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10/20/98
W Sayre
10/22/98
RB Craver

OCT 1 1956

Case No. 722.00
Ref. Sym: 1612 (309)
Project No. TM-375
File: D-5

TCG-NNT-1, TCG-WM-1

MR. L. E. DAVIES - 1243

Attn: Mr. W. T. Holmes - 1243

Re: Static Test of Model Cylinders for Class "A" Weapon

CDL No.
ACCOUNTA CARD
FILE NO. D-5

Summary of Results

Eleven model cylinders of aluminum alloy with an O.D. of six inches, a length of 21-1/2 inches and wall thickness varying from 0.035-inch to 0.175 inch were statically tested. The loads producing failure on eight of the cylinders, using 180° bearing of the loading sling at the center of the cylinder, varied from 3000 pounds for the 0.035-inch cylinder to 16,000 pounds for the 0.175-inch cylinder.

The 0.100-inch cylinder failed at a load of 1200 pounds when loaded with a sway brace pad 5/16-inch in diameter. The 0.175-inch cylinder failed at loads of 2400 pounds and 3200 pounds when loaded with sway brace pads having 5/16-inch and 5/8-inch diameters, respectively.

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The Stresscoat and experimental data obtained in this test will be used for comparison with theoretical data.

Object of Test

The test was performed to obtain strain data and to determine strength characteristics of model cylinders, scale 1:10, so that this information might be used in the design of the full scale Class "A" weapon. Also, the test results are to be used for comparison with derived theoretical equations.

Reason for Test

The test was performed as a result of the Work Order Authorization dated February 10, 1956, from Division 1244 to Division 1612.

Function of Object Tested

The items tested are model cylinders used in the study and design of a Class "A" weapon.

Summary of Past Tests

No previous static tests have been performed on the model cylinders.

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CLASSIFICATION CHANGED TO: U
Carmela Dally 10/27/98
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W C Sayre 10/28/98
PERSON VERIFYING MARKING & DATE
AUTHORITY: R B Craver
RECORD ID: 99SN0166
DATED: 10/22/98

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Setup for Test

Figure 1 shows the setup for loading a cylinder with the loading cable having 180° bearing on the cylinder. This particular cylinder is one that has been Stresscoated.

Figures 2 and 3 show the setup for testing a cylinder instrumented with strain gages and loaded with a cable having 180° bearing on the cylinder. The setup in these two photographs is similar to Fig. 1 except for the instrumentation.

Figure 4 shows the setup for loading a cylinder with a sway brace pad.

The eleven aluminum alloy cylinders tested had a nominal O.D. of six inches and an overall length of 21-1/2 inches. The nominal thickness of the cylinder walls were as follows: Three cylinders Nos. 1, 2, and 3 with 0.100-inch wall; three cylinders No. 4, 5, and 6 with 0.150-inch wall; three cylinders No. 7, 8, and 9 with 0.175-inch wall; one cylinder No. 10 with 0.035-inch wall and one cylinder No. 11 with 0.056-inch wall.

The following equipment was used during the test of the cylinders:

1 - Baldwin Load Cell; 10,000 pound capacity; Serial No. 658; sensitivity = 0.793 microinches/inch/pound.

1 - Baldwin SR-4 Strain Indicator, Serial No. J-59101.

1 - One-inch pull rod; Serial No. B; sensitivity = 0.1043 microinches/inch/pound.

1 - Hydraulic Pump and ram; 30 ton capacity.

1 - Sadic Automatic Data Processing System, Model 34-112 M1.

Baldwin-Southwark Universal Testing Machine, 120,000 pound capacity.

The following instrumentation was used during the test:

Stresscoat No. 1206 - Sensitivity at time of test = 500 microinches per inch.

A-7 strain gages, G.F. = 1.90, Res. = 120 ohms used as biaxial gages and three-element rosettes.

Procedure

Cylinders No. 1, No. 4, and No. 7 having nominal wall thicknesses of 0.100, 0.150, and 0.175 inches, respectively, were Stresscoated with Stresscoat No. 1206.

Cylinder No. 1 was loaded first with the loading cable having 180° contact with the cylinder as shown in Fig. 1. The cylinder was loaded such that each load was 1.2 times the previous value with an initial load of 150 pounds. After each increment the load was released to zero and the cylinder was inspected for Stresscoat cracks. The above procedure was followed on this setup until a load of 1360 pounds was reached. Because no cracks were produced in the Stresscoat, the loading cable was then changed so that the cable had 120° contact with the cylinder. The loading was repeated by the same procedure and with same initial load as for the loading with the 180° cable. For the 120° cable, the cylinder was loaded in increments to a maximum of 2820 pounds. The load of 2820 pounds was maintained on the cylinder for a period of about 2-1/2 hours and then released suddenly, thereby producing cracks in the Stresscoat on areas of compressive strain on the cylinder which were above the threshold sensitivity of the Stresscoat.

Cylinder No. 4, with a wall thickness of 0.150 inches, was the next Stresscoated cylinder to be loaded. The 180° loading was used on this cylinder with an initial load of 1130 pounds. The loading progressed in increments to a maximum of 3720 pounds. This latter load was held for about 2-1/2 hours as in the previous test and then released suddenly to produce cracks on the Stresscoat in areas of compressive strain on the cylinder above the threshold sensitivity of the Stresscoat.

Cylinder No. 7, with a thickness of 0.175 inches, was loaded with the loading cable having a 90° contact with the cylinder. The cylinder was loaded in increments from an initial load of 1635 pounds to a maximum of 2820 pounds. The load of 2820 pounds was maintained for about 3-1/2 hours in order to produce cracks on the Stresscoat due to compressive strain in the cylinder similar to the two previous tests.

Cylinder No. 5 (.150") was instrumented with 60 strain gages consisting of 16 three-element rosettes and 6 biaxial rosettes as shown in Fig. 5. The cylinder was then mounted in the jig as shown in Figs. 2 and 3. Loads were applied in increments of 250 pounds from zero to 3750 pounds and in increments of 500 pounds from thereon until failure. Strain readings were recorded after each increment of load.

Cylinder No. 6 (.150") and cylinder No. 8 (.175") were each instrumented with 58 strain gages consisting of 16 three-element rosettes and 5 biaxial rosettes as shown in Fig. 5. Each cylinder was loaded in the jig as shown in Figs. 2 and 3 using increments of 1000 pounds until failure, with strain readings being taken after each increment.

Cylinder No. 2 (.100") was instrumented with 55 strain gages consisting of 15 three-element rosettes and 5 biaxial rosettes as shown in Fig. 6. The cylinder was loaded with the 180° cable in increments of 1000 pounds until failure with strain readings being taken after each increment.

Cylinder No. 3 (.100") was instrumented with 72 strain gages consisting of 22 three-element rosettes and 3 biaxial rosettes as shown in Fig. 7. The cylinder was loaded with the 180° cable in increments of 1000 pounds until failure with strain readings being taken after each increment. This cylinder as the previous instrumented cylinders was loaded in the jig as shown in Figs. 2 and 3.

Cylinder No. 4 (.150") was instrumented with 72 strain gages consisting of 22 three-element rosettes and 3 biaxial rosettes as shown in Fig. 8. The cylinder was loaded with the 180° cable in increments of 1000 pounds until failure with strain readings being taken after each increment.

Cylinder No. 1 (.100") was instrumented with 27 strain gages consisting of 9 three-element rosettes as shown in Fig. 9. The cylinder was then loaded with a sway brace pad 5/16" in diameter as shown in Fig. 4. The load was applied in increments of 200 pounds until failure, with strain readings being taken after each increment.

Cylinder No. 9 (.175") was instrumented with 27 gages consisting of 9 three-element rosettes as shown in Fig. 10. The cylinder was loaded with a sway brace pad 5/8" in diameter as shown in Fig. 4. The load was applied in increments of 200 pounds until failure, with strain readings being taken after each increment.

Cylinder No. 9 (.175") was instrumented with 27 gages consisting of 9 three-element rosettes as shown in Fig. 11. The cylinder was loaded with a sway brace pad 5/16" in diameter as shown in Fig. 4. The load was applied in increments of 200 pounds until failure, with strain readings being taken after each increment.

Cylinder No. 10 (.035") and cylinder No. 11 (.056") were each loaded to failure using the 180° cable as shown in Fig. 1. No instrumentation was used on these two cylinders.

Three tensile specimens each one-inch wide were cut from cylinder No. 6 (.150") in the direction of the longitudinal axis. Each of these specimens were tested to failure in tension in the Baldwin-Southwark Testing Machine. Similarly, three tensile specimens were taken from cylinders No. 3 (.100"), No. 10 (.035"), and No. 11 (.056") and tested to failure. For all the tensile specimens tested, the strain was recorded for a two-inch length of the specimen.

Results

Table I shows the failure loads for all cylinders which were tested to failure.

Figures 12, 13, and 14 show the Stresscoat cracks for cylinder No. 1 (.100") when loaded to 2820 pounds with a 120° cable. The area marked

"C" on Fig. 14 is the area of Stresscoat cracks produced by compressive strains resulting from a load of 2820 pounds for 2-1/2 hours.

Figures 15, 16, and 17 show the Stresscoat cracks for cylinder No. 4 (.150") when loaded to 3720 pounds with a 180° cable. The area marked "C" on Fig. 17 is the area of Stresscoat cracks produced by compressive strains resulting from a load of 3720 pounds for 2-1/2 hours.

Figures 18, 19, and 20 show the Stresscoat cracks for cylinder No. 7 (.175") when loaded to 2820 pounds with a 90° cable. The area marked "C" on Fig. 20 is the area of Stresscoat cracks produced by compressive strains resulting from a load of 2820 pounds for 3-1/2 hours.

Table II gives the Stresscoat data for cylinders No. 1, No. 4, and No. 7. Tables III through VIII show the strain readings and the computed maximum and minimum principal strains for cylinder No. 5, 6, 8, 2, 3, and 4 when loaded in increments to failure with the 180° cable.

Table IX, X, and XI show the strain readings and the computed maximum and minimum principal strains for cylinder Nos. 1 and 9 when load in increments to failure with sway brace pads.

Figures 21, 22, and 23 show cylinder No. 5 (.150") after loading to failure. Gages No. 25 and 27 were under the loading cable. However, a slot was cut in the band on the loading cable so that the load would not bear on the gages.

Figures 24, 25, 26, and 27 show the location of the strain gages and the area of failure for cylinder No. 6 (.150").

Figures 28, 29, and 30 show cylinder No. 8 (.175"), the location of the gages and the area of failure.

Figures 31, 32, and 33 show the area of failure and gage locations for cylinder No. 2 (.100").

Figures 34, 35, and 36 gove the gage locations and area of failure for cylinder No. 3 (.100").

Figures 37, 38, 39, and 40 gives the area of failure and gage locations for cylinder No. 4 (.150").

Figure 41 shows cylinder No. 10 (.035") and cylinder No. 11 (.056") after testing to failure. No strain gages were used on these two cylinders.

Figures 42 and 43 show the location of strain gages and the area of loading for cylinder No. 1 (.100") when loaded with the 5/16-inch diameter sway brace pad.

Figures 44 and 45 show the location of strain gages and the area of loading from cylinder No. 9 (.175") when loaded with the 5/16-inch diameter sway brace.

Figures 46 and 47 show the location of the gages and the area of loading for cylinder No. 9 (.175") when loaded with the 5/8-inch diameter sway brace pad.

Table XII gives the data which resulted from testing the three tensile specimens from cylinder No. 6 (.150"). The average stress at failure for the three specimens was 24,700 psi. Each of the three specimens failed just outside the two-inch gage marks. Figure 48 shows the stress-strain curve based on the data in Table XII.

Table XIII gives the data which resulted from testing three tensile specimens to failure from cylinder No. 3 (.100"). The average stress at failure for the three specimens was 42,600 psi. Each of the three specimens failed just outside the two-inch gage marks. Figure 49 shows the stress-strain curve based on the data in Table XIII.

Table XIV gives the data relating to the testing of three tensile specimens from cylinder No. 10 (.035"). The average stress at failure was 69,400 psi. Figure 50 shows the stress-strain curve. The material in this cylinder was stamped 24ST-3.

Table XV shows the data which resulted from testing the three tensile specimens from cylinder No. 11 (.056"). The average stress at failure was 67,900 psi. Figure 51 shows the stress-strain curve for these three specimens. The material in this cylinder was also stamped 24ST-3.

Conclusions

From the test of tensile specimens it is concluded that cylinder No. 3 was probably 61ST-6 aluminum alloy and that cylinder No. 6 could have been 14S-0, 17S-0 or 24S-0. Cylinder Nos. 10 and 11 were stamped 24ST-3 and the results of the tensile tests verify this designation.

The other data resulting from the test will be useful for comparison with theoretical equations and for use in design of the full scale weapon.

Harry P. Wheeler
HARRY P. WHEELER - 1612-2

Approved by: Paul H. Adams
PAUL H. ADAMS - 1612

OCT 1 1956

Ref. Sym: 1612 (309)
Project No. TM-375

HPW:1612-2:as

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K. M. Sadler, 7222-3

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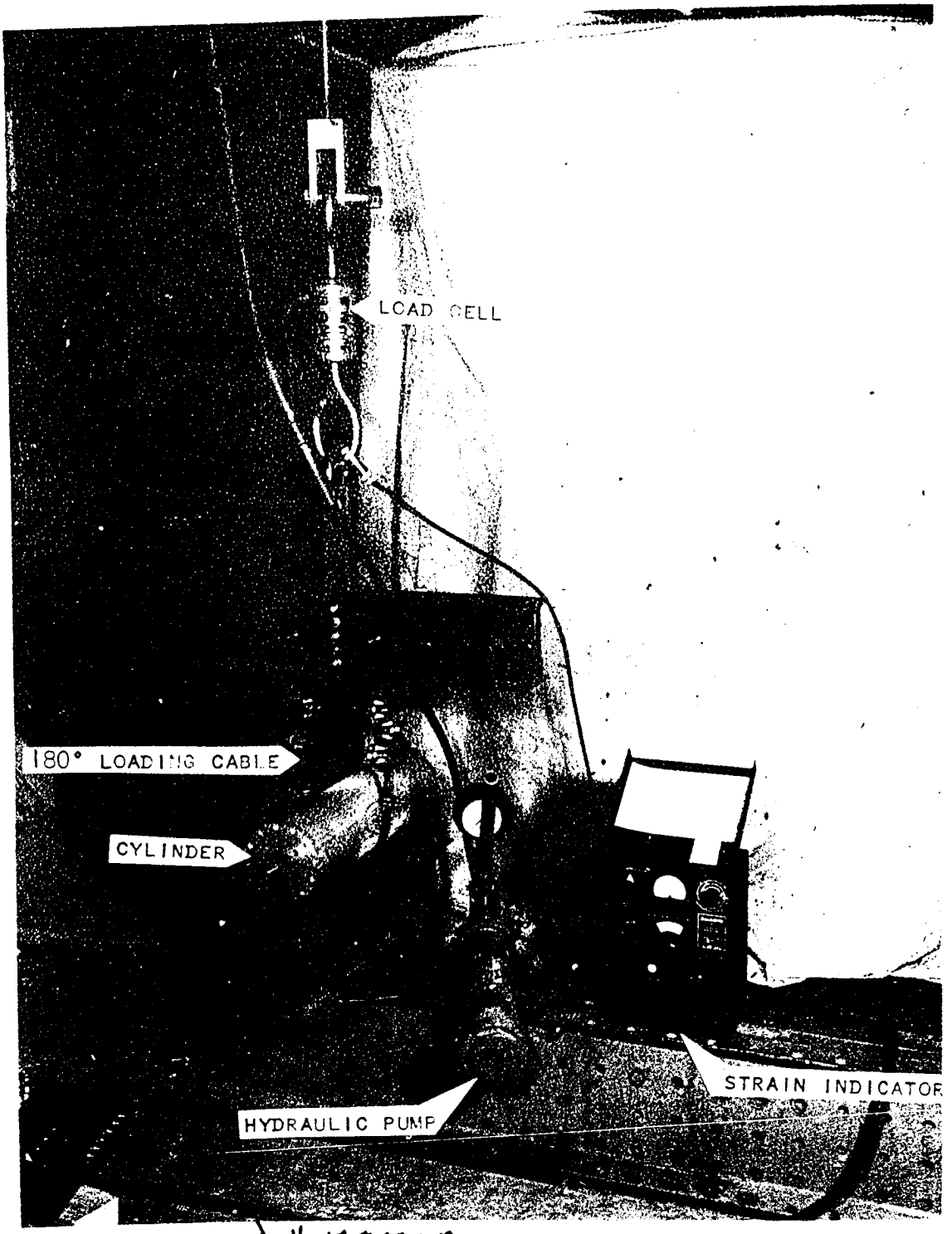

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FIG. 1--SETUP FOR TESTING CYLINDER WITH THE 180° LOADING CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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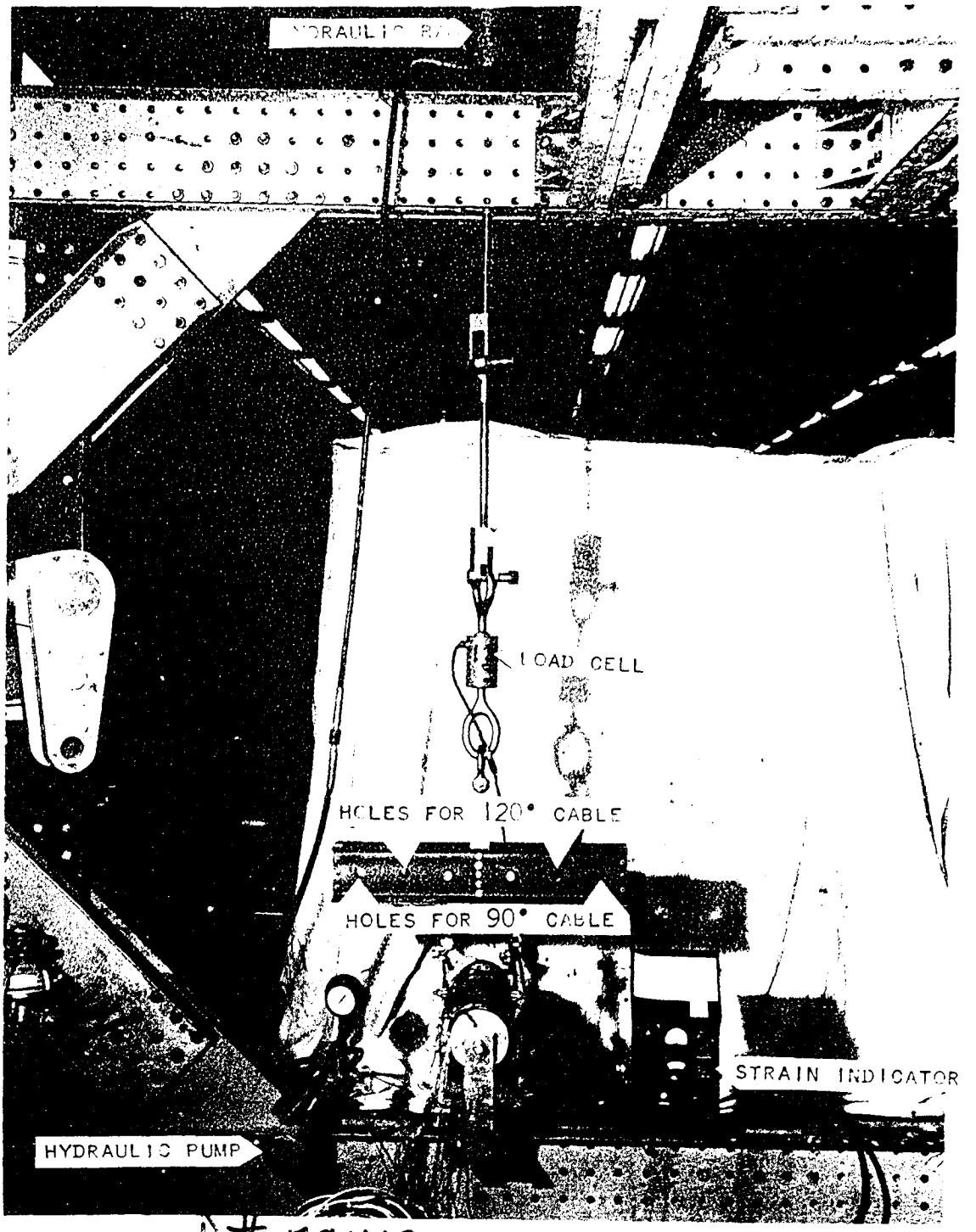

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FIG. 2--SETUP FOR TESTING INSTRUMENTED CYLINDER WITH THE 180° LOADING CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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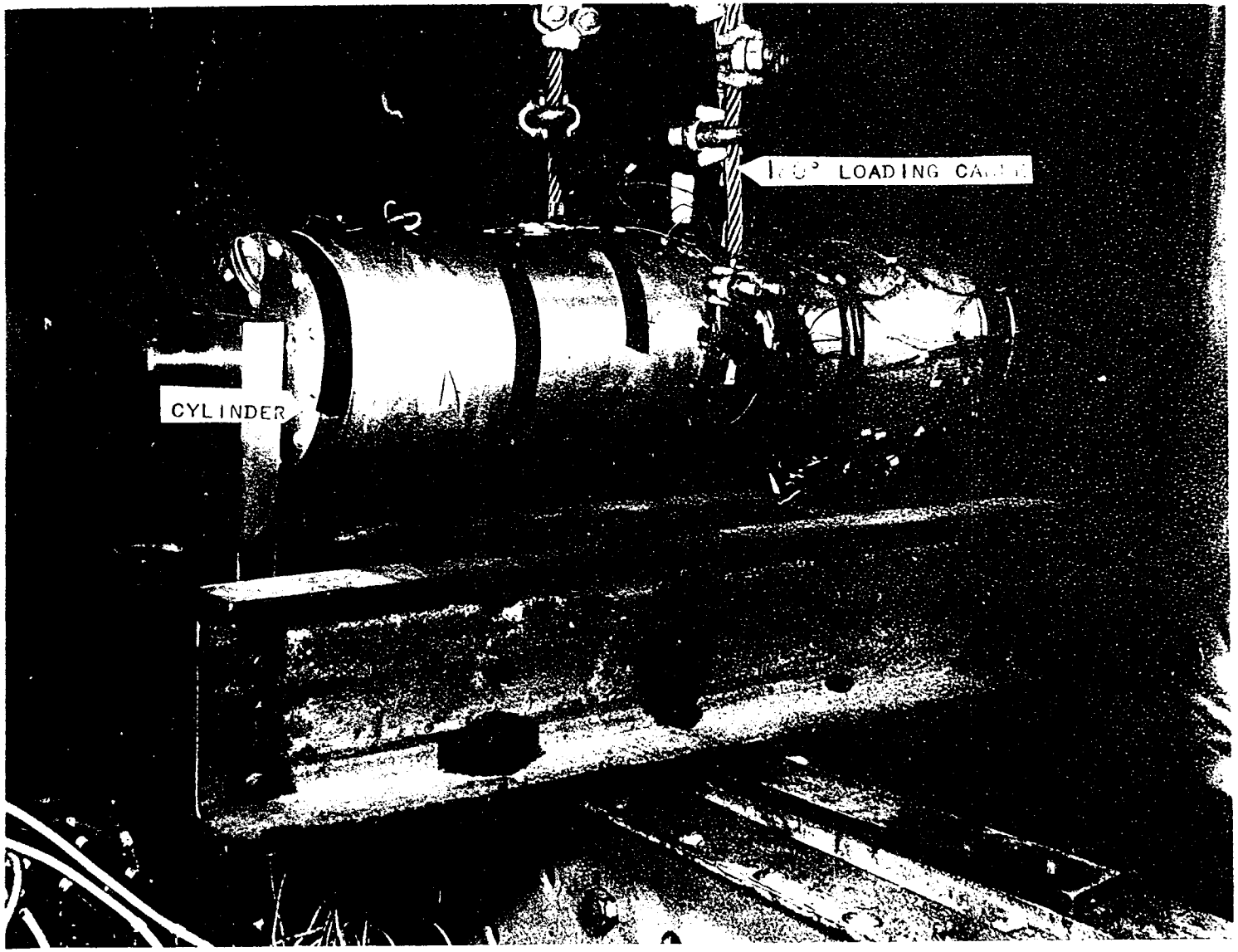

FIG. 3--CLOSEUP VIEW OF INSTRUMENTED CYLINDER WITH THE 180° LOADING CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON
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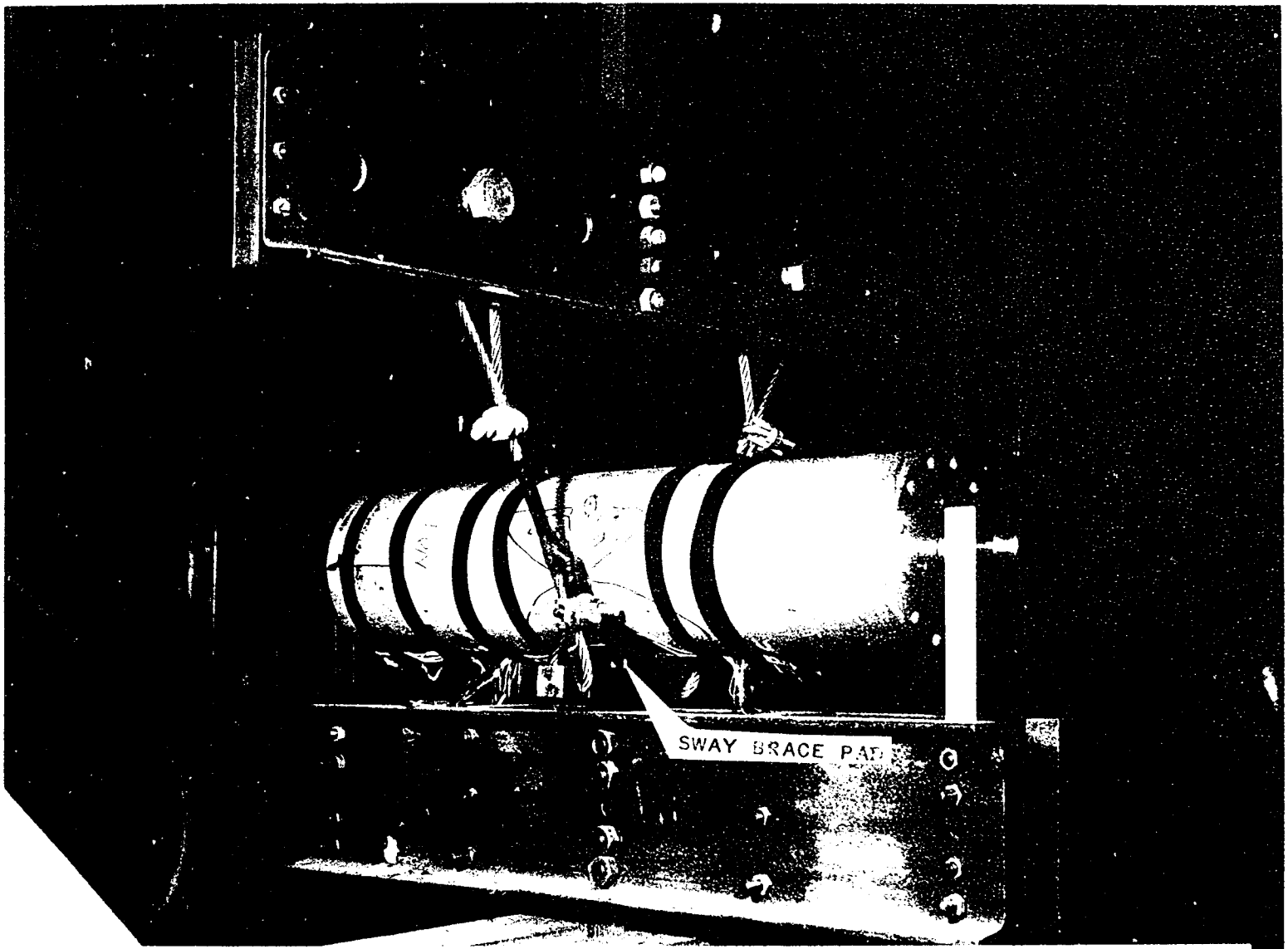

FIG. 4--SETUP FOR LOADING CYLINDER WITH A SWAY BRACE PAD--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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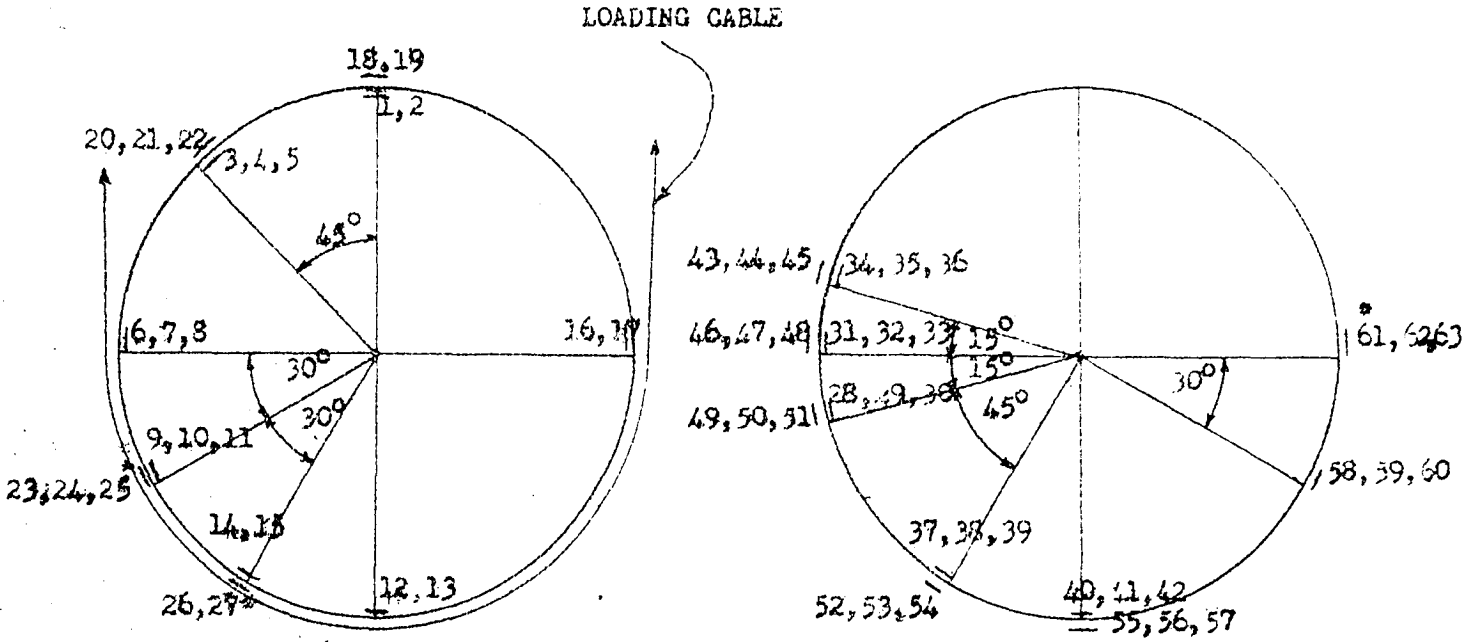
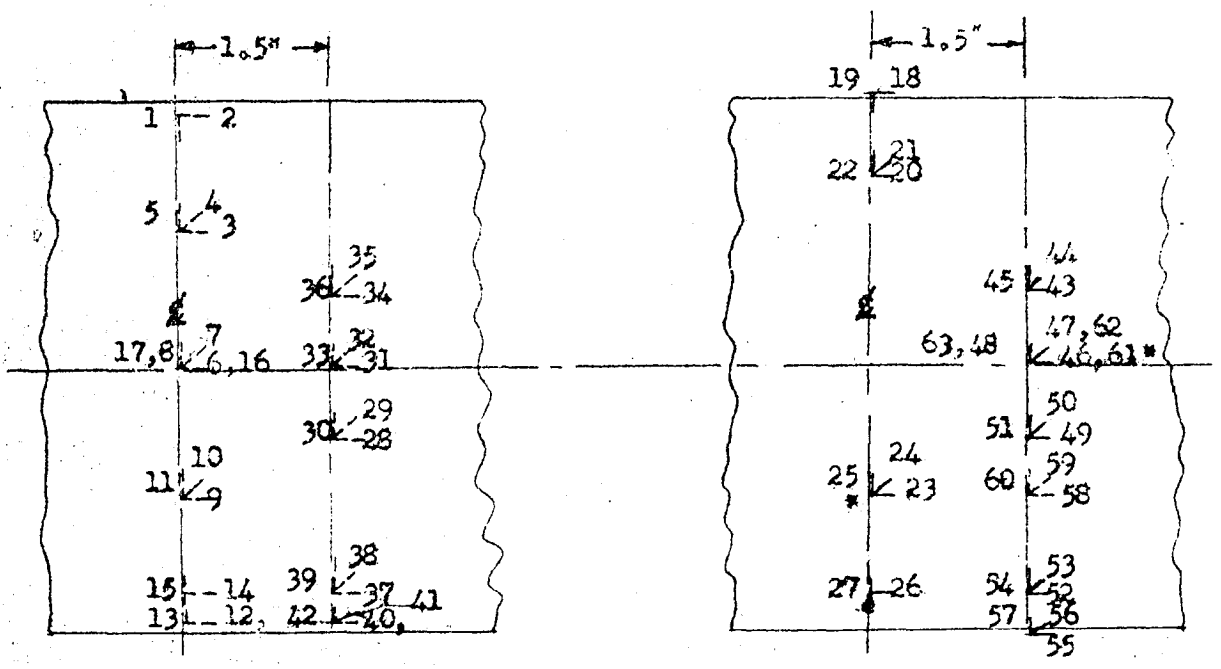
*GAGES 23, 24, 25, 26, & 27 ON CYLINDER NO. 5 ONLY
*GAGES 61, 62, & 63 ON CYLINDERS NO6 AND NO. 8 ONLY



