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AUG 8 1958
Case No. 746.00
Ref. Sym: 1612(743)
Project No. TM-789
File: TX-41, 3-2

MR. P. F. JONES - 1218

Attn: Mr. A. E. Sensel - 1218-2

Re: Static Test of TX-41 Long Afterbody

Summary of Results

The fuse deck of the TX-41 afterbody was loaded to 3,000 pounds (150 per cent of L.L.). This test which simulated drogue gun loads produced no damage.

The afterbody was loaded to 68,750 pounds (137.5 per cent of L.L.). This test which simulated a resultant parachute load colinear with the longitudinal axes of the afterbody produced no damage.

The afterbody was loaded to a simulated parachute load of 95,000 pounds (190 per cent of L.L.). This test simulated a resultant parachute load which makes an angle of 24° with the longitudinal axis of the afterbody plus a simulated air load of 2700 pounds (137.5 per cent of L.L.) normal to each fin.

With the above maximum loading, the rivets sheared which hold the cylindrical skin to the forging ring.

Object of Test

The object of this test was to structurally test the afterbody for simulated parachute loads. The structural adequacy of the afterbody was to be determined for 137.5 per cent of L.L. for the straight pull and 167 %L.L. for the 24° pull. Also, the fuse deck of the afterbody was to be statically tested for the simulated drogue gun load to a maximum of 150% of limit load.

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Reason for Test

The test was performed as a result of the Work Order Authorization pertaining to the simulated parachute loads dated February 17, 1958 from Division 1218 to Division 1612. This Work Order Authorization was supplemented by a memorandum, "Detail Test Requirements," Ref. Sym. 1218(80) dated February 19, 1958 from Division 1218 to Division 1612. In addition,

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
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AUTHORITY: W. C. Layne
PERSON CHANGING MARKING & DATE: Emelda Selph 9/25/98
RECORD ID: 98SN4456
PERSON VERIFYING MARKING & DATE: WC Layne 9/29/98
DATED: 9/24/98

CENTRAL RECORD FILE
ACCOUNTABLE
FILE No. TX-41
3-2

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the details for the simulated drogue gun test were covered by the Work Order Authorization dated March 12, 1958 from Division 1218 to Division 1612.

Function of Object Tested

The afterbody contains the parachute and transmits the parachute loads to the case of the weapon when the parachute is deployed. The fuse deck supports the loads which result from the firing of the drogue gun.

Summary of Past Tests

No previous static tests have been performed on the TX-41 long afterbody. A similar static test has recently been performed on a TX-41 short afterbody the results of which are given in the test report, "Static Test of TX-41 Short Afterbody", Ref. Sym: 1612 (698), Project No. TM-747, dated April 7, 1958.

Setup for Test

The unit tested was the TX-41 long afterbody (MC-976), Drawing No. 310703, Serial No. 008.

The following equipment was used:

1 - load cell, capacity = 5000 lbs., No. 2127
2 - load cells, capacity = 10000 lbs, Nos. 6064 and 6049
1 - two - inch calibrated pull rod, No. 7
4 - one - inch - calibrated links, Nos. D, E, F, and G.
8 - one - inch calibrated rods, Nos. 1, 3, 4, 5, 6, 7, 8, and 10.
3 - Baldwin Strain Indicators, Serial Nos. J-59101, J-59252 and 391905.
1 - Fairchild Strain Indicator, Model 101 - C - 2.
1 - Sadic Automatic Data Processing System, Model 34-112 M1.
1 - Miller Hydraulic Ram, capacity = 400,000 lbs.
1 - Hydraulic Console.

The following instrumentation was used:

9 - Starrett dial indicators, minimum graduation = 0.001 inch, maximum travel = 1.0 inch.
4 - AR-7 strain gage rosettes, Res. = 60 ohms G. F. = 1.92 ± 2%
6 - AX-7 biaxial strain gages, Res. = 120 ohms G. F. = 1.86 ± 2%
Stresscoat No. 1207 - sensitivity at time of test = 800 microinches per inch.

Procedure

The TX-41 long afterbody was stresscoated with Stresscoat No. 1207 and mounted in the static jig as shown in Figures 1, 2 and 3. The longitudinal axis of the afterbody made an angle of 24 degrees with the direction of the resultant parachute load. Each of the twelve nylon shroud lines would make an angle of approximately six degrees with the longitudinal axis of the unit if the direction of the resultant parachute load and longitudinal axis of the unit were made co-linear.

After the tension of the twelve nylon shroud lines was approximately equalized as measured by the calibrated links, the initial simulated parachute load of 10,000 pounds was applied to the afterbody and a simulated air load of 2700 pounds was applied normal to each fin. All of these loads were released and the unit was inspected for cracks in the stresscoat. This procedure was repeated with each new parachute load being 1.2 times the preceding load until a parachute load of 50,000 pounds was reached. However, the load on each fin was kept at 2700 pounds for each increment of parachute load.

After the Stresscoat test was completed, the unit was dismounted and strain gages were mounted on the unit, consisting of 6 biaxial gages and 4 rosettes at the locations shown on Figures 4 through 9.

The unit was set up for the simulated drogue gun test as shown in Figures 10 and 11. The fuse deck was loaded in increments to a maximum load of 3000 pounds (150 per cent of limit load). The strain readings for the two rosettes shown on Figure 9 and deflection readings from the dial indicator at the nine locations shown on Figures 9, 10 and 11 were taken after each increment of load.

After the drogue gun test was completed, the unit was mounted in the static jig for the simulated straight pull parachute loads as shown in Figures 12 and 13. The afterbody was loaded in increments to a maximum longitudinal load of 68,750 pounds (137.5 per cent of limit load). The strains from the 18 strain gages shown on Figures 4, 5, 6, 7 and 8 were read after each increment of load.

The afterbody was next mounted in the static jig for the simulated parachute load making an angle of 24° with the longitudinal axis of the afterbody. The setup is shown in Figures 1, 2 and 3. The longitudinal load was applied in increments to a maximum load of 95,000 pounds (190% of L.L.) with the load on each fin being maintained at a constant value of 2700 pounds (137.5% of limit fin load). Failure at the above load prohibited additional loading of the afterbody.

Results

The results of the Stresscoat test on the afterbody are shown on Table I. The areas on which Stresscoat cracks appeared are shown on Figures 14 through 26.

The simulated drogue gun load of 3000 pounds (150% of limit load) was applied to the fuse deck without producing failure. The deflection readings from the nine dial indicators shown on Figures 9, 10 and 11 are given in Table II. The strains and computed principal stresses for the two rosette strain gages shown on Figure 9 are given in Table III. The maximum computed stress was about 22,000 psi (tension) at strain gage rosette (22, 23, 24), Figure 9, mounted on 24S-T3 aluminum..

The unit was tested for the simulated parachute load exerting a straight pull to 68,750 pounds (137.5% of limit load) without producing failure. The strain readings and the computed principal stresses for the 18 strain gages (6 biaxials and 2 rosettes) are shown on Table IV. The maximum computed stress was 13730 psi (tension) at biaxial strain gage (7,8), Figure 5, mounted on 14S-T6 aluminum forging.

The unit failed at a load of 95,000 pounds (190% L.L.) when tested to the simulated parachute load which made an angle of 24° with the longitudinal axis of the afterbody. The failure consisted of shearing the rivets which attach the cylindrical skin of the afterbody to the forged ring on the mounted end of the unit as shown in Figure 27. The strain readings and the computed principal stresses for the 18 strain gages are shown on Table V. The maximum computed stress was about 25,000 psi (tension) at the biaxial gage (5, 6), Figure 5, mounted on 14S-T6 aluminum forging.

Conclusions

It is concluded that the TX-41 long afterbody has adequate strength for 150 per cent of limit drogue gun load, 137.5 per cent of limit load for the parachute load pulling straight, and 167 per cent of limit load for the parachute pulling at a 24° angle.

HARRY P. WHEELER - 1612-2

Approved by:
PAUL H. ADAMS - 1612

HPW:1612-2:mad

Copy to:
W. A. Gardner, 1610
D. M. Bruce, 1282
C. L. Gomel, 5523
K. Smeltzer, 7221-3

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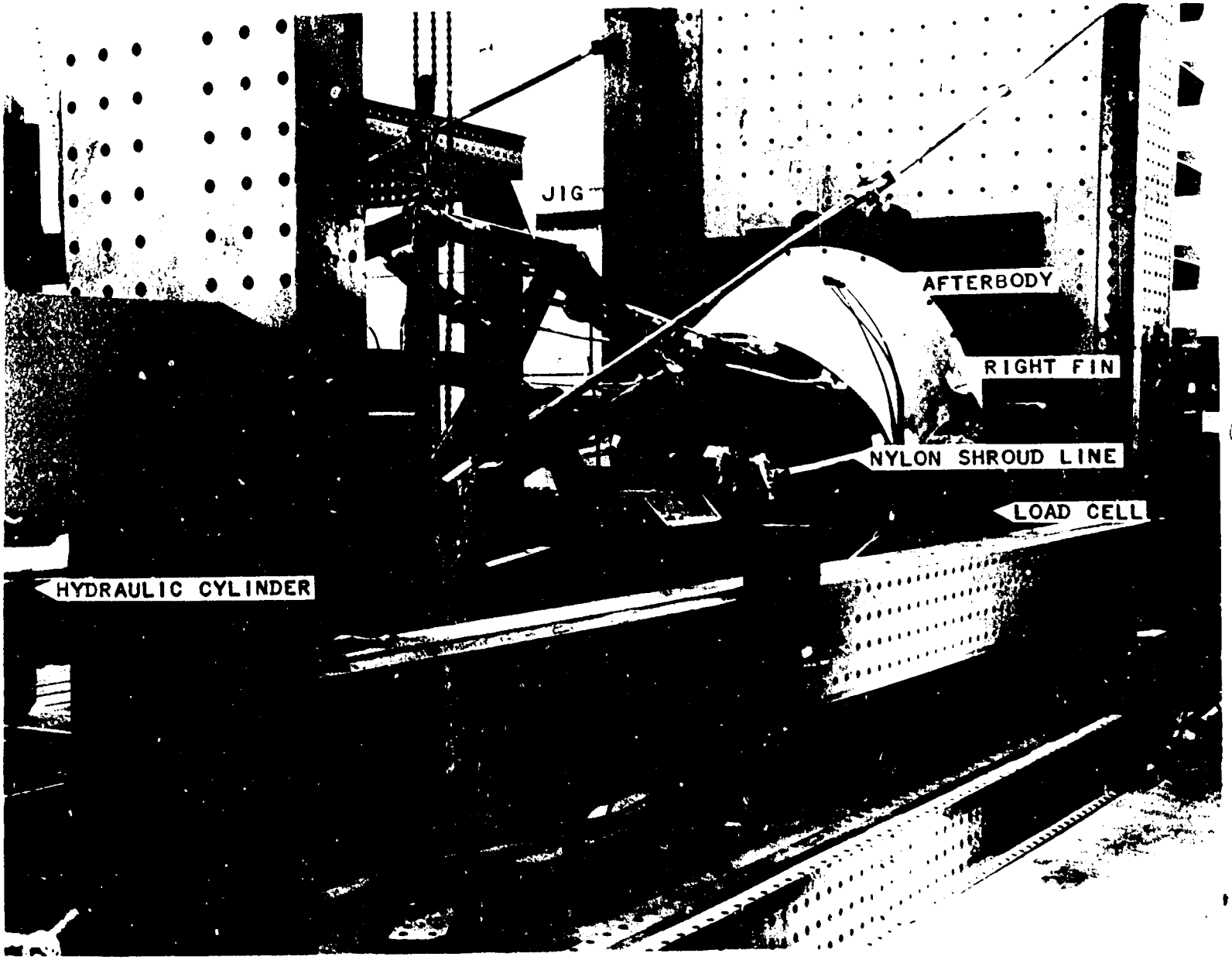

FIG. 1 -- SETUP FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108901

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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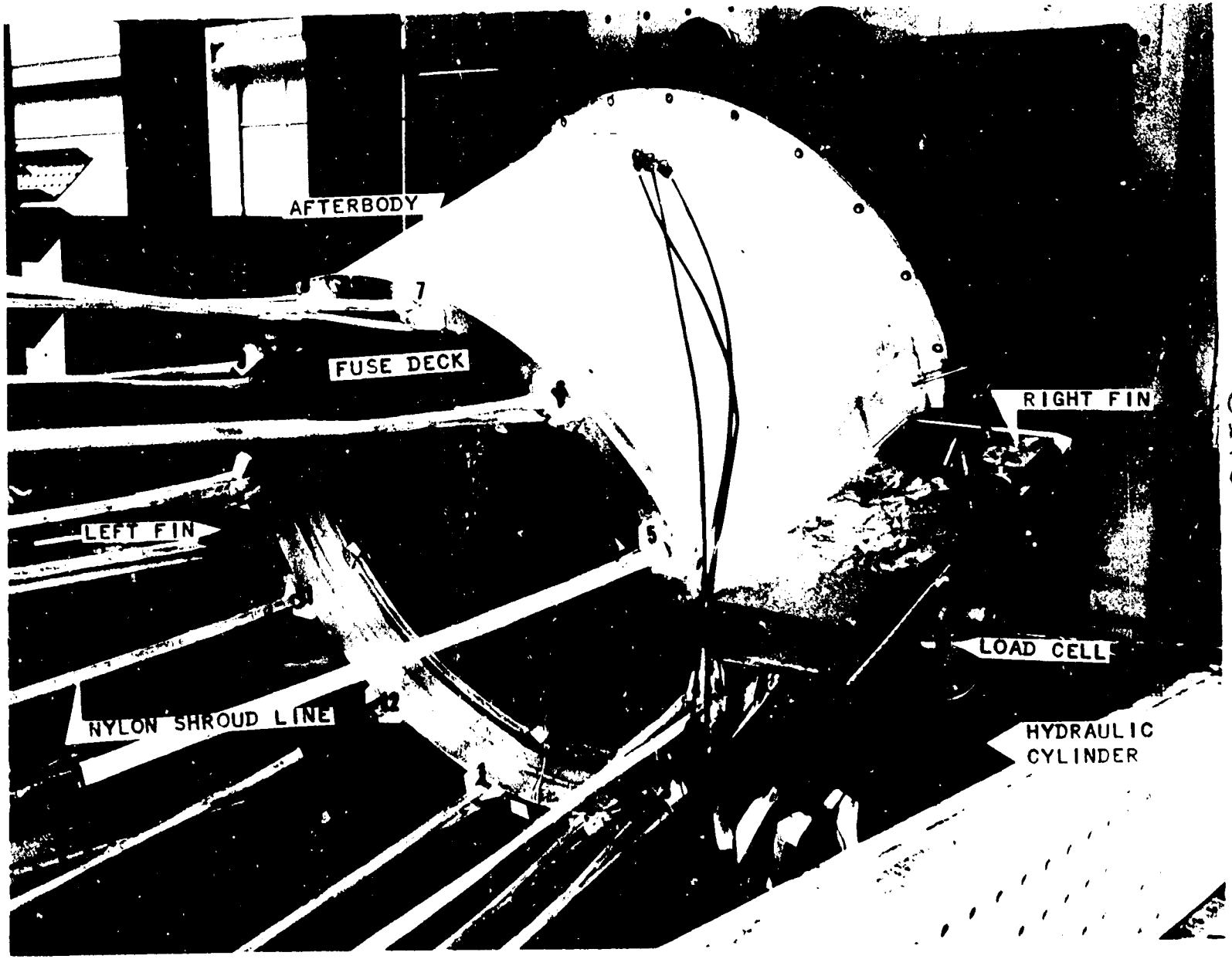

