

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
Review Date: <u>6/11/98</u>	Determination (Circle Number): 1. Classification Retained 2. Classification Changed to: <u>UNCL</u> 3. Contains No DOE Classified Information 4. Coordinate With: 5. Contains UCAI? Comments: <u>declassified</u>
Authority: <u>W. C. Layne</u>	
Review Date: <u>6-17-98</u>	
Authority: <u>ADD</u>	
Name: <u>W. C. Layne</u>	

MAY 24 1963

File No: TX-43, 3-2
T-18980
Test Completed: 3-3-63

RECEIVED

MAY 28 1963

MR. L. A. DUNN - 7122
Attn: Mr. R. M. Rayner

Re: Drop Tower Tests of B-43 With Honeycomb Belly Band

CENTRAL RECORD FILE	
ACCOUNTABILITY CARD	<u>BB</u>
FILE No.	<u>TX 43</u>
	<u>3-2</u>

Test Summary

Two B43 bombs, each with a honeycomb band around the aft end, were dropped from the drop tower to evaluate the ability of the honeycomb to mitigate the shock transmitted to the MC917 firing set during slapdown.

Test No. 1 was made with the bomb impacting with its longitudinal axis 18° from horizontal onto a concrete target. The velocity components at impact were 80 fps vertical and zero horizontal. The test record showed a maximum faired acceleration at slapdown of 5,830g with a duration of 1.8 milliseconds on the top of the case at station 96.0. An acceleration of 4,920g with a duration of 1.4 milliseconds was recorded on the center of the aft bulkhead at station 104.0. The MC917 neutron generator would not function after the test and began leaking oil. No cracks or ruptures were found in the bomb case after the test.

The test record from Test No. 2 showed a maximum faired acceleration at slapdown of about 1200g with a pulse duration of approximately four milliseconds recorded both on the aft bulkhead at station 104.0 and on top of the case aft stations 92.0 and 94.0. The accelerometers on this test experienced a reference shift and the above stated values cannot be reported within any given error limit and confidence level. The MC917 neutron generator remained functional throughout this test. The bomb case sustained a crack 1/8 inch wide and 3/4 inch long on the top at the pullout connectors. The threads on the steel sleeve which was threaded into the aft end of the bomb case were stripped allowing the sleeve to separate from the case about 7/16 of an inch.

Setup and Procedure

The location of the accelerometers on the bomb are shown in Figures 1 and 2. Positive acceleration was chosen as being directed from the bottom of the bomb toward the top. The bomb for Test No. 1 is shown rigged to the tower boom in Figure 3. The longitudinal axis was 18° from horizontal and the drop height for the test was 99.5 feet corresponding to an impact velocity of 80 fps; the bomb had no horizontal velocity at impact.

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: <u>U</u>	AUTHORITY: <u>W.C. Layne</u>
PERSON CHANGING MARKING & DATE: <u>Emelda Selph 6/30/98</u>	RECORD ID: <u>98SN2504</u>
PERSON VERIFYING MARKING & DATE: <u>W.C. Layne 7/6/98</u>	DATED: <u>6/17/98</u>

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The bomb for Test No. 2 is shown rigged to the tower carriage in Figure 4.

The longitudinal axis of the bomb at impact was about 40° from horizontal with a vertical velocity component of 83 fps and a horizontal velocity component of 39 fps. An unreinforced concrete target one foot thick and restrained on all sides with a steel frame was used as an impact media in both tests.

Test data were recorded on a C.E.C. Data Tape Recorder having a flat frequency response of 10,000 cps and played back through an Ampex Playback Tape Recorder driving a C.E.C. recording oscillograph using low pass filters having a cut-off frequency of 1250 cps. The accelerometers used on the bombs were Endevco Models 2225 for Test No. 1 and 2225-M1 for Test No. 2. A complete description of the instrumentation and data recording set-up is contained in the Tower Test Book under the T-number of this test.

Setup and performance of the test was according to the Tower Safe Operating Procedures on file at the Tower Control Building. The test conditions for each test are shown in Table I and II.

Test Results

The test records are presented in Tables I and II. The test conditions for each test are also shown in these tables. The shock signatures were interpreted (except as noted) according to the procedure outlined in SC-4452B(N), dated February 1963.

The accelerometers on bomb No. 2 experienced various amounts of reference shift (shown in Table II) and it was difficult to determine exactly when the acceleration pulse ended. Since accelerometer A-3 appeared to have experienced less reference shift than did A-1 and A-2 the signal from A-3 was used to estimate the end of the slapdown shock pulse as indicated on the test record in Table II. By subtracting the acceleration value of each reference shift and determining the velocity change under each curve reasonable values were obtained for the slapdown velocity as well as satisfactory agreement among the maximum accelerations. No error limits and confidence levels in these limits can be ascribed to the listed values however.

Pictures of the B43 bomb after test No. 1 are shown in Figures 5 and 6. No damage to the case was observed. The MC917 neutron generator would not function after the test and began leaking oil.

Pictures of the B43 bomb after test No. 2 are shown in Figures 7 through 10. The steel sleeve which threads into the aft end of the case separated from the case about 7/16 inch measured on the bottom of the bomb as shown

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Mr. L. A. Damm - 7122

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in Figure 8. The top of the case at the pullout connectors developed a crack about 1/8 inch wide and 3/4 inch long as shown in Figure 10. The MCS17 neutron generator was functional after the second test.

