

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
Review Date: <u>8/18/98</u> Authority: <u>WC Layne</u> Review Date: <u>8/19/98</u> Authority: <u>WC Layne</u>	Desecration (Circle Number): 1 Classification Retained <input checked="" type="radio"/> 2 Classification Changed to: <u>U</u> 3 Contains No DOE Classified Information 4 Coordinate With: <input checked="" type="radio"/> 5 Contains UCAF <u>NO</u> 6 Comments: <u>Redacted</u>

MAY 19 1959

TX-28, 3-2
 Project No. T-16168
 Case No. 853.00
 Completed: 4-7-59

TO: DISTRIBUTION

Re: Static Test of TX-28/X2 Release Plate Assembly

Object of Test

The object of the test was to determine deflections and strains in the TX-28/X2 Release Plate Assembly subjected to simulated parachute shroud line loads. The release plate assembly is a part of the MC-1113 Bomb Tail Assembly detailed on Dwg. No. 310894.

Summary of Results

A TX-28/X2 Release Plate Assembly was statically tested with simulated parachute shroud line loads up to 70,000 pounds total load. The maximum stress obtained was 32,450 psi tension in the release plate. Deflections of up to 0.403 inch were obtained in the release plate under load, but permanent set remaining after the load was released was negligible.

Authorization for Test

The test was performed in accordance with a Work Order Authorization, dated March 10, 1959, from Organization 1215 to Organization 1613. Mr. R. E. Howell, 1215-1, was the consultant.

Function of Object Tested

The release plate assembly retains the 16-foot parachute on the TX-28/X2 bomb, and upon receipt of the proper signal, releases it to deploy another parachute.

Test Equipment and Instrumentation

The following equipment was used in the tests:

- 9 - Calibrated pull bars, Ser. Nos. 1, 2, 3, 4, 5, 6, 7, 9 and 10.
- 1 - Baldwin strain indicator, Ser. No. 391903.
- 1 - Sprague hydraulic pump, Ser. No. S-72738.
- 1 - Simplex hydraulic jack, 60-ton capacity.
- 1 - Fairchild digital strain readout system.

The following instrumentation was used:

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP CLASSIFICATION CHANGED TO: <u>U</u> AUTHORITY: <u>W.C. Layne</u> PERSON CHANGING MARKING & DATE: <u>Emilda Selph 8/23/98</u> RECORD ID: <u>985N3774</u> PERSON VERIFYING MARKING & DATE: <u>WC Layne 8/25/98</u> DATED: <u>8/19/98</u>	FILED MAY 20 1959 CENTRAL RECORD FILE TX-28-X2 3-2
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Distribution

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Project No. T-16166

- 5 - SR-4 foil strain gages, three-element rectangular rosettes, type FABR-50-12, gage factor $2.15 \pm 2\%$ resistance 121.0 ± 0.5 ohms, lot no. 7-57#5.
- 1 - SR-4 strain gage, type A-7, gage factor $1.92 \pm 2\%$, resistance 119.5 ± 0.3 ohms, lot no. 232-11.
- 6 - Starrett dial indicators, 0.001 inch least graduation, 1.000 inch full range.

Procedure

The release plate assembly was mounted in the forward portion of a TX-28/X2 rear case, which in turn was attached to the static jig by its threaded mounting ring. Nylon shroud lines from the eight parachute lugs in the assembly were fastened to calibrated pull bars bolted to a thick steel plate. Load was applied to this plate by a hydraulic jack thru a single pull bar to the center of the plate. The setup is shown in Figure 1.

At the start of the test, a load of 6000 pounds was applied to the plate, and all shroud lines were adjusted so as to have approximately equal tension. This adjustment was checked again at 10,000 pounds load, and individual shroud line loads were monitored during the remainder of the test.

Load was applied in 10,000 pound increments up to a maximum of 70,000 pounds. Dial indicator and strain gage readings were taken at each increment. Locations of the dial indicators are shown in Figure 2. All indicators were mounted with their axes parallel to the direction of applied load. Strain gage locations are shown in Figures 2 thru 5.

