[redacted]

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date 11/4/98
Authority ADD
Name RBCraner
2nd Review Date 11/9/98
Authority ADD
Name WCLayne
Determination (Circle Number)
1 Classification Retained
(3) Classification Changed to U
Contains No DOE Classified Information
Coordinate With
Contains UCAI
(1) Comments
Declassify

TCG-NNT-1

SEP 27 1954

142

Case No. 433.00
Ref. Symbol: 1612(139)
Project No. TM-226

UNCLASSIFIED

MR. P. E. JOCKLE, JR., 1281

Re: Ramp Test of the XH-343

INVENTORIED
SEP 14 '65

Summary of Results

The XH-343 container (without the cover) carrying a dummy weight TX-15 was tested on the Engineering Test Ramp in accordance with SCS-5.

The container and dummy TX-15 were not damaged during this series of tests.

The accelerations were not progressively greater for progressively higher runs due to the variation in the wood blocks used as bumpers and the fact that the container was not in direct contact with the front stop of the ramp dolly at the start of each of the first three runs.

The maximum displacements of the container frame relative to the container cradle were as follows:

Longitudinal (front and rear) - 3.0 inches
Vertical (front) - 2.7 inches
Vertical (rear) - 2.2 inches

These maximums were on the 7 mile per hour run.

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The maximum faired longitudinal acceleration on the XH-343 frame on the 7.07 mph run was 36 g and the corresponding longitudinal acceleration on the vertical plane through the C. G. of the TX-15 was 9.2 g.

7'55

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Object of Test

The object of this test was to investigate the strength and characteristics of the shear pads on the XH-343 container and to determine the amount of shock transmitted through the shear pads to the weapon under simulated railroad bumping.

H-342
3-2

Reason for Test

This test was requested in a Work Order Authorization from L. E. Lamkin, 1280, to Department 1610 dated July 21, 1954 and a supplement in the form of a memorandum from P. E. Jockle, Jr., 1281, to P. H. Adams, 1612, dated August 11, 1954.

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP

CLASSIFICATION CHANGED TO: U	AUTHORITY: WCLayne
Carmela Gallegos 12/9/98	RECORD ID: 99SN0388
PERSON CHANGING MARKING & DATE	
WC Layne 12/16/98	DATED: 11/9/98
PERSON VERIFYING MARKING & DATE	

INVENTORIED
CENTRAL M & R
CONTROL NO. Q 42259

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Y ORG. 484[redacted]

[redacted]

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Function of Object Tested

The XH-343 is a shipping and storage container for the TX-15.

Summary of Past Tests

There have been no previous structural tests made on this container by Department 1610.

Setup for Test

Figure 1 shows the XH-343 with the TX-15 (Fig. 2) mounted on the Engineering Test Ramp.

The components tested were the XH-343 container (Fig. 3) which had no serial number and was made to Drawing No. DS(1281)34176, and a TX-15 dummy weight Serial No. 7 made from Drawing No. J110859.

Test Equipment used:

Miller amplifiers, Type C3, Model CA12, Serial Nos. 3 and 7.
Miller oscillograph, Model J, Serial No. 99
Engineering Test Ramp

Instrumentation included:

Statham accelerometers as listed on Table I and shown in Figs. 4, 5, 6, 7, and 8
Microswitch (Figs. 1 and 10)
2 Scratch gages (Figs. 1 and 9)

Procedure

The container swivel wheels were removed and the container with the dummy weight TX-15 was fastened to the ramp dolly as shown in Figs. 1 and 2. This method of securing the container is not the method that will be used for fastening the container in a railroad car.

This series of tests was run in accordance with SOS-5. The container was to be run at velocities of 5.1, 5.6, 6.0, 6.5, 6.8 and 7.0 mph at the time of impact. The velocity was measured by the use of a "make and break" circuit using a microswitch and two actuating arms 48 inches apart fastened to the trunk of the ramp. (Fig. 10)

Accelerations were recorded from accelerometers 1 through 12 during all runs .

A scratch gage (Fig. 9) was used to measure the relative movement between the container frame and the cradle of the container. The scratch gages were mounted on the frame side of the front and rear shear pads (Fig. 1) and the recording plate was fastened on the weapon side of the shear pads.

For the last three tests the container was placed into direct contact with the front stop on the dolly before each run.

Results

There was no damage to the container or dummy weight TX-15 during this series of tests.

During the first three runs the container was not in direct contact with the front stop of the ramp dolly, whereas, on the last three runs the container was in direct contact with the front stop.

The longitudinal accelerations on the dolly were not progressively greater with progressively higher impact velocities. This was probably due to the variation in the wooden blocks used as bumpers.

The accelerations were read in accordance with SCS-10 and are given in Table II. The maximum accelerations were at varying times after the initial impact. A typical record is shown in Fig. 11. The maximum accelerations measured on the dummy TX-15 exceeded that allowed on the weapon which are ± 7.5 g in the longitudinal direction, ± 2.0 g in the lateral direction and + 1.0 g and -2.0 g in the vertical direction as specified in SS-3393(TM).

The longitudinal and vertical displacements of the container are shown on Table III. The maximum displacements were as follows:

Longitudinal (front and rear) - 3.0 inches
Vertical (front) - 2.7 inches
Vertical (rear) - 2.2 inches.

All these maximums were on the 7 mile per hour run.

Conclusions & Recommendations

The container successfully withstood the accelerations imposed upon it. However, the shear pads did not meet specifications in that they allowed excessive accelerations on the weapon and the maximum displacement should have been about 5 inches instead of 3 inches.

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Ref. Symbol: 1612(139)
Project No. TM-226

It is recommended that this test be rerun using the actual tie-down fittings that will be used during railroad shipment and with shear pads that meet the specifications

Robert L. Ault
ROBERT L. AULT - 1612-1

Original Signed By
P. H. ADAMS
PAUL H. ADAMS - 1612

DISTRIBUTION:
1-5/10A P. E. Jeckle, Jr., 1261
6/10A T. B. Morse, 1610
7/10A A. F. Gunn, 5510
8/10A J. P. Wanner, 1282
9/10A G. M. Byrne, 1922-2
10/10A J. M. Ralls, 5521-4 Attn: 5900 Drawing File