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FIG. 2 -- SETUP FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

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PROJECT NO. TM-789

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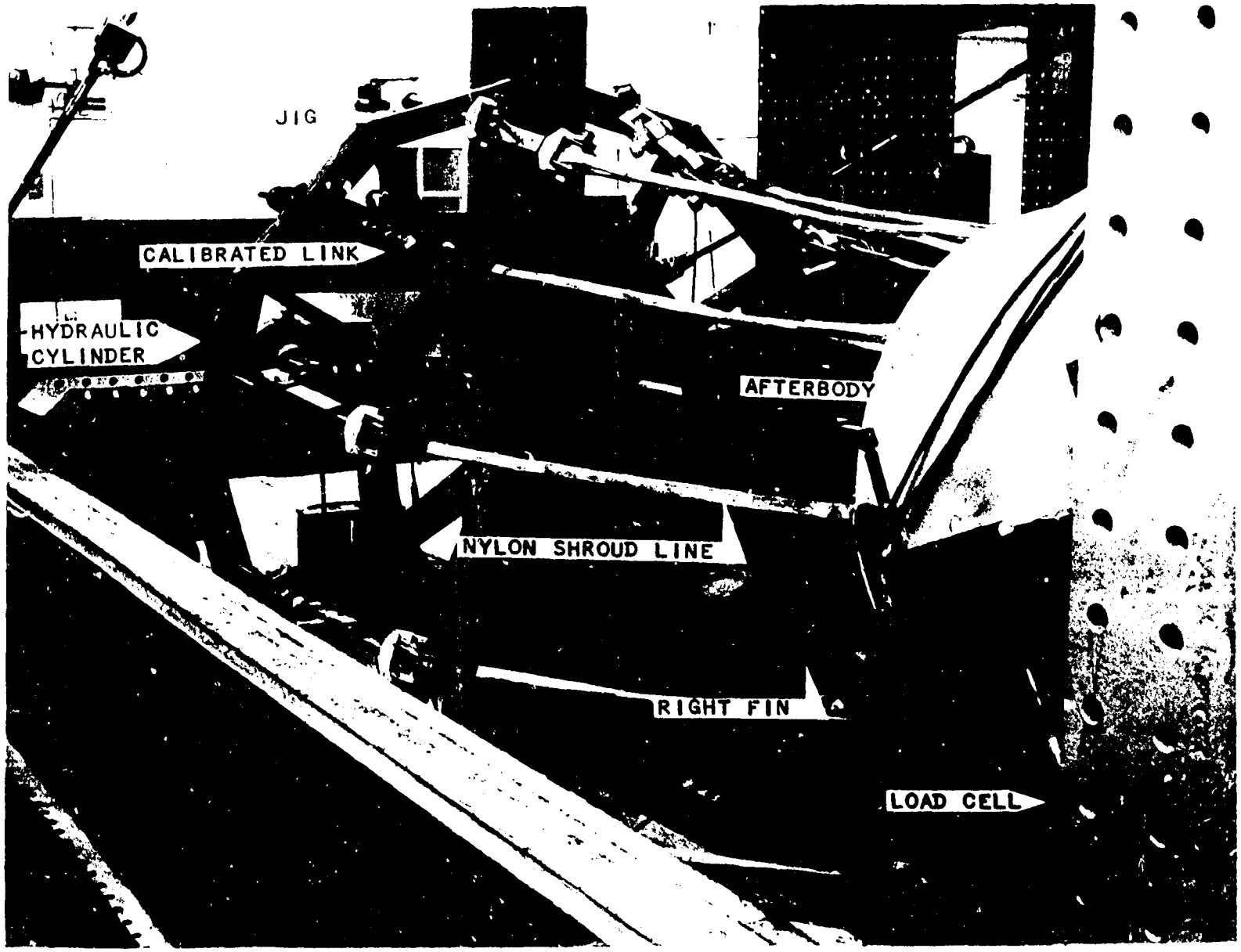

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FIG. 3 -- SETUP FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108503.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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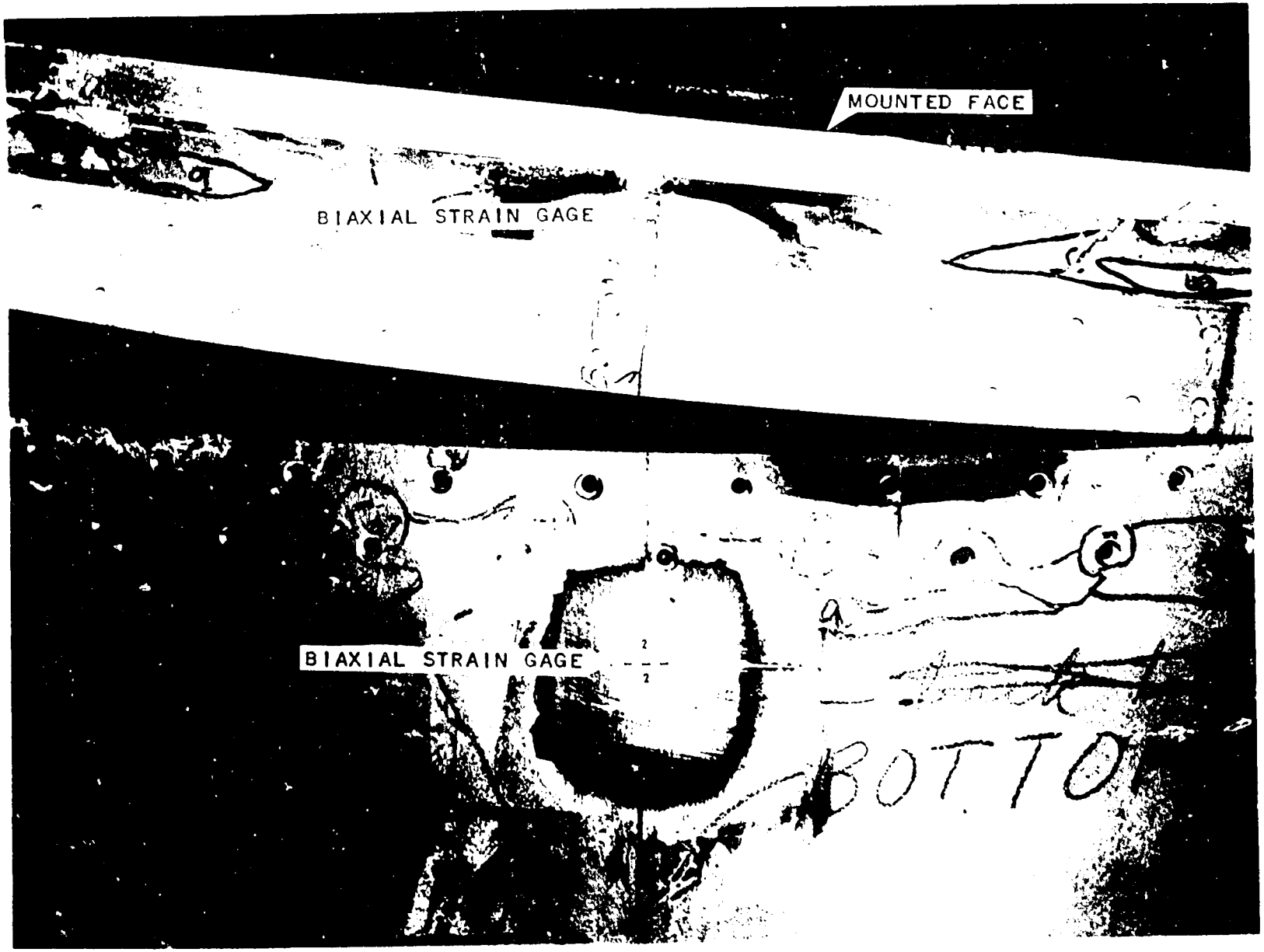

FIG. 4 -- STRAIN GAGE LOCATIONS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108906

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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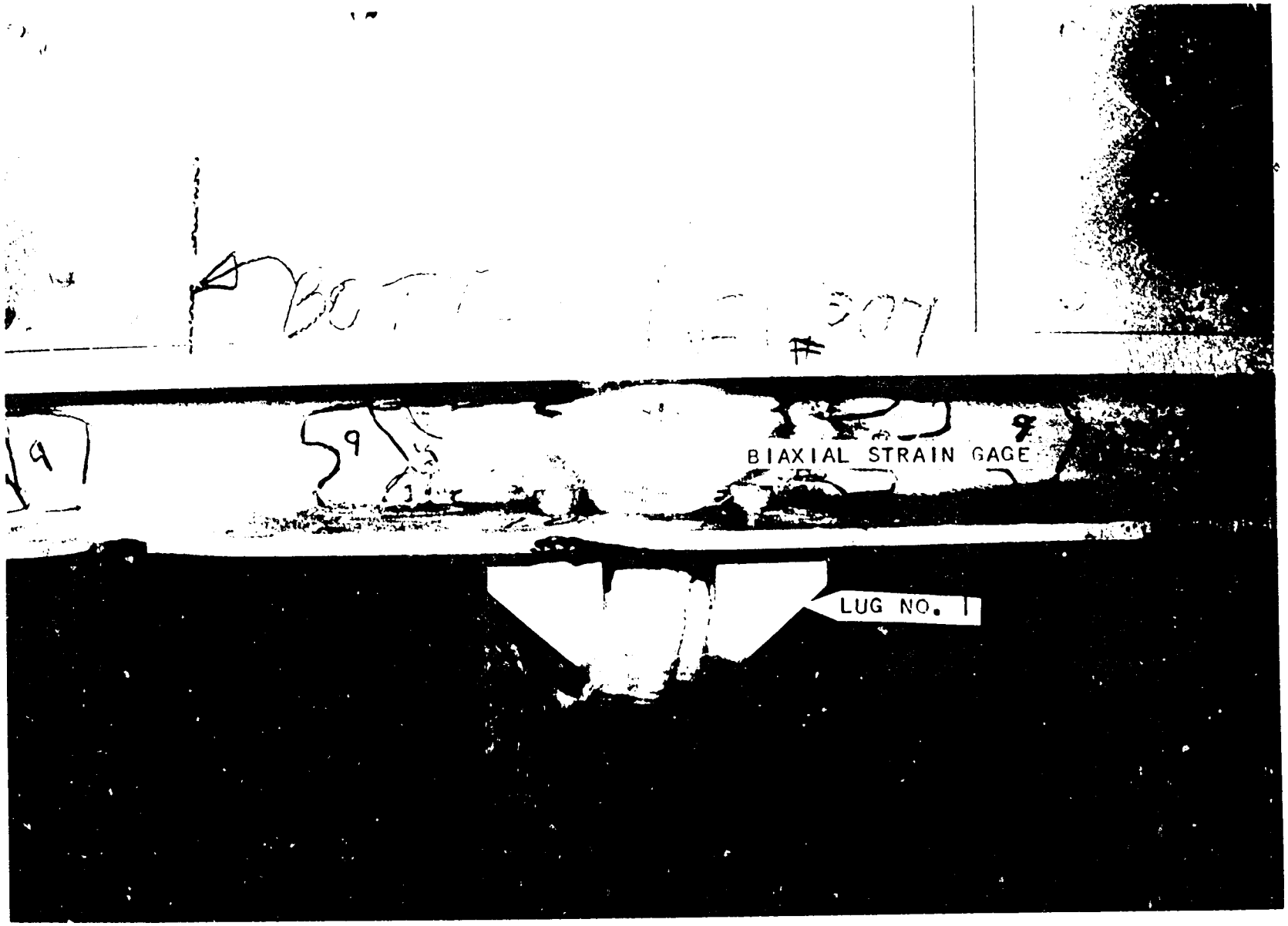

