[redacted]

UNCLASSIFIED

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO U	AUTHORITY W.C. Layne
Emelda Seph 5/14/98 PERSON CHANGING MARKING & DATE	RECORD ID 98SN1984
W.C. Layne 5/12/98 PERSON VERIFYING MARKING & DATE	DATED 5/7/98

| PROGRAM | | |

[redacted]

UNCLASSIFIED

T-11237

Table of Contents

	Page
Introduction	3
Summary	3
Setup and Procedure	3
Results	4
Figure 1 - TX-61 Rigged to Carriage	5
Figure 2 - TX-61 Nose After the Test	6
Figure 3 - TX-61 Nose After the Test	7
Table I, pages 1-8, Accelerometer Locations and Acceleration Data	8-15
Table II - Strain Gage Locations and Strain Data	16

UNCLASSIFIED

[redacted]

DROP TOWER TEST OF TX-61 NO. TD-19 (U)

Introduction

The object of this test was to determine the response of the TX-61 to simulated laydown conditions for structural evaluation. The TX-61 was drop tested using the Variable Angle Guide Wire Facility at the 185-foot Drop Tower in Area III. Using this facility, it was possible to guide the TX-61 along a predetermined flight path to the target thereby closely controlling the unit's impact attitude. The impact angle was 6° off the vertical with the tail lagging. The velocity components at impact onto the horizontal target were 86 ft/sec vertical and 47 ft/sec horizontal. These velocities were calculated using the known constant acceleration of the carriage (26.7 ft/sec) obtained during calibration tests. The TX-61 was instrumented with 46 accelerometers and two strain gages.

The test was requested by J. C. Taggart, 1512, in an Environmental Test Request, dated July 14, 1965. The drop test was conducted on August 25, 1965. Dale Buchanan, 7331, was the Test Project Engineer.

Summary

No damage was sustained by the TX-61 during this test which simulated laydown with a side wind. The maximum acceleration recorded in the component section at initial impact was 370 g on the MC 1837 in the longitudinal direction. No data were recorded at slapdown because the instrumentation cables were broken shortly after initial impact. Changes in the test setup are expected to prevent a recurrence of this problem.

Test Setup and Procedures

The TX-61 was rigged to the guided carriage with its longitudinal axis vertical as shown in Figure 1. The lugs were on the weapon's leading side and this orientation produced a shock at slapdown directed from 0° toward 180°. A test was performed by hoisting the carriage and TX-61 to a predetermined position on the guide cable and then releasing the carriage. The carriage (and TX-61) accelerated down the guide cable until the TX-61 was a few feet above target at which time it dropped from the carriage and continued in free flight to the target. The carriage was stopped by its arresting gear. The angle of the guide cable (with respect to horizontal) can be changed to achieve different trajectories. For this test, the angle was 60°.

Test setup and checkout procedures were performed according to the Drop Tower Operating Procedures which are on file at the Tower Control Building (6505).

The TX-61 was instrumented with 46 piezoelectric accelerometers in the locations and sensing directions described in Table I, pages 1 through 8, and with two strain gages in the locations and sensing directions described in Table II.

Test data were recorded on C.E.C. Type VR 2600 tape recorders having a frequency response of D.C. to 40 kcps and were played back in the Area III playback center located in Building 6540. The playback records were obtained using 5 kcps low-pass filters. A comprehensive description of the accelerometers, strain gages, data recording and playback equipment is available from file at the Drop Tower Control Building (6505) under the T-number of this report.

High-speed photographic instrumentation was provided by Org. 7226 and prints of the films were forwarded to the requesting organization, 1512. The originals of the films have been filed by the Industrial Photographic Division, 3665, under Work Order No. 87308.