GAGES AT ℄ OF LOADING CABLE

GAGES 1 1/2" FROM ℄ OF LOADING CABLE



GAGES ON INSIDE OF CYLINDER

GAGES ON OUTSIDE OF CYLINDER

NOT TO SCALE

FIG. 5--LOCATION OF STRAIN GAGES ON CYLINDERS NO. 5 (.150"), NO. 6 (.150") AND NO. 8 (.175")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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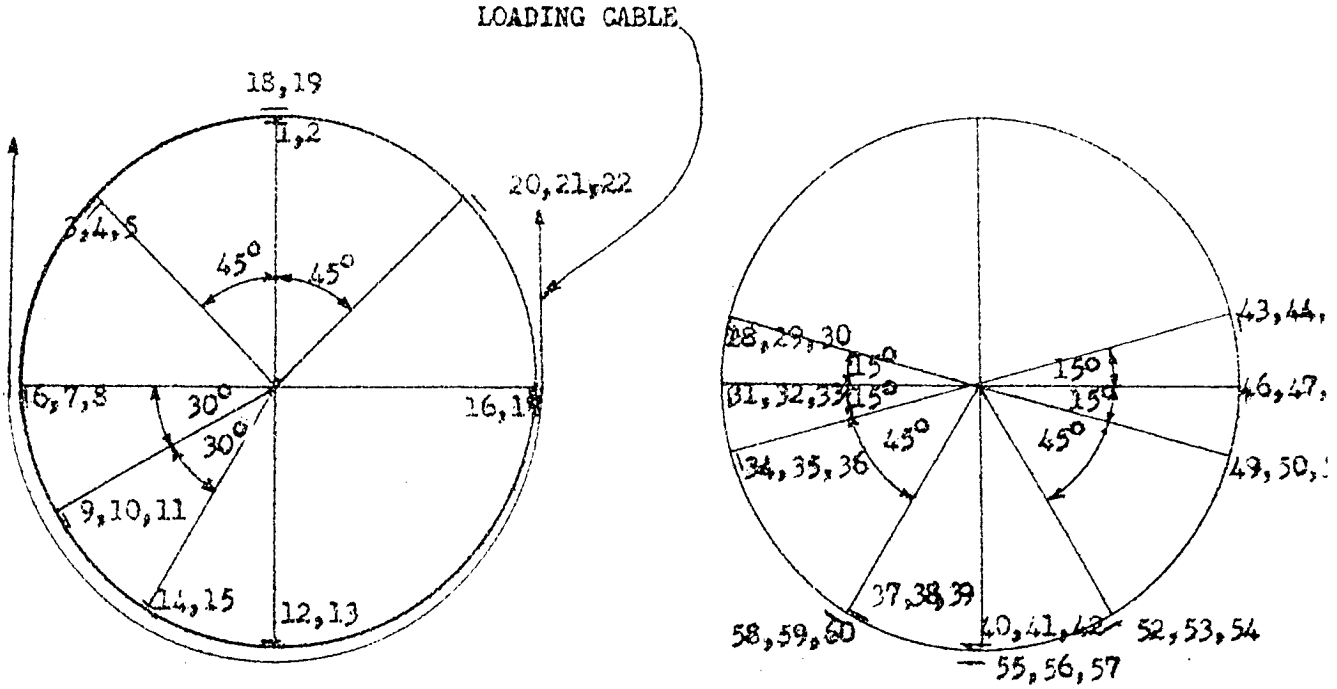
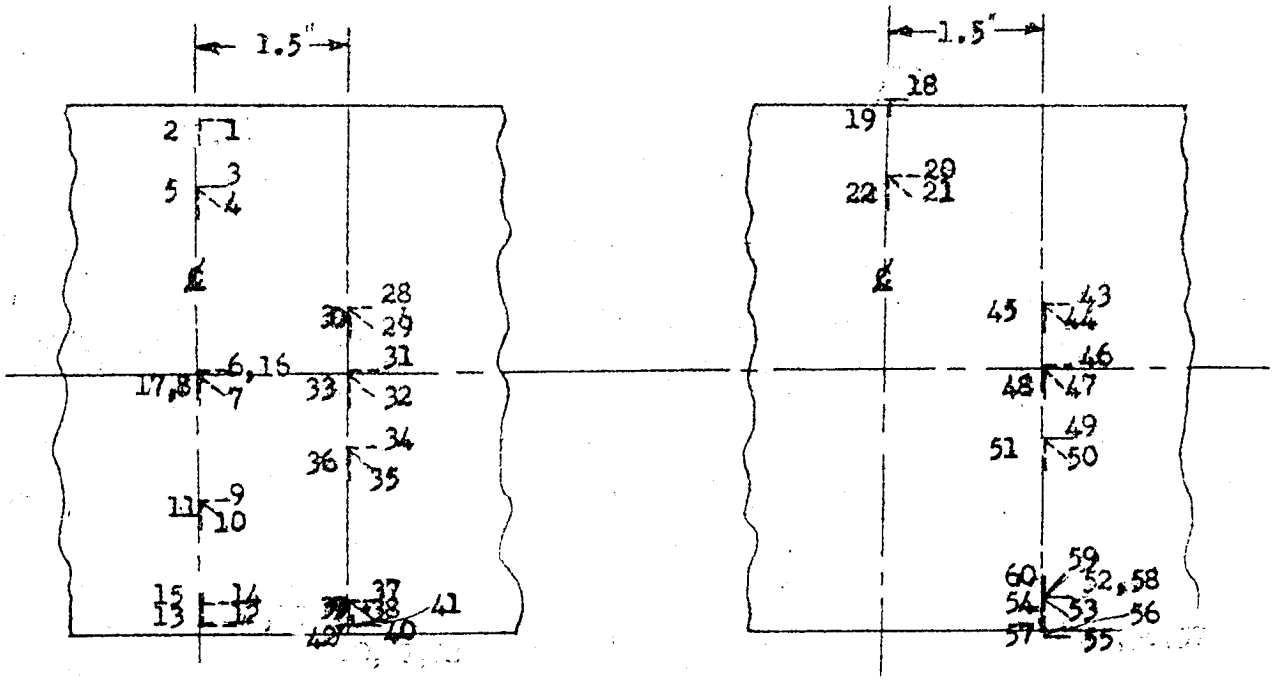


GAGES AT ℄ OF LOADING CABLE

GAGES 1 1/2" FROM ℄ OF LOADING CABLE



GAGES ON INSIDE OF CYLINDER

GAGES ON OUTSIDE OF CYLINDER

NOT TO SCALE

FIG. 6--LOCATION OF STRAIN GAGES ON CYLINDER NO. 2 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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REF. SYM: 1612(309)

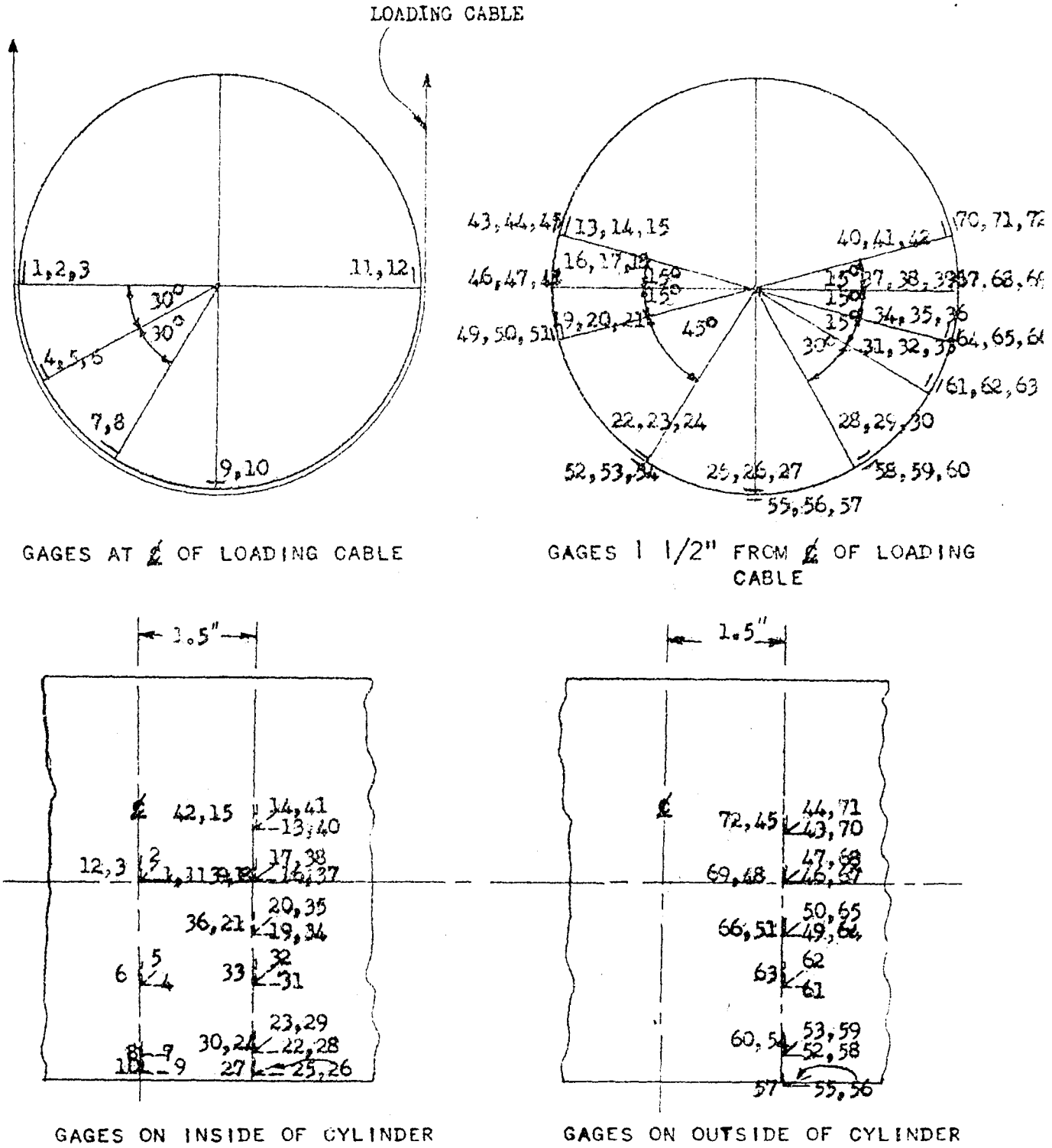

FIG. 7--LOCATION OF STRAIN GAGES ON CYLINDER NO. 3 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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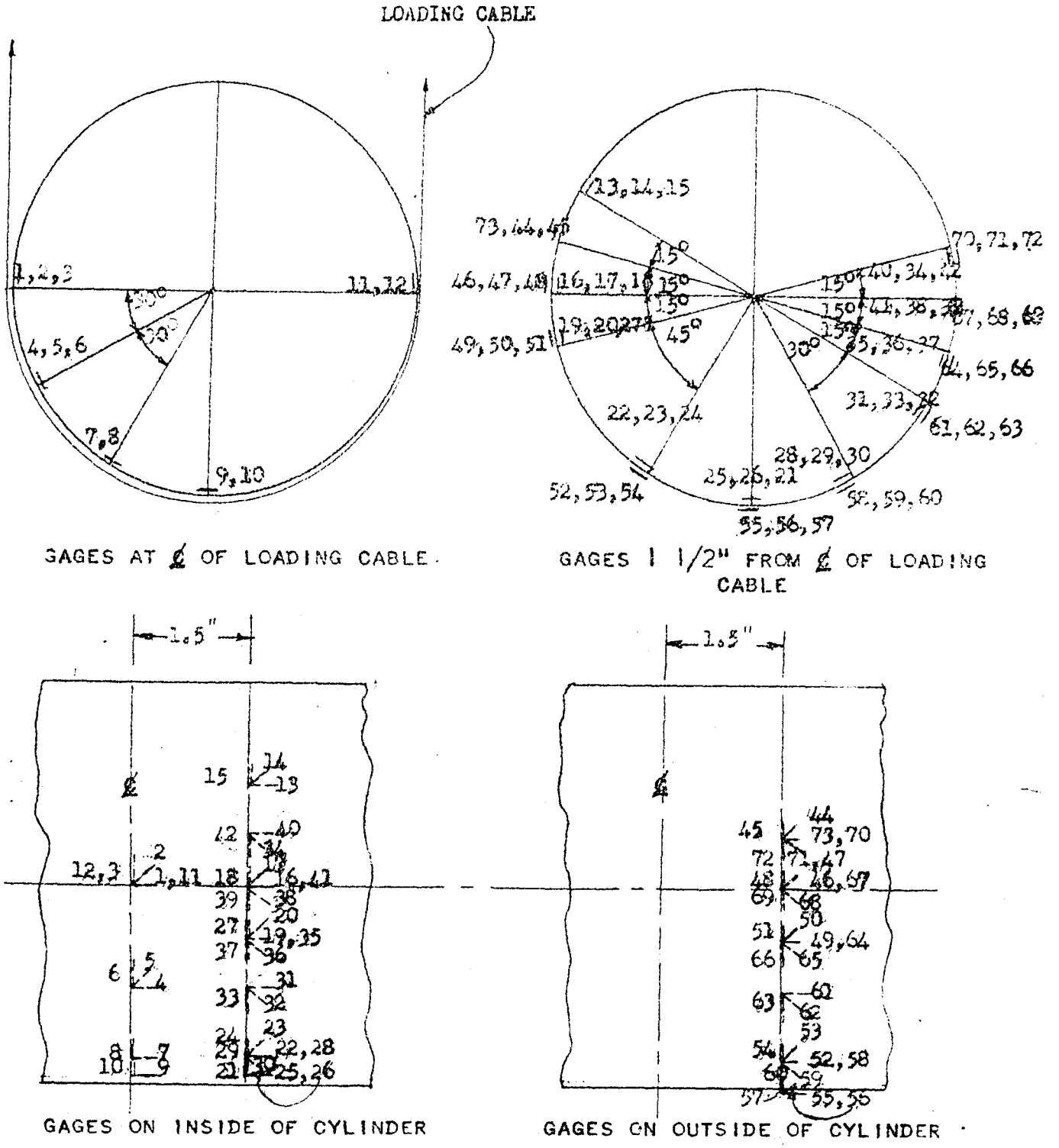

FIG. 8--LOCATION OF STRAIN GAGES ON CYLINDER NO. 4 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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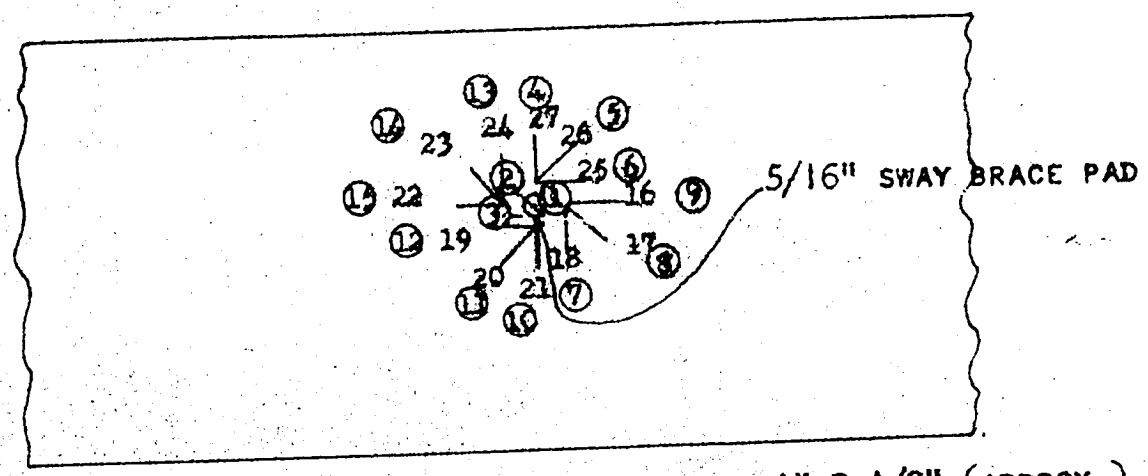

SCALE 1"=2 1/2" (APPROX.)

GAGES REPRESENTED BY CIRCLED NUMBERS ARE ON THE INSIDE OF THE CYLINDER

FIG. 9--LOCATION OF STRAIN GAGES FOR LOADING CYLINDER NO. 1 (.100") WITH 5/16" DIAMETER SWAY BRACE PAD--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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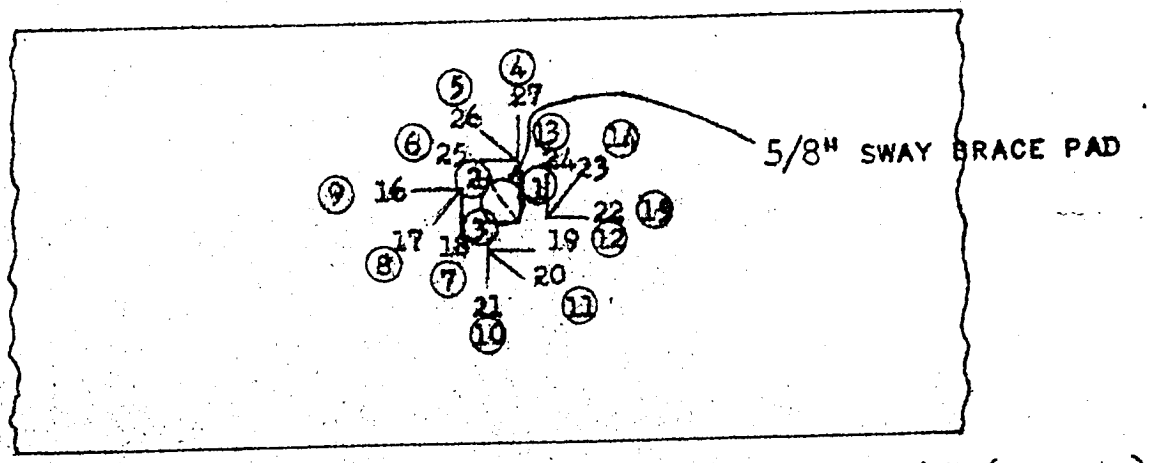

SCALE 1"=2 1/2" (APPROX.)

GAGES REPRESENTED BY CIRCLED NUMBERS ARE ON THE INSIDE OF THE CYLINDER

FIG. 10--LOCATION OF STRAIN GAGES FOR LOADING CYLINDER NO. 9 (.175") WITH 5/8" DIAMETER SWAY BRACE PAD--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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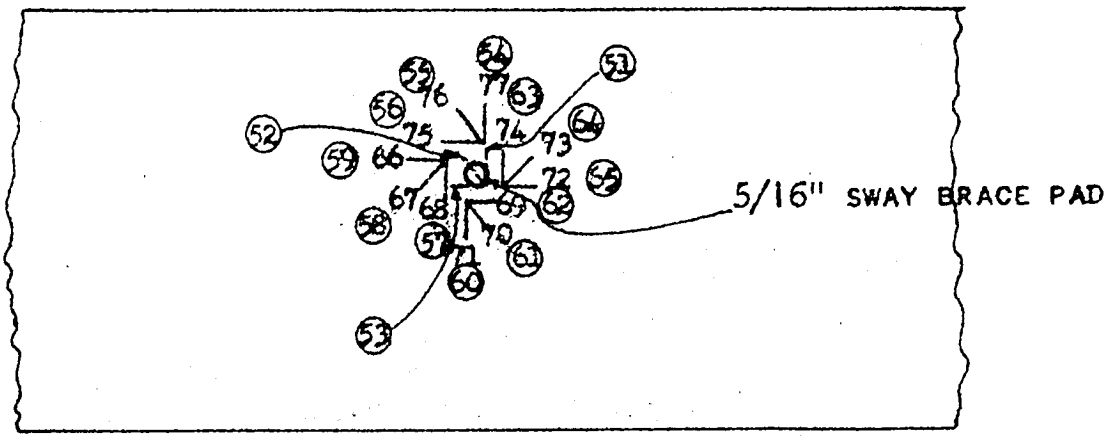

SCALE 1"=2 1/2" (APPROX.)

GAGES REPRESENTED BY CIRCLED NUMBERS ARE ON THE INSIDE OF THE CYLINDER.

FIG. 11--LOCATION OF STRAIN GAGES FOR LOADING CYLINDER NO. 9 (.175") WITH 5/16" DIAMETER SWAY BRACE PAD--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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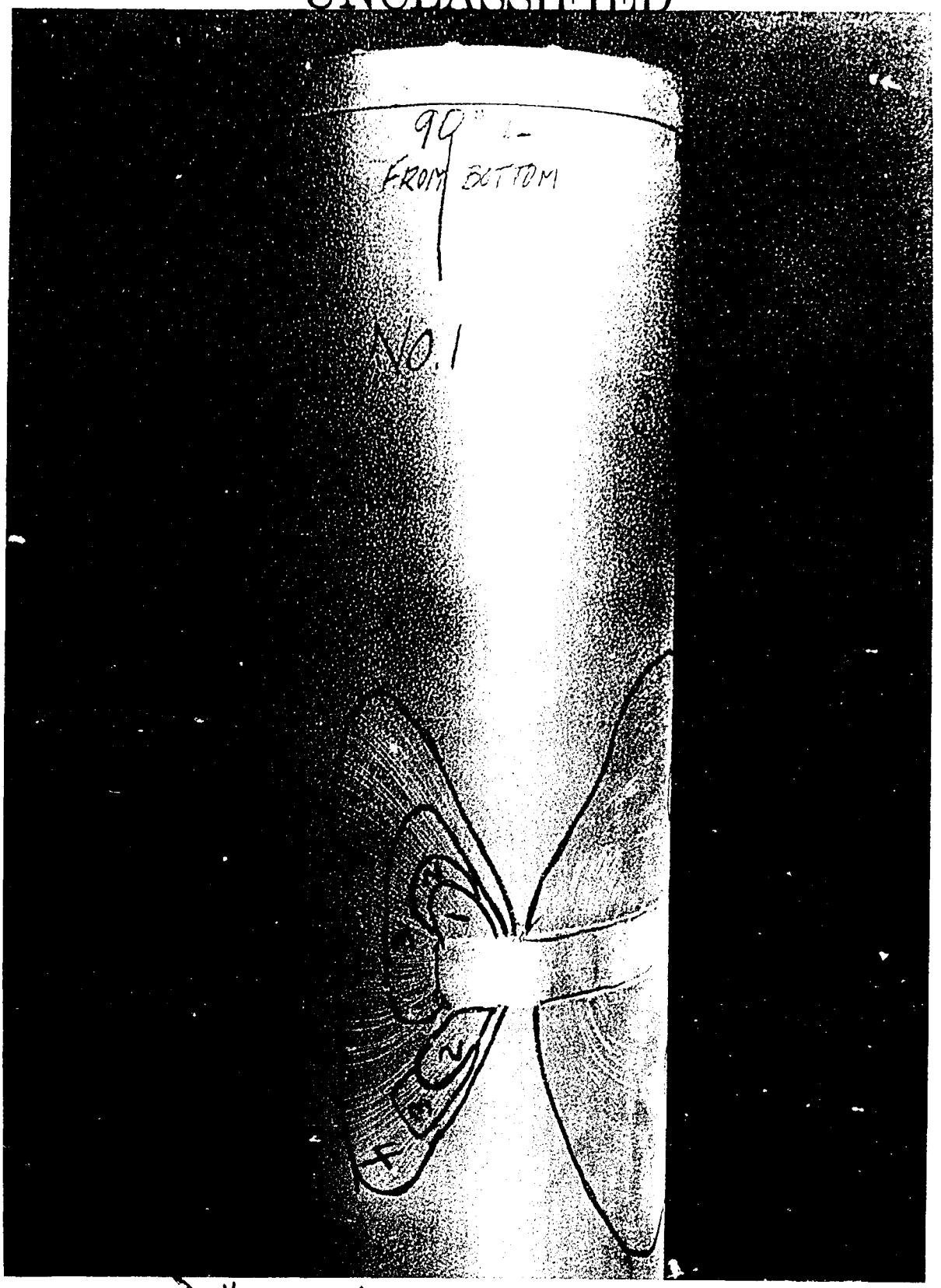

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FIG. 12--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 1 (.100") WITH 120° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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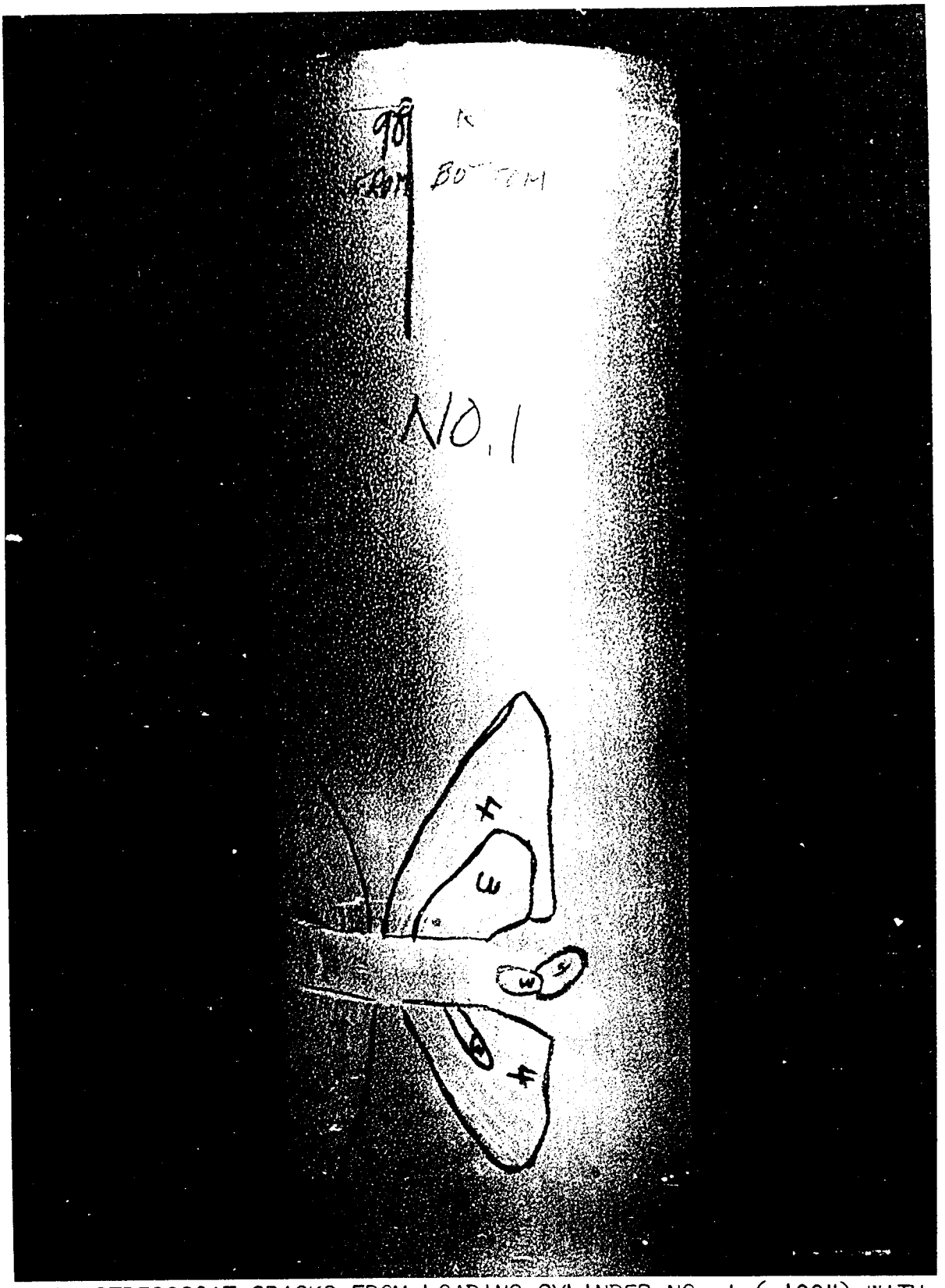

FIG. 13--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 1 (.100") WITH 120° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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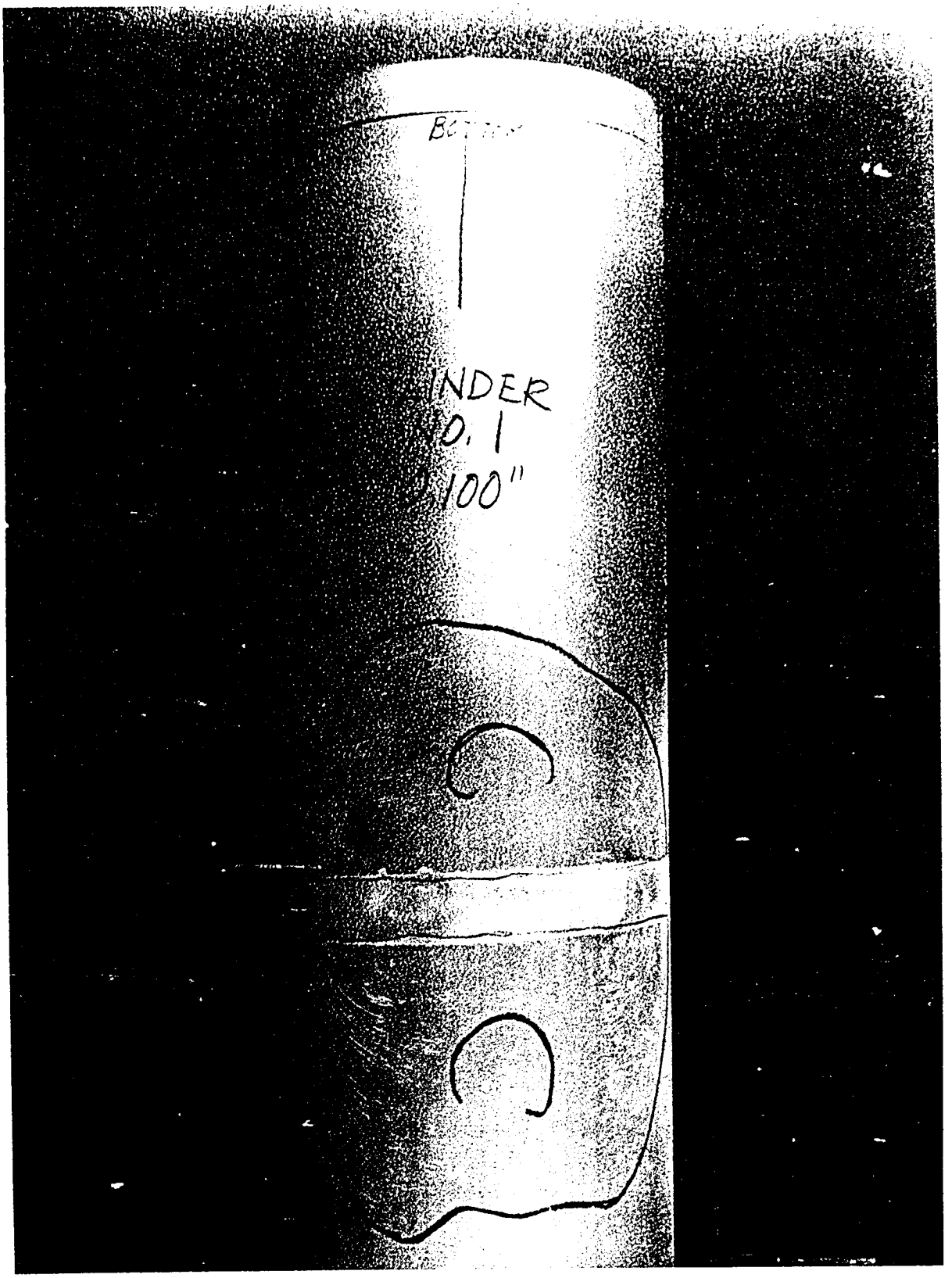

FIG. 14--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 1 (.100") WITH 120° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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REF. SYM: 1612(309)

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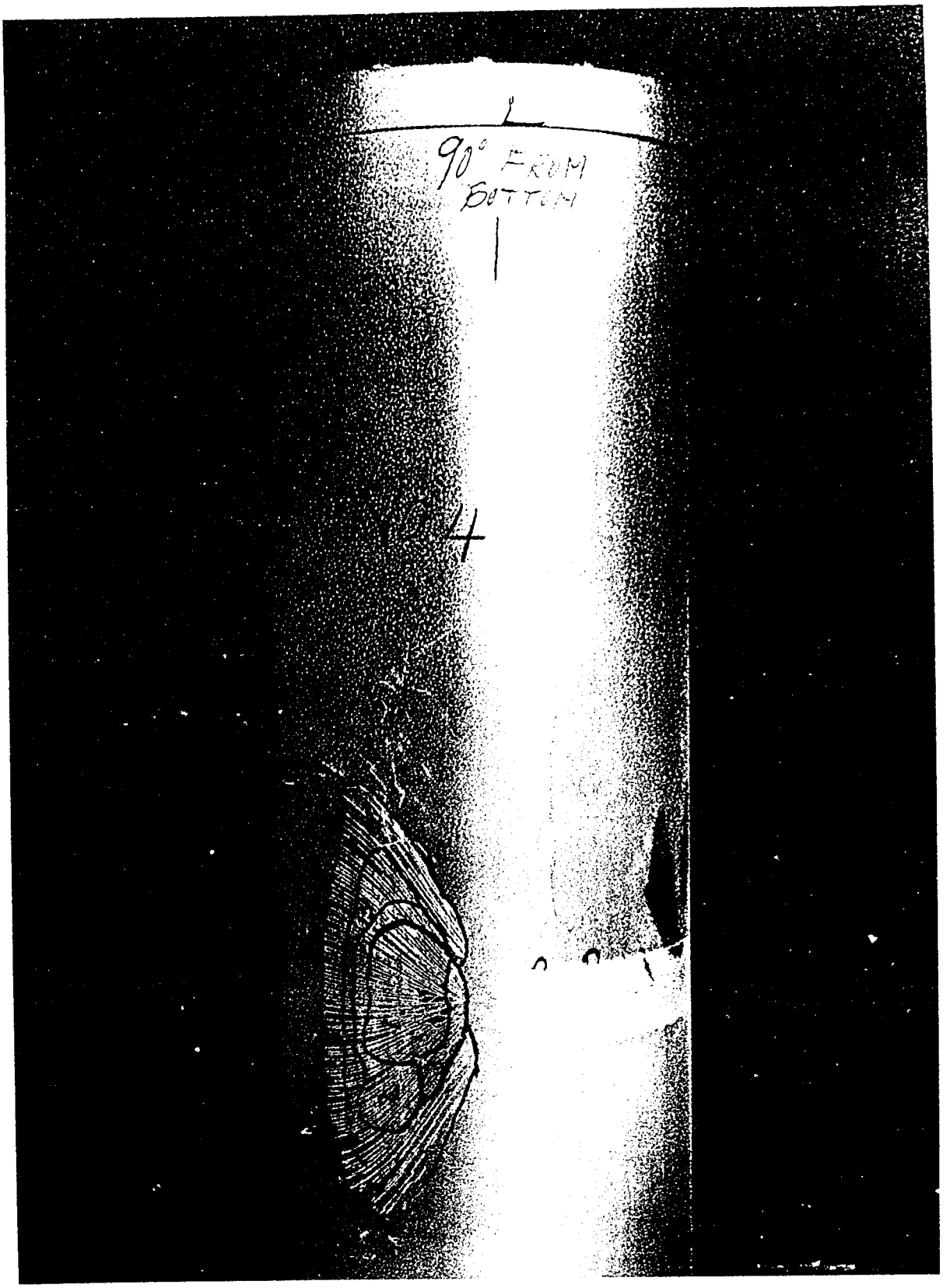

FIG. 15--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 4 (.150") WITH 180° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