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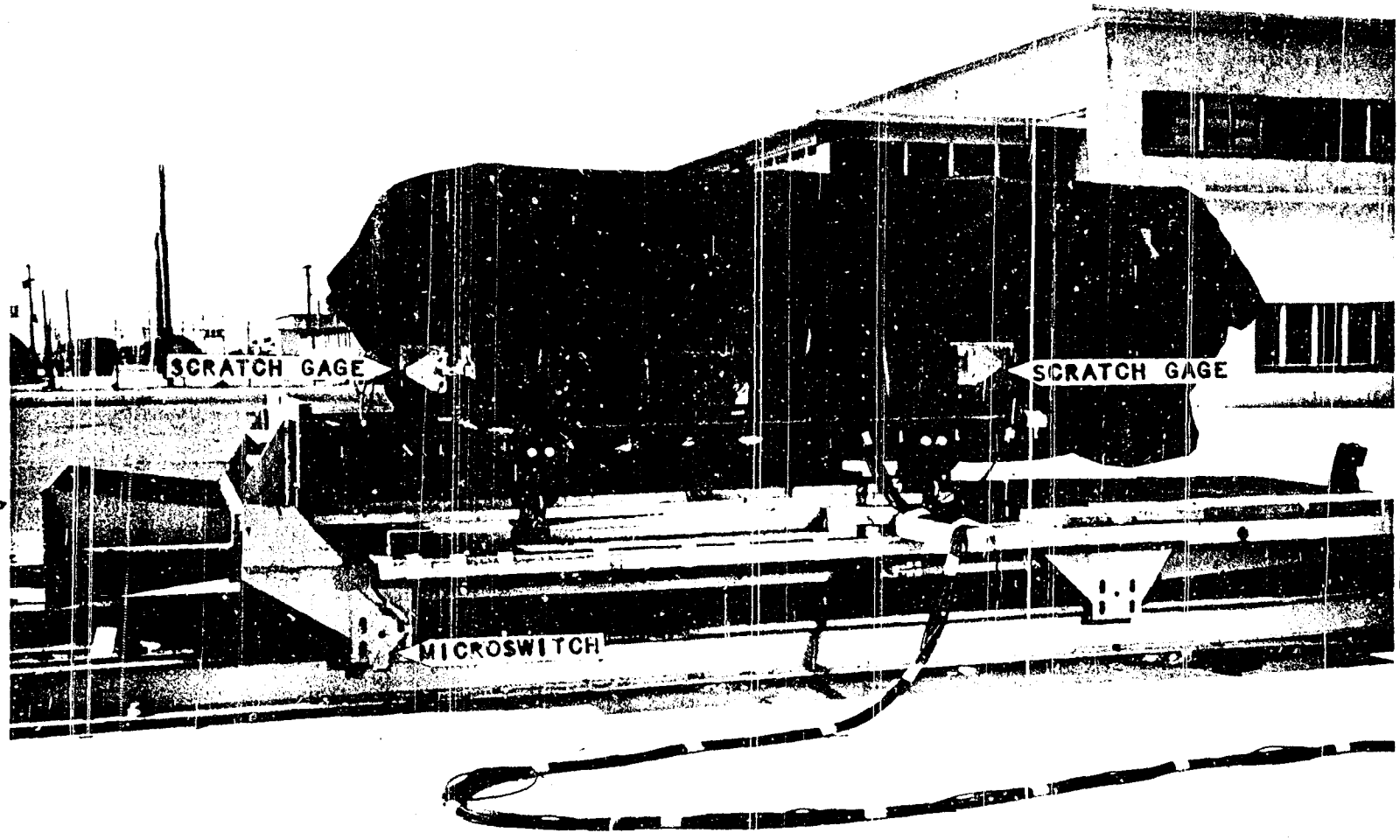

FIG. 1 XH-343 CONTAINER SECURED TO ENGINEERING TEST RAMP- RAMP TEST OF THE XH-343

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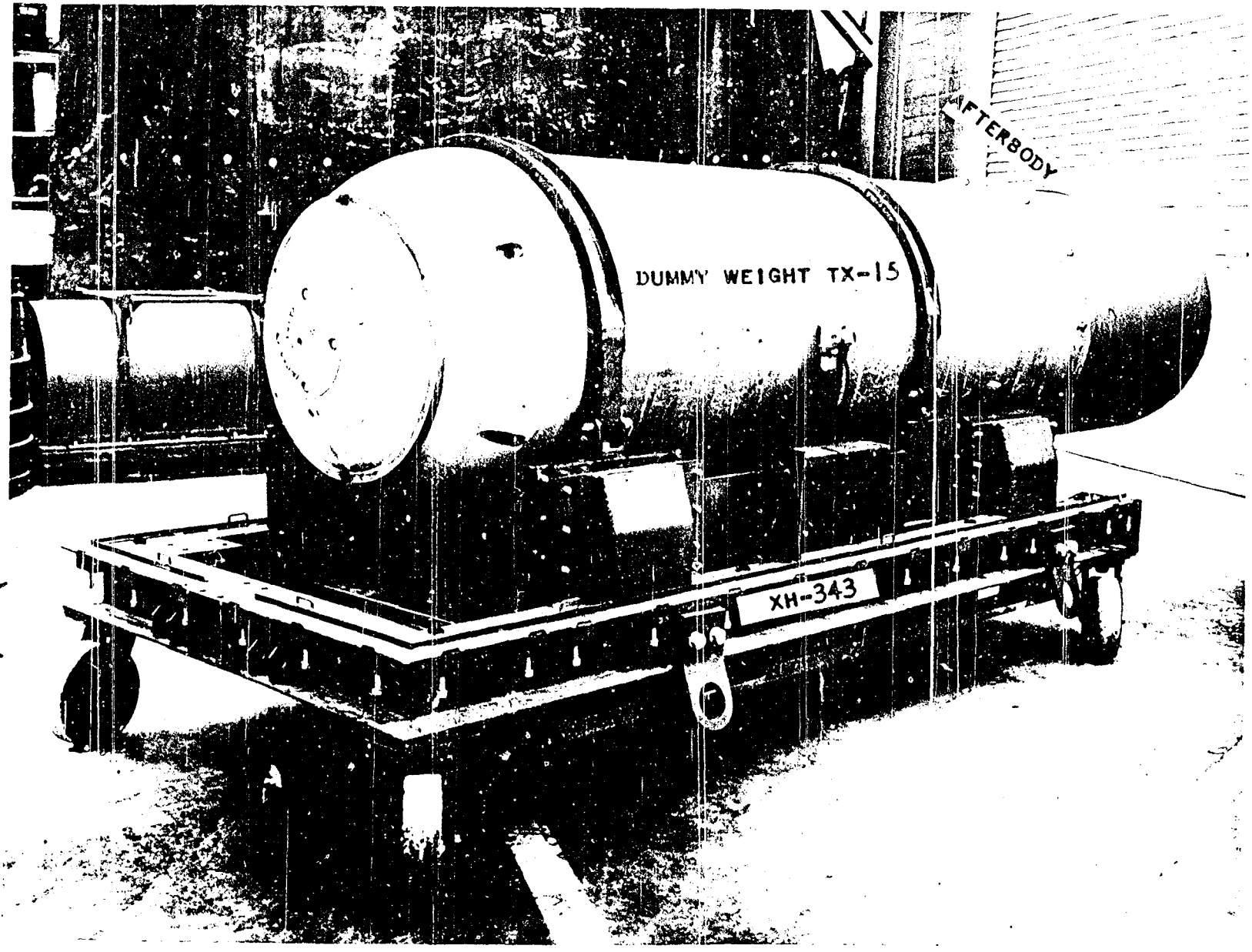