Results

Deflections, strain readings and calculated principal stresses are given in Tables I, II and III, respectively. The highest stress obtained was 32,450 psi tension at strain gage locations 1, 2 and 3 (see Fig. 3) for 70,000 pounds load. The highest deflection obtained was 0.403 inch at dial indicator location No. 5 (see Fig. 2), also occurring at 70,000 pounds load. Permanent set remaining after the load was released was negligible.

W. M. Sigmon

W. M. SIGMON - 1612-1

R. G. Hamilton

1613 Project Engineer: R. G. HAMILTON - 1613-3

R. S. Cooper
Approved by: R. S. COOPER - 1613-3

WMS:1612-1:ec

Enc: Figures I thru V
Tables I thru III

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Distribution

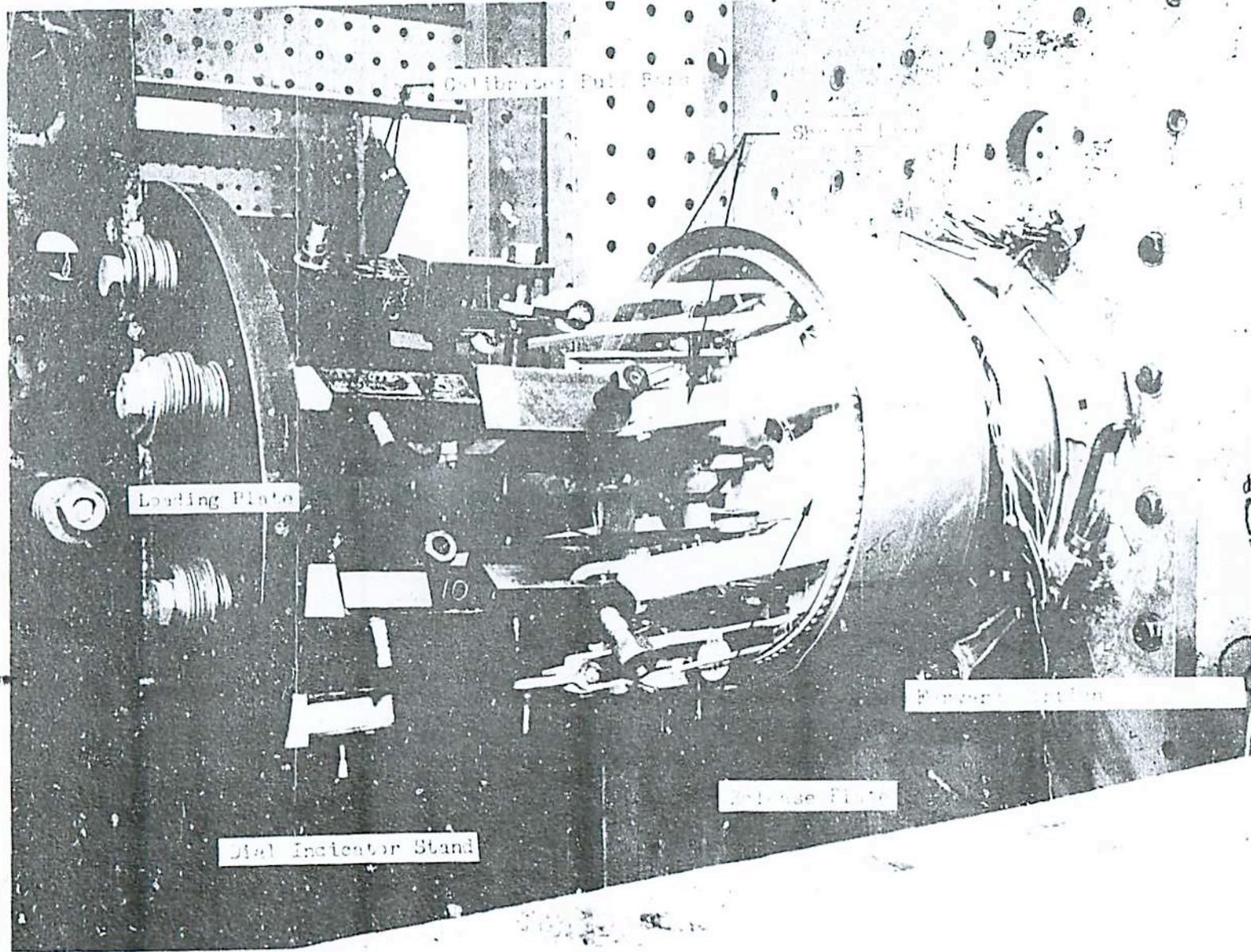
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Project No. T-16166