C. G. Coalson

C. G. COALSON - 7325-2

R. E. Howell

Test Project Engineer: R. E. HOWELL - 7331-1

Bill Johnson

Approved By: B. JOHNSON - 7331-1

CGC:7325-2:mw

Encl: Figures 1 -10
Tables I, II

Copy to:

C. S. Williams, Jr., 1442

D. S. Bliss, 2344

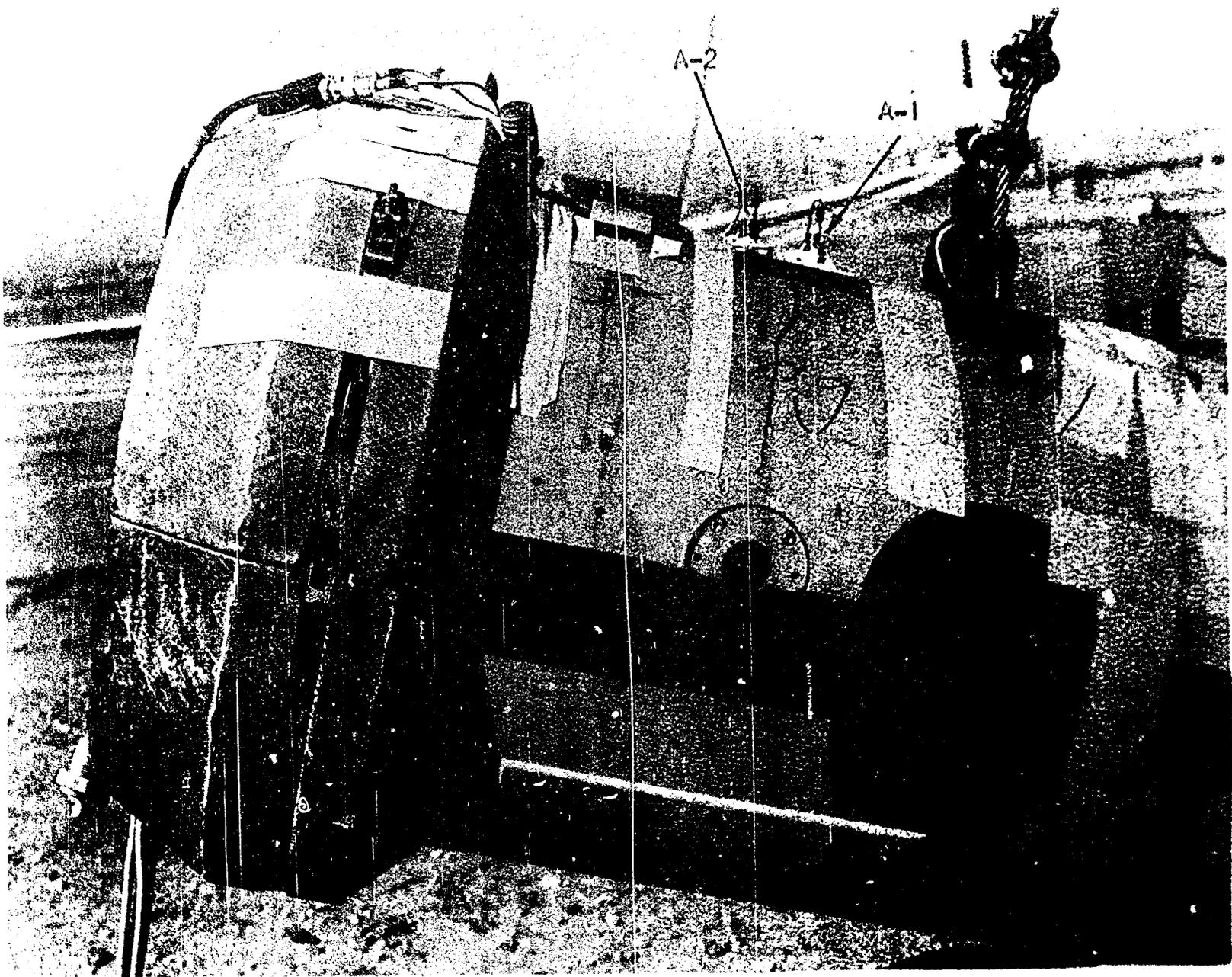
E. H. Copeland, 7331

C. L. Johnson, 7523

Central Record File, 3421-3

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A-1

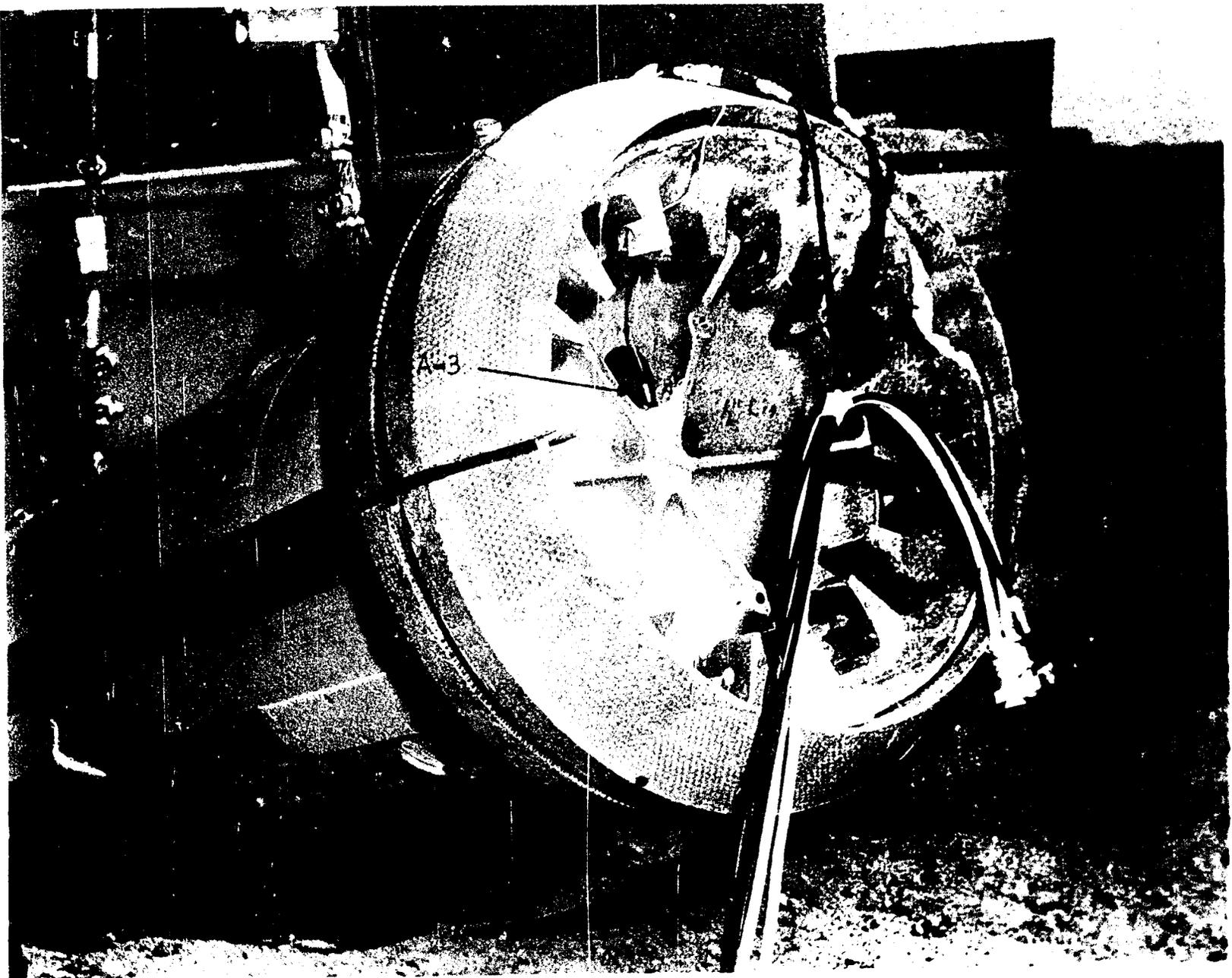
