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Authority: ADD	Contains UCA
Name: W.C. Layne	Comments

T-11343

DEC 8 1965

TX-61,3-2

RS 7331/357

RECEIVED
DEC 07 1965
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CATEGORY 30143

ORG. 210

DATE 6589

DROP TOWER TEST OF TX-61 NO. TD-21 (U)

Organization 7300 Environmental Test Report

C. G. Coalson, 7325

Approved by F. H. Mathews
Project Leader, 7325

Approved by E. White
E. White, 7331

CENTRAL TECHNICAL FILE
ACCOUNTABILITY CARD
FILE NO. 61-Program
880 3-2

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T-11343
RS 7331/357

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DROP TOWER TEST OF TX-61 NO. TD-21 (U)

Introduction

The object of this test was to determine the response of the TX-61 to simulated laydown shock conditions. The test was conducted on the Variable Angle Guide Wire Facility at the 185 ft. Drop Tower. The TX-61 was oriented with its longitudinal axis vertical and impacted onto a horizontal concrete target. Calculated velocity components at impact were 87 fps vertical and 46 fps horizontal and were computed from measurements of carriage slide time. Instrumentation consisted of 46 piezoelectric accelerometers and two strain gages.

This test was requested by J. C. Taggart, Org. 1512, in an Environmental Test Requested dated September 8, 1965. Mr. Dale Buchanan, 7331, was the Test Project Engineer. Testing was completed on September 24 1965.

Summary

No deleterious damage was sustained by the TX-61 during this test. The faired acceleration in the longitudinal direction at initial impact measured on the forward bulkhead was 400 g with a pulse duration of 15 msec. The longitudinal accelerations on the MC components ranged from 300 g to 400 g.

The slapdown shock was directed from 20° towards 200° and the MC components experienced accelerations ranging from 200 g to 500 g. The nose assembly did not break off the TX-61 during the impact shock.

Procedure

The TX-61 was rigged to the guided carriage with the longitudinal axis vertical as shown in Figure 1. Angular station 180° was located on the trailing side of the weapon so that the shock at slapdown was directed from 0° towards 180°. Location and sensing directions of the strain gages are listed in Table I. Location, sensing directions and type specifications of the accelerometers are listed in Table II, pages 1 through 11. Test data were recorded on CEC magnetic tape recorders (type VR-600) having a frequency response of D.C. to 40 KC. During playback (at the Area III Data Center) the strain records were filtered to 10 kcps and the accelerations records were filtered to 5 kcps using low pass filters. A comprehensive description of the data

recording and playback equipment is available from file at the Drop Tower Control Building 6505. The test tapes are stored at the Data Center (Bldg. 6540) for a period of six months from the date of the test. The tapes are filed under the T-number of this report.

Organization 7226 provided high-speed photographic instrumentation for the drop test and prints of the test films have been forwarded to the requesting organization (1512). Originals of the films have been filed by the Industrial Photographic Division, 3465 under Work Order No. 114228.

Results

The test record from the strain gages at nose impact are presented in Table I. No strain data were obtained at slapdown because the instrumentation lines were damaged immediately after initial impact. Test records from the accelerometers at nose impact and centercase slapdown are presented in Tables II and III respectively. Due to the weight of the large number of instrumentation signal lines and the severe whipping forces they experience between the impact and slapdown events, many of the signal lines were lost before slapdown. Signal lines were lost for accelerometers A-1, A-2, A-7, A-11 thru A-13, A-16 thru A-24, A-31, A-32, A-37 and A-42 thru A-47.

The calculated velocity components at impact were 87 fps vertical and 46 fps horizontal with the longitudinal axis of the TX-61 three degrees off vertical - tail lagging the nose. The TX-61 rolled about its longitudinal axis between impact and slapdown so that slapdown occurred at angular station 20°.

No deleterious damage was sustained by the TX-61 during this test. Figures 2 thru 4 show the TX-61 after the test.

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RS 7331/357

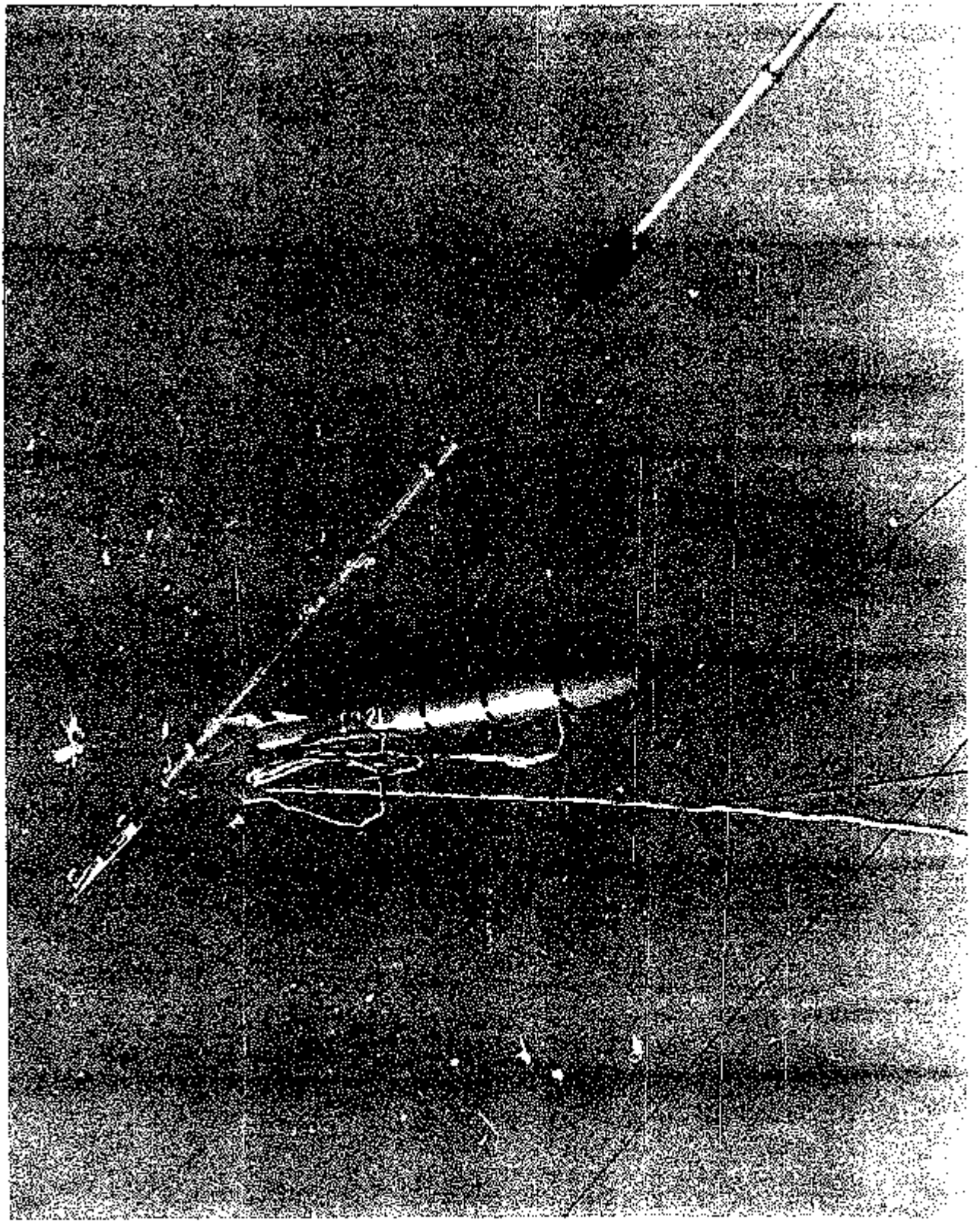

FIGURE 1.

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1-126

TX-61 AFTER THE TEST

FIGURE 2.