Copy to:

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FIGURE I - TEST SETUP FOR STATIC TEST OF TX-28/X2 RELEASE PLATE ASSEMBLY

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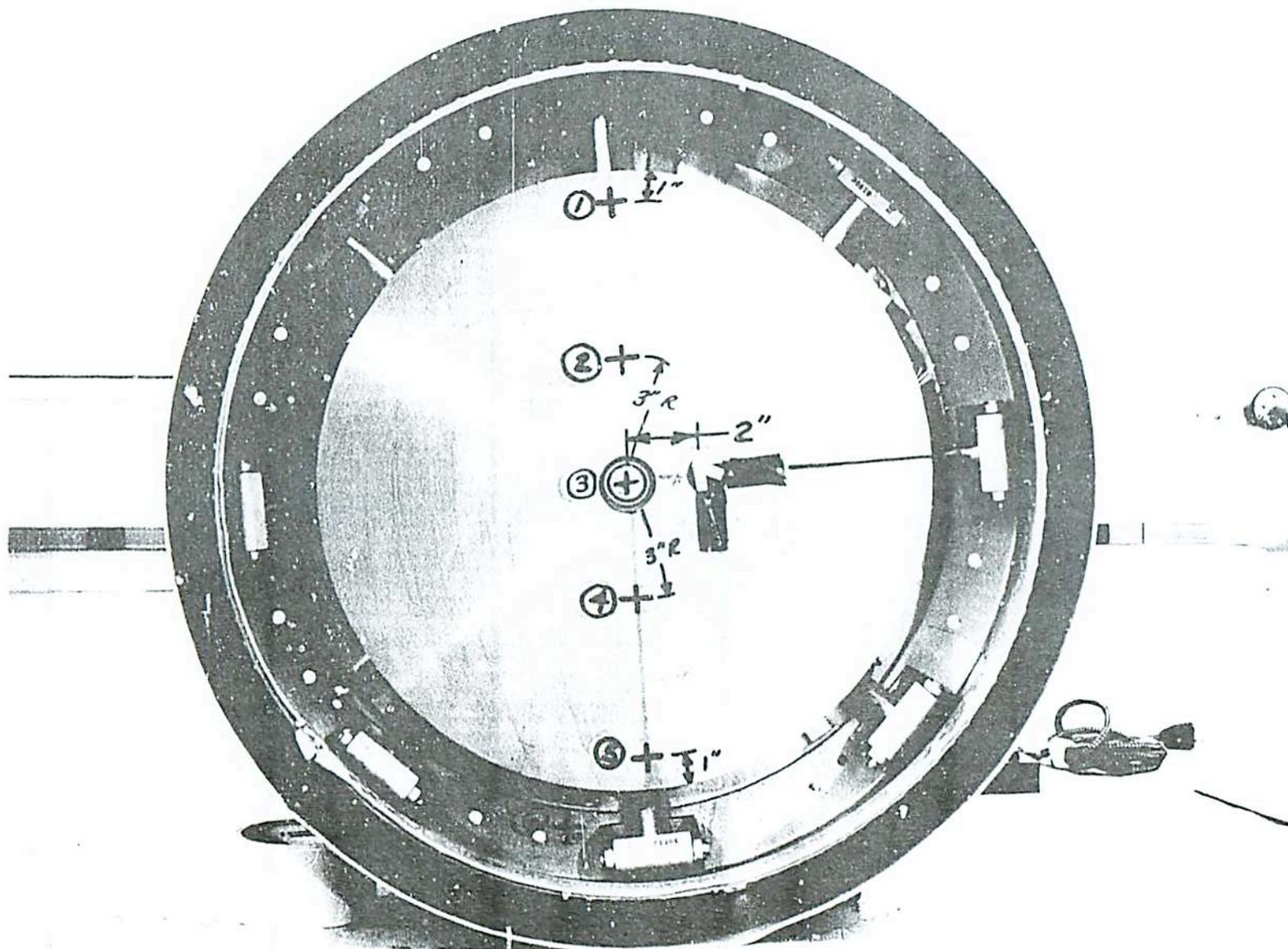