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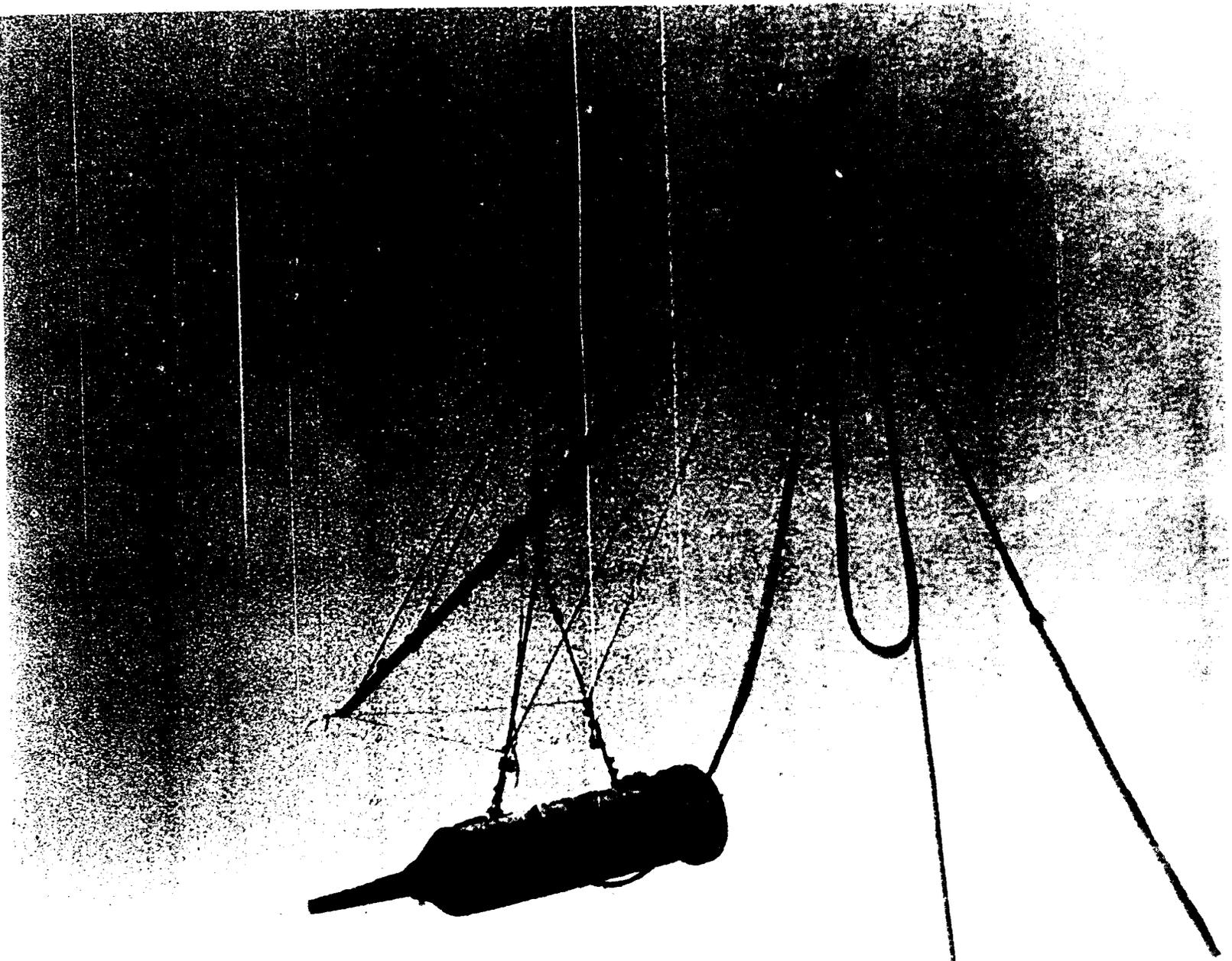
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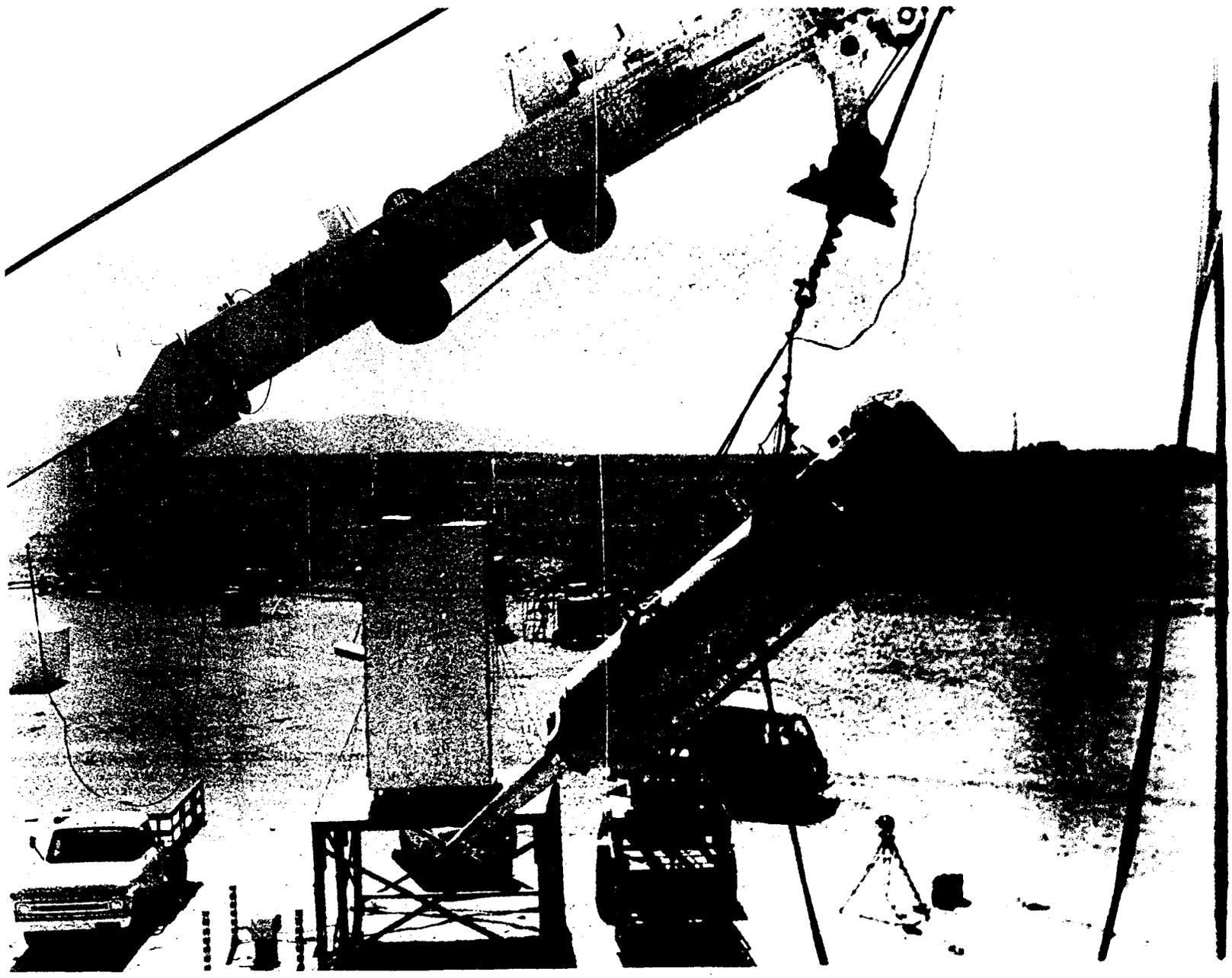
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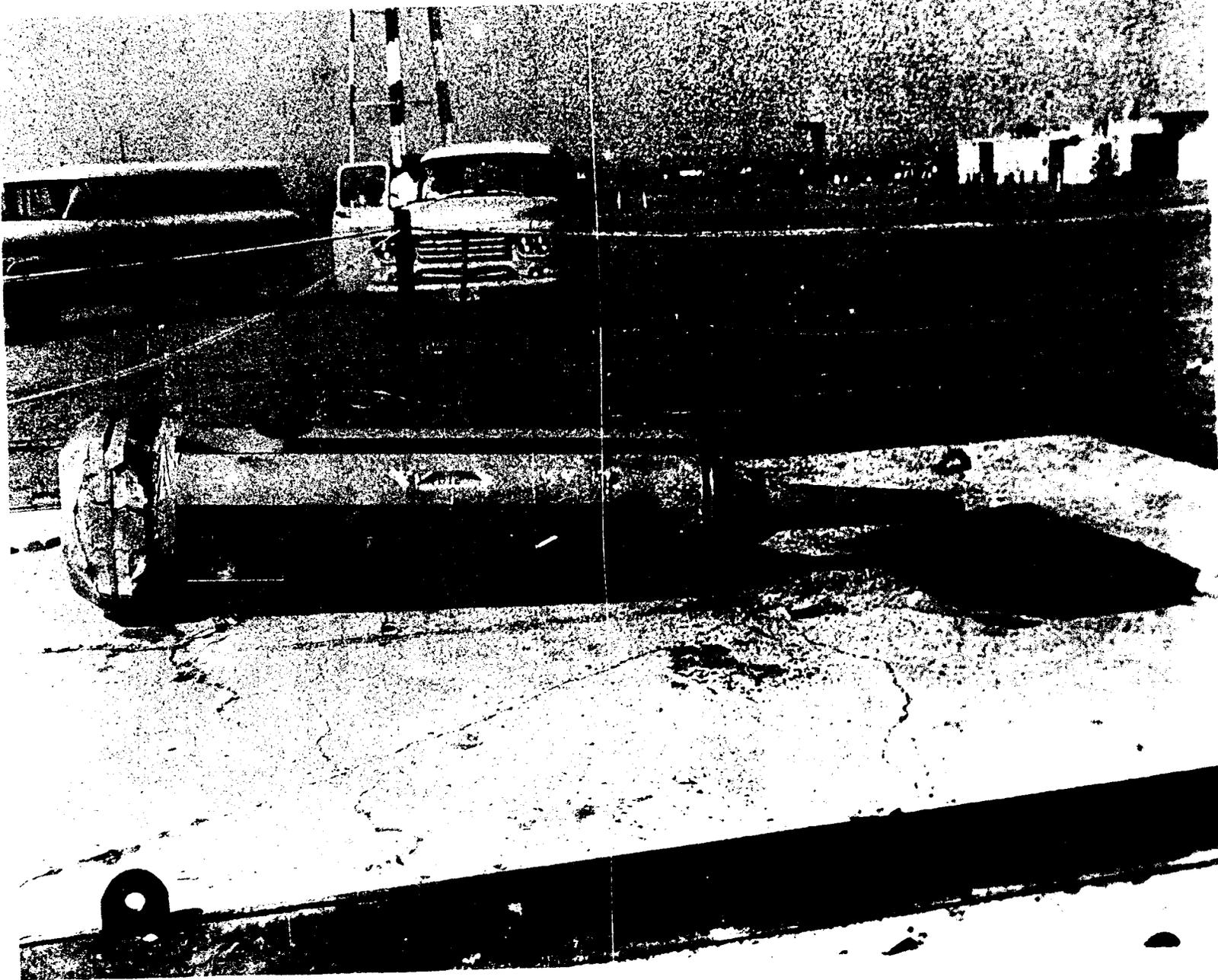


