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2098

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
1 <sup>st</sup> Review Date: <u>7/08/98</u>	Determination (Circle Number): <input checked="" type="radio"/> 1. Classification Retained <input type="radio"/> 2. Classification Changed to: <u>U</u> <input type="radio"/> 3. Contains No DOE Classified Information <input type="radio"/> 4. Coordinate With: <input type="radio"/> 5. Contains LICAT <input type="radio"/> 6. Comments: <u>OK for Open</u>
Authority: <input type="checkbox"/> ADIC <input checked="" type="checkbox"/> ADD <u>W. Wayne</u>	
Name:	
2 <sup>nd</sup> Review Date: <u>7/13/98</u>	
Authority: <u>R.B. Craner</u>	
Name:	

JAN 12 1992

File No: TX-53, 3-2  
T-18003  
Test Completed: 8-31-61

MR. E. I. BRUCE - 7117  
Attn: D. D. Baker

Re: Drop Tower Test of DB-6 (U)

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: <u>U</u>	AUTHORITY: <u>R.B. Craner</u>
PERSON CHANGING MARKING & DATE: <u>Emelda Selph 7/20/98</u>	RECORD ID: <u>98SN2856</u>
PERSON VERIFYING MARKING & DATE: <u>W. Wayne 7/22/98</u>	DATED: <u>7/13/98</u>

Summary of Test

The object of this test was to evaluate the design and the material of the TX-53 Beer Barrel Nose when subjected to simulated laydown drops and to check the action of the nose and side panels as an assembly. The maximum permissible acceleration response was 60g.

The unit was dropped on a flat concrete target. The computed velocity components were 55 fps vertical and 51 fps horizontal. The maximum faired acceleration received by the test unit at impact was 62.4g with a pulse duration of 50.6 ms and a rise time of 21.8 ms along the longitudinal axis of the unit.

The nose and the side panels functioned well as an assembly with both crushing but neither bottoming out.

Object of Test

This was the sixth in a series of drop tests to evaluate the design and material of the TX-53 Nose when subjected to simulated laydown drops. The nose is required to limit the accelerations to a maximum of 60g under the test conditions. The test also was to check the action of the nose and side panels as an assembly.

RECEIVED  
JAN 15 1962

Authorization for Test

CENTRAL RECORD FILE

This test was requested in an Environmental Test Order from Mr. E. I. Bruce, 7117, to Mr. M. McWhirter, 7325, dated 8-3-61. Don Baker, 7117, was the consultant.

Setup for Test

The overall setup and rigging of the test unit to the 185 foot drop tower carriage is shown in Figure 1. Because of the manner in which the test unit was hung below the carriage, it was necessary to use guy cables to prevent

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CENTRAL RECORD FILE	
ACCOUNTABILITY CARD	<u>OK</u>
FILE No. <u>TX-53</u>	<u>3-2</u>

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it from swinging during the slide period. A steel cable was run from the lip of the parachute can to the end of the carriage and another cable was run from just above the nose of the unit to the end of the carriage. The cable above the nose was fastened to a rubber covered strap around the unit. This strap was rigged so that it was cut loose from the unit at the time the unit was released from the carriage. The unit and the strap were released by means of explosive cable cutters.

About 200 sawdust bags were placed in front of the concrete barricade to prevent the unit from slamming into the barricade.

A list of the components making up the test unit is contained in Table I. Table II is a list of the test equipment used in recording the test. Specifications and locations of the accelerometers used for the test are included in Table 1.1. The locations and orientations of these accelerometers are shown in Figures 2, 3 and 4.

The accelerations were recorded on a C.E.C. type 5-119 oscillograph and also on a C.E.C. type 5-752A tape recorder. The tape was played back on an Ampex tape recorder, filtered to 1248 cps, and recorded on a C.E.C. type 5-119 oscillograph.

#### Procedure

The test unit was rigged to the carriage with its longitudinal axis vertical and the 0° reference leading (Figure 4). After the normal rigging and check outs had been performed, the test unit was positioned on the cable such that it had a slide distance of 133.5 feet at the end of which it would have a free fall height of 25 feet. The carriage was released at time zero by an explosive cutter. The carriage was allowed to slide along the cable until the horizontal component of velocity had been obtained at which time the unit was released from the carriage by means of explosive cutters. The unit continued in free fall until impact on the target.