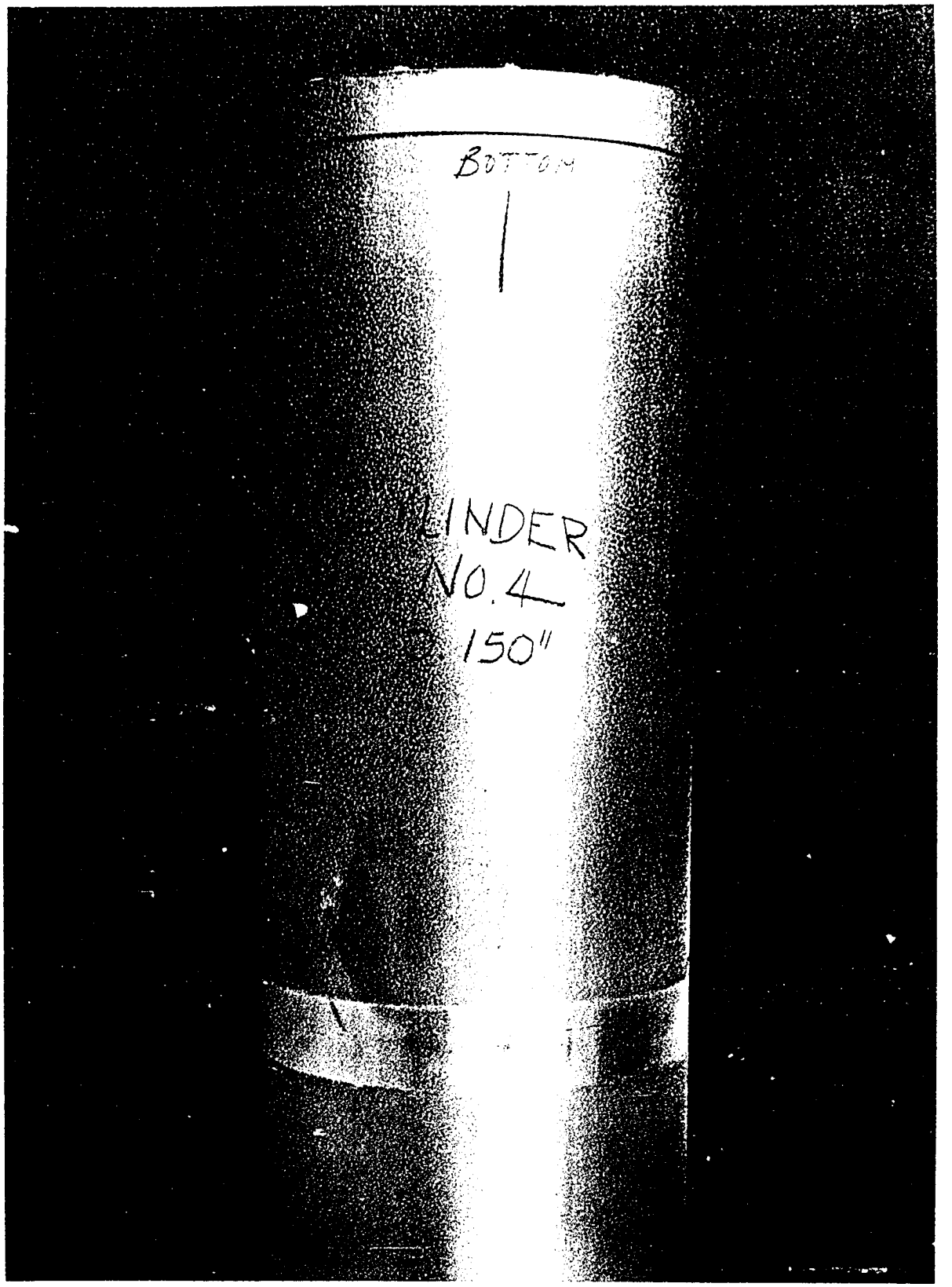

FIG. 16--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 4 (.150") WITH 180° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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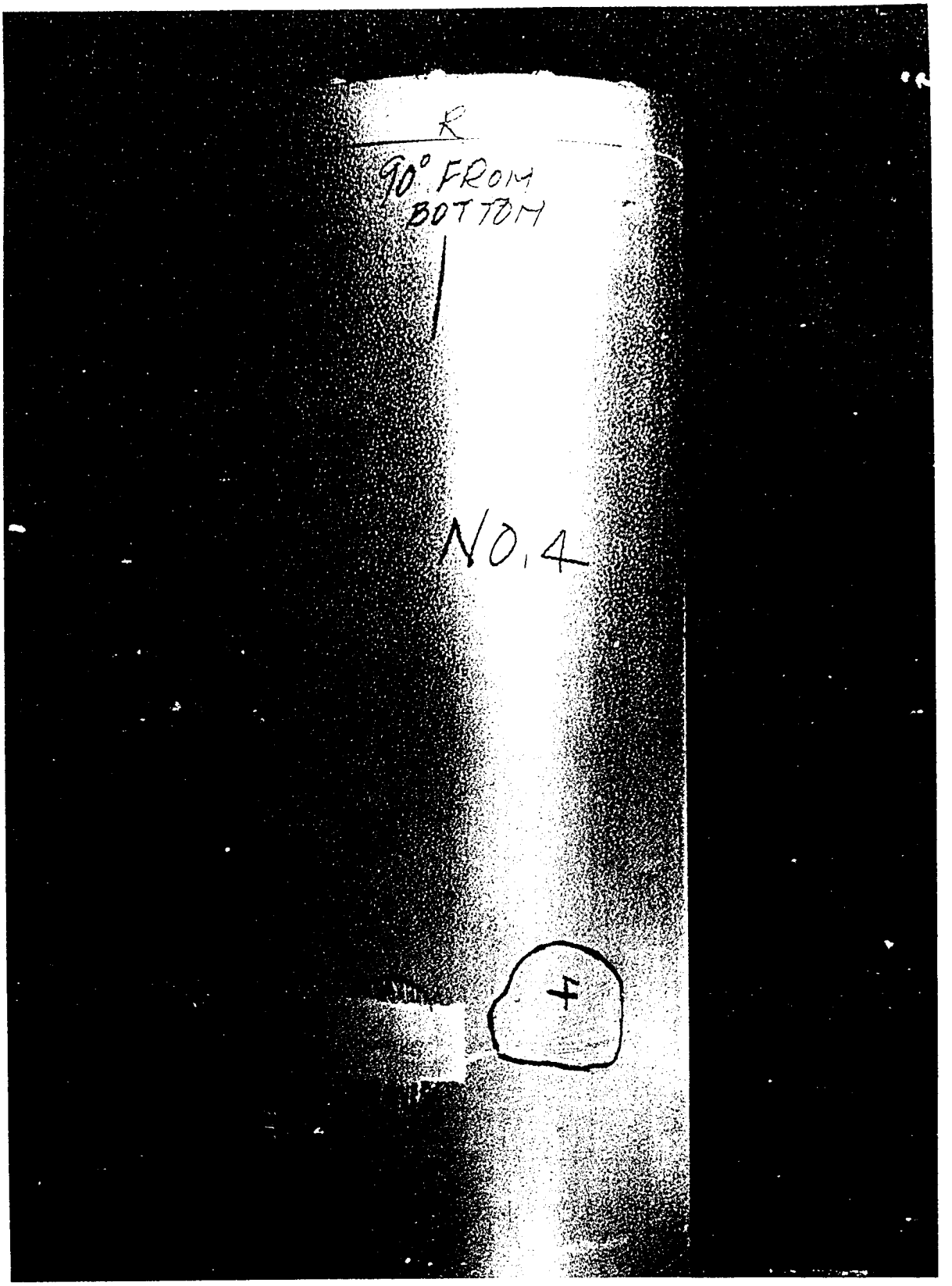

FIG. 17--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 4 (.150") WITH 180° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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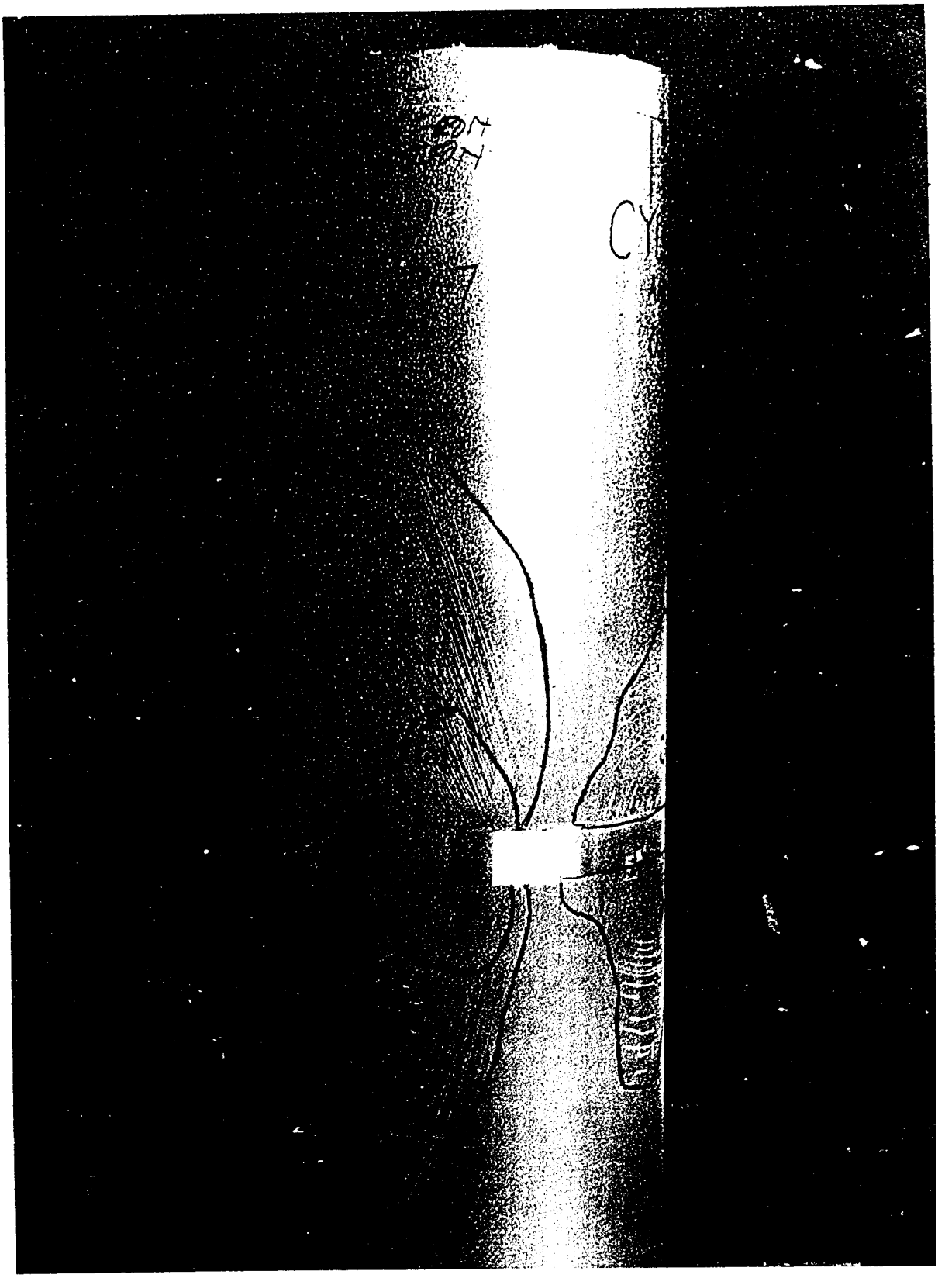

FIG. 18--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 7 (.175") WITH 90° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

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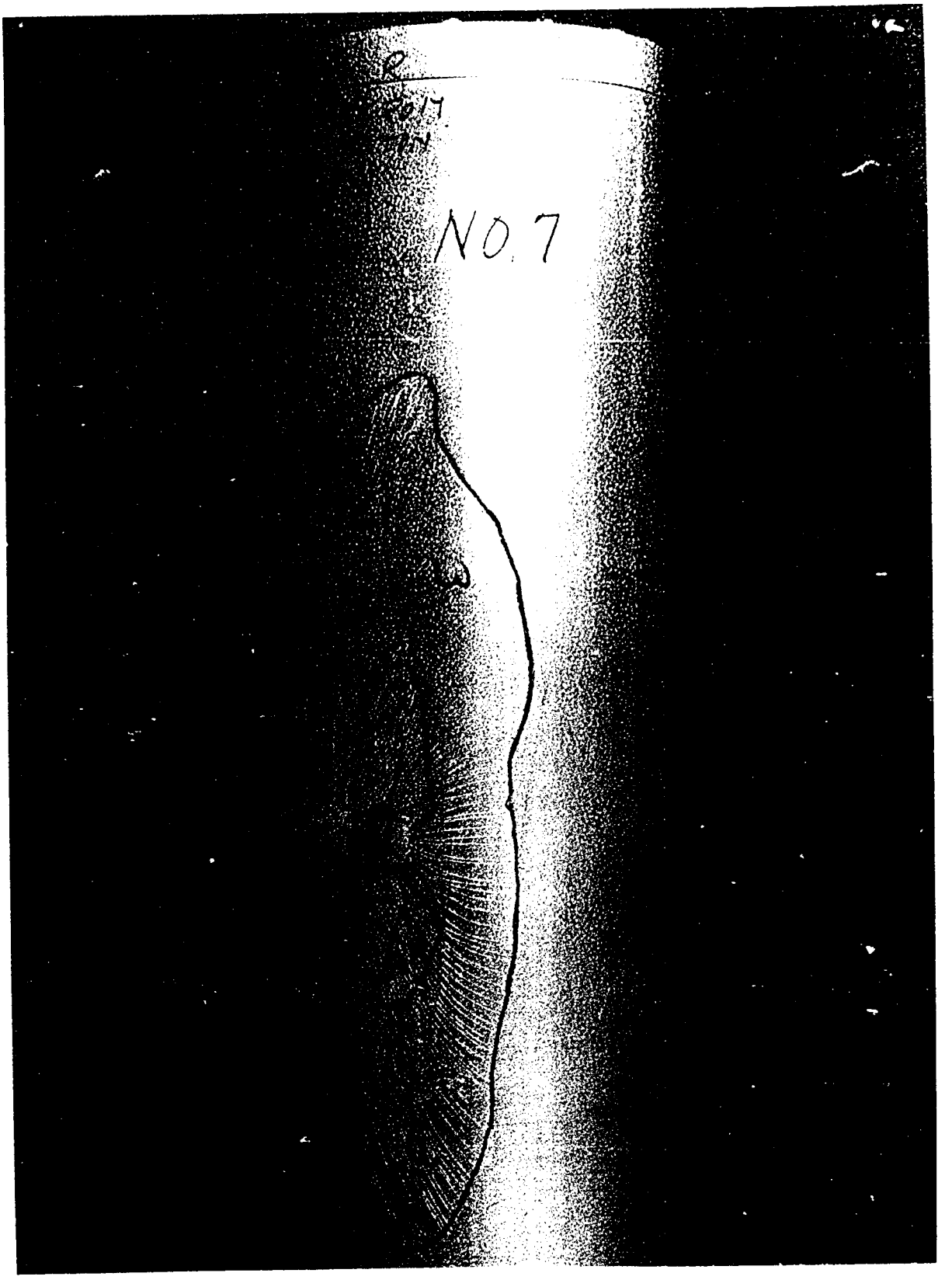

FIG. 19--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 7 (.175") WITH 90° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

#1396

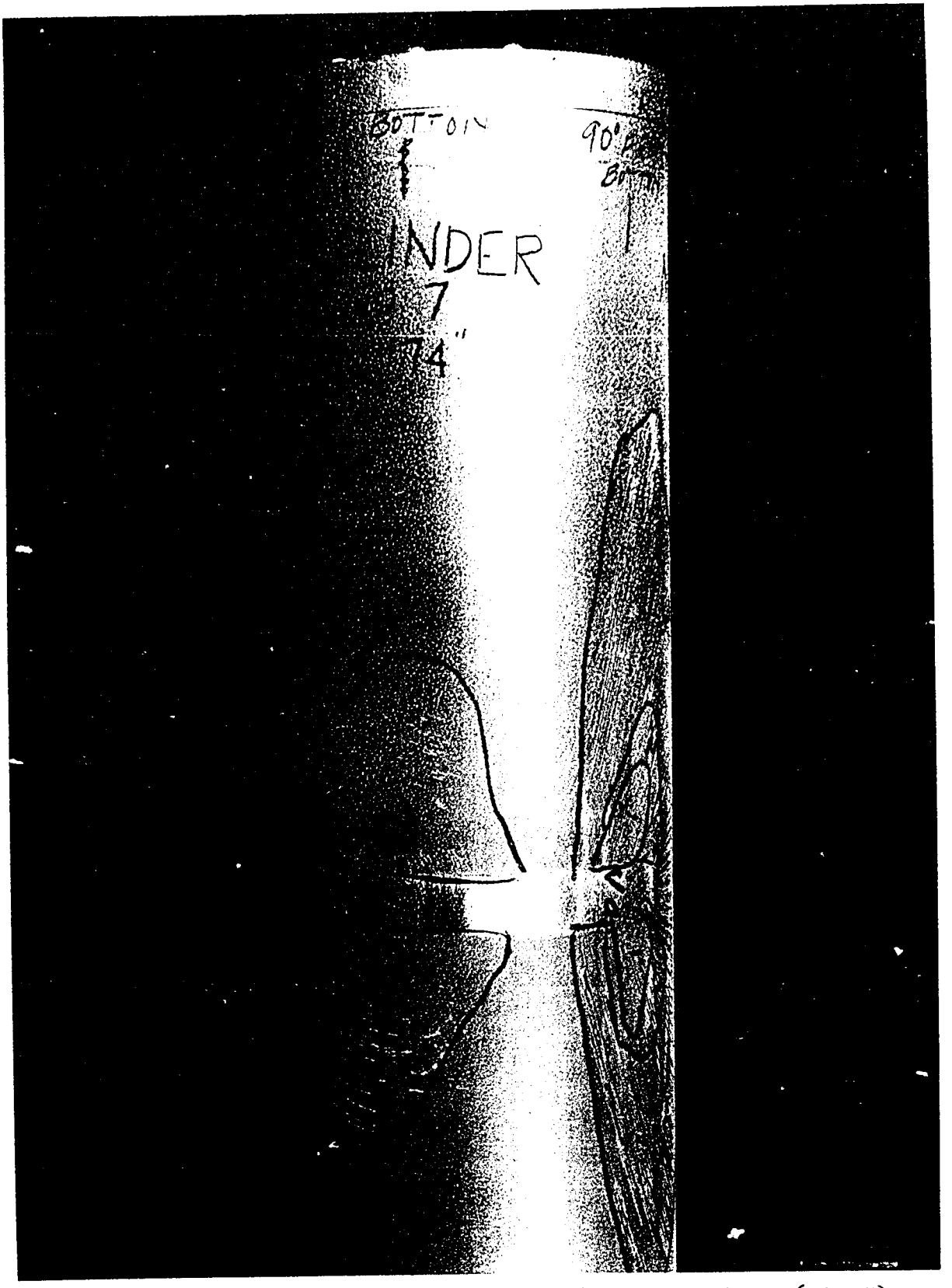

FIG. 20--STRESSCOAT CRACKS FROM LOADING CYLINDER NO. 7 (.175") WITH 90° CABLE--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

#1397

UNCLASSIFIED

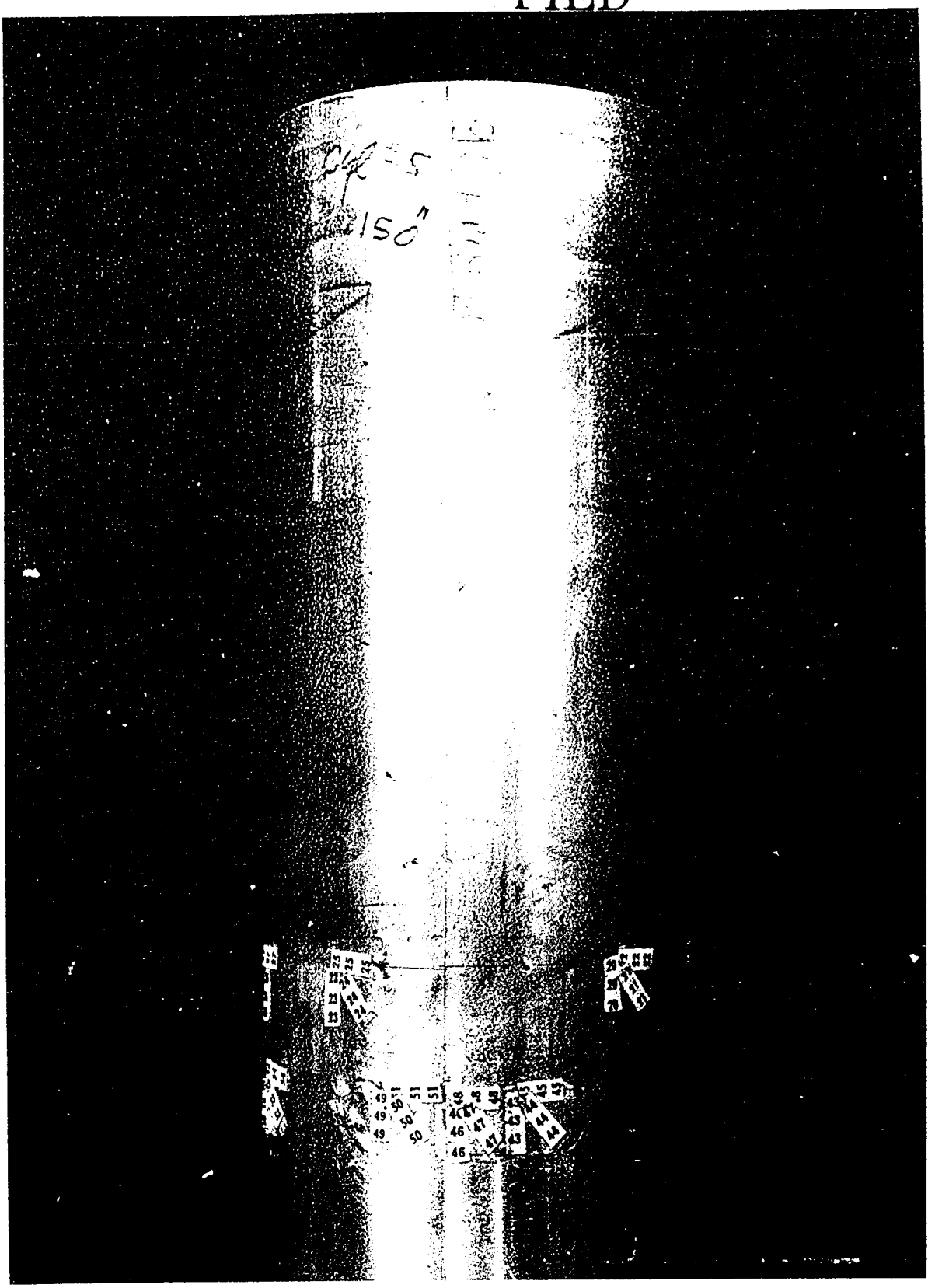

FIG. 21--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 5 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

D#71778

TM-375
REF. SYM: 1612(309)

UNCLASSIFIED

#1398

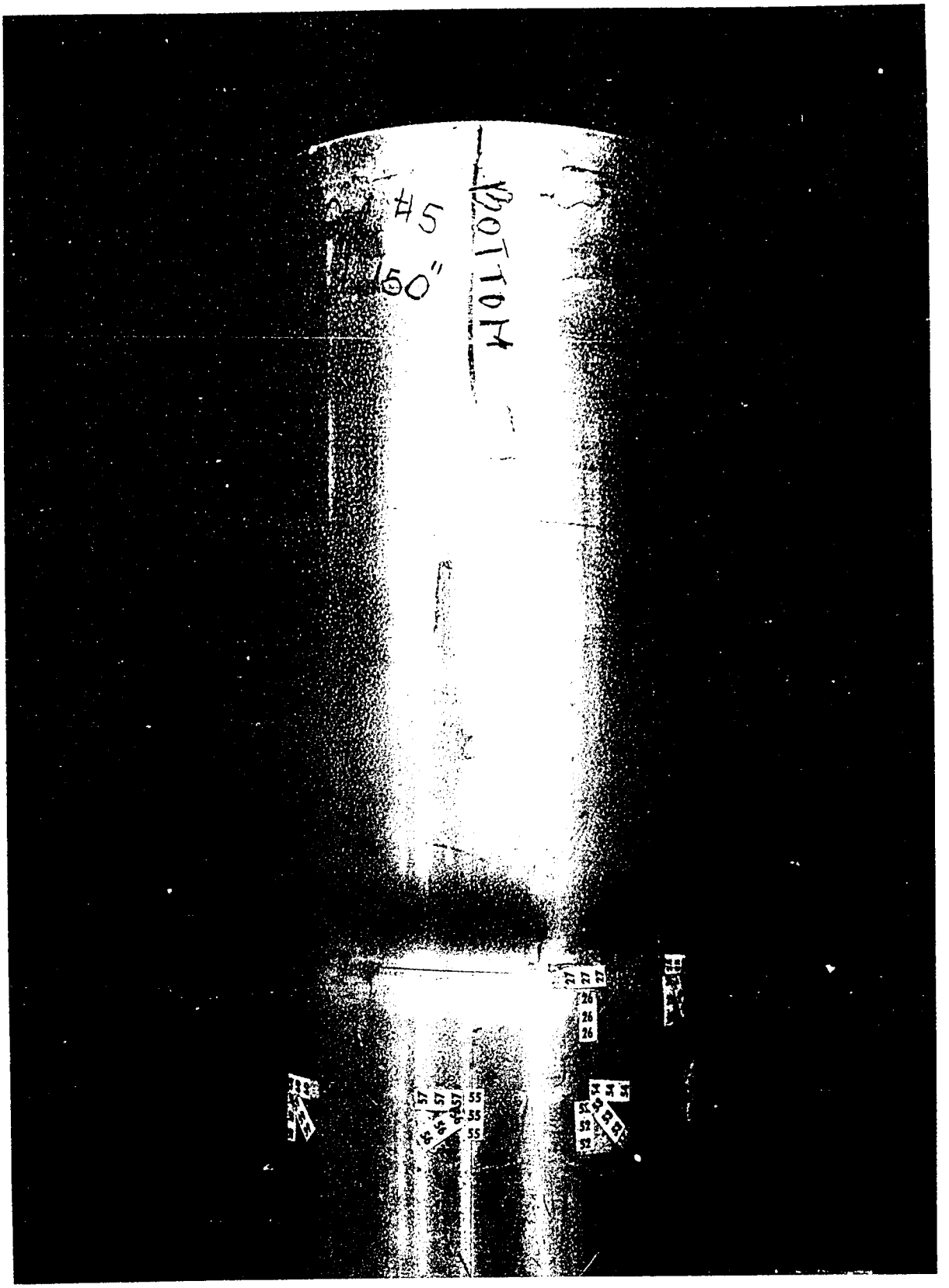

FIG. 22--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 5 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#71779

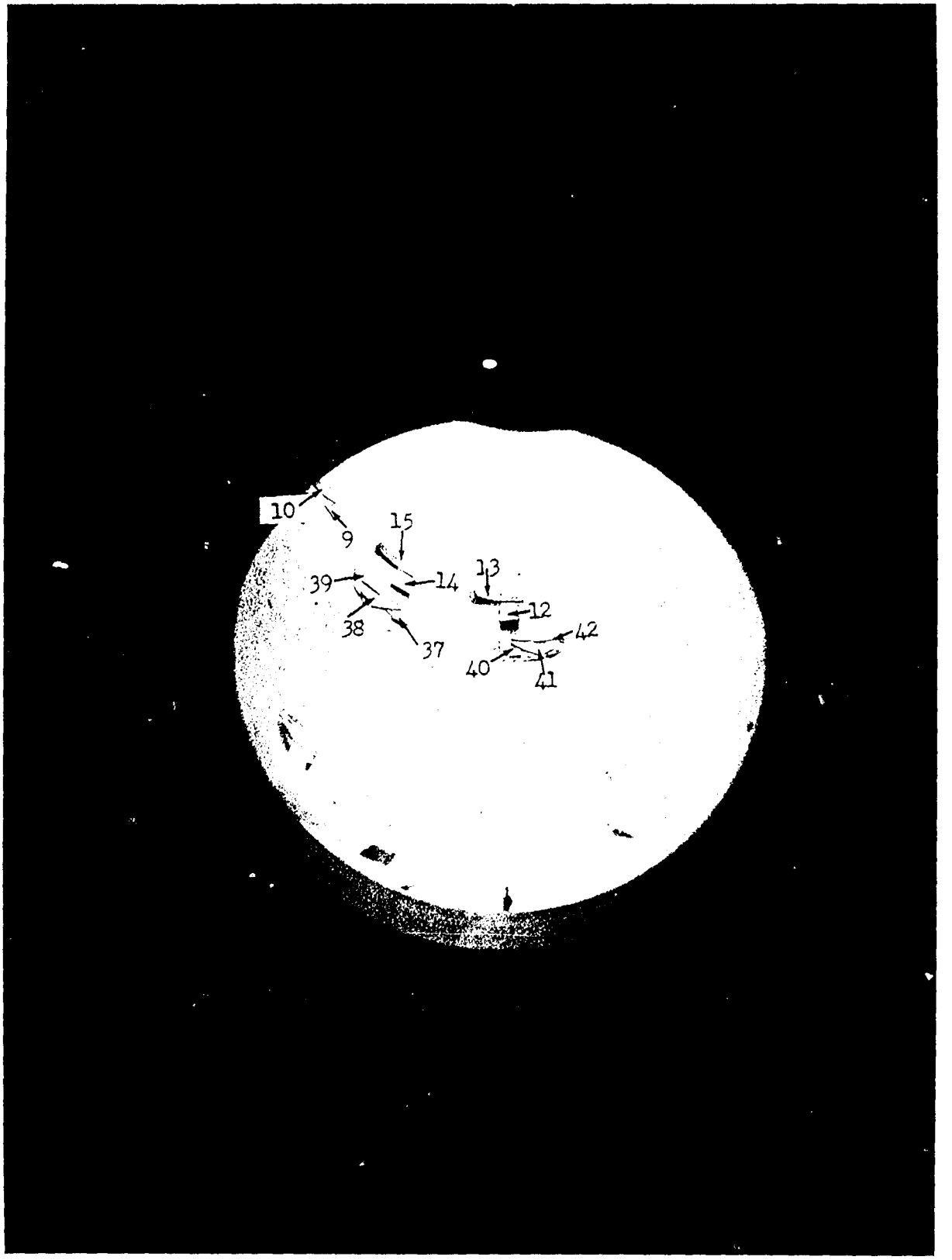

FIG. 23--GAGE LOCATIONS AND AREA OF FALURE IN THE INTERIOR OF CYLINDER NO. 5 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

#1400

UNCLASSIFIED

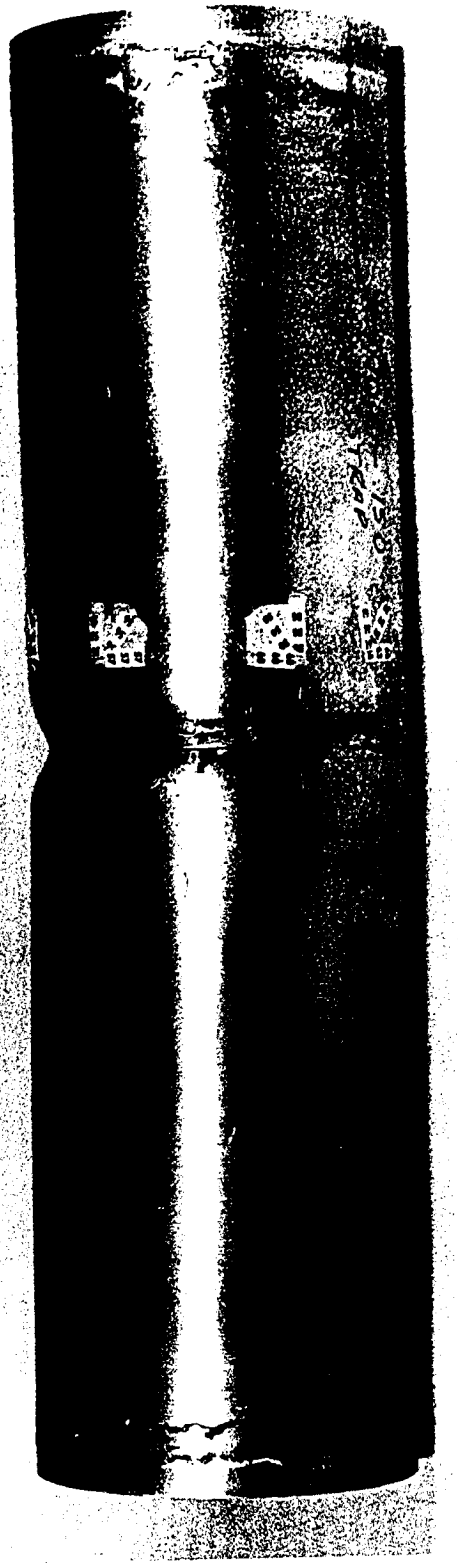

FIG. 24--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 6 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#73331

UNCLASSIFIED

[redacted]

#1401

UNCLASSIFIED

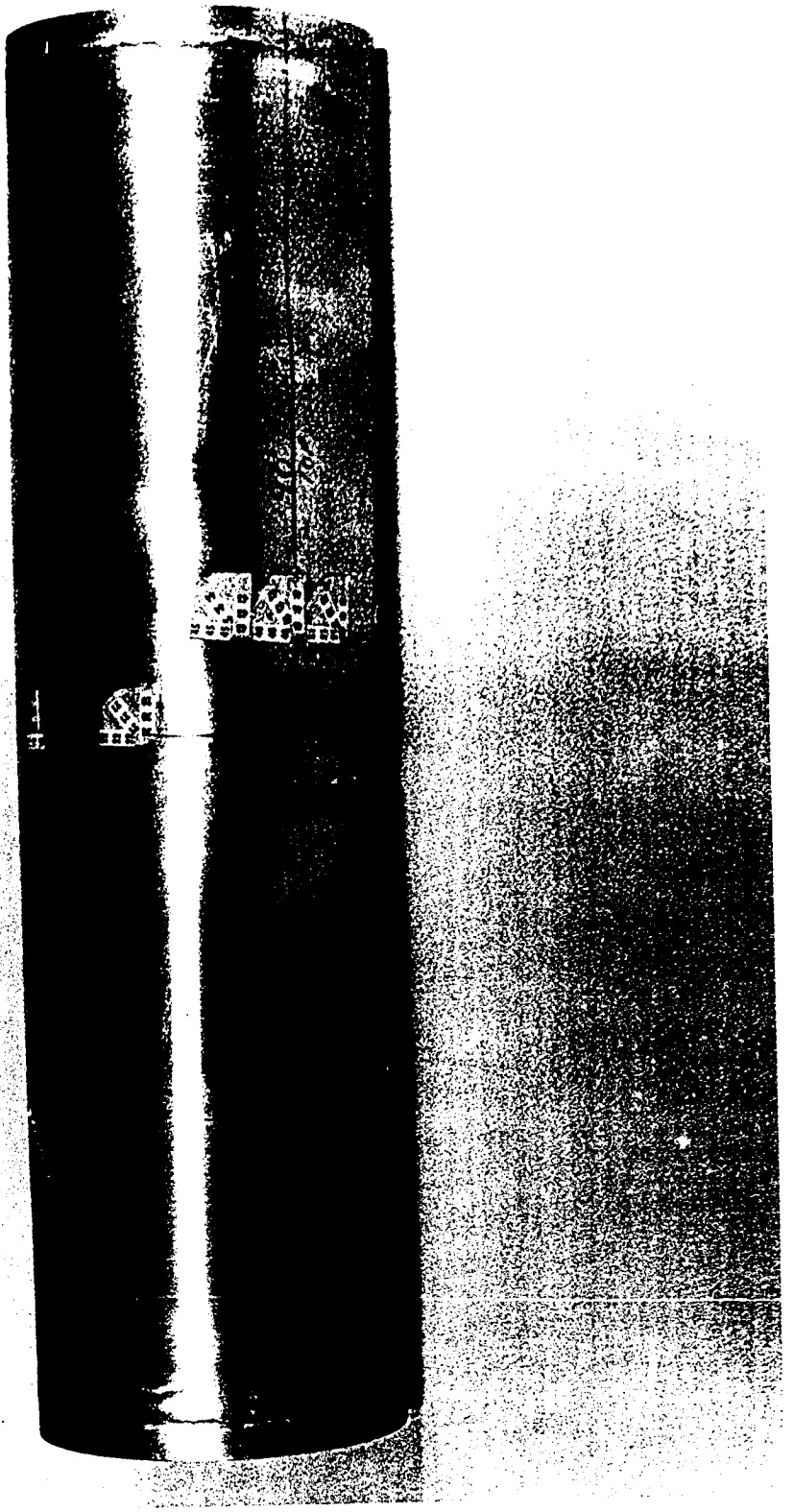

FIG. 25--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 6 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375

REF. SYM: 1612(309)

#73328

UNCLASSIFIED

[redacted]