Results

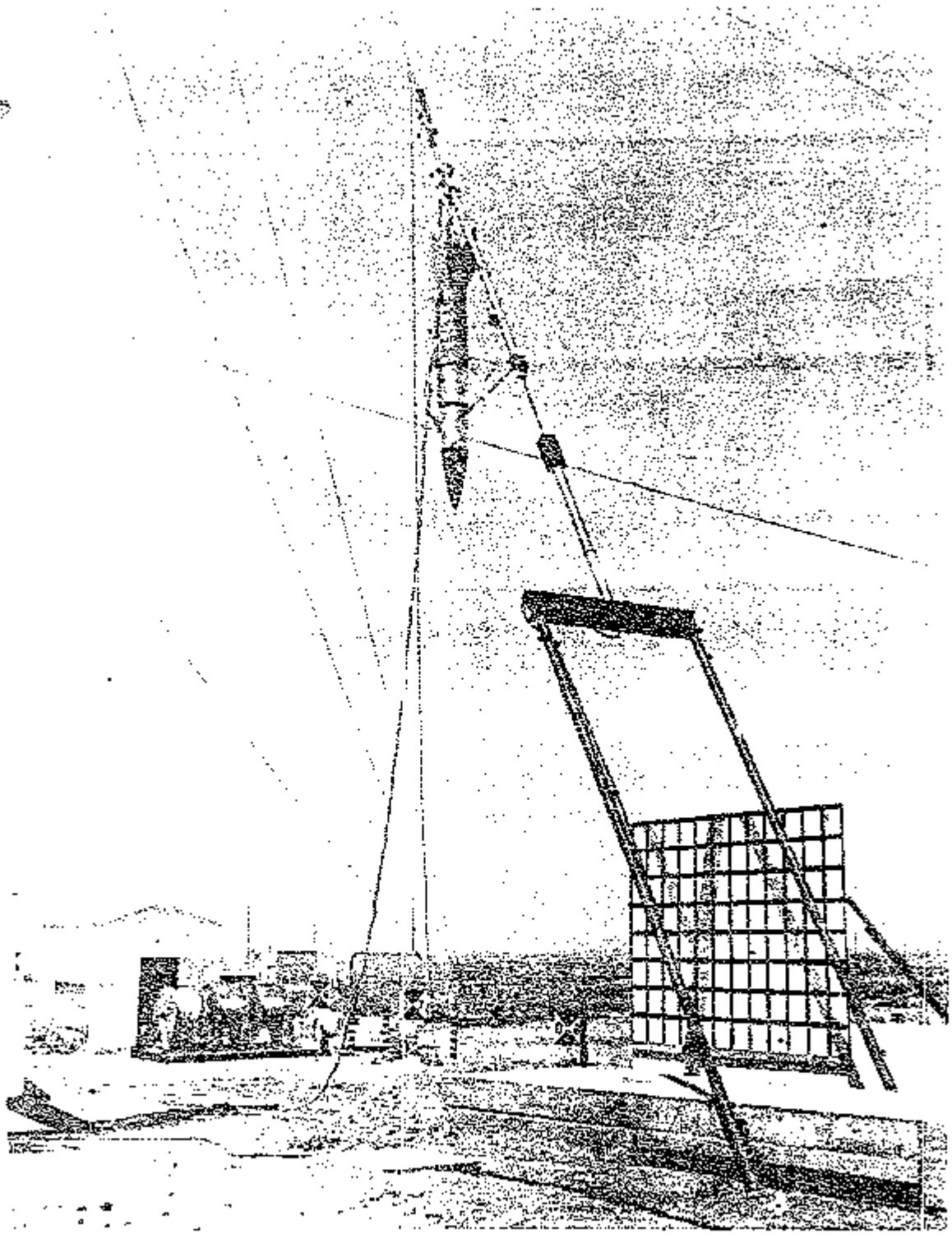
The acceleration test records and tabulated data are presented in Table I, pages 1 through 8, while the strain gage data are presented in Table II. The test records show only the initial impact shock because the instrumentation cables were broken between the initial impact shock and the slapdown shock. Since all the accelerometers mounted on the NO components and the aft end of the center case section were calibrated to record the large accelerations associated with slapdown, the acceleration signatures at initial impact were necessarily quite small.

Motion picture data indicated that at impact, the attitude of the TX-61 was 5° off vertical with the nose leading. Visual observation during the test and inspections of the TX-61 after the test (there was no slapdown induced structural damage), indicated the slapdown shock was relatively minor. No damage of any kind was sustained by the TX-61 case. Photographs taken of the TX-61 nose after the test are shown in Figures 2 and 3.

CGS:7325:ya

[redacted]