#### Results

There was no visible damage to the test unit other than the crushing of the nose and the side panels (Figure 5). The manner and extent of crushing of the nose and side panels can be seen in Figures 6 and 7.

The acceleration data from the test is contained in Table IV. All records were interpreted according to SC-4452(M) Section D, paragraph 2.1.1, dated January 1961. The acceleration signatures from the oscillograph is included in Figure 8.

The attitude of the unit at impact was approximately 5.5 degrees from vertical with the nose leading. The unit did not slap down before it hit the sawdust

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bags because the impact point was near the bags and the unit bounced a considerable distance after impact.

The velocities at impact, as reduced from the films of the drop, were 48.0 FPS in the horizontal direction and 51.0 FPS in the vertical direction. The above velocities are correct to  $\pm$  15%.

*G. T. Gay*  
G. T. GAY - 7325

*Dale Buchanan*  
7321 Project Engineer: DALE BUCHANAN - 7321-5

Approved By: *R. S. Hooper*  
R. S. HOOPER - 7321-5

GTG:7325-2:mw

Encl: Figs. 1-8  
Tables I-IV

## Copy to:

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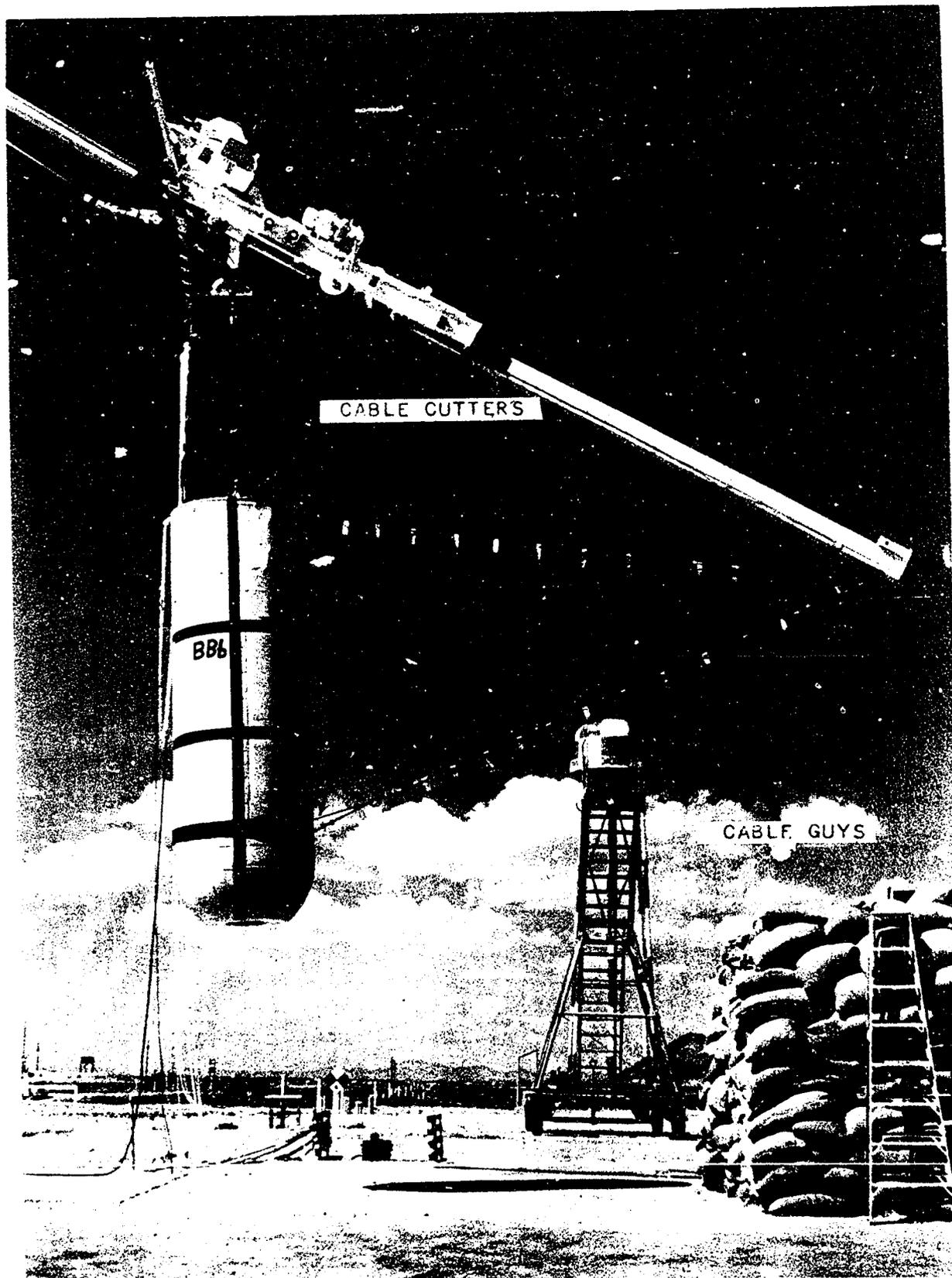


