[redacted] UNCLASSIFIED

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 6/23/98
Authority: DDC ADD
Name: B. Cramer
1st Review Date: 6/24/98
Authority: ADD
Name: W Layne
Determination (Circle Number):
1. Classification Retained
2. Classification Changed to: UNCL
3. Contains No DOE Classified Information
4. Coordinate With:
5. Contains UCAI?
6. Comments: DECLASSIFY

APR 13 1960

XW-54, 3-2
Project No. T-16647
Case No. 866.00
Ref. Sym: 1613(200)

ID: DISTRIBUTION

Re: Vibration Test of the XW-54/GAR-11

The XW-54/GAR-11 with a pentek simulated H. E. assembly, was subjected to vibration tests in three mutually perpendicular warhead axes. This test was conducted for proof of structural adequacy with input accelerations taken from fly-around test data. No structural damage was found as a result of this test.

Procedure and Results

A resonance survey was conducted in each axis with the input control taken from the accelerometer located in the pit of the warhead. These input accelerations were taken from a fly-around test, (Ref: 1225(192) SCDR-227-29 Report of the Inert XW-54/GAR-11 Captive Fly-Around Test, dated 12/59).

Figures 1 and 2 show the definition of axes and accelerometer location and Table I lists the sequence of events during this test. Table II lists the location of the accelerometers and their direction of sensitivity with respect to the direction or axis of vibration.

The accelerations recorded during this test are recorded in Tables III, IV and V.

RECEIVED APR 14 1960 RECORD FILE

INVENTORIED SEP 14 '65

1613 Project Engineer: R. F. HARLAN - 1623-3

Approved by: R. S. HOOPER - 1613-3

RFH:1613-3:ec

DISTRIBUTION:
1/7A - V. E. Blake, Jr., 1225
Attn: H. G. Togami
2/7A - W. A. Gardner, 1610
3/7A - D. M. Bruce, 1282
Attn: D. W. Doak
4/7A - J. M. Wiesen, 1442
5/7A - J. R. Harrison, 5523
6/7A - R. S. Gauler, GMX-3, LASL
7/7A - R. E. Smeltzer, 3421-3

INVENTORIED AUG 6 1964 3427-1

RECORD FILE
XW-54/Falcon 3-2

PROGRAM 05460 CATEGORY 30213 ORG. 000 DATE 6027

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
Emelda Selph 7/1/98
PERSON CHANGING MARKING & DATE
W C Layne 7/1/98
PERSON VERIFYING MARKING & DATE
AUTHORITY: W. C. Layne
RECORD ID: 98SN2623
DATED: 6/24/98

1612

[redacted]