#1402

UNCLASSIFIED

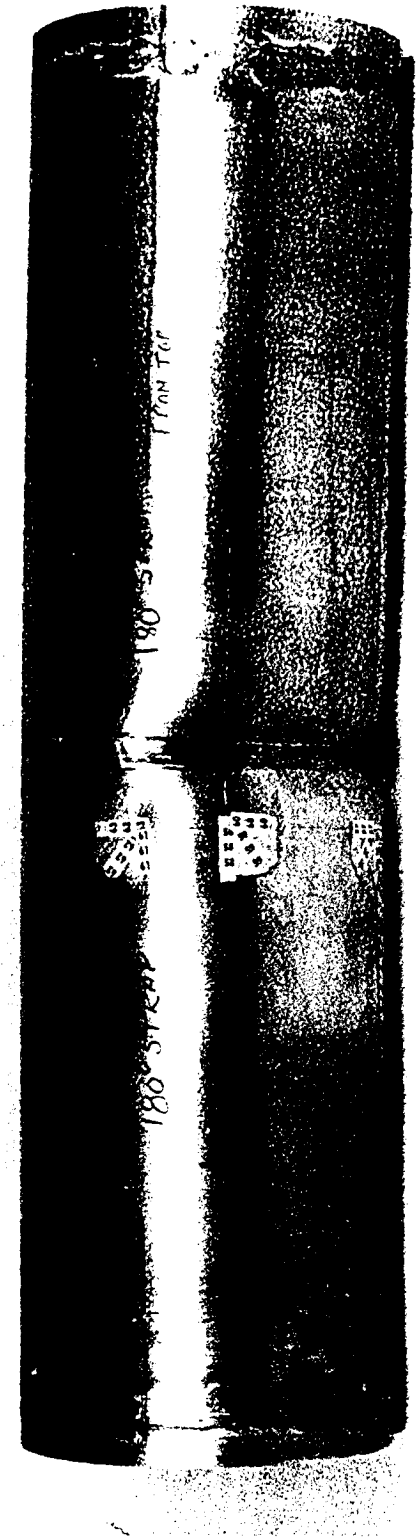

FIG. 26--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 6 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#73333

UNCLASSIFIED

[redacted]

#1403

UNCLASSIFIED

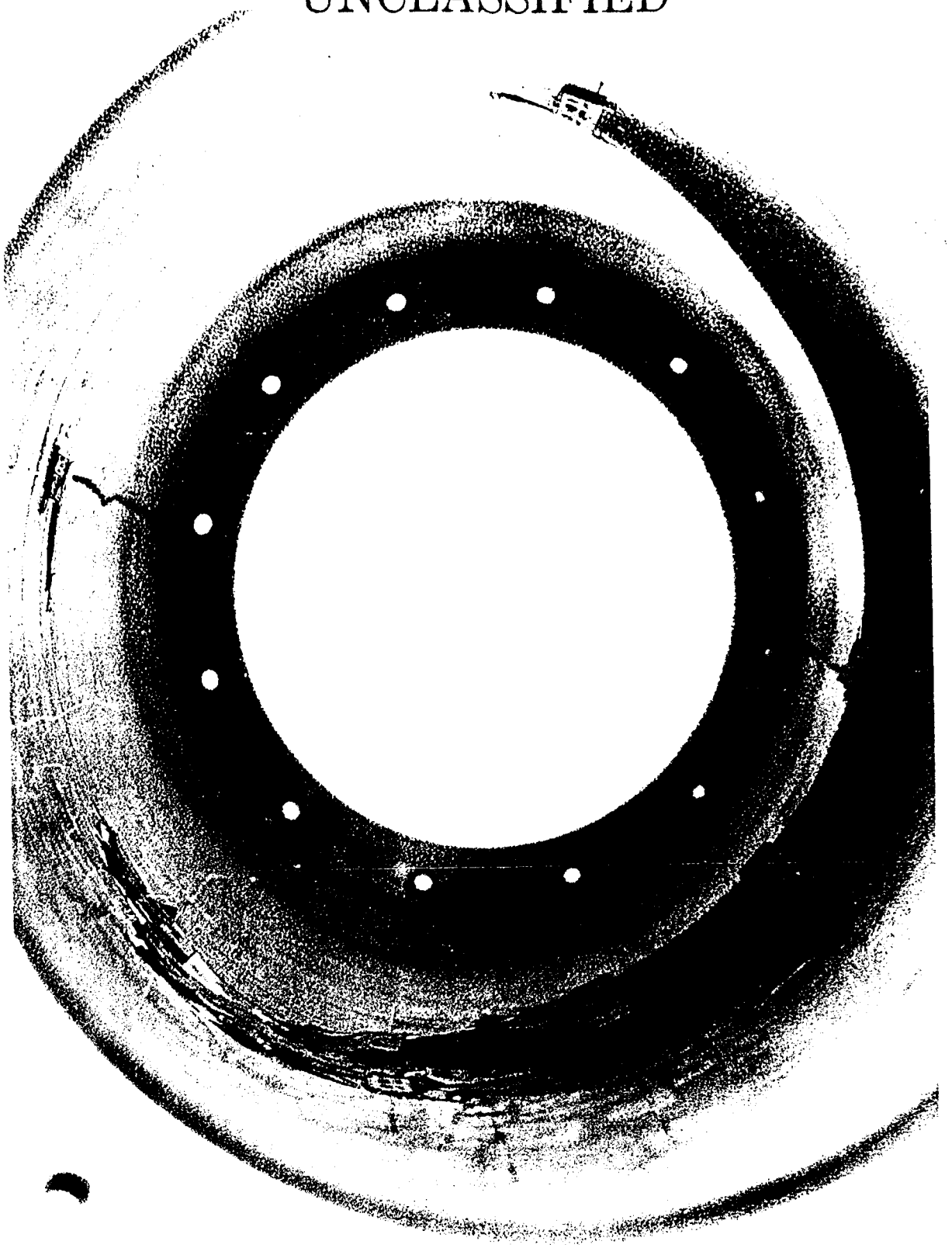

FIG. 27--GAGE LOCATIONS AND AREA OF FAILURE ON INTERIOR OF CYLINDER NO. 6 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

D#73332

TM-375
REF. SYM: 1612(309)

UNCLASSIFIED

[redacted]

#1404

UNCLASSIFIED

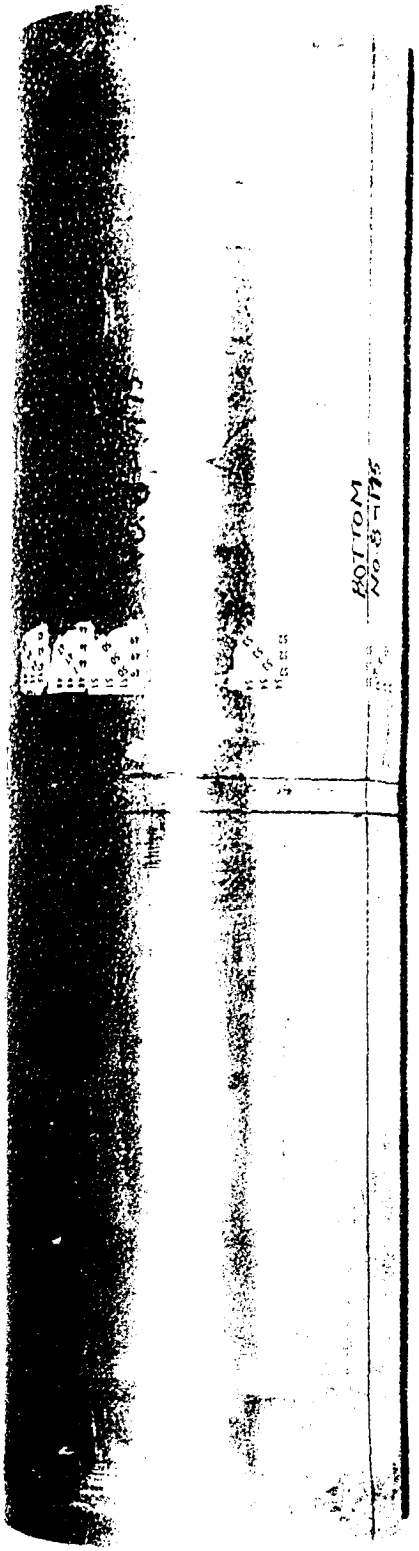

FIG. 28--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 8 (.175")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#7334

UNCLASSIFIED

[redacted]

#1405

UNCLASSIFIED

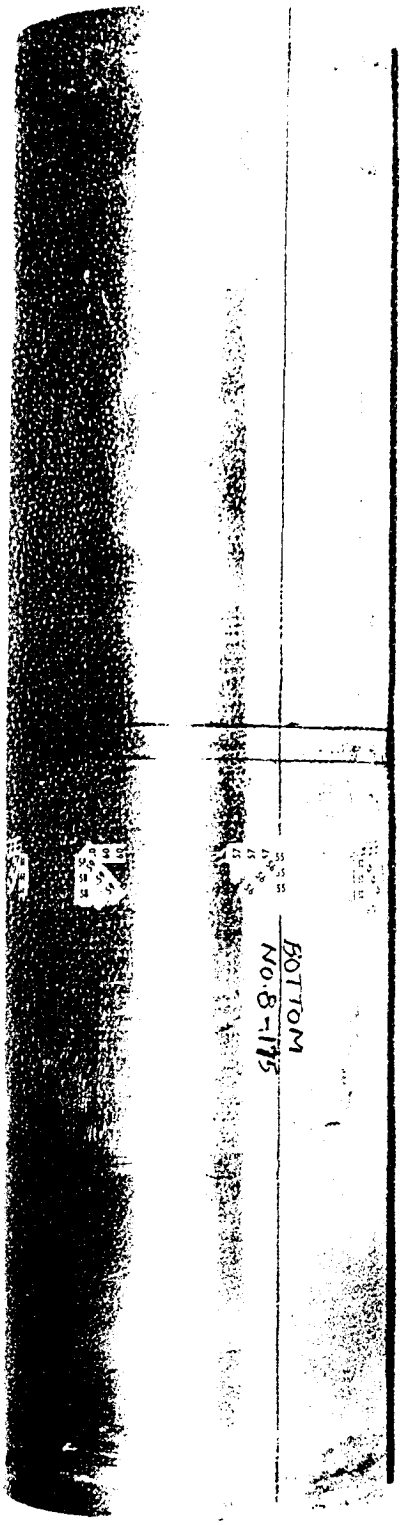

FIG. 29--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 8 (.175")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D# 7333

UNCLASSIFIED

[redacted]

#1406

UNCLASSIFIED

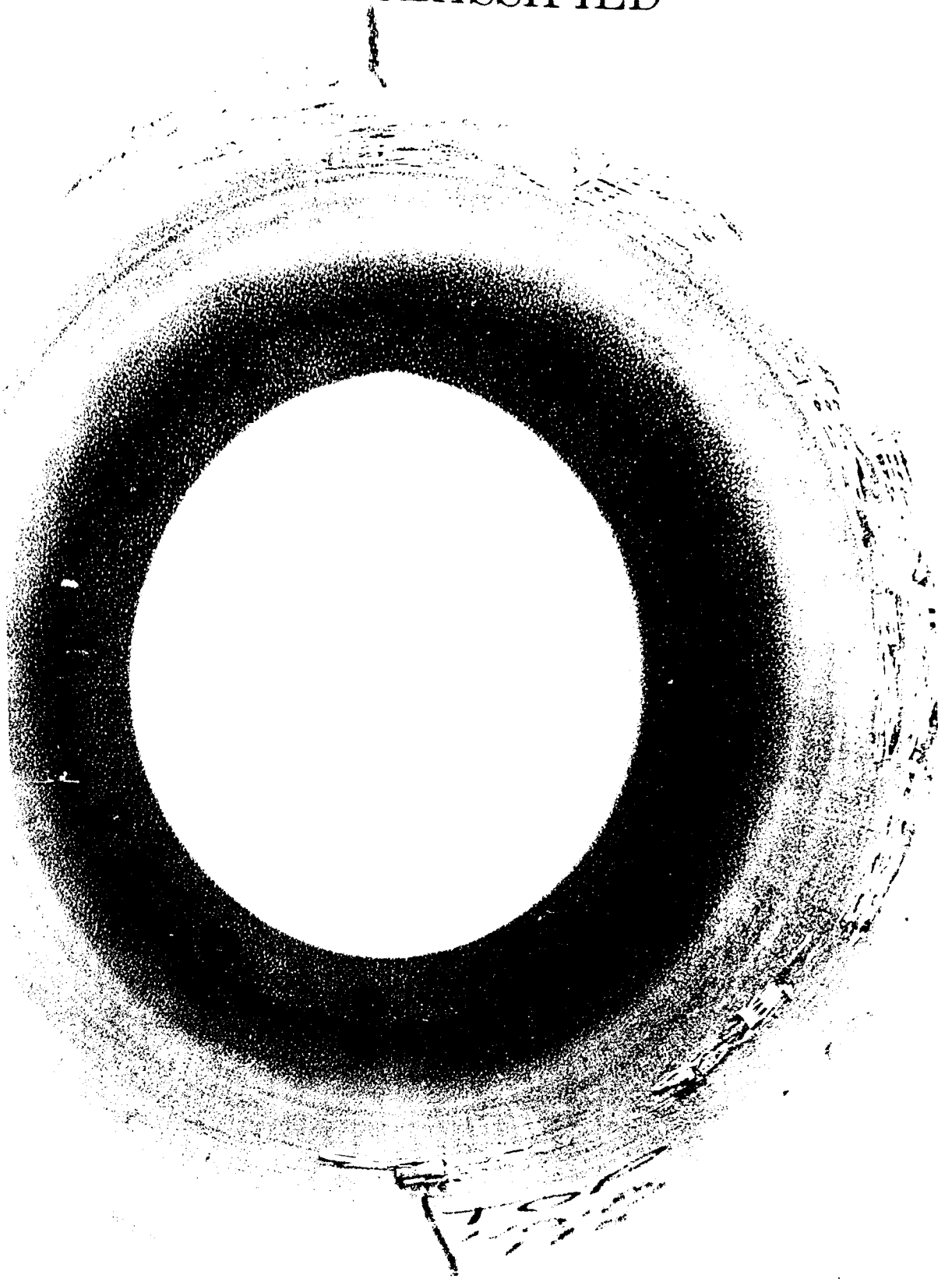

FIG. 30--GAGE LOCATIONS AND AREA OF FAILURE IN INTERIOR OF CYLINDER NO. 8 (.175")--STATIC TEST OF MODEL CYLINDERS FOR CLASS"A" WEAPON

TM-375
REF. SYM: 1612(309)

D#73336

UNCLASSIFIED

#1407

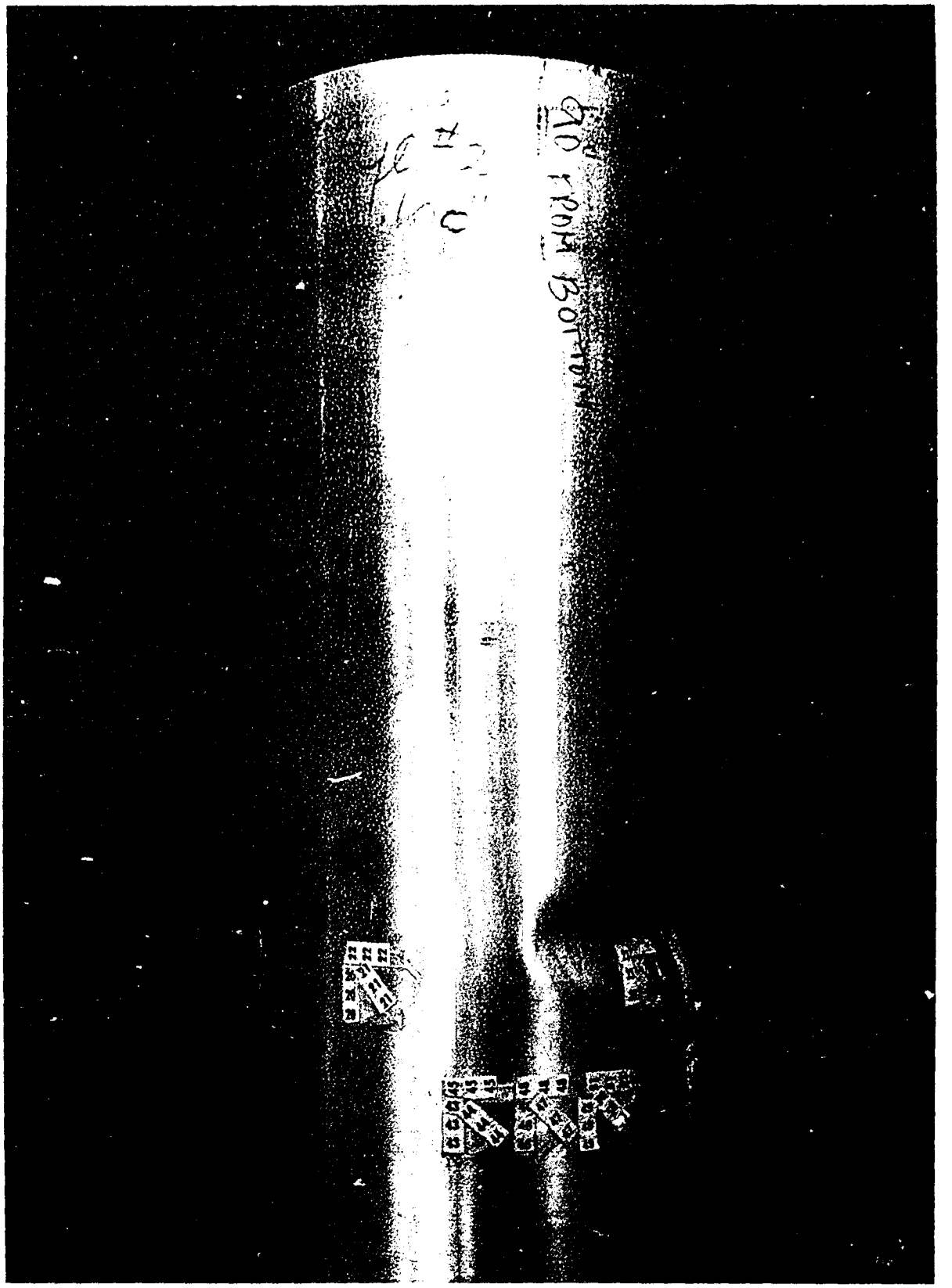

FIG. 31--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 2 (.100")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#71777

[redacted] #1408

UNCLASSIFIED

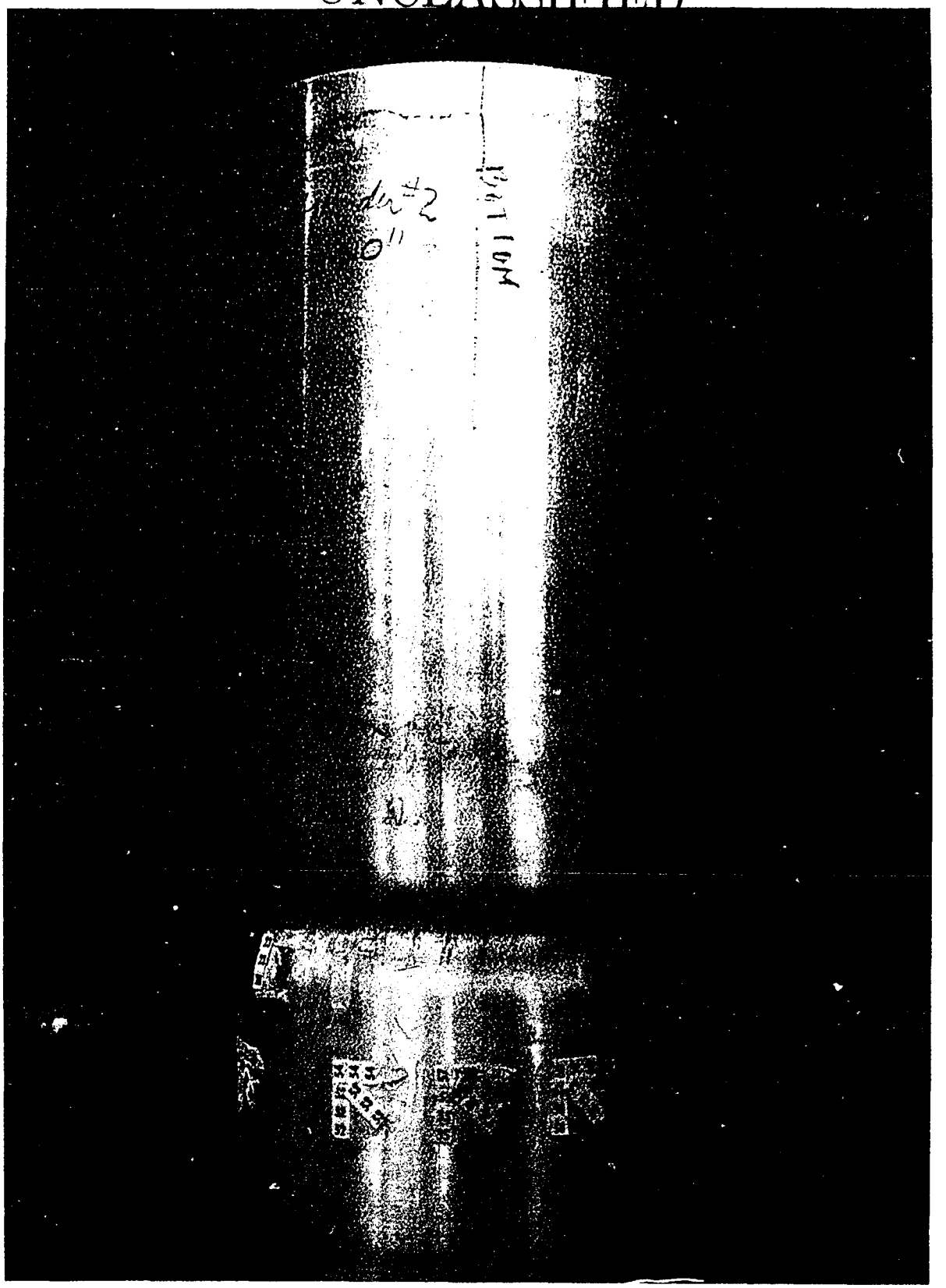

FIG. 32--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 2 (.100")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D# 71774

UNCLASSIFIED

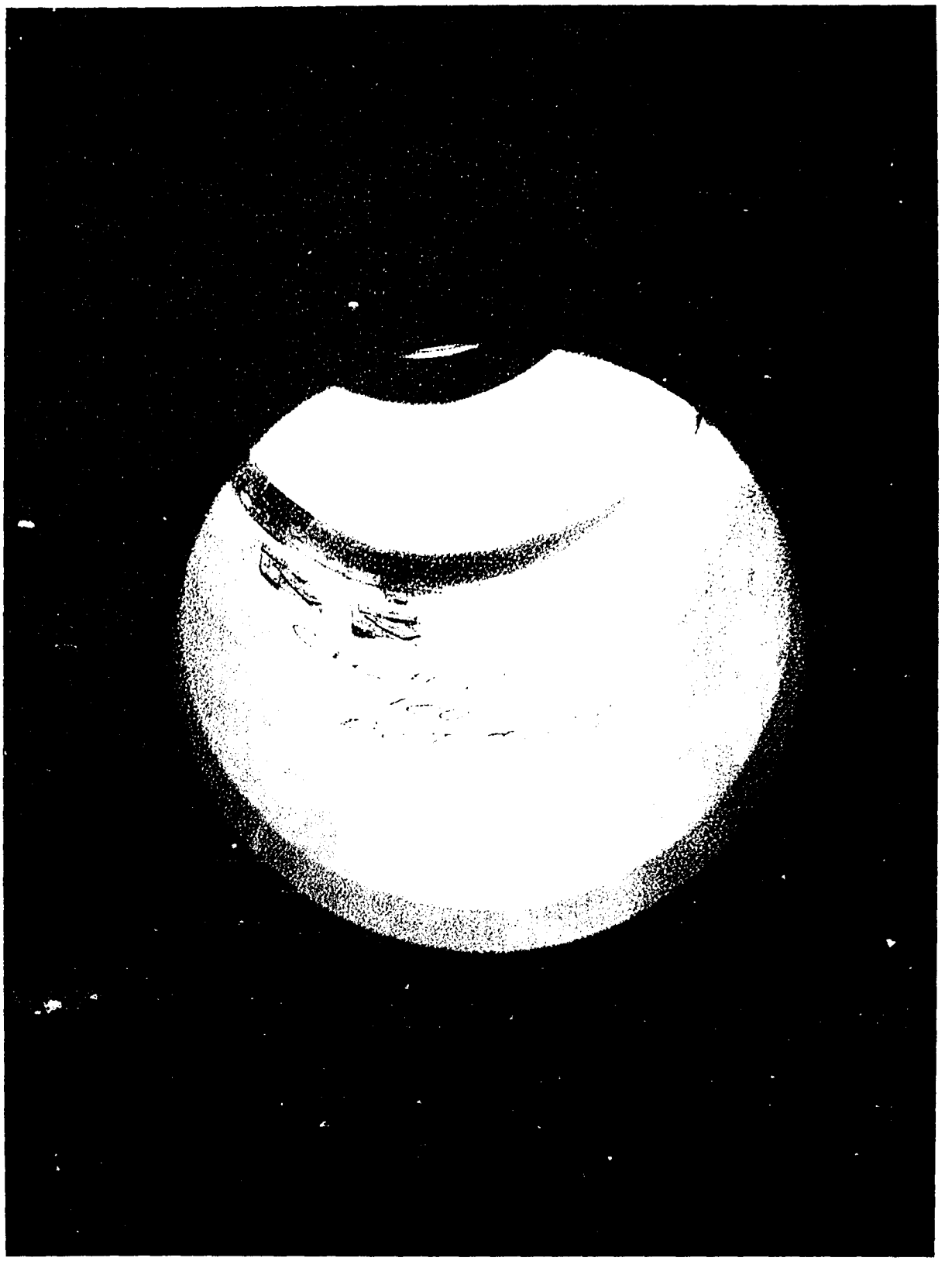

FIG. 33--GAGE LOCATIONS AND AREA OF FAILURE IN INTERIOR OF CYLINDER NO.2 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

#1410

UNCLASSIFIED

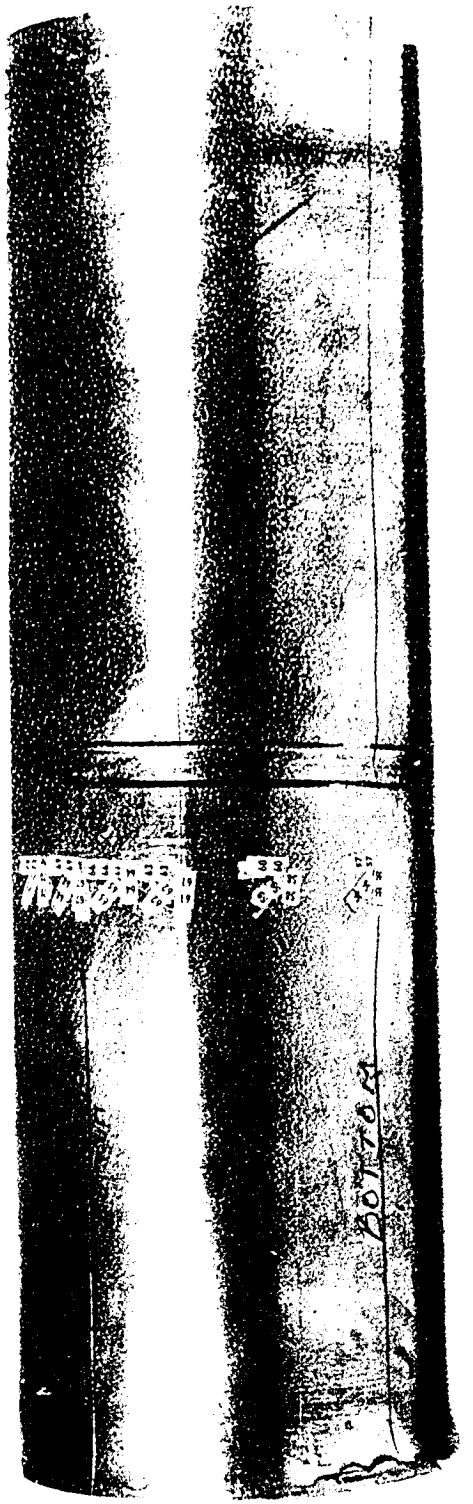

FIG. 34--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 3 (.100")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#7393

UNCLASSIFIED

[redacted]

#7411

UNCLASSIFIED

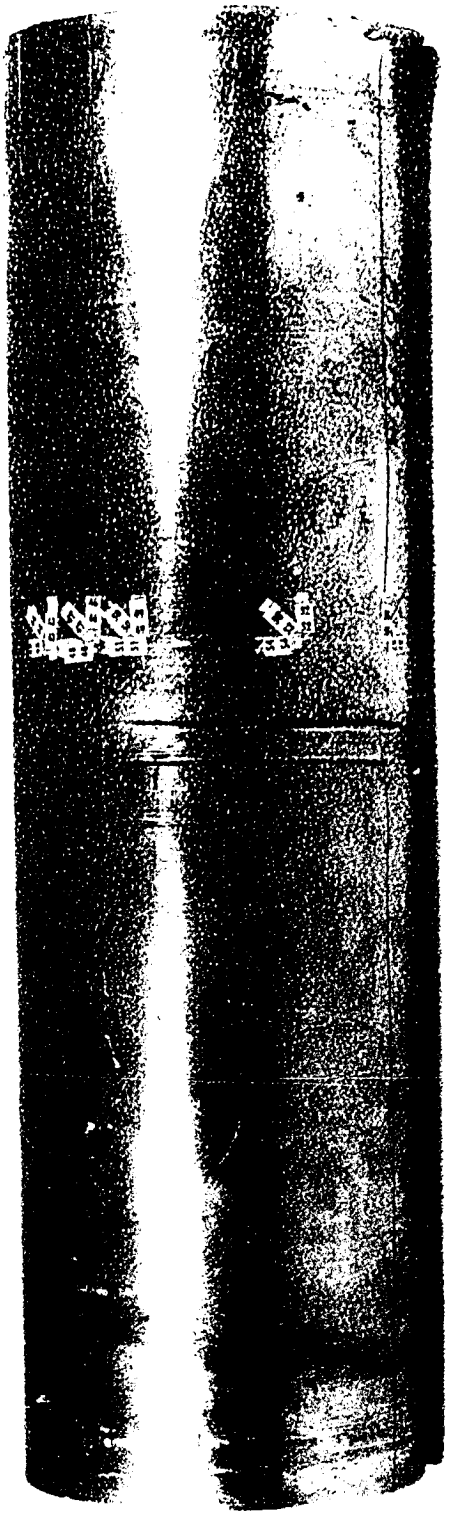

FIG. 35--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 3 (.100")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D #73938

UNCLASSIFIED

[redacted]

#1412

UNCLASSIFIED

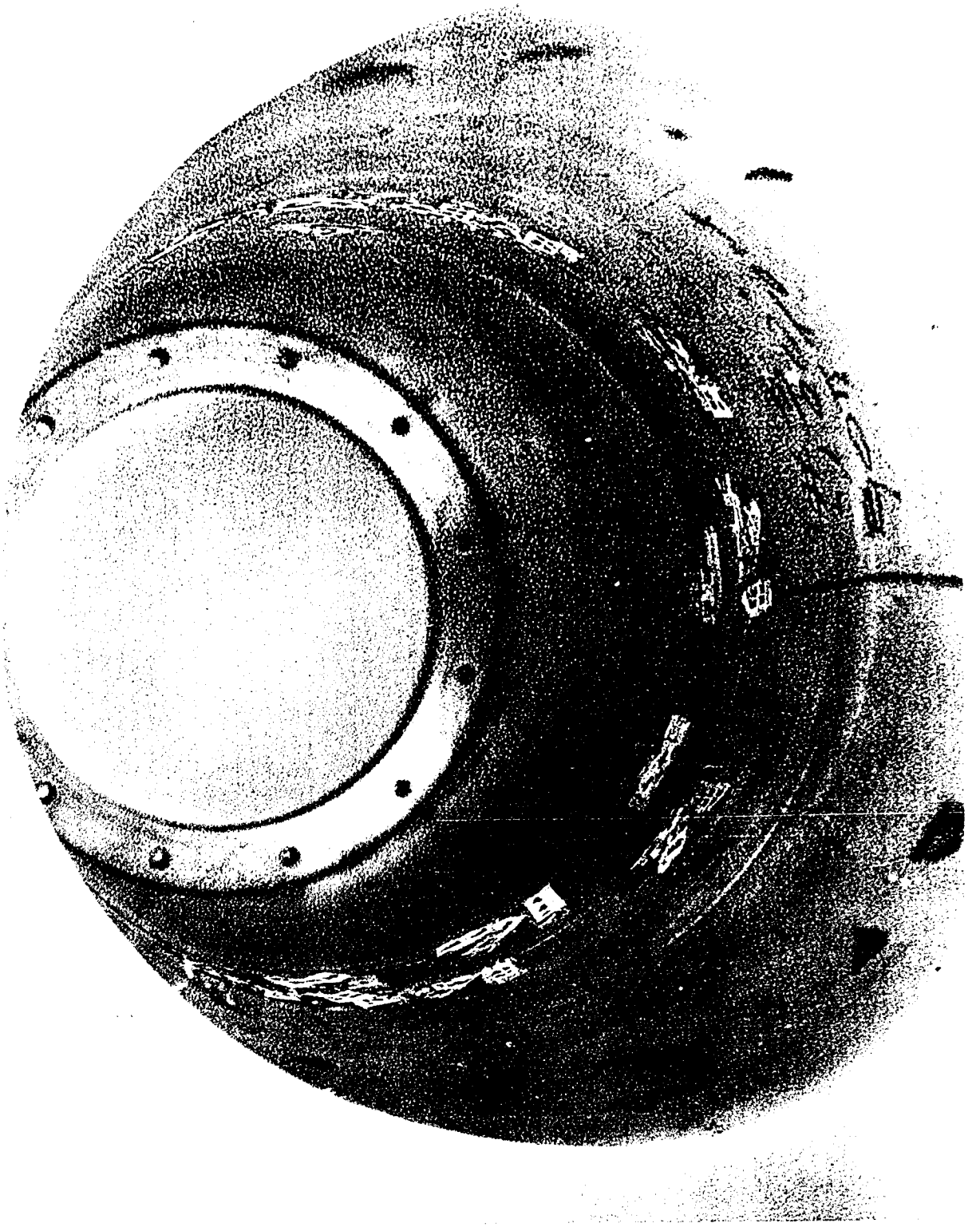

FIG. 36--GAGE LOCATIONS AND AREA OF FAILURE IN INTERIOR OF CYLINDER NO. 3 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D#73939

UNCLASSIFIED

[redacted]