FIG. 5 -- STRAIN GAGE LOCATIONS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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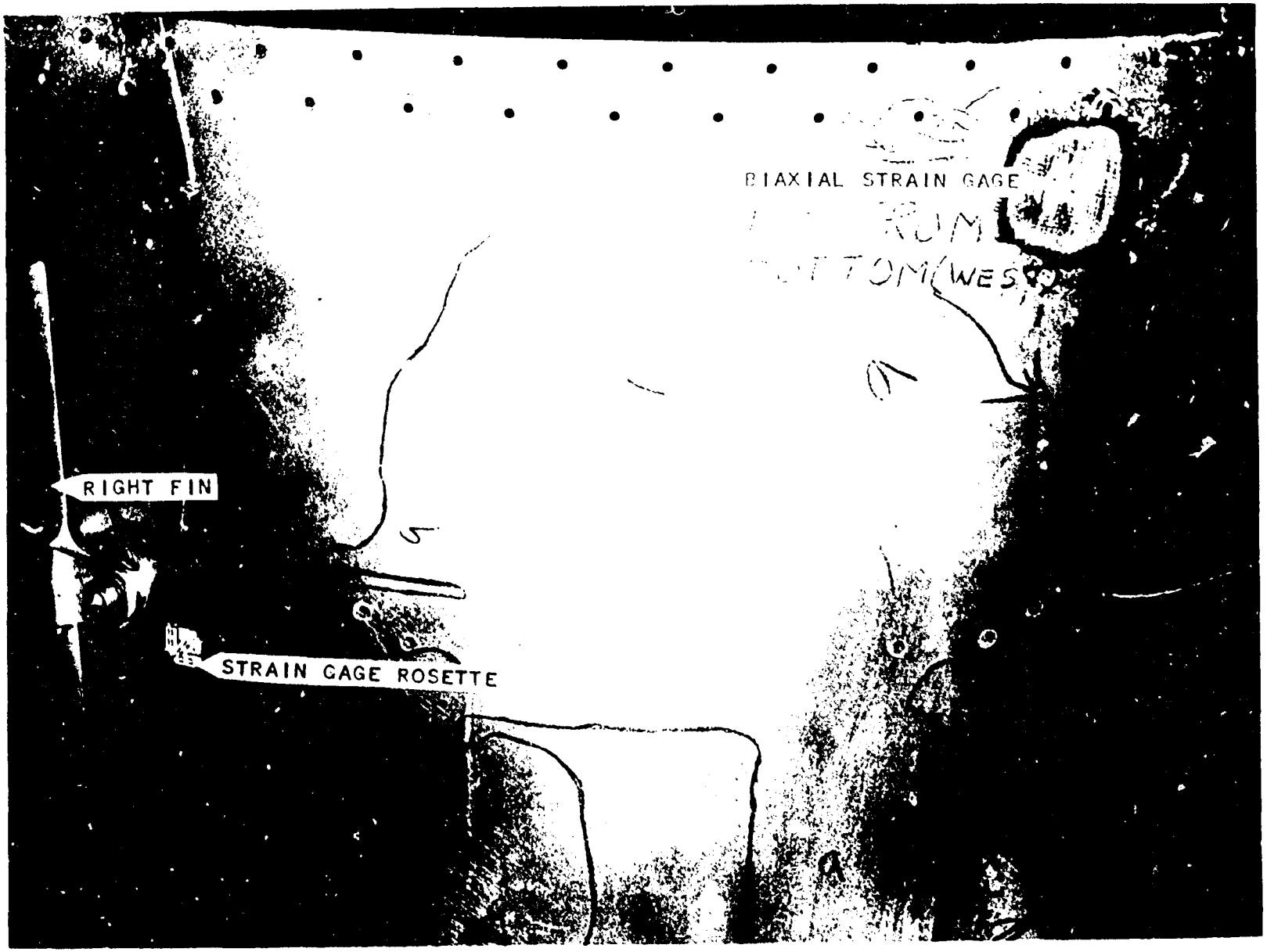

FIG. 6 -- STRAIN GAGE LOCATIONS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TN-789

D # 108906

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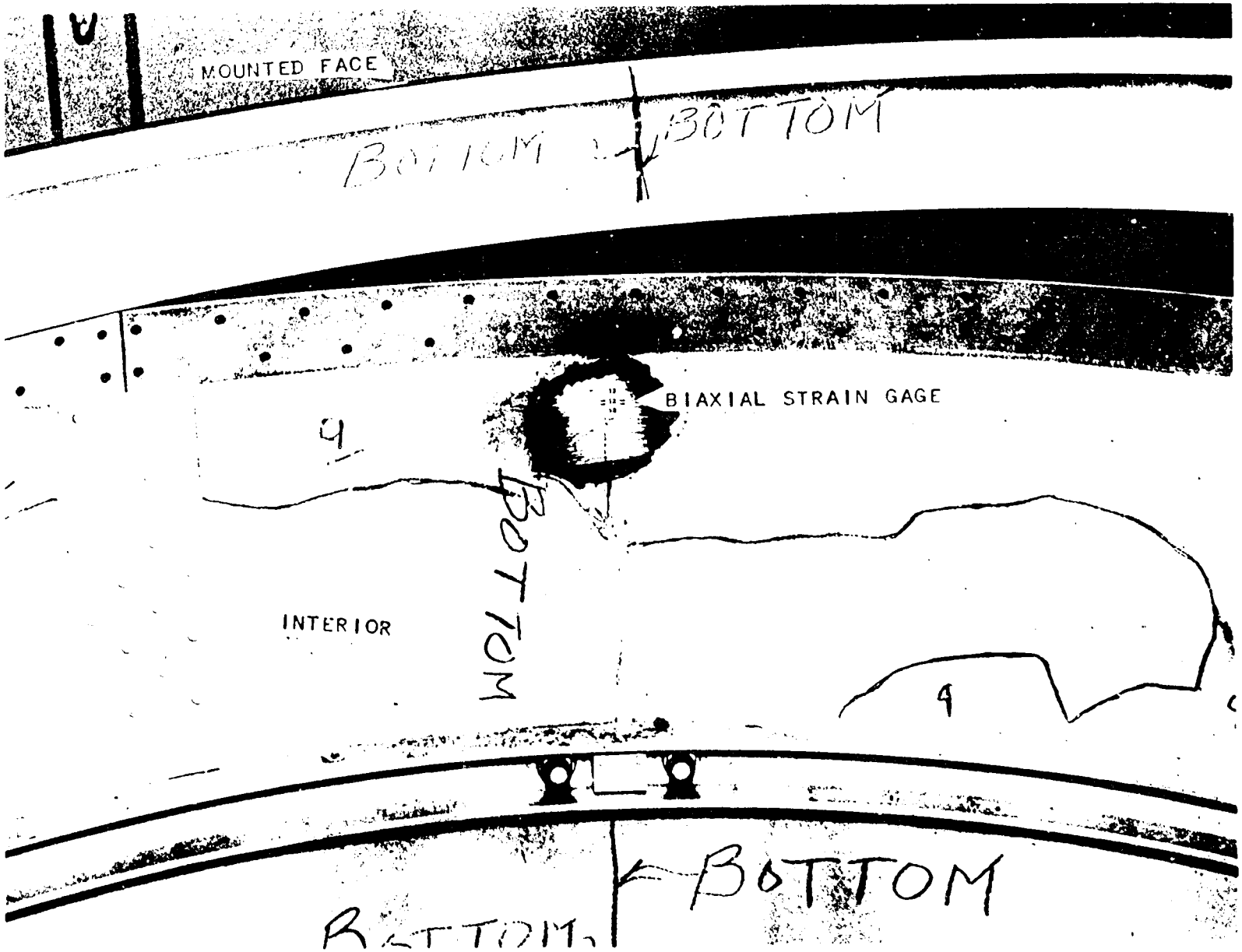

FIG. 7 -- STRAIN GAGE LOCATIONS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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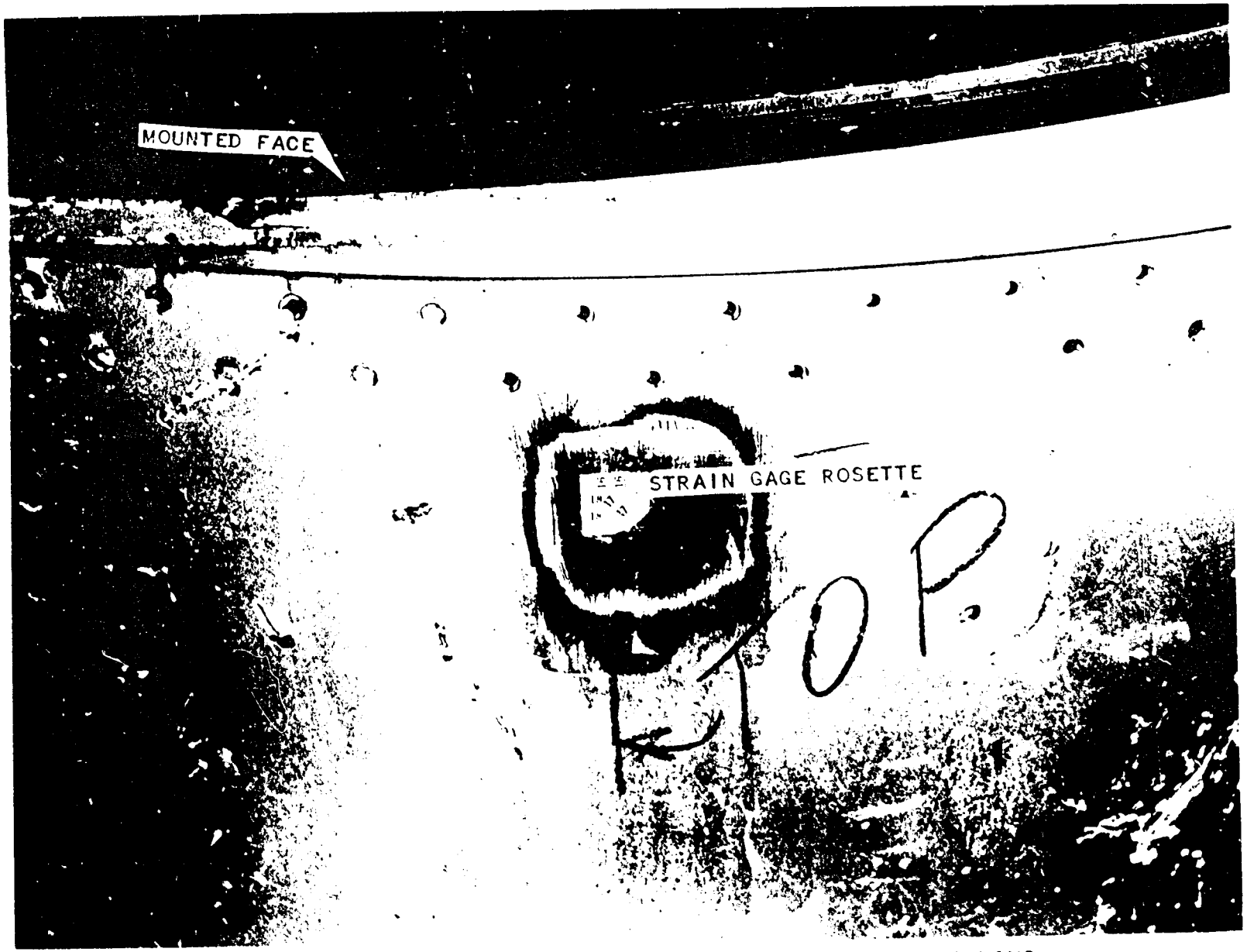

FIG. 8 -- STRAIN GAGE LOCATIONS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TN-789

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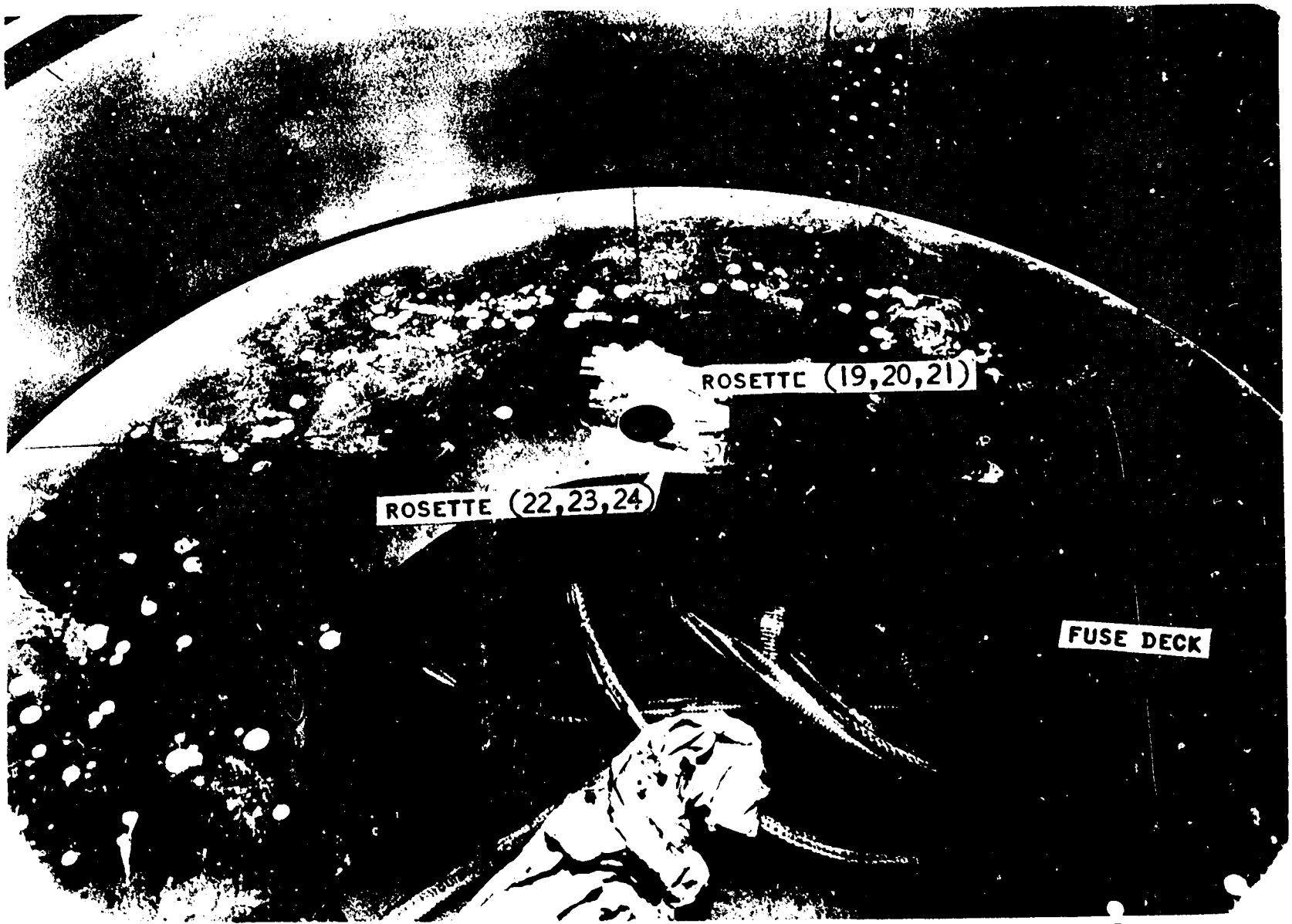

FIG. 9 -- STRAIN GAGE LOCATIONS AND DIAL INDICATOR LOCATIONS FOR DROGUE GUN TEST -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108909