FIGURE 2 - DIAL INDICATOR AND STRAIN GAGE LOCATIONS ON AFT SIDE OF RELEASE PLATE - STATIC TEST OF TX-28/X2 RELEASE PLATE ASSEMBLY

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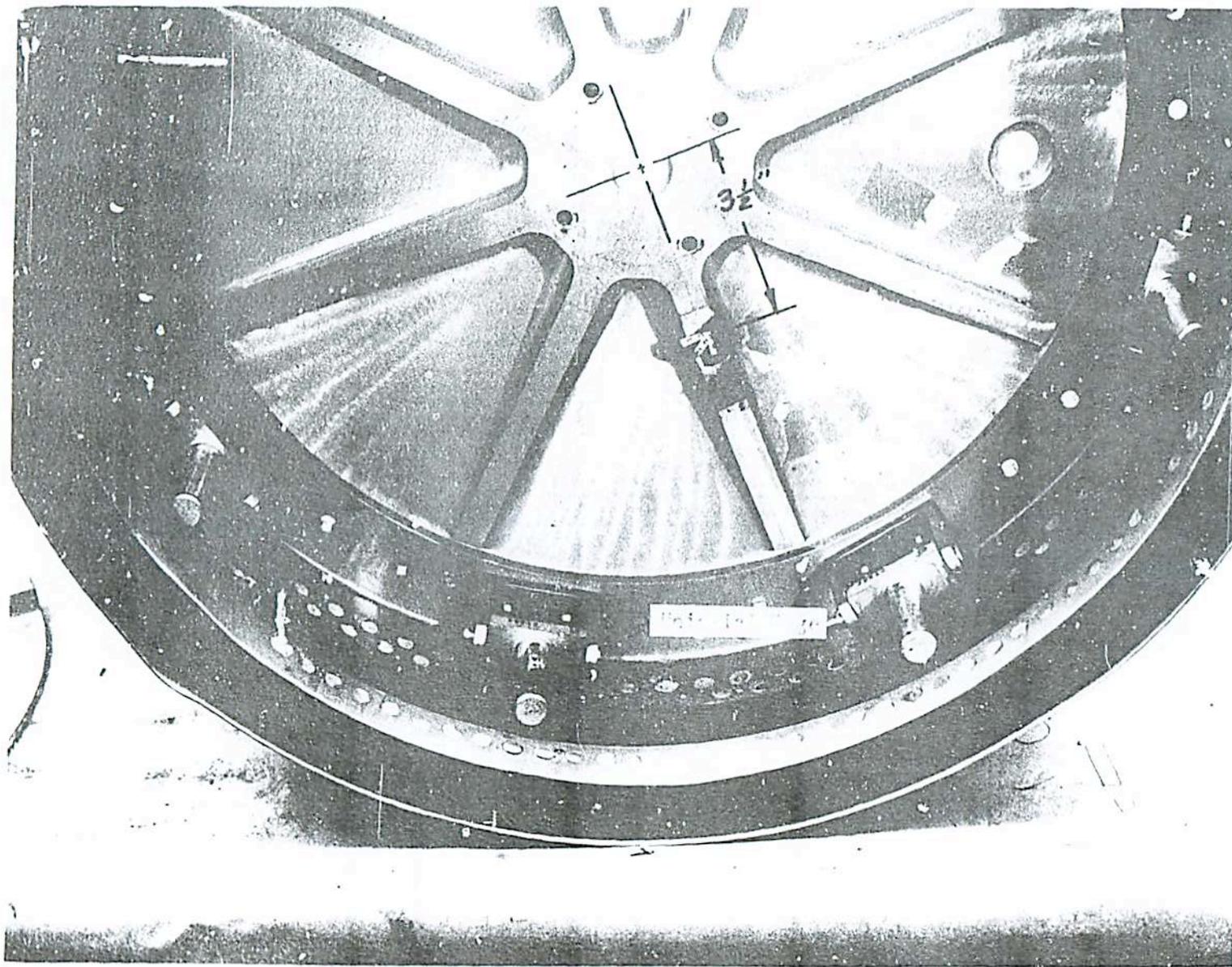