[redacted] UNCLASSIFIED

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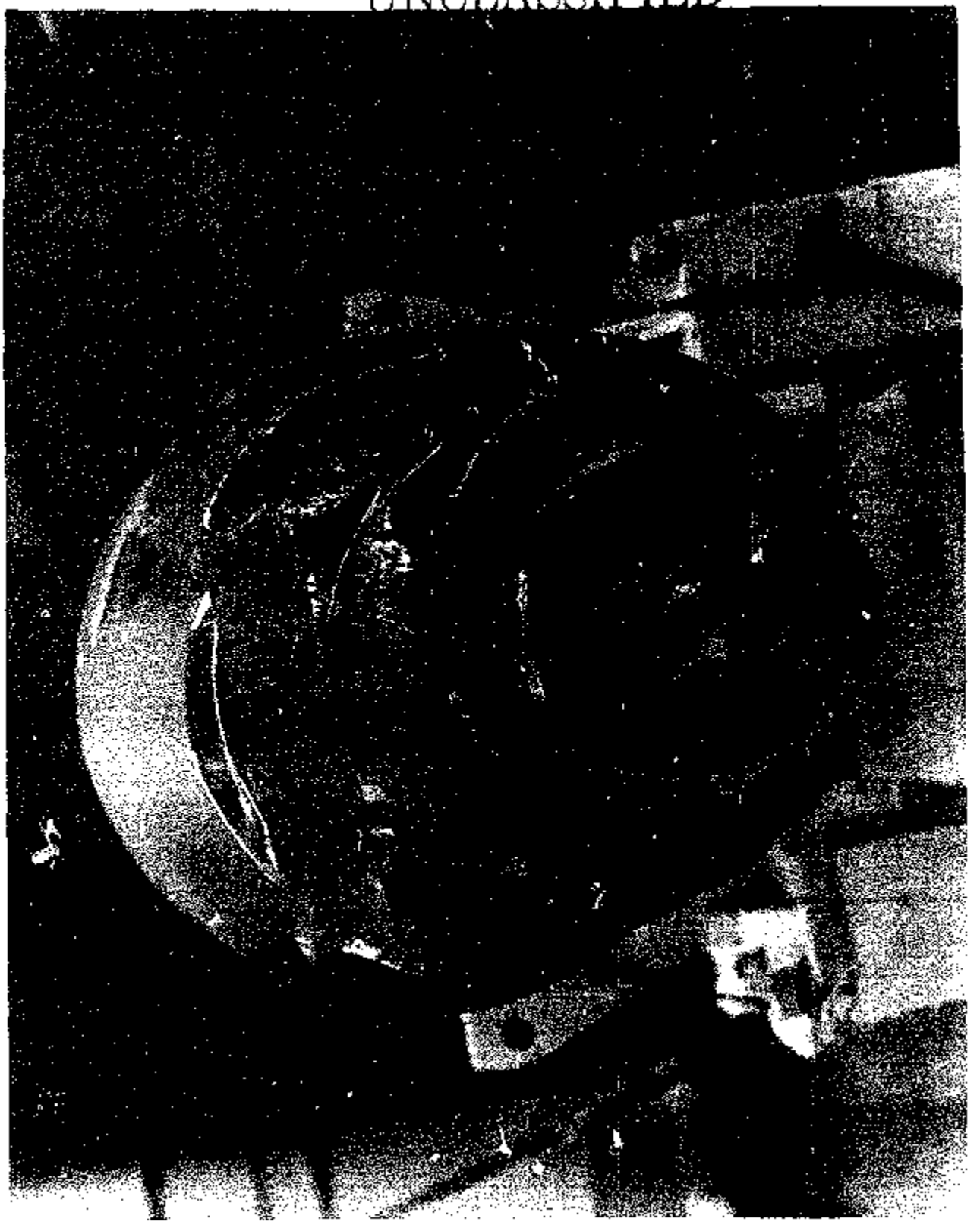

T-1163

TX-61 AFTER THE TEST

FIGURE 3.

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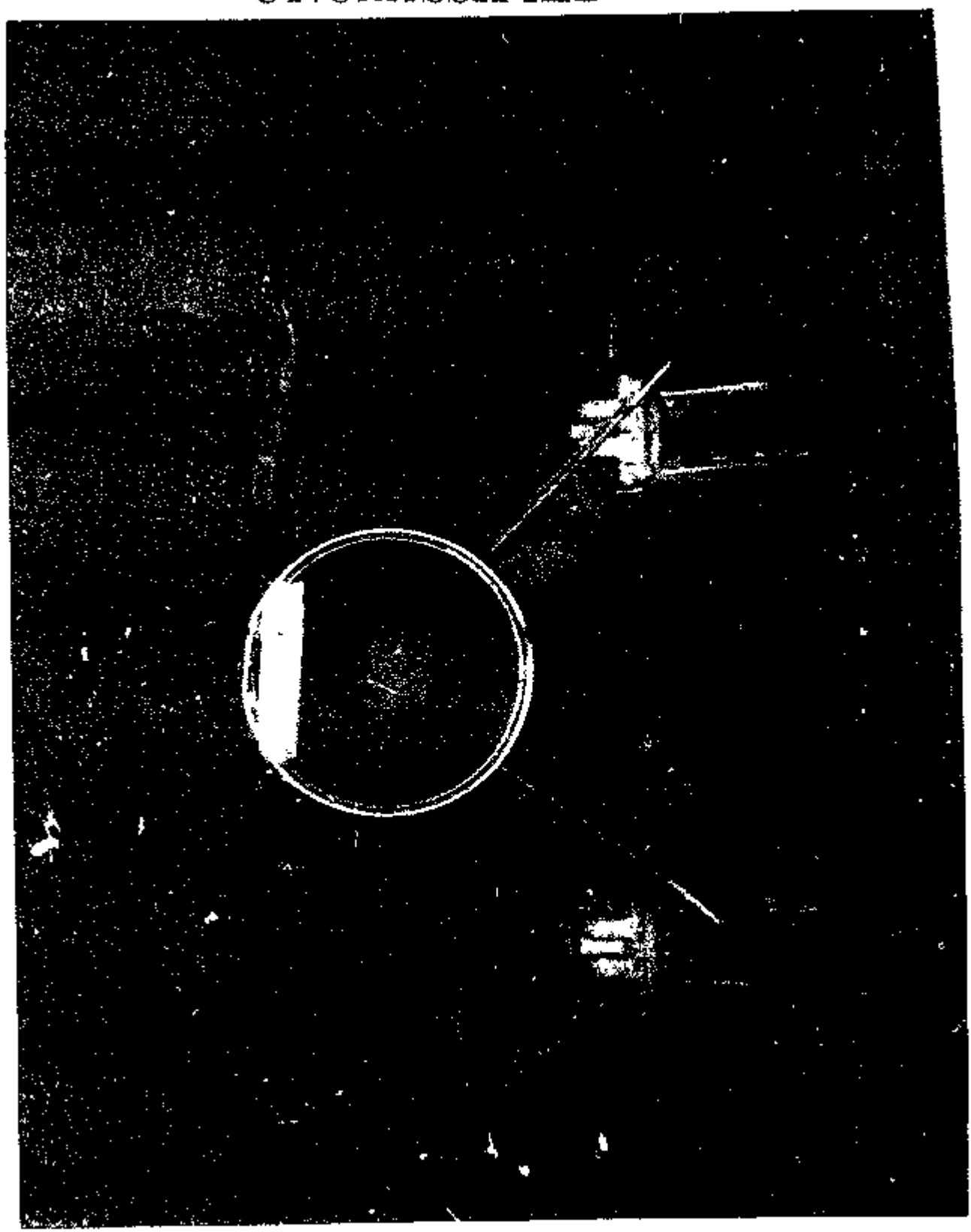

T-11343

TX-61 AFTER I B TEST

FIGURE 4.

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[redacted]

TABLE I
Page 1

T-11343
Ref. Sym [illegible]

STRAIN GAGE DATA
[illegible] TEST OF TX-61 NO. TO-21

Strain (%ε)	Angular Station No.	Location and Sensing Dir.	Gage No.
[illegible]*		OUTSIDE CASE [illegible] LONG	S-1
[illegible] (C)	225°	OUTSIDE CASE STA [illegible] LONG	S-2

[redacted]