#1413

UNCLASSIFIED

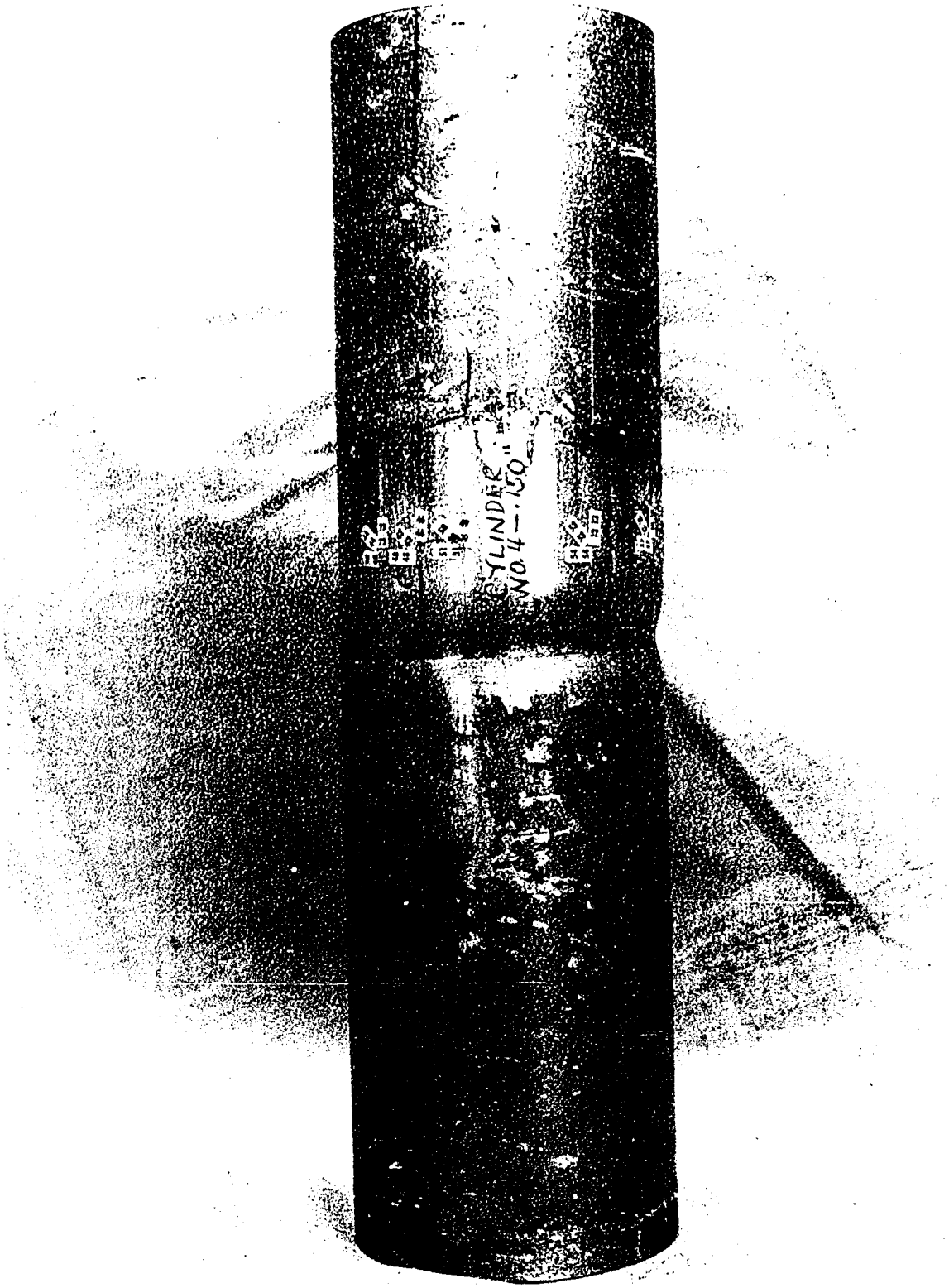

FIG. 37--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 4 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON
TM-375
REF. SYM: 1612(309)

D#76319 UNCLASSIFIED

#1414

[redacted]

UNCLASSIFIED

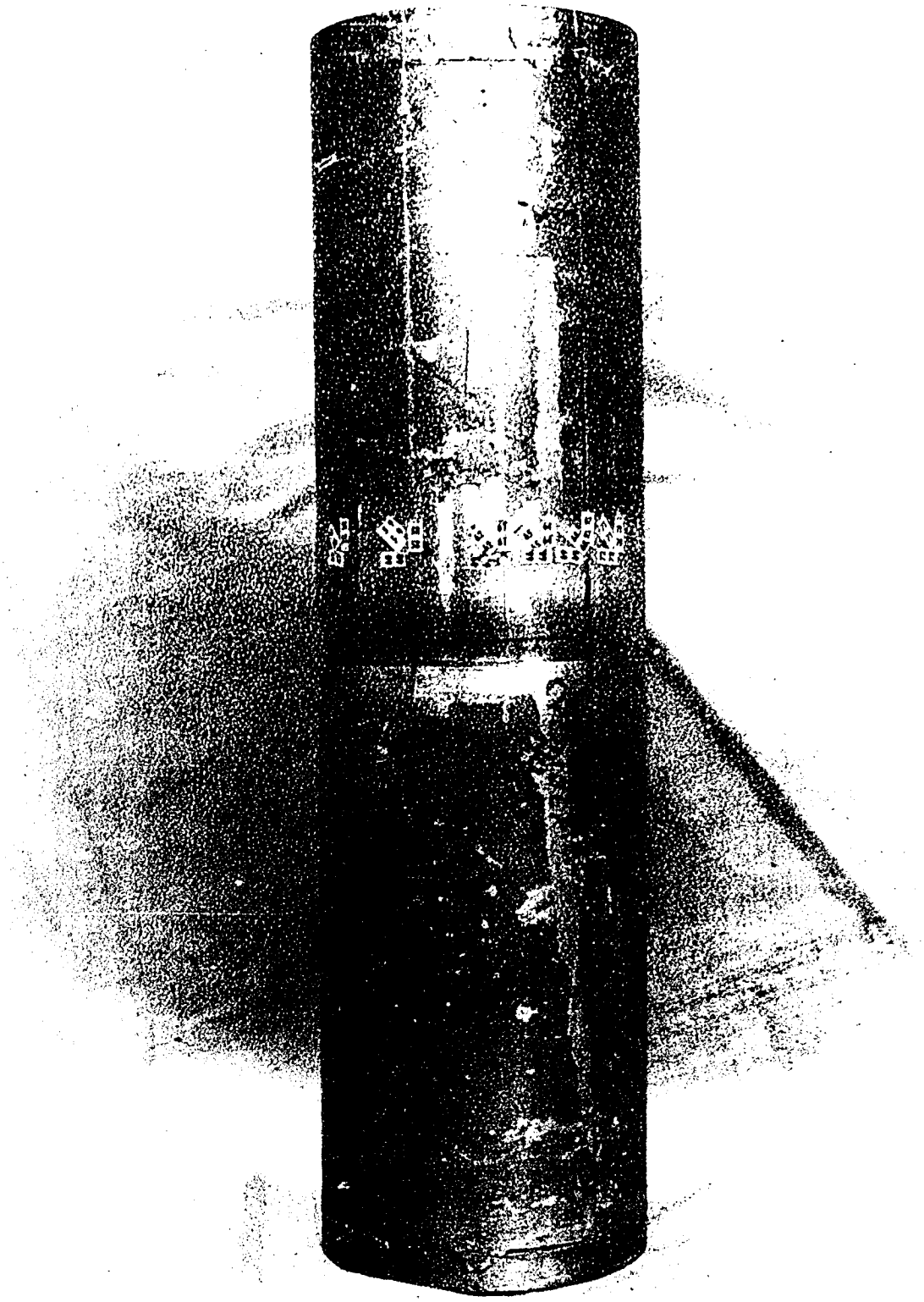

FIG. 38--GAGE LOCATIONS AND AREA OF FAILURE ON CYLINDER NO. 4 (.150")--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON
TM-375
REF. SYM: 1612(309)

D#76329

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[redacted]

#1415

UNCLASSIFIED

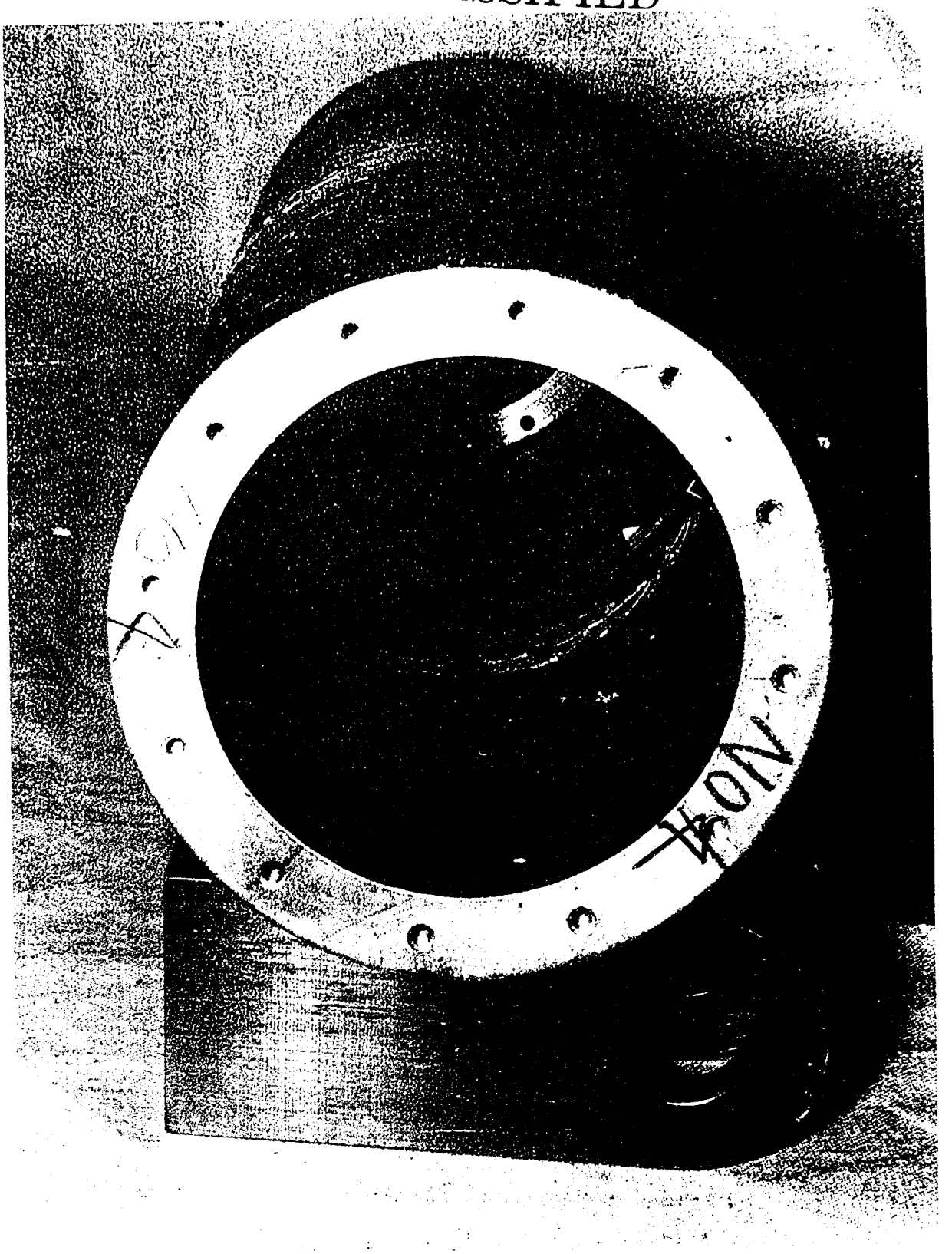


FIG. 39--GAGE LOCATIONS AND AREA OF FAILURE IN INTERIOR OF CYLINDER NO. 4 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

D #76321

UNCLASSIFIED

[redacted]

#1416

UNCLASSIFIED

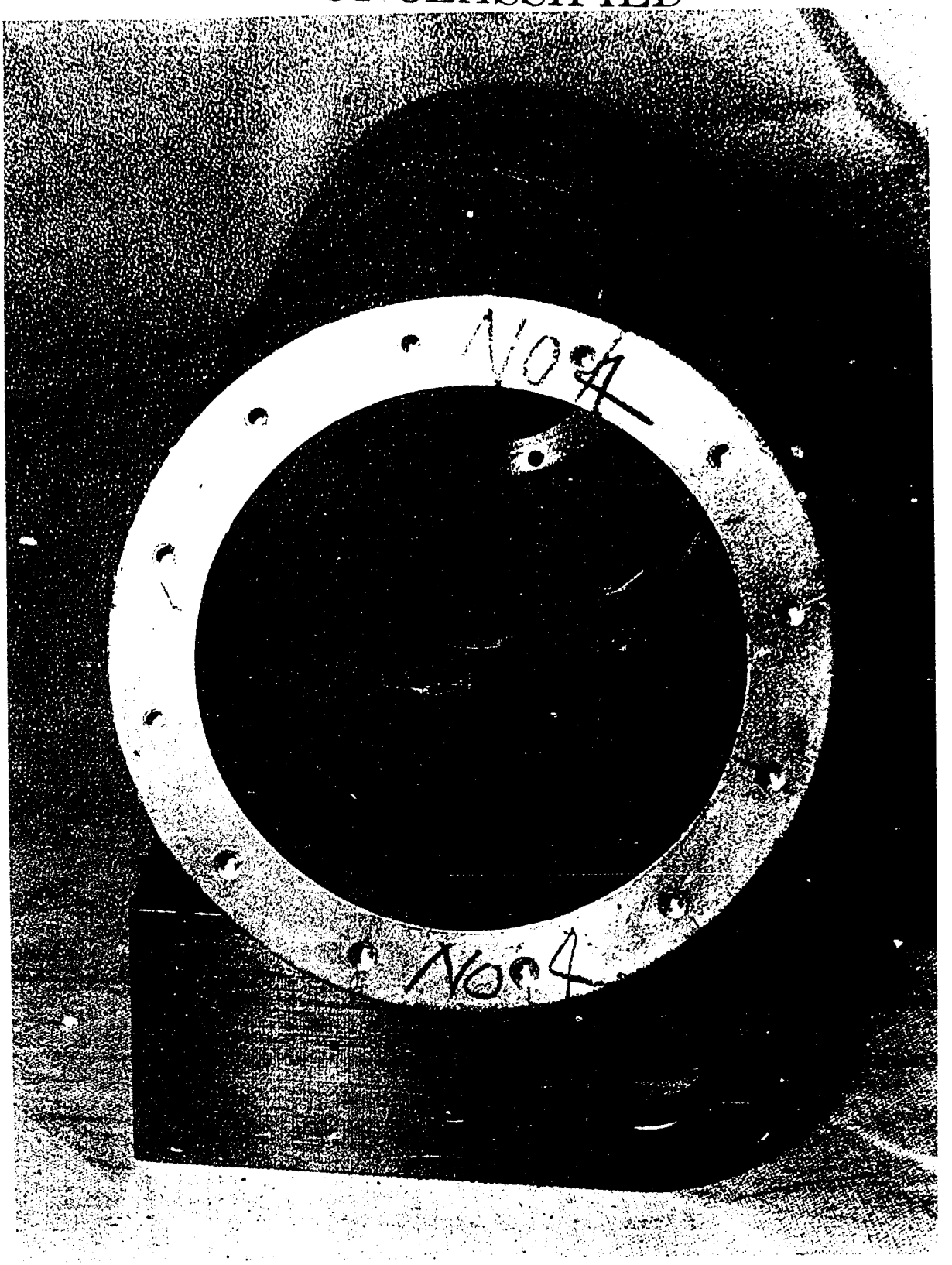


FIG. 40--GAGE LOCATIONS AND AREA OF FAILURE IN INTERIOR OF CYLINDER NO. 4 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

D# 76322

UNCLASSIFIED

[redacted]

#1417

UNCLASSIFIED

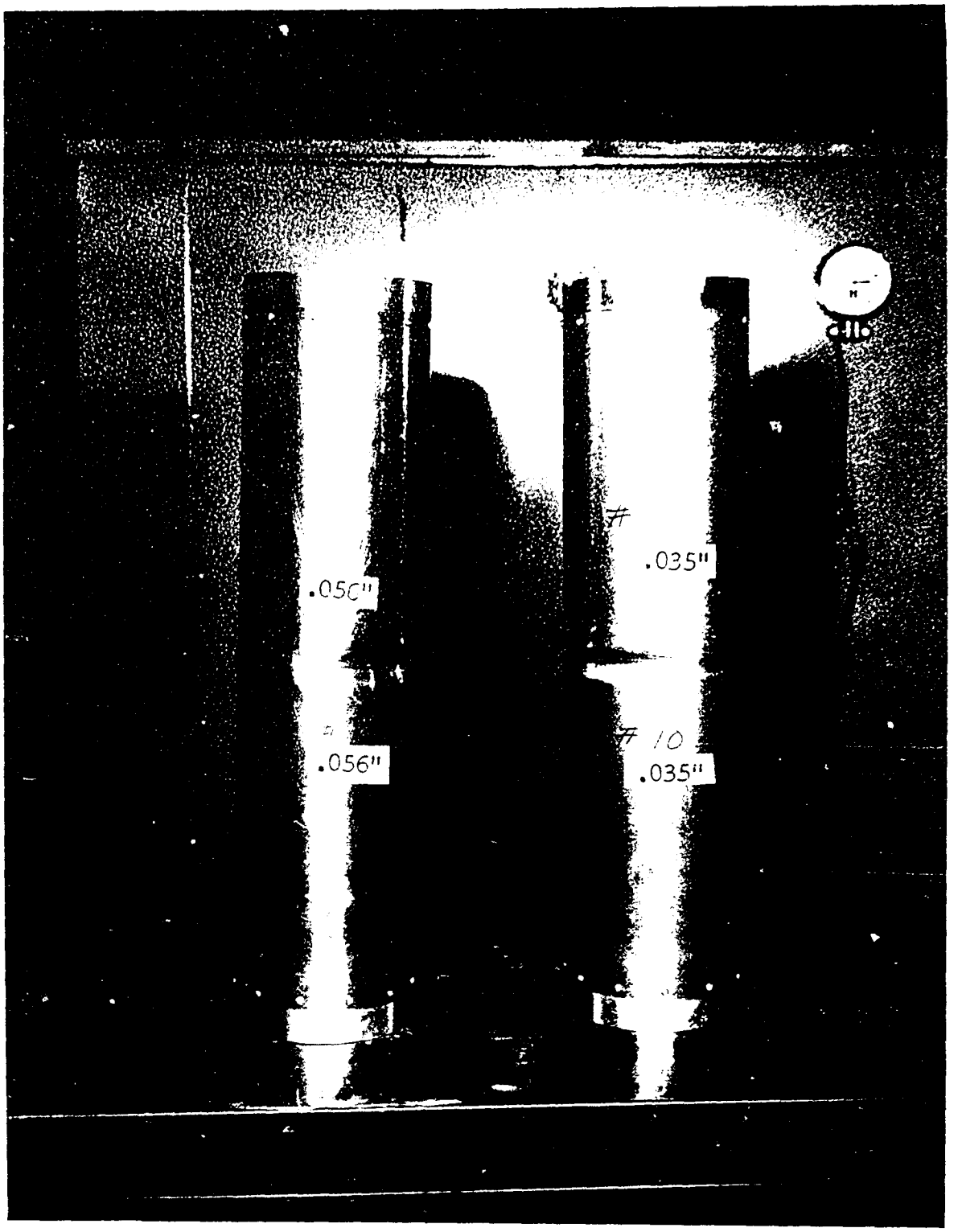


FIG. 41--CYLINDERS NO. 10 (.035") AND NO. 11 (.056") AFTER FAILURE--
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON
TM-375
REF. SYM: 1612(309)

[redacted]

UNCLASSIFIED

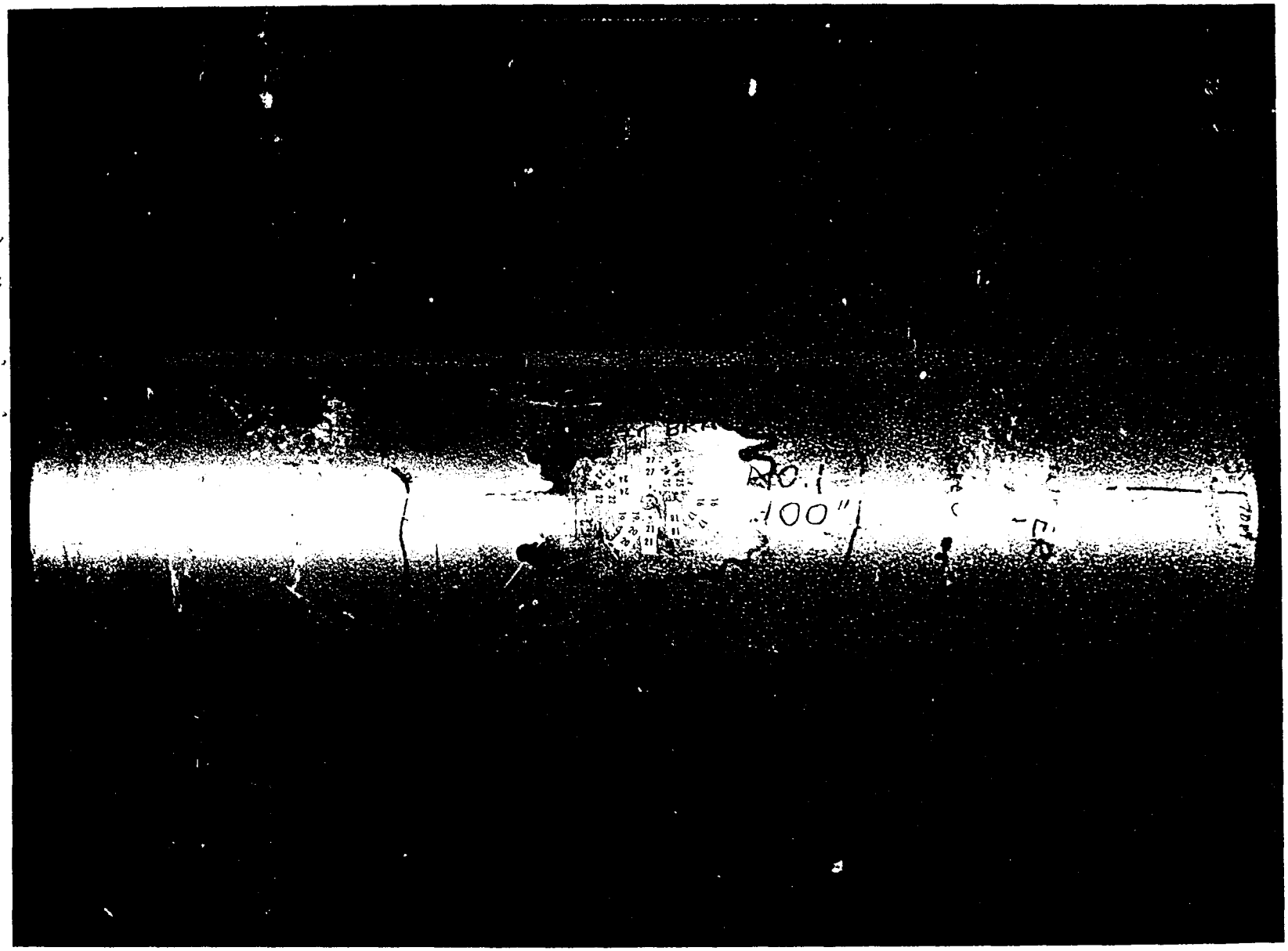


FIG. 42--LOCATION OF GAGES AND AREA OF LOADING 5/16" SWAY BRACE PAD FOR CYLINDER NO. 1 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

#1419

UNCLASSIFIED

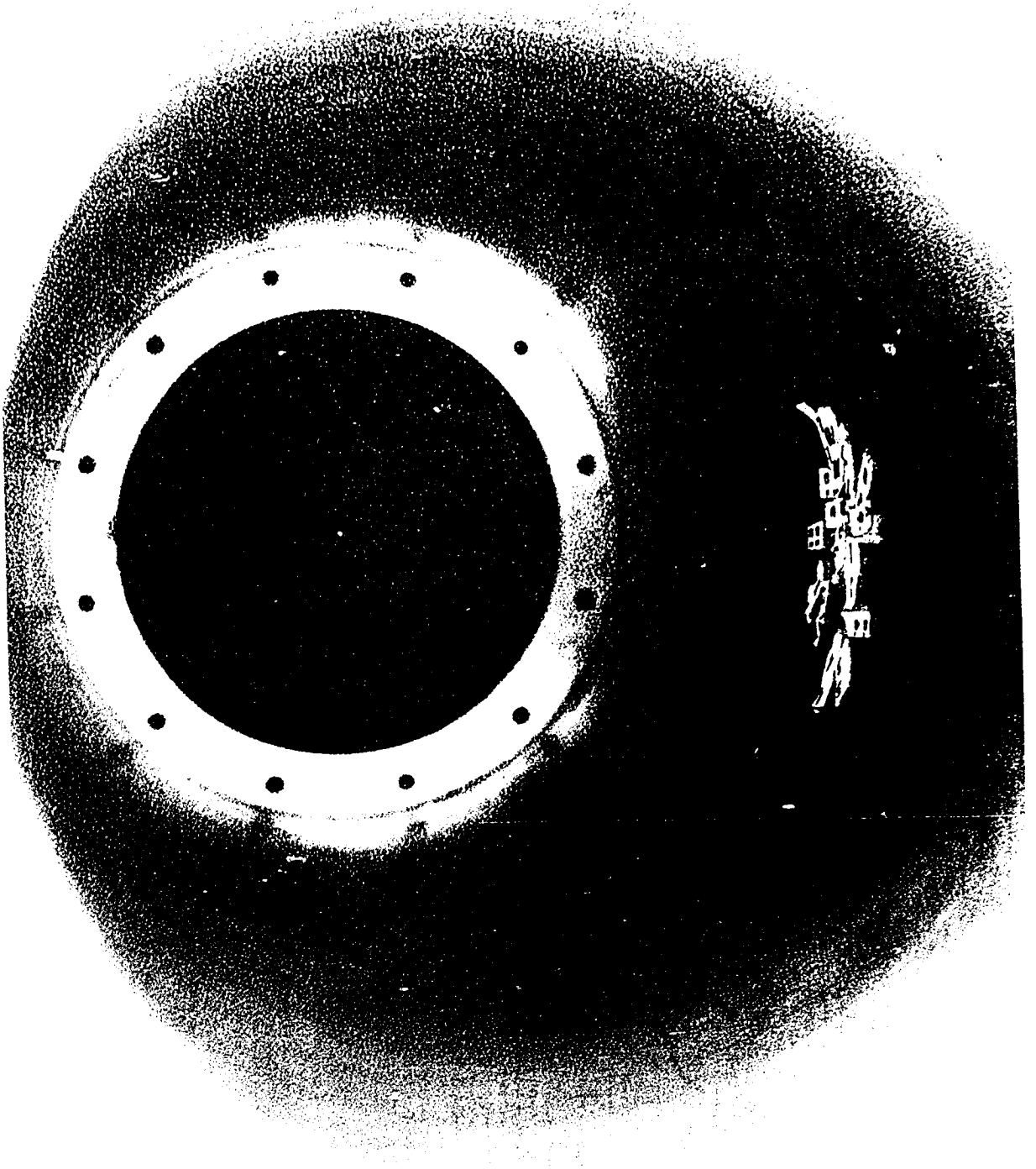
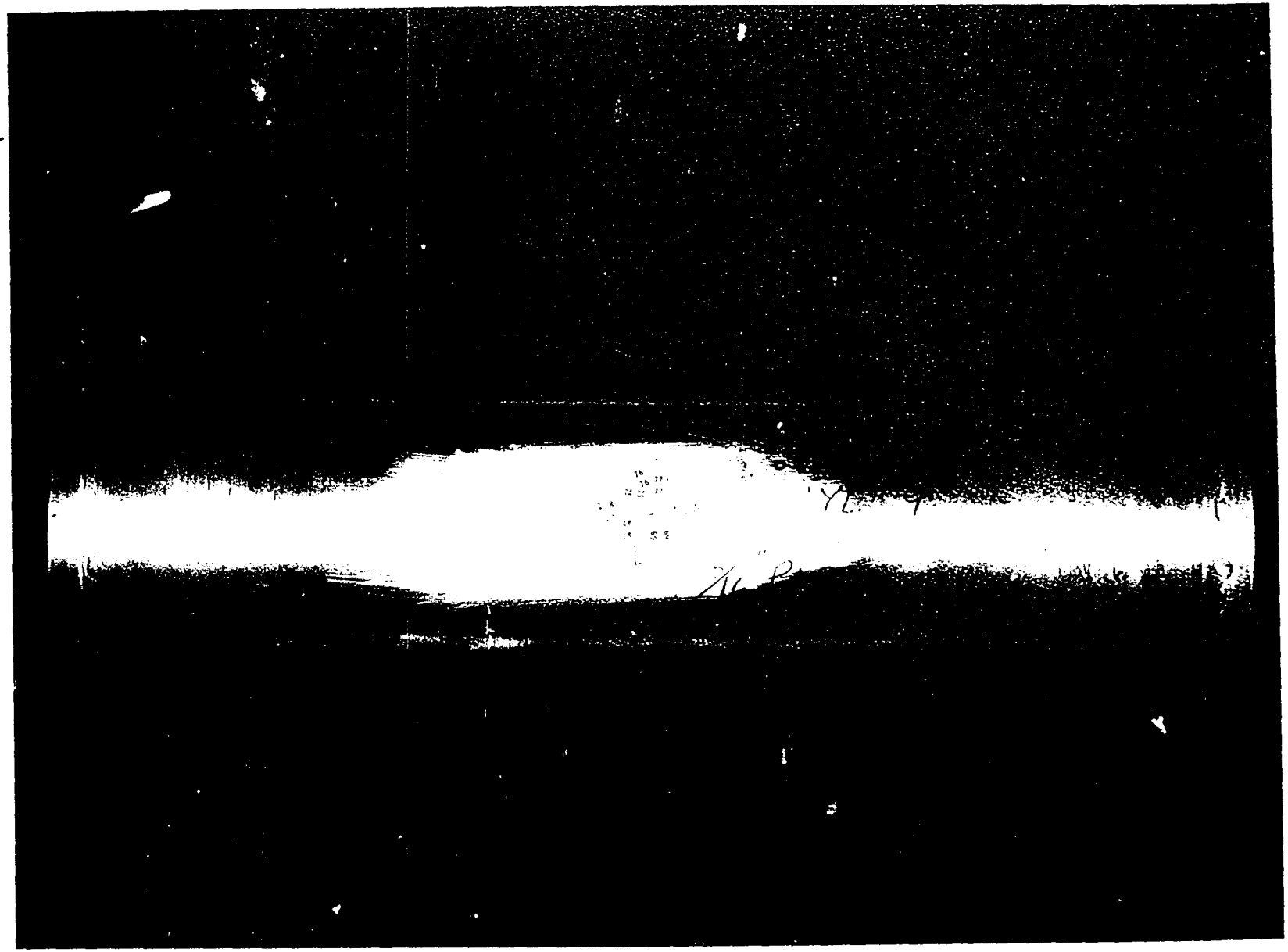


FIG. 43--LOCATION OF GAGES ON INTERIOR OF CYLINDER NO. 1 (.100") FOR 5/16" DIAMETER SWAY BRACE LOADING--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

UNCLASSIFIED

[redacted]



[redacted]

FIG. 44--LOCATION OF GAGES AND AREA OF LOADING 5/16" DIAMETER SWAY BRACE PAD FOR CYLINDER NO. 9 (.175")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

#1421

UNCLASSIFIED

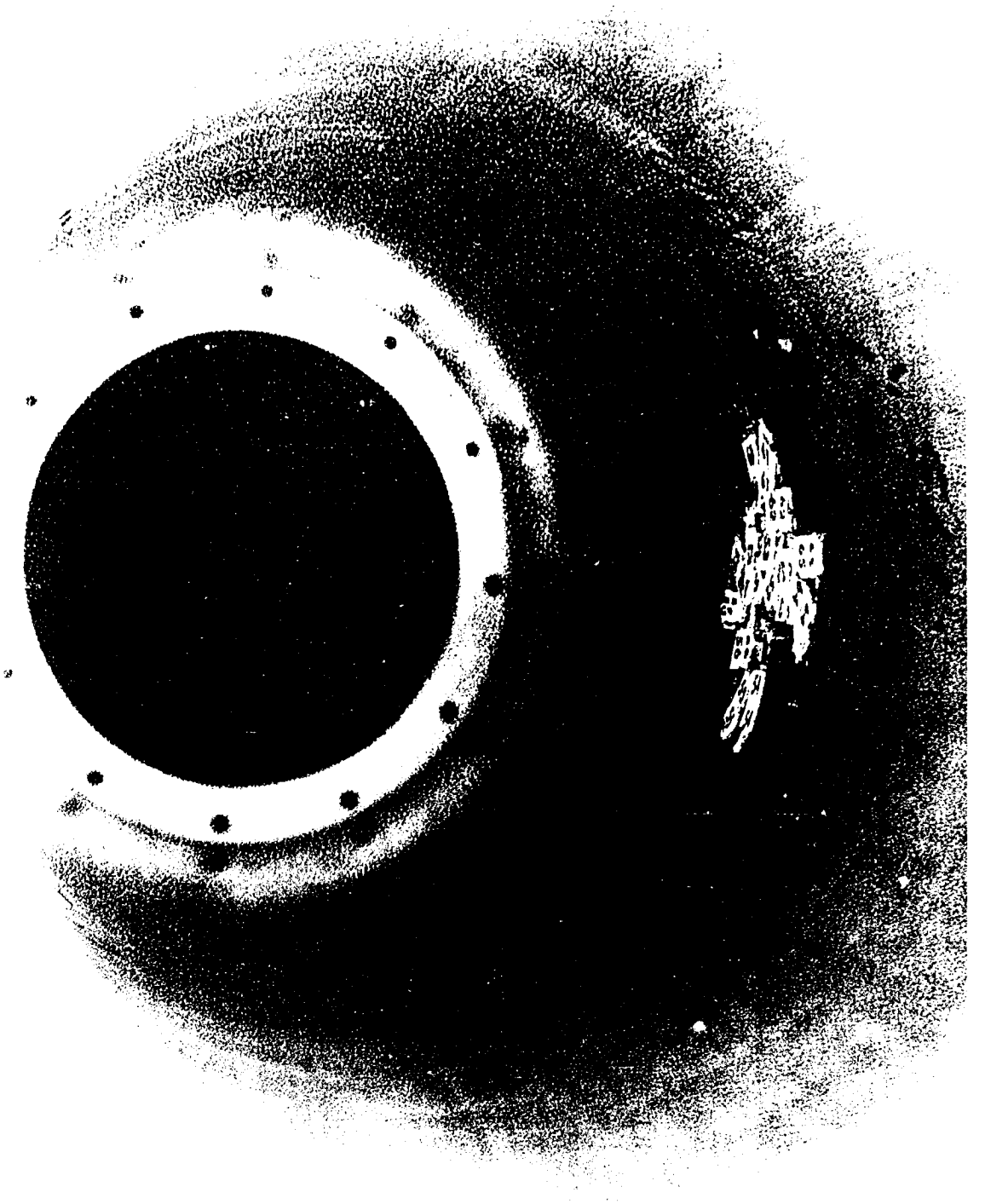


FIG. 45--LOCATION OF GAGES ON INTERIOR OF CYLINDER NO. 9 (.175") FOR 5/16" DIAMETER SWAY BRACE LOADING--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