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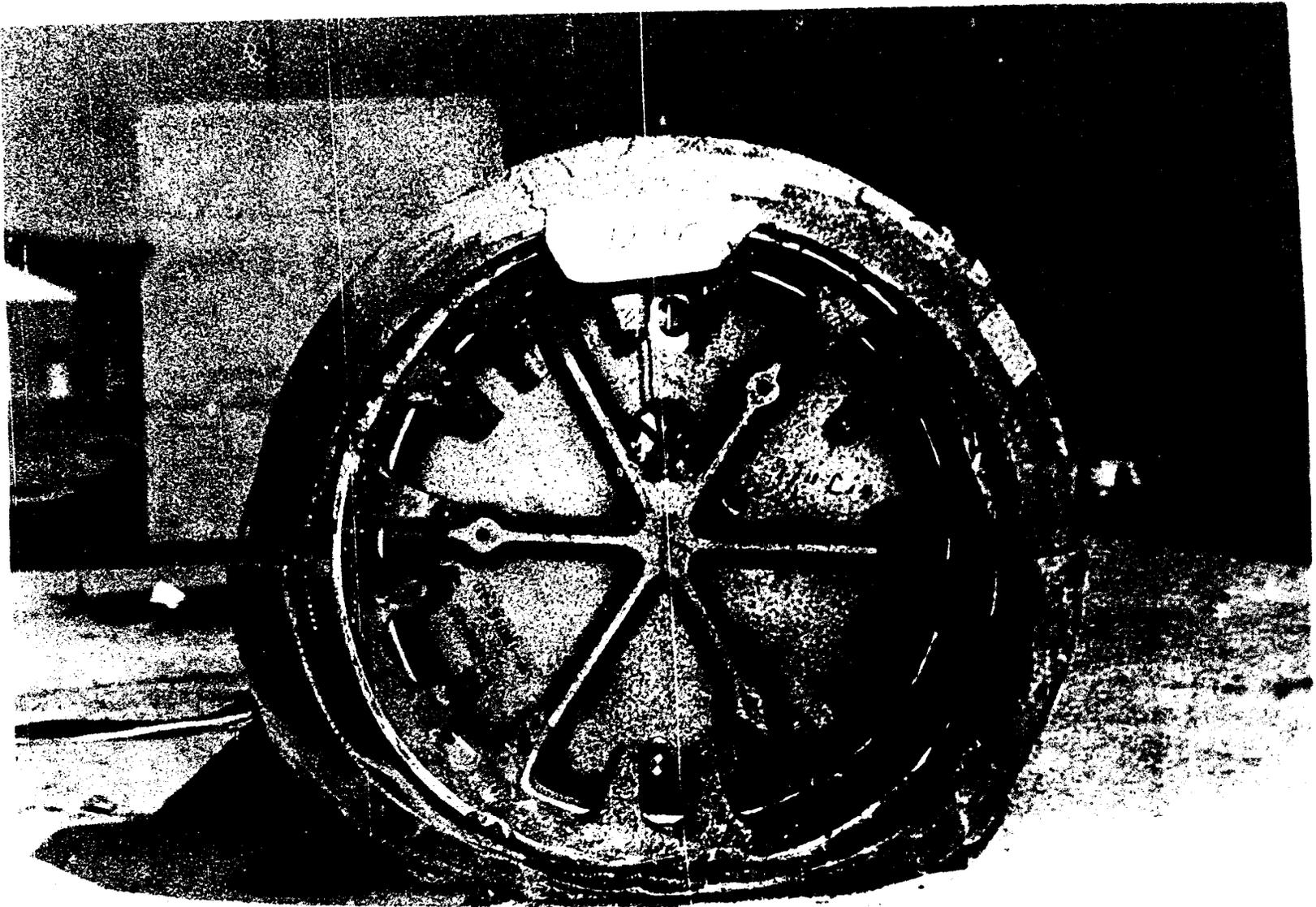
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