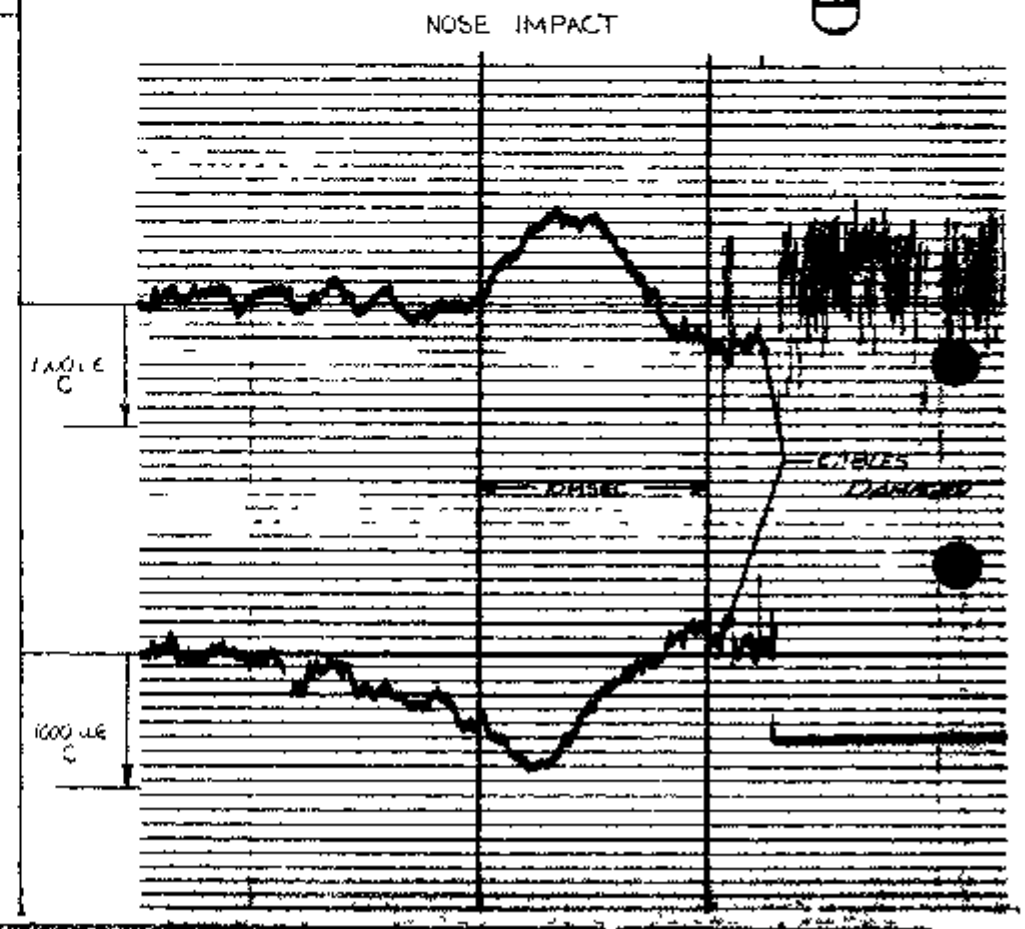

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TABLE II
Page 1

T-1343
Ref. Sym: 737/457

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible]	LA-50	—	—	40	65	—	MC1838-I 0°-180°	A-1
	LA-[illegible]	—	—	50	50	—	MC1839-I 0°-180°	A-2
	LA-37	—	—	85	110	—	MC1832-I 90°-270°	A-3
	LA-49	—	—	150	40	—	MC1838-I 90°-270°	A-4
I	LA-23	—	—	50	125	—	MC1844-I 0°-180°	A-5

[redacted]

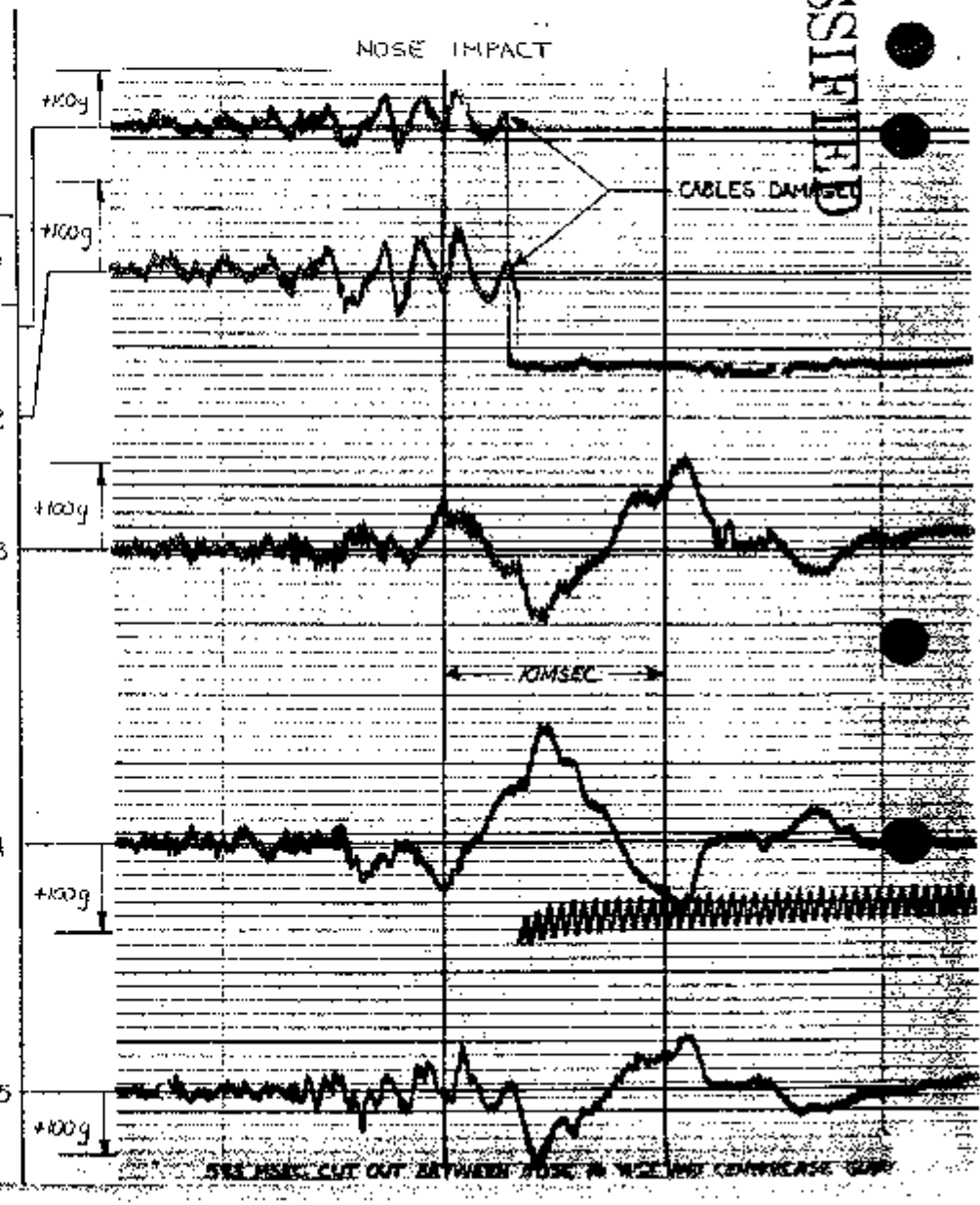

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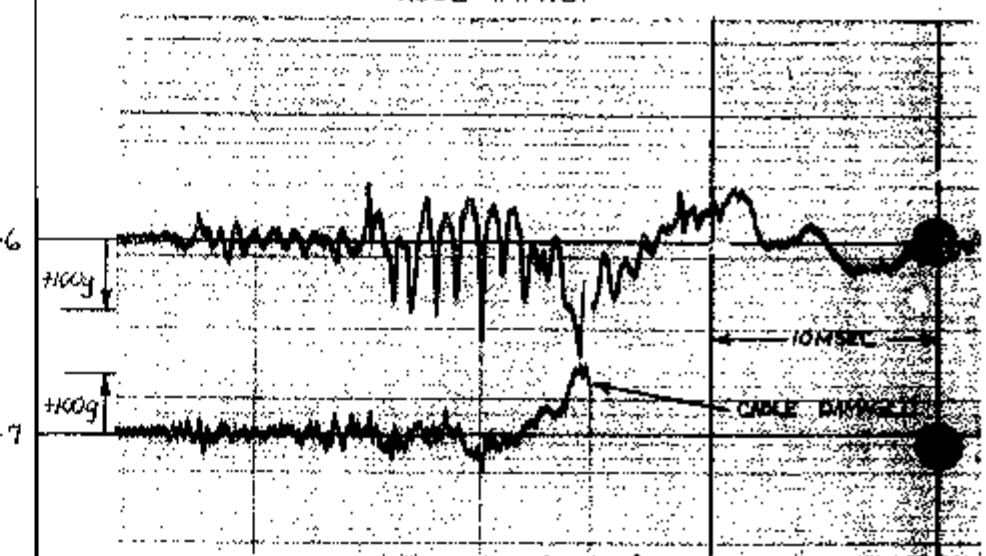
TABLE II
Page 2

T-11313
Ref. Svm: 7331/357

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO [illegible]	LA-12	—	—	25	100	—	MC1844-I 0°-180°	A-6
	GC-15	—	—	60	115	—	MC1844-I 90°-270°	A-7

NOSE IMPACT



593 MSEC CUT OUT BETWEEN NOSE IMPACT AND CENTERCASE SLAPDOWN

[redacted]

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[illegible] II
[illegible] 3

[illegible] 3
[illegible] sym [illegible]

ACCELERATION DATA
[illegible] TEST OF TX-01 NO. TD-21

Gage, S/N [illegible], f_n	Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Cage No.
[illegible]	—	—	110	[illegible]	—	[illegible]-I 0° 270°	A 8
JC 13	—	—	[illegible]	[illegible]	—	FWD BULKHEAD 0° 180°	A 9
[illegible]	[illegible]	12	790	660	+100	FWD BULKHEAD LONG	A-10
JC 51	— INOPERATIVE				—	FWD BULKHEAD 90°-270	A-11

