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11/22/60

NOV 22 1960

TX-43, 3-2
T-17197
13.734.00

UNCLASSIFIED

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 6/10/98
Authority: ADC
Name: [illegible]
2nd Review Date: 6/16/98
Authority: ADD
Name: WC Layne
Information (Check Boxes)
Classification Retained
Classification Changed to: UNCL
Contains No DOE Classified Information
Contains UCNI
Comments:
DECLASSIFY

TO: DISTRIBUTION

Re: Static Test of TX-43 Nose

PROGRAM 0 4 3 6 0
CATEGORY 3 0 2 3 3
ORG. 0 0 0
DATE 6 0 6 5

Summary of Test

A static test was performed on the TX-43 nose assembly in order to determine the structural adequacy of the modified design of the MC-1040 Explosive Bolt. Two loads were applied: a side load (7600 pounds design limit) applied 6 inches forward of the joint between the nose section and the MC-996, and an axial load (8000 pounds design limit) applied to the nose section. Failure of the MC-996 occurred at 197 percent design limit load. This load had bent, but not broken, the MC-1040 bolt.

Object of Test

The object of this test was to determine the structural adequacy of the modified design of the MC-1040 Explosive Bolt. The test unit consisted of: the TX-43 nose cap and spike, the MC-1040 explosive bolt, the MC-996 forward frame section, and a dummy nose section. Details of the MC-1040 are given in Dwg. No. 810790.

Authorization for Test

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The test was performed in accordance with a Work Order Authorization from W. W. Joseph, 7122-2, to D. Williams, 2613, dated August 15, 1960. Mr. Joseph was the consultant.

Equipment and Instrumentation

The following equipment was used in the test:

2 - Miller hydraulic cylinders, 4-inch diameter bore, 25,000 pounds capacity in tension, serial numbers N-3418 and PB-2503.

2 - Baldwin 20,000 pound load cells, serial numbers 2245 and 2399.

Load Maintainer, Channel Numbers 11 and 12.

TX-43
3-2

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
ORIGINAL DOCUMENT DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
Emelda Selph 6/18/98
DOCUMENT CLASSIFICATION MARKING & DATE
WC Layne 6-18-98
VERIFICATION MARKING & DATE
AUTHORITY: W.C Layne
RECORD ID: 98SN2425
DATED: 6/16/98

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The following instrumentation was used:

6 - Starrett dial indicators, 0.001 inch least graduation, 1.000 inch full range.

Starrett feeler gages.

Procedure

The TX-43 nose cap and spike were first mounted to the static jig back plate by six each 1/2 - 13 bolts. The MC-1040 explosive bolt was then inserted, according to the following procedure: the bolt was inserted into the spike, and the cap screw in the spike tightened; a special nut was turned on the end of the bolt and torqued to approximately 40 foot-pounds; two set screws in the spike were tightened onto the bolt; the special nut was removed.

The MC-996 was next mounted, with the threaded fastening cap being torqued on the MC-1040 to about 40 foot-pounds. The assembly was completed by mounting the dummy nose section to the MC-996.

Two loads were applied, a side load and an axial load. The side load was applied by a 3/8 inch wire cable sling looped about the dummy nose section 6 inches forward of the joint with the MC-996. The axial load was applied by a 5/8 - 11 bolt threaded into the nose section. This setup is shown in Figure 1.

Loads were applied in increments of 10 percent of design limit load until failure. Design limit loads were 7800 pounds for the side load and 8000 pounds for the axial load.

Dial indicator readings were taken at each increment of load up through 130 percent. Dial indicator locations are shown in Figures 2 and 3. In addition, the gap at the joint between the nose cap and the MC-996 was measured with feeler gages at each increment up through 100 percent.

Results

Displacements obtained from dial indicator and feeler gage measurements are presented in Table I.