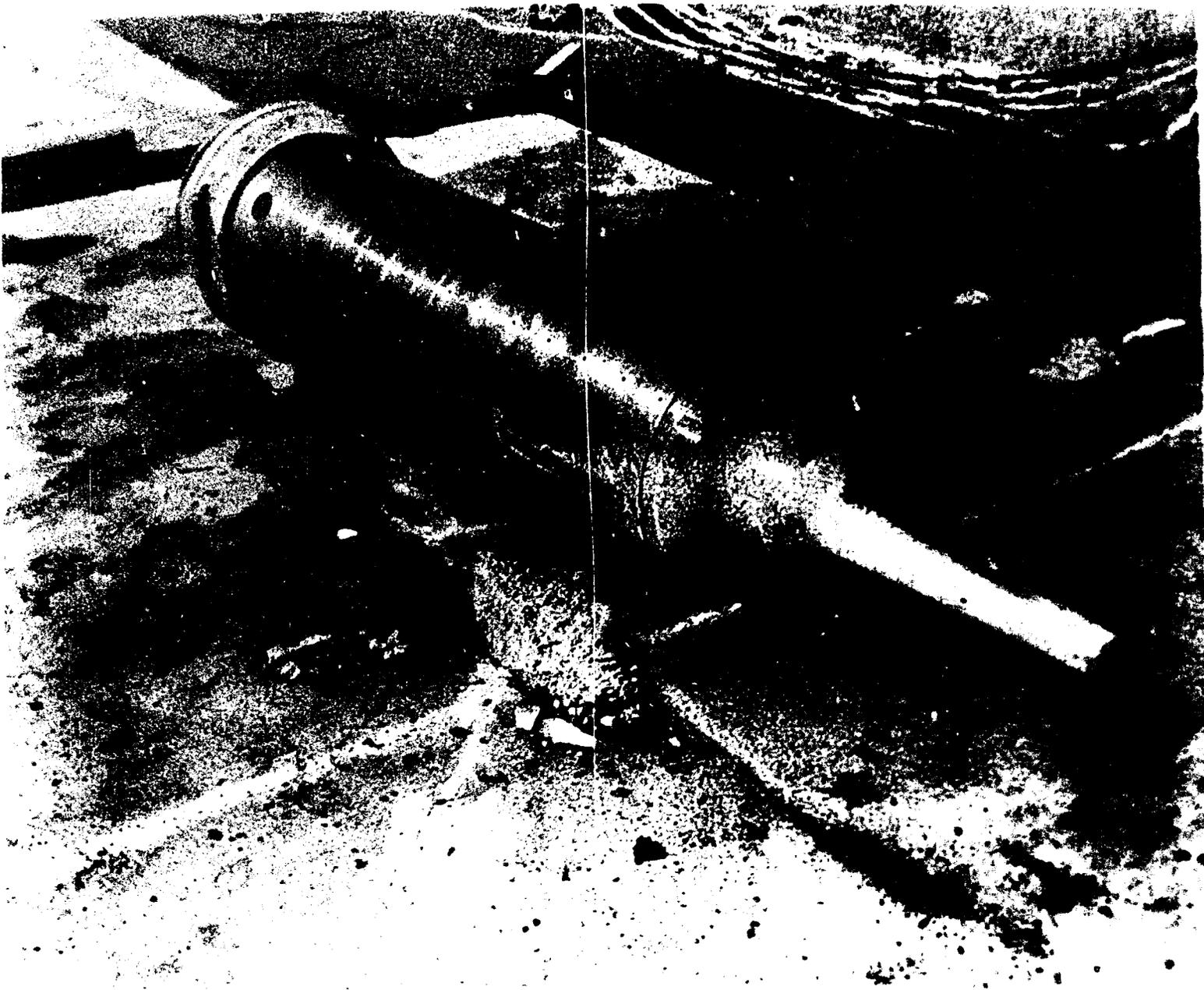
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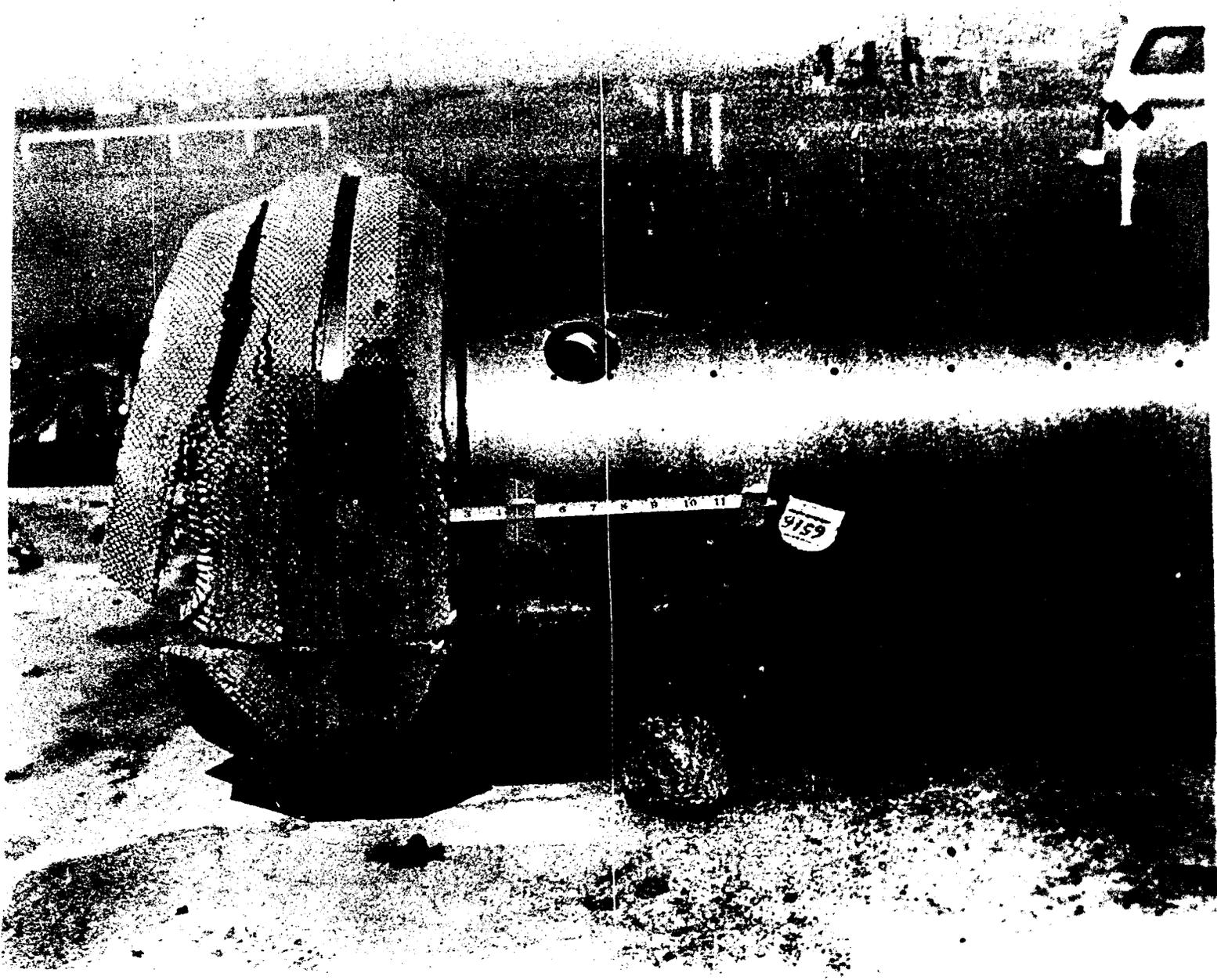
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