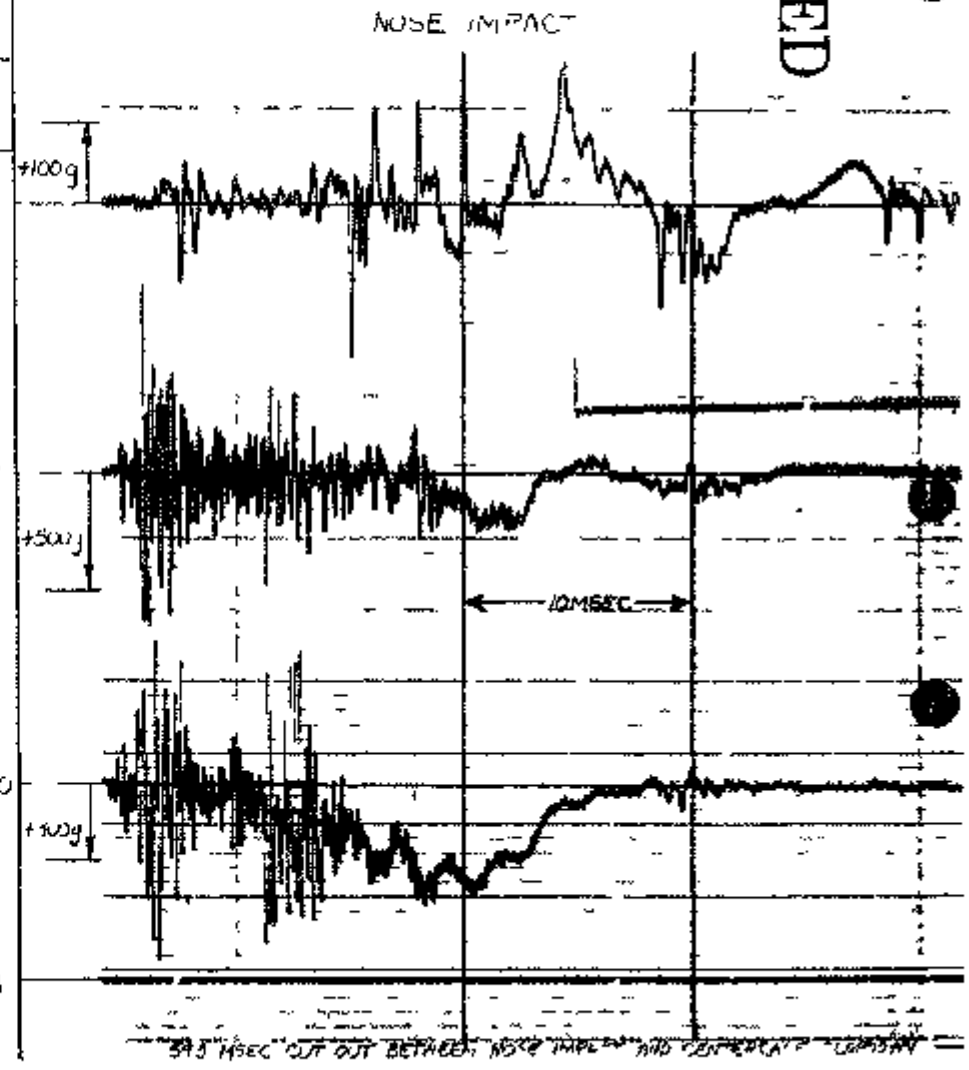

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TABLE II
Page 4

T-11343
Ref. Sym: 5331/357

ACCELERATION DATA
DROP TOWER TEST OF TX-6A NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2225-41 [illegible]	KE-42	—	INOPERATIVE			—	PIT OF PRIMARY LONG.	A-12
	JC-41	—	—	110	160	—	PIT OF PRIMARY 0°-180°	A-13
	JC-83	—	—	40	70	—	PIT OF PRIMARY 90°-270°	A-14
	KE-23	—	—	120	160	—	MC 1588 0°-180°	A-15
	KE-76	15.0	9.5	150	500	+340	MC 1588 LONG.	A-16
ENDEVCO 2225-[illegible] [illegible]	KA-26	15.5	7.9	120	500	+340	MC1589-I LONG	A-17
	JB-29	—	—	160	260	—	MC1589-I 0°-180°	A-18

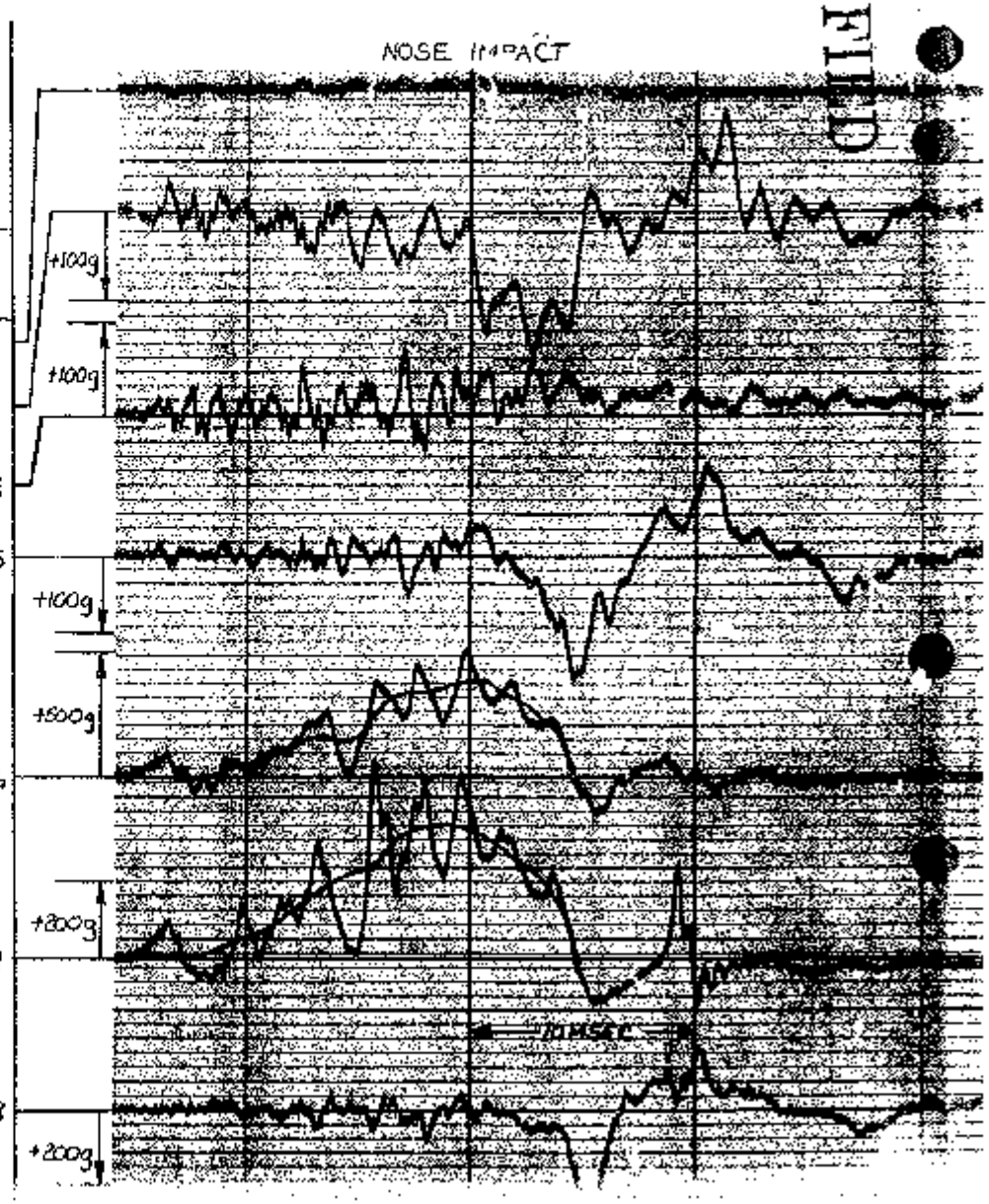

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Table II
Line 5

C-11343
Ref. Sym 7331/35

ACCELERATION DATA
PROP TOWER TEST OF TN-61 NO. TD 21

Name, S/N Name, t_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Paired (g)	Location and Sensing Dir.	Cage No.
[illegible]	[illegible]	—	—	100	130	—	MC1837 0-180°	A-20
	[illegible] 15	[illegible]	10	[illegible]	[illegible]	+300	MC1837 LONG	A-21
[illegible]	[illegible] 21	—	—	30	30	—	MC1837 90-270°	A-22
[illegible]	MA 22	—	—	[illegible]	640	—	AFT BULKHEAD LONG	A-23

[redacted]