FIG. 2 DUMMY WEIGHT TX-15 AND XH-343- RAMP TEST OF THE XH-343

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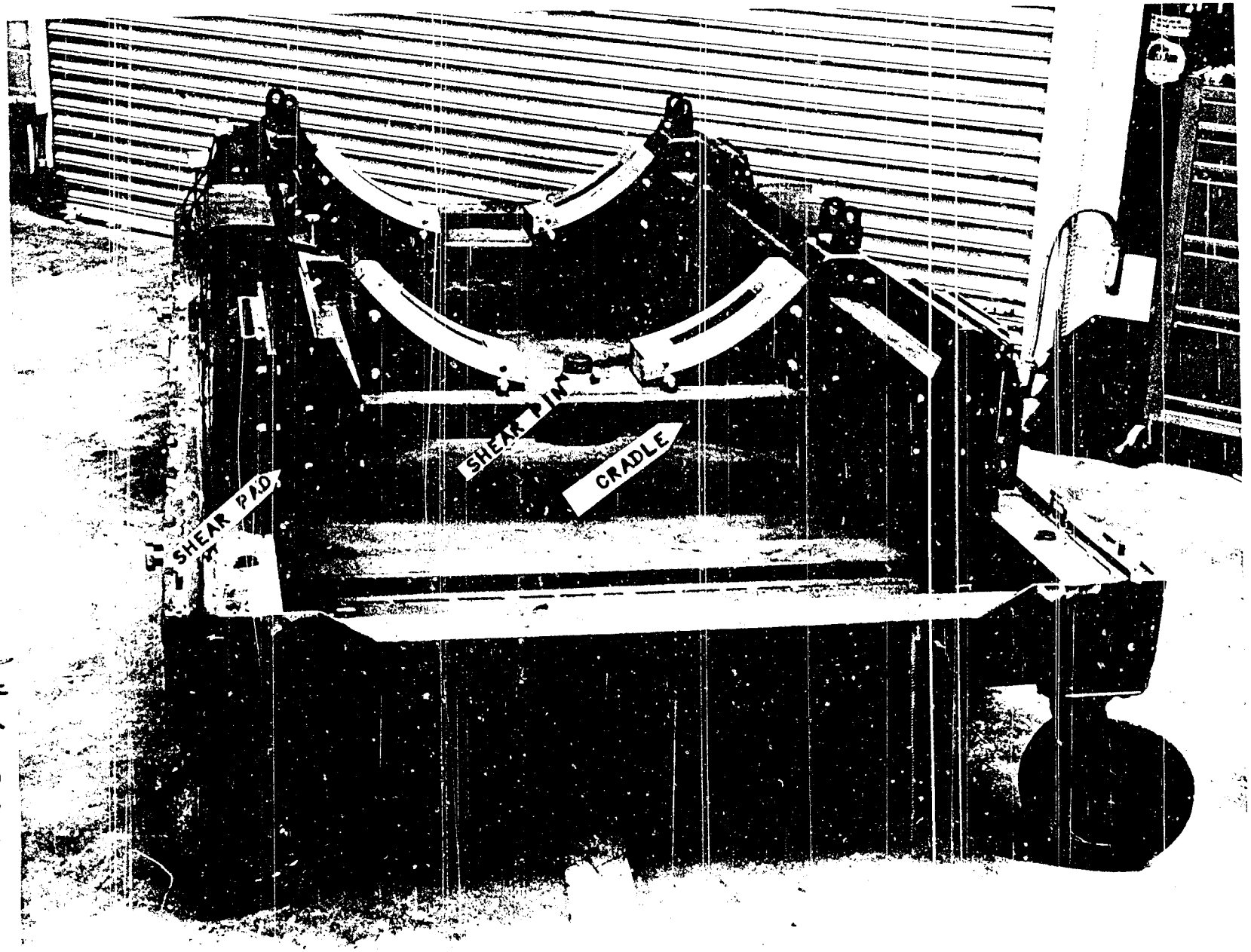

FIG. 3 XH-343 CONTAINER- RAMP TEST OF THE XH-343

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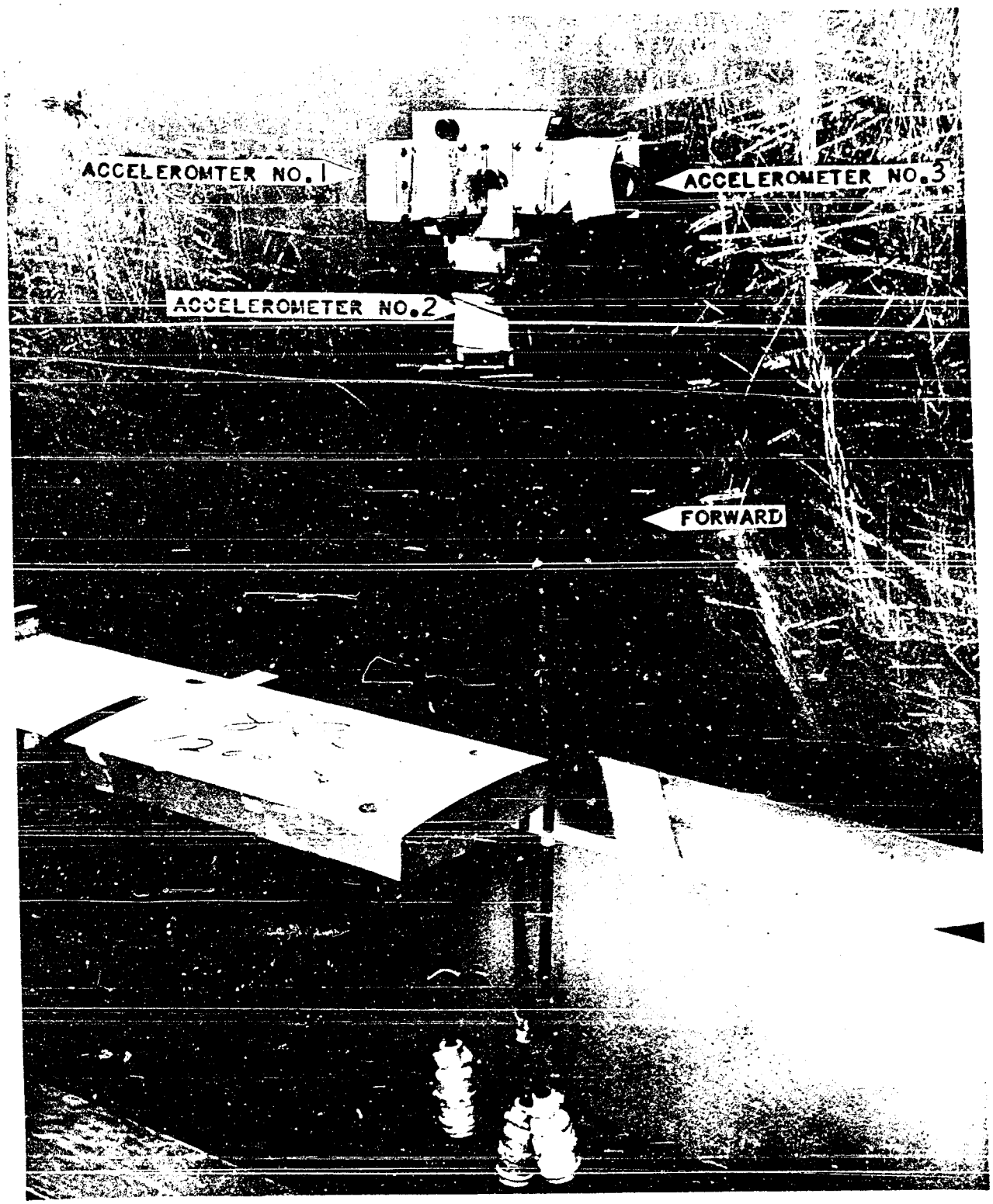