[redacted] UNCLASSIFIED

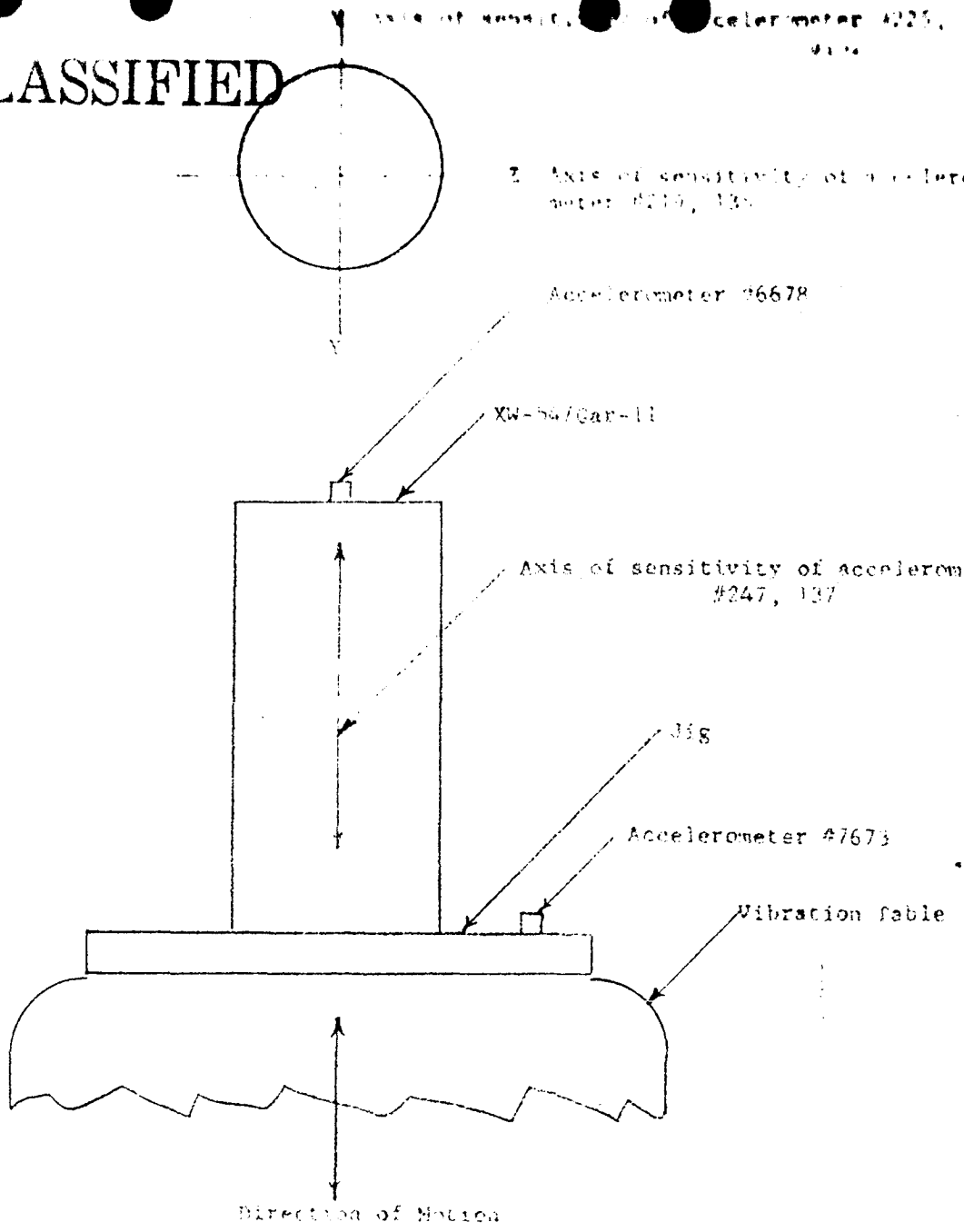

FIGURE 1 - SKETCH SHOWING SETUP FOR VIBRATION IN THE X OR LONGITUDINAL AXIS AND SENSITIVE DIRECTIONS OF ACCELEROMETERS DURING VIBRATION OF THE XW-54/CAR-11

Project No. T-16647
Ref. Sym: 1613(200)

[redacted]