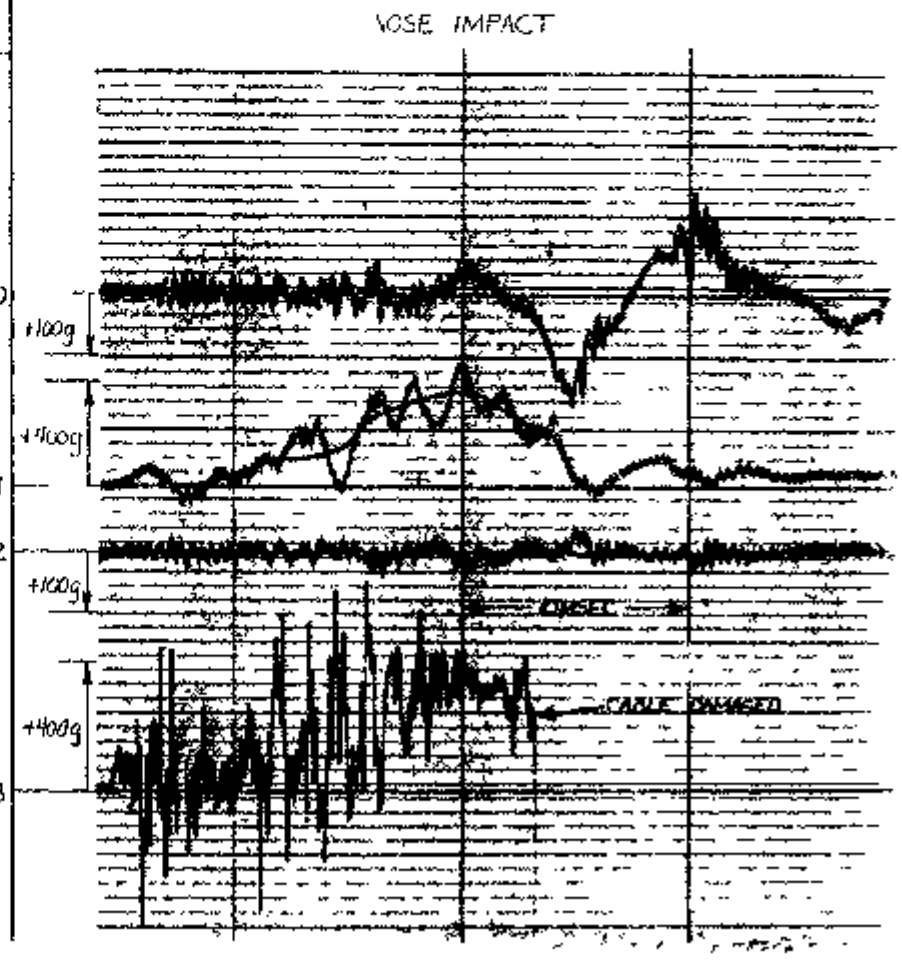

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TABLE II
Page 6

T-11343
Ref. Sym: 7931/357

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n	Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2225-2 50KC 16,000 g KF 60	—	—	480	210	—	AFT BULKHEAD 0°-180°	A-24
HA 90	—	—	300	430	—	AFT BULKHEAD 90°-270°	A-25

NOSE IMPACT

593 MSEC CUT OUT BETWEEN NOSE IMPACT AND CENTERBASE SHOCK

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TABLE II
Page 7

T-11343
Ref. Svm: 7331/357

ACCELERATION DATA
PROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_q		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2225 MC [illegible]	HA-81	—	—	125	125	—	MC1917-I 0°-180°	A-26
	KB-59	—	—	40	45	—	MC1917-I 90°-270°	A-27
↑	KF 2	—	—	100	130	—	MC1917-II 0-180°	A-28

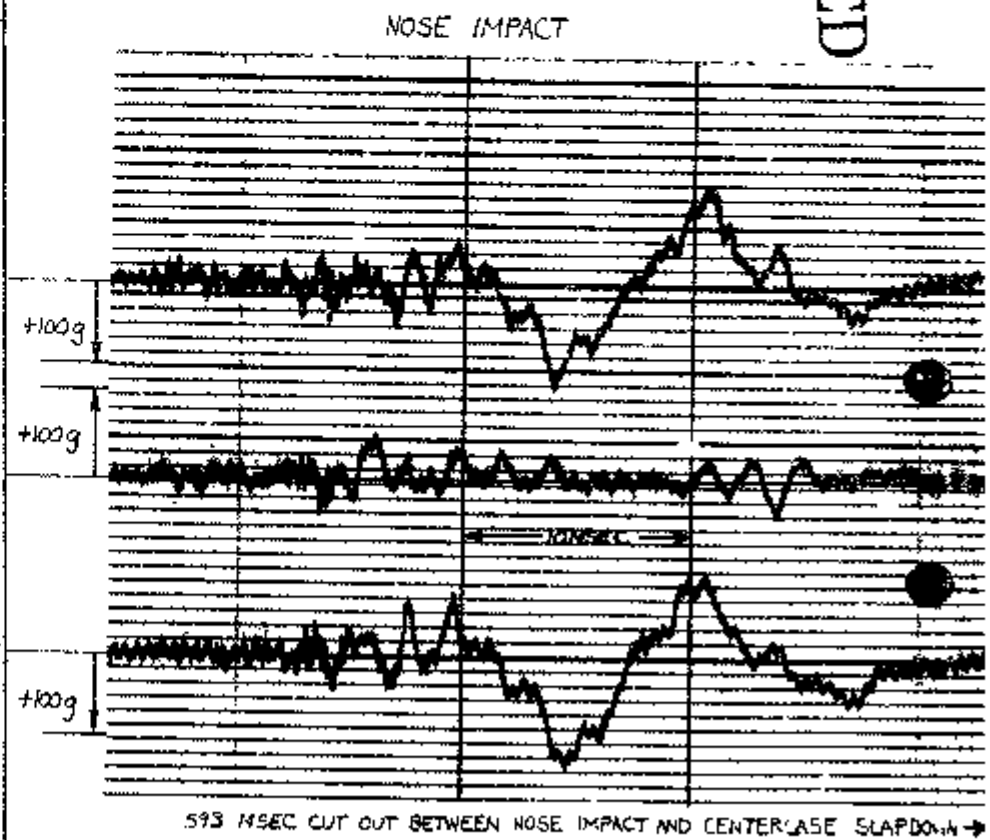

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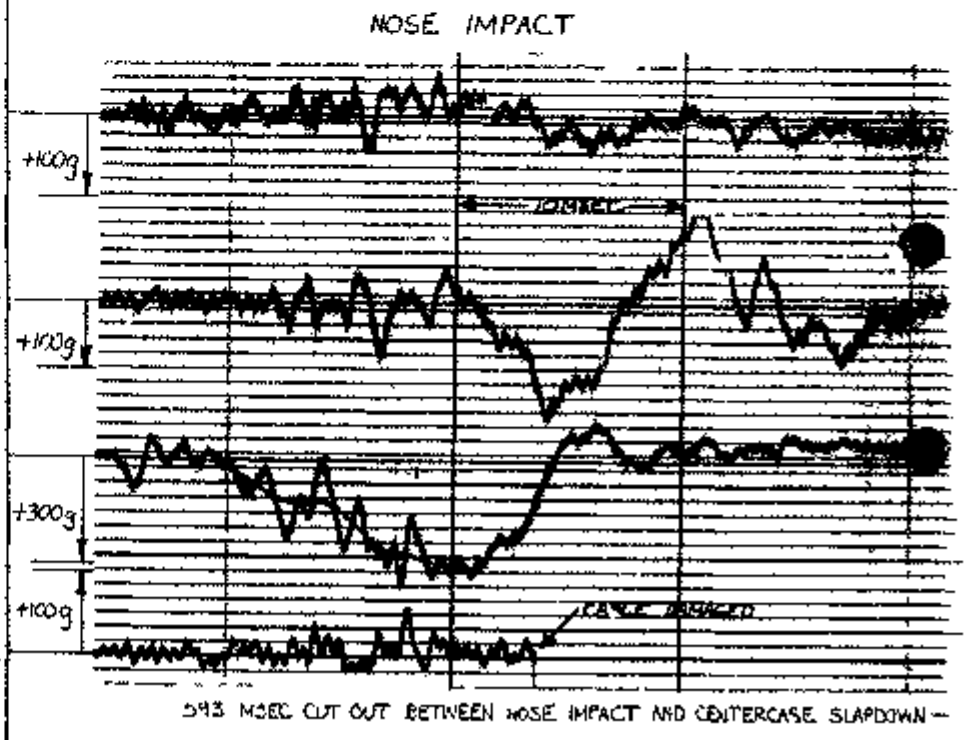
TABLE II
Page 8

T-11343
Ref. Sym. [illegible]

ACCELERATION DATA
DROP TOWER TEST OF FX-81 NO. TD-21

Name, S/N Name, f_n	Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible] KF 1	—	—	55	90	—	MC1917-II 90°-270°	A-29
[illegible] LA 1	—	—	115	115	—	GAS RESERVOIR 0°-180°	A-30
LB C2	110	60	1.5	350	+310	GAS RESERVOIR LONG.	A-31
LB-18	—	—	20	60	—	GAS RESERVOIR 90°-270°	A-32



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[illegible] DATA
[illegible] TD 2[illegible]

[illegible]	[illegible]	Position (sec)	Rise (sec)	Max. − (g)	Max. + (g)	Paired (g)	Location and [illegible]	Cage No.
		—	—	[illegible]	[illegible]	—	MC [illegible]-II [illegible]	A-33
	[illegible]	—	—	[illegible]	12[illegible]	—	MC [illegible]-II [illegible]	A-34
	[illegible]	—	—	[illegible]	[illegible]	—	MC [illegible]-II [illegible]	A-35
	[illegible]	—	—	[illegible]	[illegible]	—	[illegible]-II [illegible]	A-36
	[illegible]	—	—	[illegible]	[illegible]	—	MC [illegible]-II [illegible]	A-37
	[illegible]	—	—	100	[illegible]	—	MC [illegible]-II [illegible]	A-38

