[redacted]

UNCLASSIFIED

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
Review Date 11/10/98
Authority ADC ☒ ADD W Layne
Review Date 11/16/98
Authority ADD
Name RB Craner
Determination (Circle Numbers)
1 Classification Retained
2 Classification Changed to U
3 Contains No DOE Classified Information
4 Coordinate With
5 Contains UCAI? NW
6 Comments
OK for Opened

TCG-NNT-1

March 27, 1964 1073

File: H1154, 3-2
T-19900
Test Completed 2/17/64

RECEIVED

APR 1 1964

CENTRAL TECH FILE

MR. W. E. TREIBEL - 1523
Attn: G. J. Zimmerman

Re: Mechanical Shock of Two H1154 Explosive Generator Cases for the MC1292 Plane Wave Explosive Generator (U)

Object of Test

This was an evaluation test of four different shock isolating materials used in the H1154 cases. These cases will be used to store the MC1292 on board naval vessels. This test was to simulate normal handling shock.

Authorization for Test

This test was requested by Division 1523 in a Work Order Authorization received September 13, 1963. Mr. G. J. Zimmerman was the consultant. The material for test was received October 3, 1963.

Summary

Four types of foam shock absorbing material were evaluated for possible use in the H1154 Case for the MC1292 Explosive Generator. One of the foam materials, Union Carbide Type Y-3233, is considered to be the better of the packaging materials at this time, pending further testing of the MC1292 Explosive Generator.

Functional Measurements and Methods

The MC1292 Explosive Generator used in these shock tests was an inactive unit. No functional measurements were made on this unit.

Impact acceleration measured during these tests was not to exceed 1000g. The following equipment was used to obtain acceleration values:

Accelerometer:	Endevco Model 2226, Serial No. EG & O
Tape Recorder:	CEC Model VR 2600
Recorder:	Visicorder, Honeywell Model 1508
Guide Rails:	Sandia constructed

CENTRAL TECHNICAL FILE
ACCOUNTABILITY CARD BB
FILE NO. H 1154
3-2

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO U
Carmela Gallegos 12/9/98
PERSON CHANGING MARKING & DATE
W C Layne 12/16/98
PERSON VERIFYING MARKING & DATE
AUTHORITY RB Craner
RECORD ID 99SN0413
DATED 11/16/98

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Procedure and Results

This test consisted of a series of shocks applied to two different H1154 cases. The cases contained an inert MC1292 Explosive Generator encased in four different kinds of foam.

Shock was along the three major mutually perpendicular axes (refer to Figure 1) and on a corner of one of the cases. Guide rails were used around the unit to assure proper orientation at the time of impact in the axes shown in Figure 1. The corner drops were unguided.

The free-fall shocks were accomplished by dropping the assembly from various heights onto a concrete floor.

Impact acceleration measurements were obtained from a miniature 3-gram accelerometer (Endevco Model 2226) mounted on the MC1292. A small amount of the foam had to be removed to make room for the accelerometer.

All drops of assembly No. 1 were made at room temperature. Foams used were Urethane, 3 to 4 lbs., Alpco - A4S + 4RMA and C.P.R. International 20, 11 to 12 lbs. Results are shown in Tables 1 and 2.

Drops of assembly No. 2 were made at approximately -65°F and at room temperature. Foam used was Union Carbide Cellular Silicone, Type Y-3233.

Prior to the low temperature drops the assembly was subjected to -75°F for a minimum of 30 minutes. The unit was then removed from the chamber and instrumentation connected. The elapsed time from removal from the chamber and the first drop was a maximum of 5.0 minutes. The -75°F stabilization temperature was used to compensate for the elapsed time at room temperature before the drop.

Shock test data for assembly No. 2 are shown in Tables 3, 4 and 5.