REF. SYM: 1612 (743)
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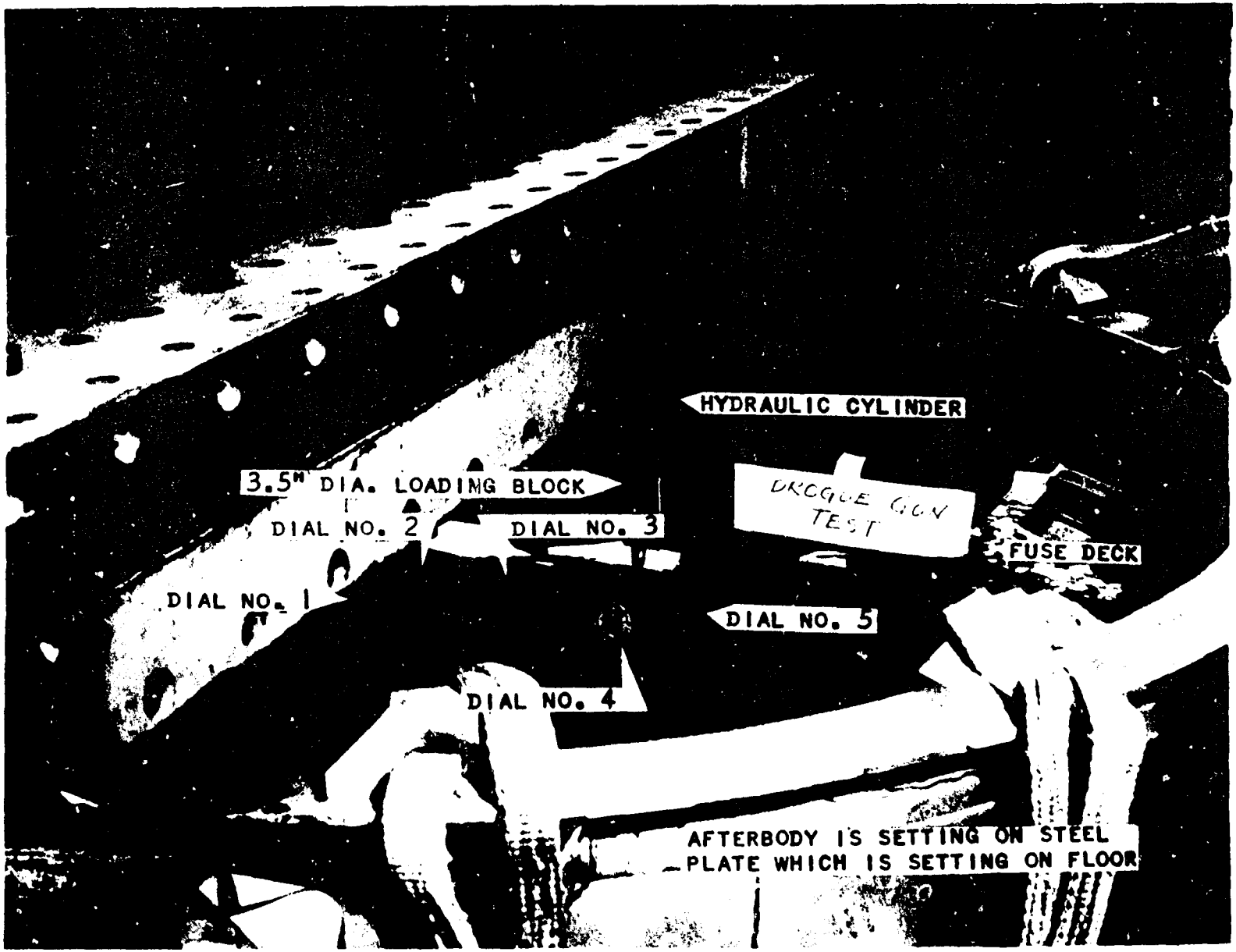

FIG. 10 -- SETUP FOR DROGUE GUN TEST -- STATIC TEST OF TX-41 LONG AFTERBODY.

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REF. SYM: 1612 (743)
PROJECT NO. TM-789

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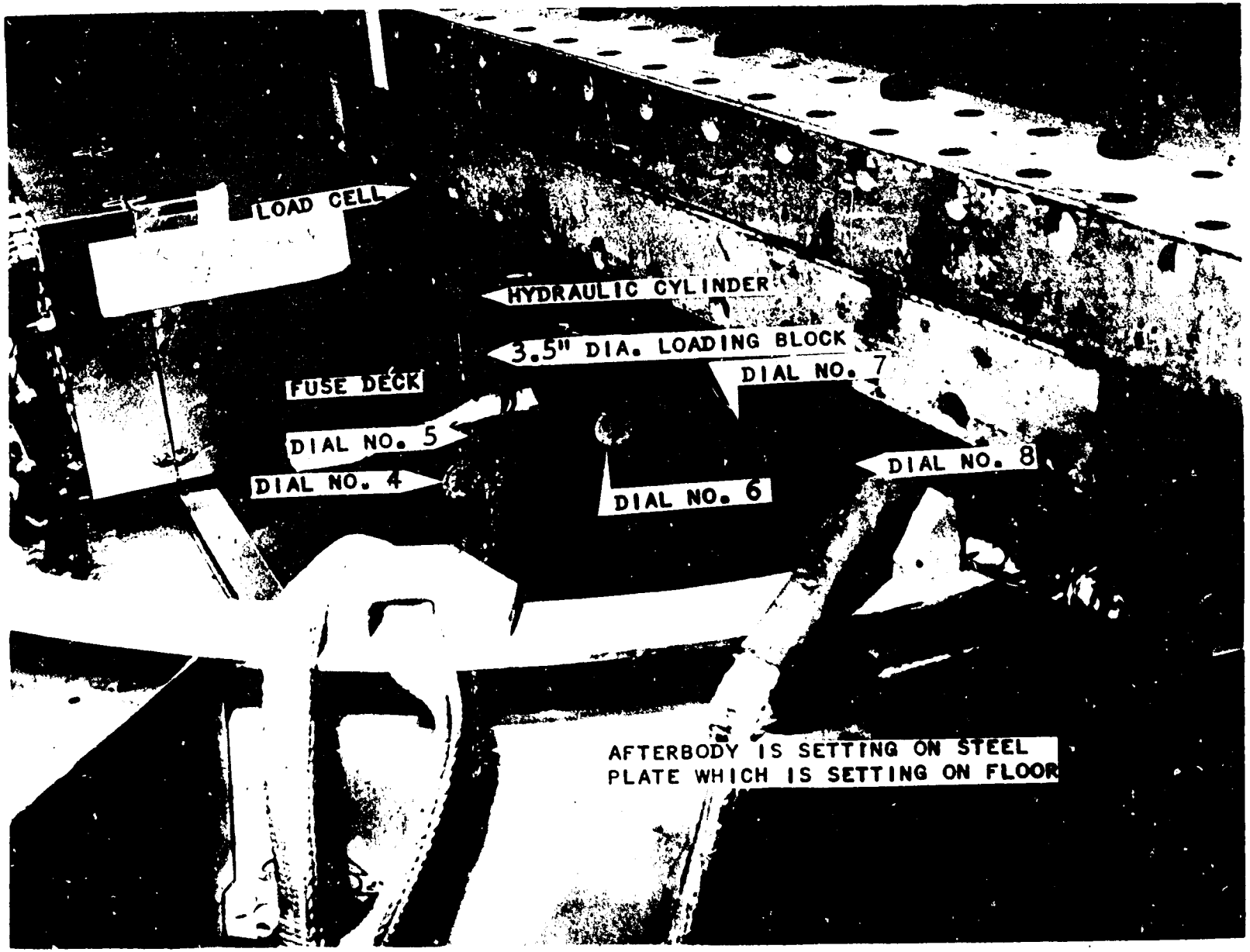

FIG. 11 -- SETUP FOR DROGUE GUN TEST -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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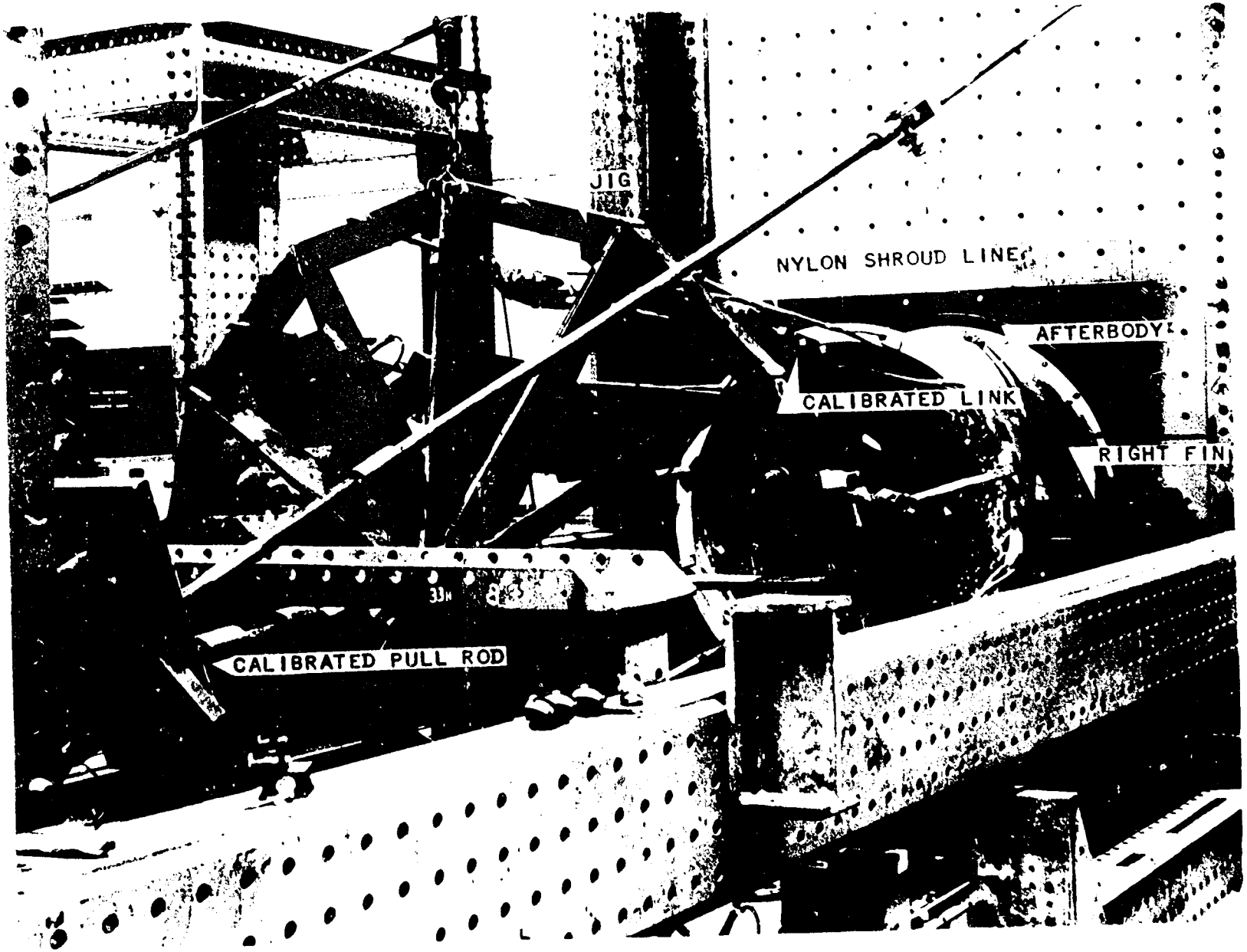

FIG. 12 -- SETUP FOR STRAIGHT-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TN-789

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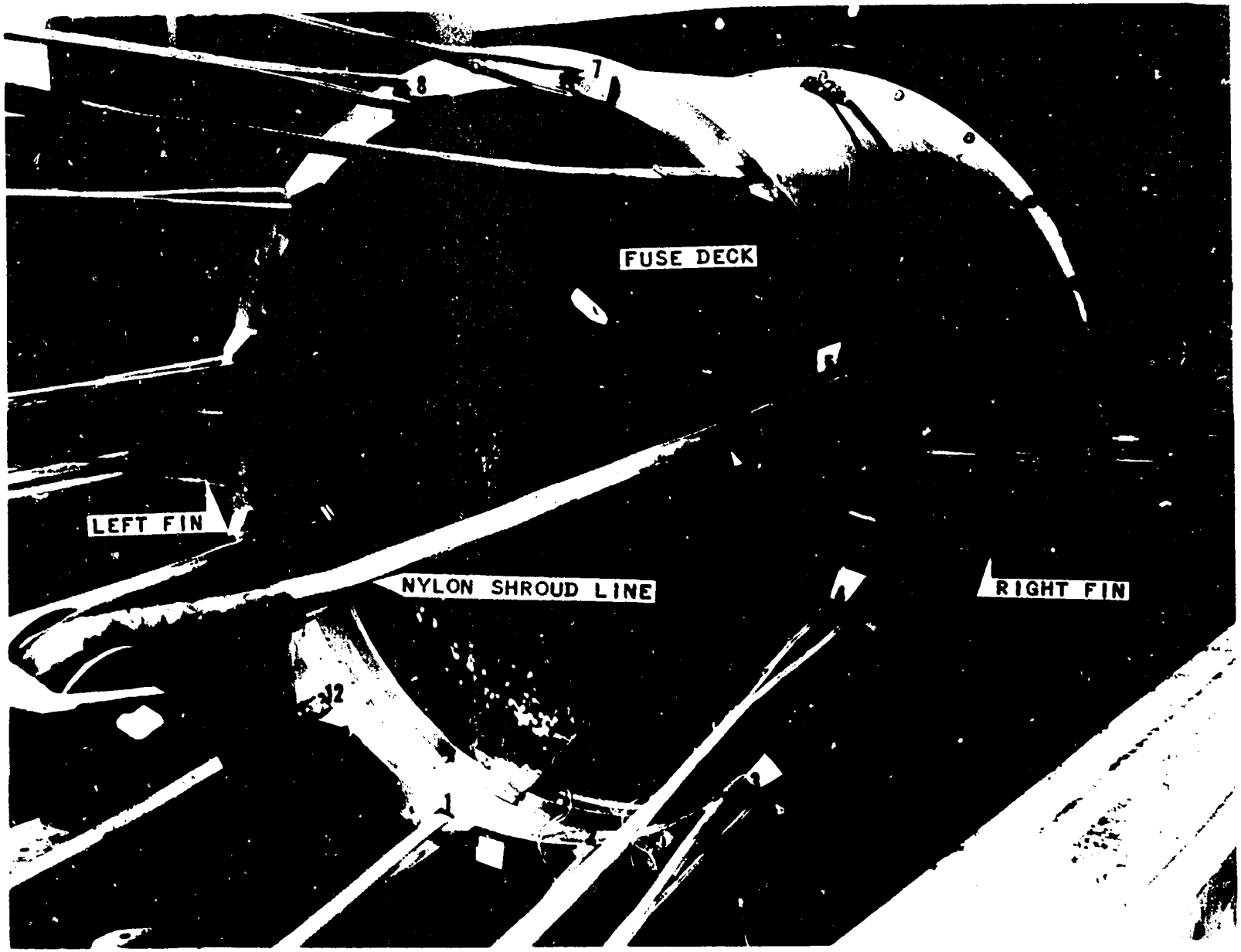