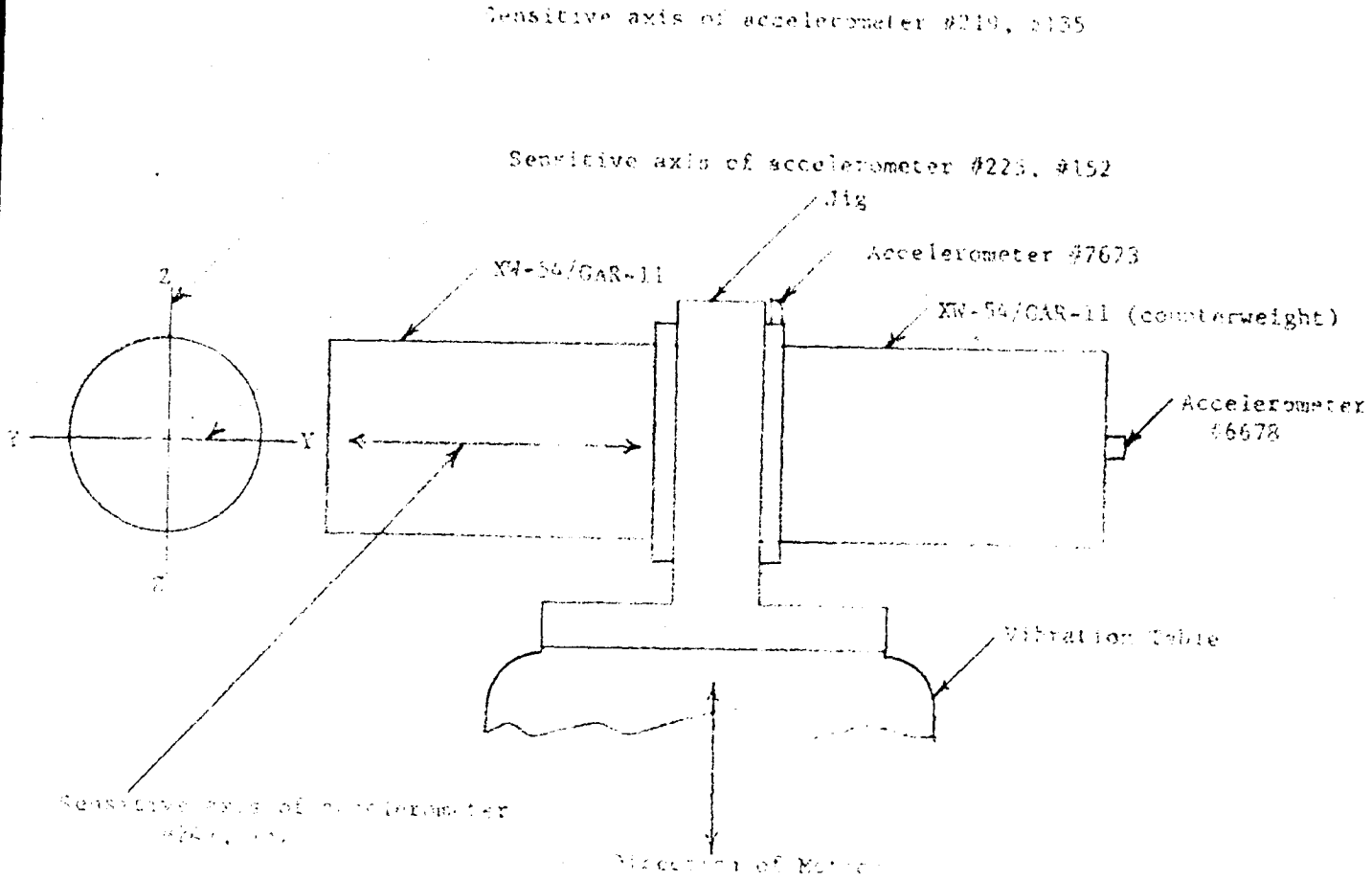

FIGURE 2 - SKETCH SHOWING SETUP FOR VIBRATION IN THE Z OR LATERAL AXIS AND SENSITIVE DIRECTIONS OF ACCELEROMETERS. FOR VIBRATION IN THE Y OR VERTICAL AXIS, THE [illegible] ROTATED [illegible] ABOUT THE LONGITUDINAL AXIS OF VIBRATION OF THE XW-54 GAR-11

Project No. [illegible]-16647
[illegible] (200)

Project No. T-16647
Ref. Sym: 1613(200)

TABLE I - PROCEDURE AND SEQUENCE FOR VIBRATION OF THE XN-54/GAR-11

DIRECTION OF VIBRATION	RESONANCE SURVEY TIME	FREQUENCY (CPS)	TIME AT RESONANCE
X	95 min.	1910	30 min.
Y	125 min.	1900 *	30 min.
Y		380	30 min.
Z	105 min.	1565	30 min.

* Not a true resonance point but a harmonic.

The input accelerations were supposed to have been as follows:

1.5 g	10-80 cps
2.0 g	80-240 cps
1.5 g	240-300 cps
1.0 g	300-2000 cps

The actual input accelerations are approximately the same as these and are shown in Tables XII, IV and V.