[redacted]

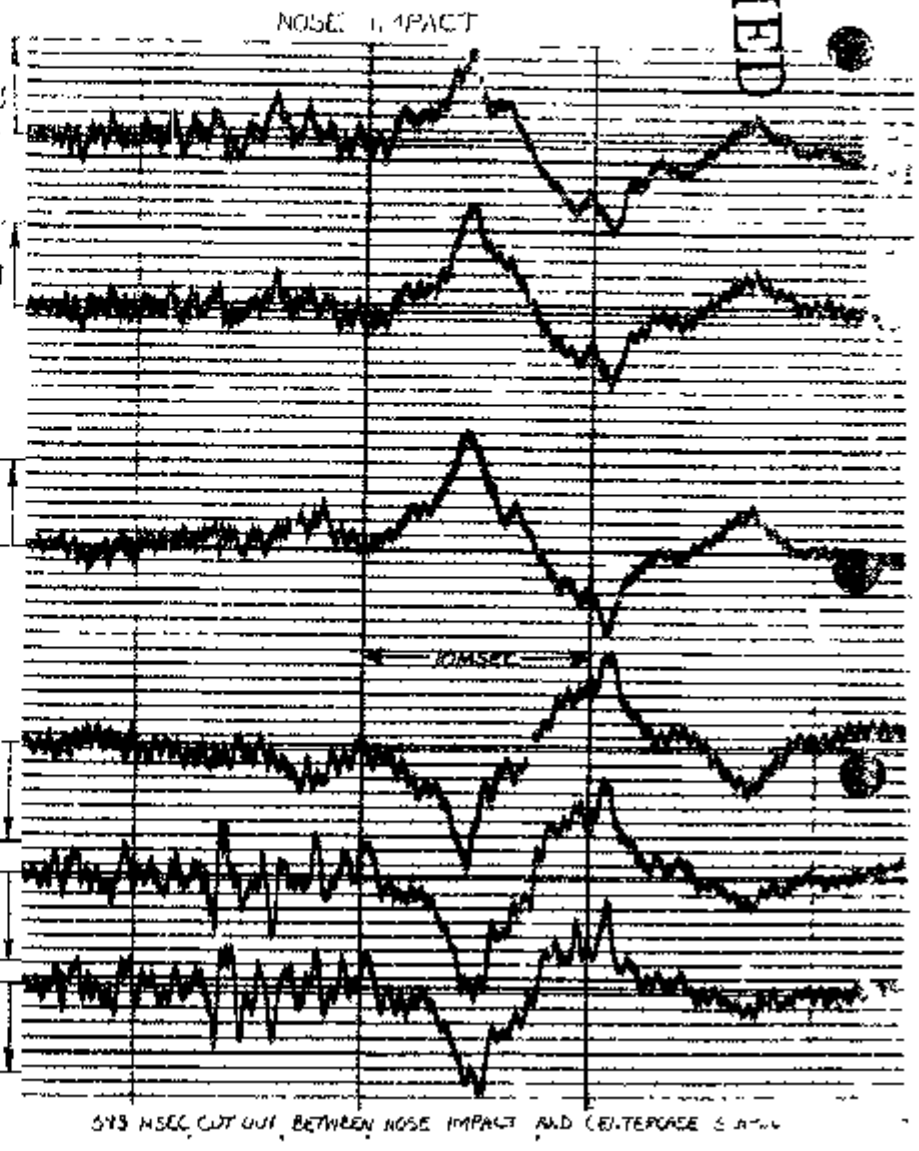

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TABLE II
Page 10

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ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2221M1 45XC 5000g	LA-31	—	—	90	118	—	MC1844-II 90°-270°	A-39
	GC-79	—	—	100	128	—	MC1844-II 90°-270°	A-40
ENDEVCO 2225M2 50XC 10000g	KF-64	—	—	110	310	—	MC1589-II 0°-180°	A-41
	JB-59	—	—	-	530	—	MC1589-II LONG.	A-42
ENDEVCO [illegible]	GC-81	—	—	60	150	—	MC1850 0°-180°	A-43

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NOSE IMPACT

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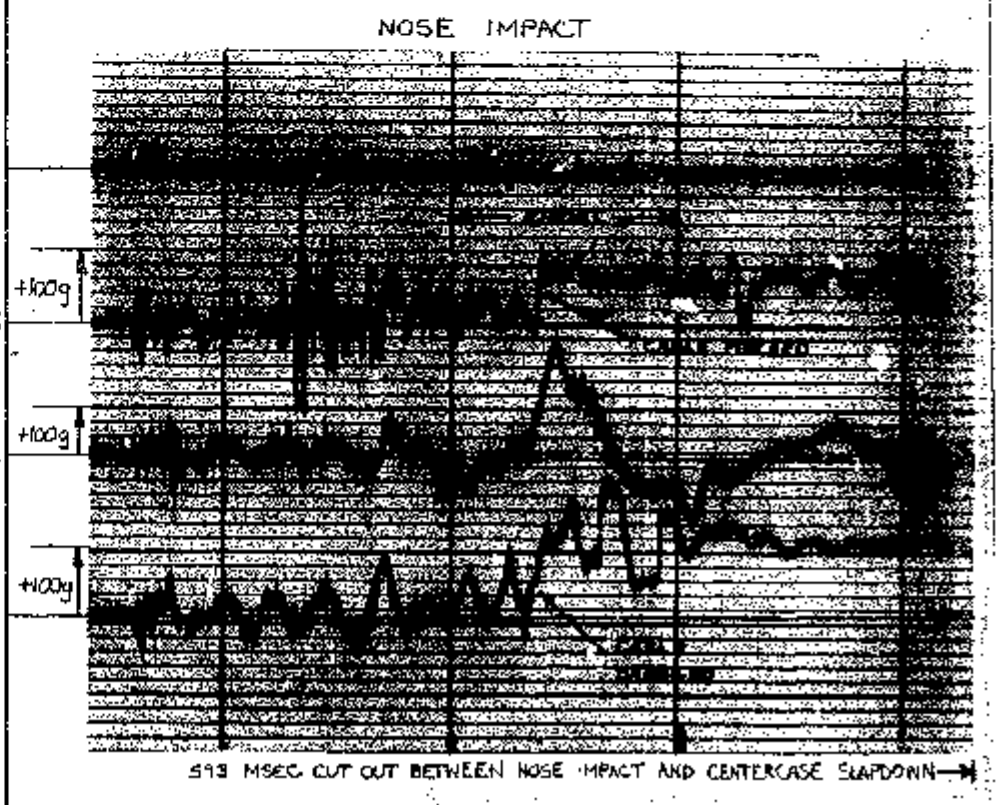
TABLE II
Page II

T-11343
Ref. Sym: 733/357

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2225M1 30AC 1,000 g	GC-59	—	INOPERATIVE			—	MC1850 LONG.	A-44
	LA-26	—	—	110	200	—	MC1850 90°-270°	A-45
ENDEVCO 2225M2 30AC 1,000 g	HA-52	—	—	130	240	—	MC1901 0°-180°	A-46
	HA-10	—	—	CABLE DAMAGED		—	MC1901 90°-270°	A-47

[redacted]



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[illegible]

[illegible]

[illegible] DATA

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Location and Sensing Dir.	Page No.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	MC1834-I 10' C10	A 3
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	A-4
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	A-5

[redacted]

CENTER CASE SLAPDOWN

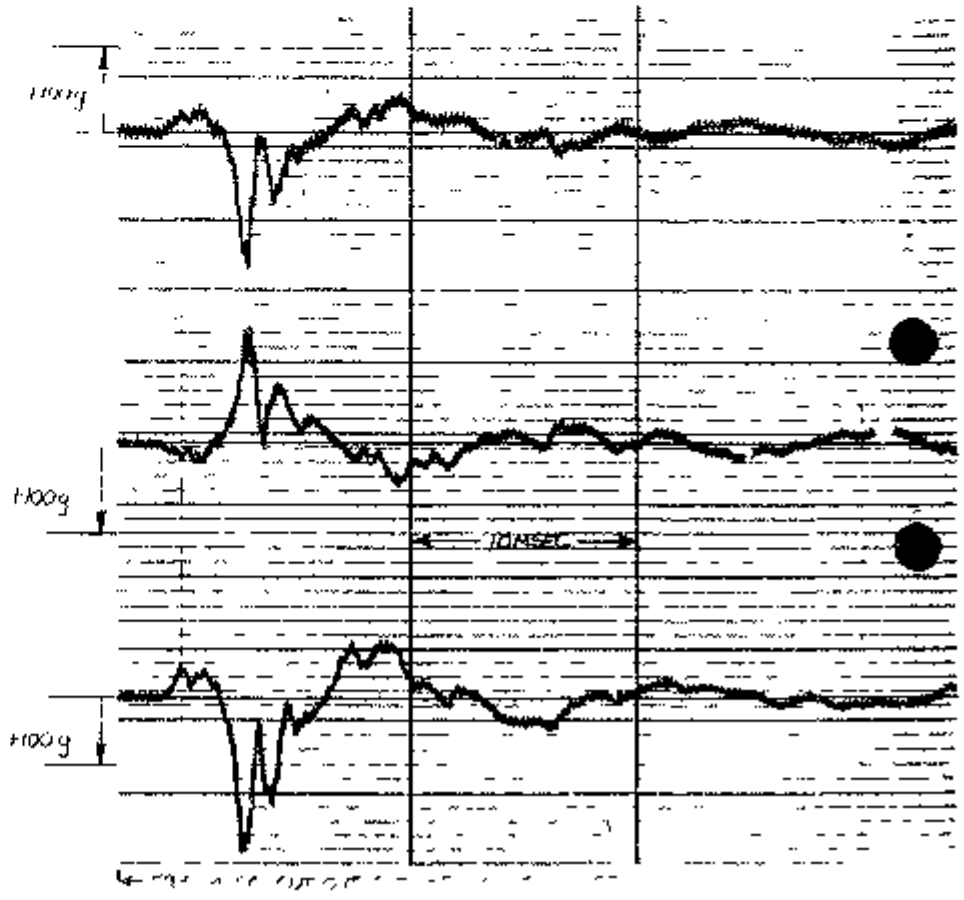

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TABLE [illegible]
Page [illegible]