FIG. 13 -- SETUP FOR STRAIGHT-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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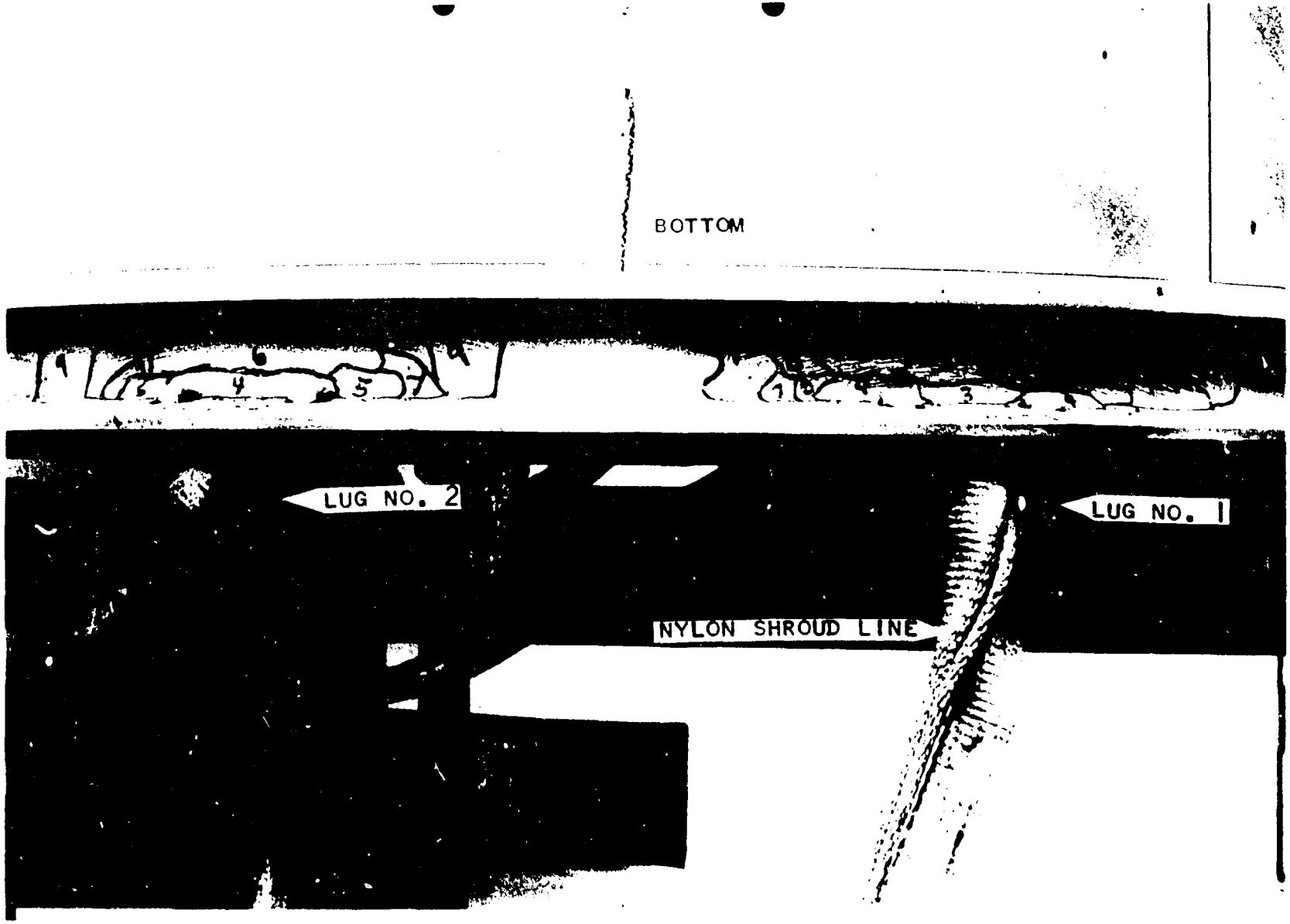

FIG. 14 -- AREAS OF STRESSCOAT CRACKS FOR 24'-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

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REF. SYM: 1612 (743)
PROJECT NO. TN-789

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FIG. 15 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108 915

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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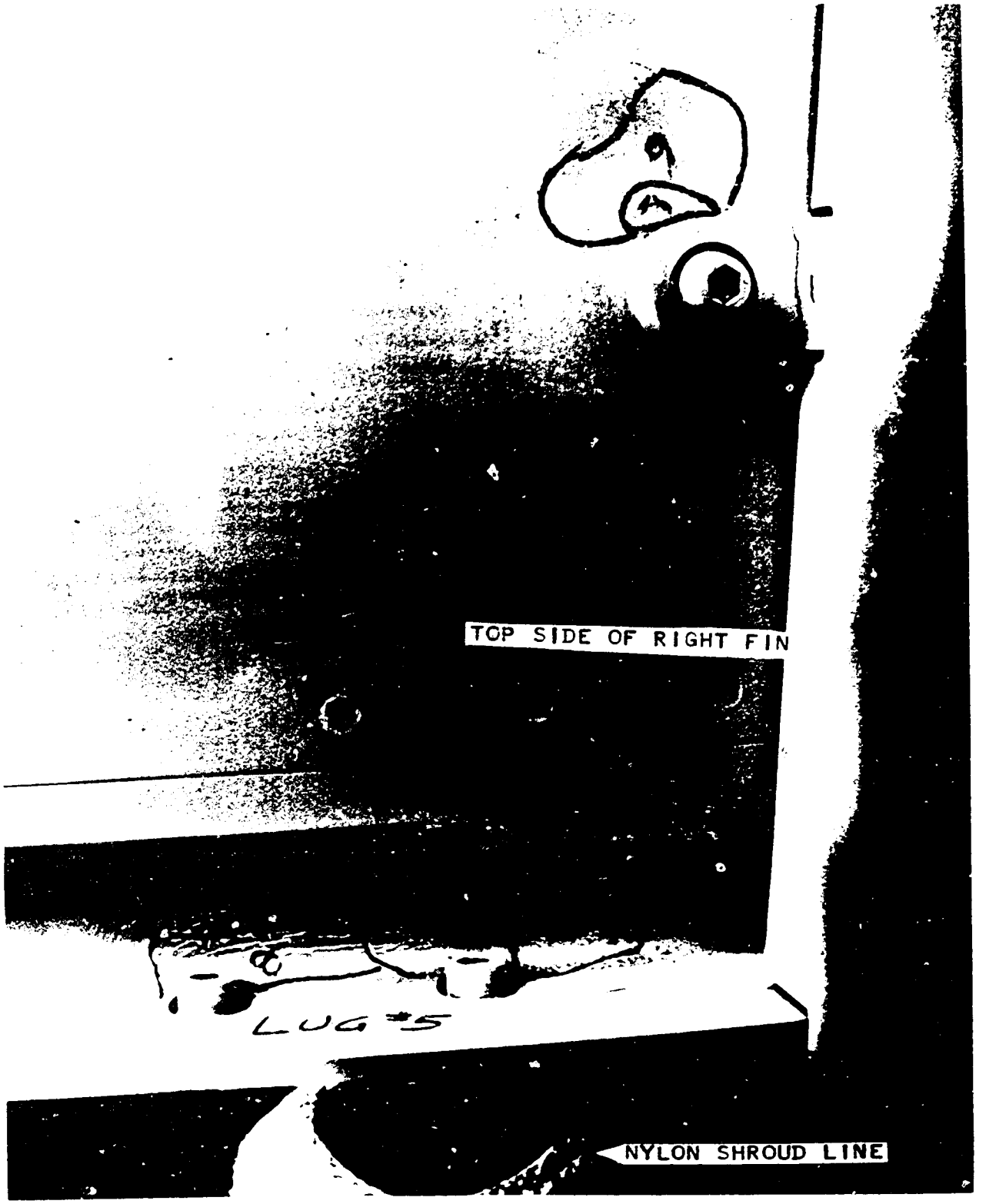

FIG. 16 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108916

REF. SYM: 1612 (743)
PROJECT NO. TN-789

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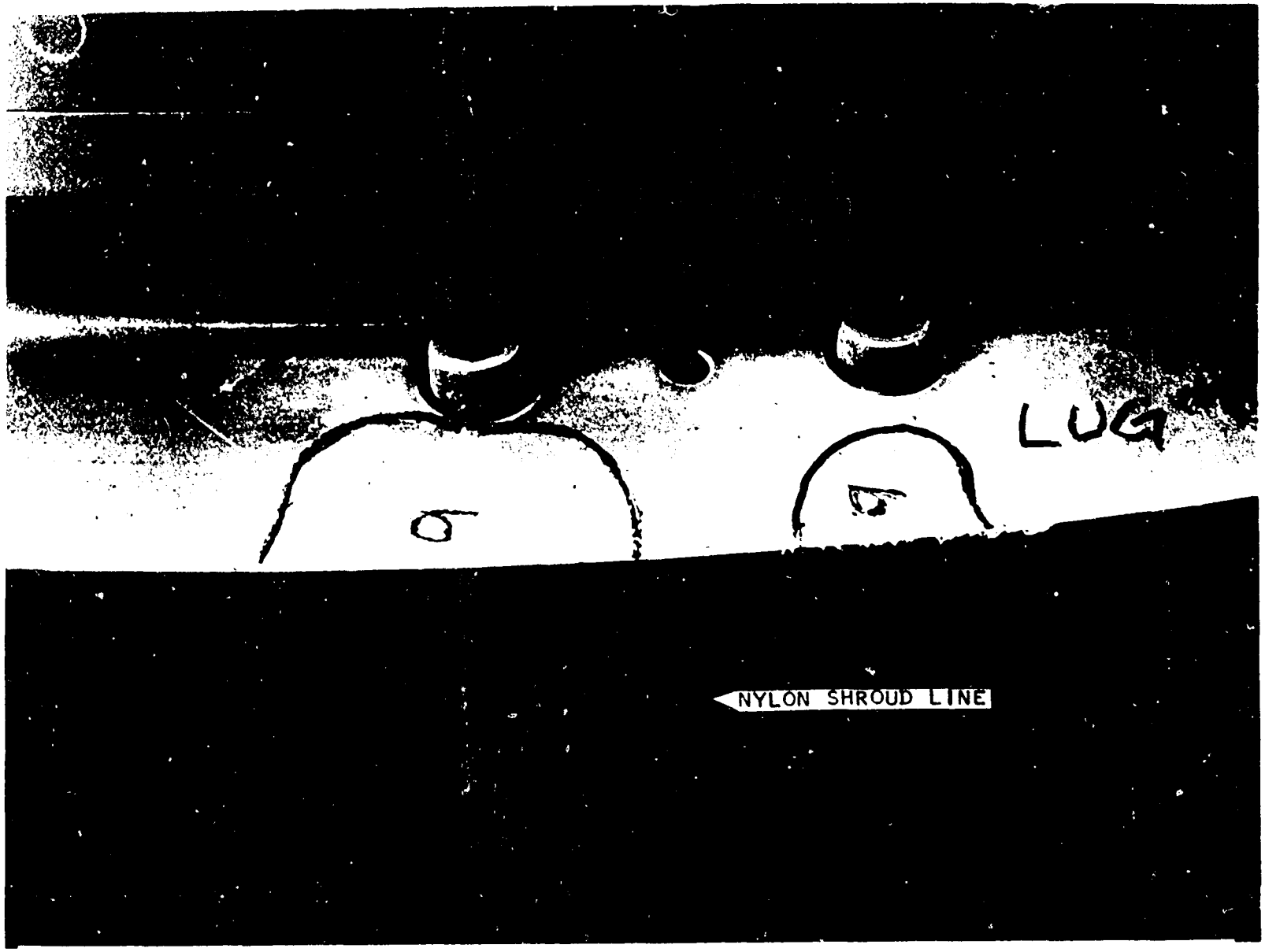

FIG. 17 -- AREAS OF STRESSCOAT CRACKS FOR 24°-FULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

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REF. SYM: 1612 (743)
PROJECT NO. TX-789

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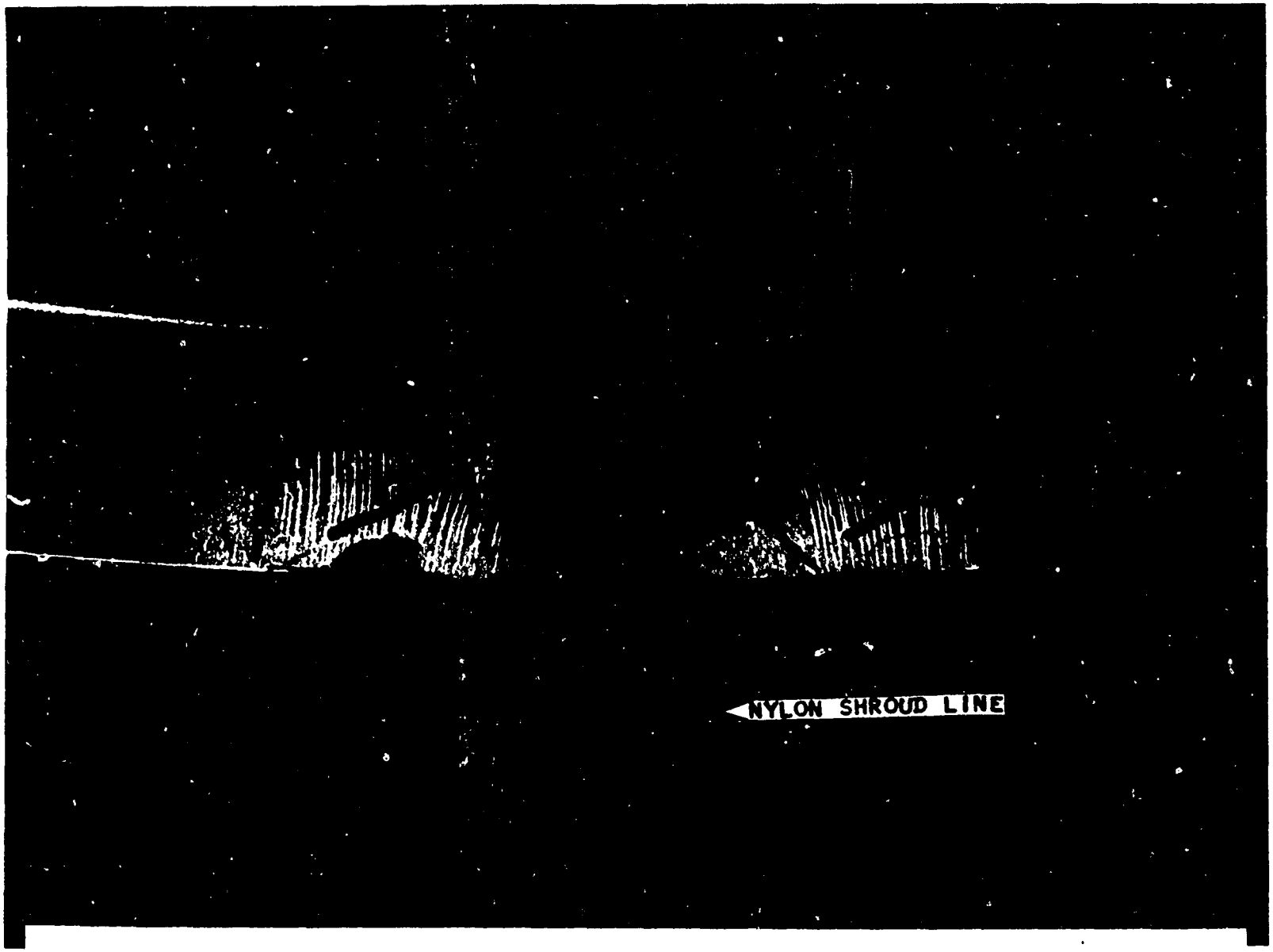