FIG. 4 ACCELEROMETER LOCATIONS, DUMMY TX-15 VERTICAL PLANE THROUGH CG.- RAMP TEST OF THE XH-343

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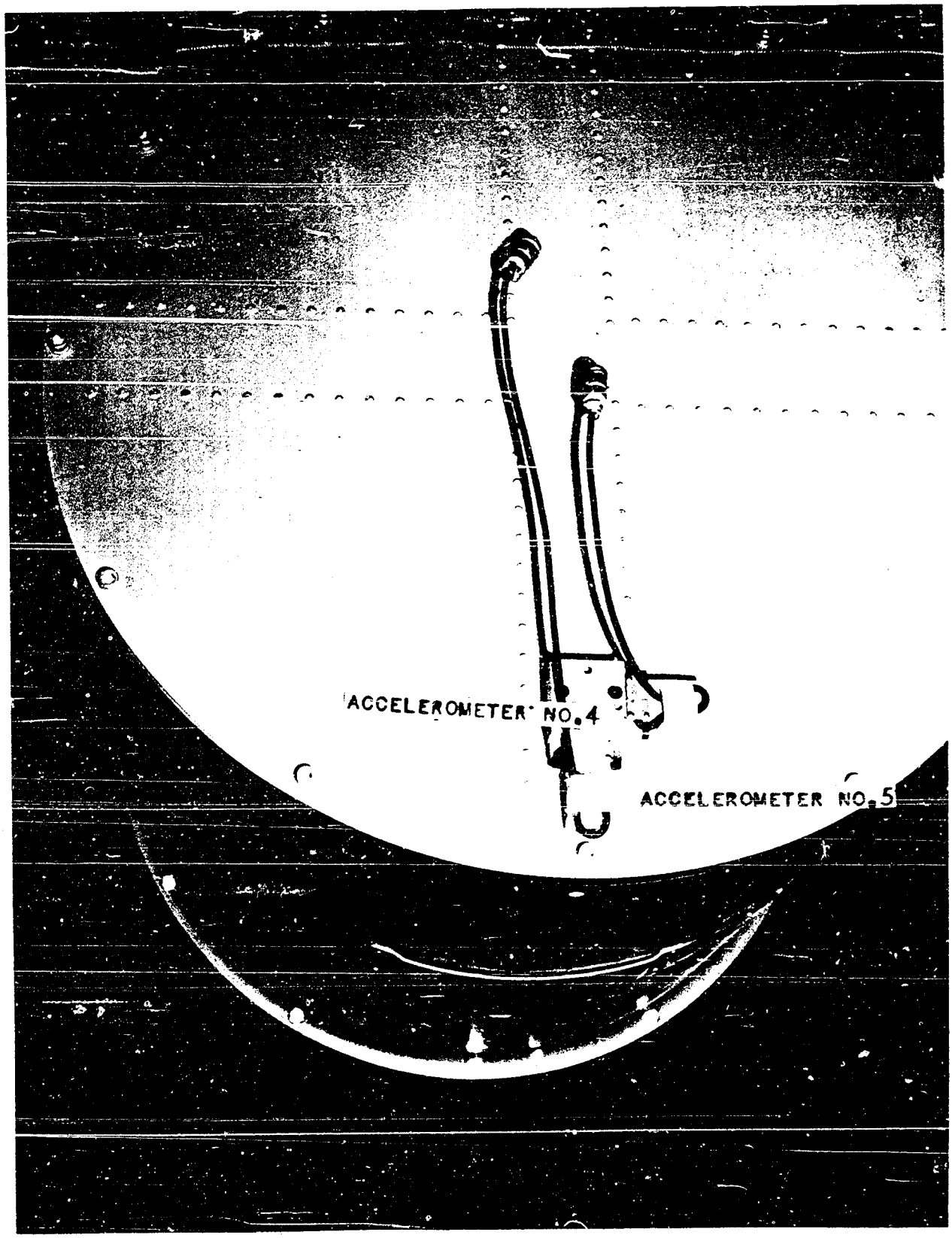

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FIG. 5 ACCELEROMETER LOCATION, TX-15 AFTERBODY- RAMP TEST OF THE XH-343