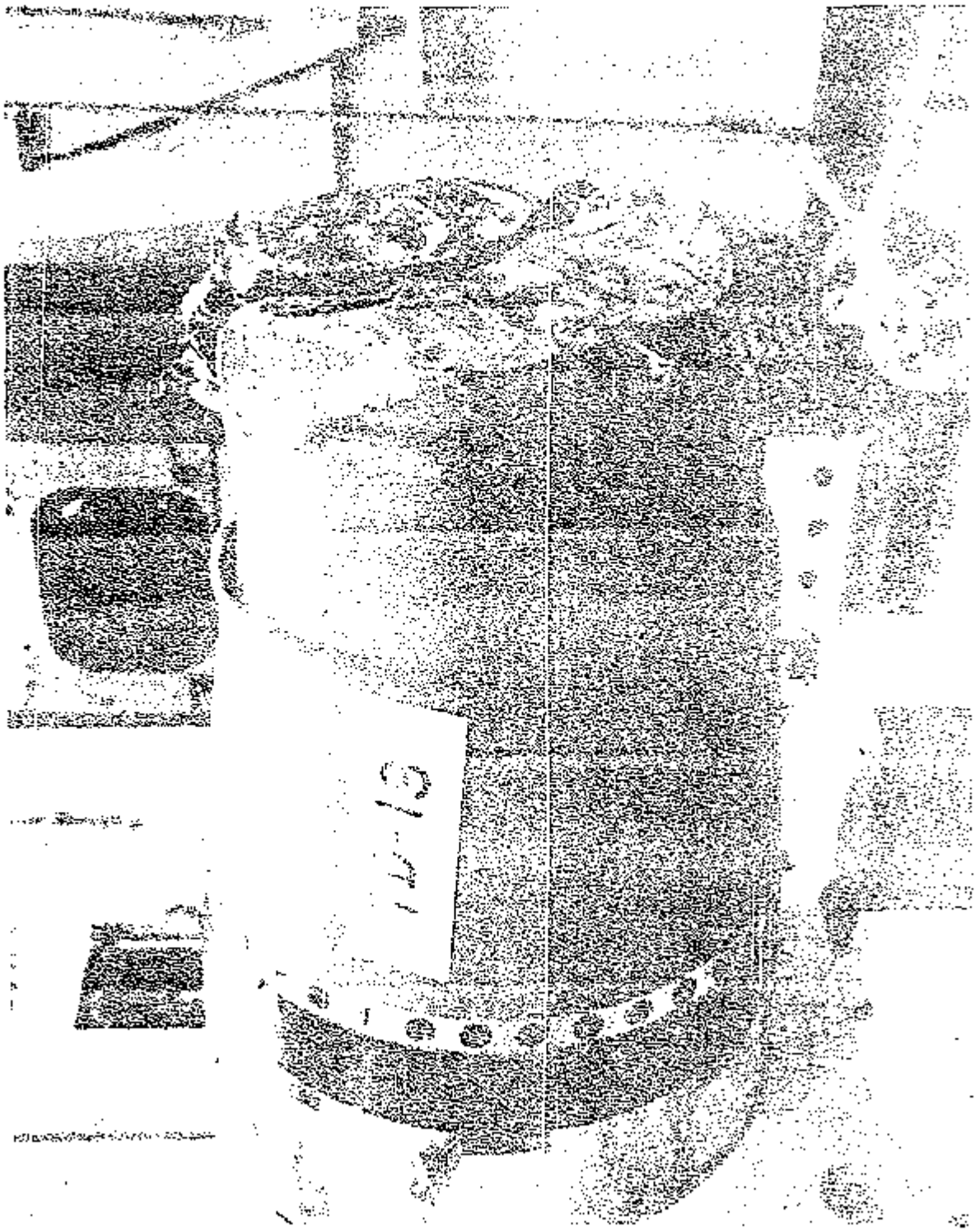
UNCLASSIFIED



[redacted]

UNCLASSIFIED

[redacted] UNCLASSIFIED



[redacted] UNCLASSIFIED

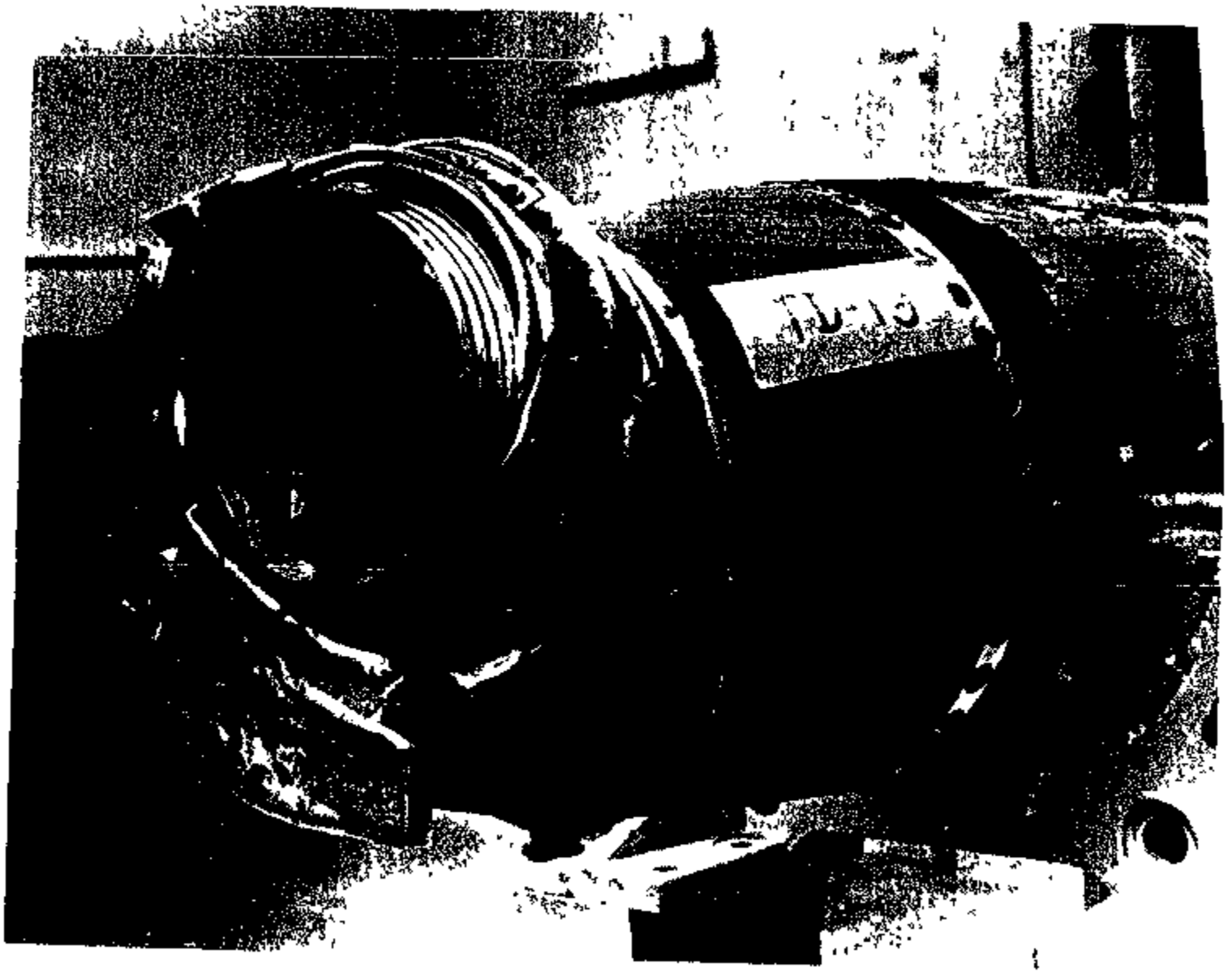


FIGURE 3. [illegible] OF TX-61 (ID-19 [illegible] EST.