Failure of the test unit occurred at 197 percent design limit load, and consisted of fracture of the cap in the MC-996 forward fuze section. This cap after failure is shown in Figure 4, and Figure 5 shows the condition of the MC-996 after failure.

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The MC-1040 explosive bolt was found to be bent but not broken following test unit failure. Figure 6 shows the bolt disassembled after the test.

W. M. Sigmon

W. M. SIGMON - 7322-1

H. W. Nunez

H. W. NUNEZ - 7321-5

Approved by: R. S. HOOPER - 7321-5

WMS:7322-1:dc

Encs: Figures 1 thru 6
Table I

Distribution
L. A. Dunn, 7122
Attn: W. W. Joseph
J. M. Wiesen, 1442
E. H. Copeland, 7321
D. S. Dreesen, 7522
R. E. Smeltzer, 3421-3

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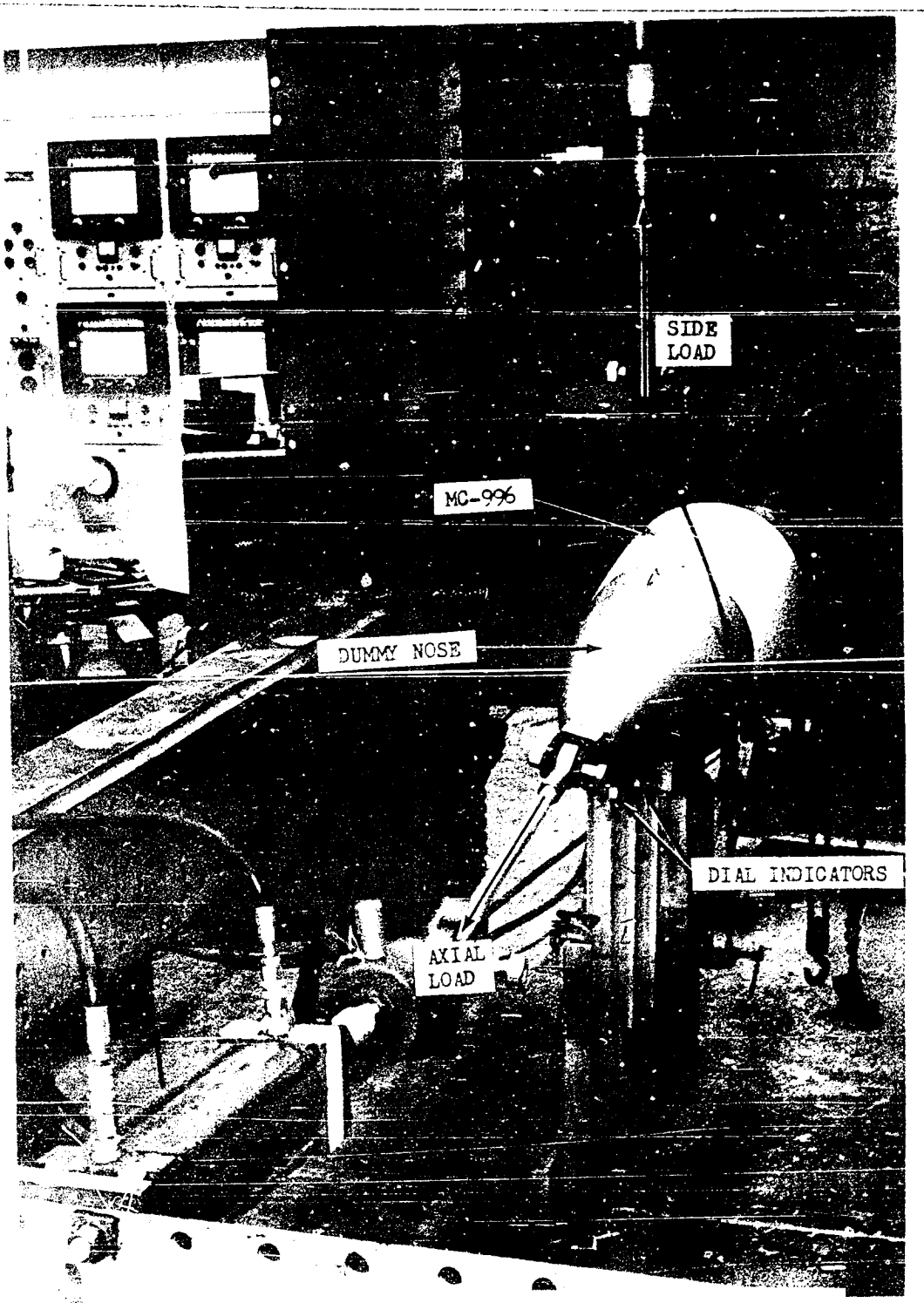

