SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 8/25/98
Authority: ADC ADD
Name: B. Kamen
2nd Review Date: 8/27/98
Authority: ADD
Name: W. Layne
Recommended (Circle Number):
1. Classification Retained
2. Classification Changed to: U
3. Contains No DOE Classified Information
4. Coordinating With:
5. Contains UCNI?
6. Comments:

JUL 22 1959

M-36, 3-2
Project No. T-16216
Case No. 608.01

TO: DISTRIBUTION

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Re: Two Dynamic Tests of MK-36-Y1-Mod 2 Pull-off Cover

Object of Test

The object of this test was to determine the total force and the force at each of the four pull points, that was necessary to remove the pullout cover from the MK-36 afterbody and to actuate pullout devices within the afterbody. The cover was to be tested with two different fastening devices; a silicone sponge and three aluminum clips. It was also required to determine the manner in which the fastening devices failed.

Summary

The maximum total force required to remove the pullout cover when fastened with the silicone sponge was 878 pounds, and about 868 pounds when fastened with the three aluminum clips. (See Table I for complete force-time information).

High-speed motion pictures of both tests indicated that the cover remained approximately parallel to the afterbody surface during the pull-off.

Authorization for Test

This test was requested in a Work Order Authorization for H. F. Howard, 1218-2, to A. W. Reger, 1613, dated March 18, 1959. Mr. J. L. Irwin, 1218-2, was the consultant.

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Procedure

The pullout cover was fastened by a silicone sponge gasket to a MK-36 afterbody. Four calibrated stress links, instrumented with strain gages, were fastened to the four pull points on the pullout cover. These stress links were fastened to a pull plate by four cables. This pull plate was designed so that theoretically the single load on the plate from the pull rod would be distributed equally to each of the four pull points. The four stress links were not preloaded before the test. The pull plate was parallel to the afterbody surface before the pullout cover started to move. This entire assembly was mounted on the large impact hammer.

The pendulum of the impact hammer was raised to a height which gave a

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MK-36
3-2

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W Layne 9-9-98
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tangential velocity of 5.6 fps to the pendulum when the pull started. This simulated the velocity as a result of a free fall drop of six inches. After the pendulum was released, its momentum pulled the pullout cover from the afterbody and actuated the pullout devices (two pullout valves, an electrical connector and the MC-845).

All strain gages were recorded at impact (Figure 2).

Fastax camera pictures were taken at the time of pull-off.

The pullout cover was remounted on the afterbody, being fastened with three aluminum shear clips. This test was run as the previous test. Strain gage traces are shown in Figure 2.

R. O. Brooks
R. O. BROOKS - 1612-3

C David McGinnis
1613 Project Engineer: C. DAVID MCGINNIS - 1613-3

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

CDM:1613-3:ec

Enc: Table I
Figs. 1 and 2

Copy to:

E. L. Harley, 1218
Attn: J. L. Irwin
W. A. Gardner, 1610
J. M. Wieson, 1592
C. L. Gomel, 5523
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Project No. T-16216

TABLE I

LOAD-TIME CHARACTERISTICS OF STRESS LINKS

TWO DYNAMIC TESTS OF MK-36 PULL-OFF COVER

		SILICONE GASKET	ALUMINUM CLIPS
Maximum load on stress link[a]	A (lbs) initial pulse	315	248
"	B " "	248	222
"	C " "	352	385
"	D " "	228	(b)
Maximum total load at one instant	(lbs) initial pulse	878	651 [c]
Time elapsed between start of initial pulse and instant of max. load (millisecond)		1.4	2.0
Initial impulse pulse duration (m.s.)		9.4	6.9
Time elapsed between end of initial pulse and start of second[d] pulse (m.s.)		78	89
Maximum load or stress link	A (lbs) second pulse	238	189
"	B " "	113	246
"	C " "	225	158
"	D " "	138	(b)

(a) - See Fig. 1 for stress link locations.

(b) - No record obtained.

(c) - This value for three stress links. Extrapolation for four stress links give a load of about 868 pounds.

(d) - Second pulse is result of pulling out pullout devices.