H. W. Gilbert
H. W. GILBERT - 7332-3

A. J. Tucker
A. J. TUCKER - 7325-1

R. P. May
R. P. MAY - 7331-1

WHG:7332-3:kv

Enclosures: Figure 1
Tables 1 through 5

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[redacted]

Copy to:
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E. H. Copeland, 7331
Central Technical File, 3428-1

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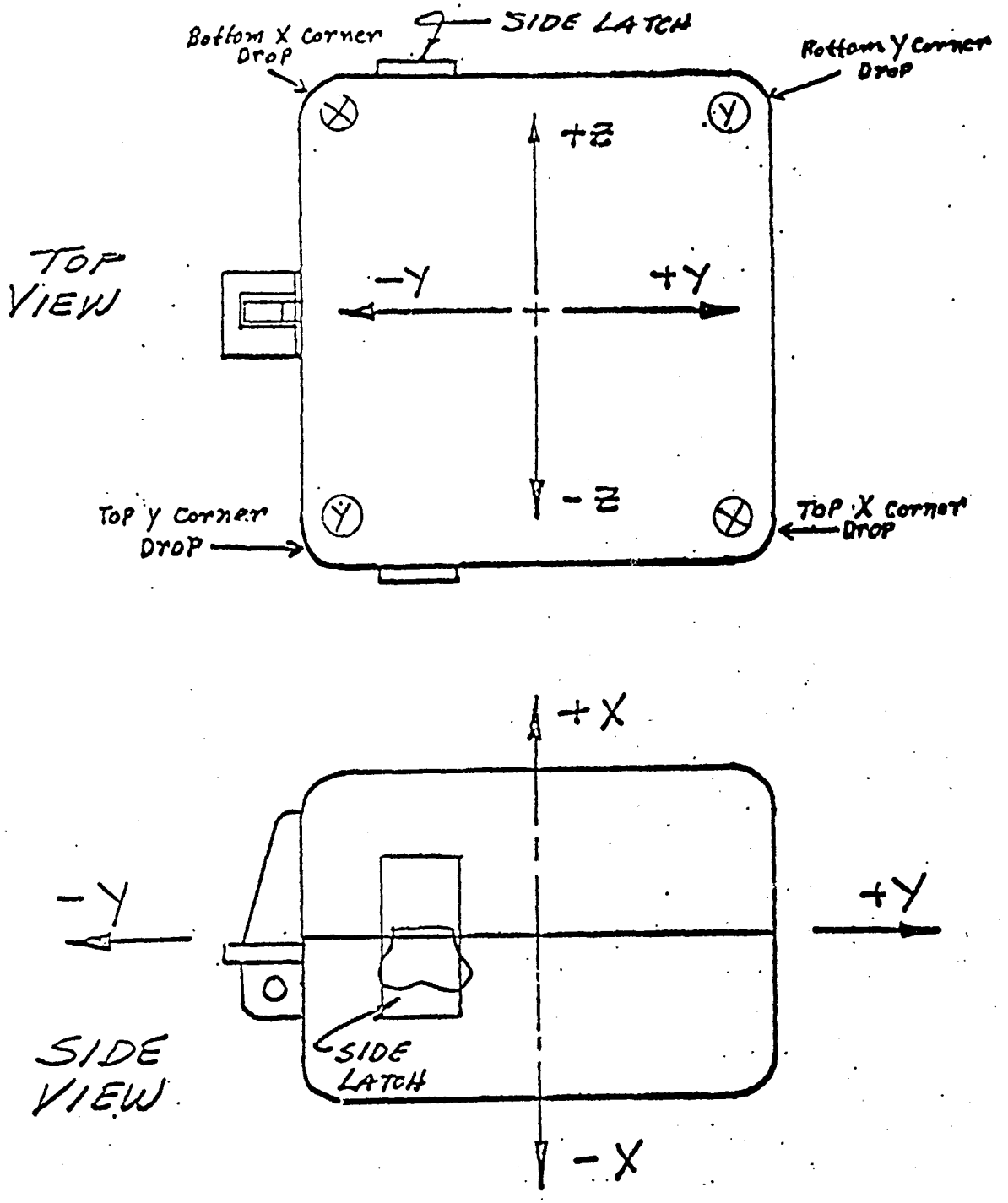