FIG. 1 - SETUP FOR STATIC TEST OF TX-43 NOSE.

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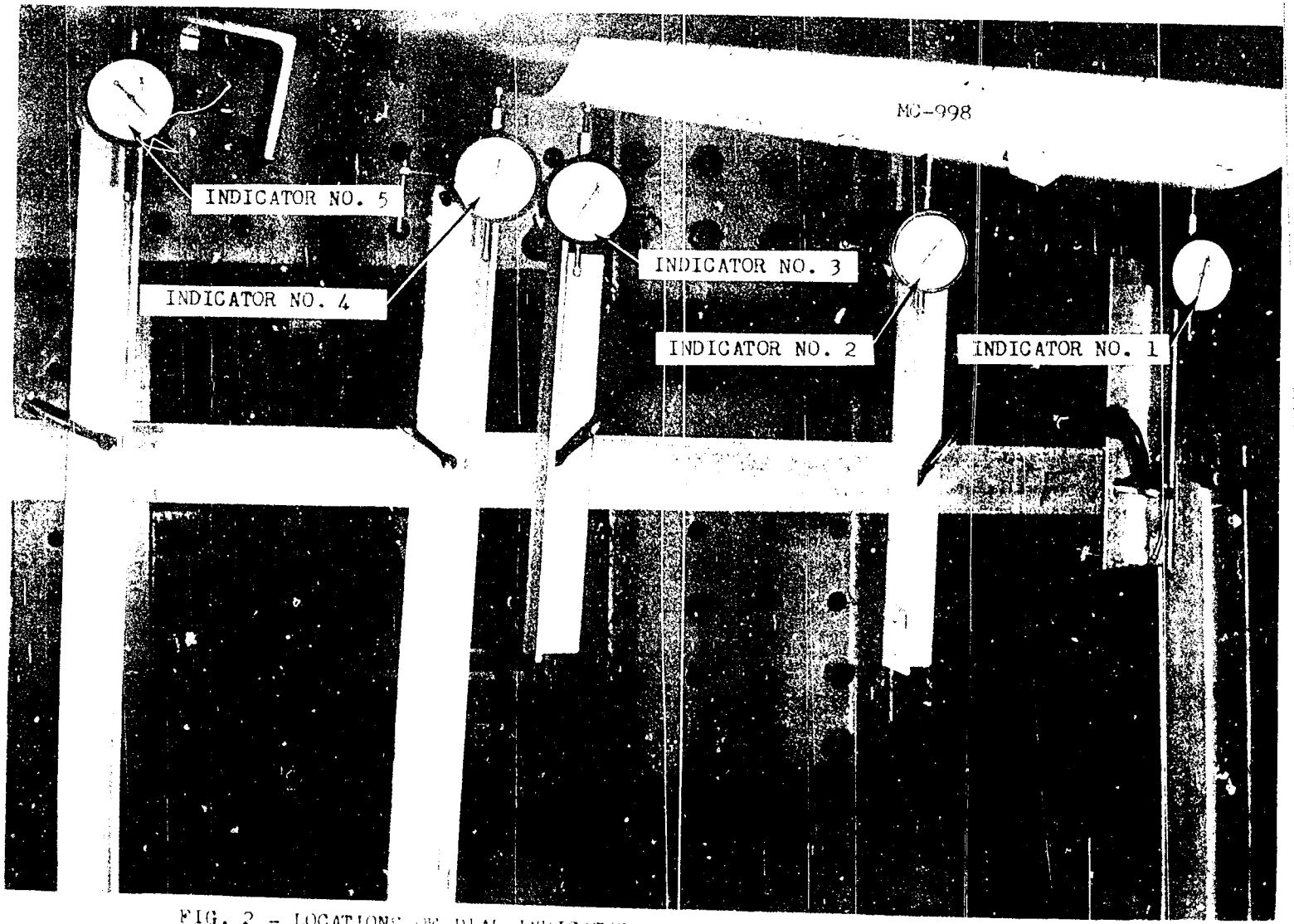