FIG. 1 - SET UP FOR BB-6  
DROP TOWER TEST OF BB-6

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D#62-480

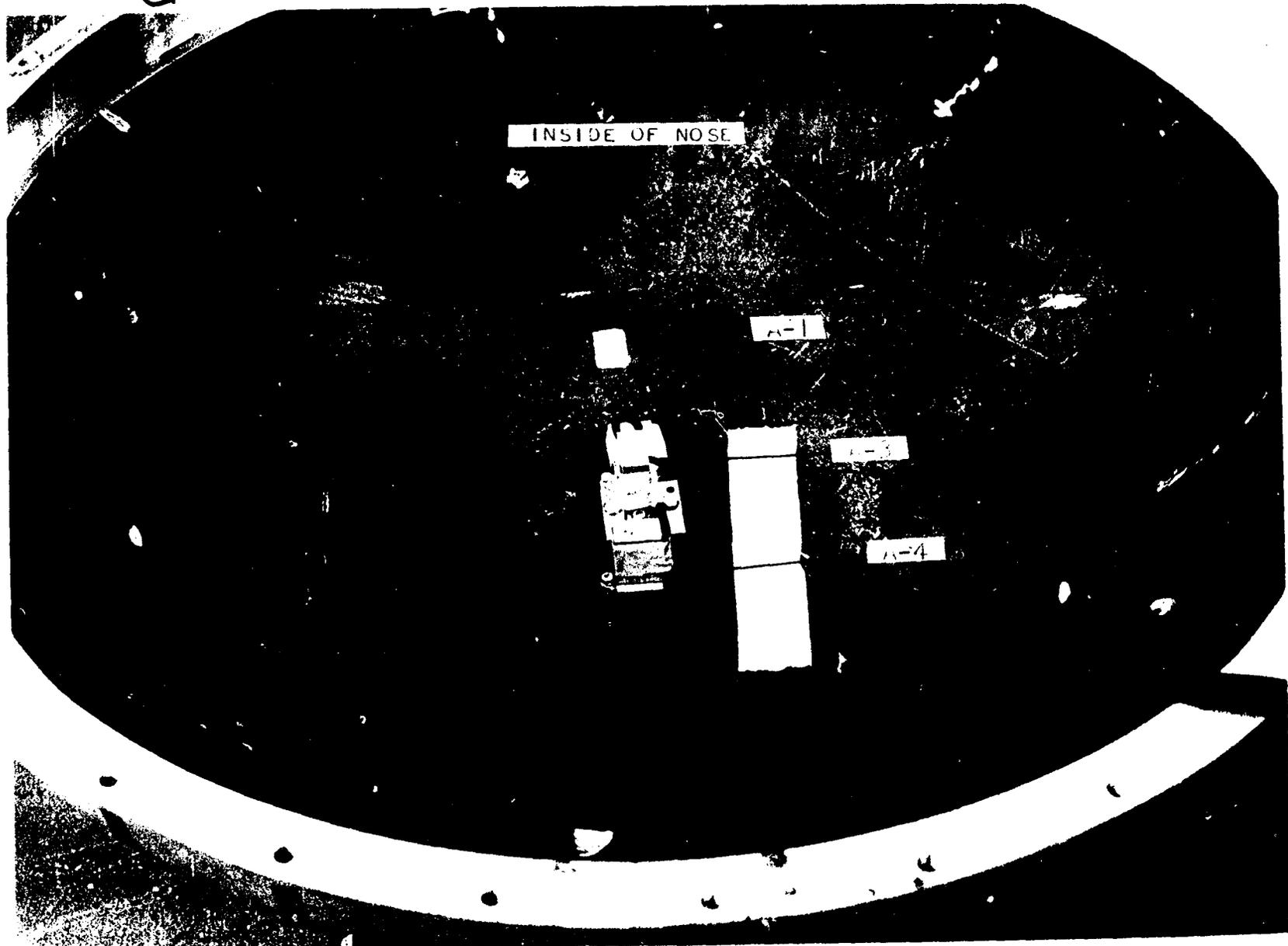