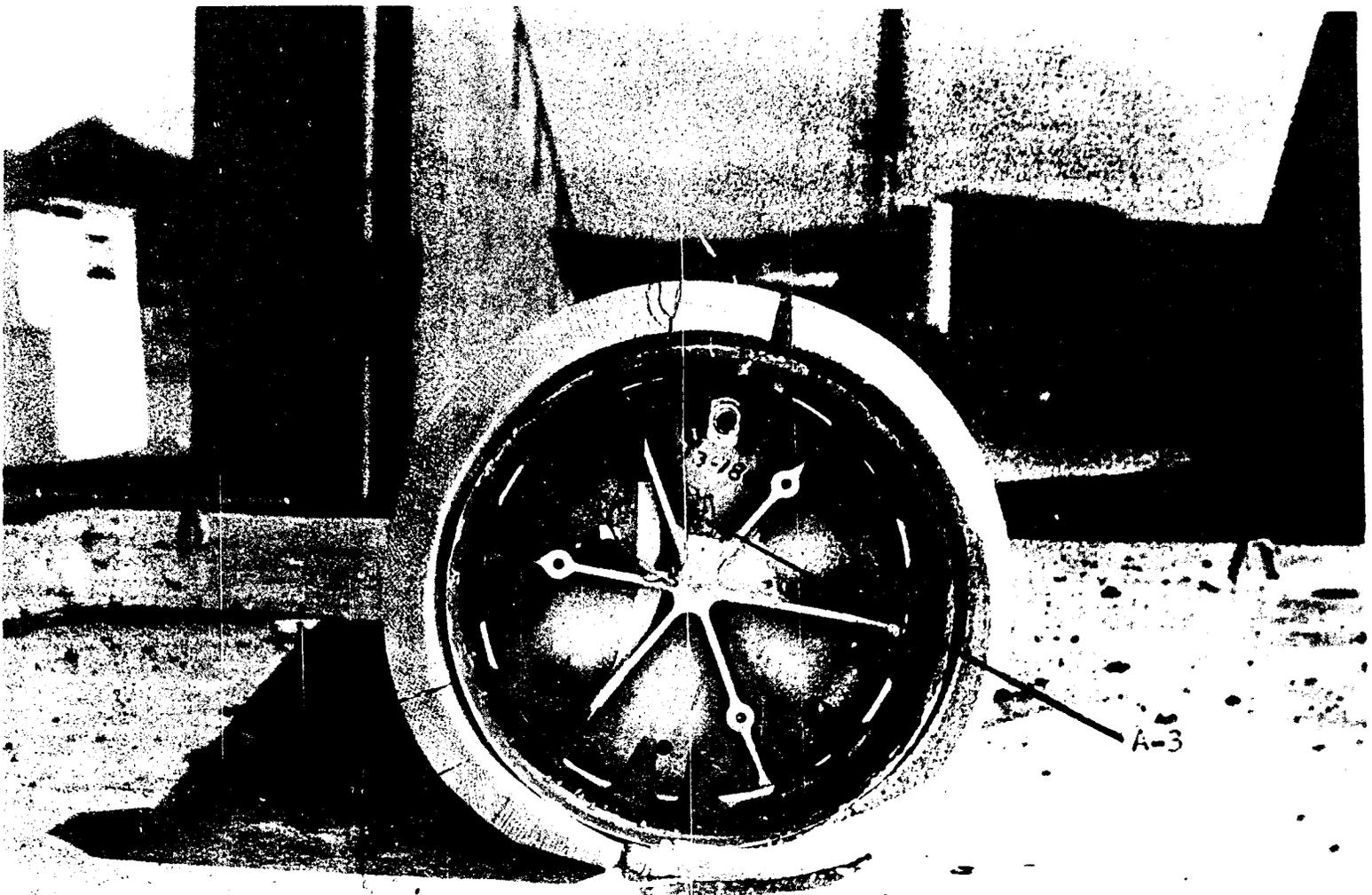
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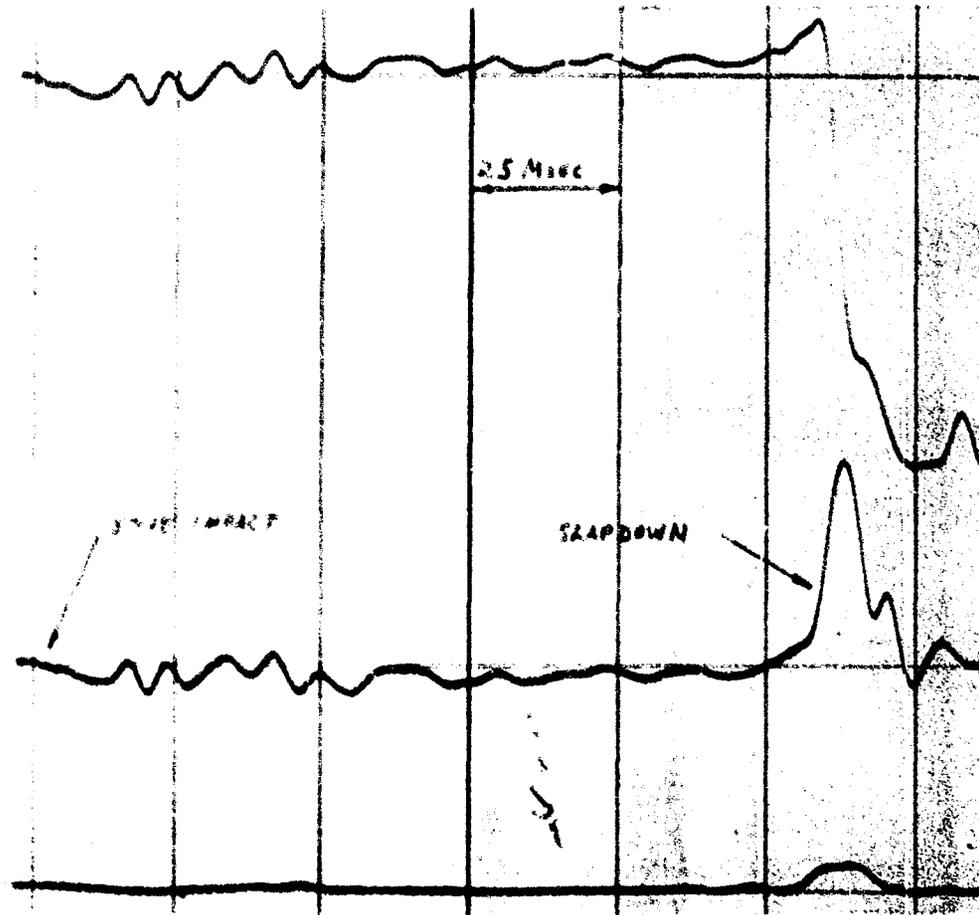
TABLE I