FIG. 2 - LOCATIONS OF DIAL INDICATORS -- STATIC TEST OF TX-43 NOSE.

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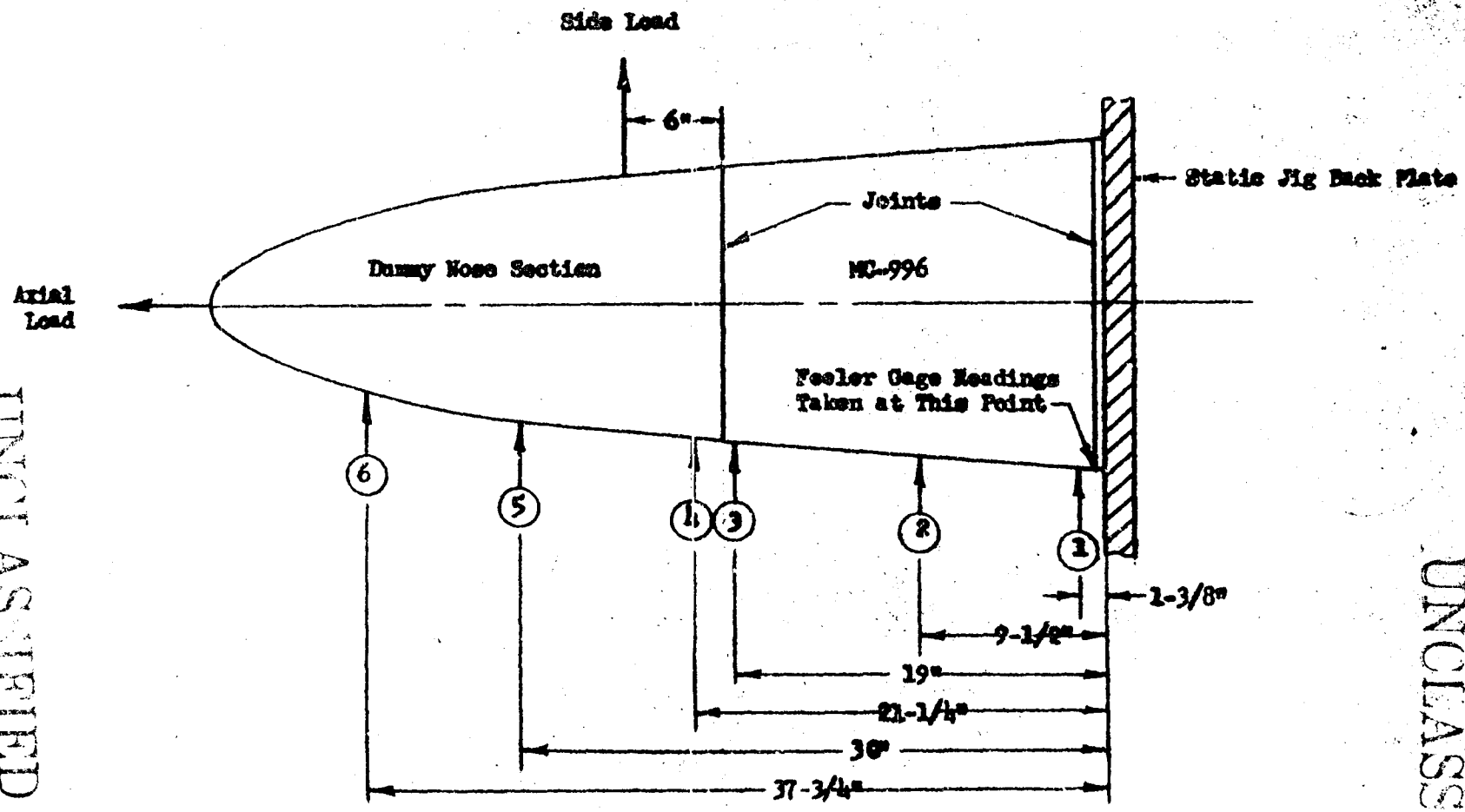