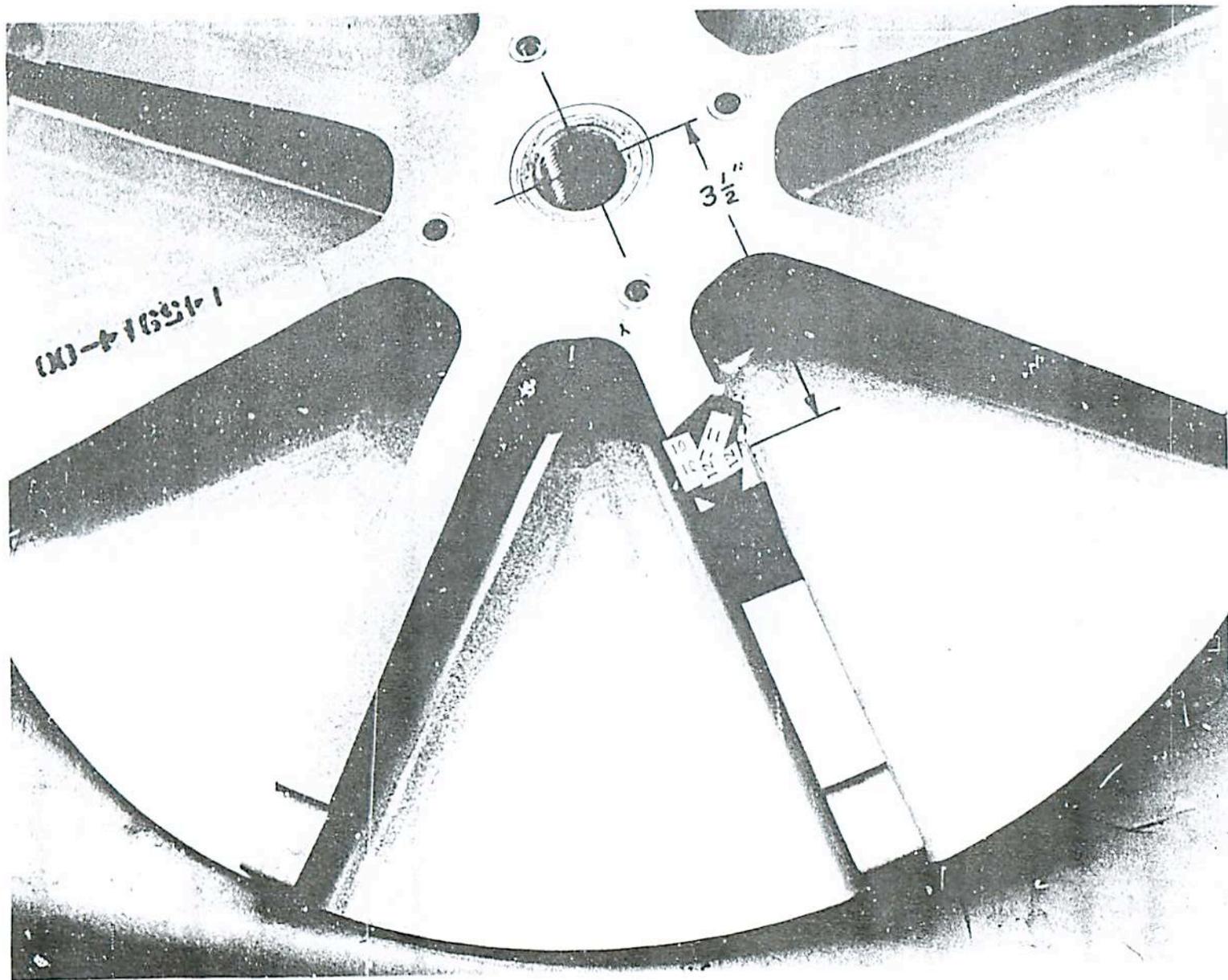
FIGURE 3 - STRAIN GAGE LOCATIONS ON FORWARD SIDE OF RELEASE PLATE - STATIC
TEST OF TX-28/X2 RELEASE PLATE ASSEMBLY