#76643

UNCLASSIFIED

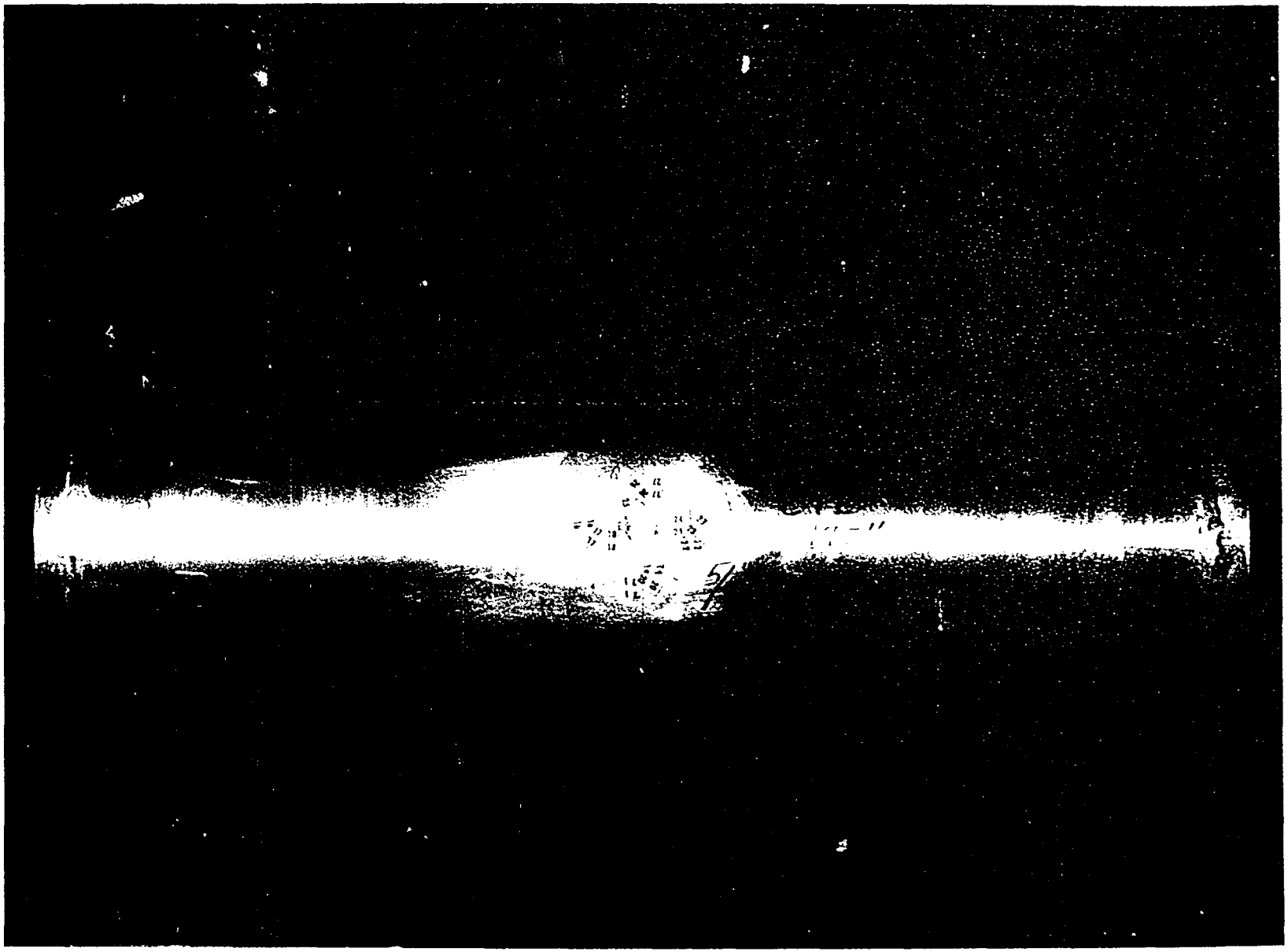


FIG. 46--LOCATION OF GAGES AND AREA OF LOADING 5/8" DIAMETER SWAY BRACE PAD FOR CYLINDER NO. 9 (.175")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

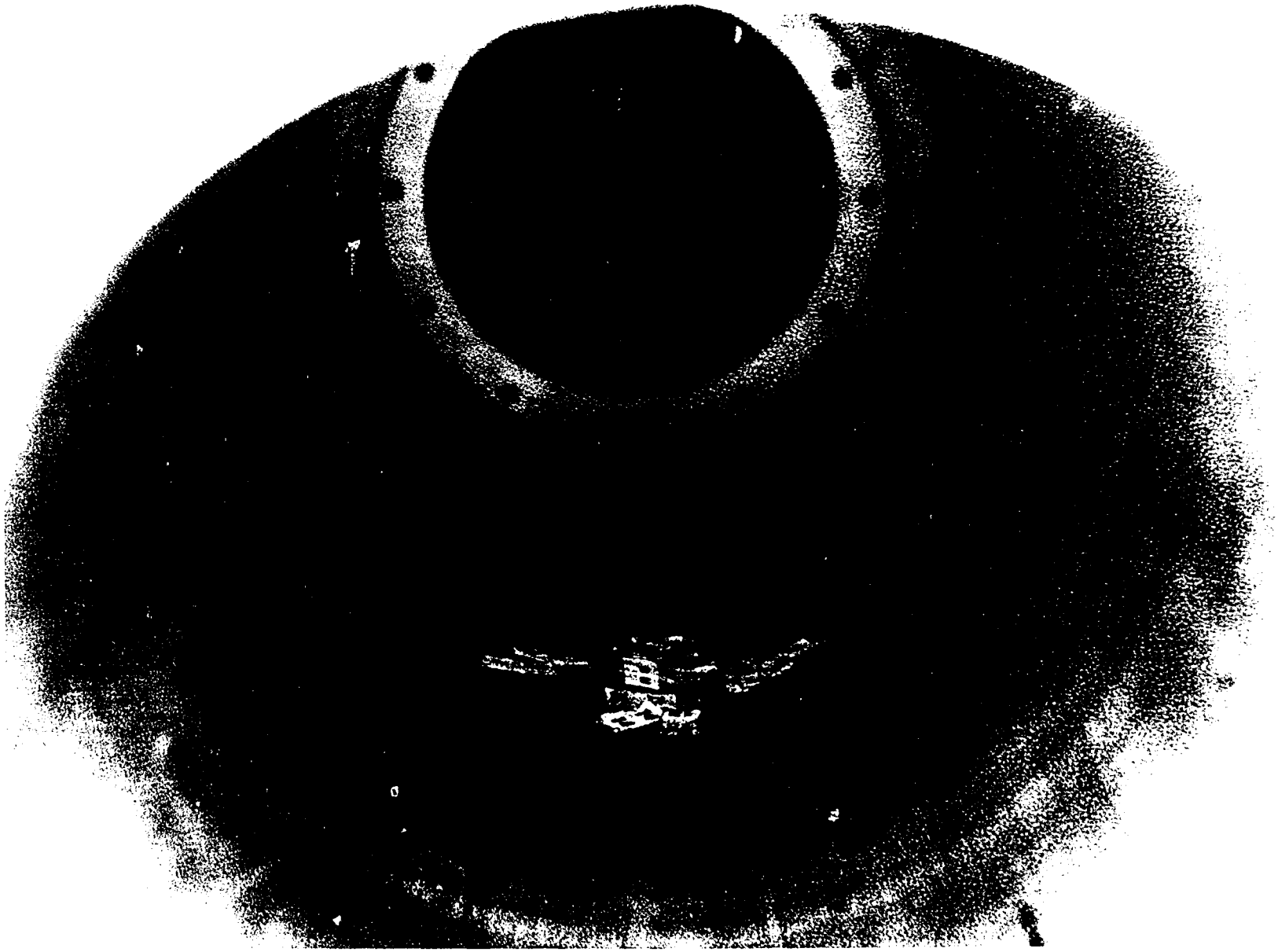
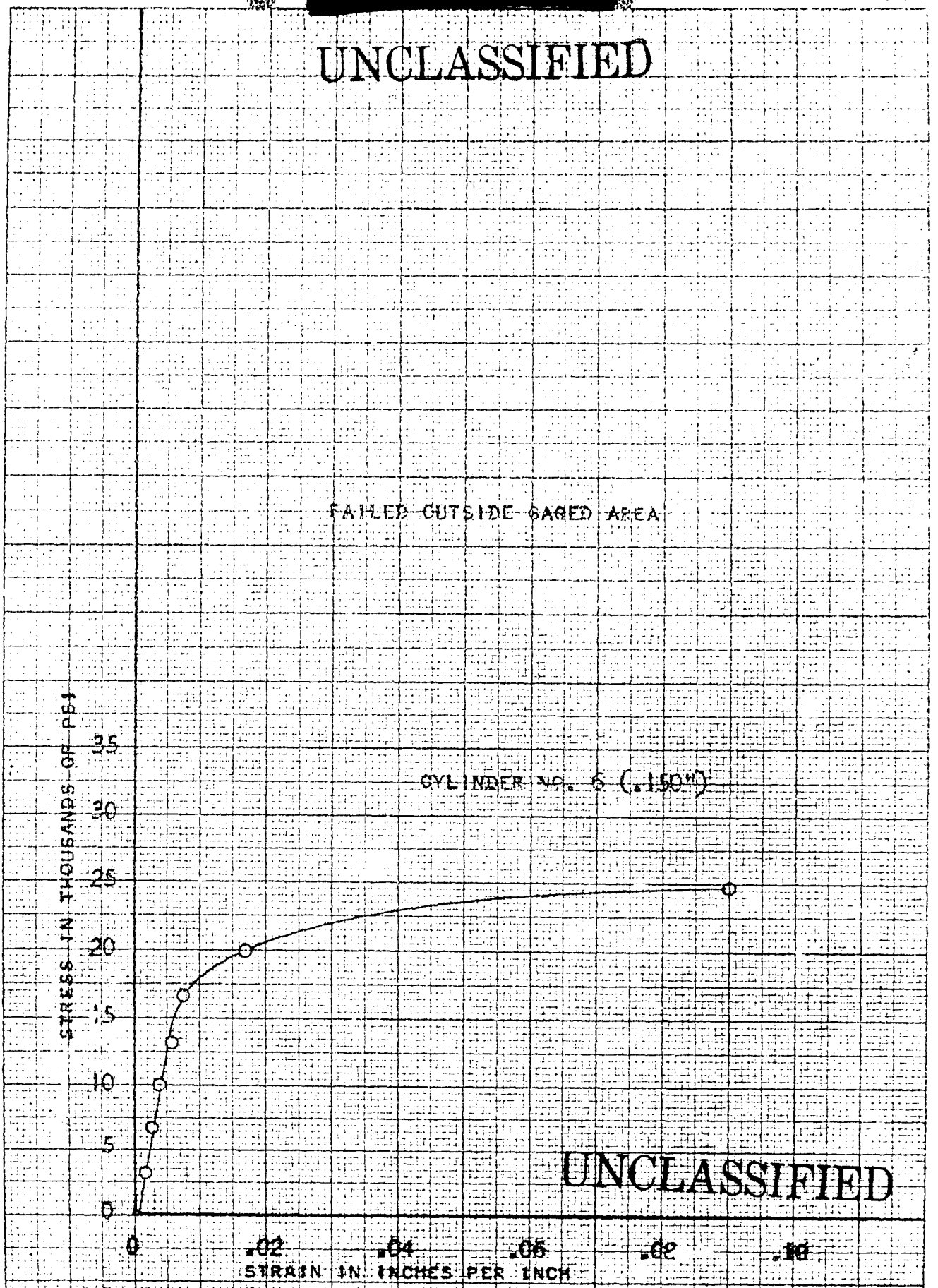


FIG. 47--LOCATION OF GAGES ON INTERIOR OF CYLINDER NO. 9 (.175") FOR 5/8" DIAMETER SWAY BRACE PAD--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

UNCLASSIFIED

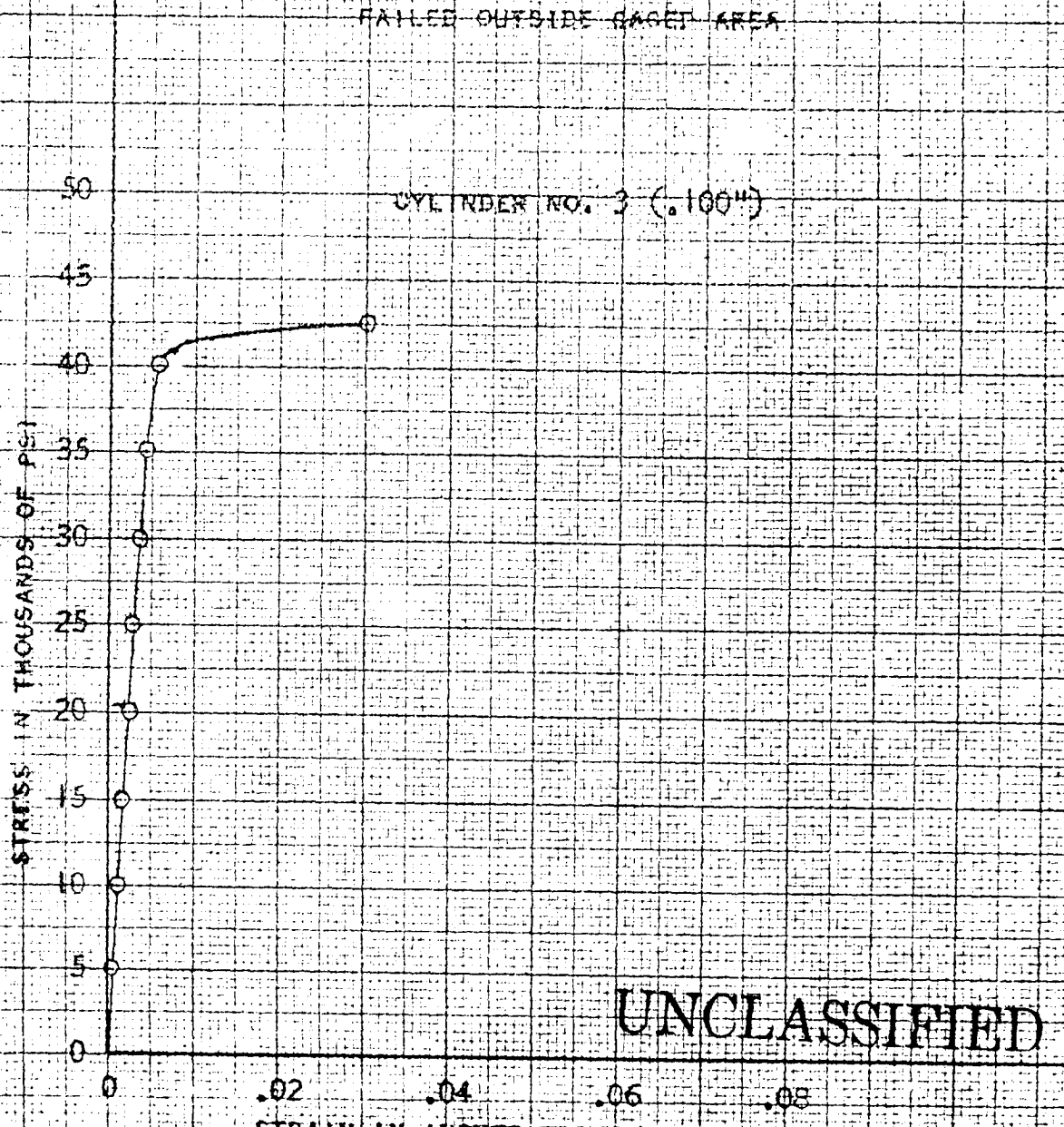


UNCLASSIFIED

FIG. 48--STRESS-STRAIN CURVE FOR TENSILE SPECIMENS, CYLINDER NO. 6 (.150")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

[redacted]

UNCLASSIFIED



UNCLASSIFIED

FIG. 49--STRESS-STRAIN CURVE FOR TENSILE SPECIMENS, CYLINDER NO. 3 (.100")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375

[redacted]

REF. SYM: 1612(309)

[redacted]

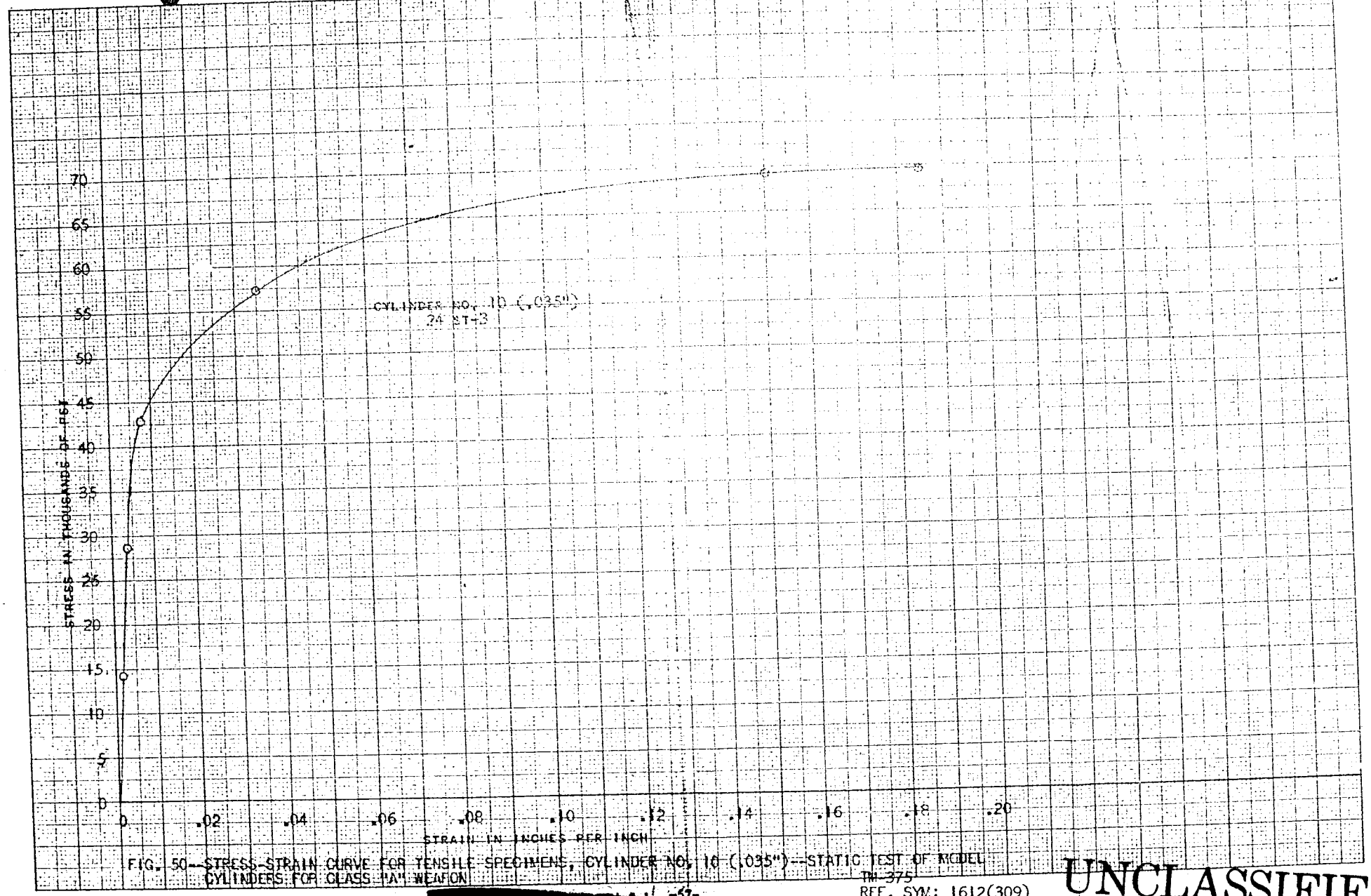


FIG. 50--STRESS-STRAIN CURVE FOR TENSILE SPECIMENS, CYLINDER NO. 10 (.035")--STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

TM-375
REF. SYM: 1612(309)

[redacted]

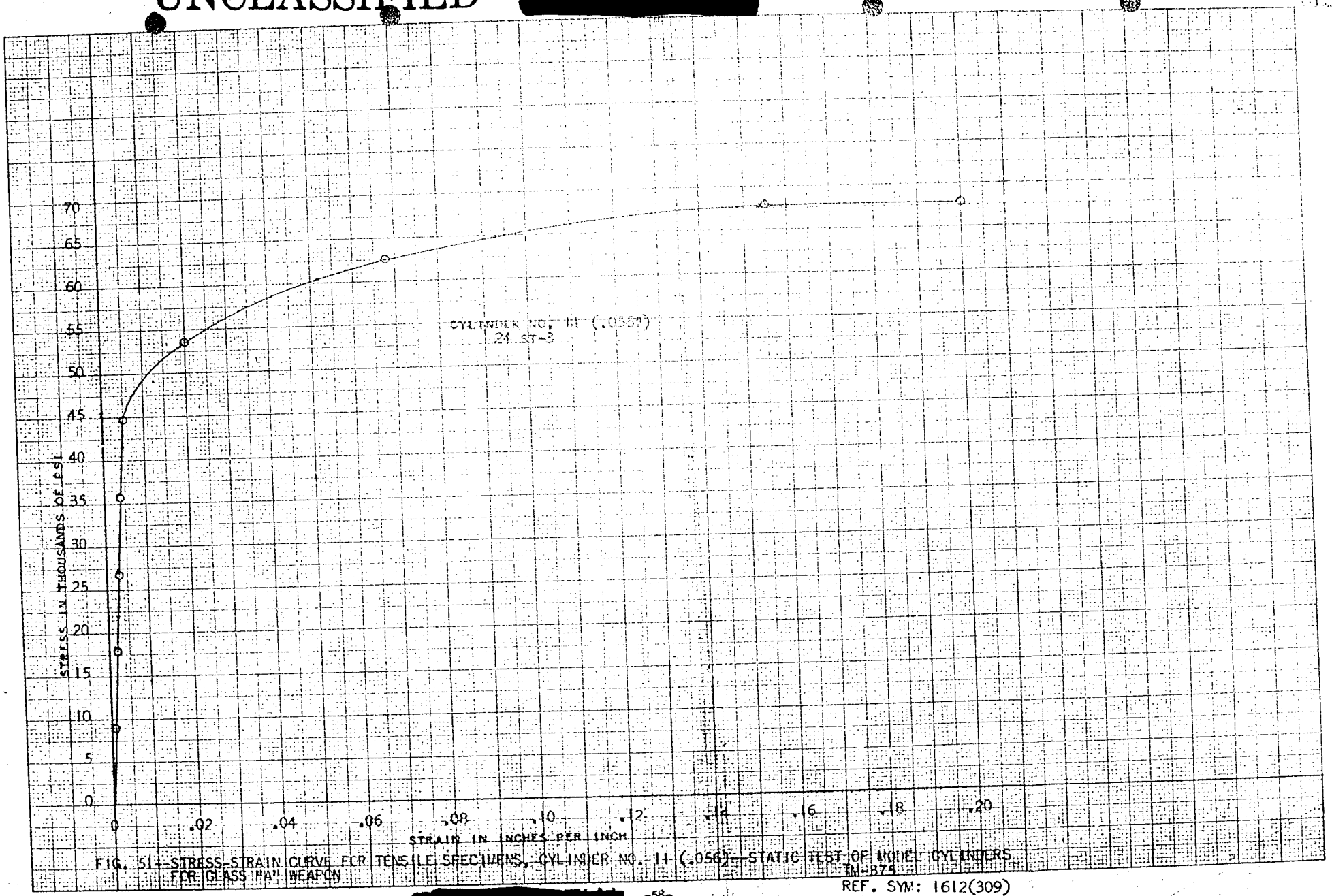


FIG. 51--STRESS-STRAIN CURVE FOR TENSILE SPECIMENS, CYLINDER NO. 11 (.056)--STATIC TEST OF MODEL CYLINDERS FOR GLASS "A" WEAPON

TM-875

REF. SYM: 1612(309)

TABLE I

SUMMARY OF LOADS PRODUCING FAILURE — STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Cylinder No.	Wall Thickness inches	Type of Loading	Failure Load pounds
1	0.100	Sway Brace (5/16")	1,200
2	0.100	180° Cable	10,500
3	0.100	180° Cable	12,400
4	0.150	180° Cable	14,000
5	0.150	180° Cable	11,750
6	0.150	180° Cable	11,800
8	0.175	180° Cable	16,000
9	0.175	Sway Brace (5/16")	2,400
9	0.175	Sway Brace (5/8")	3,200
10	0.035	180° Cable	3,000
11	0.056	180° Cable	6,400

NOTE: Cylinder No. 7 (.175") was not loaded to failure but was loaded only during testing with Stresscoat.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE II

STRESSCOAT DATA, CYLINDERS NO. 1, NO. 4 AND NO. 7 -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

	Cylinder No. 1		Cylinder No. 4		Cylinder No. 7	
Load in Pounds	Stresscoat Designation	Stresscoat Sensitivity Microinches/Inch	Stresscoat Designation	Stresscoat Sensitivity Microinches/Inch	Stresscoat Designation	Stresscoat Sensitivity Microinches/Inch
150	--					
180	--					
216	--					
260	--					
312	--					
375	--					
450	--					
540	--					
650	--					
780	--					
940	--					
1130	--		--			
1360	--		--			
1635	1	500	--		--	
1960	2	500	--		1	500
2350	3	500	--		2	500
2820	4 & C	500	1	500	3 & C	500 & 600
3100			2	500		
3380			3	500		
3720			4 & C	500 & 750		

1429

TABLE III

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 5 (.150") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the following gages - microinches per inch																				
	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22		
1,000	50	99	99	59	Gage	63	-137	-222	Gage	-260	-375	-177	-23	-80	-385	-107	Gage	93	-94	116	28	-37
2,000	106	198	198	124	Out	166	-245	-445	Out	-431	-682	-327	-189	-156	-614	-204	Out	184	-187	227	53	-64
3,000	146	284	281	173	"	221	-383	-673	"	-569	-929	-494	-346	-270	-797	-274	"	267	-286	332	71	-126
4,250	180	393	392	256	"	215	-523	-966	"	-742	-895	-734	-433	-459	-345	-512	"	386	-412	451	69	-229
5,250	219	484	478	312	"	252	-684	-1194	"	-923	-1070	-973	-530	-859	-393	-636	"	472	-500	553	85	-281
6,250	268	583	582	381	"	302	-839	-1470	"	-1220	-1300	-1260	-624	-1220	-440	-784	"	561	-607	662	100	-344
*7,250	385	680	684	363	"	345	-1150	-1690	"	-1820	-2860	-1260	-1780	-660	-5380	-430	"	635	-747	836	214	-226
8,250	450	770	790	430	"	330	-1380	-2010	"	-2470	-3850	-1670	-2400	-1000	-7560	-990	"	720	-850	960	250	-250
9,250	520	870	890	490	"	270	-1680	-1950	"	-2590	-2350	-2500	-3470	-1680	-11300	-790	"	800	-960	1090	280	-300
10,250	590	970	1010	560	"	170	-2110	-2970	"	-5480	-8310	-4970	-5610	-3010	-15500	-1200	"	900	-1090	1230	300	-350
11,250	720	1110	1150	670	"	-90	-2830	-3890	"	-8870	-13000	-10500	-11400	-6940	-21500	-2760	"	1020	-1280	1390	320	-460
11,750	830	1200	1220	720	"	-690	-3410	-4210	"	--	--	--	--	--	--	-6560	"	1130	-1520	1640	330	-550
0	260	110	140	210	"	-1240	-1540	-1950	"	--	--	--	--	--	--	-6000	"	80	-330	140	-50	-190

Load in Pounds	Maximum and Minimum Principal Strains at Following Gages - Microinches Per Inch																				
	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22	
	e_u	e_v	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v
1,000	100	50	--	--		72	-232		--	--		-25	-177	-84	-386	--	--	92	-93	116	-37
2,000	199	108	--	--		179	-460		--	--		-192	-329	-162	-616	--	--	182	-185	229	-64
3,000	285	149	--	--		240	-697		--	--		-351	-497	-278	-800	--	--	264	-283	333	-125
4,250	400	184	--	--		220	-980		--	--		-441	-798	-352	-662	--	--	382	-408	451	-227
5,250	486	224	--	--		270	-1230		--	--		-540	-980	-402	-863	--	--	467	-495	550	-280
6,250	586	274	--	--		320	-1500		--	--		-640	-1270	-450	-1220	--	--	550	-600	660	-340
*7,250	684	392	--	--		430	-1790		--	--		-1280	-1790	-710	-5390	--	--	630	-740	840	-230
8,250	775	458	--	--		430	-2120		--	--		-1690	-2420	-1080	-7570	--	--	710	-840	970	-250
9,250	875	529	--	--		530	-2230		--	--		-2530	-3500	-1790	-11320	--	--	790	-950	1100	-300
10,250	976	600	--	--		290	-3120		--	--		-5030	-5660	-3170	-15530	--	--	890	-1080	1240	-350
11,250	1120	730	--	--		50	-4070		--	--		-10600	-11500	-7160	-21560	--	--	1010	-1270	1400	-460
11,750	1210	842	--	--		-490	-4460		--	--		--	--	--	--	--	--	1110	-1510	1550	-550
0	261	112	--	--					--	--		--	--	--	--	--	--	80	-330	140	-190

* Loading cable readjusted prior to this load.
e_u = Maximum principal strain.
e_v = Minimum principal strain.

NOTE: Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in direction of maximum and minimum principal strains.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE III (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 5 (.150") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches per Inch

Load in Pounds	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1,000	-32	4	20	-37	96	-27	-88	Gage	26	-78	-85	64	-49	-117	-95	10	101	-92	-52	-2	55	18	48
2,000	-11	-26	-24	-70	59	-49	-176	Out	55	-152	-177	130	-91	-229	-199	13	221	-189	-112	-15	116	40	94
3,000	-90	-66	-128	-99	17	-86	-266	"	75	-242	-268	187	-145	-352	-306	2	315	-287	-172	-29	161	48	137
4,250	-29	-141	-269	-42	-420	-90	-385	"	126	-335	-431	270	-183	-486	-427	-8	487	-401	-253	-76	222	52	170
5,250	-21	-162	-349	3	-548	-112	-474	"	155	-419	-559	333	-226	-608	-532	-7	609	-500	-313	-93	267	62	214
6,250	11	-157	-430	118	-725	-136	-588	"	190	-510	-667	401	-269	-730	-635	-10	742	-594	-370	-114	326	76	261
*7,250	142	133	-316	-223	1360	-376	-694	"	78	-88	-586	377	-506	-970	-809	-43	497	-755	-427	-80	305	79	378
8,250	380	480	-520	-100	1820	-430	-790	"	90	-810	-680	440	-570	-1120	-930	-30	560	-840	-460	-50	340	90	490
9,250	800	1040	-390	200	2230	-510	-920	"	90	-940	-790	500	-640	-1270	-1080	0	640	-950	-510	-20	360	90	590
10,250	1550	1830	-320	860	2320	-610	-1070	"	80	-1100	-920	550	-720	-1460	-1240	40	790	-1050	-580	10	390	90	680
11,250	3010	3250	-400	2980	1330	-760	-1260	"	30	-1260	-1080	600	-780	-1640	-1340	120	970	-1080	-550	120	390	70	790
11,750	4070	4400	-480	5900	-1260	-900	-1200	"	-120	-1280	-870	560	-850	-1650	-1320	10	740	-1010	-320	360	350	0	780
0	4550	5380	1660	7180	-1860	-230	-390	"	-160	-180	-320	10	70	-130	-40	280	490	100	210	310	-90	-90	150

Maximum and Minimum Principal Strains at Following Gages - Microinches Per Inch

Load in Pounds	23 - 24 - 25			26 - 27		28 - 29 - 30			31 - 32 - 33			34 - 35 - 36			37 - 38 - 39			40 - 41 - 42			43 - 44 - 55		
	e_u	e_v		e_u	e_v	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	22	-34		96	-36	--	--		43	-103		65	-119		100	-94		-2	-92		85	19	
2,000	-7	-28		58	-69	--	--		84	-208		132	-232		219	-198		-16	-190		171	41	
3,000	-63	-156		16	-99	--	--		125	-320		190	-357		312	-303		-31	-288		251	50	
4,250	-31	-270		-38	-420	--	--		175	-484		272	-491		484	-424		-79	-402		342	53	
5,250	-23	-350		-2	-548	--	--		216	-604		335	-613		605	-528		-97	-501		421	64	
6,250	13	-436		111	-724	--	--		261	-743		403	-735		736	-629		-119	-596		514	79	
*7,250	226	-402		1360	-210	--	--		110	-624		398	-998		498	-814		-87	-755		607	83	
8,250	630	-770		1820	-80	--	--		340	-930		460	-1150		570	-940		-50	-840		750	90	
9,250	1220	-810		2230	220	--	--		380	-1080		520	-1300		660	-1100		-30	-950		880	80	
10,250	2140	-900		2330	880	--	--		410	-1260		570	-1490		810	-1270		0	-1060		1000	80	
11,250	3880	-1240		2990	1360	--	--		380	-1440		610	-1660		1000	-1370		110	-1080		1150	40	
11,750	5240	-1610		5890	-1200	--	--		360	-1360		580	-1690		770	-1350		350	-1010		1170	-30	
0	5800	470		7160	-1790	--	--		-140	-340		90	-210		500	-40		310	100		200	-140	

* Loading cable readjusted prior to this load.
e_u = Maximum principal strain.
e_v = Minimum principal strain.

NOTE: Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in direction of maximum and minimum principal strains.

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE III (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 5 (.150") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
1,000	18	-2	31	-29	-40	26	-104	-98	6	-92	-9	83	-76	-9	-4
2,000	43	0	64	-47	-79	55	-200	-190	-3	-184	-19	166	-158	-21	-14
3,000	58	-2	92	-71	-119	69	-296	-276	-4	-293	-32	278	-242	-37	-21
4,250	77	-3	131	-88	-156	101	-409	-414	-71	-453	-64	391	-371	-66	-13
5,250	94	-2	166	-112	-187	130	-504	-514	-85	-561	-80	486	-456	-82	-16
6,250	107	-3	206	-144	-223	163	-618	-630	-102	-676	-98	586	-544	-99	-20
*7,250	61	-55	239	-264	-357	89	-849	-677	286	-740	-82	720	-537	-89	-157
8,250	50	-70	270	-300	-400	110	-990	-740	370	-830	-90	820	-610	-110	-180
9,250	30	-80	330	-360	-450	150	-1140	-850	450	-950	-100	950	-690	-120	-190
10,250	-10	-90	400	-450	-490	220	-1300	-980	500	-1070	-90	1110	-800	-150	-190
11,250	-100	-130	510	-620	-540	410	-1450	-1080	560	-1120	-120	1180	-900	-230	-190
11,750	-200	-230	500	-850	-640	540	-1640	-1000	880	-1120	-290	1000	-810	-330	-460
0	-270	-100	240	-620	-10	600	-330	-190	-310	240	50	-100	10	-170	-200

Load in Pounds	Maximum and Minimum Principal Strains at Following Gages - Microinches Per Inch														
	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	51	-2		45	-48		23	-122		87	-91		8	-86	
2,000	108	0		100	-92		29	-233		184	-193		9	-183	
3,000	153	-2		135	-137		39	-342		275	-296		111	-276	
4,250	214	-4		192	-179		-2	-482		383	-450		22	-411	
5,250	267	-4		237	-219		3	-593		482	-558		27	-504	
6,250	323	-7		285	-266		6	-733		581	-672		29	-602	
*7,250	372	-70		230	-407		400	-970		715	-736		-33	-667	
8,250	410	-90		270	-460		480	-1110		820	-830		-50	-750	
9,250	480	-120		320	-530		580	-1280		950	-950		-40	-850	
10,250	540	-150		380	-610		660	-1460		1100	-1060		-40	-960	
11,250	660	-240		560	-770		730	-1630		1180	-1140		-80	-1020	
11,750	660	-360		680	-1000		1010	-1770		1010	-1130		-290	-990	
0	250	-280		590	-610		-190	-450		240	-120		30	-220	

* Loading cable readjusted prior to this load.
e_u = Maximum principal strain.
e_v = Minimum principal strain.

NOTE: Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in direction of maximum and minimum principal strains.