[redacted]

Project No. T-16647
Ref. Sym: 1613(200)

TABLE II - LOCATION OF ACCELEROMETERS FOR VIBRATION TEST OF THE XM-54/CAR-11

ACCEL. NO.	LOCATION	DIRECTION OF SENSITIVITY DURING VIBRATION IN THE X, Y, Z AXIS		
225	Pit	Y	Y (input)	Y
219	Pit	Z	Z	Z (input)
247	Pit	X (input)	X	X
152	Firing Set	Y	Y	Y
135	Firing Set	Z	Z	Z
137	Firing Set	X	X	X
7673 *	Jig	X	Y	Z
6678 *	Top of XM-54	X	Y	Z

* These two accelerometers were Endevco accelerometers. All others were Gianite accelerometers.

SC 3640-E (3-61)
WORK SHEET

TABLE III - ACCELERATIONS RECORDED IN THE X-AXIS - VIBRATION TEST OF THE 1617 XW-54/GAR-11

Project No. T-166-7
Ref. Sym: 1613(20)

Freq. C.P.S.	ACCELEROMETER NUMBER 225	219	247	152	135	137	7673	6678
10	0.06	0.06	1.50	0.04	0.05	1.56	1.58	1.63
[illegible]	0.05	0.05	1.56	0.03	0.04	1.50	1.52	1.53
40	0.05	0.06	1.50	0.02	0.05	1.50	1.61	1.60
50	0.10	0.09	1.56	0.04	0.06	1.47	1.60	1.63
60	0.06	0.06	1.50	0.04	0.04	1.45	1.52	1.58
70	0.06	0.07	2.00	0.07	0.14	1.89	1.98	2.08
[illegible]	0.11	0.09	2.00	0.05	0.12	1.84	1.81	2.02
[illegible]	0.08	0.08	2.00	0.10	0.05	1.87	1.73	2.00
[illegible]	0.06	0.07	2.00	0.11	0.14	1.82	1.60	1.90
[illegible]	0.05	0.06	2.00	0.13	0.14	1.73	1.54	1.83
[illegible]	0.06	0.07	2.02	0.10	0.11	1.71	1.45	1.83
[illegible]	0.04	0.04	2.01	0.14	0.09	1.61	1.35	1.75
[illegible]	0.11	0.06	2.00	0.20	0.23	1.52	1.18	1.65
[illegible]	0.10	0.04	1.42	0.21	0.07	1.01	0.86	1.15
[illegible]	0.08	0.05	1.50	0.29	0.09	1.11	0.65	1.14
[illegible]	0.11	0.06	1.65	0.17	0.23	1.20	0.65	1.23
[illegible]	0.10	0.04	1.50	0.17	0.12	1.01	0.48	1.01
[illegible]	0.11	0.06	1.50	0.30	0.49	0.94	0.39	0.92
[illegible]	0.16	0.03	1.61	0.17	0.21	0.90	0.30	0.90
[illegible]	0.09	0.06	1.20	0.28	0.14	0.65	0.13	0.64
[illegible]	0.15	0.02	1.50	0.49	0.16	0.58	0.07	0.62
[illegible]	0.36	0.06	1.50	1.01	0.32	0.50	0.05	0.50
[illegible]	—	—	—	—	—	—	—	—
[illegible]	0.19	0.03	1.80	1.08	0.60	0.65	0.50	0.42
[illegible]	0.27	0.05	1.84	0.60	1.57	0.94	0.30	0.66
[illegible]	0.24	0.04	1.71	0.24	1.15	0.56	0.32	0.37

UNCLASSIFIED

UNCLASSIFIED

2

SC 3640-E (3-59)
WORK SHEET

(TABLE III CONTINUED)

Ref. Sym: 1613(200)