T-[illegible]
Ref. Sym: [illegible]

ACCELERATION DATA
[illegible] TEST OF TX-61 NO. [illegible]

Tube, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible]	LA-[illegible]	-	-	[illegible]	[illegible]	-	MC1844-I 0°-180°	A-6
[illegible]	LA-[illegible]		-	[illegible]	[illegible]	-	MC1844-I 90°-270°	A-8
[illegible]	[illegible]	-	-	[illegible]	[illegible]	-	FWD BULKHEAD 0°-180°	A-9
[illegible]	TC-30	-	-	[illegible]	[illegible]	-	FWD. BULKHEAD LONG.	A-10

[redacted]

CENTER CASE SLAPDOWN

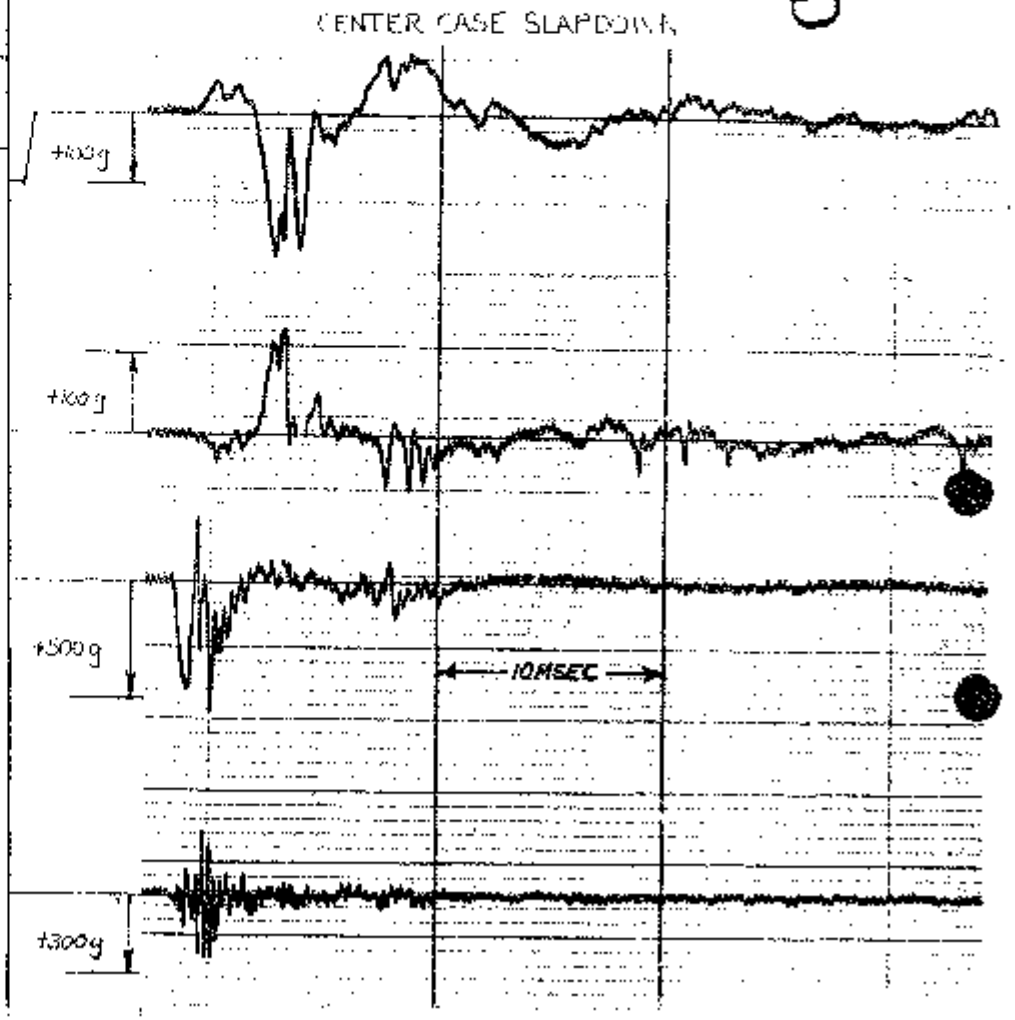

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TABLE III
Page 3

T-11343
Ref. Sym: 733/357

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible]	[illegible]	–	–	60	150	–	PIT OF PRIMARY 90°-270°	A-14
[illegible]	KE-23	–	–	95	260	–	MC1588 0°-180°	A-15
[illegible]	KE-62	–	–	190	230	–	AFT. BULKHEAD 0°-180°	A-24

[redacted]

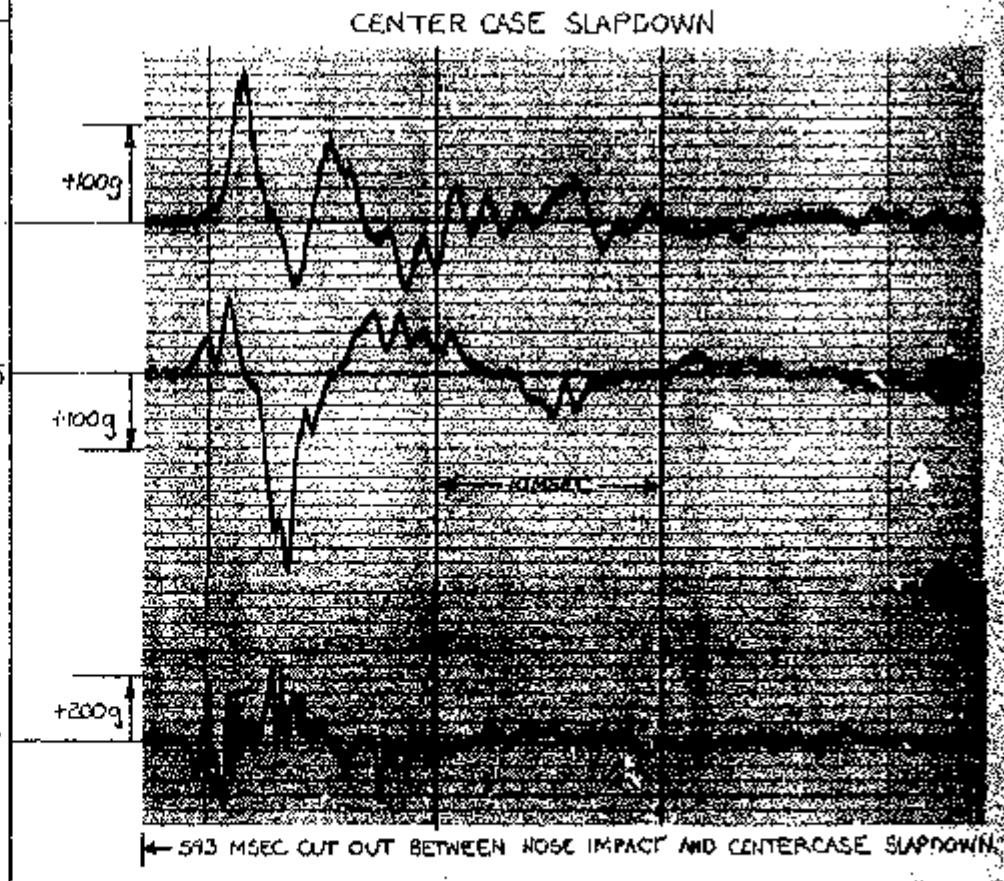

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TABLE III
Page 4

T-11343
Set. [illegible]