FIG. 2 - LOCATION OF ACCELEROMETERS  
DFOI TOWER TEST OF BB-6

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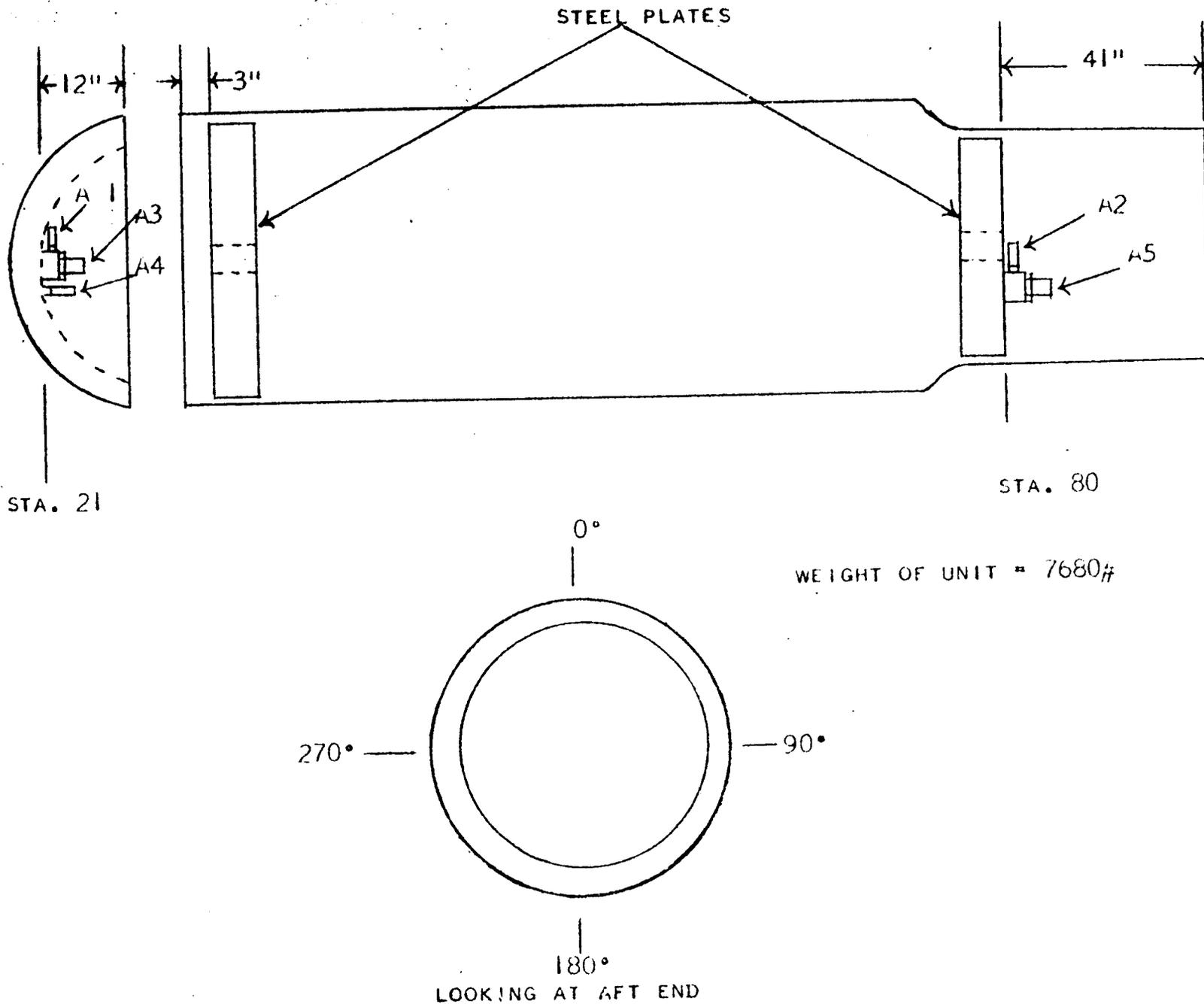