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE IV

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 6 (.150") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22		
1,000	43	116	119	42	-26	172	24	-81	246	101	135	277	-68	492	-83	154	-113	117	-4	143	98	63
2,000	93	205	208	5	-189	360	49	-223	487	110	160	565	-307	895	-251	400	-297	211	-111	282	167	65
3,000	156	309	312	-45	-378	609	102	-391	820	149	218	945	-655	1420	-483	762	-531	321	-243	446	246	68
4,000	190	350	370	-50	-450	810	80	-570	1050	80	270	1310	-910	2070	-690	1080	-740	370	-290	520	280	60
5,000	250	430	450	-90	-590	1010	160	-650	1240	110	300	1690	-1150	2430	-840	1410	-860	450	-390	660	350	60
6,000	300	510	530	-130	-750	1220	240	-760	1450	140	350	1980	-1410	2640	-990	1730	-960	550	-510	790	410	60
7,000	350	600	620	-170	-910	1500	310	-920	1780	110	360	2410	-1740	3370	-1250	2190	-1140	640	-620	940	480	60
8,000	410	680	720	-210	-1080	1970	390	-1170	2380	-50	350	3370	-2260	4560	-1720	2880	-1430	730	-730	1080	540	60
9,000	470	770	820	-240	-1220	2750	540	-1570	3460	-260	230	5280	-3110	7580	-2580	4030	-1880	820	-850	1240	610	40
10,000	540	860	930	-260	-1370	4270	790	-2350	Gage	-340	-170	Gage	-4900	18300	-4760	6030	-2720	920	-990	1430	670	0
11,000	1640	1260	1540	480	-2370	8310	3990	-6150	Out	-1190	-4530	Out	Gage	Gage	-8320	Gage	-7720	2410	-4960	6930	1270	-3820
0	1680	1420	-3000	-300	--	--	2300	-5600	"	-8570	--	"	Out	Out	-6560	Out	--	1640	-3020	2430	20	-1710

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22		
	e_u	e_v	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	
1,000	116	44	119	-25		173	-81		297	83		276	-55	491	-78	153	-112	117	-3	144	64	
2,000	206	95	206	-187		358	-220		593	61		560	-301	892	-242	397	-293	210	-109	283	68	
3,000	311	159	308	-375		605	-385		996	52		928	-616	1415	-469	757	-523	319	-240	447	72	
4,000	350	190	366	-446		805	-563		1360	30		1300	-890	2060	-670	1070	-730	370	-290	520	65	
5,000	430	250	440	-590		1000	-640		1580	-20		1680	-1130	2420	-820	1400	-850	450	-390	660	70	
6,000	510	310	520	-740		1210	-750		1840	-20		1910	-1390	2630	-960	1720	-940	540	-500	790	70	
7,000	600	360	610	-900		1490	-900		2270	-90		2390	-1720	3360	-1220	2180	-1120	630	-610	940	70	
8,000	680	420	710	-1070		1960	-1150		3100	-350		3350	-2230	4540	-1670	2870	-1400	720	-720	1080	70	
9,000	770	480	810	-1210		2730	-1540		4490	-760		5250	-3060	7550	-2500	4010	-1840	810	-840	1240	50	
10,000	870	550	920	-1360		4250	-2310		--	--		--	--	18250	-4580	6000	-2660	910	-980	1430	130	
11,000	1650	1280	1710	-2550		8810	-6620		--	--		--	--	--	--	--	--	2360	-4940	6900	-3760	
0	1690	1440	--	--		--	--		--	--		--	--	--	--	--	--	1610	-3000	2440	-1710	

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE IV (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 6 (.150") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1,000	Gage	9	195	30	-53	2	93	1	-62	Gage	24	57	83	0	25	72	69	136	57	44	65	24	-16	-7
2,000	Out	-60	346	-33	-216	-31	146	-103	-255	Out	-38	73	-38	-86	-37	96	77	226	50	7	46	-46	-128	-84
3,000	"	-153	513	-95	-408	-92	189	-227	-482	"	-97	96	-154	-195	-125	132	90	348	42	-45	28	-127	-275	-190
4,000	"	-280	620	-140	-530	-160	220	-270	-590	"	-100	100	10	-240	-160	140	100	420	50	-40	50	-130	-310	-240
5,000	"	-370	750	-240	-680	-180	250	-380	-780	"	-150	150	-120	-330	-230	160	100	510	40	-80	40	-190	-420	-300
6,000	"	-450	880	-260	-850	-220	290	-480	-960	"	-210	160	-250	-410	-290	180	110	600	30	-110	30	-250	-510	-370
7,000	"	-550	1050	-330	-1030	-270	340	-580	-1150	"	-250	200	-400	-490	-360	200	120	710	30	-150	30	-310	-620	-450
8,000	"	-700	1260	-440	-1240	-340	380	-690	-1360	"	-250	270	-560	-590	-420	200	120	830	10	-170	60	-350	-710	-520
9,000	"	-920	1520	-590	-1510	-440	420	-810	-1590	"	-350	300	-750	-710	-460	180	110	990	-20	-190	130	-380	-790	-580
10,000	"	-1340	1870	-880	-1910	-630	440	-940	-1870	"	-460	300	-1030	-820	-470	80	30	1190	-80	-230	230	-380	-840	-660
11,000	"	-1050	2320	-3730	-800	-1060	-2550	490	-1090	"	-50	-4400	3480	-1620	710	--	-1970	3650	-360	380	70	710	-1310	-400
0	"	-6410	3830	-3260	-5040	-4600	-170	240	-920	"	570	510	600	260	-310	-4290	-1390	5530	-2280	1120	5410	670	940	700

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	28-29-30 e_u	28-29-30 e_v	31-32-33 e_u	31-32-33 e_v	34-35-36 e_u	34-35-36 e_v	37-38-39 e_u	37-38-39 e_v	40-41-42 e_u	40-41-42 e_v	43-44-45 e_u	43-44-45 e_v	46-47-48 e_u	46-47-48 e_v	49-50-51 e_u	49-50-51 e_v
1,000	--	--	85	-54	94	-62	--	--	115	-6	152	58	79	44	37	-20
2,000	--	--	150	-214	149	-259	--	--	10	-85	268	57	89	8	0	-130
3,000	--	--	217	-406	193	-489	--	--	-83	-199	425	59	115	-44	-41	-280
4,000	--	--	560	-540	220	-600	--	--	110	-260	510	60	140	-40	-50	-320
5,000	--	--	250	-680	250	-790	--	--	-10	-340	630	50	160	-80	-70	-430
6,000	--	--	360	-850	300	-970	--	--	-130	-410	750	30	170	-110	-110	-520
7,000	--	--	420	-1030	350	-1170	--	--	-270	-490	880	40	210	-150	-140	-630
8,000	--	--	450	-1240	390	-1380	--	--	-370	-620	1020	20	240	-170	-150	-720
9,000	--	--	470	-1510	430	-1610	--	--	-430	-790	1210	-30	310	-200	-160	-810
10,000	--	--	390	-1910	440	-1890	--	--	-470	-1050	1450	-170	400	-260	-180	-870
11,000	--	--	-360	-4480	560	-4240	--	--	6040	-1810	--	--	420	-710	1710	-1390
0	--	--	-2690	-5250	310	-1400	--	--	610	-320	5880	-4630	5410	-2250	940	440

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE IV (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 6 (.160") -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch											
	52	53	54	55	56	57	58	59	60	61	62	63
1,000	4	50	104	13	76	119	42	55	-13	52	47	98
2,000	-87	18	154	-71	89	207	0	53	-83	76	44	144
3,000	-209	-25	221	-185	106	331	-53	44	-202	107	47	208
4,000	-250	-40	250	-230	120	380	-40	50	-230	110	40	250
5,000	-340	-70	290	-320	120	470	-90	40	-290	120	40	290
6,000	-430	-110	340	-400	140	560	-130	30	-380	120	40	340
7,000	-530	-150	410	-500	150	680	-160	30	-460	160	30	390
8,000	-640	-170	410	-610	170	820	-180	40	-530	160	30	390
9,000	-730	-180	620	-730	200	980	-180	60	-620	150	0	570
10,000	-820	-170	750	-890	210	1170	-150	110	-720	70	-50	770
11,000	-1870	750	970	-970	660	1080	-30	1230	-2660	-100	1650	2370
0	360	-90	-440	210	-20	-90	810	80	-1170	-1550	-1650	6720

Load in Pounds	Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch											
	52 - 53 - 54			55 - 56 - 57			58 - 59 - 60			61 - 62 - 63		
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	104	5		120	13		63	-54		113	42	
2,000	154	-86		208	-70		60	-134		164	38	
3,000	221	-209		331	-184		56	-314		279	39	
4,000	250	-250		380	-230		70	-340		340	30	
5,000	290	-340		470	-320		60	-440		390	20	
6,000	340	-430		560	-400		50	-570		460	20	
7,000	410	-530		680	-500		50	-680		530	10	
8,000	410	-640		820	-600		70	-790		550	10	
9,000	620	-740		980	-720		100	-910		800	-520	
10,000	750	-820		1160	-880		170	-1050		1000	-160	
11,000	1390	-2290		1230	-1120		1500	-4220		2470	-1780	
0	360	-440		230	-110		830	-1170		9640	-5430	

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain.
e_v = minimum principal strain.
Biaxial gages are assumed to be oriented in the direction of the maximum and minimum principal strains.

TABLE V

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 8 (.175) - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch																				
	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22		
1,000	47	80	73	10	-50	-13	-176	-160	-83	-6	-8	-122	-184	-105	-178	38	-214	77	-82	99	20	-21
2,000	90	164	146	14	-112	-25	-319	-222	-174	-56	-43	-265	-351	-230	-373	58	-377	159	-169	203	40	-45
3,000	134	251	219	18	-172	-34	-455	-263	-270	-106	-71	-397	-536	-344	-506	79	-533	239	-258	308	59	-69
4,000	178	335	300	23	-240	-41	-592	-313	-380	-157	-96	-527	-723	-482	-743	99	-687	321	-309	421	79	-95
5,000	219	420	373	26	-302	-26	-714	-341	-488	-200	-108	-669	-903	-603	-920	108	-793	399	-427	520	100	-118
6,000	260	500	440	20	-370	-30	-860	-410	-610	-260	-140	-830	-1110	-750	-1130	120	-950	480	-530	620	110	-150
7,000	300	600	520	30	-440	-40	-1020	-480	-740	-310	-170	-980	-1320	-900	-1320	130	-1100	560	-620	720	130	-170
8,000	350	670	600	30	-490	-60	-1180	-580	-900	-390	-210	-1140	-1530	-1060	-1540	140	-1240	640	-710	830	150	-200
9,000	400	750	660	40	-550	-80	-1390	-710	-1130	-490	-270	-1350	-1770	-1270	-1820	150	-1470	720	-800	940	160	-190
10,000	440	830	740	40	-610	-130	-1610	-860	-1380	-630	-350	-1540	-2040	-1520	-2160	160	-1690	800	-890	1050	190	-250
11,000	490	920	820	50	-670	-200	-1900	-1060	-1710	-830	-500	-1810	-2380	-1850	-2660	150	-1950	880	-980	1160	200	-280
12,000	530	990	900	60	-720	-290	-2220	-1270	-2070	-1070	-690	-2180	-2790	-2320	-3300	130	-2260	950	-1070	1260	220	-310
13,000	590	1100	980	90	-770	-440	-2730	-1610	-2640	-1500	-1060	-2880	-3430	-3200	-4360	90	-2760	1050	-1180	1390	230	-360
14,000	650	1180	1080	120	-810	-670	-3430	-2080	-3760	-2230	-1670	-4110	-4340	-4700	-5810	0	-3500	1130	-1290	1520	240	-410
15,000	720	1300	1180	180	-830	-1100	-4610	-2830	-5600	-3660	-2690	-6650	-5600	-7860	-8230	-210	-4790	1250	-1430	1670	240	-490
0	-120	-160	150	130	180	-1700	-4040	-2850	-7530	-5410	-3830	--	-5870	--	-9010	-680	-4010	-300	220	130	100	-800

Load in Pounds	Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch																				
	1 - 2		3 - 4 - 5		6 - 7 - 8		9 - 10 - 11		12 - 13		14 - 15		16 - 17		18 - 19		20 - 21 - 22				
	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v			
1,000	80	48	73	-49	27	-202	8	-100	-124	-185	-107	-179	36	-214	76	-81	101	-23			
2,000	165	91	145	-111	92	-341	-26	-193	-269	-354	-234	-375	54	-376	157	-167	208	-49			
3,000	252	136	217	-170	173	-474	-55	-290	-402	-540	-349	-509	74	-532	236	-256	317	-75			
4,000	337	181	298	-237	253	-611	-79	-402	-534	-728	-489	-748	92	-686	318	-306	433	-104			
5,000	422	223	370	-298	362	-733	-89	-512	-678	-910	-612	-926	100	-792	395	-423	534	-128			
6,000	500	270	440	-370	440	-880	-120	-640	-840	-1120	-760	-1140	110	-950	470	-530	640	-160			
7,000	600	310	520	-430	520	-1050	-140	-780	-990	-1330	-910	-1330	120	-1100	550	-610	740	-190			
8,000	670	360	600	-480	570	-1210	-180	-940	-1160	-1540	-1080	-1550	130	-1240	630	-700	850	-220			
9,000	750	410	650	-540	630	-1430	-230	-1180	-1370	-1780	-1290	-1830	140	-1470	710	-790	980	-220			
10,000	830	450	730	-600	660	-1660	-310	-1430	-1560	-2060	-1540	-2180	140	-1690	790	-880	1080	-270			
11,000	920	500	810	-660	690	-1960	-460	-1770	-1830	-2400	-1880	-2680	130	-1950	870	-970	1200	-310			
12,000	1000	540	890	-710	720	-2290	-640	-2140	-2210	-2810	-2350	-3320	110	-2260	940	-1060	1300	-340			
13,000	1110	600	970	-760	750	-2820	-1010	-2720	-2910	-3460	-3240	-4390	60	-2760	1040	-1170	1430	-390			
14,000	1190	660	1070	-800	760	-3540	-1600	-3880	-4150	-4380	-4760	-5860	-40	-3500	1120	-1280	1570	-440			
15,000	1310	730	1170	-820	770	-4740	-2670	-5700	-6710	-5870	-7940	-8310	-260	-4790	1240	-1420	1720	-530			
0	-120	-160	200	130	-460	-4140	-3930	-7590	--	--	--	--	-720	-4020	220	-300	150	-100			

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE V (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 8 (.175) - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1,000	-72	-28	123	-22	-83	17	30	-67	-93	-89	-13	17	-84	-41	-22	21	7	58	-9	-11	27	-24	-52	-46
2,000	-145	-65	222	-48	-165	48	57	-140	-175	-186	-28	41	-175	-79	-38	48	15	111	-8	-24	50	-50	-105	-79
3,000	-219	-103	322	-72	-246	55	85	-211	-259	-279	-41	65	-264	-117	-53	76	23	165	-8	-38	74	-76	-156	-108
4,000	-299	-144	422	-99	-330	72	116	-282	-346	-383	-56	94	-350	-155	-75	109	34	217	-8	-45	98	-107	-202	-136
5,000	-381	-182	534	-131	-417	89	138	-357	-434	-478	-69	117	-440	-193	-93	134	42	273	-15	-61	125	-139	-253	-162
6,000	-470	-230	640	-160	-500	100	160	-440	-530	-580	-80	140	-540	-240	-120	160	40	330	-20	-80	150	-180	-320	-200
7,000	-550	-270	750	-190	-600	120	190	-510	-620	-680	-90	160	-640	-280	-140	170	50	380	-30	-90	170	-200	-360	-230
8,000	-630	-300	860	-210	-690	130	210	-590	-710	-780	-100	200	-730	-330	-160	200	60	440	-30	-100	210	-220	-420	-250
9,000	-710	-340	990	-240	-780	150	240	-670	-800	-880	-110	230	-830	-360	-180	220	70	480	-30	-120	250	-250	-460	-280
10,000	-790	-380	1120	-270	-870	170	260	-750	-900	-970	-110	260	-910	-400	-220	240	70	520	-50	-130	290	-280	-500	-300
11,000	-890	-420	1270	-300	-960	200	290	-830	-990	-1070	-100	300	-1000	-440	-240	260	70	640	-60	-140	340	-280	-550	-320
12,000	-980	-460	1440	-340	-1070	230	310	-910	-1090	-1160	-90	340	-1080	-470	-260	260	70	710	-80	-160	390	-330	-580	-320
13,000	-1120	-510	1650	-380	-1180	260	330	-1010	-1200	-1250	-80	420	-1170	-520	-290	270	60	810	-120	-180	480	-370	-620	-320
14,000	-1260	-560	1890	-440	-1290	300	350	-1110	-1330	-1340	-50	430	-1260	-550	-330	250	40	910	-170	-200	580	-430	-640	-300
15,000	-1450	-640	2160	-510	-1480	330	360	-1220	-1460	-1410	-10	490	-1340	-560	-310	200	0	1040	-250	-230	730	-430	-640	-240
0	-260	40	900	70	-130	170	170	0	-190	-40	230	50	-130	-110	-270	-40	-60	100	-60	-30	210	-140	60	-20

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	28 e_u	28 e_v	29	30	31 e_u	31 e_v	32	33	34 e_u	34 e_v	35	36	37 e_u	37 e_v	38	39	40 e_u	40 e_v	41	42	43 e_u	43 e_v	44	45	46 e_u	46 e_v	47	48	49 e_u	49 e_v	50	51
1,000	135	-84			79	-84			38	-102			20	-93			-20	-86			77	2			38	-17			-15	-55		
2,000	247	-170			170	-170			80	-200			47	-194			-35	-181			151	9			74	-32			-23	-108		
3,000	360	-256			234	-252			122	-298			74	-290			-48	-272			228	16			114	-48			-28	-158		
4,000	473	-349			310	-338			166	-398			106	-398			-67	-362			303	26			149	-58			-42	-204		
5,000	597	-443			386	-428			201	-500			132	-497			-83	-456			380	31			190	-79			-50	-254		
6,000	720	-550			450	-510			240	-610			160	-600			-110	-560			470	30			230	-100			-60	-320		
7,000	840	-640			540	-620			280	-710			190	-710			-120	-660			520	30			260	-120			-70	-360		
8,000	960	-730			620	-710			310	-820			230	-810			-140	-750			610	40			310	-130			-50	-420		
9,000	1110	-820			710	-800			360	-930			260	-920			-170	-860			660	50			380	-160			-70	-460		
10,000	1260	-920			790	-890			390	-1040			300	-1010			-190	-950			780	40			420	-180			-80	-500		
11,000	1420	-1040			880	-980			440	-1150			350	-1120			-210	-1040			880	30			480	-200			-50	-550		
12,000	1610	-1150			990	-1100			470	-1260			390	-1220			-230	-1130			960	30			550	-230			-80	-580		
13,000	1840	-1300			1090	-1210			510	-1390			470	-1310			-250	-1220			1090	0			650	-280			-80	-620		
14,000	2100	-1470			1190	-1330			540	-1530			500	-1420			-270	-1320			1210	-40			750	-340			-90	-650		
15,000	2400	-1680			1350	-1530			560	-1670			580	-1510			-260	-1410			1370	-120			910	-430			-20	-650		
0	960	-300			370	-130			170	-190			230	-220			-90	-310			140	-80			250	-90			140	-20		

TABLE V (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 8 (.175) - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch											
	52	53	54	55	56	57	58	59	60	61	62	63
1,000	-80	-46	20	-76	-6	85	-61	-11	-20	-6	-20	4
2,000	-159	-95	38	-157	-14	175	-121	-22	-40	-9	-38	6
3,000	-239	-143	57	-239	-20	268	-165	-33	-59	-10	-54	10
4,000	-337	-194	78	-319	-19	360	-229	-39	-84	-11	-74	16
5,000	-401	-238	96	-394	-21	450	-285	-45	-106	-8	-84	27
6,000	-500	-300	120	-490	-30	550	-350	-60	-130	-20	-110	20
7,000	-580	-360	140	-580	-30	650	-420	-70	-150	-20	-130	20
8,000	-660	-410	160	-670	-40	750	-470	-80	-170	-20	-140	80
9,000	-750	-460	180	-770	-50	870	-530	-90	-190	-30	-160	50
10,000	-830	-510	210	-860	-60	990	-580	-100	-220	-40	-180	60
11,000	-920	-560	240	-970	-60	1130	-630	-110	-240	-50	-200	80
12,000	-980	-600	280	-1080	-60	1270	-660	-110	-260	-70	-200	120
13,000	-1070	-650	330	-1220	-70	1450	-700	-110	-270	-80	-220	160
14,000	-1150	-690	370	-1390	-90	1630	-720	-110	-290	-120	-240	230
15,000	-1230	-730	440	-1590	-140	1850	-670	-90	-320	-170	-290	350
0	-140	-140	150	-620	-70	790	310	140	-140	30	10	140

Load in Pounds	Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch											
	52 - 53 - 54			55 - 56 - 57			58 - 59 - 60			61 - 62 - 63		
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	21	-82		84	-75		-5	-76		18	-20	
2,000	42	-164		175	-157		-11	-152		35	-38	
3,000	63	-247		267	-239		-19	-207		54	-54	
4,000	84	-345		359	-318		-21	-295		79	-74	
5,000	106	-414		448	-392		-24	-371		104	-85	
6,000	130	-520		550	-490		-30	-450		110	-110	
7,000	160	-600		650	-580		-40	-540		130	-130	
8,000	180	-690		750	-670		-40	-600		210	-150	
9,000	200	-780		870	-770		-50	-680		180	-160	
10,000	240	-860		990	-860		-60	-750		200	-180	
11,000	270	-960		1130	-970		-60	-810		240	-210	
12,000	320	-1020		1270	-1080		-60	-860		270	-220	
13,000	370	-1120		1450	-1220		-60	-920		320	-240	
14,000	420	-1200		1630	-1390		-60	-960		400	-280	
15,000	490	-1290		1850	-1590		-60	-940		510	-330	
0	208	-200		800	-630		320	-140		180	-10	

e_u = maximum principal strain.
e_v = minimum principal strain.
Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strains.

Ref. Sym: 1612 (309)
Project No. TN-375

TABLE VI

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 2 (.150") - STATIC TEST OF NODAL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches per Inch

Load in Pounds	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13			14 - 15		16 - 17		18 - 19		20 - 21 - 22		
1,000	115	113	157	-97	-303	198	Gage	2	313	29	-200	Gage	-[illegible]	65	-177	77	-517	Gage	-134	150	77	-15
2,000	233	226	310	-200	-628	234	Out	-21	294	-26	-415	Out	-860	-113	-836	133	-954	Out	-275	280	169	-26
3,000	349	324	457	-302	-964	50	"	-171	-49	-157	-568	"	-1170	-477	-1430	157	-1240	"	-416	401	248	-54
4,000	469	430	613	-391	-1300	-188	"	-74	-470	-277	-615	"	-1330	-916	-1730	168	-1620	"	-555	519	337	-79
5,000	586	534	766	-474	-1620	-433	"	83	-921	-334	-537	"	-1440	-1330	-1920	174	-1700	"	-694	638	431	-99
6,000	700	640	920	-540	-1950	-640	"	210	-1310	-480	-540	"	-1590	-1670	-2160	170	-1880	"	-830	770	530	-120
*7,000	820	740	1000	-760	-2410	910	"	-850	800	-220	-1360	"	-3690	-540	-4370	420	-3310	"	-940	900	530	-180
*8,000	940	830	1250	-860	-2820	570	"	-1200	430	-450	-990	"	-4010	-1070	-5630	500	-4040	"	-1040	1050	570	-220
*9,000	1100	940	1440	-1020	-3490	400	"	-1450	310	-580	-2190	"	-5460	-2470	-6830	600	-4720	"	-1140	1200	590	-320
10,000	1260	1060	1640	-1150	-3950	-460	"	-3280	-500	-1000	-2880	"	-13200	-6620	-14200	480	-6540	"	-1320	1370	600	-420
0	530	1230	-450	-1190	1500	-10300	"	-10130	-930	-510	-1020	"	-2060	-7680	-13100	-1930	-16200	"	-1270	410	-400	-840

Maximum and Minimum Principal Strains at the Following Gages - Microinches per Inch

Load in Pounds	1 - 2		3 - 4 - 5			6 - 7 - 8			9 - 10 - 11			12 - 13			14 - 15		16 - 17		18 - 19		20 - 21 - 22		
	e_u	e_v	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v	
1,000	116	114	155	-307		--	--		312	-218		--	--		63	-176	72	-516	--	--	150	-14	
2,000	235	228	305	-626		--	--		291	-413		--	--		-121	-837	123	-953	--	--	285	-29	
3,000	352	327	449	-961		--	--		-15	-608		--	--		-491	-1435	144	-1288	--	--	412	-62	
4,000	473	434	601	-1295		--	--		-285	-810		--	--		-933	-1739	153	-1520	--	--	540	-96	
5,000	591	540	750	-1613		--	--		-370	-1142		--	--		-1350	-1930	157	-1700	--	--	670	-126	
6,000	710	650	900	-1940		--	--		-350	-1520		--	--		-1690	-2180	150	-1880	--	--	810	-160	
*7,000	830	750	980	-2400		--	--		790	-1350		--	--		-580	-4380	390	-3310	--	--	920	-200	
*8,000	950	840	1220	-2810		--	--		440	-1010		--	--		-1130	-5640	460	-4030	--	--	1070	-230	
*9,000	1110	950	1400	-3480		--	--		340	-2240		--	--		-2540	-6850	550	-4710	--	--	1210	-320	
10,000	1270	1070	1600	-3930		--	--		-350	-3070		--	--		-6780	-16270	410	-6540	--	--	1370	-410	
0	1240	540	2480	-1420		--	--		-520	-1470		--	--		-6810	-13170	-2090	-16220	--	--	430	-860	

* Loading cable readjusted prior to this load.
e_u = maximum principal strain.
e_v = minimum principal strain.
Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strains.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VI (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 2 (.100") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch																							
	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1,000	Gage Out	Gage Out	-105	Gage Out	Gage Out	Gage Out	-121	8	275	-79	-51	-25	-99	-100	-96	99	203	174	20	79	73	-12	-26	-157
2,000	"	"	-185	"	"	"	-224	55	544	-161	-107	-54	-206	-203	-197	193	387	327	50	161	108	-20	-29	-287
3,000	"	"	-262	"	"	"	-323	104	803	-242	-167	-119	-312	-303	-281	271	545	457	67	231	139	-40	-39	-402
4,000	"	"	-340	"	"	"	-409	152	1060	-319	-225	-174	-423	-406	-382	387	783	644	101	344	194	-64	-44	-506
5,000	"	"	-414	"	"	"	-494	200	1310	-393	-233	-227	-528	-512	-487	425	859	707	117	335	216	-70	-44	-603
6,000	"	"	-470	"	"	"	-560	250	1530	-460	-330	-270	-630	-600	-600	500	1010	820	140	450	250	-70	-40	-680
*7,000	"	"	-540	"	"	"	-760	170	1870	-530	-380	-310	-710	-680	-650	670	1310	1040	200	660	450	-30	0	-750
*8,000	"	"	-570	"	"	"	-830	240	2200	-590	-430	-360	-810	-780	-740	780	1540	1220	230	790	580	-130	20	-810
*9,000	"	"	-380	"	"	"	-880	140	2400	-580	-450	-270	-890	-820	-740	960	1780	1400	330	1030	870	-80	90	-720
10,000	"	"	-420	"	"	"	-900	200	2960	-570	-490	-530	-920	-920	-820	1070	2160	1700	240	1200	1250	-260	-10	-650
0	"	"	-1270	"	"	"	50	590	1820	200	-190	-470	340	320	-550	-420	--	1850	-1310	530	3320	-1200	-760	1550

Load in Pounds	Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch																							
	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	--	--		--	--		285	-130		-26	-79		-96	-101		213	62		88	5		7	-178	
2,000	--	--		--	--		555	-232		-65	-162		-199	-208		404	120		165	-6		26	-336	
3,000	--	--		--	--		816	-331		-120	-245		-290	-424		569	166		236	-28		31	-477	
4,000	--	--		--	--		1075	-418		-174	-324		-386	-427		814	227		349	-51		36	-611	
5,000	--	--		--	--		1328	-504		-227	-400		-492	-533		893	250		390	-54		52	-731	
6,000	--	--		--	--		1550	-570		-270	-470		-600	-640		1050	290		460	-60		70	-830	
*7,000	--	--		--	--		1920	-800		-310	-540		-660	-720		1350	380		680	-30		100	-950	
*8,000	--	--		--	--		2250	-870		-360	-600		-750	-820		1590	430		830	-10		120	-1070	
*9,000	--	--		--	--		2500	-970		-440	-620		-750	-900		1820	560		1110	100		175	-980	
10,000	--	--		--	--		3120	-1040		-490	-620		-810	-950		2230	570		1430	80		20	-940	
0	--	--		--	--		1950	0		190	-570		500	-720		3360	-1330		1820	-1470		460	-1320	

* Loading cable readjusted prior to this load.
e_u = maximum principal strain.
e_v = minimum principal strain.
Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strains.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VI (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 2 (.109") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Strain Readings at the Following Gages - Microinches Per Inch								
	52 - 53 - 54			55 - 56 - 57			58 - 59 - 60		
1,000	-250	-16	70	-102	30	59	-111	3	121
2,000	-326	-34	135	-240	50	121	-206	-12	261
3,000	-488	-59	183	-365	50	155	-403	-31	387
4,000	-649	-81	223	-488	53	191	-540	-51	502
5,000	-797	-103	255	-611	60	231	-673	-73	613
6,000	-930	-130	280	-720	60	270	-790	-90	710
*7,000	-1150	-170	360	-880	90	340	-950	-20	1000
*8,000	-1330	-190	490	-1030	100	400	-1110	-30	1210
*9,000	-1440	-230	410	-1190	100	510	-1270	50	1470
10,000	-1590	-270	420	-1400	120	580	-1470	40	1750
0	470	-370	-1320	230	210	0	200	190	310

Load in Pounds	Maximum and Minimum Principal Strains at the Following Gages - Microinches per Inch							
	52 - 53 - 54			55 - 56 - 57			58 - 59 - 60	
	e_u	e_v		e_u	e_v		e_u	e_v
1,000	72	-163		73	-116		120	-110
2,000	140	-332		149	-269		262	-207
3,000	191	-499		194	-406		384	-400
4,000	236	-666		241	-541		497	-536
5,000	273	-820		293	-677		608	-668
6,000	300	-960		340	-790		700	-780
*7,000	380	-1180		430	-970		990	-940
*8,000	500	-1350		500	-1140		1200	-1100
*9,000	440	-1480		600	-1290		1460	-1260
10,000	450	-1630		700	-1530		1740	-1460
0	460	-1320		260	-30		340	170

* Loading cable readjusted prior to this load.
e_u = maximum principal strain.
e_v = minimum principal strain.
Minus indicates compressive strain and plus indicates tensile strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strains.

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VII

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 3 (.1309") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches per Inch

Load in Pounds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1,000	64	-365	-591	144	106	290	642	-312	40	-355	285	-80	114	-180	-305	Gage	Gage	-128	-65	-68	161	-120	21	118
2,000	52	-770	-1190	241	44	631	1300	-633	-67	-654	536	273	213	-377	-530	Out	Out	-305	-146	-129	314	-265	17	239
3,000	0	-1170	Gage	340	-20	980	1980	-970	-160	-960	810	160	310	-580	-860	"	"	-410	-210	-190	450	-400	20	360
4,000	-80	-1540	Out	440	-90	1350	2670	-1280	-230	-1280	1110	0	400	-790	-1120	"	"	-510	-290	-240	580	-530	20	490
5,000	-130	-1880	"	590	-130	1750	3440	-1600	-340	-1580	1410	-80	500	-910	-1350	"	"	-600	-340	-310	700	-650	30	610
6,000	-240	-2300	"	620	-280	2120	4310	-1940	-510	-1910	1700	-230	570	-1130	-1630	"	"	-710	-420	-390	830	-810	20	750
7,000	-370	-2750	"	490	-560	2600	5710	-2390	-860	-2290	2010	-460	650	-1340	-1900	"	"	-810	-480	-420	960	-930	50	880
8,000	-510	-3220	"	460	-940	3160	7810	-3010	-1440	-2650	2350	-720	720	-1550	-2170	"	"	-910	-540	-480	1120	-1070	60	970
9,000	-680	-3810	"	550	-1370	3960	Gage	-4080	-2220	-3120	2740	-1070	800	-1770	-2460	"	"	-1030	-600	-520	1280	-1160	100	1180
10,000	-860	-4440	"	1020	-1750	5170	Out	-5650	-3050	-3710	3210	-1550	860	-2000	-2770	"	"	-1170	-660	-580	1460	-1260	170	1330
11,000	-1180	-5310	"	1690	-2320	7220	"	-8100	-4410	-4530	3930	-2430	930	-2230	-3080	"	"	-1300	-690	-600	1680	-1310	240	1470
12,000	-2540	-8080	"	2370	-4590	Gage Out	"	Gage Out	-8710	-6330	5650	-5210	830	-2000	-3030	"	"	-1530	-610	-610	2040	-1220	420	1670

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	1-2-3 e_u	1-2-3 e_v	4-5-6 e_u	4-5-6 e_v	7-8 e_u	7-8 e_v	9-10 e_u	9-10 e_v	11-12 e_u	11-12 e_v	13-14-15 e_u	13-14-15 e_v	16-17-18 e_u	16-17-18 e_v	19-20-21 e_u	19-20-21 e_v	22-23-24 e_u	22-23-24 e_v
1,000	73	-606	351	88	639	-306	36	-355	284	-77	127	-320	--	--	209	-112	119	-121
2,000	71	-1220	874	6	1304	-620	-73	-655	539	276	249	-629	--	--	395	-225	238	-264
3,000	--	--	1410	-80	1970	-950	-170	-960	810	150	370	-920	--	--	570	-330	360	-400
4,000	--	--	1980	-170	2660	-1250	-240	-1280	1110	10	480	-1210	--	--	720	-430	490	-530
5,000	--	--	2590	-230	3420	-1570	-360	-1580	1410	-80	600	-1460	--	--	890	-530	610	-650
6,000	--	--	3180	-410	4290	-1900	-530	-1920	1700	-210	700	-1780	--	--	1060	-650	740	-800
7,000	--	--	3890	-770	5690	-2330	-880	-2300	2010	-440	820	-2080	--	--	1210	-720	870	-920
8,000	--	--	4860	-1200	7780	-2930	-1470	-2660	2340	-700	910	-2380	--	--	1410	-830	970	-1070
9,000	--	--	6240	-1690	--	--	-2250	-3140	2730	-1040	1020	-2700	--	--	1600	-920	1170	-1150
10,000	--	--	8340	-2090	--	--	-3090	-3740	3190	-1520	1110	-3040	--	--	1830	-1020	1320	-1250
11,000	--	--	11740	-2740	--	--	-4460	-4570	3910	-2390	1170	-3370	--	--	2100	-1100	1470	-1300
12,000	--	--	--	--	--	--	-6430	-8770	5600	-5150	1090	-3920	--	--	2580	-1130	1680	-1230

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VII (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 3 (.100") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1,000	-94	-105	-100	-108	-26	12	-113	87	343	-74	-26	209	-5	Gage	"	82	-172	-[illegible]	64	71	239	-13	2	144
2,000	-211	-223	-202	-234	-50	37	-240	131	591	-163	-57	499	-34	Out	54	82	-349	-681	123	134	460	-8	-12	225
3,000	-330	-340	-300	-370	-60	80	-380	170	860	-250	-100	810	-60	"	90	100	-520	-[illegible]	190	190	680	0	-20	300
4,000	-440	-450	-400	-490	-80	100	-500	210	1130	-340	-130	9[illegible]	-70	"	130	110	-690	-[illegible]	250	250	870	10	-40	370
5,000	-540	-560	-510	-600	-110	160	-630	260	1390	-430	-170	11[illegible]	-100	"	170	160	-860	-1120	310	310	1080	20	-50	450
6,000	-690	-700	-630	-750	-130	190	-770	290	1640	-520	-210	1330	-160	"	200	180	-1040	-1510	360	360	1290	20	-70	520
7,000	-800	-820	-760	-890	-140	210	-900	340	1930	-660	-240	1560	-200	"	240	200	-1230	-1640	390	420	1520	10	-90	610
8,000	-920	-960	-890	-1020	-160	260	-1000	400	2210	-700	-260	1730	-230	"	270	240	-1410	-1750	430	470	1760	0	-120	720
9,000	-1040	-1090	-1010	-1150	-170	310	-1120	440	2550	-830	-280	[illegible]	-270	"	300	260	-1600	-2000	450	520	2030	-20	-120	860
10,000	-1170	-1210	-1110	-1270	-180	370	-1230	590	2910	-860	-290	[illegible]	-310	"	410	290	-1810	-2450	440	560	2340	-40	-110	1040
11,000	-1300	-1340	-1190	-1380	-180	390	-1300	710	3310	-920	-460	[illegible]	-360	"	470	230	-2020	-2800	360	590	2720	-90	-90	1270
12,000	-1470	-1510	-1300	-1420	-140	370	-1200	1070	3990	-910	-330	[illegible]	-410	"	[illegible]	310	-2310	-2910	-150	450	3550	-390	-30	1950