Project No. T-14156

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FIGURE 4 - STRAIN GAGE LOCATIONS ON AFT SIDE OF FORWARD PLATE -
STATIC TEST OF TX-28/A2 RELEASE PLATE ASSEMBLY

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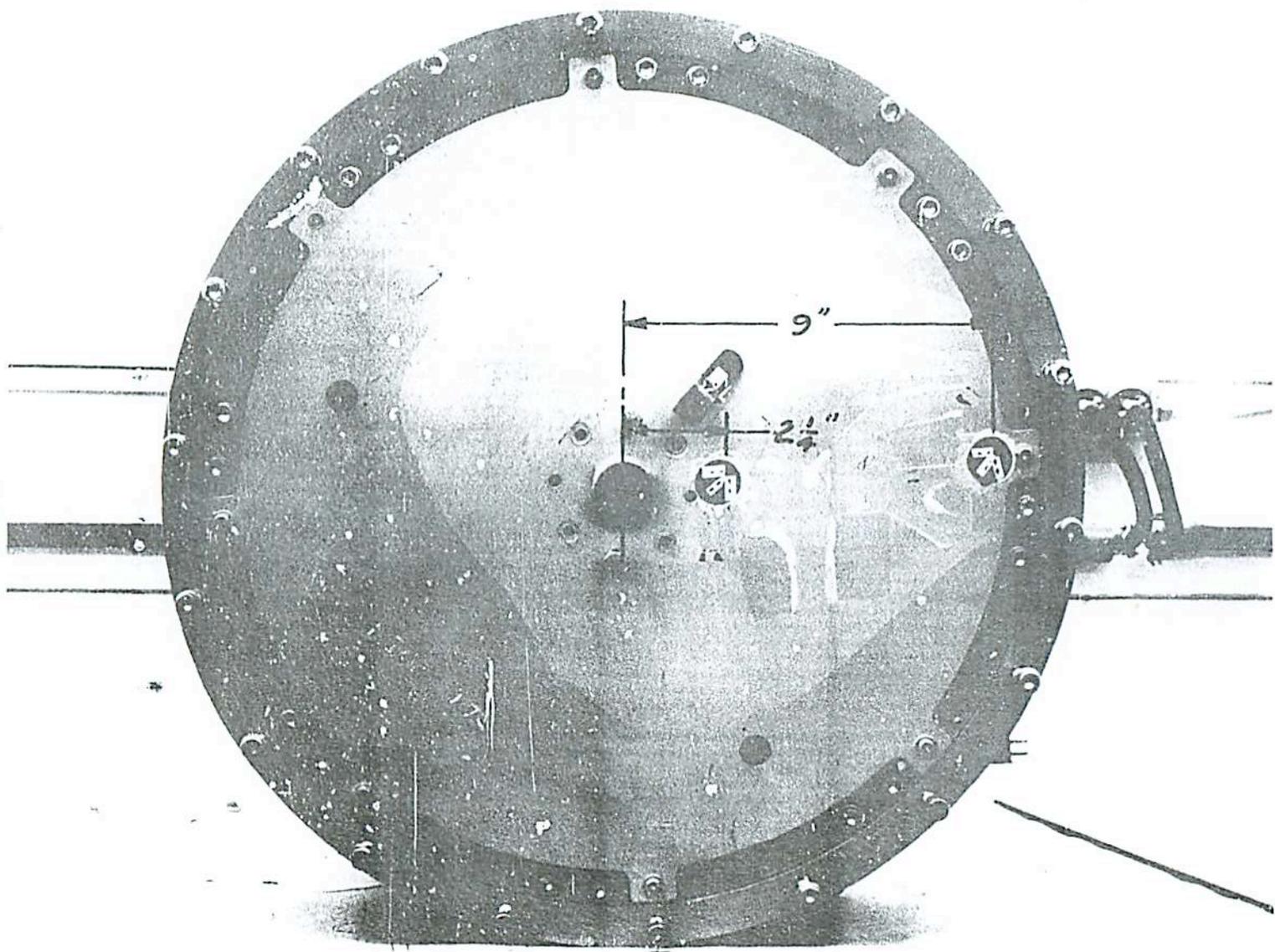