FIG. 3 - LOCATION OF ACCELEROMETERS  
DROPTOWER TEST OF BB-6

1-120-3

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FIG. 4

LOCATION OF ACCELEROMETERS  
DROP TOWER TEST OF BB-6

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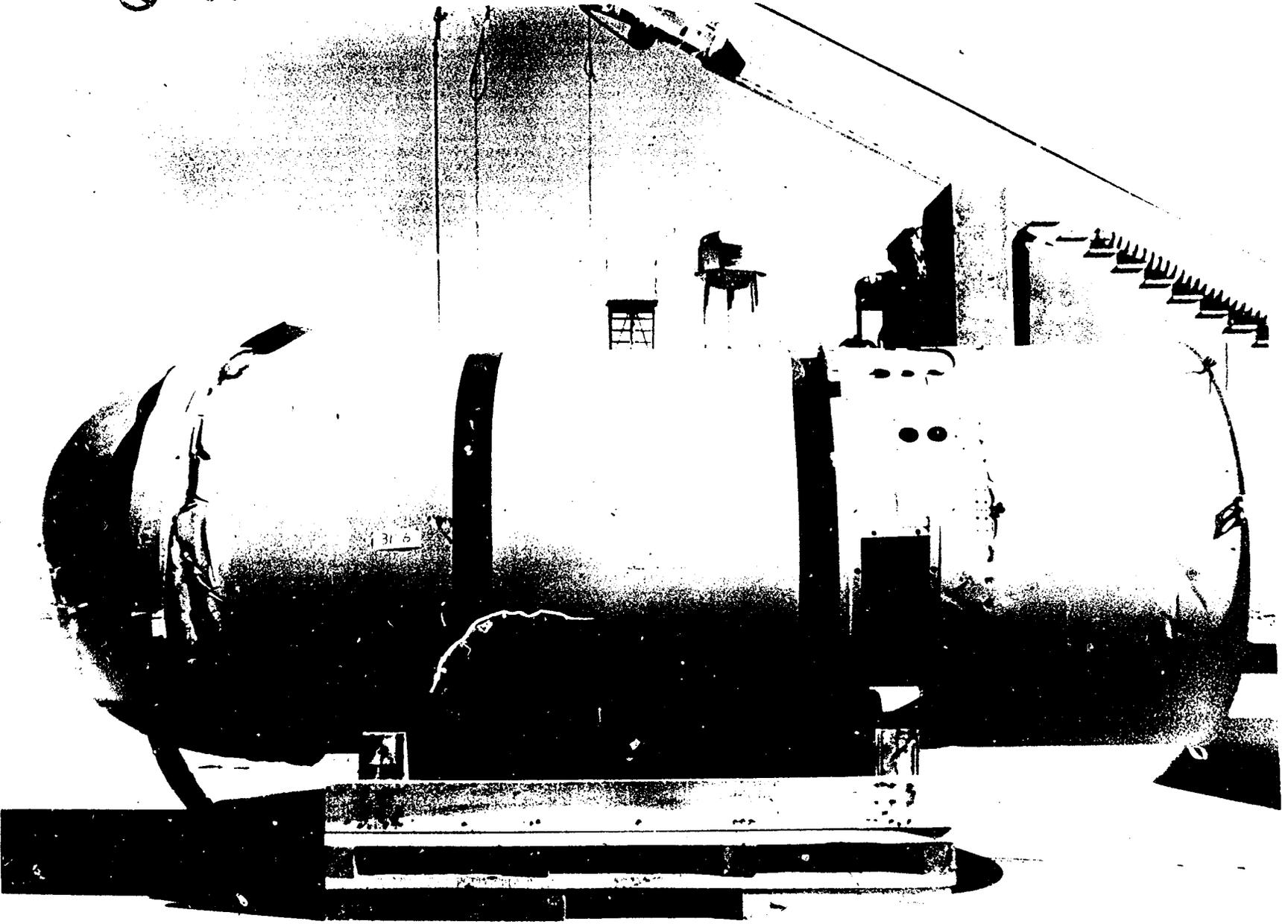


