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0491

NOV 21 1958
XII-40, 3-2
Project No. ET-4464
Case No. 762.00
Completed 4-20-58

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
1 st Review Date: 8/26/98	Determination (Circle Numbers):
Authority: ADD	1. Classification Retained <input type="checkbox"/>
Name: [Signature]	2. Classification Changed to <input checked="" type="checkbox"/>
2 nd Review Date: 8/22/98	3. Contains No DOB Classified Information <input type="checkbox"/>
Authority: ADD	4. Coordinate With: [Signature]
Name: W. C. Payne	5. Contains UCAI? <input type="checkbox"/>
	6. Comments: [Signature]

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: U	AUTHORITY: W. C. Payne
PERSON CHANGING MARKING & DATE: Emilda Seph 9/28/98	RECORD ID: 985N3894
PERSON VERIFYING MARKING & DATE: [Signature] 9/28/98	DATED: 8/27/98

Environmental Tests of XII-40

Summary

Prior to humidity, a pressure leak between the cover can and the rest of the assembly was traced to a pinched section of the "O" ring between them.

After removal from humidity an open circuit discovered during continuity checks was found to be caused by a battery connection that had not been made.

During tests with a missile simulator on the unit while at -65°F with the cover removed trouble was encountered with the MC-808 arm/safe switch. It was necessary to operate the arm and safe switches on the missile simulator several times to get the MC-808 to operate. Operation time was 15 or more seconds. Examination of the MC-808 showed the two case-sections had separated along the top.

During tests at -65°F and 66,000 feet, using the missile simulator, there was arcing from the battery plug to ground. This did not occur when the altitude was lowered to 60,000 feet. During this same test at 60,000 feet, arcing occurred across the det. cable connectors on the MC-865 when the MC-865 was fired.

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Object of Test**UNCLASSIFIED**

The object of this test was to evaluate the XW-40 during conditions of exposure to rain, salt spray, tropical exposure, tropical assembly and altitude. It was requested by Organization 1246. Mr. Rex McKay, 1246, was the consultant.

Procedure and Results

One XW-40, comprised of the following components was tested:

XMC-863 Case	Serial No. AA-2119-I7
XMC-864 Pressure Cover	AA-X100-G7
XMC-865 Firing Set	AA-X004-G7
MC-721 S. D. Firing Set	AS-008-H7
MC-796 Battery Pack	AA-0043-D7
MC-774 Zipper	GC-100625-F7
MC-774 Zipper	GC-100626-F7
MC-808 A/S. Switch	FT-58566-F7
MC-808 A/S. Switch	FT-58568-F7
Type 1A Reservoir	JP-054-H6
Gas Valve	115

A T-304 Tester was used during the test to check the continuity loops through the unit. A missile simulator was used during low temperature tests and altitude tests.

On 1-29-58, the unit was placed in salt fog exposure. Humidity measurements were made before and after this exposure. There was no change in the internal humidity and there were no difficulties as a result of this exposure.

Pressure inside the unit was checked prior to humidity exposure and it had dropped from 15 psig to 9.25 psig. The unit was depressurized and a new "O" ring was installed between the two sections. The unit was repressurized to 15 psig with 25% helium and 75% nitrogen. The unit leaked down to 0.5 psig in about five minutes. The unit was pressurized again, with the idea of locating the leak with a helium leak detector. The pressure leaked out before the leak could be located. The unit was sent to the 1246 mock-up area for rework to stop the leak. It was found to be caused by a pinched section on the "O" ring about three inches long. A new "O" ring was installed and the unit was repressurized to 7.5 psig with helium and on up to 17.8 psig with nitrogen. This time the pressure held.

On 2-7-58, the unit was placed in the humidity chamber for tropic exposure test. The humidity in the unit was 21% at 77°F. The pressure was 17.8 psig. On 2-26-58, the humidity was 54% at 88°F and the pressure

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was 15.44 psig. Continuity check with the T-304 was satisfactory. Pressure was released and the relative humidity went to 45%. The access door was removed with the unit still in the humidity chamber and the battery was installed. The access door was replaced and the unit was repressurized to 18.1 psig with dry nitrogen. Relative humidity was 54% at 86°F. After one hour in the chamber, the relative humidity measured 57% at 86.5°F.

On 2-27-58, the unit was removed from the chamber. The relative humidity was greater than 55% at 86°F. Continuity check with the T-304 showed one open circuit. The pressure was released and the cover removed in order to locate the source of trouble. It was found to be caused by failure to connect one of the battery leads.

On 3-7-58, the cover was removed and the unit was placed in a chamber at -65°F. A missile simulator was used to functionally test the unit after it stabilized at -65°F. All tests were satisfactory except those involving the MC-808. These switches were slow to operate (fifteen seconds or more) and the arm and safe switches on the missile simulator had to be operated several times in order to make the MC-808's operate. Examination of the unit after removal from the chamber revealed that the MC-808 had spread apart along the top seam. See Figure 1.

On 3-14-58, the MC-865 was placed in an altitude chamber at ambient temperature. The altitude was raised to 66,000 feet. At this altitude, when high voltage was applied from the missile simulator, arcing occurred from the battery plug to ground. The altitude was lowered to 60,000 feet and this arcing ceased. At 60,000 feet, the MC-865 was fired and arcing occurred across the det. cable connectors. Since this unit is normally pressurized, these were not considered significant.

The unit was reassembled and pressurized to 17.6 psig with dry nitrogen. It was placed in an altitude chamber and the pressure in the chamber was reduced to 40.6 mm of Hg. There was a slight bulging of the top of the cover can. There was significant bulging on the side of the case around the access door. The chamber pressure was returned to ambient and the internal pressure of the unit was checked. There was no significant drop in pressure.

On 4-17-58, the unit was subjected to rain exposure in accordance with SCS-5. There were no significant changes in relative humidity or pressure as a result of this exposure. Continuity tests following this exposure were satisfactory.

This completed testing of this unit.

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Distribution

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ET-4464

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Enc: Figure I

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FIGURE I - SEPARATION OF MC-808 SECTION, XT-40

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