ACCELEROMETER NUMBER

Avg. C.P.D.	225	219	247	152	135	137	7673	6678
500	0.06	0.09	1.00	0.73	1.61	1.29	0.29	0.25
600	0.08	0.11	1.00	0.49	0.57	0.65	0.55	0.32
650	0.11	0.21	1.08	0.19	0.48	0.19	0.48	0.64
700	0.12	0.15	1.00	0.14	0.32	0.06	0.35	1.05
750	0.09	0.09	0.92	0.12	0.42	0.20	0.10	1.60
800	0.22	0.11	1.00	0.38	0.54	0.39	0.28	1.70
850	0.42	0.19	1.00	1.70	1.38	1.34	0.82	1.50
900	0.11	0.31	1.00	0.64	1.89	0.76	1.05	2.15
950	0.06	0.28	1.00	0.51	1.05	1.06	2.45	2.40
1000	0.05	0.06	1.00	0.40	0.13	1.38	3.10	2.90
1050	0.06	0.06	1.00	0.31	0.11	1.66	4.00	3.30
1100	0.06	0.06	1.00	0.13	0.52	1.89	5.20	3.80
1150	0.06	0.06	1.00	1.03	0.55	3.64	6.40	4.30
1200	0.05	0.06	1.00	0.50	0.35	0.81	7.90	5.00
1250	0.06	0.07	1.00	0.38	0.35	1.13	9.60	5.90
1300	0.07	0.08	1.00	0.45	0.67	1.47	11.20	7.00
1350	0.05	0.09	1.00	0.64	0.88	1.57	12.80	8.70
1400	0.06	0.07	1.00	0.89	0.99	1.64	14.10	11.30
1450	0.16	0.12	1.00	1.35	0.92	2.26	14.50	18.00
1500	0.29	0.29	1.00	1.88	2.07	1.13	12.00	59.00
1550	0.26	0.31	1.00	1.01	4.06	4.52	9.00	18.00
1600	0.41	0.62	1.00	2.75	7.60	5.76	12.50	7.00
1650	4.68	2.87	1.00	1.83	2.76	14.75	102.00	31.50
1700	6.19	2.22	1.00	16.05	32.26	23.04	120.00	20.00
1750	3.67	1.57	1.00	16.97	28.11	23.96	125.00	6.60
1800	4.47	1.11	0.50	8.94	11.06	9.22	76.00	2.70

UNCLASSIFIED

UNCLASSIFIED

SC 3449-E (8-59)
WORK SHEET

(TABLE III CONTINUED)

Project No. T-1667
Ref. Sym: 1613(200)

	Sig C.P.T.	Accelerometer Number 255	219	247	152	135	137	7613	6678
1	1850	0.92	0.76	0.50	11.31	13.44	15.21	60.00	1.45
2	1960	0.63	0.29	0.50	6.08	11.29	32.26	56.00	1.25
3	1950	0.78	0.14	0.50	6.42	5.16	25.35	62.00	1.35
4	2000	0.67	0.20	0.50	0.57	4.24	19.82	76.00	2.60
5	1750	2.75	2.08	0.50	16.05	26.27	22.12	96.00	7.60
6	1910	0.76	0.26	0.50	7.57	9.22	32.26	60.00	1.70
7									
8									
9									
10									
11		ALL VALUES ARE GIVEN IN g's.							
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

UNCLASSIFIED

UNCLASSIFIED

SC 3540-E (3-59)
WORK SHEET

TABLE IV - ACCELERATIONS RECORDED IN THE Y-AXIS - VIBRATION TEST OF THE XW-54/GAR-11

Project No. T-16647
Ref. Sym: 1613(200)