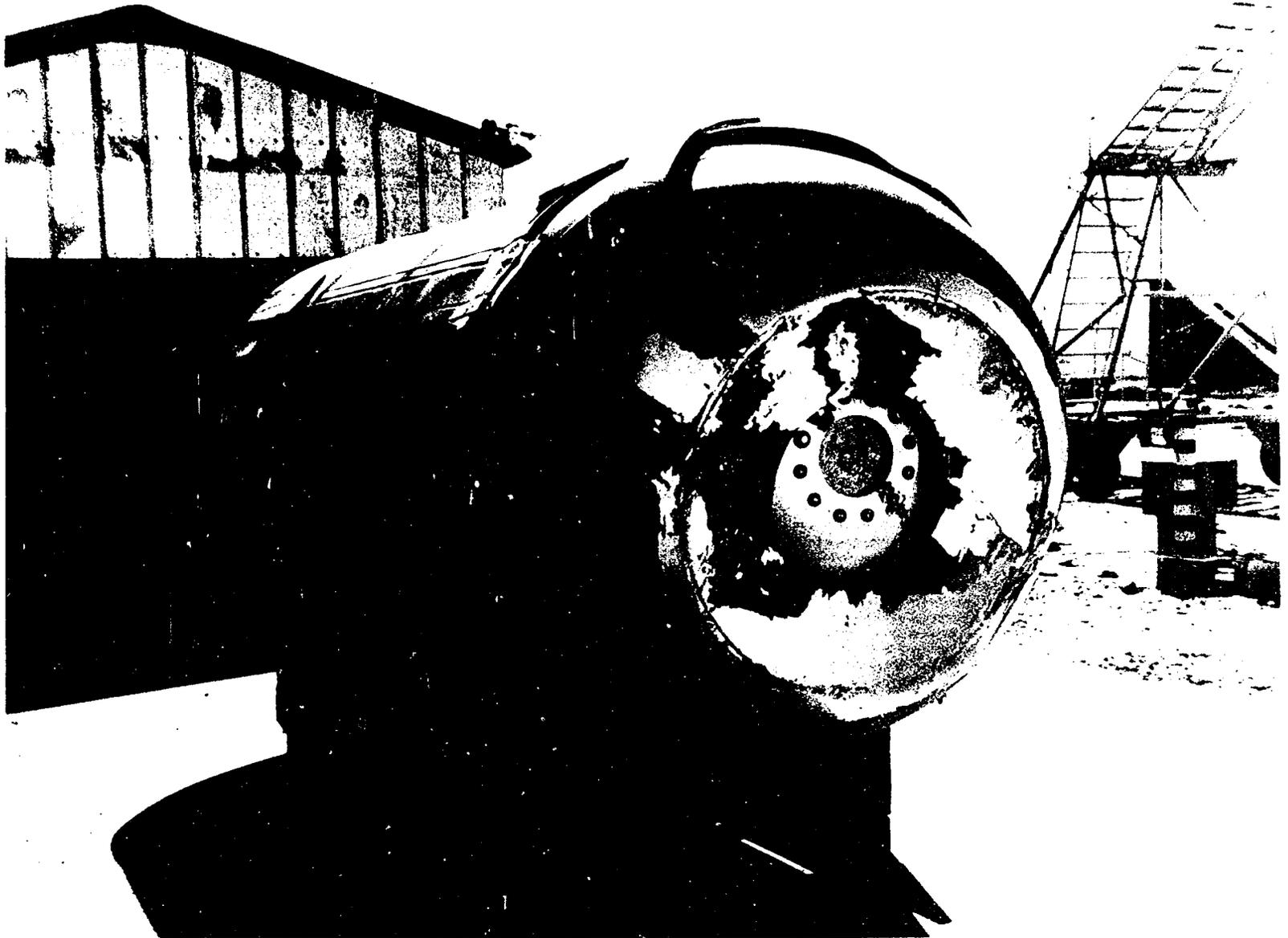
FIG. 5 - UNIT AFTER DROP  
DROP TOWER TEST OF BB-6

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V<sub>V</sub> = 40 FT.  
V<sub>H</sub> = 40 FT.

