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1027

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW

1st Review Date: 11/5/98
Authority: ☐ ADC ☒ ADD
Name: R B Craner
2nd Review Date: 11/9/98
Authority: ADD
Name: W Layne

Determination (Circle Number)
1. Classification Retained
2. Classification Changed to U
3. Contains No DOE Classified Information
4. Coordinate With:
5. Contains UCAI?
6. Comments: OK for Openet

TCG-NNT-1

H-490, 3-2
Case No. 433.00
Ref. Sym: 1611
Project No. ET-3116
Completed 4/11/56

TO: DISTRIBUTION

Re: Vibration and Shock Test of H-490

Object of Test

The object of this test was to determine if the H-490 (with warhead contained) would withstand the vibration test specified in paragraph 2.6 of SCS-5. A modification of the vertical drop test delineated in paragraph 3.4.1 of the same document was to be performed, using three different cushioning materials.

Authorization for Test

This test was requested by Division 1284 in a Work Order Authorization dated January 3, 1956. Mr. G. V. Lemmon was the consultant.

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Procedure and Results

Three Statham F-300 accelerometers were mounted on the warhead so that the axes of sensitivity were mutually perpendicular. All of the accelerometers were mounted near the top of the warhead so that they would experience the greatest degree of oscillatory motion resulting from vibration.

For the vibration test, the only damping material used was a cup-shaped preformed pad of Stafoam polyurethene (medium) with a total height of approximately 16 inches. The warhead slid inside the cupped material something over half this distance, the outside of the preformed cushion fitting tightly inside the H-490.

The specimen was mounted on a Sonntag vibration table and vibration begun (10-55-10 cps with a constant double amplitude of 0.060 in). However, the tie-down brackets on the H-490 broke off before half of the first vibrational cycle was completed.

The brackets were replaced and strengthened by welding, considerable welding rod being used at stress points. Vibration was continued, while the accelerometers were monitored. The damped system seemed to resonate at about 13.5 cps, the highest acceleration (5 g) being read in the direction of table motion. The input to the table at this frequency was approximately 0.57 g. Vibration was continued for a total of 45 minutes. Because of the symmetry of the warhead and container about the polar axis, the specimen was vibrated in only one orientation.

CDL No.
ACCOUNTABILITY CARD BB
FILE No. H-490 3-2

CLASSIFIED: Carmela Gallagher 12/9/98 U
PERSON CHANGING MARKING CODE: W C Layne 12/16/98
RECORDED: W C Layne 99SN0404
DATE: 11/9/98

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Following vibration, the specimen was dropped 12 inches onto a concrete floor, using the same damping material as was used during vibration. The faired value os the resultant shock was a negative acceleration of 10 g with a duration of 64 milliseconds with an immediate transition into a positive acceleration of 2.5 g with a duration of approximately 60 milliseconds. The initial shock pulse was followed in 220 milliseconds by one of 4 g with a duration of 80 milliseconds which resulted from the bounce. Three drops resulted in almost identical results.

The drop test was repeated, using preformed damping materials identified as C-8 and X-9530. The C-8 material resulted in a recorded negative acceleration of 8.4 g, with a duration of 64 milliseconds a positive acceleration of 2.4 g of almost 150 milliseconds duration. The shock resulting from bounce was only 2 g.

The use of X-9530 material resulted in a shock of 10.2 g, duration 64 milliseconds, and a 3 g positive acceleration at transition. A bounce 240 milliseconds after the end of the first shock pulse resulted in an acceleration of approximately 3 g, with two more bounce caused shocks of lesser degree following immediately.

R G Hamilton

Test Conducted by R. G. HAMILTON - 1611-2

M A Richter

Approved by M. A. RICHTER - 1611-2

RGH:1611-2:dr

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