FIG. 18 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D#108918

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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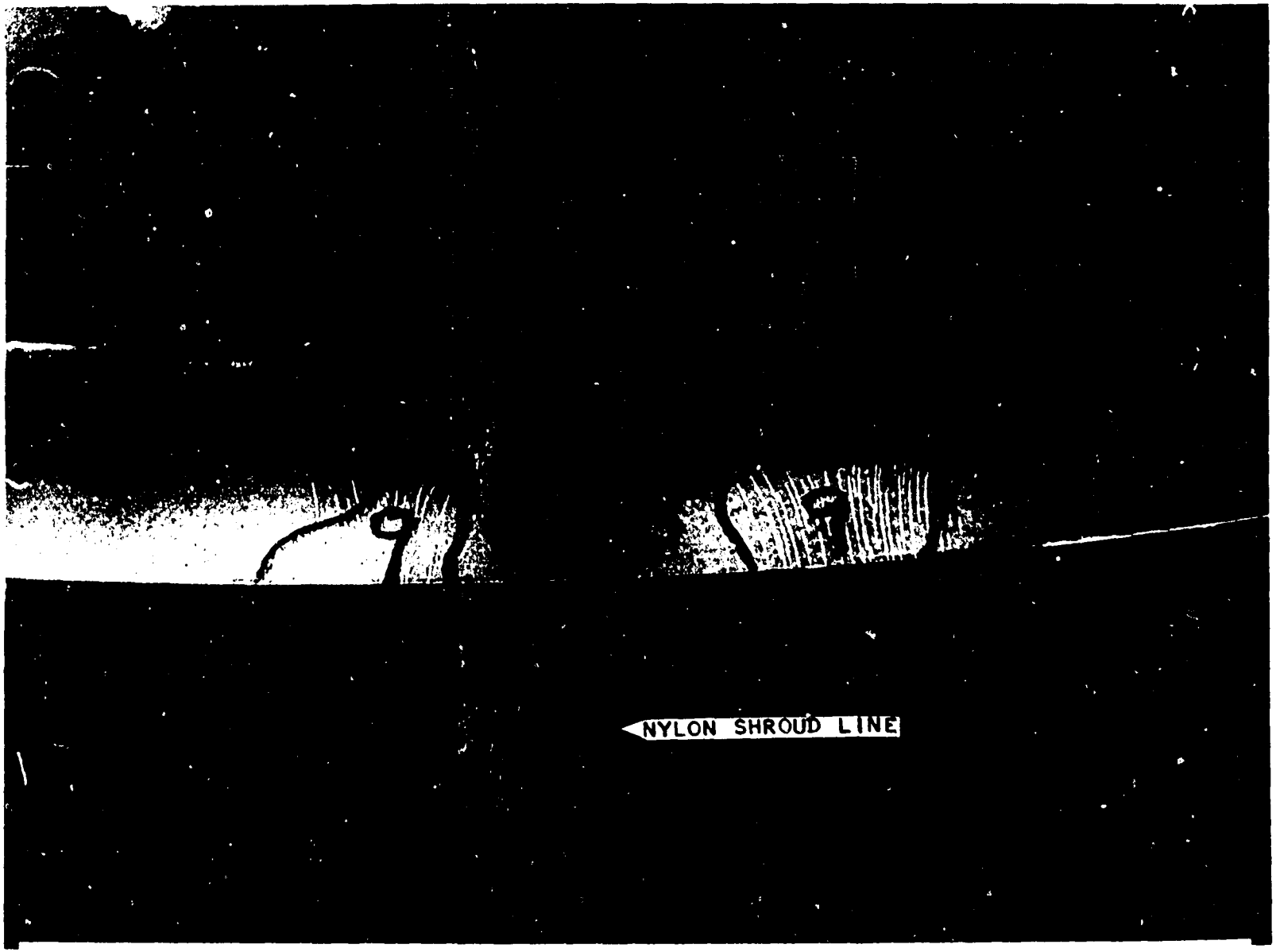

FIG. 19 -- AREAS OF STRESSCOAT CRACKS FOR 24°-FULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

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REF. SYM: 1612 (743)
PROJECT NO. TM-789

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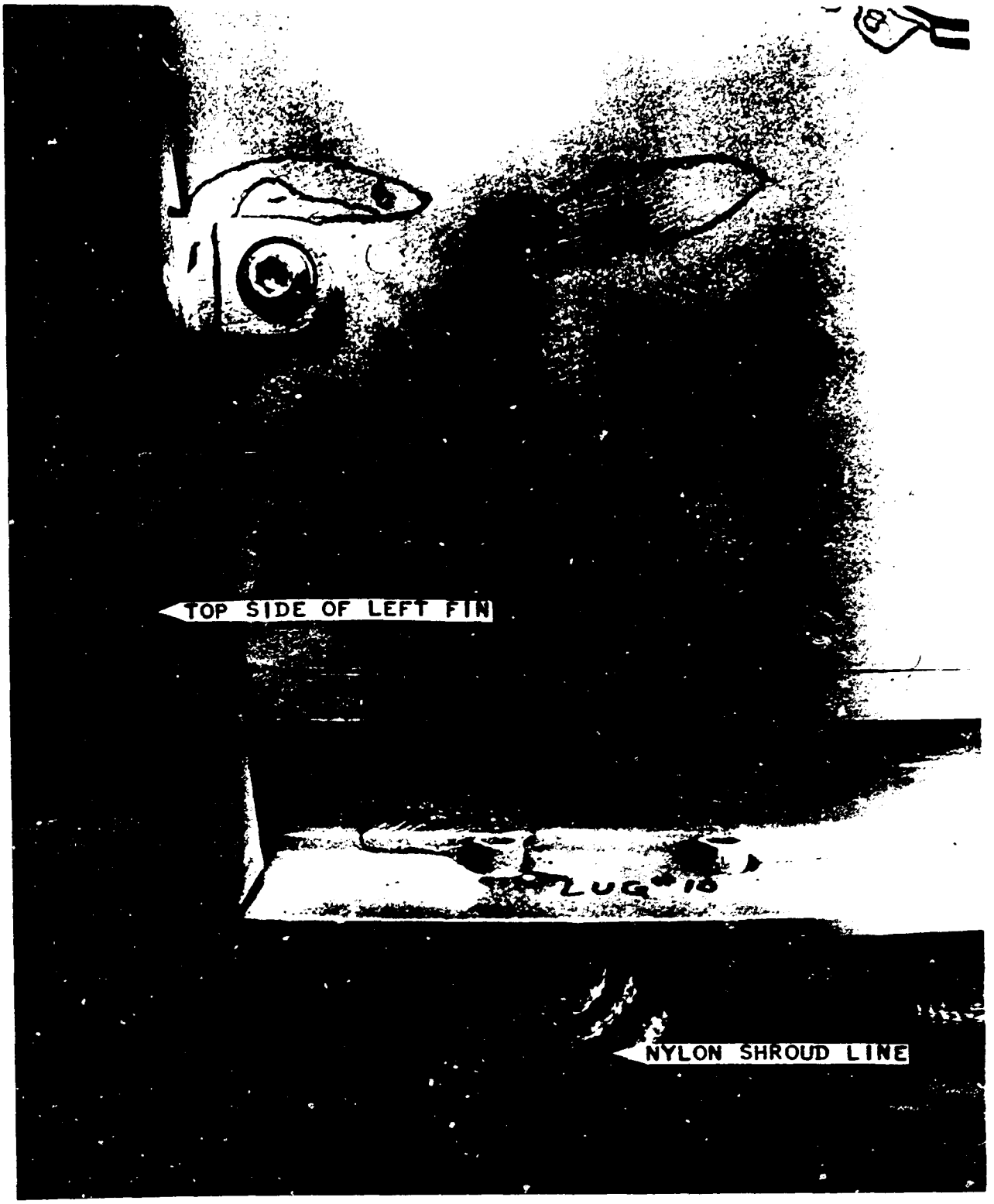

FIG. 20 -- AREAS OF STRESSCOAT CRACKS FOR 24'-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108920

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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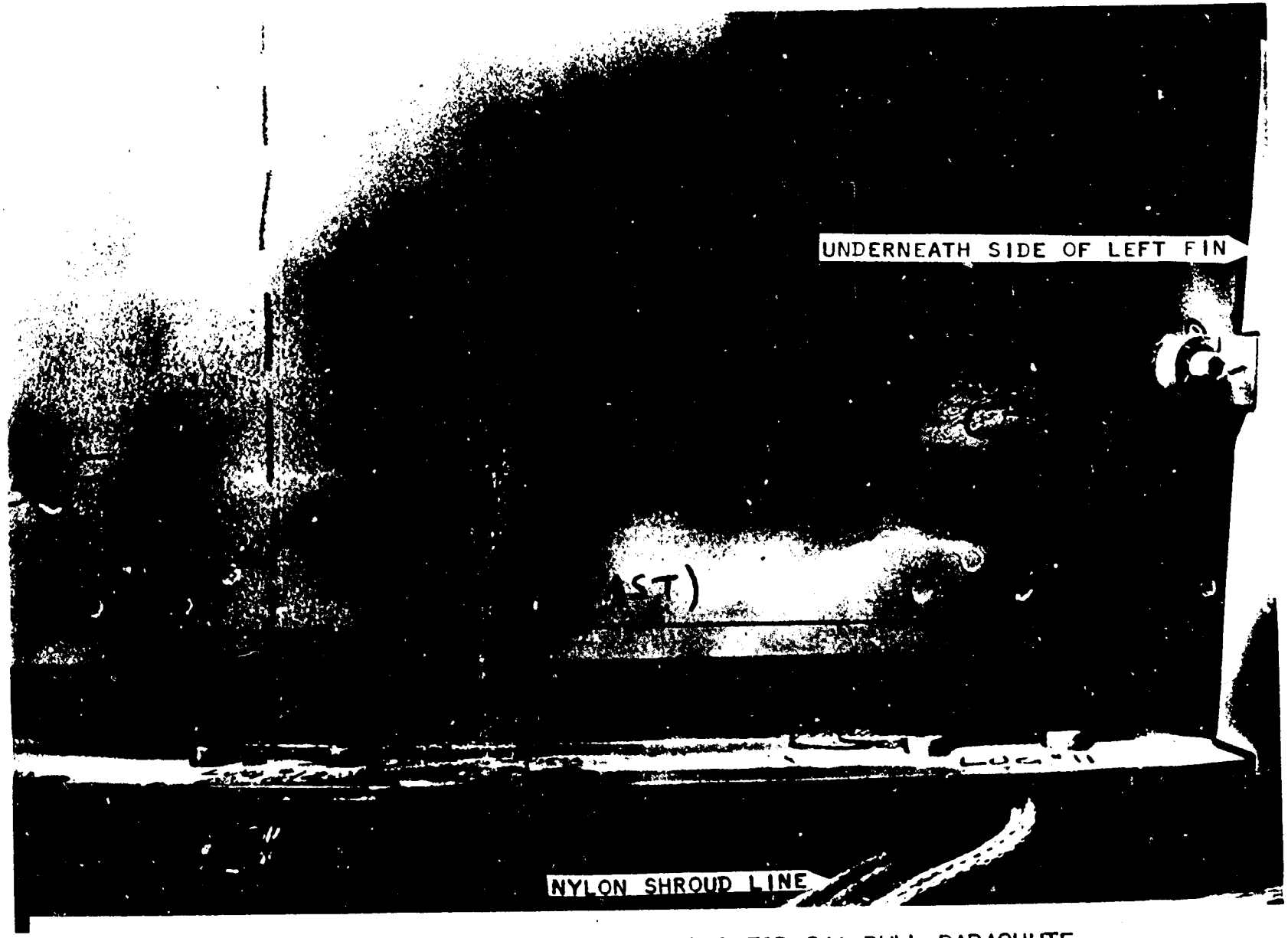