T-11237
[illegible] 7331/351

UNCLASSIFIED

[redacted]

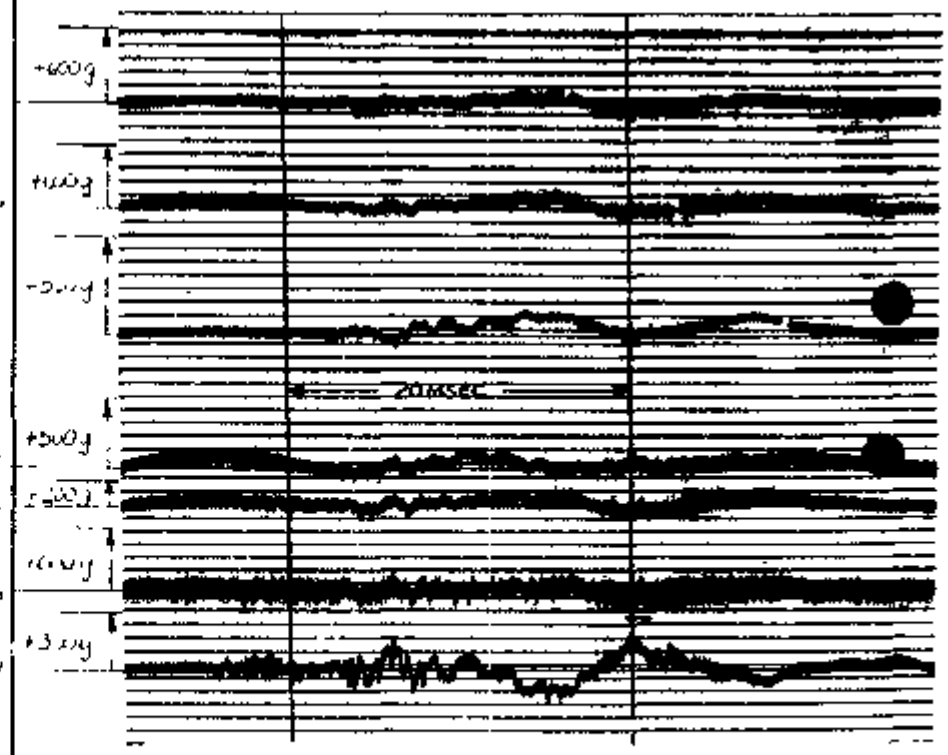
TABLE I
Page 1

T-H 37
Ref. Sym: 7331/351

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

Make, S/N Range, f_n	Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible]	--	—	-	[illegible]	—	[illegible]	A-1
[illegible]	---	—			--	[illegible]	A-2
						[illegible]	A-3
		—	[illegible]		—	[illegible]	A-4
	---	—	[illegible]	[illegible]	—	[illegible]	A-5
		—	[illegible]		—	[illegible]	A-6
				[illegible]	—	[illegible]	A-7

RECORD FILTERED TO 5 KC



UNCLASSIFIED

UNCLASSIFIED

[redacted]

TABLE I
Page 2

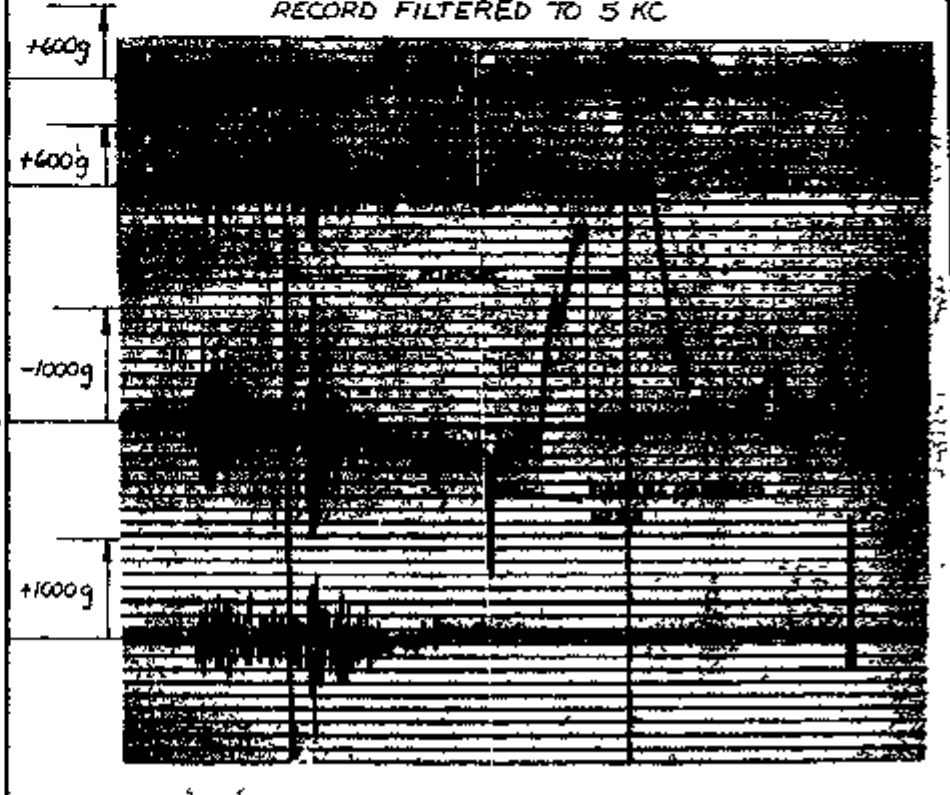
T-11237
Ref. Sym: 7332/352

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-19

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2221M1 15KC 4000g	LA22	—	—	140	120	—	MC 1844 I 90°-270°	A-8
ENDEVCO 2225M2 15KC 16000g	JC13	—	—	670	700	—	FWD HARD CASE 0°-180°	A-9
	JC30	—	—	1100	950	295	FWD HARD CASE LONG.	A-10
	JC24	—	—	980	580	—	FWD HARD CASE 90°-270°	A-11

[redacted]