Fig. 3. Locations of Dial Indicators -- Static Test of TX-43 Nose.

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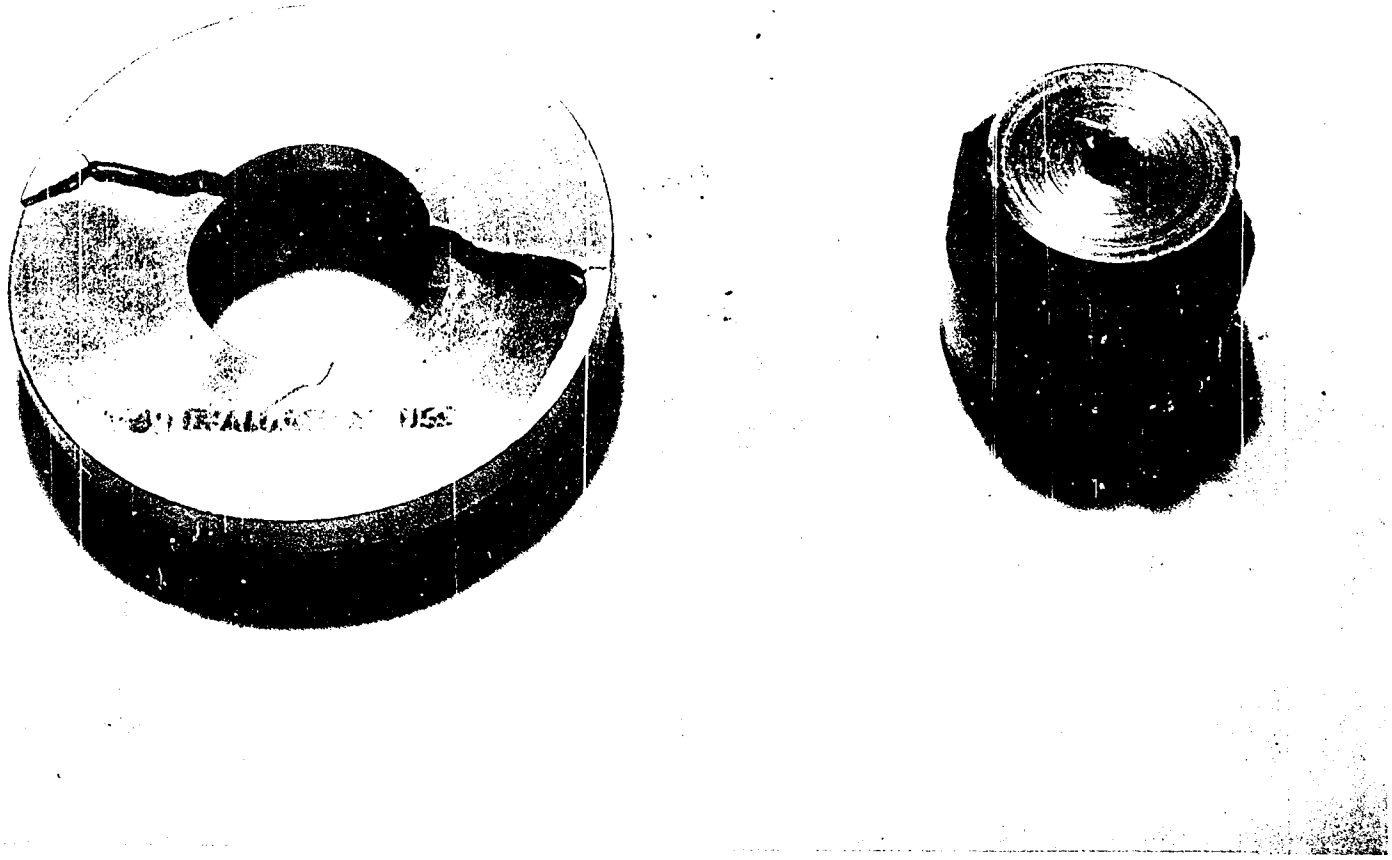