ACCELERATION DATA
[illegible] TEST OF TN-01 No. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Paired (g)	Location and Sensing Dir.	Gage No.
[illegible]	[illegible]	-	-	[illegible]	[illegible]	-	MC1917-I 0°-180°	A-26
	[illegible]	-	-	[illegible]	[illegible]	-	MC1917-I 90°-270°	A-27
	[illegible]	-	-	[illegible]	[illegible]	-	MC1917-II 0°-180°	A-28
	KF-51	-	-	80	[illegible]	-	MC1917-II 90°-270°	A-29
[illegible]	LA-[illegible]	-	-	[illegible]	[illegible]	-	GAS RESERVOIR 0°-180°	A-30

[redacted]

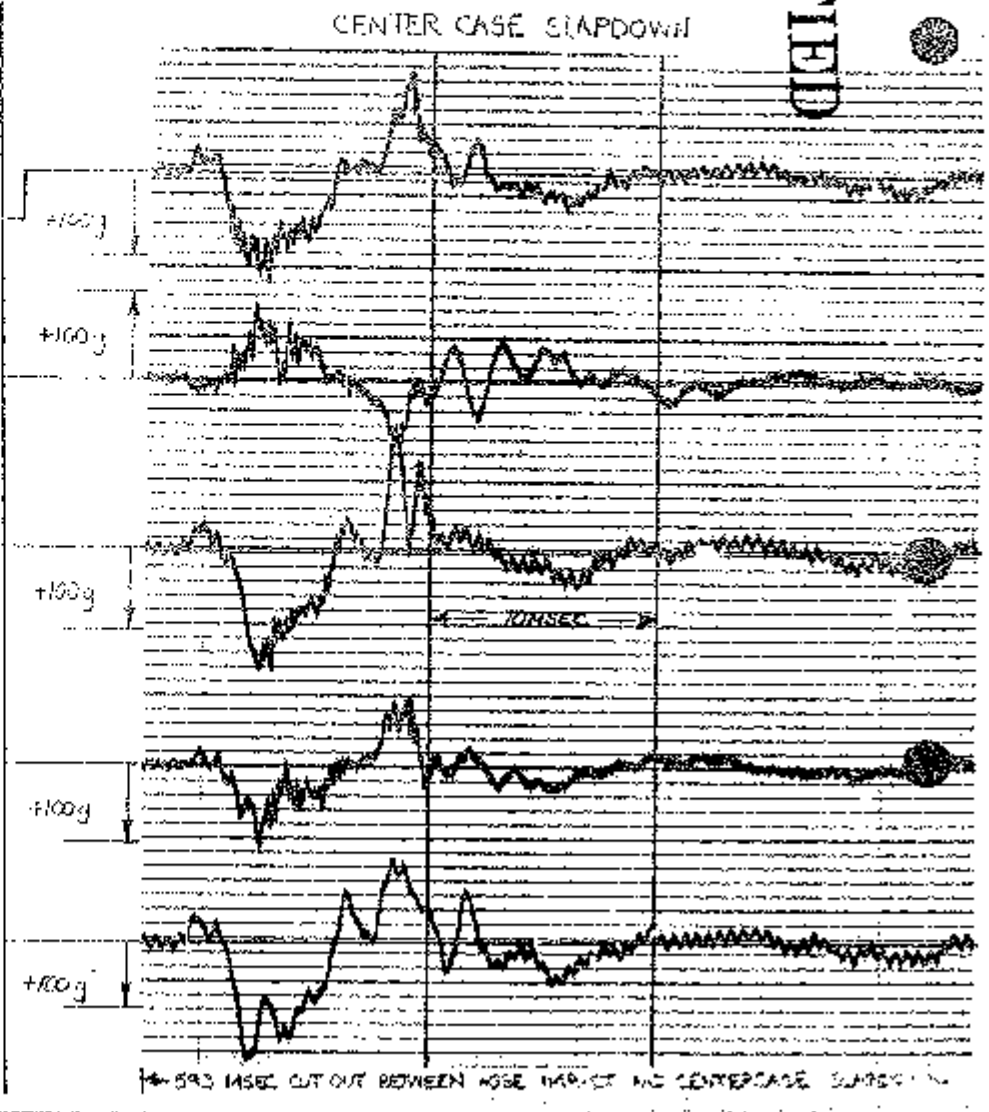

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TABLE III
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ACCELERATION DATA
PROF TOWER TEST OF FX-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. − (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible]	LA-55	-	-	80	240	-	MC1838-II 0°-180°	A-33
	LA-53	-	-	85	225	-	MC1838-II 0°-180°	A-34
	LA-54	-	-	40	10	-	MC1838-II 90°-270°	A-35
	LA-56	-	-	45	110	-	MC1838-II 90°-270°	A-36
	LA-52	-	-	110	220	-	MC1844-II 0°-180°	A-38

[redacted]

CENTER CASE SLAPDOWN

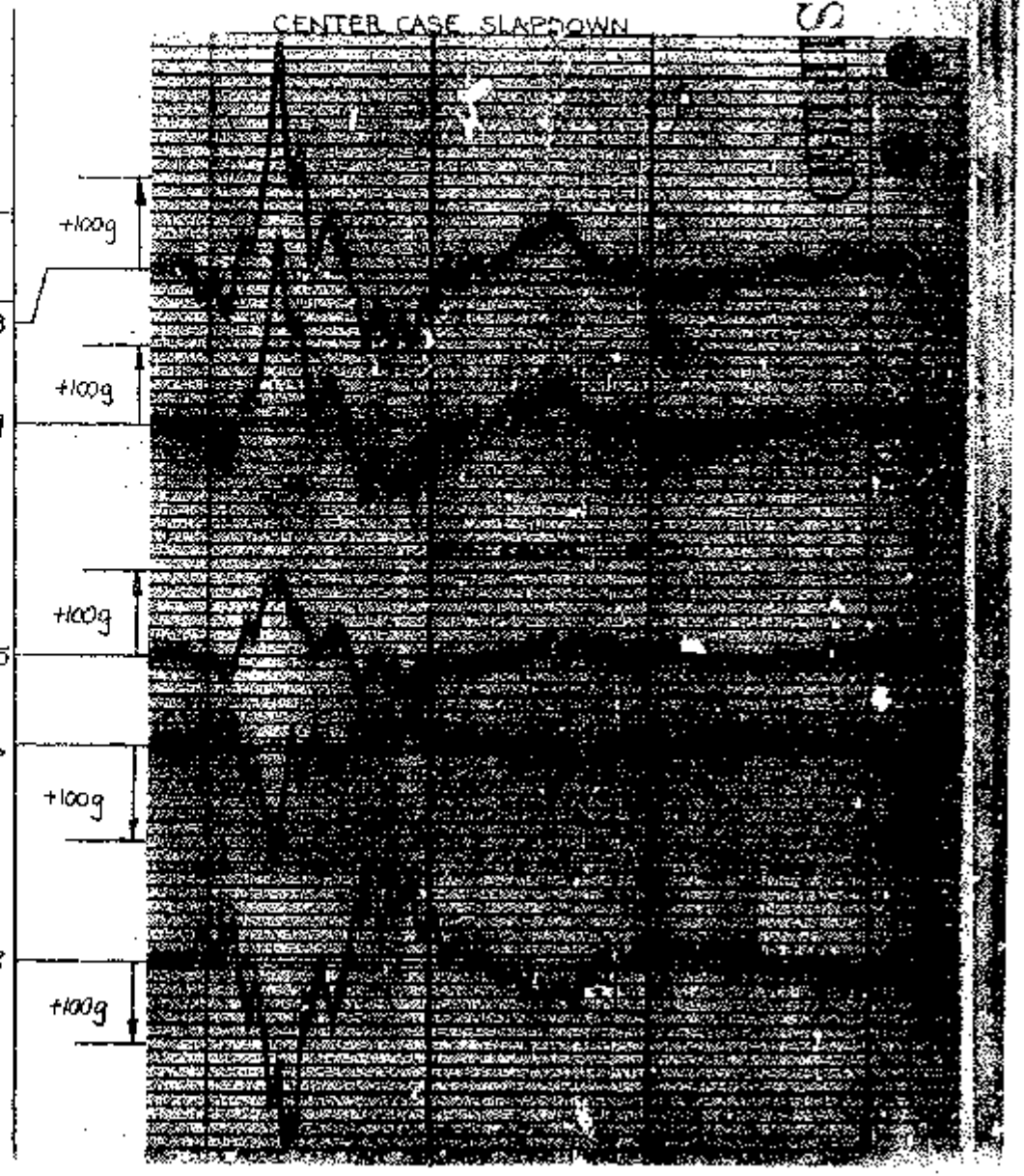

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TABLE III
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T-11343
Ref. Sym: 7331/357

ACCELERATION DATA
PROP TOWER TEST OF TN-61 NO. TD-21

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2225M1 [illegible]	LA-31	–	–	45	85	–	MC1844-II 90°-270°	A-39
	GC-79	–	INOPERATIVE		–	–	MC1844-II 90°-270°	A-40
ENDEVCO 2225M2 [illegible]	PF 64	–	–	140	470	–	MC~~1859~~ 1589-II 0°-180°	A-41

CENTER CASE SLAPDOWN

←593 MSEC CUT OUT BETWEEN NOSE IMPACT AND CENTERCASE SLAPDOWN.

[redacted]

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