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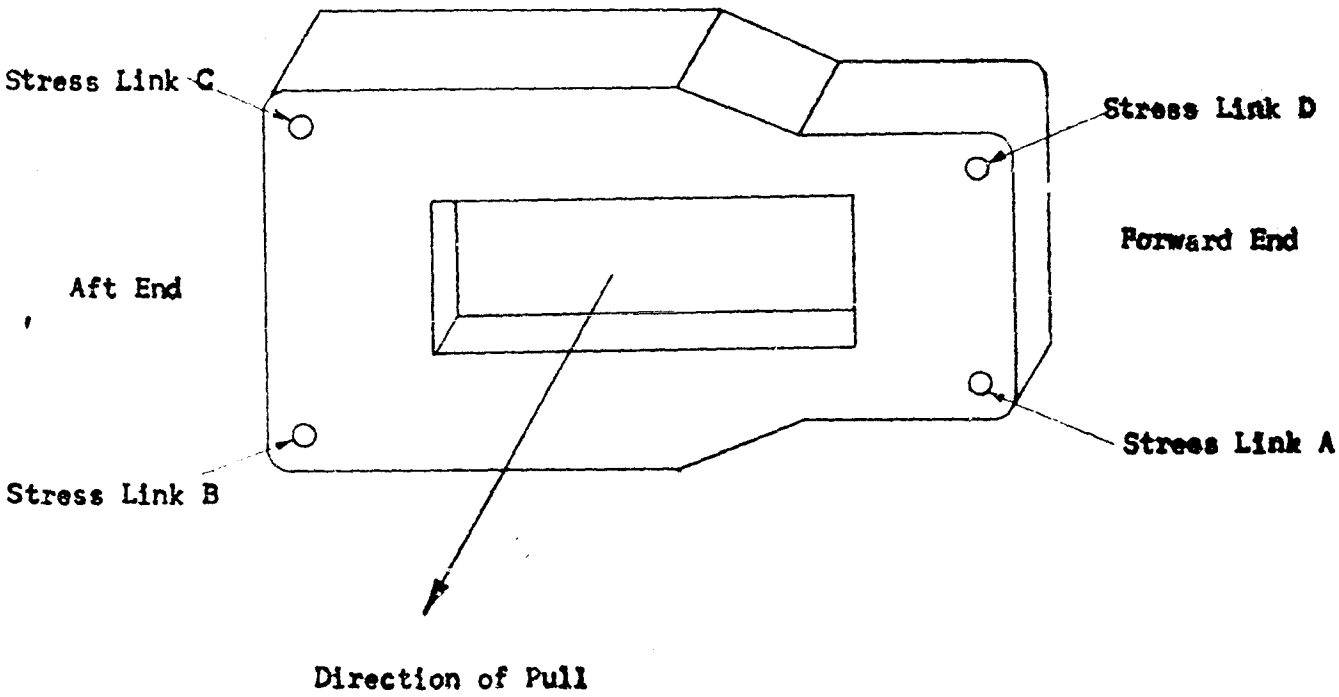

