit 2 dome extensometers were placed on the 24°-204° diameter which would result in a somewhat different response if the axis of rotation of the internal structure were somewhat off the north-south line.

Figure 5.2 shows the radial movements measured near the equipment opening at peak test pressure. The measurements on the horizontal plane at EL. 38' indicate that there is relatively small variation in outward movement with distance from the edge of the opening. Since the opening is located near the buttress, the side of the opening adjacent to the buttress at 156° moves less than the opposite side as expected.

Movements along the vertical center plane increase with distance up from the base mat to the lower edge of the opening as expected. Above the opening, movement is greatest at the upper edge and decreases with increasing elevation. This pattern of displacements is similar to that found adjacent to openings located well above the base mat where stress concentrations and bending tend to produce the largest radial movements at the opening edge.

The variation of deformation with pressure is illustrated in Figures 5.3 through 5.6. The deformation/pressure relationships are reasonably linear. In some cases, extensometers with long wire will show a delayed response when the direction of containment movement reverses. This results from the reversal of friction forces in the moving parts of the extensometer and introduces small errors into the displacement data recorded following initial blowdown from the peak test pressure plateau. A residual is usually apparent at the completion of final blowdown.

This residual is a combination of extensometer delayed response and incomplete recovery of the delayed elastic strain in the containment concrete. (Refer to Appendixes A and B for computer data).

5.2 CONCRETE SURFACE SURVEILLANCE

Figure 5.7 shows only the cracks in the surveillance areas measured at 0.01 in. or greater. This area is at the top of the haunch at 336°. Two cracks were recorded during the structural integrity test. The measured cracks increased in width from 0.010 to 0.012 in. This increase in width is insignificant compared to the acceptance limit of 0.060 in.

5.3 ESTIMATED ACCURACY OF MEASUREMENT

The accuracy of measurement is based on the following items:

- o Calibration of instrumentation
- o Laboratory testing as in the case invar wire
- o Human factor, i.e., judgement of the reader

Displacements in the containment structure were measured using taut wire extensometers. Accuracy of the extensometer is $\pm$ 0.002 inches so long as wire tension remains constant. When the direction of pressurization changes, extensometer response lags due to friction in the mechanism. Typical lag is 0.02 inches for a 100-foot long wire.

The crack patterns were measured using optical comparators calibrated to measure crack width of 0.001 inches and wider. However, since most cracks observed on the containment were irregular traces on coarse textured concrete surfaces, it was not generally possible to estimate true crack width to better than approximately 0.003 inches. For this reason, reported crack widths are considered to be accurate to within $\pm$ 0.003 inches.

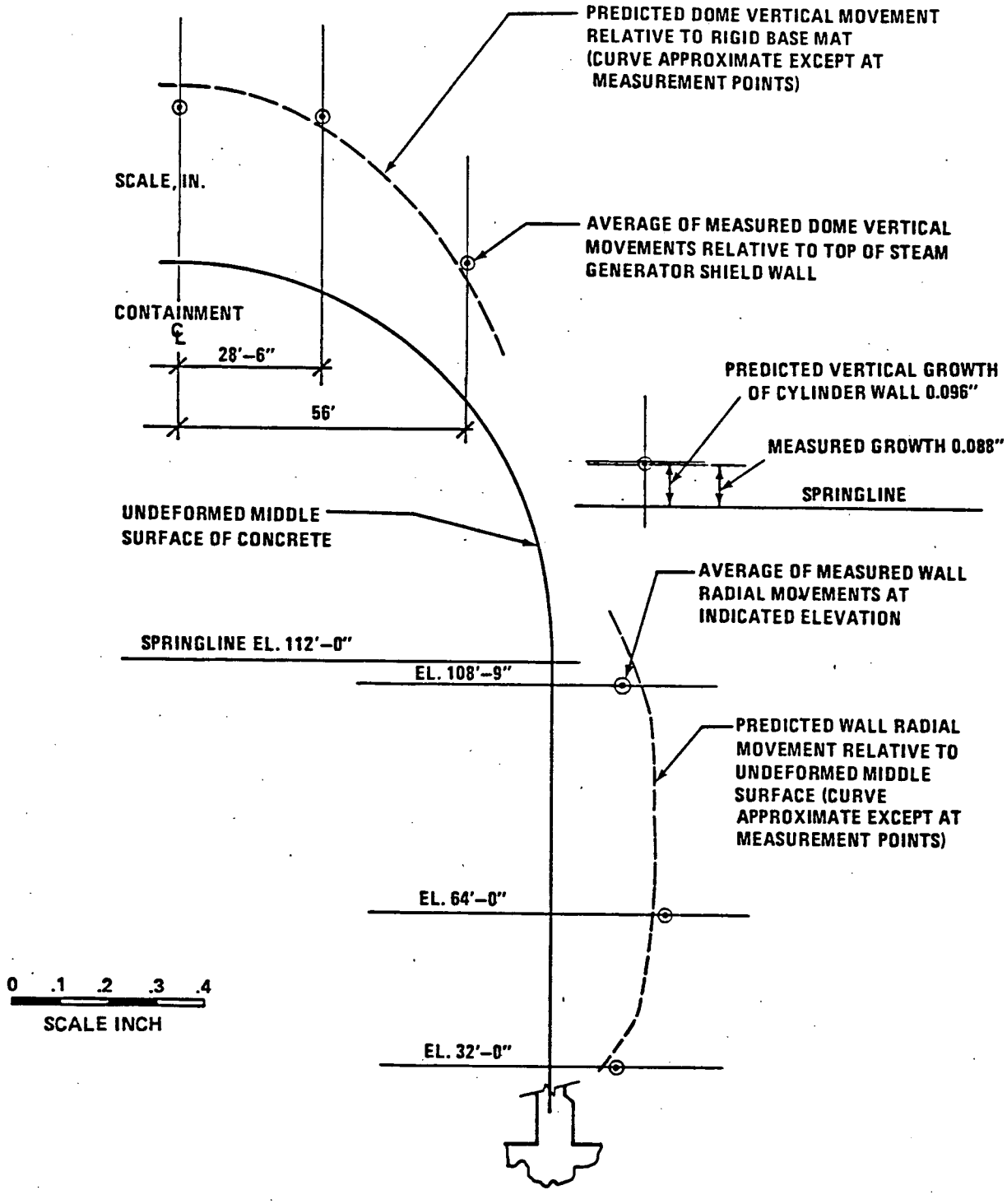
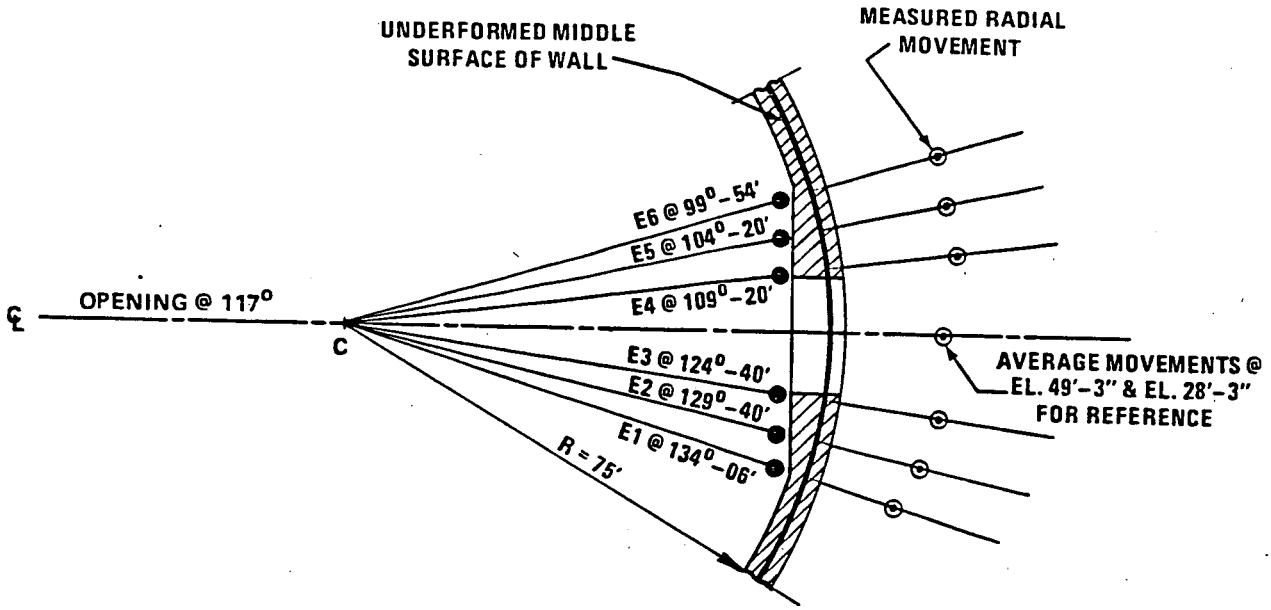
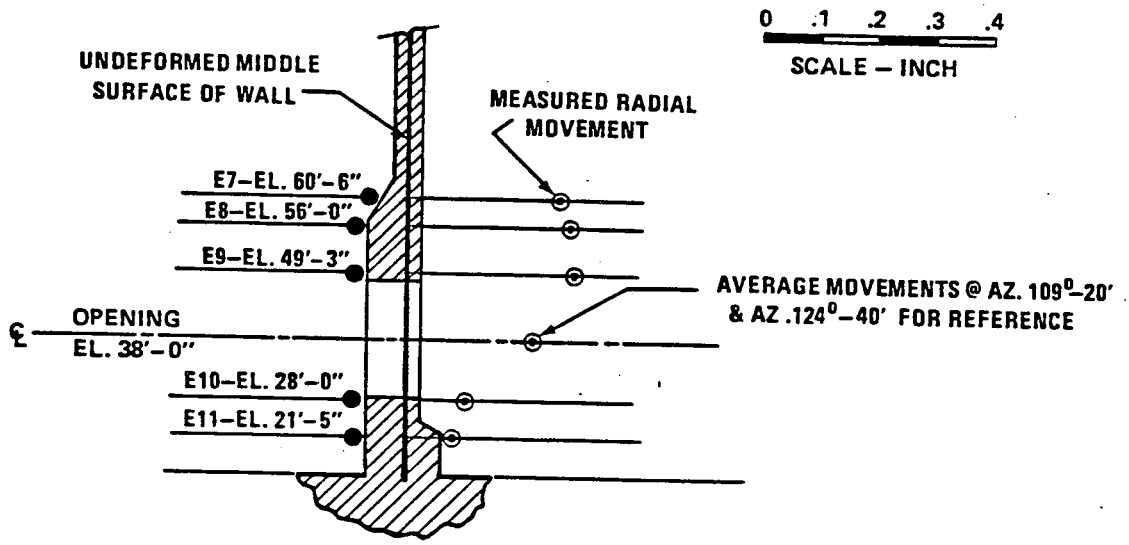