T-10380

ACCELERATION DATA FROM TEST NO. 1
DROP TOWER TEST OF B-43 BOMB

TRANSDUCER INFORMATION

GAGE NO.	MODEL & FN (CPS)	STA. NO.	LOCATION AND SENSING DIRECTION	MAX (+)	MAX (-)	MFP (g)	RISE (MS)	...
A-1	ENDRECO RFS NO. 000	92.0	TOP OF CASE 0°-180°	CABLE	DAMAGED			
A-2		96.0	TOP OF CASE 0°-180°	5830	880	15,830	0.7	
A-3		104.0	AFT BULKHEAD 0°-180°	4900	-	4900	0.4	



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5' FROM HORIZONTAL
AT IMPACT

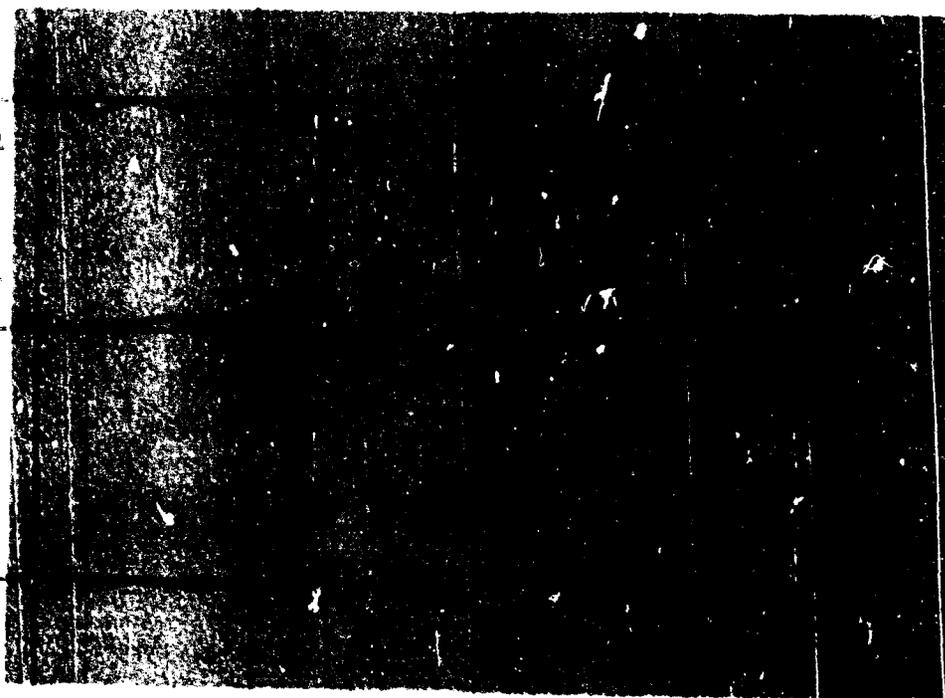
COMPRESSION STRENGTH OF
CONCRETE TARGET = 4007 PSI

TABLE II

1-18-70

ACCELERATION DATA FROM TEST NO. 2
DROP TOWER TEST OF B-43 BOMB

RECORDS RELAYED TO 12000 OPS



TRANSDUCER INFORMATION							
GAGE NO.	MODEL & F _N (CPS)	STA. NO.	LOCATION AND SENSING DIRECTION	MAX (+)	MAX (-)	NET	RISE (MS)
A-3	EULEVCO 2225-M1 45,000	104.0	AFT BLANKHEAD 0°-180°	1240	-	+120	2.5
A-2		94.0	TOP OF CASE 0°-180°	1180	-	+1180	2.5
A-1		92.0	TOP OF CASE 0°-180°	1180	-	+1180	1.5

* EXACT DATA IMPOSSIBLE DUE TO SHIFT. FORCE ACCELERATIONS HAVE BEEN ADJUSTED* DUE TO 180 BY THE AMOUNT OF THE SHIFT, DURATIONS READ TO PROBABLE END OF PULSE AS INDICATED.

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