FIGURE 1

H-1154 AXES OF SHOCK

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TABLE 1 MECHANICAL SHOCK H 1154 CASE AND COMPONENT T-19900

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UNIT 1 TYPE FOAM	FOAM CONDITION	SHOCK NUMBER	DATE DROPPED	TEMPERA.	DIRECTION OF DROP	DROP HEIGHT (FT)	PULSE AMPLITUDE (G)	PULSE DURATION (MS)
URETHANE (3-4 LBS)	RIGID	1	10-29-63	ROOM	-X	2	450	2.1
" "	"	2	"	"	+X	2	752	1.5
" "	"	3	"	"	+X	3	900	1.4
" "	"	4	"	"	-X	3	740	1.4
ALPCO-A4S ±4 RMA	SOFT	5	"	"	-X	6	780	2.1
" " "	"	6	"	"	+X	6	900 @	@
C.P.R. INTERNATIONAL	MEDIUM	7	"	"	+X	6	600	3.0
2011-12LB	"	8	"	"	+X	3	350	3.3
"	"	9	10-30-63	"	-X	2	110	3.8
"	"	10	"	"	-X	6	220	3.0
"	"	11	"	"	+Y	6	360	1.8
"	"	12	"	"	+Y	3	70	3.5
"	"	13	"	"	+Y	2	50	3.8
"	"	14	"	"	-Y	2	60	3.8
"	"	15	"	"	-Y	3	90	3.5
"	"	16	"	"	-Y	6	200	2.8
"	"	17	"	"	-Z	2	55	3.6
"	"	18	"	"	-Z	3	65	3.5
"	"	19	"	"	-Z	6	105	3.7
"	"	20	12-4-64	"	X CORNER	2	215	4.0
"	"	21	"	"	"	2	225	4.5
"	"	22	"	"	"	3	300	4.0
"	"	23	"	"	"	3	210	4.5

@ CABLE FAILED AT 900 G BUT HAD NOT REACHED PEAK.

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WORK SHEET

TABLE 2 MECHANICAL SHOCK H 1154 CASE AND COMPONENT T-19900

UNIT 1 TYPE FOAM	FOAM CONDITION	SHOCK NUMBER	DATE DROPPED	TEMPERA.	DIRECTION OF DROP	DROP HEIGHT (FT)	PULSE AMPLITUDE (G)	PULSE DURATION (MS)					
C.P.R. INTERNATIONAL	MEDIUM	24	12-4-63	ROOM	X CORNER	3	280	4.0					
2011-12 LB	"	25	"	"	"	3	300	4.5					
"	"	26	"	"	Y CORNER	3	255	3.5					
"	"	27	"	"	"	3	305	4.0					
"	"	28	"	"	"	3	315	4.0					
"	"	29	"	"	X CORNER	6	365	4.5					
"	"	30	"	"	"	6	360	4.0					
"	"	31	"	"	"	6	280	4.0					
"	"	32	"	"	Y CORNER	6	380	4.5					
"	"	33	"	"	"	6	440	4.5					
"	"	34	"	"	"	6	150	3.5					
"	"	35	"	"	"	6	360	4.0					
"	"	36	"	"	+X	6	585	4.0					
"	"	37	"	"	"	6	525	4.0					
"	"	38	"	"	"	6	530	4.0					

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WORK SHEET TABLE 3 MECHANICAL SHOCK H1154 CASE AND COMPONENT T-19900

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UNIT 2 TYPE FOAM	FOAM CONDITION	SHOCK NUMBER	DATE DROPPED	TEMPERA.	DIRECTION OF DROP	DROP HEIGHT (FT)	PULSE AMPLITUDE (G)	PULSE DURATION (MS)
C.P.R. INTERNATIONAL	MEDIUM	1	1-10-64	* -65°F	-X	2	790	0.8
2011-12 LB	"	2	"	"	-X	3	1150	1.0
"	"	3	"	"	-X	4	1100	0.85
"	"	4	"	"	-X	5	1400	0.9
"	"	5	"	"	-X	6	2400	0.6
"	"	6	"	"	+X	2	960	0.75
"	"	7	"	"	+X	3	1400	0.65
"	"	8	"	"	+X	4	2750	0.6
"	"	9	"	"	+X	5	2400	0.6
"	"	10	"	"	+X	6	2400	0.6
CELLULAR SILICONE	"	11	2-14-64	"	-X	6	320	4.7
TYPE Y-3233	"	12	"	"	-X	5	300	4.7
(UNION CARBIDE)	"	13	"	"	-X	4	275	4.7
"	"	14	"	"	-X	3	200	4.7
"	"	15	"	"	-X	2	200	4.7
"	"	16	"	"	-X	1	80	5.5
"	"	17	"	"	-X	6	370	4.7
"	"	18	"	"	+X	6	360	4.7
"	"	19	"	"	+X	5	270	4.4
"	"	20	"	"	+X	4	190	4.4
"	"	21	"	"	+X	3	100	4.4
"	"	22	"	"	+X	6	440	3.5
"	"	23	2-17-64	"	-Z	6	330	4.0
"	"	24	"	"	-Z	5	420	2.9