FIGURE 5.1 CONTAINMENT DEFORMATIONS AT 69 PSIG - WALL & DOME



PLAN THROUGH EQUIPMENT OPENING
℄ @ EL. 38'–0"



VERTICAL SECTION THROUGH EQUIPMENT OPENING
℄ @ 117°

FIGURE 5.2 CONTAINMENT DEFORMATIONS AT 69 PSIG EQUIPMENT OPENING

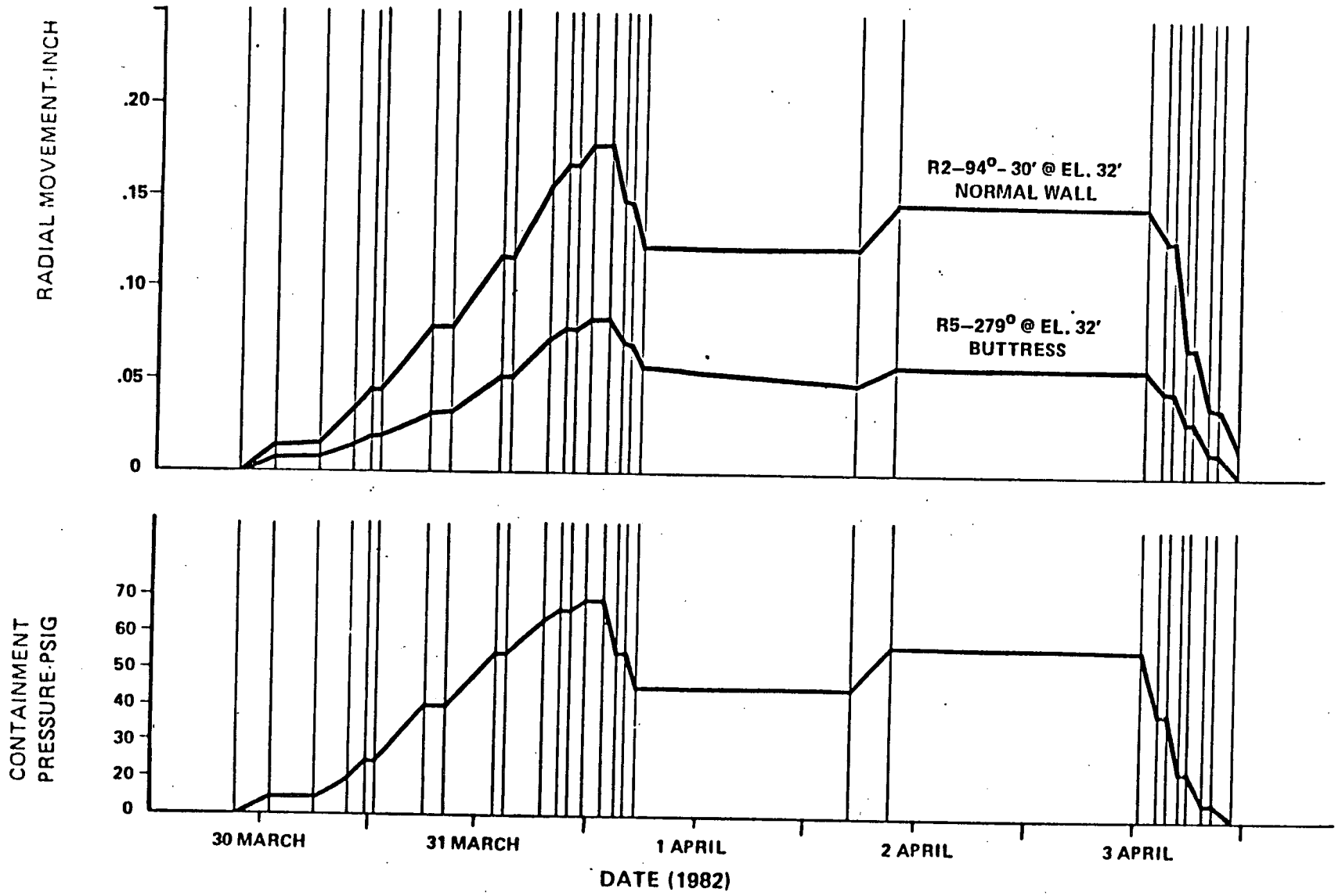


FIGURE 5.3 TYPICAL DEFORMATION/PRESSURE TIME HISTORY WALL/BUTTRESS RADIAL MOVEMENT - R2 & R5

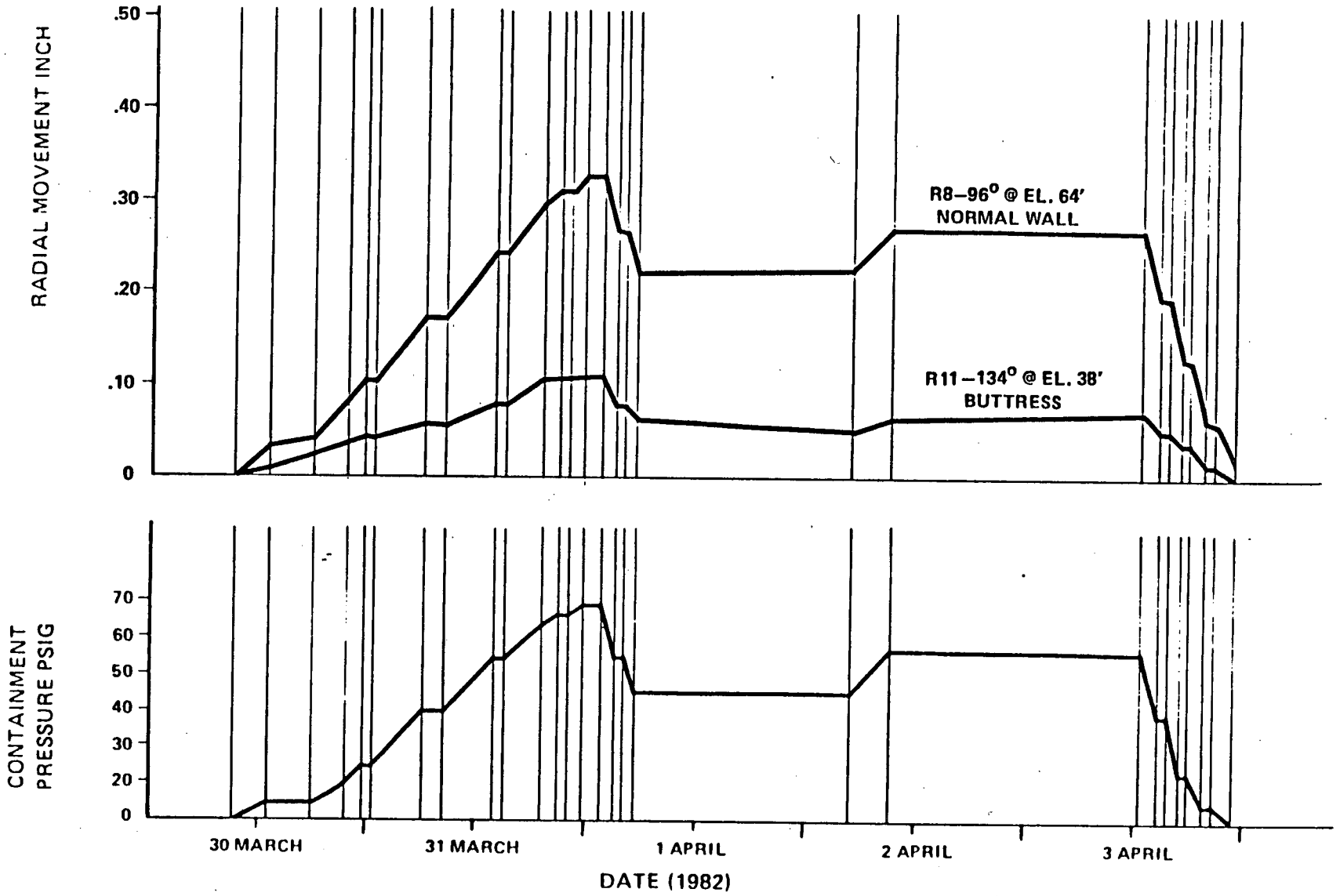


FIGURE 5.4 TYPICAL DEFORMATION/PRESSURE TIME HISTORY WALL/BUTTRESS RADIAL MOVEMENT- R8 & R11

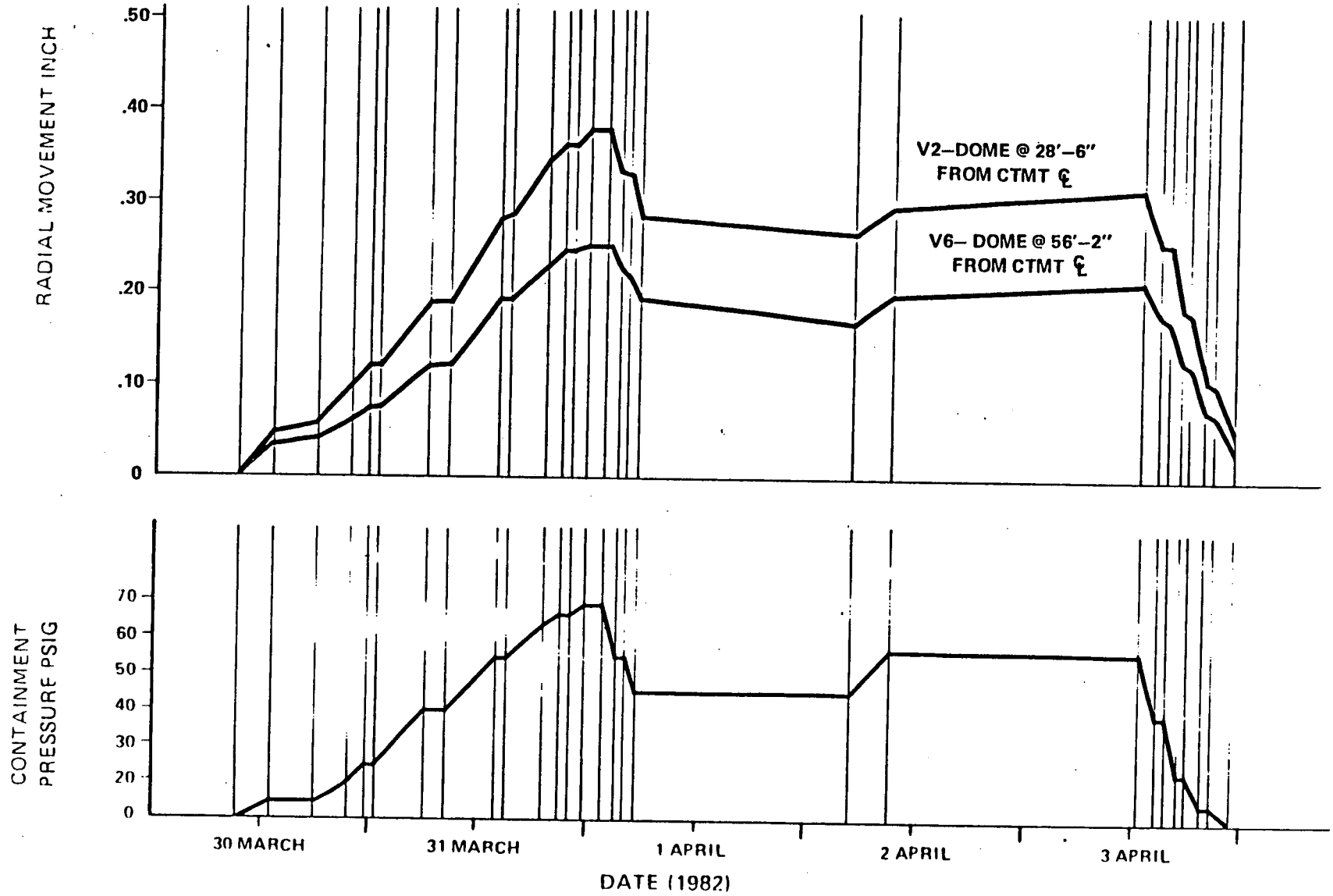


FIGURE 5.5 TYPICAL DEFORMATION/PRESSURE TIME HISTORY DOME VERTICAL MOVEMENT -V2 & V6

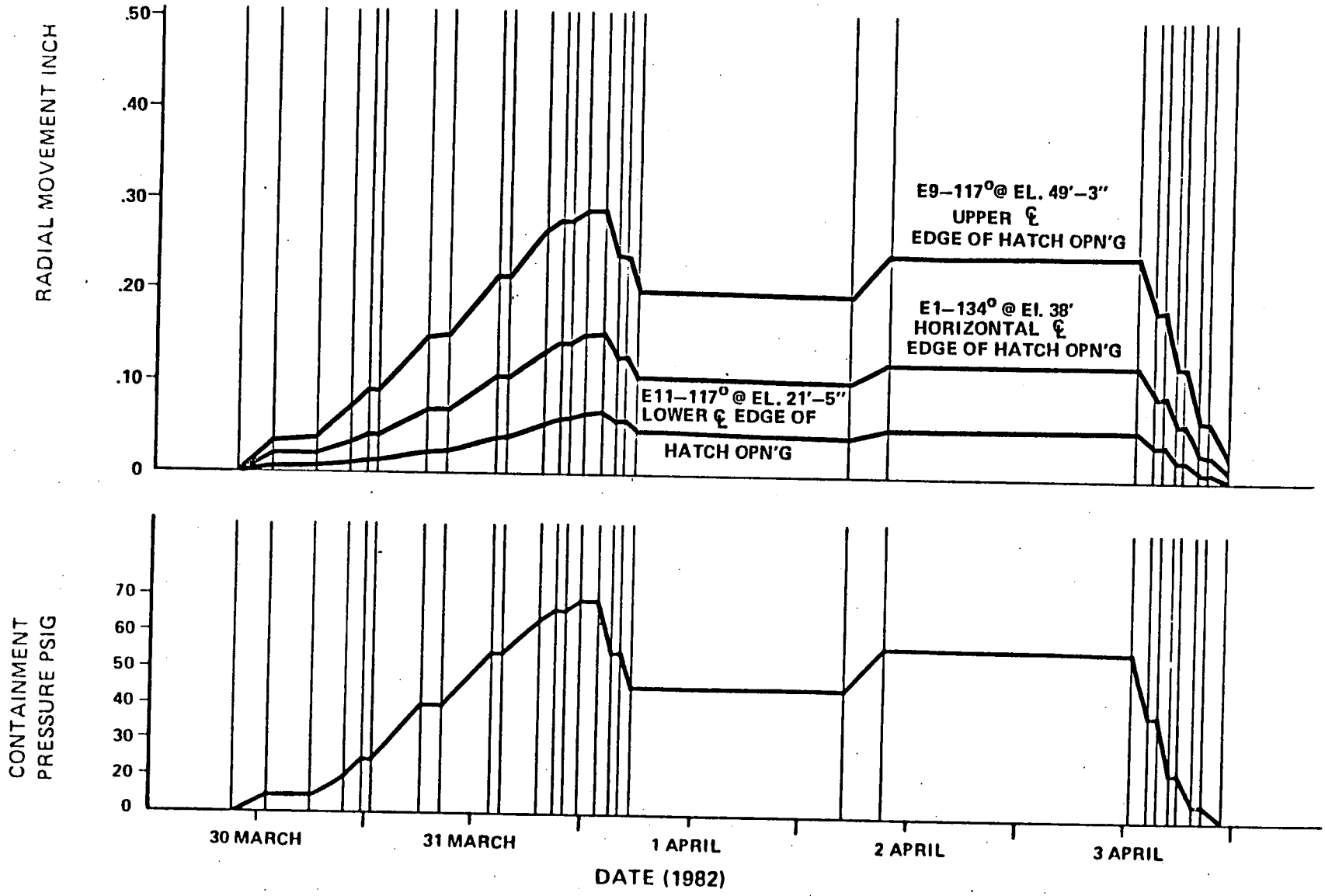
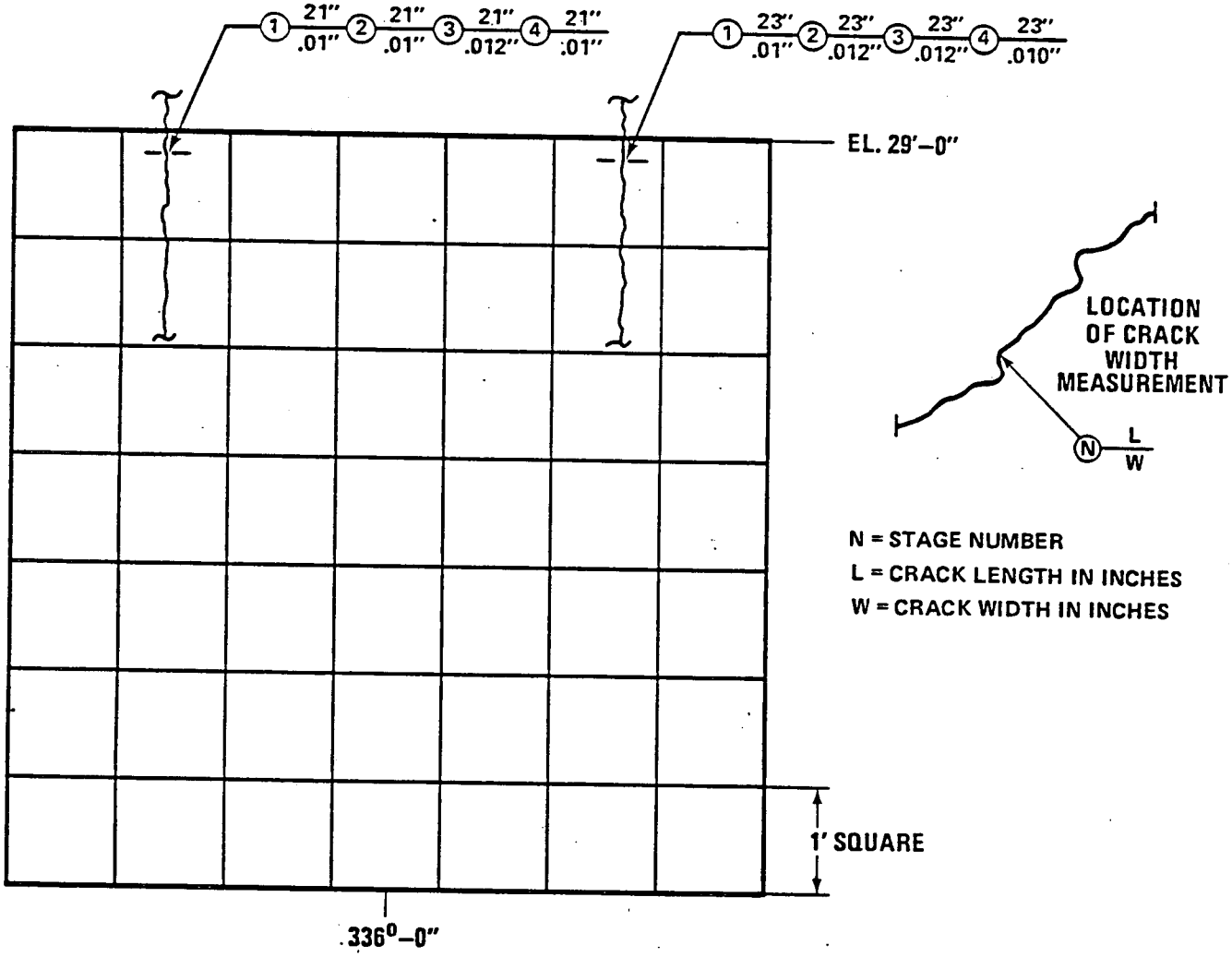