RECORD FILTERED TO 5 KC



UNCLASSIFIED

UNCLASSIFIED

[redacted]

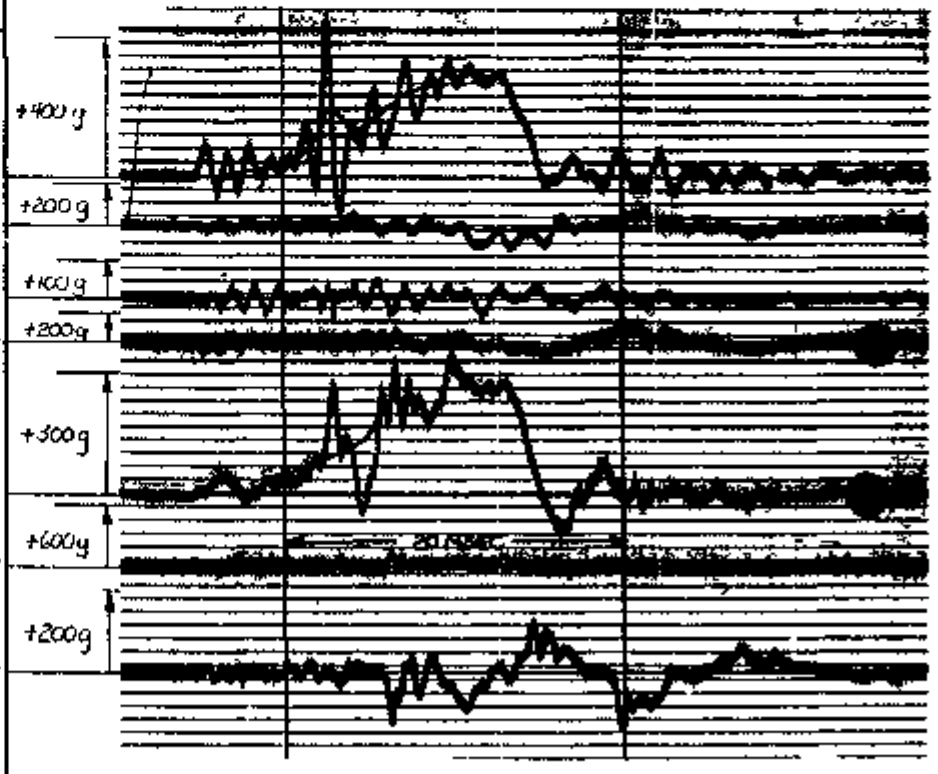
TABLE I
Page 3

T-11c37
Ref. Sym: 7331/351

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-19

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO [illegible]	KE-2	[illegible]	[illegible]	85	430	290	PIT OF PRIMARY LONG	A-12
[illegible]	[illegible]	—	—	100	[illegible]	—	PIT OF PRIMARY 0-180°	A-13
	[illegible]	—	—	45	45	—	PIT OF PRIMARY 90°-270°	A-14
	[illegible]	—	—	90	100	—	MC1588-I 0°-180°	A-15
⊥	KE7[illegible]	[illegible]	[illegible]	80	120	320	MC1588 I LONG	A-16
[illegible]	[illegible]	—	—	[illegible]	130	—	MC1589 I [illegible]	A-17
⊥	JB-1	—	—	[illegible]	[illegible]	—	MC1589 I LONG	A-18

RECORD FILTERED TO 5 KC.



[redacted]

UNCLASSIFIED

UNCLASSIFIED

[redacted]