1620

	ACCELEROMETER NUMBER							
Freq.	[illegible]	29	[illegible]	152	135	137	7663	6678
10	1.50	[illegible]	0.20	1.51	0.07	0.08	1.58	1.58
20	1.50	0.55	0.14	1.52	0.08	0.06	1.65	1.60
40	1.50	[illegible]	0.09	1.54	0.09	0.07	1.66	1.55
60	1.50	0.55	0.08	1.47	0.06	0.10	1.65	1.62
80	1.50	0.50	0.06	1.38	0.12	0.17	1.42	1.65
100	2.00	0.72	0.05	1.74	0.19	0.18	1.68	2.30
120	[illegible]	0.37	0.08	1.47	0.16	0.16	1.35	2.26
140	[illegible]	0.44	0.23	1.42	0.10	0.29	1.17	2.35
160	[illegible]	0.69	0.16	1.06	0.08	0.33	0.67	2.55
180	[illegible]	0.64	0.11	0.77	0.09	0.39	0.29	2.68
[illegible]	1.93	0.59	0.12	0.45	0.15	0.46	0.14	2.80
[illegible]	2.00	0.58	0.19	0.15	0.09	0.52	0.56	3.05
[illegible]	[illegible]	0.44	0.22	0.44	0.32	0.67	1.04	3.40
[illegible]	1.50	1.16	0.21	0.83	0.29	0.65	1.14	2.80
250	1.50	0.88	0.29	1.50	0.34	0.80	1.48	3.30
[illegible]	1.50	0.77	0.44	2.29	0.24	0.88	1.90	3.62
[illegible]	1.50	0.72	0.44	3.67	0.52	0.99	2.25	4.10
[illegible]	1.50	0.84	1.01	4.43	0.40	1.38	2.25	4.40
[illegible]	1.50	0.51	1.15	5.83	0.24	1.38	1.80	4.80
[illegible]	1.50	2.50	8.16	14.68	1.98	3.78	5.80	9.80
[illegible]	1.50	1.71	10.94	14.45	2.21	6.22	4.50	11.20
[illegible]	1.47	0.50	5.44	14.22	1.71	4.42	2.00	8.10
[illegible]	1.50	0.26	1.84	[illegible]	1.71	1.66	1.95	3.60
[illegible]	1.50	[illegible]	0.41	3.46	0.96	0.78	2.00	1.58
[illegible]	1.50	0.45	0.44	2.41	1.11	0.97	2.90	0.86
500	1.50	0.53	1.82	5.50	1.22	1.75	3.15	1.45

UNCLASSIFIED

UNCLASSIFIED

SC 3640-K (3-69)
WORK SHEET

(TABLE IV CONTINUED)

Project No. T-16662
Ref. Dyn. 1013(760)

1621

			ACCELEROMETER NUMBER					
Freq. C.P.S.			2	13	135	137	7663	6676
1	1.00	0.17	1.18	7.57	4.61	3.41	2.15	1.35
2	1.00	0.32	1.45	3.39	4.24	1.52	1.90	1.60
3	1.00	0.04	0.36	2.09	0.18	0.27	0.88	1.95
4	1.00	0.45	0.58	3.11	0.73	0.31	2.45	1.65
5	1.00	0.53	0.41	1.10	0.21	0.71	2.10	3.52
6	1.00	0.26	0.13	4.57	0.16	0.88	0.72	5.00
7	1.00	0.32	0.90	2.62	1.15	1.89	2.90	16.50
8	1.00	0.17	0.38	2.20	2.49	2.58	2.26	2.90
9	1.00	0.22	0.21	2.80	0.90	3.32	5.50	0.82
10	1.00	0.26	0.19	1.83	1.06	4.33	9.00	1.40
11	1.00	0.11	0.18	2.67	1.22	2.12	13.10	2.30
12	1.00	0.32	0.21	1.97	2.86	14.06	13.00	1.85
13	1.00	0.01	0.12	1.61	3.23	26.27	15.50	4.16
14	1.00	0.39	0.13	3.21	0.65	6.77	21.00	4.90
15	1.00	0.35	0.09	1.93	0.45	3.64	24.90	5.36
130-0	1.00	0.26	0.19	1.15	0.34	1.61	29.00	6.46
14	1.00	0.37	0.09	0.79	0.65	0.86	10.30	7.10
15	1.00	0.01	0.13	1.51	1.57	1.48	8.80	41.10
16	1.00	0.32	0.11	0.61	0.76	0.62	28.50	9.90
17	1.00	0.34	0.26	1.72	1.54	1.80	15.30	9.90
18	1.00	0.29	0.22	1.97	3.41	2.07	28.50	16.50
1600	1.00	0.44	0.15	1.70	1.86	3.59	19.70	26.50
20	1.00	0.51	0.16	2.06	1.08	3.96	15.30	35.00
21	1.00	0.45	0.07	2.06	1.29	4.10	10.60	31.50
22	1.00	0.52	0.06	1.93	2.86	5.16	7.90	45.00
1700	1.00	0.26	0.06	1.61	4.47	4.38	9.10	52.00