FIGURE 5.6 TYPICAL DEFORMATION/PRESSURE TIME HISTORY EQUIPMENT OPENING RADIAL MOVEMENT- E1, E9 & E11



DATE	TIME	STAGE	PSIG	REMARKS
3/29	1520	1	0	
3/31	0700	2	40	
4/1	0020	3	69	
4/5	1320	4	0	

OPTICAL COMPARATOR No. SU1854

FIGURE 5.7 CONCRETE CRACK MAPPING AREA 1

6. REFERENCES

6.1 Primary Reactor Containment Structural Integrity Test Procedure 3PE-101-03, Revision 0.

6.2 Final Safety Analysis Report (FSAR) Amendment 28, Dated 1/82.

6.3 USNRC Regulatory Guide 1.18, Revision 1, Structural Acceptance Test for Concrete Primary Reactor Containments.

6.4 BC-TOP-5-A, Revision 3, Prestressed Concrete Nuclear Reactor Containment Structures.

APPENDIX A

SUMMARY DATA FOR PEAK PRESSURE AND 0 PSIG

SUMMARY OF DATA AT 134 401 69. PSIG

TRANSDUCER	VOLTAGE	DISPLACEMENT (IN)
V 1	0.663	0.327
V 2	1.076	0.379
V 3	0.842	0.367
V 4	0.227	0.299
V 5	0.465	0.324
V 6	-0.140	0.254
V 7	-1.181	0.099
V 8	-1.339	0.084
V 9	-1.106	0.127
V10	-1.576	0.080
R 1	-1.412	0.095
R 2	-0.484	0.180
R 3	-1.295	0.088
R 4	-0.448	0.179
R 5	-1.378	0.083
R 6	-0.790	0.138
R 7	-0.426	0.235
R 8	0.848	0.330
R 9	-0.337	0.204
R10	0.468	0.283
R11	-1.097	0.112
R12	-0.182	0.223
D 1	-0.169	0.233
D 2	-0.637	0.199
D 3	-0.341	0.261
E 1	-0.665	0.162
E 2	-0.544	0.186
E 3	-0.322	0.205
E 4	-0.110	0.233
E 5	-0.007	0.227
E 6	-0.070	0.233
E 7	0.329	0.270
E 8	0.293	0.282
E 9	0.576	0.293
E10	-1.054	0.103
E11	-1.432	0.069
REF	-2.065	-0.001