* APPROXIMATE TEMPERATURE

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SC 2640-E (3-59)

WORK SHEET TABLE 4 MECHANICAL SHOCK H 1154 CASE AND COMPONENT T-19900

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UNIT 2 TYPE FOAM	FOAM CONDITION	SHOCK NUMBER	DATE DROPPED	TEMPERA.	DIRECTION OF DROP	DROP HEIGHT (FT)	PULSE AMPLITUDE (G)	PULSE DURATION (MS)					
CELLULAR SILICONE	MEDIUM	25	2-17-64	*-65°F	-Z	4	480	3.2					
TYPE Y-3233	"	26	"	"	-Z	3	250	3.3					
(UNION CARBIDE)	"	27	"	"	-Z	2	160	3.3					
"	"	28	"	"	-Z	1	150	5.3					
"	"	29	"	"	-Z	6	590	2.5					
"	"	30	"	"	+Z	6	280	4.0					
"	"	31	"	"	+Z	5	480	2.9					
"	"	32	"	"	+Z	4	380	3.0					
"	"	33	"	"	+Z	3	320	3.4					
"	"	34	"	"	+Z	2	180	4.6					
"	"	35	"	"	+Z	1	120	4.9					
"	"	36	"	"	+Z	6	690	2.4					
"	"	37	"	ROOM	-Z	6	500	3.5					
"	"	38	"	"	-Z	5	220	7.7					
"	"	39	"	"	-Z	4	390	3.7					
"	"	40	"	"	-Z	3	140	4.1					
"	"	41	"	"	-Z	2	150	7.7					
"	"	42	"	"	-Z	1	90	@					
"	"	43	"	"	-Z	6	500	2.8					
"	"	44	"	"	+Z	6	240	5.0					
"	"	45	"	"	+Z	5	380	3.2					
"	"	46	"	"	+Z	4	270	3.6					
"	"	47	"	"	+Z	3	130	3.8					
"	"	48	"	"	+Z	2	140	4.7					

* APPROXIMATE TEMPERATURE @ NO READING - CABLE TROUBLE

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SC 3640-E (3-59)
WORK SHEET

TABLE 5 MECHANICAL SHOCK H1154 CASE AND COMPONENT T-19900

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UNIT 2 TYPE FOAM	FOAM CONDITION	SHOCK NUMBER	DATE DROPPED	TEMPERA.	DIRECTION OF DROP	DROP HEIGHT (FT)	PULSE AMPLITUDE (G)	PULSE DURATION (MS)
CELLULAR SILICONE	MEDIUM	49	2-17-64	ROOM	+Z	1	80	5.4
TYPE Y-3233	"	50	"	"	+Z	6	440	4.8
(UNION CARBIDE)	"	51	"	"	-X	6	270	5.5
"	"	52	"	"	-X	5	220	5.0
"	"	53	"	"	-X	4	170	5.3
"	"	54	"	"	-X	3	120	5.2
"	"	55	"	"	-X	2	100	5.6
"	"	56	"	"	-X	1	90	6.5
"	"	57	"	"	-X	6	260	5.7
"	"	58	"	"	+X	6	320	4.0
"	"	59	"	"	+X	5	310	4.3
"	"	60	"	"	+X	4	250	4.4
"	"	61	"	"	+X	3	220	4.4
"	"	62	"	"	+X	2	190	6.3
"	"	63	"	"	+X	1	110	6.7
"	"	64	"	"	+X	6	330	4.1

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