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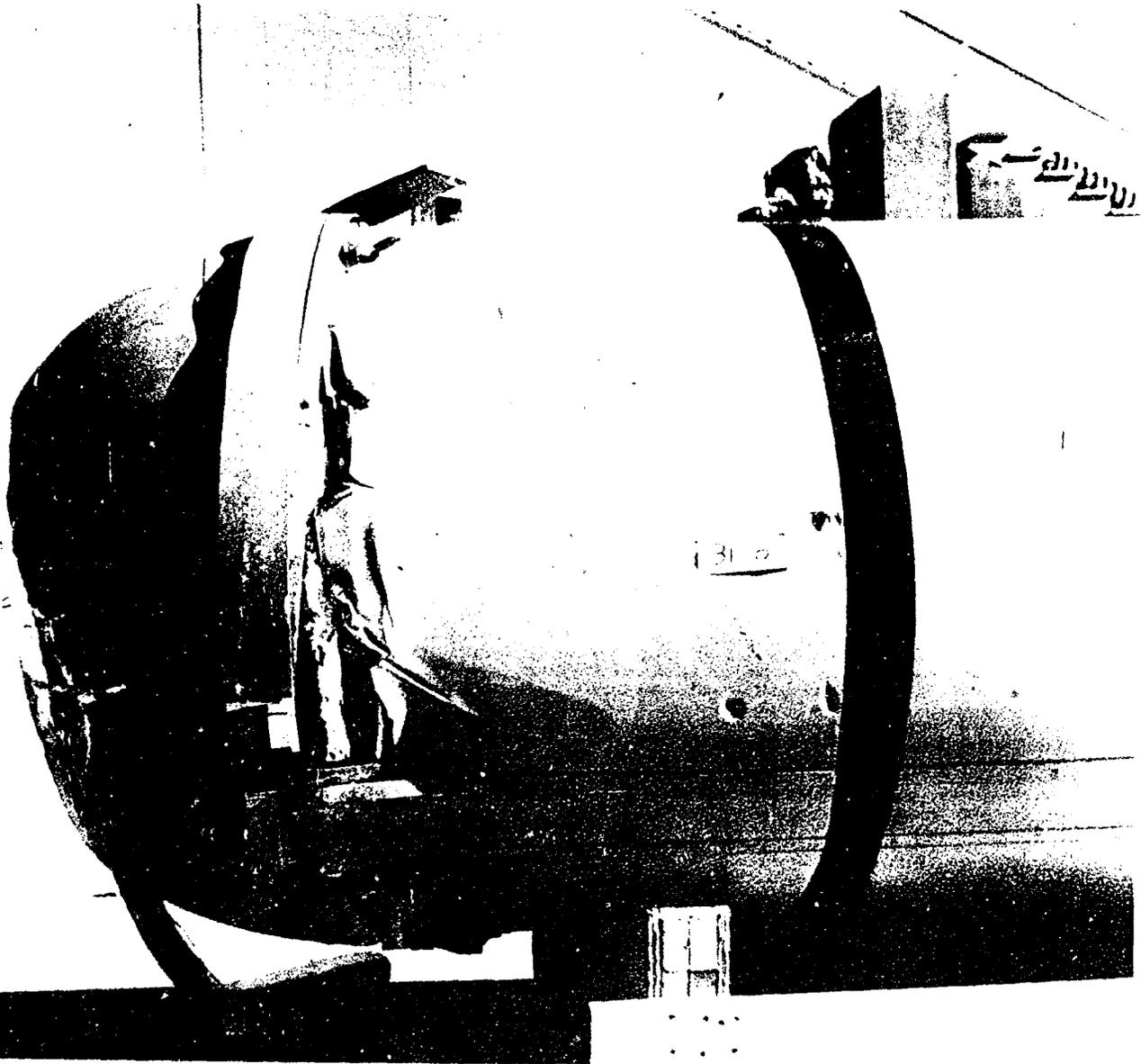
FIG. 6 - UNIT AFTER DROP  
DROP TOWER TEST OF BB-6

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$V_V = 55 \text{ FPS}$   
 $V_H = 51 \text{ FPS}$

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FIG. 7 - UNIT AFTER DROP  
DROP TOWER TEST OF BU-6