SUMMARY OF DATA AT 2233 403 0. PSIG

TRANSDUCER	VOLTAGE	DISPLACEMENT (IN)
V 1	-1.881	0.031
V 2	-1.708	0.050
V 3	-1.758	0.049
V 4	-1.979	0.027
V 5	-1.877	0.040
V 6	-1.940	0.033
V 7	-1.913	0.016
V 8	-2.000	0.008
V 9	-1.901	0.035
V10	-2.103	0.017
R 1	-2.254	0.002
R 2	-1.889	0.016
R 3	-2.086	-0.003
R 4	-1.915	0.010
R 5	-2.055	0.004
R 6	-2.033	-0.001
R 7	-1.943	0.023
R 8	-1.864	0.021
R 9	-2.043	0.006
R10	-1.871	0.015
R11	-2.027	0.006
R12	-1.949	0.016
D 1	-1.880	0.032
D 2	-1.989	0.032
D 3	-1.738	0.093
E 1	-1.927	0.017
E 2	-1.948	0.020
E 3	-1.906	0.022
E 4	-1.892	0.019
E 5	-1.919	0.018
E 6	-1.882	0.020
E 7	-1.869	0.033
E 8	-1.867	0.031
E 9	-1.785	0.030
E10	-1.962	0.003
E11	-1.968	0.006
REF	-2.059	0.000

APPENDIX B

SUMMARY DATA FOR TRANSDUCERS

APPENDIX B

SUMMARY OF DATA FOR TRANSDUCER V 2

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.128
330	1106	5.	0.019	-1.968
330	1252	10.	0.047	-1.728
330	1352	10.	0.052	-1.688
330	1452	10.	0.056	-1.652
330	1552	10.	0.059	-1.631
330	1652	10.	0.059	-1.631
330	1749	10.	0.059	-1.630
330	1938	15.	0.075	-1.492
330	2129	20.	0.097	-1.308
330	2330	25.	0.119	-1.123
331	30	25.	0.119	-1.123
331	218	30.	0.140	-0.947
331	410	35.	0.163	-0.748
331	607	40.	0.190	-0.524
331	707	40.	0.189	-0.525
331	807	40.	0.190	-0.524
331	815	40.	0.189	-0.525
331	1002	45.	0.216	-0.302
331	1153	50.	0.247	-0.039
331	1355	55.	0.284	0.275
331	1455	55.	0.289	0.321
331	1700	60.	0.321	0.592
331	1911	65.	0.352	0.849
331	2100	67.	0.366	0.970
331	2200	67.	0.366	0.971
331	2230	67.	0.366	0.970
331	2334	69.	0.377	1.063
401	30	69.	0.379	1.076
401	130	69.	0.379	1.076
401	134	69.	0.379	1.076
401	202	65.	0.377	1.064
401	226	60.	0.356	0.883
401	253	55.	0.334	0.694
401	400	55.	0.329	0.655
401	432	50.	0.307	0.465
401	450	47.	0.293	0.350
401	513	46.	0.286	0.292
401	806	46.	0.282	0.254
401	1102	46.	0.280	0.241
401	1403	46.	0.280	0.241
401	1702	46.	0.280	0.241
401	2003	46.	0.277	0.219
401	2303	46.	0.274	0.191
402	204	46.	0.271	0.163
402	450	47.	0.269	0.145
402	620	50.	0.269	0.147
402	813	55.	0.291	0.335
402	915	57.	0.303	0.439
402	1203	57.	0.310	0.495

SUMMARY OF DATA FOR TRANSDUCER V 2

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.320	0.583
402	1804	57.	0.323	0.608
402	2104	57.	0.323	0.608
403	4	57.	0.323	0.608
403	306	57.	0.323	0.607
403	604	57.	0.321	0.592
403	900	57.	0.321	0.592
403	1200	57.	0.321	0.592
403	1231	57.	0.322	0.592
403	1246	55.	0.321	0.592
403	1317	50.	0.304	0.445
403	1345	45.	0.284	0.271
403	1426	40.	0.262	0.086
403	1526	40.	0.260	0.069
403	1601	35.	0.239	-0.107
403	1629	30.	0.215	-0.310
403	1701	25.	0.189	-0.526
403	1801	25.	0.183	-0.576
403	1832	20.	0.161	-0.766
403	1904	15.	0.135	-0.987
403	1939	10.	0.108	-1.214
403	2039	10.	0.102	-1.262
403	2115	5.	0.080	-1.449
403	2233	0.	0.050	-1.708

SUMMARY OF DATA FOR TRANSDUCER V 6

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.212
330	1106	5.	0.017	-2.071
330	1252	10.	0.035	-1.924
330	1352	10.	0.039	-1.890
330	1452	10.	0.040	-1.889
330	1552	10.	0.040	-1.888
330	1652	10.	0.040	-1.889
330	1749	10.	0.040	-1.888
330	1938	15.	0.049	-1.810
330	2129	20.	0.061	-1.710
330	2330	25.	0.077	-1.583
331	30	25.	0.077	-1.583
331	218	30.	0.089	-1.484
331	410	35.	0.107	-1.337
331	607	40.	0.121	-1.221
331	707	40.	0.126	-1.183
331	807	40.	0.126	-1.183
331	815	40.	0.126	-1.183
331	1002	45.	0.151	-0.976
331	1153	50.	0.176	-0.777
331	1355	55.	0.197	-0.603
331	1455	55.	0.197	-0.602
331	1700	60.	0.218	-0.433
331	1911	65.	0.235	-0.293
331	2100	67.	0.248	-0.187
331	2200	67.	0.248	-0.187
331	2230	67.	0.248	-0.187
331	2334	69.	0.254	-0.141
401	30	69.	0.254	-0.140
401	130	69.	0.254	-0.140
401	134	69.	0.254	-0.140
401	202	65.	0.254	-0.140
401	226	60.	0.246	-0.200
401	253	55.	0.230	-0.334
401	400	55.	0.224	-0.380
401	432	50.	0.210	-0.498
401	450	47.	0.202	-0.566
401	513	46.	0.194	-0.630
401	806	46.	0.191	-0.654
401	1102	46.	0.188	-0.678
401	1403	46.	0.188	-0.678
401	1702	46.	0.188	-0.678
401	2003	46.	0.188	-0.678
401	2303	46.	0.185	-0.703
402	204	46.	0.180	-0.741
402	450	47.	0.177	-0.763
402	620	50.	0.177	-0.762
402	813	55.	0.194	-0.626
402	915	57.	0.206	-0.528
402	1203	57.	0.215	-0.453

SUMMARY OF DATA FOR TRANSDUCER V 6

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.215	-0.452
402	1804	57.	0.215	-0.452
402	2104	57.	0.215	-0.452
403	4	57.	0.215	-0.452
403	306	57.	0.215	-0.453
403	604	57.	0.215	-0.453
403	900	57.	0.215	-0.453
403	1200	57.	0.220	-0.415
403	1231	57.	0.220	-0.415
403	1246	55.	0.220	-0.415
403	1317	50.	0.216	-0.447
403	1345	45.	0.201	-0.567
403	1426	40.	0.183	-0.714
403	1526	40.	0.181	-0.730
403	1601	35.	0.167	-0.845
403	1629	30.	0.150	-0.986
403	1701	25.	0.132	-1.134
403	1801	25.	0.127	-1.172
403	1832	20.	0.112	-1.299
403	1904	15.	0.094	-1.445
403	1939	10.	0.076	-1.594
403	2039	10.	0.071	-1.634
403	2115	5.	0.055	-1.760
403	2233	0.	0.033	-1.940