UNCLASSIFIED

UNCLASSIFIED

SC 3640-E (3-58)
WORK SHEET

(TABLE IV CONTINUED)

Project No. T-[illegible]
Ref. Sym: 1613(200)

ACCELEROMETER NUMBER

Avg. [illegible]	[illegible]	219	244	[illegible]	[illegible]	137	[illegible]	6678				
1850	1.00	0.48	0.10	3.12	7.19	8.02	26.00	95.50				
1900	1.00	0.46	0.13	6.47	10.69	26.27	34.50	63.00				
1950	1.00	0.23	0.12	6.51	11.06	7.51	56.00	36.00				
2000	1.00	0.33	0.15	5.28	7.97	18.89	67.00	28.00				
[illegible]	1.00	0.34	0.08	0.94	0.83	1.08						
[illegible]	1.00	0.32	0.18	1.13	1.31	1.61						
[illegible]	1.00	0.35	0.12	0.62	0.67	1.98						
[illegible]	1.00	0.22	0.88	1.58	1.59	1.80						
[illegible]	1.00	0.37	0.29	1.44	2.07	2.44						
[illegible]	1.00	0.47	0.08	1.61	2.12	3.99						
1650	1.00	0.51	0.08	1.93	0.97	3.78						
[illegible]	1.00	0.44	0.05	1.88	1.82	4.01						
1750	1.00	0.45	0.04	1.97	1.80	4.10						
1800	1.00	0.46	0.18	2.25	3.04	3.92						
1850	1.00	0.45	0.12	2.75	6.22	2.44						
1900	1.00	0.44	0.13	4.56	9.95	19.58						
[illegible]	1.00	0.13	0.15	5.05	11.89	8.53						
2000	1.00	0.37	0.13	5.73	7.10	12.21						
2[illegible]	1.00	2.22	7.37	11.93	1.80	2.64						

all values are given in g's

UNCLASSIFIED

UNCLASSIFIED

SC 3640-E (3-59)
WORK SHEET

TABLE V - ACCELERATIONS RECORDED IN Z-AXIS - VIBRATION TEST OF THE XW-54/GAR-11

Project No. T-16647
Ref. Sym: 1613(200)

	ACCELEROMETER NUMBER												
Freq. (CPS)	205	219	247	152	135	137	7673	6678					
10	0.55	1.44	0.10	0.05	1.52	0.12	1.50	2.40					
20	0.56	1.50	0.09	0.04	1.66	0.04	1.70	1.70					
30	0.56	1.51	0.06	0.03	1.61	0.04	1.08	1.90					
40	0.56	1.50	0.05	0.03	1.56	0.05	1.55	1.74					
50	0.52	1.50	0.06	0.06	1.42	0.04	1.44	1.80					
60	0.75	2.00	0.08	0.06	1.80	0.06	1.76	2.50					
70	0.50	2.00	0.07	0.14	1.59	0.06	1.45	2.45					
80	0.73	2.00	0.24	0.11	1.41	0.31	1.16	2.65					
90	0.74	2.00	0.15	0.14	1.11	0.09	0.78	2.80					
100	0.75	2.00	0.17	0.11	0.82	0.11	0.32	3.00					
200	0.42	1.85	0.18	0.12	0.416	0.37	0.10	3.00					
220	0.47	1.16	0.12	0.10	0.41	0.12	0.29	2.00					
240	0.91	2.00	0.29	0.29	0.415	0.33	1.06	3.80					
260	0.50	1.50	0.18	0.22	0.74	0.32	1.06	2.90					
280	0.34	1.48	0.18	0.16	1.11	0.41	1.36	3.00					
300	0.42	1.50	0.22	0.22	1.80	0.49	1.85	3.60					
320	0.57	1.50	0.46	0.32	3.09	0.48	2.50	4.40					
340	0.19	1.50	0.97	0.25	4.33	0.45	3.05	4.90					
360	0.87	1.50	1.66	0.48	4.88	0.51	2.85	4.70					
380	0.53	1.50	3.27	1.15	3.78	0.51	2.00	3.80					
400	0.64	1.50	4.19	1.01	0.99	2.40	1.60	3.65					
420	0.65	1.50	3.04	4.68	7.93	1.29	2.30	7.20					
440	1.01	1.44	1.20	4.95	5.99	0.69	1.40	4.20					
460	0.51	1.48	1.01	1.47	2.12	0.78	0.86	1.95					
480	0.67	1.50	1.06	0.76	5.99	3.50	5.00	5.40					
500	1.49	1.50	2.53	1.61	9.68	3.46	5.20	9.00					