I-1000s

V<sub>v</sub> 1000  
H 1000

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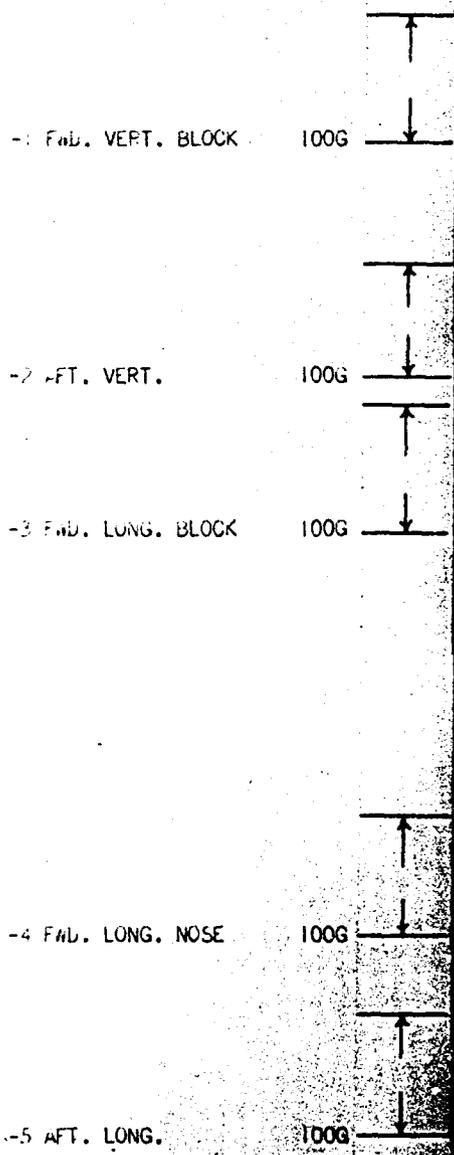


Fig. 8 - ACCELERATION SIGNATURES  
DROP TOWER TEST OF B8-6 T-18003 V<sub>v</sub> - 55 FPS  
V<sub>H</sub> - 51 FPS

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TABLE I

Components Tested  
Drop Tower Test of BB-6

<u>MC No.</u>	<u>Name of Component</u>	<u>Drawing or Part No.</u>	<u>Serial No.</u>
None	Steel Case and Weights	SK(1217)3856	None
None	Nose	N10603, Issue 3	None
None	Outer Case Sections	158661	None
None	Wedges	158662	None
None	Rear Case Assembly	158666	None

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TABLE II

Equipment Used  
Drop Tower Test of BB-6

<u>Name</u>	<u>Type</u>	<u>Modal No.</u>	<u>Serial No.</u>	<u>Property No.</u>
Video Amplifier	R-9B			113917
Video Amplifier	R-9B			113929
Video Amplifier	R-9B			113957
Video Amplifier	R-9B			113926
Video Amplifier	R-9B			113921
Video Amplifier	R-9B			113923
Video Amplifier	R-9B			113927
Video Amplifier	R-9B			113928
Video Amplifier	R-9B			113948
Video Amplifier	R-9B			113964
Video Amplifier	R-9B			113920
CEC Oscillograph	5-119R		9071	89965
CEC Tape Recorder	5-752	A	T-01465	-
Ampex Tape Recorder	114	A	1051	103465

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TABLE III

Instrumentation  
Drop Tower Test of BB-6

<u>Gage No.</u>	<u>Location</u>	<u>Type or Model No.</u>	<u>Serial No.</u>	<u>Nat. Freq.</u>	<u>Fig. Ref.</u>
A-1	Fwd vert. block	A5A-200-350	6914	1100	2 and 4
A-2	Aft vert.	A5A-200-335	1665	1120	3 and 4
A-3	Fwd long. block	A5A-200-350	5534	1050	2 and 4
A-4	Fwd long. nose	A5A-200-350	6019	910	2 and 4
A-5	Aft long.	A5A-200-350	1670	1100	3 and 4

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TABLE IV

Accelerations and Times  
Drop Tower Test of BB-6

Accel. No.	Location	Direction	Acceleration (g's)			Time (ms)	
			Max (+)	Max (-)	Faired	Rise	Pulse
A-1	Fwd block	Vert.	99	75.6	37.5	0.28	3.12
A-2	Aft	Vert.	30.2	27.8	13.6	0.81	3.82
A-3	Fwd block	Long.	88.1	48.5	53.8	24.3	54.4
A-4	Fwd nose	Long.	75.1	34.5	55.7	23.3	52.9
A-5	Aft	Long.	71.5	10.6	58.4	21.8	50.6

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