SUMMARY OF DATA FOR TRANSDUCER V10

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.248
330	1106	5.	0.003	-2.221
330	1252	10.	0.007	-2.185
330	1352	10.	0.010	-2.167
330	1452	10.	0.010	-2.167
330	1552	10.	0.010	-2.166
330	1652	10.	0.010	-2.166
330	1749	10.	0.010	-2.165
330	1938	15.	0.010	-2.167
330	2129	20.	0.015	-2.122
330	2330	25.	0.020	-2.078
331	30	25.	0.020	-2.078
331	218	30.	0.025	-2.033
331	410	35.	0.025	-2.033
331	607	40.	0.031	-1.987
331	707	40.	0.031	-1.986
331	807	40.	0.036	-1.941
331	815	40.	0.036	-1.942
331	1002	45.	0.044	-1.875
331	1153	50.	0.052	-1.807
331	1355	55.	0.058	-1.755
331	1455	55.	0.058	-1.754.
331	1700	60.	0.066	-1.686
331	1911	65.	0.073	-1.631
331	2100	67.	0.076	-1.602
331	2200	67.	0.076	-1.602
331	2230	67.	0.076	-1.603
331	2334	69.	0.080	-1.575
401	30	69.	0.079	-1.576
401	130	69.	0.080	-1.575
401	134	69.	0.080	-1.576
401	202	65.	0.080	-1.575
401	226	60.	0.080	-1.574
401	253	55.	0.079	-1.577
401	400	55.	0.077	-1.597
401	432	50.	0.071	-1.645
401	450	47.	0.068	-1.669
401	513	46.	0.066	-1.686
401	806	46.	0.063	-1.715
401	1102	46.	0.062	-1.725
401	1403	46.	0.062	-1.726
401	1702	46.	0.062	-1.726
401	2003	46.	0.060	-1.743
401	2303	46.	0.060	-1.743
402	204	46.	0.058	-1.754
402	450	47.	0.058	-1.754
402	620	50.	0.058	-1.754
402	813	55.	0.059	-1.753
402	915	57.	0.063	-1.718
402	1203	57.	0.066	-1.689

SUMMARY OF DATA FOR TRANSDUCER V10

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.066	-1.689
402	1804	57.	0.066	-1.688
402	2104	57.	0.066	-1.689
403	4	57.	0.066	-1.689
403	306	57.	0.066	-1.688
403	604	57.	0.066	-1.689
403	900	57.	0.066	-1.689
403	1200	57.	0.068	-1.676
403	1231	57.	0.068	-1.676
403	1246	55.	0.068	-1.676
403	1317	50.	0.068	-1.675
403	1345	45.	0.068	-1.676
403	1426	40.	0.062	-1.721
403	1526	40.	0.061	-1.731
403	1601	35.	0.057	-1.762
403	1629	30.	0.052	-1.809
403	1701	25.	0.047	-1.853
403	1801	25.	0.044	-1.873
403	1832	20.	0.040	-1.914
403	1904	15.	0.035	-1.953
403	1939	10.	0.030	-1.990
403	2039	10.	0.027	-2.017
403	2115	5.	0.024	-2.046
403	2233	0.	0.017	-2.103

SUMMARY OF DATA FOR TRANSDUCER R 2

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.028
330	1106	5.	0.005	-1.984
330	1252	10.	0.015	-1.902
330	1352	10.	0.015	-1.902
330	1452	10.	0.015	-1.902
330	1552	10.	0.015	-1.902
330	1652	10.	0.016	-1.890
330	1749	10.	0.016	-1.890
330	1938	15.	0.025	-1.812
330	2129	20.	0.035	-1.727
330	2330	25.	0.046	-1.635
331	30	25.	0.046	-1.635
331	218	30.	0.056	-1.546
331	410	35.	0.067	-1.450
331	607	40.	0.079	-1.347
331	707	40.	0.079	-1.347
331	807	40.	0.079	-1.348
331	815	40.	0.079	-1.347
331	1002	45.	0.090	-1.251
331	1153	50.	0.103	-1.145
331	1355	55.	0.118	-1.011
331	1455	55.	0.120	-0.996
331	1700	60.	0.137	-0.851
331	1911	65.	0.157	-0.683
331	2100	67.	0.168	-0.585
331	2200	67.	0.169	-0.577
331	2230	67.	0.169	-0.577
331	2334	69.	0.178	-0.503
401	30	69.	0.179	-0.491
401	130	69.	0.180	-0.484
401	134	69.	0.180	-0.484
401	202	65.	0.175	-0.525
401	226	60.	0.162	-0.635
401	253	55.	0.149	-0.749
401	400	55.	0.147	-0.761
401	432	50.	0.134	-0.873
401	450	47.	0.127	-0.937
401	513	46.	0.123	-0.970
401	806	46.	0.123	-0.970
401	1102	46.	0.123	-0.970
401	1403	46.	0.123	-0.970
401	1702	46.	0.123	-0.970
401	2003	46.	0.123	-0.971
401	2303	46.	0.123	-0.970
402	204	46.	0.123	-0.971
402	450	47.	0.123	-0.970
402	620	50.	0.129	-0.920
402	813	55.	0.141	-0.817
402	915	57.	0.147	-0.762
402	1203	57.	0.147	-0.762

SUMMARY OF DATA FOR TRANSDUCER R 2

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.147	-0.763
402	1804	57.	0.147	-0.762
402	2104	57.	0.147	-0.762
403	4	57.	0.147	-0.762
403	306	57.	0.148	-0.754
403	604	57.	0.148	-0.754
403	900	57.	0.148	-0.754
403	1200	57.	0.148	-0.754
403	1231	57.	0.148	-0.754
403	1246	55.	0.148	-0.761
403	1317	50.	0.135	-0.866
403	1345	45.	0.123	-0.968
403	1426	40.	0.111	-1.076
403	1526	40.	0.110	-1.081
403	1601	35.	0.098	-1.187
403	1629	30.	0.085	-1.294
403	1701	25.	0.073	-1.400
403	1801	25.	0.072	-1.411
403	1832	20.	0.061	-1.504
403	1904	15.	0.049	-1.603
403	1939	10.	0.039	-1.697
403	2039	10.	0.037	-1.708
403	2115	5.	0.027	-1.795
403	2233	0.	0.016	-1.889

SUMMARY OF DATA FOR TRANSDUCER R 5

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.089
330	1106	5.	0.003	-2.065
330	1252	10.	0.008	-2.023
330	1352	10.	0.008	-2.024
330	1452	10.	0.007	-2.025
330	1552	10.	0.008	-2.023
330	1652	10.	0.008	-2.023
330	1749	10.	0.008	-2.023
330	1938	15.	0.012	-1.989
330	2129	20.	0.016	-1.952
330	2330	25.	0.020	-1.915
331	30	25.	0.020	-1.915
331	218	30.	0.023	-1.890
331	410	35.	0.028	-1.850
331	607	40.	0.033	-1.808
331	707	40.	0.033	-1.808
331	807	40.	0.033	-1.808
331	815	40.	0.033	-1.808
331	1002	45.	0.037	-1.768
331	1153	50.	0.045	-1.705
331	1355	55.	0.053	-1.630
331	1455	55.	0.053	-1.630
331	1700	60.	0.062	-1.555
331	1911	65.	0.074	-1.451
331	2100	67.	0.078	-1.414
331	2200	67.	0.078	-1.414
331	2230	67.	0.079	-1.414
331	2334	69.	0.083	-1.378
401	30	69.	0.083	-1.377
401	130	69.	0.083	-1.377
401	134	69.	0.083	-1.378
401	202	65.	0.083	-1.377
401	226	60.	0.080	-1.404
401	253	55.	0.072	-1.469
401	400	55.	0.070	-1.489
401	432	50.	0.064	-1.543
401	450	47.	0.059	-1.581
401	513	46.	0.057	-1.599
401	806	46.	0.057	-1.600
401	1102	46.	0.054	-1.624
401	1403	46.	0.054	-1.624
401	1702	46.	0.054	-1.625
401	2003	46.	0.054	-1.625
401	2303	46.	0.054	-1.626
402	204	46.	0.051	-1.649
402	450	47.	0.051	-1.649
402	620	50.	0.051	-1.649
402	813	55.	0.055	-1.617
402	915	57.	0.058	-1.589
402	1203	57.	0.058	-1.589