FIGURE 5 - STAIN TAG LOCATIONS ON FORWARD SIDE OF FORWARD YENITE - STATIC TEST OF TX-29/X2 RELEASE FLATE ASSEMBLY

D#9-6400

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LOAD POUNDS	DIA		DEFLECTION			
	1	2	3	4	5	6
* 6,000						
10,000	.027	.017	.017	.016	.022	.011
20,000	.067	.061	.061	.065	.070	.052
30,000	.114	.107	.105	.111	.121	.082
40,000	.162	.153	.150	.158	.170	.121
50,000	.203	.191	.187	.196	.210	.145
60,000	.237	.221	.217	.227	.242	.171
70,000	.264	.247	.242	.253	.269	.181
80,000	.284	.263	.258	.270	.287	.191

* ALL DEFLECTIONS MEASURED AT 1/8" DIA. POINTS

- (-) INDICATES DEFLECTION IN THE DIRECTION OF APPLIED LOAD.
- (+) INDICATES DEFLECTION OPPOSITE TO THE DIRECTION OF APPLIED LOAD.

PROJECT NO. T-10166

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19 15 16
T-16166
ASSEMBLY

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19 15 16

20 - 76

21 - 110

22 - 350

23 - 510

24 - 720

25 - 780

26 - 1150

27 - 1200

28 - 0

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STRAIN GAUGE NO.

LOAD
 POUNDS

LOAD POUNDS	1, 2, AND 3			4, 5, AND 6			7, 8, AND 9			10, 11, AND 12			13, 14, AND 15	
	S _x	S _y	θ	S _x	S _y	θ	S _x	S _y	θ	S _x	S _y	θ	S _x	S _y
0	0	0	-	0	0	-	0	0	-	0	0	-	0	0
6000	263	-70	175.2	800	-390	345.7	-850	-120	187.2	200	30	1.9	-117	-4
11000	315	-90	177.0	1000	-1000	349.5	-1800	-200	189.2	400	30	2.8	-125	-20
16000	415	0	177.4	1300	-2230	350.2	-3000	-400	196.8	700	30	2.6	-310	-30
21000	465	10	177.2	1600	-2500	351.2	-3200	-500	202.5	1000	30	3.1	-300	-20
26000	515	20	177.2	2000	-3030	351.6	-3400	-600	208.1	1300	30	3.3	-600	-30
31000	565	30	177.0	2400	-1000	351.1	-3700	-700	196.8	1600	30	3.1	-500	-10
36000	705	-100	177.0	2800	-1200	350.6	-1000	-1000	198.9	2100	30	2.9	-1000	-20
41000	805	-100	177.0	3200	-1400	349.5	-1100	-1000	202.5	2600	30	3.0	-1000	-10
0	15	20	-	-30	-70	-	-200	-40	-	300	20	-	0	0

* UNIFORM GAUGE

(+) INDICATES A TENSILE STRESS.

(-) INDICATES A COMPRESSIVE STRESS.

θ, EXPRESSED IN DEGREES, IS THE ANGLE BETWEEN S_x AND THE AXIS OF THE LOWEST NUMERICAL ROSETTE, MEASURED COUNTER-CLOCKWISE.

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SY @		16*										
												1
												2
432	35.8	-730										3
433	33.4	-1750										4
434	33.9	-3010										5
435	37.2	-5250										6
436	32.9	-7420										7
437	31.3	-7850										8
438	29.5	-12000										9
439	27.0	-15500										10
												11
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BETWEEN THE DIRECTION
 NUMBERED GAGE IN THE
 USE.