FIG. 4 - THREADED CAP FROM MC-996 AFTER FAILURE — STATIC TEST OF TX-43 NOSE.

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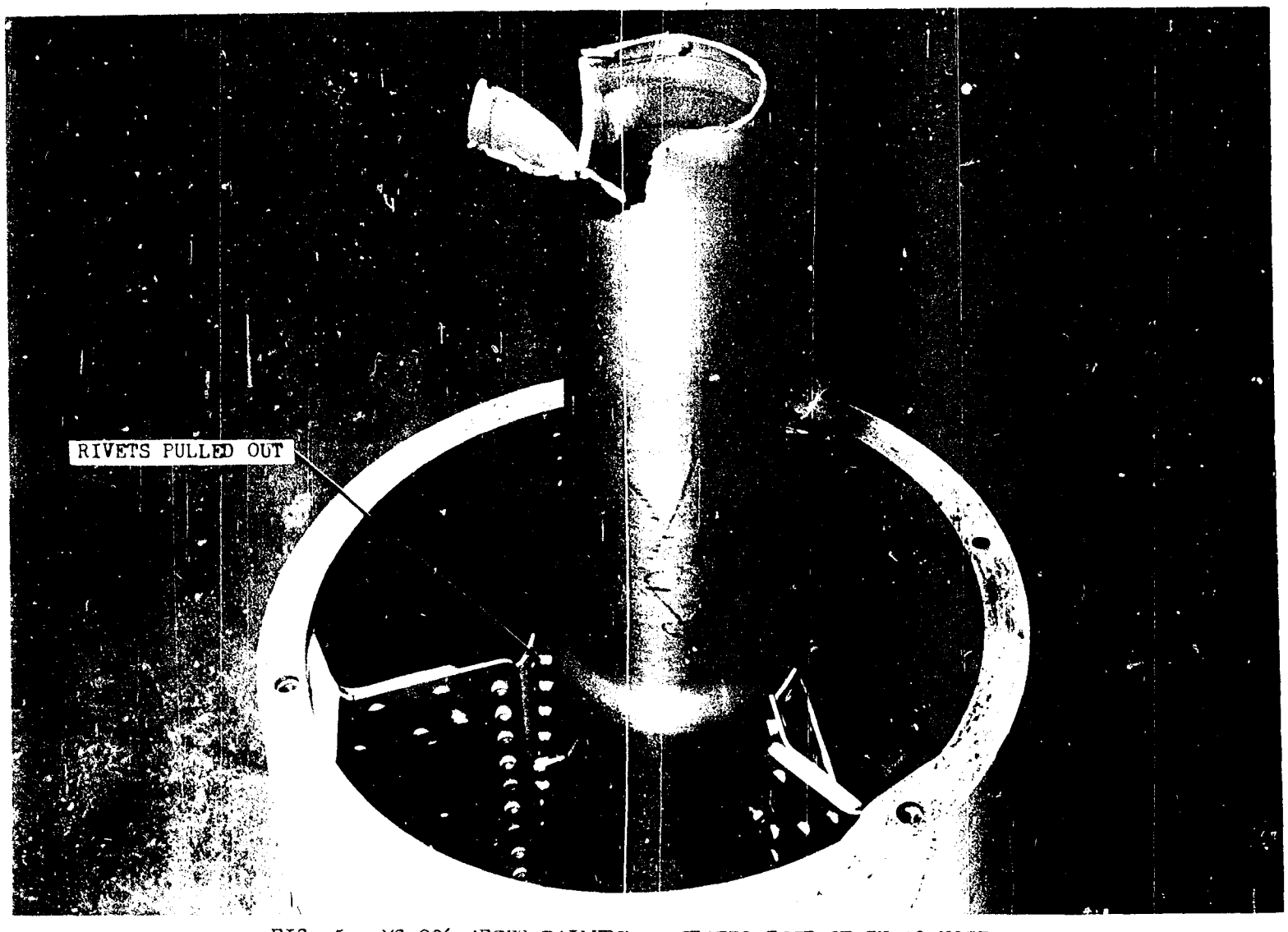