SUMMARY OF DATA FOR TRANSDUCER R 5

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.060	-1.570
402	1804	57.	0.060	-1.569
402	2104	57.	0.060	-1.569
403	4	57.	0.060	-1.569
403	306	57.	0.060	-1.569
403	604	57.	0.060	-1.569
403	900	57.	0.060	-1.569
403	1200	57.	0.060	-1.569
403	1231	57.	0.060	-1.569
403	1246	55.	0.061	-1.569
403	1317	50.	0.060	-1.569
403	1345	45.	0.056	-1.611
403	1426	40.	0.050	-1.661
403	1526	40.	0.048	-1.677
403	1601	35.	0.043	-1.717
403	1629	30.	0.037	-1.768
403	1701	25.	0.032	-1.814
403	1801	25.	0.031	-1.826
403	1832	20.	0.025	-1.872
403	1904	15.	0.020	-1.919
403	1939	10.	0.015	-1.963
403	2039	10.	0.013	-1.978
403	2115	5.	0.009	-2.007
403	2233	0.	0.004	-2.055

SUMMARY OF DATA FOR TRANSDUCER R 8

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.050
330	1106	5.	0.016	-1.908
330	1252	10.	0.037	-1.727
330	1352	10.	0.038	-1.713
330	1452	10.	0.039	-1.710
330	1552	10.	0.039	-1.705
330	1652	10.	0.040	-1.703
330	1749	10.	0.040	-1.702
330	1938	15.	0.060	-1.523
330	2129	20.	0.082	-1.334
330	2330	25.	0.105	-1.130
331	30	25.	0.105	-1.128
331	218	30.	0.127	-0.938
331	410	35.	0.150	-0.734
331	607	40.	0.174	-0.520
331	707	40.	0.175	-0.519
331	807	40.	0.175	-0.517
331	815	40.	0.175	-0.517
331	1002	45.	0.195	-0.343
331	1153	50.	0.218	-0.137
331	1355	55.	0.245	0.095
331	1455	55.	0.246	0.106
331	1700	60.	0.271	0.331
331	1911	65.	0.300	0.583
331	2100	67.	0.315	0.710
331	2200	67.	0.315	0.717
331	2230	67.	0.316	0.721
331	2334	69.	0.329	0.834
401	30	69.	0.330	0.841
401	130	69.	0.330	0.847
401	134	69.	0.330	0.848
401	202	65.	0.314	0.706
401	226	60.	0.291	0.507
401	253	55.	0.269	0.310
401	400	55.	0.267	0.294
401	432	50.	0.245	0.097
401	450	47.	0.232	-0.013
401	513	46.	0.226	-0.064
401	806	46.	0.226	-0.066
401	1102	46.	0.226	-0.068
401	1403	46.	0.226	-0.069
401	1702	46.	0.226	-0.071
401	2003	46.	0.226	-0.070
401	2303	46.	0.227	-0.062
402	204	46.	0.228	-0.053
402	450	47.	0.228	-0.049
402	620	50.	0.242	0.076
402	813	55.	0.262	0.250
402	915	57.	0.272	0.337
402	1203	57.	0.271	0.326

SUMMARY OF DATA FOR TRANSDUCER R 8

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.271	0.326
402	1804	57.	0.271	0.328
402	2104	57.	0.272	0.336
403	4	57.	0.273	0.342
403	306	57.	0.273	0.347
403	604	57.	0.274	0.350
403	900	57.	0.273	0.345
403	1200	57.	0.272	0.332
403	1231	57.	0.272	0.333
403	1246	55.	0.264	0.270
403	1317	50.	0.244	0.091
403	1345	45.	0.223	-0.090
403	1426	40.	0.202	-0.280
403	1526	40.	0.200	-0.292
403	1601	35.	0.179	-0.479
403	1629	30.	0.157	-0.676
403	1701	25.	0.134	-0.877
403	1801	25.	0.132	-0.891
403	1832	20.	0.111	-1.076
403	1904	15.	0.089	-1.270
403	1939	10.	0.066	-1.467
403	2039	10.	0.065	-1.483
403	2115	5.	0.044	-1.664
403	2233	0.	0.021	-1.864

SUMMARY OF DATA FOR TRANSDUCER R11

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.078
330	1106	5.	0.004	-2.043
330	1252	10.	0.014	-1.954
330	1352	10.	0.018	-1.923
330	1452	10.	0.022	-1.888
330	1552	10.	0.025	-1.859
330	1652	10.	0.027	-1.841
330	1749	10.	0.027	-1.839
330	1938	15.	0.032	-1.796
330	2129	20.	0.038	-1.744
330	2330	25.	0.044	-1.696
331	30	25.	0.044	-1.697
331	218	30.	0.048	-1.662
331	410	35.	0.053	-1.614
331	607	40.	0.059	-1.567
331	707	40.	0.059	-1.567
331	807	40.	0.058	-1.569
331	815	40.	0.058	-1.569
331	1002	45.	0.061	-1.543
331	1153	50.	0.069	-1.478
331	1355	55.	0.081	-1.373
331	1455	55.	0.083	-1.352
331	1700	60.	0.098	-1.227
331	1911	65.	0.107	-1.148
331	2100	67.	0.111	-1.113
331	2200	67.	0.110	-1.115
331	2230	67.	0.110	-1.119
331	2334	69.	0.112	-1.097
401	30	69.	0.113	-1.097
401	130	69.	0.112	-1.098
401	134	69.	0.112	-1.097
401	202	65.	0.104	-1.168
401	226	60.	0.093	-1.263
401	253	55.	0.083	-1.355
401	400	55.	0.081	-1.372
401	432	50.	0.072	-1.453
401	450	47.	0.066	-1.499
401	513	46.	0.064	-1.521
401	806	46.	0.061	-1.543
401	1102	46.	0.059	-1.560
401	1403	46.	0.059	-1.561
401	1702	46.	0.058	-1.568
401	2003	46.	0.057	-1.577
401	2303	46.	0.057	-1.583
402	204	46.	0.056	-1.590
402	450	47.	0.055	-1.599
402	620	50.	0.058	-1.570
402	813	55.	0.066	-1.501
402	915	57.	0.071	-1.460
402	1203	57.	0.071	-1.461

SUMMARY OF DATA FOR TRANSDUCER R11

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.078	-1.400
402	1804	57.	0.083	-1.358
402	2104	57.	0.082	-1.359
403	4	57.	0.081	-1.368
403	306	57.	0.080	-1.378
403	604	57.	0.079	-1.390
403	900	57.	0.078	-1.401
403	1200	57.	0.077	-1.410
403	1231	57.	0.077	-1.410
403	1246	55.	0.075	-1.422
403	1317	50.	0.068	-1.482
403	1345	45.	0.062	-1.536
403	1426	40.	0.057	-1.581
403	1526	40.	0.057	-1.582
403	1601	35.	0.053	-1.617
403	1629	30.	0.047	-1.668
403	1701	25.	0.041	-1.719
403	1801	25.	0.040	-1.727
403	1832	20.	0.034	-1.781
403	1904	15.	0.028	-1.838
403	1939	10.	0.021	-1.899
403	2039	10.	0.019	-1.912
403	2115	5.	0.013	-1.963
403	2233	0.	0.006	-2.027

SUMMARY OF DATA FOR TRANSDUCER E 1

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.075
330	1106	5.	0.012	-1.975
330	1252	10.	0.021	-1.896
330	1352	10.	0.021	-1.896
330	1452	10.	0.021	-1.895
330	1552	10.	0.021	-1.895
330	1652	10.	0.021	-1.895
330	1749	10.	0.021	-1.895
330	1938	15.	0.029	-1.823
330	2129	20.	0.037	-1.751
330	2330	25.	0.046	-1.673
331	30	25.	0.046	-1.674
331	218	30.	0.055	-1.600
331	410	35.	0.064	-1.519
331	607	40.	0.074	-1.430
331	707	40.	0.074	-1.431
331	807	40.	0.074	-1.430
331	815	40.	0.074	-1.427
331	1002	45.	0.087	-1.317
331	1153	50.	0.099	-1.217
331	1355	55.	0.112	-1.097
331	1455	55.	0.113	-1.092
331	1700	60.	0.128	-0.964
331	1911	65.	0.144	-0.818
331	2100	67.	0.153	-0.742
331	2200	67.	0.153	-0.743
331	2230	67.	0.153	-0.738
331	2334	69.	0.161	-0.676
401	30	69.	0.161	-0.669
401	130	69.	0.162	-0.665
401	134	69.	0.162	-0.665
401	202	65.	0.157	-0.704
401	226	60.	0.146	-0.805
401	253	55.	0.134	-0.906
401	400	55.	0.133	-0.917
401	432	50.	0.121	-1.019
401	450	47.	0.115	-1.076
401	513	46.	0.112	-1.103
401	806	46.	0.111	-1.105
401	1102	46.	0.110	-1.113
401	1403	46.	0.110	-1.117
401	1702	46.	0.110	-1.116
401	2003	46.	0.109	-1.124
401	2303	46.	0.108	-1.130
402	204	46.	0.108	-1.137
402	450	47.	0.107	-1.141
402	620	50.	0.111	-1.104
402	813	55.	0.123	-1.002
402	915	57.	0.131	-0.937
402	1203	57.	0.131	-0.930