UNCLASSIFIED

UNCLASSIFIED

(TABLE V CONTINUED)

Project No. T-16667
Ref. Sym: 1613(200)

WORK SHEET

Avg. C.P.I.	225	219	247	152	135	137	7673	6678
500	0.55	1.50	3.13	2.25	1.013	5.39	1.55	11.50
600	0.97	1.00	1.66	1.65	12.67	4.15	2.60	5.50
650	1.01	1.00	0.25	0.80	7.14	0.88	2.05	0.47
700	0.78	1.00	0.60	1.42	21.43	2.26	11.50	1.23
750	1.37	1.00	1.38	2.25	11.29	1.34	9.10	1.23
800	0.99	1.00	1.34	5.32	20.28	1.84	11.00	5.30
850	0.18	1.00	0.67	1.38	9.22	0.46	3.40	4.20
900	0.57	1.00	0.69	1.03	6.22	0.86	3.10	4.30
950	0.22	1.00	0.28	0.37	4.06	0.49	1.40	4.80
1000	0.28	1.00	0.29	0.46	2.40	0.78	6.00	6.70
1050	0.29	1.00	0.29	0.60	1.34	1.01	10.40	2.10
1100	0.14	1.00	0.21	2.75	3.32	7.14	14.90	3.90
1150	0.45	1.00	0.24	4.95	3.18	17.51	15.70	6.50
1200	0.54	1.00	0.28	0.21	1.34	1.20	21.00	6.30
1250	0.53	1.00	0.24	0.33	0.69	0.83	26.00	7.00
1300	0.44	1.00	0.20	0.29	0.76	0.41	26.80	7.10
1350	0.13	1.00	0.20	0.62	1.11	0.92	34.00	8.30
1400	0.41	1.00	0.26	0.76	2.76	0.92	18.50	10.50
1450	0.47	1.00	0.30	0.64	4.70	1.24	27.00	12.80
1500	0.25	1.00	0.32	1.19	10.14	1.57	21.00	15.00
1550	0.34	1.00	0.24	5.05	30.64	4.06	22.00	18.00
1600	0.40	1.00	0.08	4.36	27.65	1.47	20.50	21.50
1650	0.22	1.00	0.06	2.94	17.51	1.57	13.00	40.00
1700	0.39	1.00	0.11	2.57	9.90	2.86	19.00	41.00
1750	0.52	1.00	0.06	1.93	11.42	4.15	18.50	23.00
1800	0.60	1.00	0.07	2.11	5.07	8.29	52.00	22.00

UNCLASSIFIED

UNCLASSIFIED

AE 3440-E (8-58)
WORK SHEET

(TABLE V CONTINUED)

Project No. T-16647
Ref. Sym: 1613(200)

	ACCELEROMETER NUMBER												
Aug. 16	225	219	207	152	135	127	2673	6673					
1850	0.46	1.00	0.13	2.20	5.99	23.04	15.50	12.50					
1900	0.45	1.05	0.20	3.76	10.59	34.10	21.50	4.50					
[illegible]	0.47	1.00	0.20	4.54	4.61	20.41	31.60	2.10					
[illegible]	0.38	1.00	0.17	6.05	7.14	19.35	48.00	15.50					
[illegible]	0.33	1.00	0.10	7.11	33.18	51.53	29.50	26.00					

[redacted]

UNCLASSIFIED