FIGURE 1 - SKETCH OF PULLOUT COVER SHOWING LOCATION OF STRESS LINKS - TWO DYNAMIC TESTS OF MK-36-Y1-MOD2 PULL-OFF COVER

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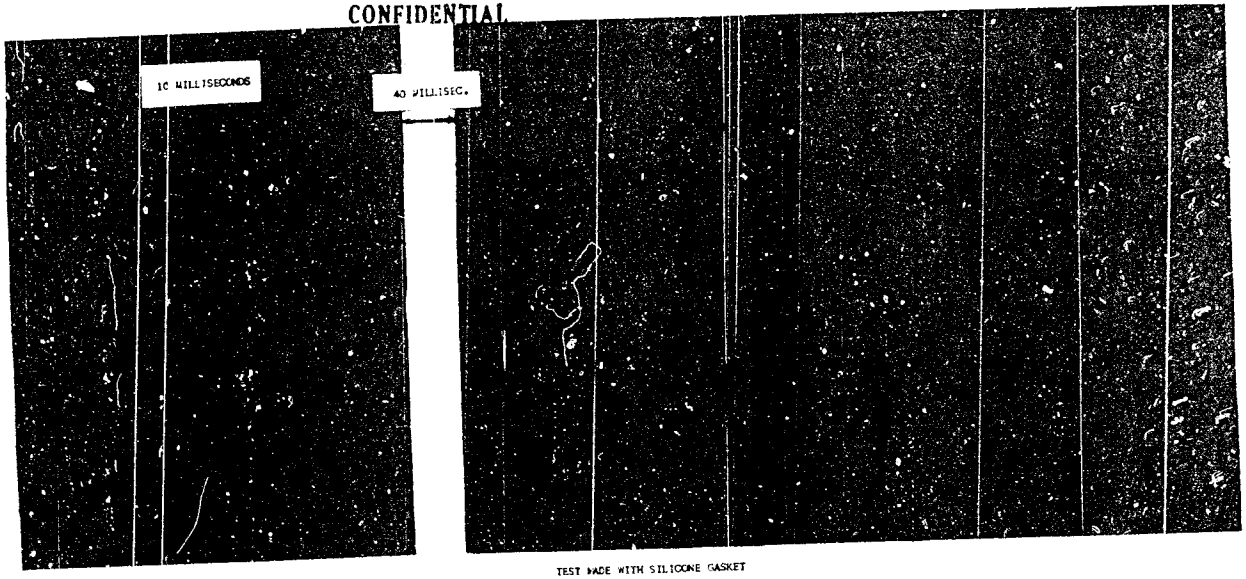
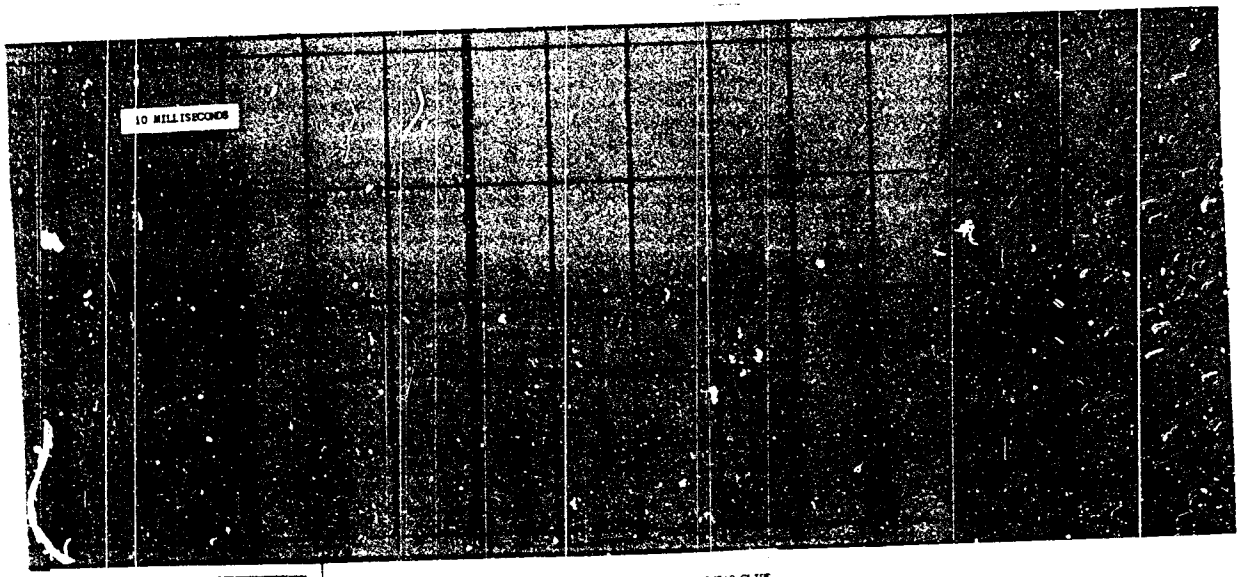
STRESS LINK *	CALIBRATION (LBS/IN.)
D	260
C	250
B	241
A	305
A	274
B	254
C	268
D	N.R.

* SEE FIGURE 1



TEST MADE WITH SILICONE GASKET



TEST MADE WITH ALUMINUM SHEAR CLIPS

FIGURE 2 - OSCILLOGRAPH RECORDS OF STRAIN GAGES OR STRESS LINKS, RECORDED DURING PULL-OFF TESTS - TWO DYNAMIC TESTS OF MK-36-Y1-MOD 0 PULL-OFF COVER

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