FIG. 21 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108921

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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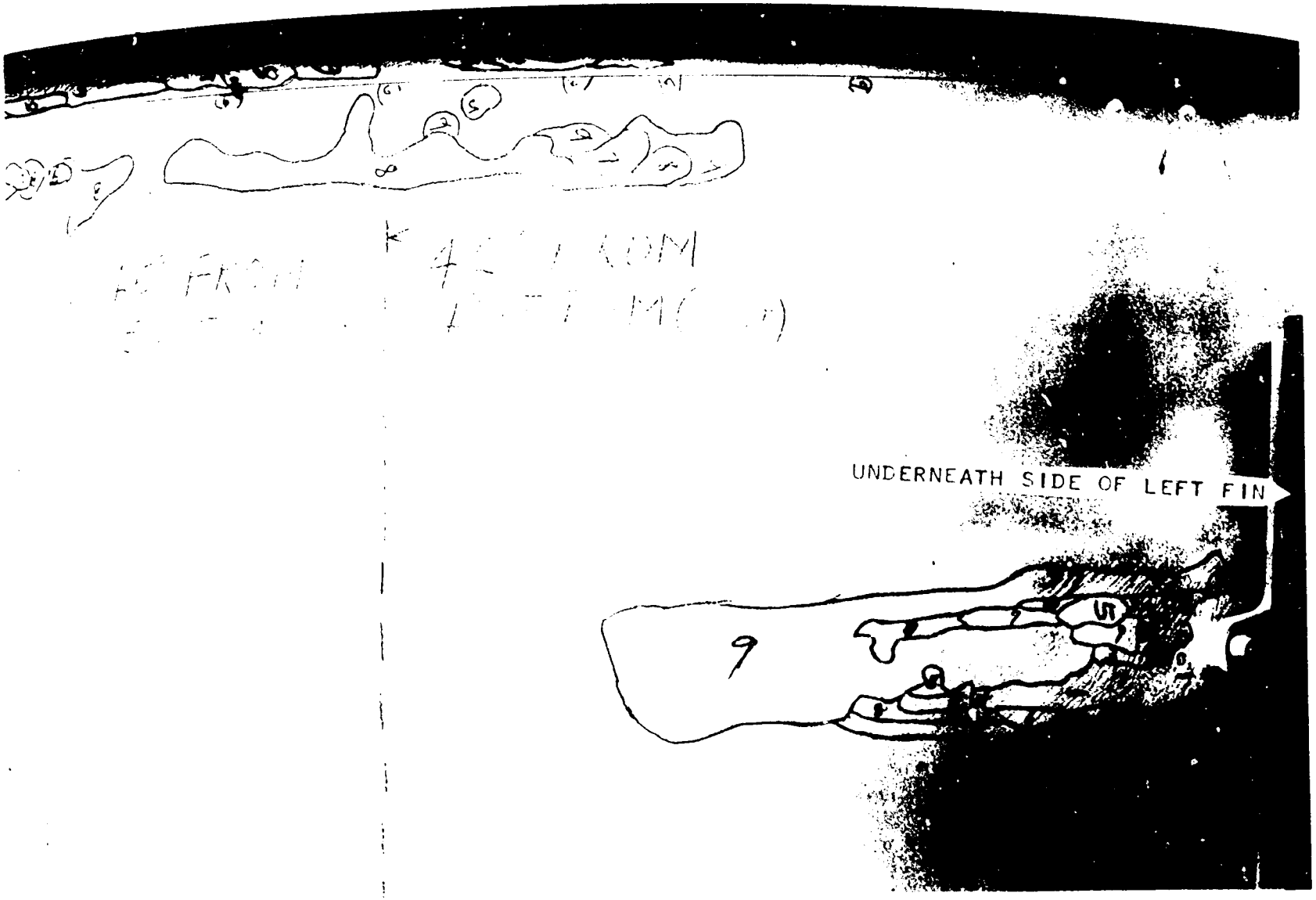

FIG. 22 -- AREAS OF STRESSCOAT CRACKS FOR 24°-FULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108922

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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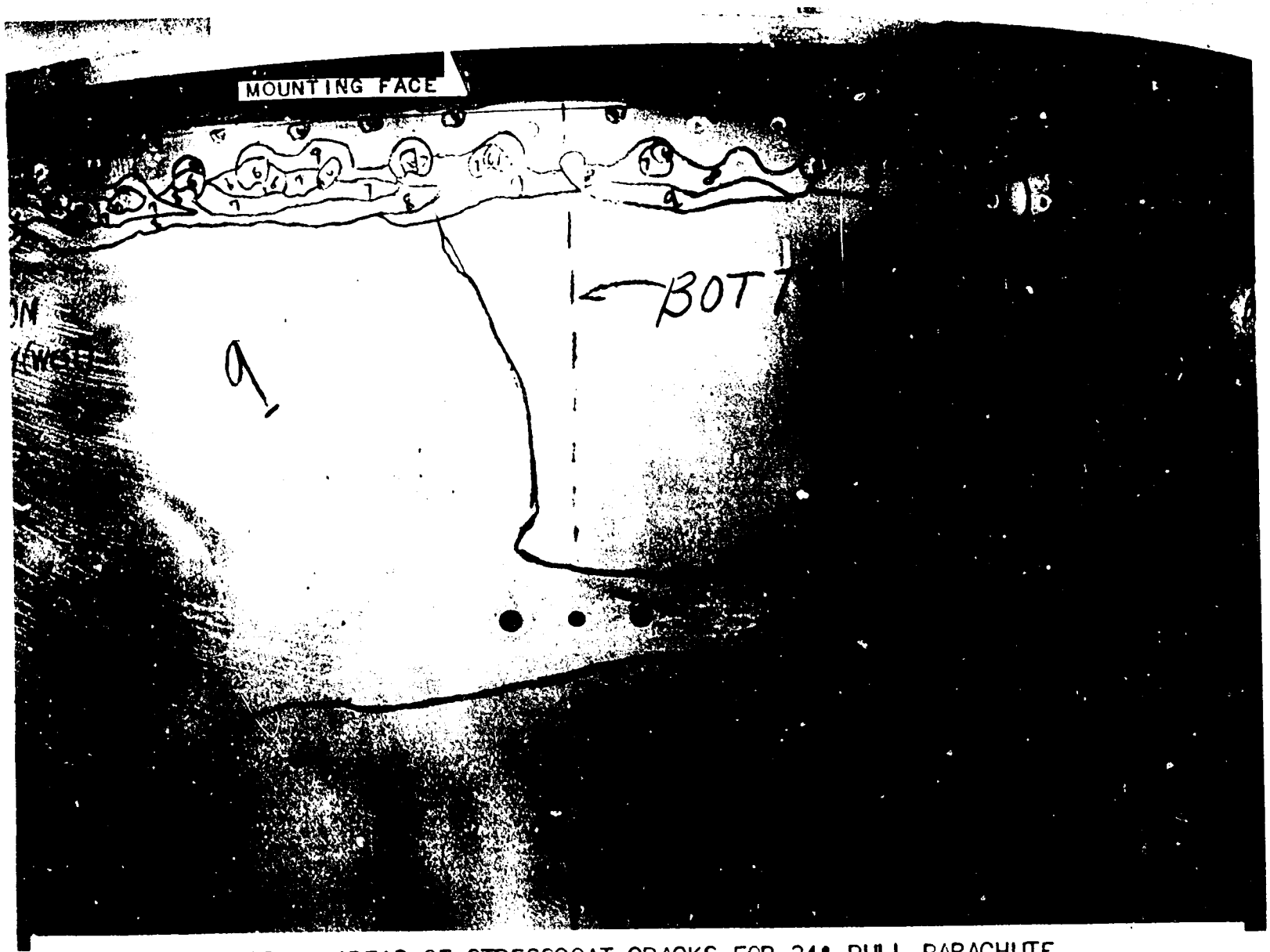

FIG. 23 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108923

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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FIG. 24 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108924

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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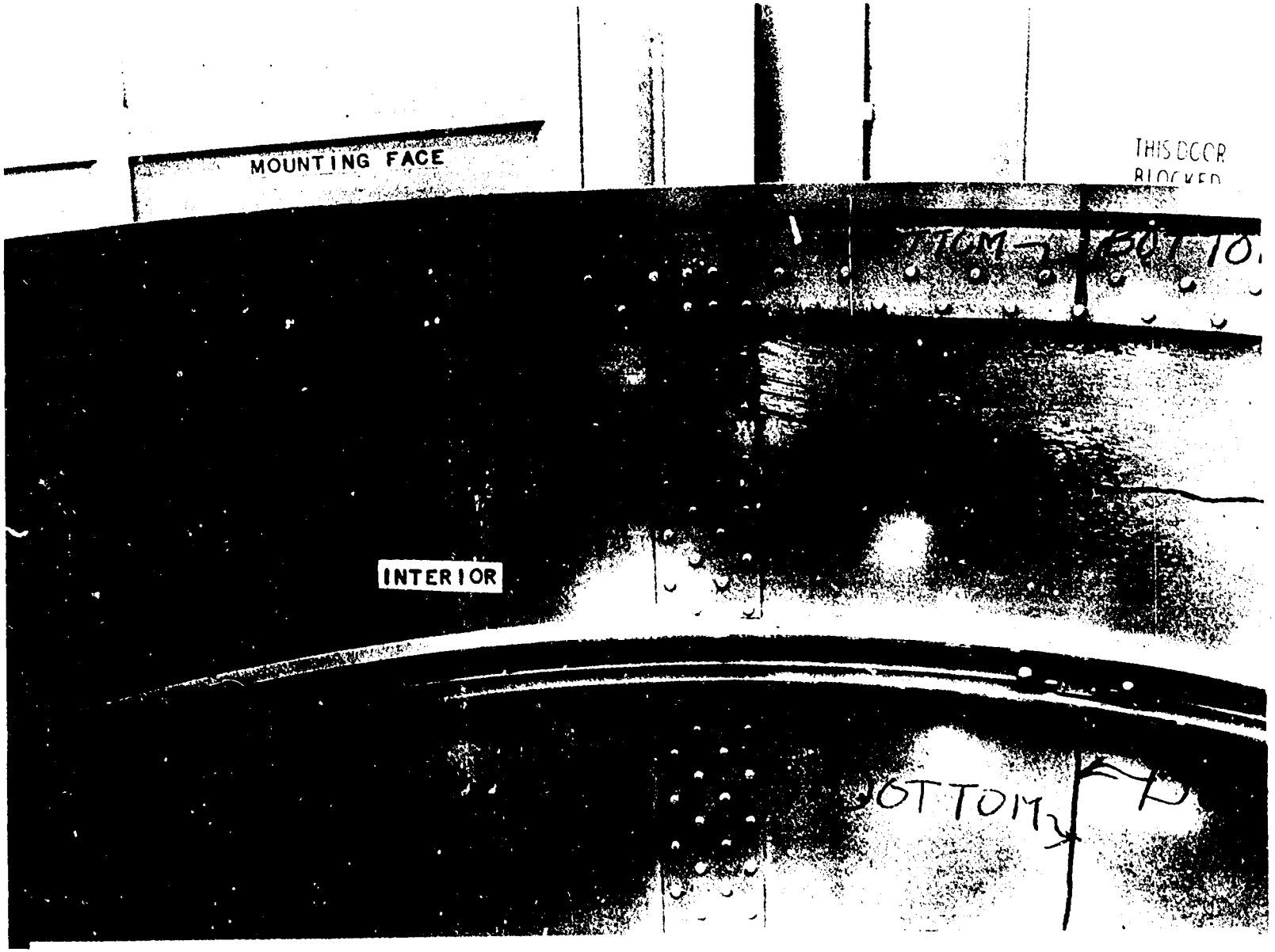

FIG. 25 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108925

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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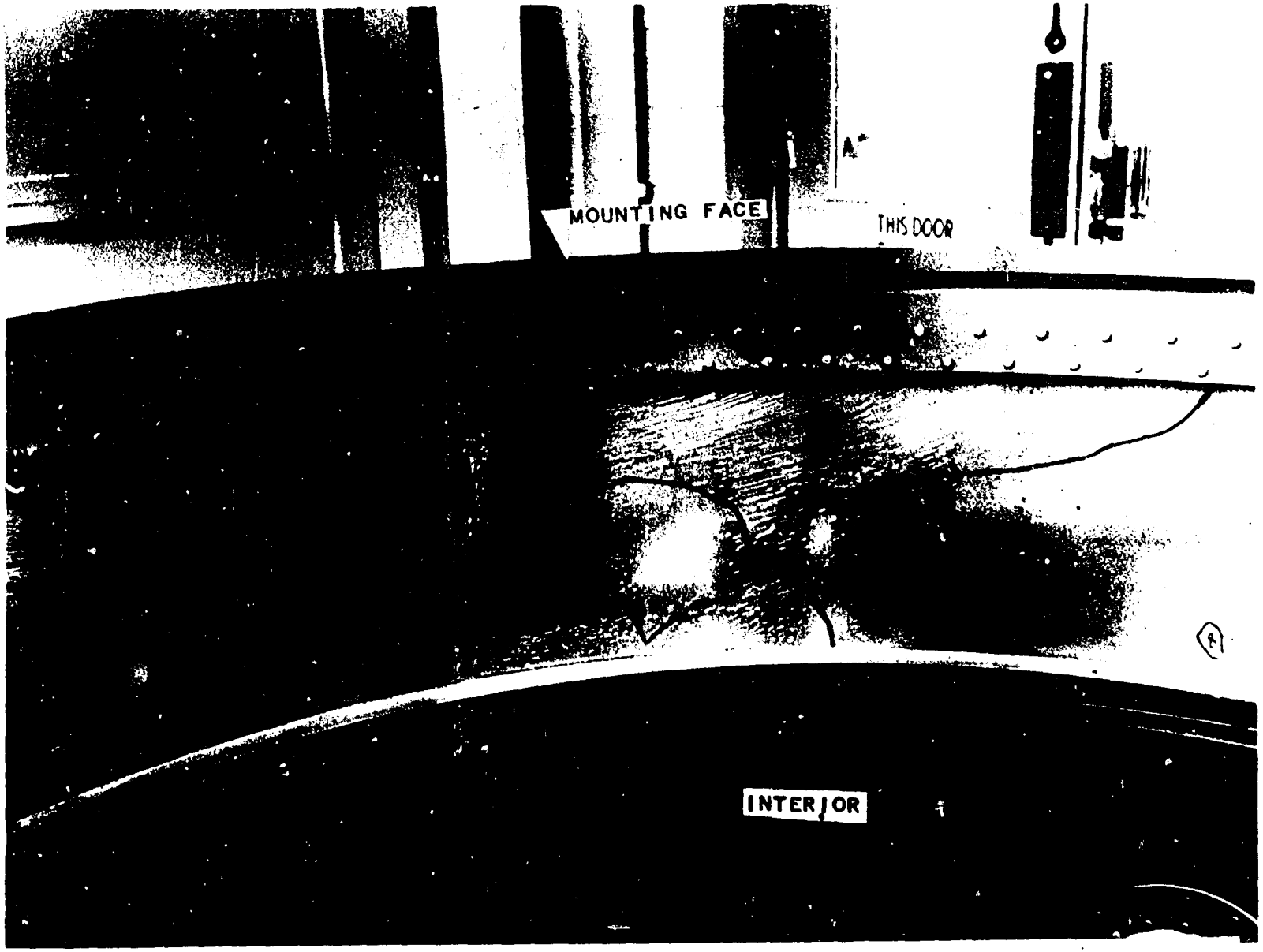

FIG. 26 -- AREAS OF STRESSCOAT CRACKS FOR 24°-PULL PARACHUTE LOADS -- STATIC TEST OF TX-41 LONG AFTERBODY.