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	-90	-106		15	-112		320	-110		308	-111		--	--		62	-278		270	35		166	-34	
2,000	-191	-225		43	-242		591	-236		566	-226		--	--		114	-517		523	66		2[illegible]	-56	
3,000	-290	-350		90	-380		860	-380		810	-340		--	--		160	-740		780	100		380	-70	
4,000	-390	-460		120	-510		1130	-500		1050	-460		--	--		220	-980		1000	130		480	-100	
5,000	-490	-570		170	-610		1390	-620		1290	-580		--	--		250	-1220		1240	160		590	-120	
6,000	-620	-720		210	-770		1640	-760		1510	-690		--	--		300	-1450		1480	180		690	-150	
7,000	-740	-830		240	-920		1930	-890		1750	-840		--	--		350	-1700		1730	190		810	-180	
8,000	-860	-970		290	-1050		2210	-990		2020	-920		--	--		420	-1940		2010	200		960	-230	
9,000	-970	-1100		340	-1190		2550	-1110		2300	-1060		--	--		450	-2210		2310	190		1110	-270	
10,000	-1080	-1230		400	-1310		2910	-1220		2630	-1140		--	--		500	-2490		2650	160		1310	-300	
11,000	-1150	-1370		430	-1430		3310	-1280		3000	-1230		--	--		520	-2770		3060	50		1550	-360	
12,000	-1250	-1550		430	-1490		3990	-1180		3590	-1290		--	--		450	-3180		3930	-490		2200	-620	

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VII (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 3 (1100°) - STATIC TEST OF AL RL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
1,000	-42	-115	-133	-148	-45	57	-120	12	170	-155	-76	66	-142	-219	-191	-58	-132	-134	-10	-16	24	53	49	170
2,000	-94	-261	-271	-314	-94	126	-255	23	359	-316	-155	121	-297	-425	-333	-139	-297	-254	-13	-55	120	108	95	341
3,000	-140	-400	-390	-480	-160	180	-380	30	550	-480	-250	170	-430	-620	-460	-210	-440	-340	-10	-80	170	170	150	490
4,000	-190	-520	-490	-630	-210	250	-510	50	730	-620	-340	220	-560	-790	-590	-270	-570	-430	0	-120	200	230	190	650
5,000	-240	-650	-570	-780	-270	310	-630	70	920	-780	-430	260	-710	-990	-720	-350	-720	-520	10	-140	260	300	250	820
6,000	-280	-770	-670	-950	-330	370	-770	70	1110	-950	-520	320	-850	-1170	-850	-410	-850	-610	10	-170	300	360	290	970
7,000	-340	-910	-760	-1130	-400	450	-920	90	1310	-1130	-610	370	-980	-1360	-980	-490	-1000	-680	10	-200	350	410	340	1150
8,000	-390	-1020	-840	-1310	-470	540	-1080	110	1520	-1320	-720	430	-1130	-1560	-1120	-570	-1150	-780	0	-230	420	460	390	1320
9,000	-430	-1140	-920	-1500	-520	660	-1260	110	1760	-1490	-810	510	-1290	-1740	-1260	-640	-1290	-860	-10	-260	490	510	430	1520
10,000	-470	-1230	-1030	-1670	-580	790	-1460	110	2010	-1730	-910	590	-1390	-1960	-1390	-710	-1420	-920	-40	-290	600	530	470	1720
11,000	-500	-1310	-1020	-1850	-620	960	-1730	70	2260	-1890	-1020	720	-1470	-2090	-1500	-780	-1530	-950	-90	-310	760	510	480	1960
12,000	-440	-1140	-780	-2010	-720	1130	-2340	-70	2720	-2100	-1150	930	-1440	-2130	-1590	-870	-1560	-830	-360	-380	1200	260	380	2410

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	-36	-141		56	-147		169	-119		69	-159		-111	-226		-45	-149		107	-33		197	28	
2,000	-67	-301		123	-313		358	-253		128	-325		-208	-428		-84	-313		180	-72		399	54	
3,000	-90	-450		180	-480		550	-380		180	-490		-280	-620		-100	-450		260	-100		570	90	
4,000	-110	-580		240	-630		730	-510		240	-640		-370	-790		-120	-590		340	-140		770	120	
5,000	-120	-700		300	-780		920	-620		280	-800		-450	-990		-140	-730		440	-160		970	170	
6,000	-130	-830		360	-950		1110	-760		340	-980		-540	-1180		-160	-870		510	-200		1150	190	
7,000	-140	-970		440	-1130		1310	-910		390	-1160		-610	-1370		-170	-1010		590	-230		1360	220	
8,000	-160	-1080		530	-1310		1510	-1070		460	-1360		-710	-1570		-200	-1160		690	-270		1550	250	
9,000	-160	-1200		650	-1500		1750	-1250		540	-1530		-780	-1750		-210	-1300		800	-310		1790	260	
10,000	-210	-1310		780	-1670		2000	-1450		620	-1770		-870	-1940		-220	-1430		930	-360		2010	260	
11,000	-170	-1370		950	-1850		2250	-1720		790	-1950		-900	-2100		-210	-1540		1100	-430		2280	210	
12,000	-70	-1170		1130	-2020		2710	-2330		1010	-2190		-920	-2140		-160	-1560		1530	-680		2770	-70	

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain
e_v = minimum principal strain
Biaxial gages are assumed to be oriented in direction of maximum and minimum principal strains.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VIII

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 4 (.150") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	1 - 2 - 3			4 - 5 - 6			7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18			19 - 20 - 27			22 - 23 - 24		
1,000	Gage	Gage	Gage	220	120	-100	90	-120	Gage	-170	30	-280	30	-40	-120	-40	Gage	-30	-70	-70	90	Gage	10	40
2,000	Out	Out	Out	330	130	-130	350	-180	Out	-240	80	-280	60	-10	-110	10	Out	-30	-50	-60	120	Out	20	60
3,000	"	"	"	740	170	-390	510	-530	"	-650	230	-710	160	-80	-310	10	"	-30	-160	-150	320	"	0	110
4,000	"	"	"	1020	200	-520	790	-770	"	-980	320	-960	210	-110	-430	-70	"	-30	-230	-220	420	"	-20	150
5,000	"	"	"	1340	230	-680	990	-1070	"	-1280	420	-1210	270	-160	-540	-90	"	-50	-280	-280	530	"	-20	180
6,000	"	"	"	1690	260	-830	1050	-1320	"	-1570	500	-1450	320	-190	-670	-120	"	-60	-360	-350	620	"	-40	240
7,000	"	"	"	2240	300	-1070	1440	-1650	"	-1950	600	-1710	380	-220	-800	-150	"	-60	-430	-410	730	"	-30	300
8,000	"	"	"	2980	320	-1380	1770	-2040	"	-2370	680	-1990	440	-270	-910	-170	"	-60	-500	-480	850	"	-30	370
9,000	"	"	"	3460	520	-1500	2410	-2210	"	-2600	650	-2180	520	-290	-1010	-200	-760	200	-550	-490	980	"	-30	410
10,000	"	"	"	5050	570	-2260	3390	-3010	"	-3360	760	-2660	580	-330	-1140	-250	-1100	200	-660	-560	1170	"	-10	500
11,000	"	"	"	7160	570	-3210	5380	-3310	"	-3810	860	-3230	630	-380	-1290	-310	-1260	210	-730	-660	1350	"	0	560
12,000	"	"	"	--	660	-3800	7360	-3780	"	-4110	1080	-3760	660	-450	-1470	-410	-1420	250	-960	-770	1620	"	40	660
13,000	"	"	"	--	1130	-3910	--	-3530	"	-4130	1600	-3300	710	-500	-1670	-540	-1640	230	-1240	-970	1970	"	160	810
0	"	"	"	--	-1990	-3680	--	--	"	-3520	2420	-3780	-10	110	-650	-310	720	-650	-730	-890	950	"	640	700

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	1 - 2 - 3			4 - 5 - 6			7 - 8		9 - 10		11 - 12		13 - 14 - 15			16 - 17 - 18			19 - 20 - 27			22 - 23 - 24		
	e_u	e_v		e_u	e_v		e_u	e_v	e_u	e_v	e_u	e_v	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	--	--		230	-110		90	-120	--	--	30	-280	30	-120		--	--		120	-100		--	--	
2,000	--	--		330	-130		350	-180	--	--	80	-280	60	-110		--	--		160	-90		--	--	
3,000	--	--		740	-380		500	-520	--	--	220	-710	160	-310		--	--		410	-250		--	--	
4,000	--	--		1020	-510		780	-760	--	--	310	-960	210	-430		--	--		540	-350		--	--	
5,000	--	--		1340	-670		980	-1060	--	--	410	-1210	270	-540		--	--		690	-440		--	--	
6,000	--	--		1690	-820		1040	-1310	--	--	490	-1440	310	-670		--	--		810	-550		--	--	
7,000	--	--		2250	-1070		1420	-1640	--	--	580	-1700	370	-800		--	--		950	-650		--	--	
8,000	--	--		3020	-1400		1750	-2020	--	--	660	-1980	430	-910		--	--		1110	-750		--	--	
9,000	--	--		3490	-1510		2390	-2190	--	--	630	-2170	510	-1010		970	-970		1250	-810		--	--	
10,000	--	--		5120	-2300		3360	-2980	--	--	730	-2650	570	-1140		1060	-1110		1470	-960		--	--	
11,000	--	--		7310	-3320		5350	-3260	--	--	830	-3220	620	-1280		1170	-1280		1690	-1130		--	--	
12,000	--	--		--	--		7320	-3710	--	--	1040	-3750	650	-1460		1290	-1450		2010	-1340		--	--	
13,000	--	--		--	--		--	--	--	--	1570	-3280	690	-1660		1360	-1680		2440	-1700		--	--	
0	--	--		--	--		--	--	--	--	2380	-3760	210	-870		710	-1680		1400	-1180		--	--	

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain.
e_v = minimum principal strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strain.

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VIII (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER No. 4 (.150") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	25 - 26 - 21			28 - 29 - 30			31 - 33 - 32			35 - 36 - 37			41 - 38 - 39			40 - 34 - 42			73 - 44 - 45			46 - 47 - 48		
1,000	-100	-100	-80	-100	Gage	Gage	Gage	30	Gage	-50	100	Gage	20	80	0	80	10	-70	20	40	90	0	0	30
2,000	-150	-100	-70	-90	Out	Out	Out	30	Out	-50	120	Out	30	110	10	60	20	-60	40	70	160	40	30	70
3,000	-290	-240	-150	-270	"	"	"	70	"	-160	260	"	30	280	70	140	80	-220	100	80	240	0	-20	80
4,000	-430	-340	-200	-380	"	"	"	110	"	-220	340	"	20	370	100	180	110	-310	110	80	310	0	-40	90
5,000	-520	-430	-270	-490	"	"	"	130	"	-280	430	"	20	470	120	220	150	-420	130	80	380	-30	-70	90
6,000	-690	-510	-320	-590	"	"	"	150	"	-330	510	"	20	560	150	260	180	-500	140	90	460	-30	-80	110
7,000	-820	-610	-390	-680	"	"	"	180	"	-380	590	"	20	650	180	310	220	-590	170	100	530	-50	-90	140
8,000	-960	-710	-460	-790	"	"	"	220	"	-450	690	"	20	760	220	350	270	-680	180	100	620	-80	-110	170
9,000	-1060	-780	-430	-870	"	"	"	320	"	-480	840	"	40	900	230	470	330	-820	170	140	680	-70	-150	180
10,000	-1230	-910	-500	-980	"	"	"	380	"	-530	990	"	60	1040	280	520	370	-940	160	140	820	-100	-140	220
11,000	-1410	-1040	-560	-1090	"	"	"	400	"	-640	1110	"	20	1160	290	540	380	-1080	110	100	920	-150	-170	250
12,000	-1620	-1190	-620	-1200	"	"	"	440	"	-770	1290	"	0	1320	340	580	400	-1230	40	70	1110	-200	-130	370
13,000	-1860	-1310	-610	-1260	"	"	"	490	"	-960	1520	"	-50	1540	370	610	390	-1420	-170	20	1430	-300	-30	580
0	20	-20	-30	120	"	"	"	360	"	-550	920	"	-10	530	-700	-10	-770	-1240	-1410	-350	1970	20	810	1410

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	25 - 26 - 21			28 - 29 - 30			31 - 33 - 32			35 - 36 - 37			41 - 38 - 39			40 - 34 - 42			73 - 44 - 45			46 - 47 - 48		
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	-80	-110		--	--		--	--		--	--		80	-60		80	-70		90	20		40	-10	
2,000	-70	-150		--	--		--	--		--	--		110	-70		60	-60		170	30		80	30	
3,000	-150	-290		--	--		--	--		--	--		280	-180		170	-250		280	60		110	-30	
4,000	-200	-430		--	--		--	--		--	--		370	-250		230	-360		370	50		140	-50	
5,000	-270	-530		--	--		--	--		--	--		470	-330		300	-500		470	40		150	-90	
6,000	-330	-690		--	--		--	--		--	--		560	-390		360	-600		560	40		130	-100	
7,000	-400	-820		--	--		--	--		--	--		650	-450		430	-710		660	50		210	-120	
8,000	-470	-960		--	--		--	--		--	--		760	-520		500	-830		770	40		240	-150	
9,000	-440	-1070		--	--		--	--		--	--		900	-630		630	-990		810	50		290	-180	
10,000	-510	-1240		--	--		--	--		--	--		1040	-700		710	-1130		970	20		310	-190	
11,000	-570	-1420		--	--		--	--		--	--		1160	-850		760	-1300		1090	-50		340	-240	
12,000	-630	-1630		--	--		--	--		--	--		1320	-980		820	-1480		1310	-150		440	-270	
13,000	-620	-1870		--	--		--	--		--	--		1540	-1220		870	-1690		1630	-360		610	-330	
0	20	-30		--	--		--	--		--	--		580	-1300		-10	-1260		2070	-1500		1420	30	

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain.
e_v = minimum principal strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strain.

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Ref. Sym: 1612 (309)
Project No. TM-375

TABLE VIII (Continued)

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 4 (.190") - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
1,000	-20	-50	-60	-100	-30	40	-50	40	90	-80	10	40	-40	-20	-70	-20	-10	-70	0	30	30	40	20	70
2,000	0	-40	-30	-60	0	70	-20	90	210	-110	50	120	-30	10	-70	10	10	-90	40	80	60	90	190	170
3,000	-70	-190	-110	-210	-50	160	-170	110	320	-110	60	170	-80	-10	-110	-10	10	-170	60	110	50	120	270	250
4,000	-110	-280	-180	-300	-80	200	-240	120	420	-300	60	210	-130	-20	-170	-30	0	-220	50	140	50	150	350	320
5,000	-160	-350	-230	-400	-120	240	-340	130	520	-210	70	270	-190	-40	-210	-40	0	-290	50	170	40	130	420	380
6,000	-190	-420	-260	-490	-150	300	-420	160	650	-490	90	320	-210	-50	-250	-30	10	-340	70	210	50	210	510	460
7,000	-220	-510	-320	-590	-190	350	-520	180	770	-590	100	370	-250	-70	-300	-90	0	-400	70	240	60	250	600	530
8,000	-250	-560	-340	-670	-220	410	-610	210	920	-690	120	450	-270	-70	-340	-100	10	-440	80	280	80	230	690	630
9,000	-270	-630	-370	-750	-210	530	-720	240	1040	-770	150	540	-290	-40	-380	-70	40	-500	140	380	160	330	850	770
10,000	-300	-700	-420	-850	-230	610	-820	280	1220	-870	200	610	-320	-50	-440	-100	60	-500	130	430	210	400	970	880
11,000	-350	-760	-470	-950	-270	670	-960	290	1380	-980	210	700	-350	-90	-510	-150	30	-560	60	440	250	370	1060	1000
12,000	-340	-810	-510	-1100	-320	780	-1140	310	1610	-1060	210	810	-330	-60	-570	-180	10	-600	-10	480	370	340	1200	1200
13,000	-270	-750	-500	-1230	-400	900	-1140	300	1910	-1090	270	920	-120	-20	-640	-210	-20	-550	-230	490	620	170	1360	1550
0	10	--	230	70	10	-40	0	130	310	60	-50	40	250	-50	-120	-500	-320	480	-1540	-90	1620	-1050	750	2080

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
1,000	-20	-60		40	-100		90	-50		50	-90		-10	-80		0	-90		40	-10		80	30	
2,000	10	-40		70	-60		210	-20		130	-120		10	-110		30	-110		80	20		200	60	
3,000	10	-190		160	-210		320	-170		180	-220		-10	-180		40	-220		110	0		290	80	
4,000	-10	-280		200	-300		420	-240		230	-320		-20	-280		30	-280		140	-40		380	100	
5,000	-40	-350		240	-400		520	-340		290	-430		-40	-360		30	-380		170	-80		450	110	
6,000	-30	420		300	-490		650	-420		350	-520		-50	-410		40	-470		210	-90		550	130	
7,000	-30	-520		350	-590		770	-510		410	-630		-70	-480		40	-530		240	-110		640	140	
8,000	-30	-560		410	-670		920	-600		490	-730		-70	-560		50	-600		280	-120		750	170	
9,000	-10	-630		530	-750		1040	-710		580	-820		-40	-630		100	-670		380	-80		910	250	
10,000	-20	-710		610	-850		1210	-810		670	-930		-50	-720		100	-710		430	-90		1050	240	
11,000	-60	-770		670	-950		1370	-950		760	-1040		-90	-780		70	-790		450	-140		1180	210	
12,000	-40	-820		780	-1110		1600	-1130		860	-1110		-50	-860		50	-840		530	-170		1380	180	
13,000	-10	-770		910	-1250		1900	-1420		1010	-1180		30	-860		10	-780		710	-320		1710	30	
0	--	--		70	-40		310	0		150	-50		350	-1310		560	-580		1610	-1530		2030	-1050	

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain.
e_v = minimum principal strain.
Biaxial gages are assumed to be oriented in the direction of maximum and minimum principal strain.

[redacted]

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE IX

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 1 (.100") - 5/16" SWAY BRACE PAD - STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
200	320	333	605	-92	-141	2	581	-10	-155	150	-24	Gage	78	-67	-178	-18	-140	-565	-56	-75	-162	-8	-117	-363	-329	1	-182
600	2260	2560	1640	-470	-940	-90	2750	-350	-1080	520	-40	Out	340	-410	-1060	50	-520	-2670	-370	-310	-420	80	-690	-2430	-1510	110	-1010
800	3170	4110	2380	-810	-1430	-140	4710	-530	-1720	470	-80	"	280	-910	-1670	310	-130	-4590	-560	-300	-440	510	-700	-3750	-2310	280	-820
1,000	4580	6870	5030	-1530	-2550	-120	6540	-1610	-3160	940	-820	"	310	-1860	-3000	1280	50	-7250	-710	490	830	1800	-280	-6290	-3580	760	380
1,200	7630	Gage	Gage	-2840	-4370	-90	6870	-3370	-4340	-6140	-3040	"	-80	-4510	-5640	1690	2880	Gage	760	Failure	- - -	- - -	- - -	- - -	- - -	- - -	- - -
0	1450	Out	Out	-1860	-2660	-110	2160	-3730	-3360	-9540	-5510	"	-610	-3940	-4280	740	2970	Out	-80	3900	4990	3490	2860	-5720	-2170	1130	6120

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	1-2-3 e_u	1-2-3 e_v	4-5-6 e_u	4-5-6 e_v	7-8-9 e_u	7-8-9 e_v	10-11-12 e_u	10-11-12 e_v	13-14-15 e_u	13-14-15 e_v	16-17-18 e_u	16-17-18 e_v	19-20-21 e_u	19-20-21 e_v	22-23-24 e_u	22-23-24 e_v	25-26-27 e_u	25-26-27 e_v
200	657	277	60	-151	641	-211	--	--	77	-178	15	-604	-48	-172	0	-376	6	-522
600	2650	1290	400	-960	3070	-1390	--	--	330	-1060	230	-2880	-310	-490	150	-2580	110	-2650
800	4180	1420	520	-1480	5270	-2250	--	--	290	-1690	710	-5000	-300	-710	660	-3930	390	-3550
1,000	6910	2800	1010	-2680	7510	-4100	--	--	360	-3070	2170	-8200	930	-810	2180	-6720	1430	-4670
1,200	--	--	1700	-4660	8800	-6250	--	--	310	-6090	--	--	--	--	--	--	--	--
0	--	--	880	-2870	3520	-4740	--	--	-130	-4810	4040	-10620	5370	-410	4900	-7150	6180	-3190

Minus indicates compressive strain and plus indicates tensile strain.
e_u = maximum principal strain.
e_v = minimum principal strain.

[redacted]

TABLE X

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 9 (.375") - 5/16" SHAY BRASS PAD - STATIC TEST OF METAL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches per Inch

Load in Pounds	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
200	433	394	194	39	45	182	353	13	-133	-36	-15	49	312	147	-82	-49	-131	-354	-334	-142	-104	-35	-135	-453	-116	-94	-63
400	890	742	372	65	65	384	709	22	-269	-66	-14	105	669	335	-166	-103	-208	-697	-659	-340	-315	-73	-372	-887	-188	-161	-98
600	1230	1060	550	100	100	610	1020	20	-380	-100	-10	160	990	510	-230	-150	-540	-1420	-810	-400	-350	-100	-550	-1330	-250	-210	-110
800	1660	1390	780	70	100	960	1420	-10	-590	-120	-50	230	1360	760	-310	-190	-760	-1980	-1180	-620	-480	-100	-770	-1960	-360	-260	-130
1,000	2180	1760	1050	0	60	1360	1810	-60	-790	-300	-130	270	1760	1020	-410	-40	-980	-2440	-1560	-780	-610	-50	-990	-2780	-480	-270	-120
1,200	2790	2270	1420	-310	-100	1860	2260	-180	-1080	-490	-210	340	2130	1260	-520	120	-870	-3080	-1840	-730	-350	70	-1150	-3770	-550	-190	0
1,400	3930	3360	2090	-730	-320	2790	3190	-380	-1650	-810	-400	510	3130	1900	-770	320	-1140	-4680	-2930	-970	-290	240	-1660	-4800	-810	-160	80
1,600	5160	4810	2920	-1280	-560	3990	4040	-650	-2270	-1220	-680	660	4340	2800	-1190	650	-1330	-6600	-3790	-1120	-400	520	-2110	-6070	-1210	-70	300
1,800	6340	6660	4010	-1920	-840	5490	4990	-1020	-3010	-1740	-950	840	5570	3770	-1610	1090	-1430	-8350	-4820	-1340	320	920	-2480	-10500	-1440	210	520
2,000	8020	9250	5920	-2890	-1220	7720	6120	-1520	-3970	-2510	-1460	1170	6700	5360	-1870	1720	-1680	-11300	-7010	-1620	640	1570	-2970	-13900	-1940	460	940
2,200	11400	12600	9800	-4600	-1700	12600	8200	-2600	-5700	-4400	0	1600	8200	8400	-2700	3000	-1700	-17700	-11300	-2000	2200	3470	-3700	-22200	-3700	1400	2200
0	9440	8280	9900	-7720	-3210	16300	6620	-3830	-6200	-6000	-3440	1160	6500	3370	-2600	5960	470	-17500	-10900	-20	4670	5530	-1550	-12400	-3840	3140	4200

Maximum and Minimum Principal Strains at the Following Gages - Microinches per Inch

Load in Pounds	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
	e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v		e_u	e_v	
200	459	174		208	16		370	-147		54	-41		313	-83		-62	-357		-134	-267		-14	-479		-64	-117	
400	916	358		450	3		744	-300		110	-71		676	-170		-110	-698		-287	-596		-72	-900		-96	-192	
600	1280	520		720	0		1080	-430		160	-100		970	-240		-120	-1240		-350	-850		-90	-1350		-110	-260	
800	1700	770		1120	-80		1500	-660		240	-190		1390	-330		-70	-1720		-430	-1240		-80	-2030		-130	-360	
1,000	2210	1050		1600	-220		1920	-890		290	-320		1810	-450		20	-2520		-370	-1610		-30	-2850		-120	-480	
1,200	2820	1430		2160	-600		2420	-1220		360	-500		2200	-570		210	-3300		-270	-2040		150	-3890		10	-560	
1,400	4010	2070		3240	-1160		3430	-1870		550	-850		3220	-860		500	-5070		-170	-3080		380	-6000		120	-850	
1,600	5430	2740		4590	-1860		4370	-2580		690	-1260		4130	-1170		940	-6950		-150	-4290		750	-8370		400	-1320	
1,800	7100	3360		6300	-2690		5430	-3430		900	-1790		5100	-1510		1500	-8830		420	-5570		1260	-10930		710	-1640	
2,000	9520	4560		8800	-3930		6700	-4530		1240	-2590		6360	-1990		2350	-11970		900	-7540		2060	-14510		1210	-2220	
2,200	12840	8570		14250	-6170		9150	-6600		1860	-4690		8410	-2860		4600	-12950		2470	-11760		4380	-23360		2860	-4370	
0	11160	8370		18350	-9680		7710	-7290		1940	-6200		6680	-2640		7280	-12950		5150	-11440		6890	-23930		5100	-4740	

e_u = maximum principal strain.
e_v = minimum principal strain.

Minus indicates compressive strain and plus indicates tensile strain.

Ref. Sym: 1612 (309)
Project No. TM-375

TABLE XI

STRAIN READINGS AND COMPUTED MAXIMUM AND MINIMUM PRINCIPAL STRAINS, CYLINDER NO. 9 (.175) - 5/8" SWAY BRACE PAD -- STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Strain Readings at the Following Gages - Microinches Per Inch

Load in Pounds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
200	241	260	134	66	5	108	262	-21	-143	-85	-11	1[illegible]	319	193	-79	-4	-112	-307	-124	-46	-14	-70	-227	-353	-254	-123	-129
400	441	412	151	153	17	136	445	-58	-248	-151	-27	11	563	367	-114	-9	-190	-520	-203	-72	-15	-135	-429	-615	-446	-230	-254
600	598	571	217	207	19	194	587	-79	-345	-207	-31	18	700	[illegible]	-153	-63	-263	-727	-285	-98	-14	-190	-589	-859	-647	-320	-353
800	814	816	311	250	-5	288	811	-104	-462	-284	-41	27	979	716	-213	-71	-339	-980	-389	-128	-5	-255	-821	-1180	-931	-427	-463
1,000	1000	1040	430	250	-50	390	1010	-120	-560	-360	-40	35	1130	690	-230	-4[illegible]	-360	-1170	-460	-130	20	-270	-1000	-1490	-1180	-480	-480
1,200	1160	1310	570	120	-170	590	1250	-210	-730	-480	-70	40	1350	1170	-310	10	-410	-1470	-560	-130	70	-330	-1300	-1970	-1600	-540	-480
1,400	1260	1480	710	10	-260	790	1460	-280	-900	-600	-110	40	1540	1440	-370	70	-430	-1760	-670	-130	160	-360	-1570	-2420	-2010	-600	-460
1,600	1250	1720	970	-320	-430	1170	1720	-420	-1160	-810	-160	50	1810	1800	-490	240	-420	-2270	-840	-130	250	-390	-2040	-3220	-2700	-660	-330
1,800	1180	1890	1210	-630	-590	1610	1980	-610	-1460	-1030	-240	50	-2140	2240	-620	440	-380	-2760	-1030	-100	410	-390	-2460	-4010	-3440	-720	-170
2,000	1070	1990	1420	-920	-680	2110	2250	-810	-1760	-1270	-330	50	2460	2590	-740	640	-320	-3250	-1230	-70	560	-380	-2830	-4790	-4170	-810	-50
2,200	810	2080	1680	-1310	-810	2820	2530	-1080	-2140	-1570	-430	60	2930	3070	-910	940	-210	-3880	-1440	0	790	-350	-3320	-5670	-5130	-910	150
2,400	580	2160	1860	-1790	-890	3930	2880	-1480	-2680	-1960	-500	70	3310	3640	-1130	1370	-70	-4840	-1770	10	1110	-250	-3860	-6860	-6350	-1070	410
2,600	150	2220	2050	-2610	-1110	5890	3490	-2130	-3580	-2740	-900	110	4050	4480	-1490	2220	190	-6550	-2350	120	1710	0	-4730	-8890	-8500	-1330	840
2,800	-250	2360	2450	-3420	-1250	8070	4060	-2840	-4520	-3740	-1290	160	4940	5340	-1910	3940	530	-8460	-3040	250	2440	380	-5710	-10900	-11000	-1700	1600
3,000	-1160	2530	3510	-5430	-1130	10300	5370	-4690	-6820	-6840	-2410	51[illegible]	7090	7240	-2950	6640	1520	-13300	-4820	100	4660	170	-7640	-15800	-17100	-2400	2300
0	-3200	-100	1700	-12100	-2400	8700	5000	-8500	-10100	-14300	-4200	1700	6600	9000	-4200	15900	5500	-21800	-7200	2600	10200	5830	-10200	-24900	-27900	-1800	8100

Maximum and Minimum Principal Strains at the Following Gages - Microinches Per Inch

Load in Pounds	1 e_u	1 e_v	2 e_u	2 e_v	3 e_u	3 e_v	4 e_u	4 e_v	5 e_u	5 e_v	6 e_u	6 e_v	7 e_u	7 e_v	8 e_u	8 e_v	9 e_u	9 e_v	10 e_u	10 e_v	11 e_u	11 e_v	12 e_u	12 e_v	13 e_u	13 e_v	14 e_u	14 e_v	15 e_u	15 e_v	16 e_u	16 e_v	17 e_u	17 e_v	18 e_u	18 e_v	19 e_u	19 e_v	20 e_u	20 e_v	21 e_u	21 e_v	22 e_u	22 e_v	23 e_u	23 e_v	24 e_u	24 e_v	25 e_u	25 e_v	26 e_u	26 e_v	27 e_u	27 e_v
200	279	100					172	4					276	-156					19	-91					395	55					-41	-293					-11	-129					-73	-355					-102	-285				
400	483	115					272	19					476	-277					20	-161					540	-143					-39	-539					-10	-210					-135	-622					-201	-506				
600	660	163					382	23					624	-380					32	-223					750	-198					-45	-752					-8	-294					-193	-867					-275	-735				
800	922	215					544	0					864	-511					47	-306					1062	-289					-44	-1017					3	-401					-256	-1193					-350	-1058				
1,000	1150	290					700	-50					1080	-620					60	-400					1260	-350					0	-1220					30	-480					-270	-1500					-350	-1330				
1,200	1400	350					900	-210					1350	-820					70	-520					1570	-520					60	-1540					80	-580					-340	-1990					-310	-1790				
1,400	1560	430					1160	-350					1580	-1010					80	-640					1850	-660					150	-1850					130	-1020					-370	-2440					-260	-2240				
1,600	1740	500					1550	-690					1870	-1300					90	-860					2270	-930					330	-1730					270	-860					-400	-3240					-80	-2930				
1,800	1900	520					2040	-1050					2170	-1650					90	-1080					2770	-1240					590	-2930					430	-1060					-410	-4030					120	-3780				
2,000	2010	500					2560	-1360					2490	-2000					90	-1330					3200	-1460					840	-3480					580	-1230					-410	-4810					280	-4540				
2,200	2190	330					3330	-1800					2830	-2440					110	-1630					3750	-1830					1210	-4180					820	-1480					-390	-5690					530	-5560				
2,400	2360	110					4510	-2350					3270	-3060					110	-2020					4450	-2250					1740	-5240					1130	-1800					-310	-6880					840	-6840				
2,600	2560	-340					6670	-3350					4020	-4110					140	-2800					5480	-2900					2740	-7110					1730	-2380					-80	-8900					1380	-9110				
2,800	2940	-720					9050	-4350					4740	-5200					180	-3800					6610	-3550					4010	-9180					2460	-3070					290	-10910					2160	-11650				
3,000	3860	-1490					11010	-6090					6470	-7930					520	-6910					9220	-5040					7610	-14340					4610	-4780					10	-15800					3330	-18280				
0	1750	-3270					8600	-12030					6940	-12090					1820	-14550					11010	-7570					17470	-23430					10200	-7170					5560	-24850					9540	-29540				

e_u = maximum principal strain.
e_v = minimum principal strain.

Minus indicates compressive strain and plus indicates tensile strain.

TABLE XII

DATA FROM TENSILE SPECIMENS, CYLINDER NO. 6, (.150")
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Stress in psi P/A	Strain in Inches/ Two Inches 1	2	3	Average Strain Per Two Inches	Average Strain Inches Per Inch
0	0	0	0	0	0	0
500	3,330	.004	.002	.002	.0027	.0014
1,000	6,670	.008	.004	.003	.0050	.0025
1,500	10,000	.013	.007	.004	.0078	.0039
2,000	13,330	.017	.010	.005	.0107	.0054
2,500	16,670	.021	.014	.010	.0150	.0075
3,000	20,000	.040	.022	.040	.0340	.0170
3,600	23,300	.170	—	—		
3,700	24,700	—	—	.150	.1800	.0900
3,800	25,300	—	.210	—		

NOTE: All three specimens failed outside the two-inch gage marks.

Cross sectional area of each specimen = 0.150 square inches.

[redacted]

TABLE XIII

DATA FROM TENSILE SPECIMENS, CYLINDER NO. 3, (.100")
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Stress in psi P/A	Strain in Inches/Two Inches 1	2	3	Average Strain Per Two Inches	Average Strain Inches Per Inch
0	0	0	0	0	0	0
500	5,000	.001	.001	.001	.0010	.0005
1,000	10,000	.002	.002	.003	.0023	.0012
1,500	15,000	.003	.003	.004	.0033	.0016
2,000	20,000	.004	.004	.006	.0047	.0024
2,500	25,000	.005	.005	.007	.0057	.0028
3,000	30,000	.007	.006	.008	.0070	.0035
3,500	35,000	.008	.007	.010	.0083	.0042
4,000	40,000	.010	.008	.015	.0110	.0056
4,250	42,500	.050	—	—		
4,260	42,600	—	.065	—	.0600	.0300
4,270	42,700	—	—	.065		

NOTE: All three specimens failed outside the two-inch gage marks.

Cross sectional area of each specimen = 0.100 square inches.

[redacted]

TABLE XIV

DATA FROM TENSILE SPECIMENS, CYLINDER NO. 10, (.035")
STATIC TEST OF MODEL CYLINDERS FOR CLASS "A" WEAPON

Load in Pounds	Stress in psi P/A	Strain in Inches/ Two Inches 1	2	3	Average Strain Per Two Inches	Average Strain Inches Per Inch
0	0	0	0	0	0	0
500	14,300	.003	.003	.005	.0037	.0018
1,000	28,600	.006	.007	.009	.0073	.0036
1,500	42,900	.020	.012	.014	.0150	.0075
2,000	57,200	.072	.060	.065	.0690	.0350
2,420	69,200	.355	.230	.310	.3000	.1500
2,430	69,500	—	.330	.410	.3700	.1850

NOTE: All three specimens failed within the two-inch gage marks.

Cross sectional area of each specimen = .035 square inches.

TABLE XV

DATA FROM TENSILE SPECIMENS, CYLINDER NO. 11, (.056")
STATIC TEST OF MODEL CYLINDER FOR CLASS "A" WEAPON

Load in Pounds	Stress in psi P/A	Strain in Inches/ Two Inches 1	2	3	Average Strain Per Two Inches	Average Strain Inches Per Inch
0	0	0	0	0	0	0
500	8,940	.002	.002	.002	.002	.0007
1,000	17,900	.004	.004	.004	.004	.002
1,500	26,800	.006	.006	.006	.006	.003
2,000	35,700	.008	.008	.008	.008	.004
2,500	44,700	.010	.010	.010	.010	.005
3,000	53,600	.040	.040	.040	.040	.020
3,500	62,500	.135	.140	.135	.137	.068
3,800	67,900	.280	.350	.300	.310	.155
3,800	67,900	.400	.400	.400	.400	.200

NOTE: All three specimens failed within the two-inch gage marks.

Cross sectional area of each specimen = .056 square inches.