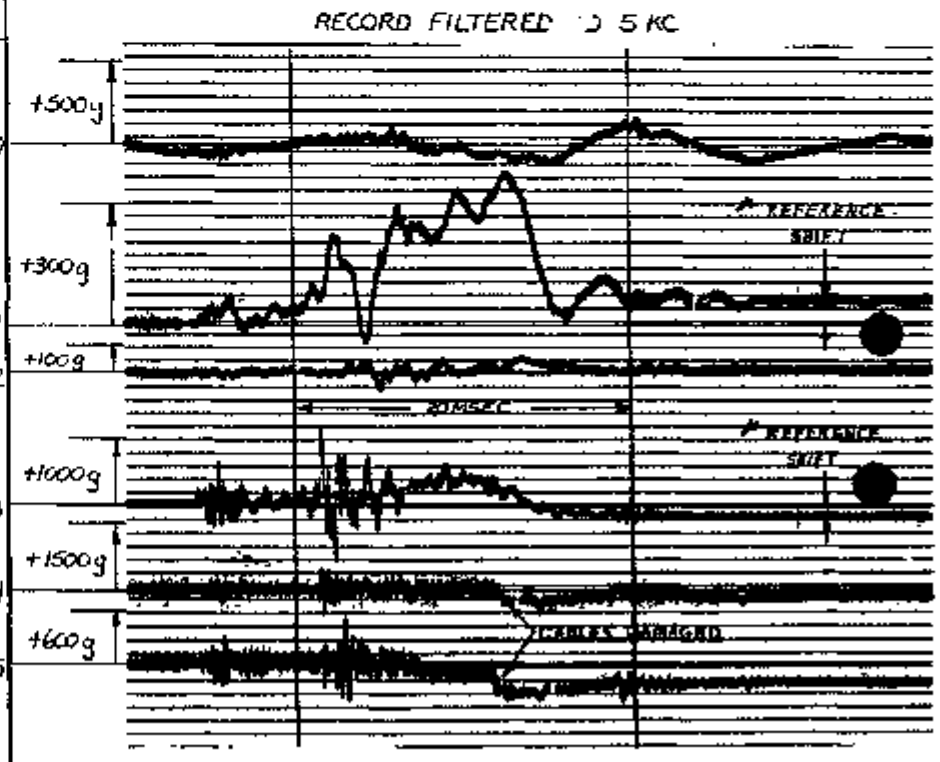
TABLE I
Page 4

T-11237
Ref. Sym: 7331/351

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-19

Make, S/N Range, f_n	Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO TC-1	—	—	100	150	—	MC1837 0°-180°	A-20
FE35	17.4	13.5	40*	370*	370*	MC1837 LONG.	A-21
FE31	—	—	60	50	—	MC1837 90°-270°	A-22
ENDEVCO M422			500*	1170*	400*	AFT BULKHEAD LONG	A-23
KF62	—	—	500	400	—	AFT BULKHEAD 0°-180°	A-24
HA90	—	—	400	450	—	AFT BULKHEAD 90°-270°	A-25

[redacted]



UNCLASSIFIED

UNCLASSIFIED

[redacted]

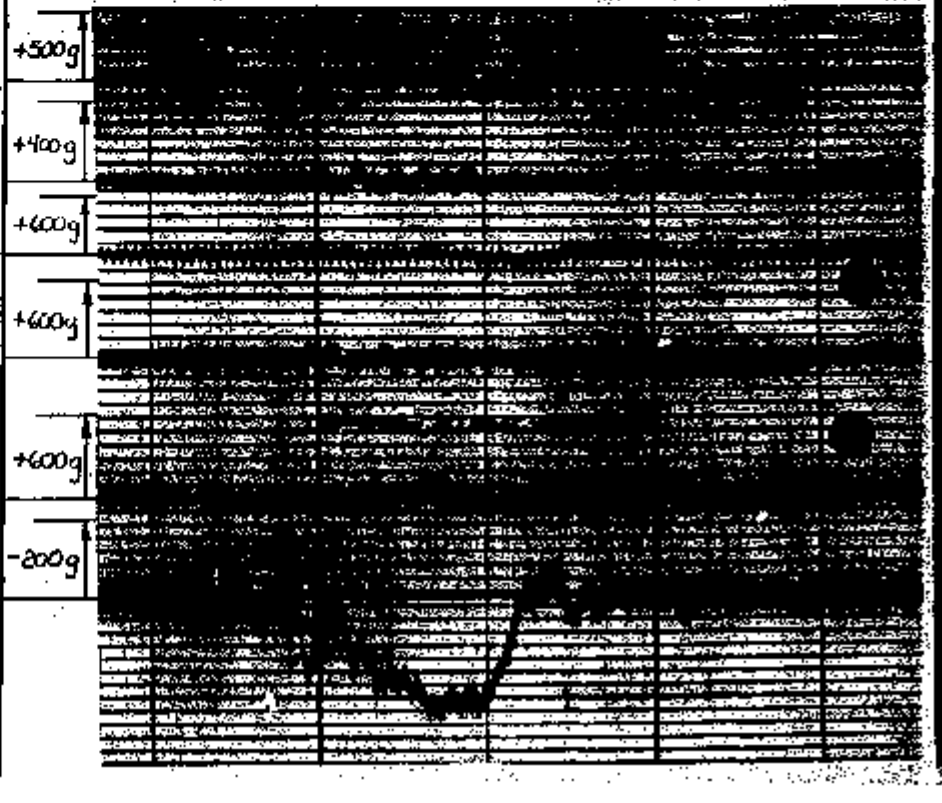
TABLE I
Page 5

T-11237
Ref. Sym: 7331/351

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-19

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2285M2 [illegible]	[illegible]	—	—	100	100	—	MC1917-I 0°-180°	A-26
	[illegible]	—	—	40	70	—	MC1917-I 90°-270°	A-27
	KF22	—	—	100	100	—	MC1917-II 0°-180°	A-28
↓	KF51	—	—	60	70	—	MC1917-II 90°-270°	A-29
ENDEVCO [illegible] 45KC 6000g	LA-14	—	—	90	90	—	GAS RESERVOIR 0°-180°	A-30
↓	LB02	15.8	10.0	50	290	285	GAS RESERVOIR LONG.	A-31

RECORD FILTERED TO 5 KC.



[redacted]

UNCLASSIFIED

UNCLASSIFIED

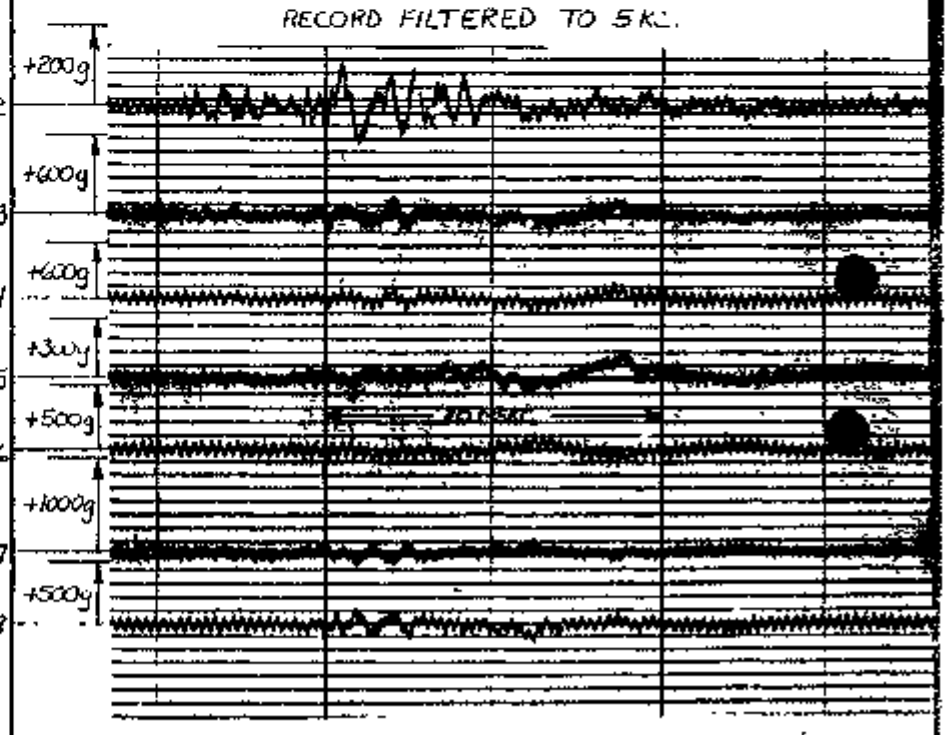
[redacted]