SUMMARY OF DATA FOR TRANSDUCER E 1

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.132	-0.926
402	1804	57.	0.132	-0.926
402	2104	57.	0.132	-0.926
403	4	57.	0.132	-0.926
403	306	57.	0.132	-0.927
403	604	57.	0.132	-0.927
403	900	57.	0.132	-0.926
403	1200	57.	0.133	-0.916
403	1231	57.	0.133	-0.916
403	1246	55.	0.133	-0.916
403	1317	50.	0.123	-1.002
403	1345	45.	0.113	-1.091
403	1426	40.	0.102	-1.187
403	1526	40.	0.101	-1.195
403	1601	35.	0.091	-1.284
403	1629	30.	0.080	-1.375
403	1701	25.	0.070	-1.469
403	1801	25.	0.068	-1.487
403	1832	20.	0.058	-1.567
403	1904	15.	0.048	-1.653
403	1939	10.	0.038	-1.741
403	2039	10.	0.036	-1.757
403	2115	5.	0.028	-1.834
403	2233	0.	0.017	-1.927

SUMMARY OF DATA FOR TRANSDUCER E 9

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.052
330	1106	5.	0.019	-1.879
330	1252	10.	0.037	-1.716
330	1352	10.	0.039	-1.705
330	1452	10.	0.039	-1.702
330	1552	10.	0.039	-1.700
330	1652	10.	0.039	-1.701
330	1749	10.	0.039	-1.701
330	1938	15.	0.056	-1.548
330	2129	20.	0.074	-1.391
330	2330	25.	0.093	-1.222
331	30	25.	0.092	-1.222
331	218	30.	0.110	-1.064
331	410	35.	0.129	-0.894
331	607	40.	0.149	-0.715
331	707	40.	0.150	-0.705
331	807	40.	0.152	-0.691
331	815	40.	0.152	-0.689
331	1002	45.	0.173	-0.496
331	1153	50.	0.195	-0.303
331	1355	55.	0.219	-0.090
331	1455	55.	0.220	-0.079
331	1700	60.	0.243	0.127
331	1911	65.	0.268	0.350
331	2100	67.	0.280	0.459
331	2200	67.	0.280	0.463
331	2230	67.	0.281	0.465
331	2334	69.	0.292	0.566
401	30	69.	0.293	0.573
401	130	69.	0.293	0.576
401	134	69.	0.293	0.576
401	202	65.	0.280	0.463
401	226	60.	0.261	0.291
401	253	55.	0.242	0.116
401	400	55.	0.240	0.096
401	432	50.	0.220	-0.081
401	450	47.	0.209	-0.180
401	513	46.	0.203	-0.230
401	806	46.	0.202	-0.236
401	1102	46.	0.201	-0.248
401	1403	46.	0.201	-0.250
401	1702	46.	0.201	-0.250
401	2003	46.	0.200	-0.256
401	2303	46.	0.200	-0.260
402	204	46.	0.199	-0.265
402	450	47.	0.199	-0.270
402	620	50.	0.209	-0.177
402	813	55.	0.231	0.018
402	915	57.	0.242	0.120
402	1203	57.	0.244	0.136

SUMMARY OF DATA FOR TRANSDUCER E 9

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.245	0.143
402	1804	57.	0.245	0.144
402	2104	57.	0.245	0.143
403	4	57.	0.245	0.143
403	306	57.	0.244	0.137
403	604	57.	0.243	0.130
403	900	57.	0.244	0.139
403	1200	57.	0.248	0.168
403	1231	57.	0.248	0.172
403	1246	55.	0.244	0.136
403	1317	50.	0.226	-0.028
403	1345	45.	0.207	-0.192
403	1426	40.	0.188	-0.365
403	1526	40.	0.187	-0.376
403	1601	35.	0.169	-0.540
403	1629	30.	0.149	-0.714
403	1701	25.	0.129	-0.891
403	1801	25.	0.127	-0.914
403	1832	20.	0.109	-1.073
403	1904	15.	0.090	-1.244
403	1939	10.	0.071	-1.419
403	2039	10.	0.068	-1.444
403	2115	5.	0.050	-1.601
403	2233	0.	0.030	-1.785

SUMMARY OF DATA FOR TRANSDUCER E11

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
330	909	0.	0.000	-2.018
330	1106	5.	0.002	-2.001
330	1252	10.	0.005	-1.978
330	1352	10.	0.005	-1.974
330	1452	10.	0.005	-1.974
330	1552	10.	0.005	-1.974
330	1652	10.	0.005	-1.974
330	1749	10.	0.005	-1.973
330	1938	15.	0.008	-1.951
330	2129	20.	0.011	-1.923
330	2330	25.	0.014	-1.895
331	30	25.	0.014	-1.895
331	218	30.	0.018	-1.868
331	410	35.	0.021	-1.836
331	607	40.	0.025	-1.806
331	707	40.	0.025	-1.807
331	807	40.	0.025	-1.807
331	815	40.	0.025	-1.806
331	1002	45.	0.028	-1.778
331	1153	50.	0.032	-1.743
331	1355	55.	0.039	-1.685
331	1455	55.	0.040	-1.678
331	1700	60.	0.048	-1.611
331	1911	65.	0.057	-1.529
331	2100	67.	0.063	-1.481
331	2200	67.	0.063	-1.481
331	2230	67.	0.063	-1.481
331	2334	69.	0.067	-1.442
401	30	69.	0.069	-1.432
401	130	69.	0.069	-1.432
401	134	69.	0.069	-1.432
401	202	65.	0.069	-1.431
401	226	60.	0.065	-1.464
401	253	55.	0.059	-1.510
401	400	55.	0.058	-1.523
401	432	50.	0.053	-1.564
401	450	47.	0.050	-1.592
401	513	46.	0.048	-1.607
401	806	46.	0.048	-1.608
401	1102	46.	0.048	-1.608
401	1403	46.	0.048	-1.608
401	1702	46.	0.048	-1.609
401	2003	46.	0.047	-1.618
401	2303	46.	0.046	-1.629
402	204	46.	0.045	-1.633
402	450	47.	0.044	-1.638
402	620	50.	0.045	-1.632
402	813	55.	0.051	-1.584
402	915	57.	0.054	-1.559
402	1203	57.	0.054	-1.560

SUMMARY OF DATA FOR TRANSDUCER E11

DATE	TIME	PRES PSIG	DISPLACEMENT INCHES	READING VOLTS
402	1504	57.	0.054	-1.559
402	1804	57.	0.054	-1.558
402	2104	57.	0.054	-1.558
403	4	57.	0.054	-1.557
403	306	57.	0.056	-1.543
403	604	57.	0.055	-1.543
403	900	57.	0.056	-1.543
403	1200	57.	0.055	-1.544
403	1231	57.	0.055	-1.543
403	1246	55.	0.055	-1.544
403	1317	50.	0.053	-1.566
403	1345	45.	0.048	-1.611
403	1426	40.	0.042	-1.656
403	1526	40.	0.042	-1.661
403	1601	35.	0.037	-1.702
403	1629	30.	0.032	-1.743
403	1701	25.	0.027	-1.783
403	1801	25.	0.026	-1.795
403	1832	20.	0.022	-1.829
403	1904	15.	0.018	-1.862
403	1939	10.	0.015	-1.893
403	2039	10.	0.013	-1.908
403	2115	5.	0.011	-1.927
403	2233	0.	0.006	-1.968