REF. SYM. 1612(139)
PROJECT NO. TM-226

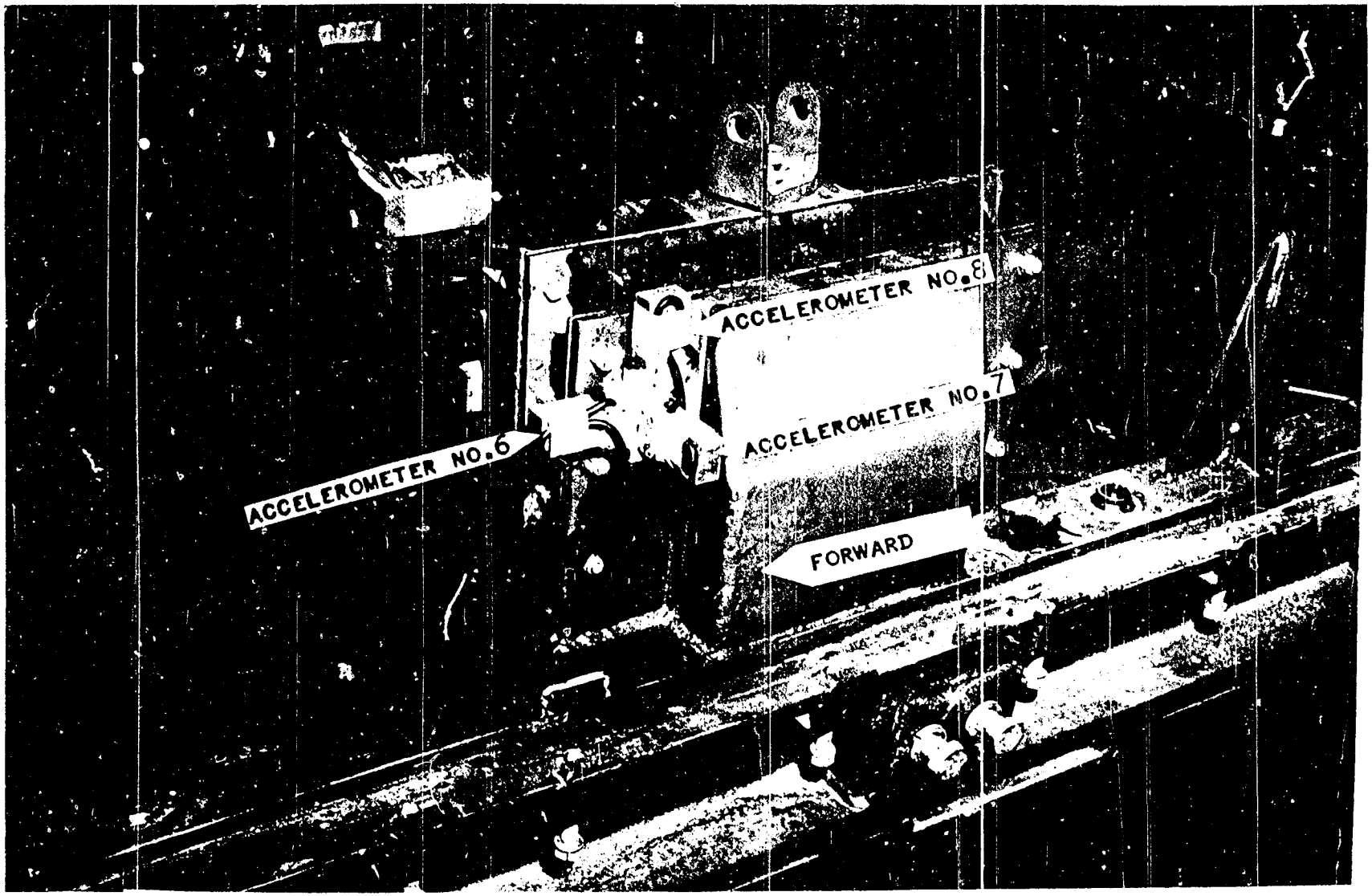

FIG. 6 ACCELEROMETER LOCATION, XH-343, FRAME- RAMP TEST OF THE XH-343

REF. SYM. 1612(139)
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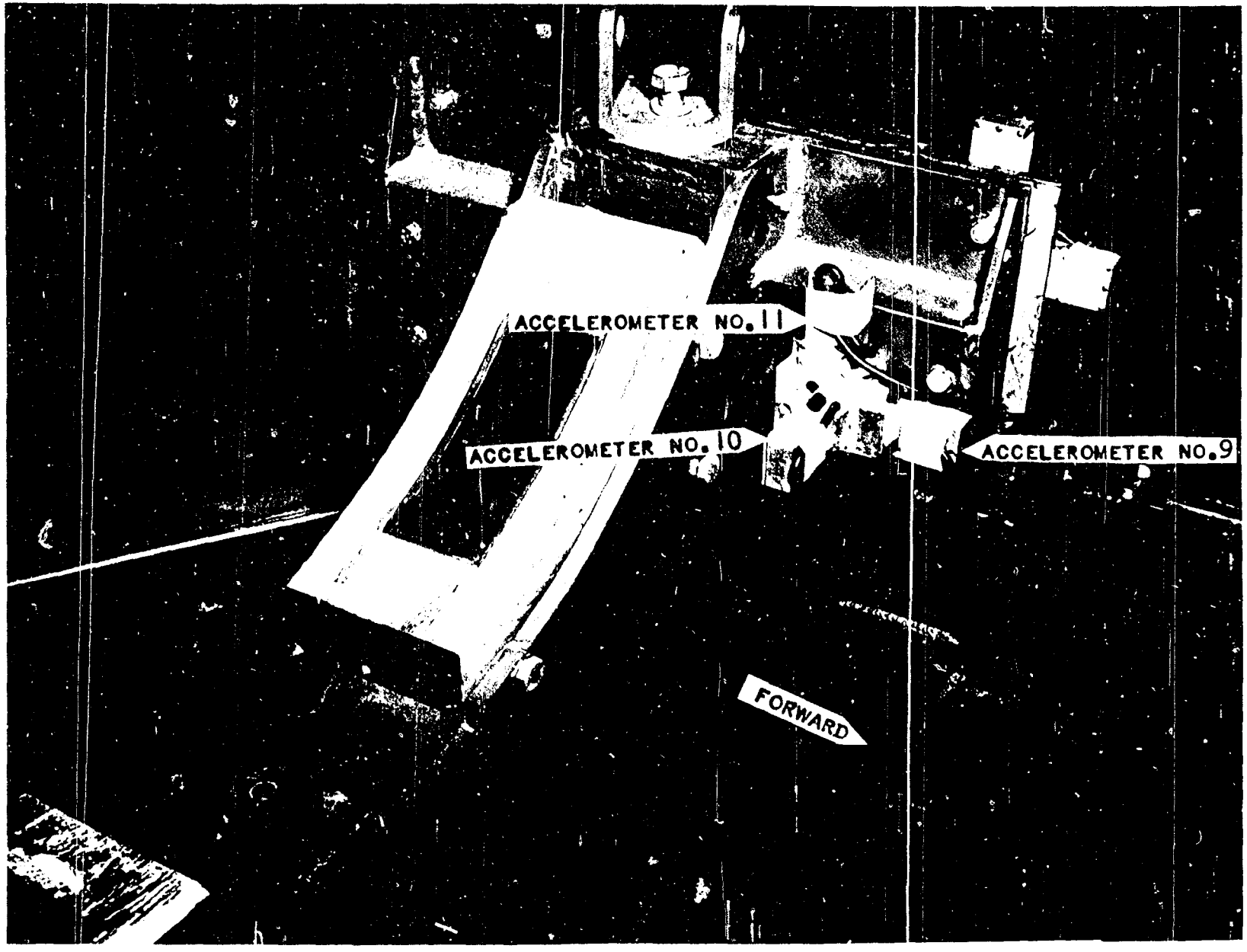

FIG. 7 ACCELEROMETER LOCATION, XH-343, CRADLE- RAMP TEST OF THE XH-343

REF. SYM. i612(139)
PROJECT NO. TM-226

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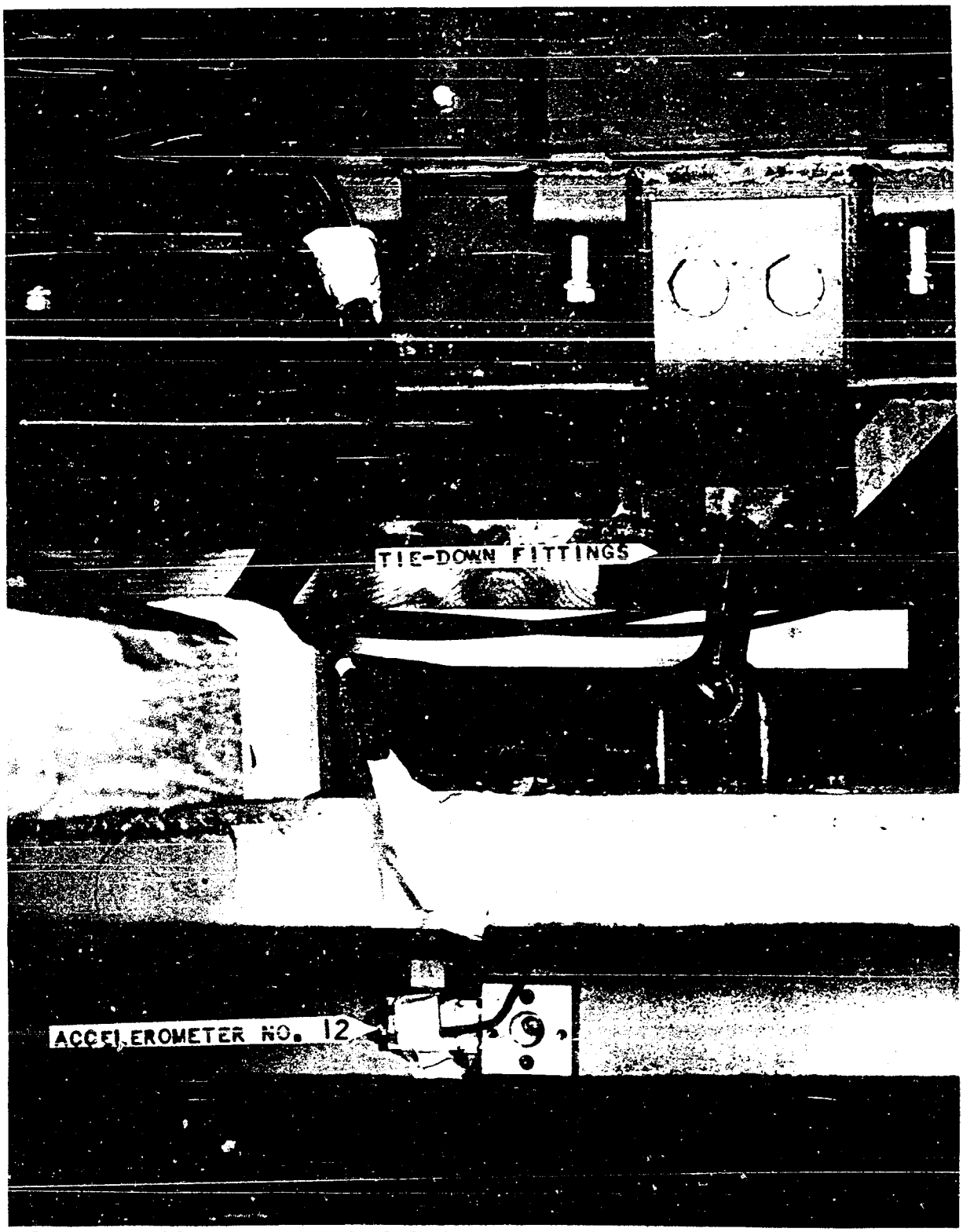