D# 108926

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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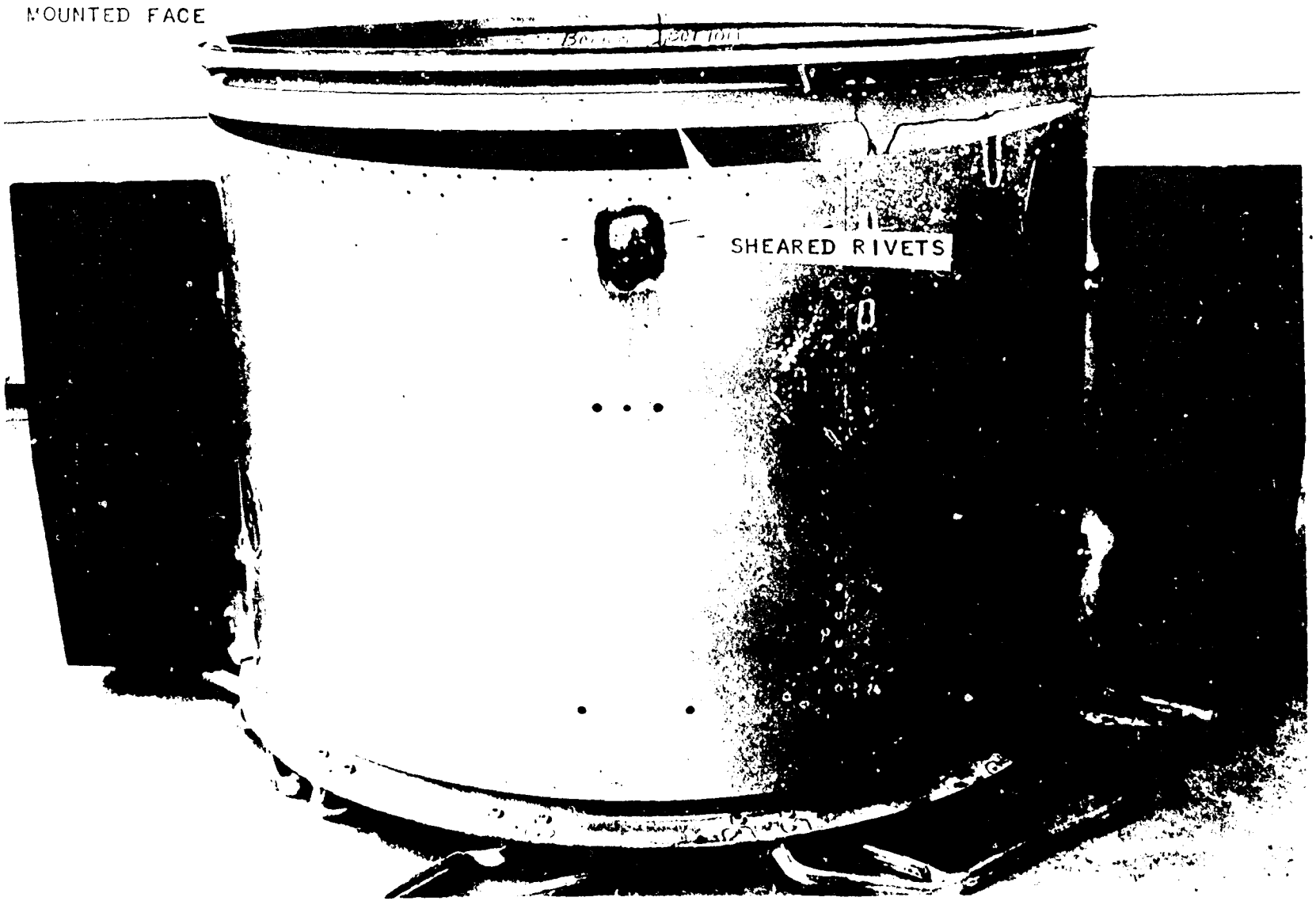

FIG. 27 -- LONG AFTERBODY AFTER FAILURE -- STATIC TEST OF TX-41 LONG AFTERBODY.

REF. SYM: 1612 (743)
PROJECT NO. TM-789

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TABLE I

STRESSCOAT DATA - STATIC TEST OF TX-41 LONG AFTERBODY

Per Cent of Limit Parachute Load	Parachute Load In Pounds	Load Normal To Each Fin Pounds (137.5% L.L.)	Stresscoat Designation Figs. 14 - 26	Stresscoat Sensitivity Microinches Per Inch
20	10,000	2,700	1	800
24	12,000	2,700	2	800
27.8	14,000	2,700	3	800
34.4	17,000	2,700	4	800
[illegible]	20,700	2,700	5	800
49.6	24,000	2,700	6	800
59.6	29,800	2,700	7	800
71.6	35,800	2,700	8	800
86.0	43,000	2,700	9	800
100	50,000	2,700	-	800

TABLE II

DEFLECTION OF FUSE DECK FOR DROGUE GUN TEST - STATIC TEST

OF TX-41 LONG AFTERBODY

Load In Pounds	Deflections in Inches for Following Dial Indicators								
	1	2	3	4	5	6	7	8	9 *
400	.006	.018	.035	.037	.034	.030	.016	.008	.020
800	.013	.035	.063	.073	.070	.061	.034	.018	.039
1200	.022	.054	.094	.112	.107	.093	.053	.027	.059
1600	.031	.075	.127	.151	.145	.126	.072	.036	.078
2000(L.L.)	.040	.095	.158	.190	.184	.159	.091	.045	.096
2200	.046	.105	.174	.213	.206	.176	.102	.050	.105
2400	.051	.115	.191	.232	.220	.191	.112	.055	.114
2600	.057	.127	.211	.255	.245	.211	.123	.060	.124
2800	.061	.135	.225	.272	.261	.225	.131	.064	.134
3000	.066	.147	.244	.295	.284	.243	.143	.070	.144
0	.008	.007	.018	.016	.016	.011	.005	.002	0

* The deflection readings for No. 9 were taken from a reloading of the unit.

TABLE III

MEASURED STRAINS AND COMPUTED STRESSES FOR SIMULATED DROGUE GUN LOADS - STATIC TEST OF TX-41 LONG AFTERBODY

Per Cent of Limit Load	Strains in Microinches per Inch for Following Gages					
	19	20	21	22	23	24
20	-98	172	198	174	31	453
40	-197	246	284	236	-36	549
60	-278	327	359	289	-109	636
80	-428	425	442	353	-182	730
100	-538	480	479	374	-293	779
110	-605	508	495	370	-358	786
120	-664	560	542	403	-394	840
130	-738	644	604	447	-380	900
140	-791	698	649	479	-446	959
150	-866	768	693	517	-480	1010
0	17	101	168	-1	17	233

Per Cent of Limit Load	Computed Maximum and Minimum Principal Stresses - Psi					
	19	20	21	22	23	24
	Su	Sv		Su	Sv	
20	2300	-740		7390	2390	
40	3170	-1820		9740	2500	
60	4030	-2770		11950	2470	
80	4900	-4680		14380	2510	
100	5250	-6170		16070	1910	
110	5390	-7100		16620	1410	
120	5920	-7820		17930	1450	
130	6710	-8800		19050	1950	
140	7250	-9470		20650	1770	
150	7830	-10530		21960	1850	
0	-	-		-	-	

All gages are mounted on 24S-T3 Al.
Su = Maximum principal stress (largest algebraic value)
Sv = Minimum principal stress (smallest algebraic value)
Plus strain or stress is tension
Minus strain or stress is compression

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TABLE IV

MEASURED STRAINS AND COMPUTED STRESSES FOR SIMULATED PARACHUTE LOAD (STRAIGHT PULL) -- STATIC TEST OF TX-41 LONG AFTERBODY

Per Cent of Limit Load	Measured Strains in Microinches per Inch for Following Gages																	
	1 - 2		3 - 4		5 - 6		7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18		
20	0	28	18	67	18	96	-9	146	-3	25	-10	-39	-15	21	50	-2	-15	36
40	4	62	36	133	51	192	-9	323	5	56	-11	-29	-26	38	101	-5	-29	77
60	8	96	46	204	98	304	-7	497	24	79	-10	-17	-39	54	154	-6	-41	115
80	16	131	54	279	127	415	-7	680	42	78	-4	-4	-51	66	207	-4	-49	150
100	27	170	61	371	166	569	-7	846	46	88	5	11	-63	79	260	0	-55	182
0	17	-19	-36	-1	17	7	-10	-9	19	4	-1	-79	-3	-1	7	14	8	-23
100	26	167	61	368	164	538	-9	847	47	82	0	-3	-64	78	257	1	-53	181
110	31	181	64	406	182	584	-8	918	47	88	6	1	-69	84	282	4	-57	187
120	38	195	65	443	202	641	-7	1030	46	94	8	5	-76	94	312	8	-62	211
130	43	209	65	476	221	695	-7	1090	46	101	15	9	-82	103	341	13	-66	224
137.5	46	223	66	505	236	740	-5	1160	46	107	17	13	-87	111	365	17	-71	234
0	28	-47	-44	-27	21	8	-12	-48	23	-4	6	-110	-3	-1	1	33	14	-45

Per Cent of Limit Load	Computed Maximum and Minimum Principal Stresses - psi																	
	1 - 2		3 - 4		5 - 6		7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18		
	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv		Su	Sv	
20	330	110	830	460	1210	600	1690	490	280	70	-280	-500	530	10		560	-30	
40	750	300	1640	920	2480	1380	3790	1200	680	290	-250	-390	1090	80		1170	-50	
60	1170	480	2480	1310	4000	2390	5860	1930	1030	610	-190	-240	1660	130		1750	-50	
80	1620	720	3360	1690	5430	3190	8030	2680	1100	810	-60	-60	2240	190		2280	-10	
100	2120	1010	4420	2120	7420	4280	10,000	3350	1230	900	150	100	2830	250		2780	50	
0	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	
100	2090	990	4390	2110	7040	4130	10,000	3330	1160	890	-40	-10	2790	220		2770	70	
110	2270	1100	4830	2290	7660	4530	10,850	3630	1230	910	40	80	3070	260		3030	100	
120	2470	1240	5250	2450	8420	4990	12,180	4090	1300	930	90	120	3390	290		3290	130	
130	2650	1360	5620	2570	9130	5440	12,890	4340	1380	960	170	210	3710	330		3530	160	
137.5	2830	1450	5960	2700	9730	5800	13,730	4650	1460	980	220	250	3970	360		3740	180	
0	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	

Gages 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 are mounted on 24S-T3 aluminum.
Gages 3 and 4 are mounted on 61S-T6 aluminum forging.
Gages 5, 6, 7, and 8 are mounted on 14S-T6 aluminum forging.

Su = Maximum principal stress (largest algebraic value).
Sv = Minimum principal stress (smallest algebraic value).

Plus strain or stress is tension.
Minus strain or stress is compression.

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TABLE V

MEASURED STRAINS AND COMPUTED STRESSES FOR SIMULATED PARACHUTE LOAD (24° PULL) — STATIC TEST OF TX-41 LONG AFTERBODY

Per Cent of Limit Load	Measured Strains in Microinches per Inch for Following Gages																	
	1 - 2		3 - 4		5 - 6		7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18		
20	-23	42	18	112	-2	250	-22	257	-91	129	-41	-63	239	326	72	8	28	-28
40	-29	90	50	197	4	506	-29	542	-141	238	-46	-33	231	405	124	6	31	-34
60	-26	136	63	331	16	753	-33	806	-175	337	-46	-12	217	475	181	2	33	-36
80	-10	180	80	470	30	1010	-30	1080	-190	440	-30	15	220	560	250	10	40	-30
100	10	240	80	620	50	1230	-40	1300	-190	520	-20	30	210	640	320	10	40	-30
0	-16	-3	-61	-25	-5	16	-20	-43	12	-33	-38	-113	-9	5	-10	7	-2	-7
100	0	240	80	610	50	1220	-40	1280	-190	520	-10	35	200	640	320	10	40	-40
110	10	280	80	700	50	1340	-40	1390	-190	560	-10	50	200	670	360	10	40	-40
120	10	320	90	790	60	1450	-50	1490	-190	590	0	75	180	710	390	10	40	-40
130	20	350	100	860	60	1550	-50	1580	-190	620	0	85	180	750	420	10	50	-40
140	30	380	120	930	70	1670	-50	1680	-200	650	0	95	180	790	460	10	40	-50
150	30	410	130	1010	70	1770	-50	1750	-210	680	10	125	170	830	490	20	40	-50
160	40	440	140	1070	80	1880	-40	1810	-220	710	10	135	170	870	520	20	50	-60
167	40	450	130	1110	80	1940	-40	1830	-230	720	10	150	170	910	550	20	50	-60
180	40	470	150	1220	80	2080	-30	1910	-240	750	10	170	160	950	600	20	50	-60
190	Unit Failed																	

Per Cent of Limit Load	Computed Maximum and Minimum Principal Stresses - psi																	
	1 - 2		3 - 4		5 - 6		7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18		
	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv	Su	Sv		Su	Sv	
20	410	-100	1400	670	2960	990	2960	780	1160	-560	-740	-910	3930	920		160	-470	
40	950	20	2540	1390	6010	2100	6310	1850	2250	-710	-580	-680	4620	910		170	-610	
60	1510	240	4180	2090	8990	3240	9420	2880	3280	-710	-330	-590	5300	910		160	-690	
80	2090	610	5900	2850	12,090	4450	12,680	4030	4440	-470	60	-300	6250	1080		270	-580	
100	2890	1090	7670	3460	14,780	5580	15,250	4800	5390	-140	270	-120	7140	1130		270	-580	
0	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	
100	2840	970	7554	3420	14,660	5540	15,010	4720	5390	-140	370	20	7110	1000		250	-710	
110	3360	1250	8620	3790	16,080	6030	16,380	5160	5870	20	550	80	7530	1210		250	-710	
120	3830	1420	9730	4270	17,430	6590	17,460	5450	6220	140	890	300	7920	970		250	-710	
130	4230	1660	10,680	4670	18,610	7000	18,520	5820	6580	263	1010	350	8370	980		320	-790	
140	4630	1900	11,510	5190	20,080	7600	19,710	6220	6890	270	1130	390	8880	1100		220	-840	
150	4980	2020	12,500	5640	21,260	8010	20,540	6510	7210	270	1520	630	9310	980		280	-750	
160	5380	2260	13,250	6000	22,610	8570	21,290	6870	7520	270	1640	670	9770	990		330	-950	
167	5500	2300	13,680	6040	23,320	8820	21,530	6950	7600	190	1820	730	10,230	1000		330	-950	
180	5700	2380	15,070	6730	24,980	9380	22,520	7390	7920	200	2060	810	10,770	1080		330	-950	
190	Unit Failed.																	

Gages 1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 are mounted on 24S-T3 aluminum.
Gages 3 and 4 are mounted on 61S-T6 aluminum forging.
Gages 5, 6, 7, and 8 are mounted on 14S-T6 aluminum forging.

Su = Maximum principal stress (largest algebraic value).
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