TABLE I
Page 6

T-11237
Ref. Sym: 7331/351

ACCELERATION DATA
DROP TOWER TEST OF TX-61 NO. TD-19

Make, S/N Range, f_o	Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Faired (g)	Location and Sensing Dir.	Gage No.
[illegible] LA12	—	—	80	105	—	CAS RESERVOIR 90°-270°	A-32
LA33	—	—	60	60	—	MC1836-II 0°-180°	A-33
LA34	—	—	70	100	—	MC1838-II [illegible]	A-34
LA34	—	—	40	100	—	MC1839-II 90°-270°	A-35
LA35	—	—	70	70	—	MC1838-II 90°-270°	A-36
LA19	—	—	100	50	—	MC1844-II 0°-180°	A-37
LA32	—	—	90	90	—	MC1844-II 0°-180°	A-38



[redacted]

UNCLASSIFIED

UNCLASSIFIED

[redacted]

TABLE I
Page 7

T-11237
Ref. Sym: 7331/351

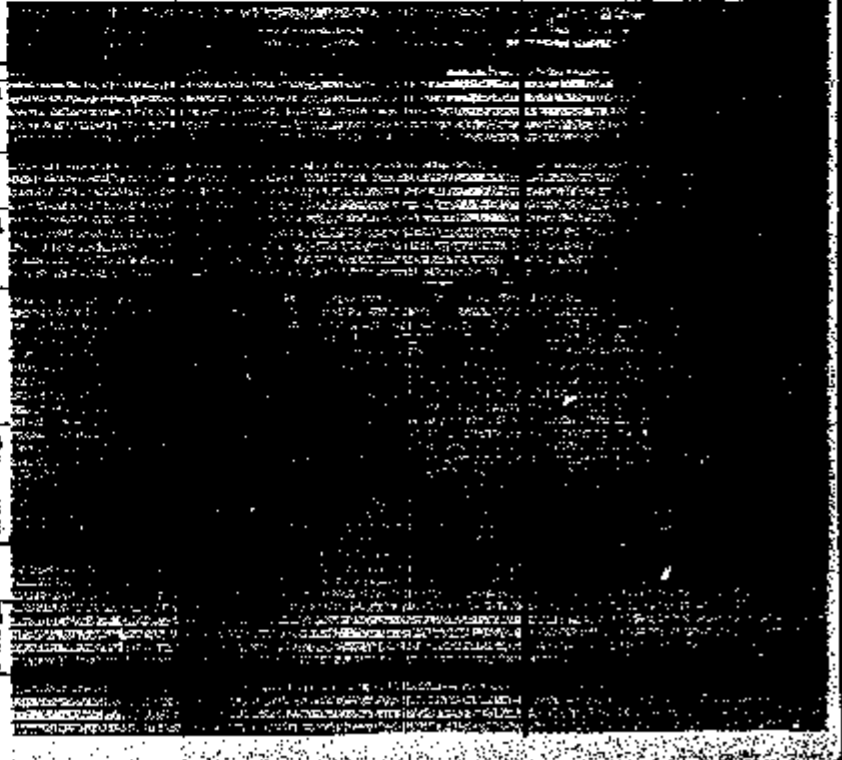
ACCELERATION DATA
DROP TOWER TEST OF TX-81 NO. TD-19

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Paired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2221M1 45KC 600g	LA31		INOPERATIVE				MC1844-II 90°-270°	A-39
	GC77	—	—	60	70	—	MC1844-II 90°-270°	A-40
ENDEVCO 2225-10 90KC 1600g	MF44	—	—	200	250	—	MC1589-II 0°-180°	A-41
	J859	16.0	7.8	90	430	280	MC1589-II LONG.	A-42
ENDEVCO 2221M1 45KC 600g	GC81	—	—	50	50	—	MC1850 0°-180°	A-43

[redacted]

+400g
+600g
+300g
+600g

RECORD FILTERED TO 5 KC.