FIG. 8 ACCELEROMETER LOCATION, RAMP DOLLY- CONTAINER TIE DOWN FITTING- RAMP TEST OF THE XH-343

REF. SYM. 1612(139)
PROJECT NO. TM-226

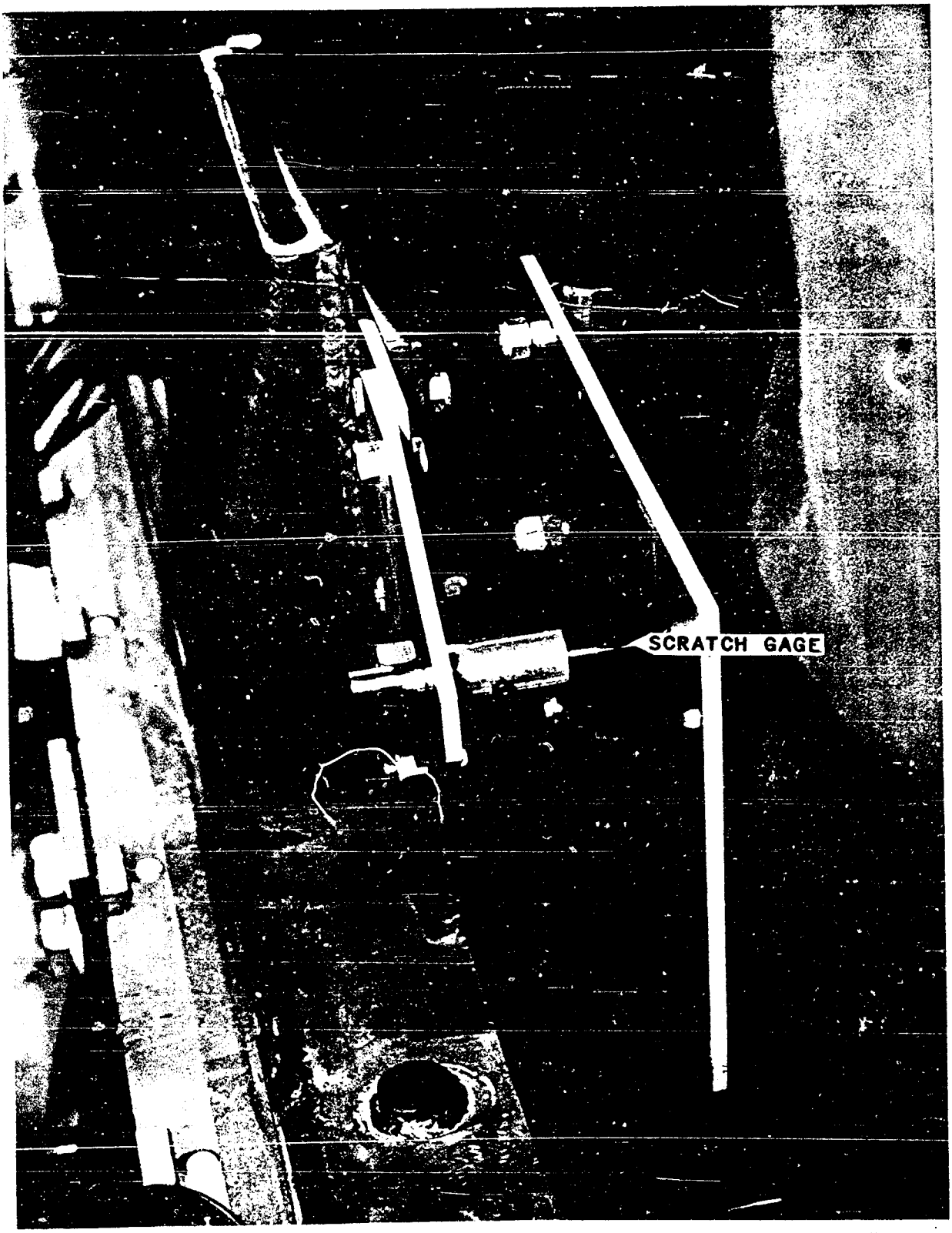

FIG. 9 SCRATCH GAGE TO MEASURE RELATIVE MOVEMENT BETWEEN THE CONTAINER FRAME AND THE CRADLE- RAMP TEST OF THE XH-343

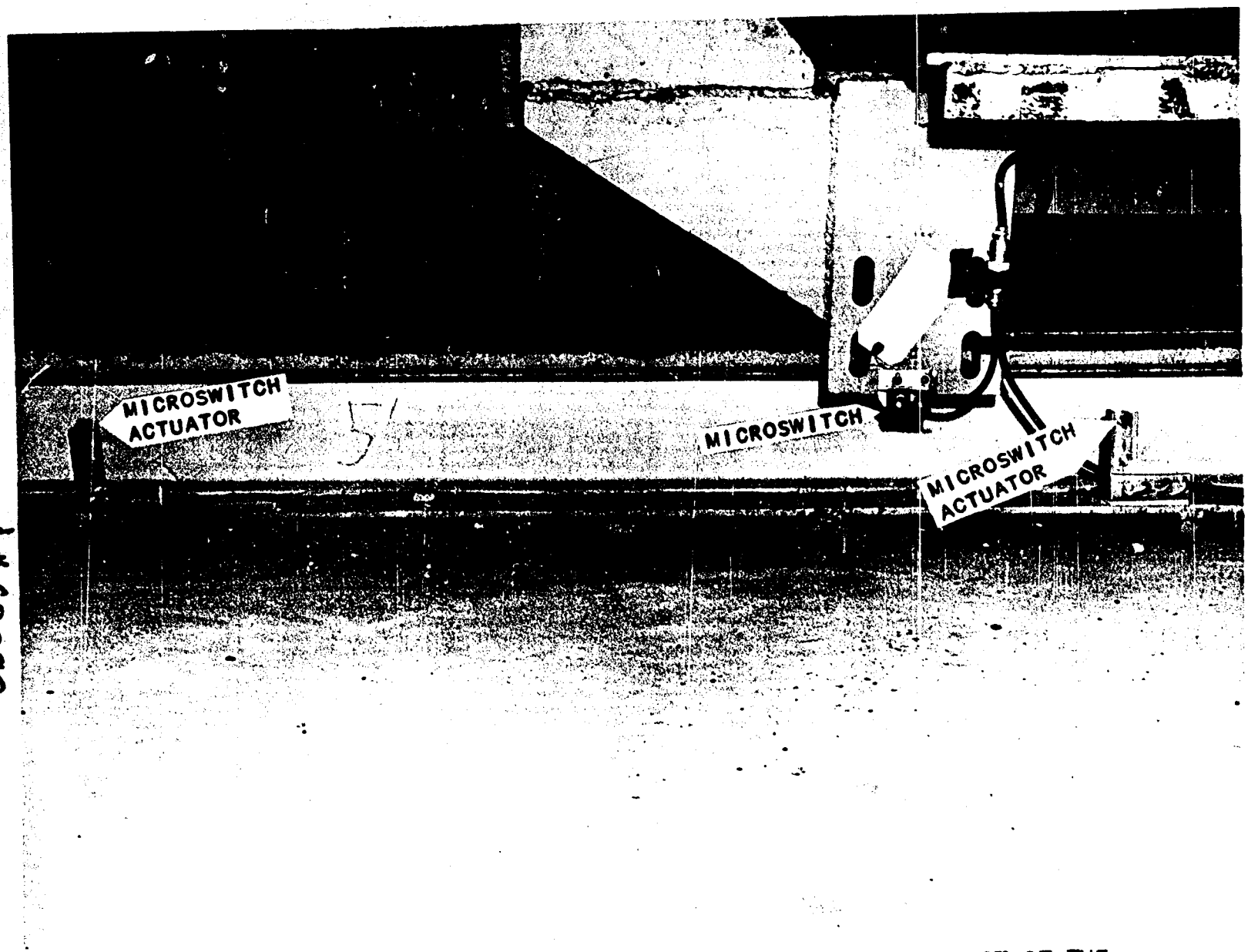

FIG. 10 MICROSWITCH FOR VELOCITY MEASUREMENT- RAMP TEST OF THE XH-343

REF. SYM. 1612(139)
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#52389

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RAMP DOLLY - LONG.