FIG. 5 - MC-996 AFTER FAILURE — STATIC TEST OF TX-43 NOSE.

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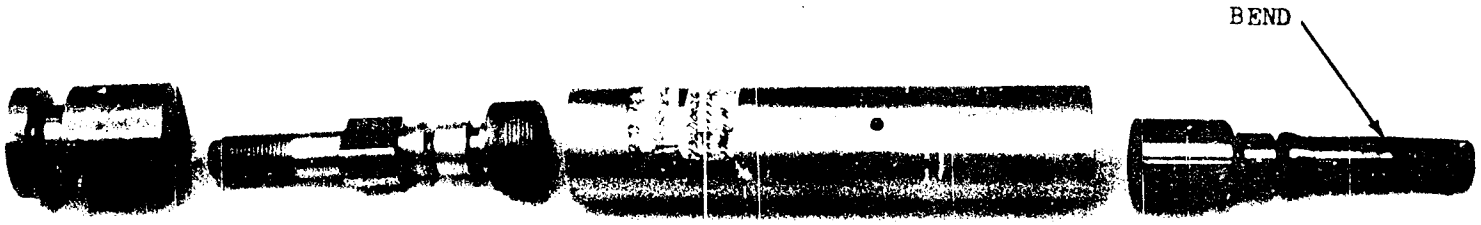

FIG. 6 - MC-1040 EXPLOSIVE BOLT SHOWN DISASSEMBLED AFTER TEST -- STATIC TEST OF TX-43 NOSE.

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TABLE 2

DISPLACEMENTS (INCHES)

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PERCENT LIMIT LOAD	CAL 1	CAL 2	CAL 3	CAL 4	CAL 5	CAL 6		AVERAGE					
0	0	0	0	0	0	0		0					
10	-.002	.028	.064	.071	.100	.128		.025					
20	-.001	.036	.083	.094	.131	.166		.035					
30	-.001	.046	.105	.116	.164	.210		.041					
40	-.001	.058	.128	.144	.200	.254		.047					
50	0	.071	.150	.170	.235	.297		.058					
60	.001	.078	.169	.193	.265	.335		.064					
70	.002	.091	.189	.217	.291	.373		.070					
80	.004	.101	.208	.241	.328	.411		.076					
90	.006	.113	.228	.265	.357	.450		.082					
100	.009	.126	.250	.293	.394	.493		.087					
110	.012	.139	.272	.320	.430	.536		—					
120	.017	.152	.297	.348	.465	.579		—					
130	.020	.168	.321	.376	.501	.628		—					

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