UNCLASSIFIED

[redacted]

TABLE I
Page 8

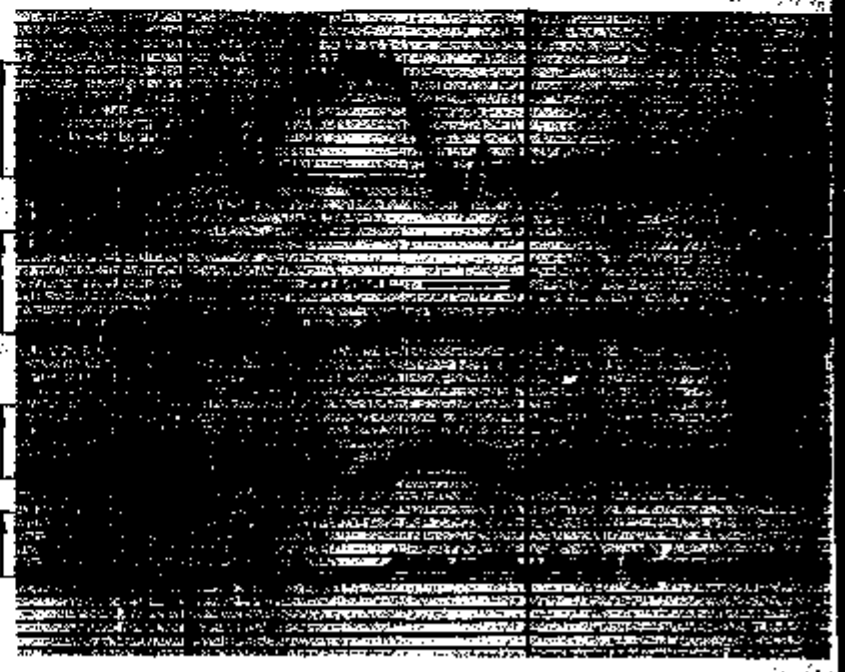
T-11237
Ref. Sym: 7331/351

ACCELERATION DATA
DROP TOWER TEST OF TX-81 NO. 7D-19

Make, S/N Range, f_n		Duration (msec)	Rise (msec)	Max. - (g)	Max. + (g)	Paired (g)	Location and Sensing Dir.	Gage No.
ENDEVCO 2221M1 45KC 6000g	GC59	15.6	10.8	60	340	310	MC1850 LONG.	A-44
	LA26	—	—	90	90	—	MC1850 90°-270°	A-45
ENDEVCO 2225M2 80KC 16000g	HA52	—	—	50	110	—	MC1901 0°-180°	A-46
	HA10	—	—	40	60	—	MC1901 90°-270°	A-47

[redacted]

RECORD FILTERED TO 5KC



UNCLASSIFIED

UNCLASSIFIED

[redacted]

TABLE II
Page 1

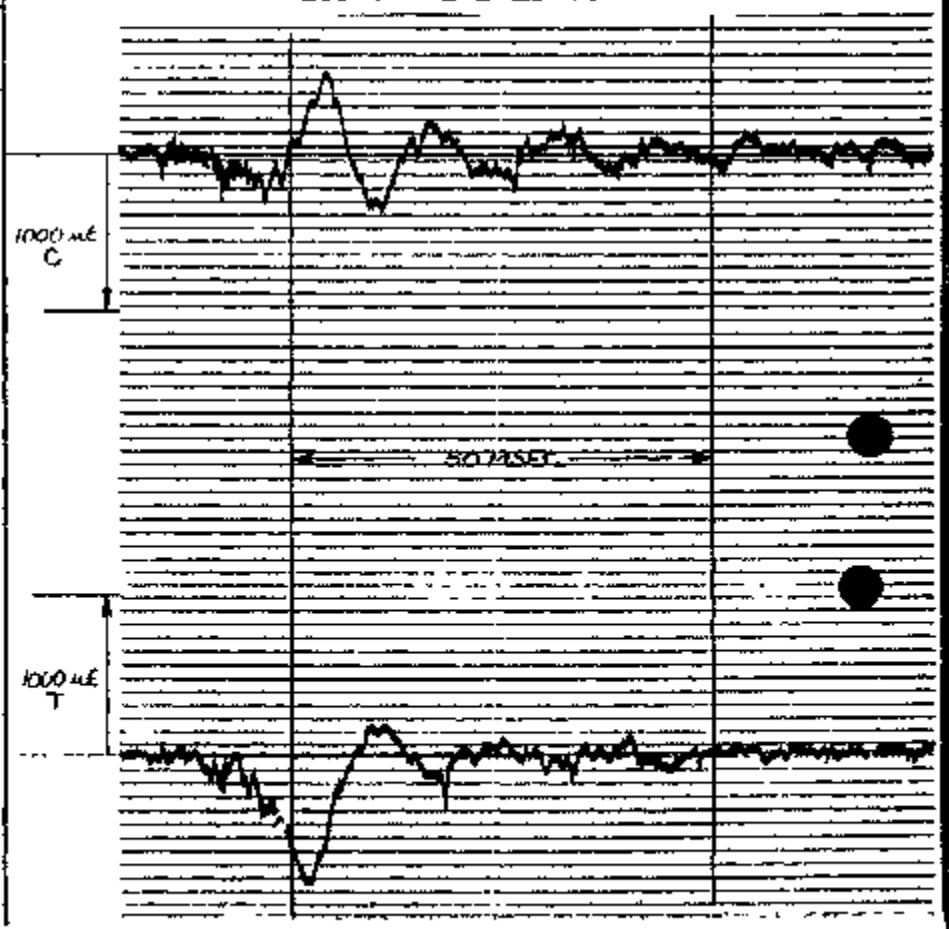
T-11257
Ref. Syn: 7331/351

STRAIN GAGE DATA
DROP TOWER TEST OF TX-61 NO. TD-19

	Strain ($\mu\epsilon$)	Angular Station No.	Location and Sensing Dir.	Gage No.
	340 (C) 490 (T)	0°	OUTSIDE CASE STA. 55.0 LONG	S-1
	710 170 (T)	180	OUTSIDE CASE STA 55.0 LONG.	S-2

[redacted]

RECORD FILTERED TO 10 KC.



UNCLASSIFIED

GENERAL DYNAMICS