XH-343 CRADLE - VERT.

XH-343 CRADLE - LAT.

XH-343 CRADLE- LONG.

XH-343 FRAME - VERT.

XH-343 FRAME - LAT.

XH-343 FRAME - LONG.

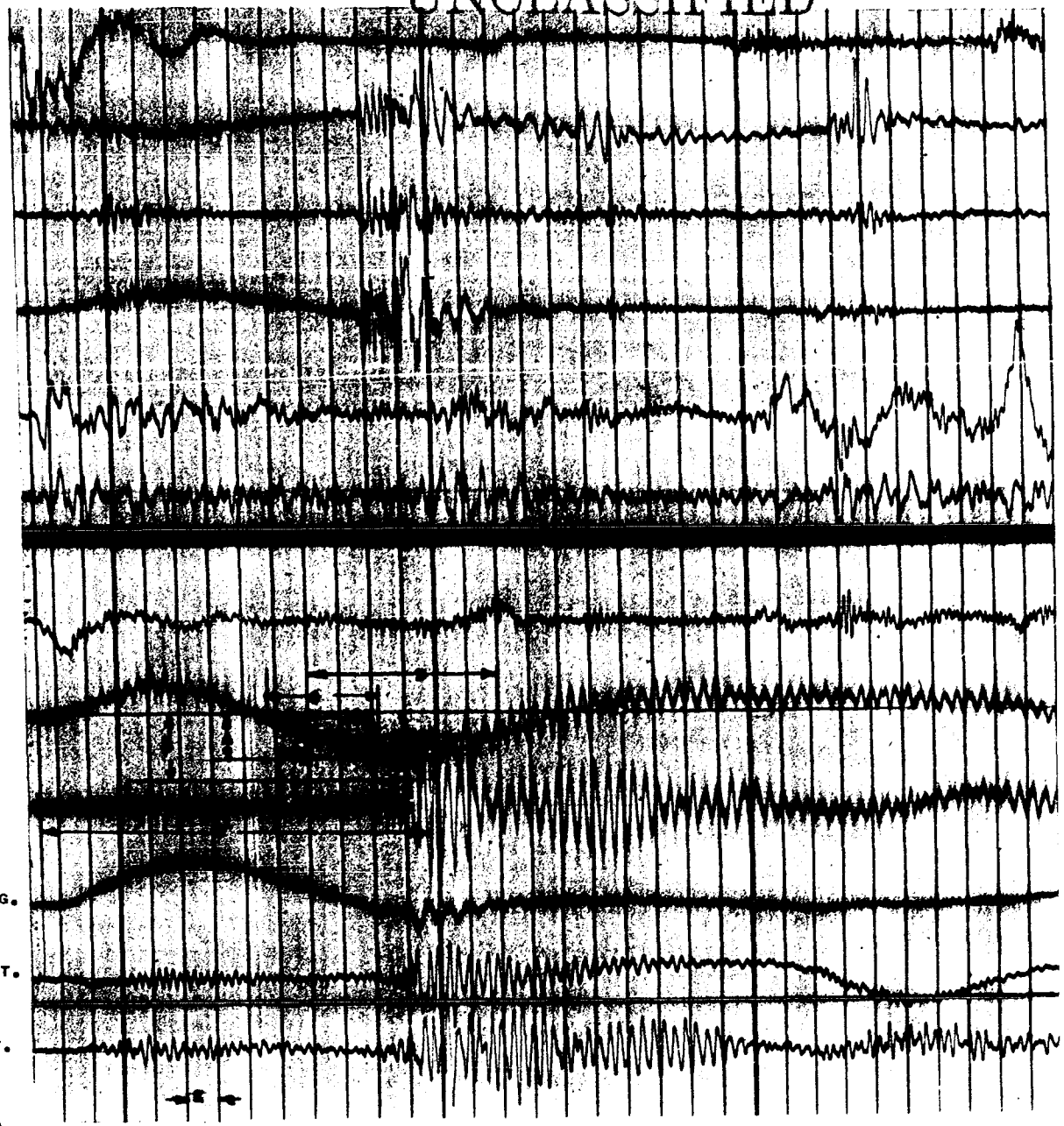
DUMMY TX-15, AFTERBODY- VERT.

DUMMY TX-15, AFTERBODY- LAT.

DUMMY TX-15, VERT. PLANE THROUGH CG- LONG.

DUMMY TX-15, VERT. PLANE THROUGH CG- VERT.

DUMMY TX-15, VERT. PLANE THROUGH CG- LAT.



A- MAXIMUM FAIRED VALUE (100%)
B- MAXIMUM AMPLITUDE
C- RISE TIME
D- PULSE TIME
E- 0.01 SECOND
F- 0 TO MAXIMUM- TIME

FIG. 11 TYPICAL RECORD- RAMP TEST OF THE XH-343

REF. SYM. 1612(139)
PROJECT NO. TM-226

TABLE I

Ref. Sym: 1612-(139)
Project No. TM-226

ACCELEROMETERS AND LOCATIONS
RAMP TEST OF THE XH-343

Accel. No.	Location	Range (g)	Serial No.	Statham Model No.	Natural Freq.
1	Dummy TX-15, Vert. plane through C. G. - Lat.	± 50	636	A5A -50-300	500
2	Dummy TX-15, Vert. plane through C. G. - Vert.	± 50	652	A5A -50-300	480
3	Dummy TX-15, Vert. plane through C. G. - Long.	±100	621	A5A-100-300	750
4	Dummy TX-15 Afterbody - Lat.	± 50	640	A5A- 50-300	550
5	Dummy TX-15 Afterbody - Vert.	± 50	657	A5A- 50-300	500
6	XH-343 Frame - Long.	±100	622	A5A-100-300	700
7	XH-343 Frame - Lat.	± 50	654	A5A- 50-300	490
8	XH-343 Frame - Vert.	± 50	650	A5A- 50-300	500
9	XH-343 Cradle - Long.	±100	611	A5A-100-300	760
10	XH-343 Cradle - Lat.	± 50	651	A5A- 50-300	490
11	XH-343 Cradle - Vert.	± 50	658	A5A- 50-300	500
12	Ramp Dolly - Long.	±100	626	A5A-100-300	740

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TABLE II

ACCELERATIONS, TIMES, FREQUENCIES, AND VELOCITIES

Bare Test of the XH-343

Accel. No.	Location and Direction	Max. (−)	Run No. 1 Position 6.7 Acceleration (g)* Max. (+)	Max. Paired	Max. Amplitude	Time (Sec.) Rise	Pulse	0-Max (−)	0-Max (+)	Freq. (cps)	Velocity (MPH)	Max. (−)	Run No. 2 Position 8.1 Acceleration (g)* Max. (+)	Max. Paired	Max. Amplitude	Time (Sec.) Rise	Pulse	0-Max (−)	0-Max. (+)
1	Dummy TX-15, Vert. plane through CG - Lat.	3.5	2.5					0.130	0.130	450	5.02	12	12			—		0.036	0.036
2	Dummy TX-15, Vert. plane through CG - Vert.	2.0	1.6					0.137	0.137	310	5.02	5.5	6.1					0.038	0.038
3	Dummy TX-15, Vert. plane through CG - Long.			-6.3	-6.3	0.026	0.022	0.054			5.02			-7.3	-9.2	0.027	0.061		0.029
4	Dummy TX-15 Afterbody-Lat.	5.5	7.1					0.183	0.183	455	5.02	23	24					0.039	0.039
5	Dummy TX-15 Afterbody-Vert.			-10.4	-11	0.033	0.0[illegible]		0.128	330	5.02			-18.4	-13	0.025	0.063		0.131
6	XH-343 Frame - Long.			-27	-37	0.008	0.009	0.028		575	5.02			-35	-62	0.010	0.007	0.021	
7	XH-343 Frame - Lat.	15	18					0.037	0.029	200	5.02	16	20			—		0.024	0.019
8	XH-343 Frame - Vert.	12	10					0.033	0.016	400	5.02	23	21					0.019	0.015
9	XH-343 Cradle - Long.	25	32					0.128	0.125	500	5.02	16	17					0.027	0.031
10	XH-343 Cradle - Lat.	15	10					0.129	0.128	620	5.02	26	30					0.033	0.032
11	XH-343 Cradle - Vert.	4.5	12					0.137	0.137	560	5.02	21	31					0.133	0.132
12	Rear Dolly - Long.			-22	-20	0.000	0.015	0.006		750	5.02			-32	-35	0.002	0.013	0.004	
			Run No.		Position 10.7								Run No. 5		Position 11.5				
1	Dummy TX-15, Vert. plane through CG - Lat.	3.8	3.7					0.123	0.032	400	6.55	6.8	8.3			0.001		0.129	0.129
2	Dummy TX-15, Vert. plane through CG - Vert.			-3.4	-3.7	0.018	0.037		0.207	370	6.55	3.3	3.9			0.001		0.129	0.129
3	Dummy TX-15, Vert. plane through CG - Long.			-8.[illegible]	-10.0	0.022	0.038		0.048		6.55			-5.5	-9.6	0.024	0.059	0.045	
4	Dummy TX-15 Afterbody Lat.	11	9.6					0.156	0.121	460	6.55	11	17			[illegible]	[illegible]	0.129	0.129
5	Dummy TX-15 Afterbody-Vert.			-20	-16	0.035	0.059		0.128	540	6.55			-11	-16	0.037	0.056		0.126
6	XH-343 Frame - Long.			-31	-40	0.007	0.009	0.010		480	6.55			-31	-34	0.007	0.010	0.011	
7	XH-343 Frame - Lat.	16	13					0.029	0.016	450	6.55	15	17					0.140	0.072
8	XH-343 Frame - Vert.	10	17					0.005	0.011	520	6.55	15	12					0.298	0.316
9	XH-343 Cradle - Long.	42	48					0.118	0.118	500	6.55	38	41					0.121	0.121
10	XH-343 Cradle - Lat.	26	29					0.117	0.117	580	6.55	29	25			0.001		0.122	0.122
11	XH-343 Cradle - Vert.			-11	-21	0.013	0.028		0.129	520	6.55			-7.9	-27	0.004	0.007		0.129
12	Rear Dolly - Long.			-28	-37	0.001	0.017	0.003		825	6.55			-27	-34	0.001	0.015	0.006	

* Plus directions are, looking forward toward nose, Longitudinal - Forward, Lateral - Left, Vertical - Up

(a) Complex frequencies but all are over 180 cps

(b) Complex frequencies but all are over 200 cps

(c) Complex frequencies but all are over [illegible] cps

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TABLE II

ACCELERATIONS, TIMES, FREQUENCIES, AND VELOCITIES

Bomb Test of the XB-43

Ref. Sym: [illegible]-([illegible])
Project No. [illegible]

Run No. 2 Position 8.1

Acceleration (g)* Max. (-)	Max. (+)	Max. Paired Amplitude		Time (Sec.) Rise	Pulse	0-Max (-)	0-Max (+)	Freq. (cps)	Velocity (MPH)
12	12					0.035	0.035	310	5.59
5.5	6.1					0.038	0.038	310	5.59
		-7.3	-9.2	0.027	0.051		0.028		5.59
23	24					0.039	0.039	415	5.59
		/8.4	/ 13	0.027	0.063		0.131	420	5.59
		-35	-62	0.010	0.007	0.021		530	5.59
16	20					0.024	0.019	335	5.59
23	21					0.019	0.016	470	5.59
46	47					0.027	0.031	(a)	5.59
26	30					0.034	0.032	450	5.59
21	31					0.132	0.132	415	5.59
		-32	-35	0.002	0.013	0.004		890	5.59

Run No. 5 Position 11.5

Acceleration (g)* Max. (-)	Max. (+)	Max. Paired Amplitude		Time (Sec.) Rise	Pulse	0-Max (-)	0-Max (+)	Freq. (cps)	Velocity (MPH)
6.8	6.3			0.001		0.129	0.129	610	6.89
3.3	3.5			0.001		0.129	0.129	(b)	6.89
		-8.5	-9.5	0.024	0.059	0.045			6.89
11	17					0.129	0.129	260	6.89
		/ 11	/ 16	0.027	0.056		0.126	250	6.89
		-31	-54	0.007	0.010	0.011		680	6.89
15	17					0.140	0.272	480	6.89
15	19					0.298	0.316	500	6.89
38	41					0.121	0.121	870	6.89
29	25			0.001		0.122	0.122	550	6.89
		/7.9	/ 27	0.004	0.007		0.129	390	6.89
		-27	-34	0.001	0.015	0.006		800	6.89

al - Up

Run No. 3 Position 9.3

Acceleration (g)* Max. (-)	Max. (+)	Max. Paired Amplitude		Time (Sec.) Rise	Pulse	0-Max (-)	0-Max (+)	Freq. (cps)	Velocity (MPH)
12	12					0.040	0.041	300	.10
4.0	6.1					0.043	0.043	310	6.10
		-7.4	-9.7	0.024	0.050	0.033			6.10
28	21					0.034	0.044	420	6.10
		/8.6	/9.5	0.020	0.055		0.128	555	6.10
		-39.7	- 73	0.001	0.007	0.027		780	6.10
32	47					0.031	0.031	470	6.10
20	31					0.028	0.028	450	6.10
50	42					0.035	0.035	(a)	6.10
21	26					0.038	0.038	450	6.10
13	15					0.039	0.038	390	6.10
		- 23	- 26	0.000	0.007	0.007		675	6.10

Run No. 6 Position 12.0

Acceleration (g)* Max. (-)	Max. (+)	Max. Paired Amplitude		Time (Sec.) Rise	Pulse	0-Max (-)	0-Max (+)	Freq. (cps)	Velocity (MPH)
7.2	6.2			0.001		0.128	0.128	390	7.07
3.0	5.5			0.001		0.122	0.122	310	7.07
		-8.2	-9.2	0.026	0.056	0.048			7.07
30	23			0.002		0.122	0.122	250	7.07
		/ 12	/ 17	0.040	0.040		0.041	450	7.07
		- 36	- 39	0.006	0.009	0.016		620	7.07
20	20			0.001		0.340	0.340	430	7.07
21	32					0.319	0.319	(c)	7.07
24	42					0.118	0.122	690	7.07
19	27					0.121	0.121	850	7.07
15	23			0.001		0.264	0.264	590	7.07
		- 30	- 46	0.001	0.017	0.007		750	7.07

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TABLE III

Ref. Sym: 1612-(139)
Project No. TM-226

CONTAINER FRAME DISPLACEMENT
RELATIVE TO THE CONTAINER CRADLE

Ramp Test of the XH-343

Direction and Location	Deflection (Inch)					
	Run No. 1	Run No. 2	Run No. 3	Run No. 4	Run No. 5	Run No. 6
Longitudinal, Front and Rear	1.8	2.4	2.5	2.8	2.9	3.0
Vertical, Front	1.6	2.0	2.1	2.3	2.5	2.7
Vertical, Rear	1.5	1.8	1.9	2.1	2.2	2.2

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