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SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
Review Date: <u>9/22/98</u>	Determinations (Circle Numbers)
Authority: <u>R.B. Cranner</u>	Classification Required: <u>U</u>
Review Date: <u>9/23/98</u>	Classification Changed to: <u>U</u>
Authority: <u>R.B. Cranner</u>	Does Not Meet DOR Classified Information: <u>No</u>
	Excludes WFO: <u>No</u>
	Excludes UCAI: <u>No</u>
	Comments: <u>OK for pennet</u>

OCT 29 1963
 File No: XW55, 3-2
 T-19963
 Test Completed: 10-3-63

MR. J. D. BENTON - 8124
 Attn: Mr. H. Easton

RECEIVED

Re: Electrical and Functional Measurements of the XW-55, TRM-5 (U)

OCT 3 1963

CENTRAL RECORD FILE

Object of Test

The purpose of the test was to determine if the XW-55 (TRM-5) would function satisfactorily after exposure to a series of environmental tests.

Summary

The XW-55 (TRM-5) was electrically and functionally checked after exposure to each of the following environments: thermal shock, T-19523, shipboard vibration, T-19580, salt fog, linear acceleration, tactical vibration, T-19583, and water entry shock, T-19585. The test unit checked satisfactorily throughout the series of environmental exposures.

Functional Measurements and Methods

All of the functional measurements were performed as follows:

- A. The resistances of C-1, C-2, C-5, C-6 and C-11 were measured with a Simpson Meter 260.
- B. The resistances of C-3, C-4, C-7, C-8, C-9 and C-10 were measured with a Simpson Meter 362.
- C. V-1, V-2 and V-3 were monitored with a Weston DC Voltmeter Model 931, 0-30V.
- D. I-1, I-2, I-3 and I-4 were monitored with a Weston Ammeter Model 931, 0-1 amp.
- E. The pressure transducer input and output was monitored with a John Fluke Differential Voltmeter Model 825.
- F. Power to the pressure transducer was provided with a John Fluke power supply.

PROGRAM	30811
CATEGORY	210
ORG.	6379
DATE	9/23/98

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: <u>U</u>	AUTHORITY: <u>R.B. Cranner</u>
PERSON CHANGING MARKING & DATE: <u>Emelda Selph 9/24/98</u>	RECORD ID: <u>98SN 4394</u>
PERSON VERIFYING MARKING & DATE: <u>W.C. [unclear] 9/28/98</u>	DATED: <u>9/23/98</u>

FILE NO:	XW 55
FILE NO:	3-2

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- 2 -

E-19963

- G. A Kepco DC power supply was used to supply power to the AK simulator for A3-B3, A4-B4 and A5-B5.
- H. Two 30V Ni-Cad batteries in series were used to supply power to the AK simulator for A1-B1 and A2-B2.
- I. A Sanborn Model 320 and a Brush Recorder Mark II were used to monitor the pressure and I-1, I-2, and I-3 during water entry shock.
- J. The internal case pressure was checked with a pressure gage supplied by SCLL.

Procedure and Results

The initial electrical check of the XW55 (TRM-5) revealed that the ESD's were in the open position. This made it impossible to conduct an adequate checkout of the test unit until after the linear acceleration exposure. The internal case pressure was the only monitoring performed through the thermal shock, salt fog, and shipboard vibration environments. Pressure measurements taken were as follows:

- A. Prior to any testing, 17.1 psia
- B. After thermal shock, 17.1 psia
- C. Prior to salt fog unit repressurized to 20.2 psia
- D. After salt fog test, 20.2 psia
- E. After tactical vibration, 18.1 psia

At the conclusion of the linear acceleration environment exposure, and just prior to exposure to the tactical vibration environment, a semi-complete electrical checkout was performed. The results were as follows:

C1 - no reading taken	V1 - no reading taken
C2 - no reading taken	V2 - no reading taken
C3 - 12 ohms	V3 - no reading taken
C4 - 12.2 ohms	
C5 - no reading taken	
C6 - no reading taken	I1 - .36 amps
C7 - 5.7 ohms	I2 - .39 amps
C8 - 5.8 ohms	I3 - .17 amps
C9 - 4.2 ohms	I4 - .17 amps
C10 - 4.4 ohms	
C11 - open	

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- 3 -

T-19963

These readings, with only minute deviations as a result of variations in temperature, apply for all readings taken throughout all environments with the exception of the water entry shock exposure. It will be noted that no readings were taken for C1, C2, C5, C6, V1, V2, and V3. The reason for this was that these circuits were not completed through the J1 connector.

The water entry shock environment consisted of subjecting the warhead to two separate shocks. Just prior to the first shock, a 60-volt signal was applied to A1-B1 (solenoid). The chopper motors were energized and the valve squibs fired. The pressure (P1) was monitored along with I1 and I2. See Figure 1. For the second shock, I1, I2, I3, and P1 were monitored. The det's were fired 30 seconds after the shock. See Figure 2. All of these electrical measurements and functions were made through the AX simulator supplied by SCLL.

Results of the thermal shock test are reported in the Environmental Test Order, T-19523.

The salt fog test consisted of subjecting the warhead to 50 hours of a wet dense fog of a 20 percent solution of sodium chloride maintained at a temperature of 110°F. The unit was visually inspected and rinsed with water at the completion of the test. No damage was noted.

The linear acceleration test was performed merely to close the MCI441 ESD's. The warhead was subjected to a launch acceleration of 8g for 30 seconds. This acceleration exposure closed the MCI441 ESD's properly.

Results of the shipboard vibration, tactical vibration and water entry shock tests will be reported in the Environmental Test Orders, T-19580, T-19583, and T-19585 respectively.

Leak rate determinations were taken at the completion of the above environments except the water entry shock test. The results are shown in Figure 3.

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- 4 -

T-19963

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Test Project Engineer: J. E. BEAR - 7331-1

E. White
Approved By: E. WHITE - 7331-1

DW:7331-1:EW

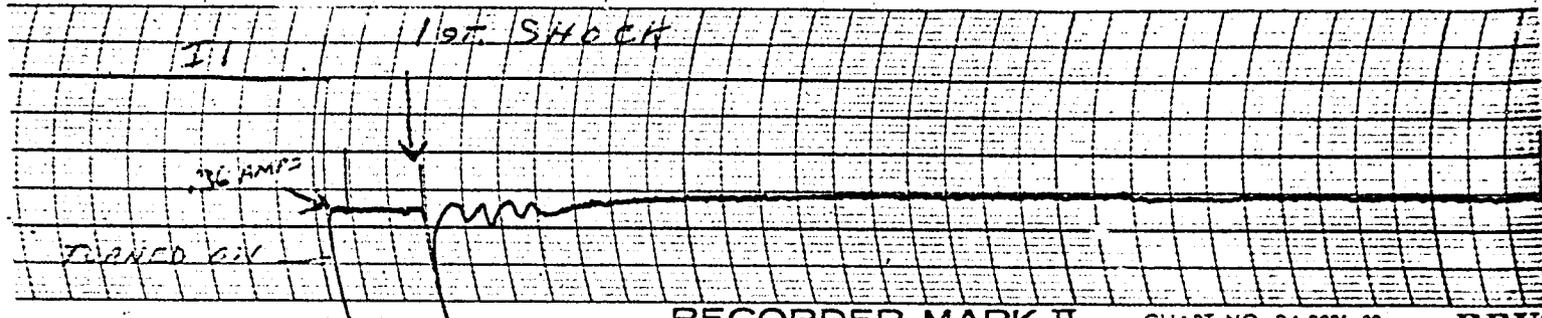
Encl: Figures 1 - 3

Copy to:
E. H. Copeland, 7331
Central File, 8233-2
Central Technical File, 3421-3

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FIGURE 1 - WATER ENTRY SHOCK OF THE XW-55, TRM-5

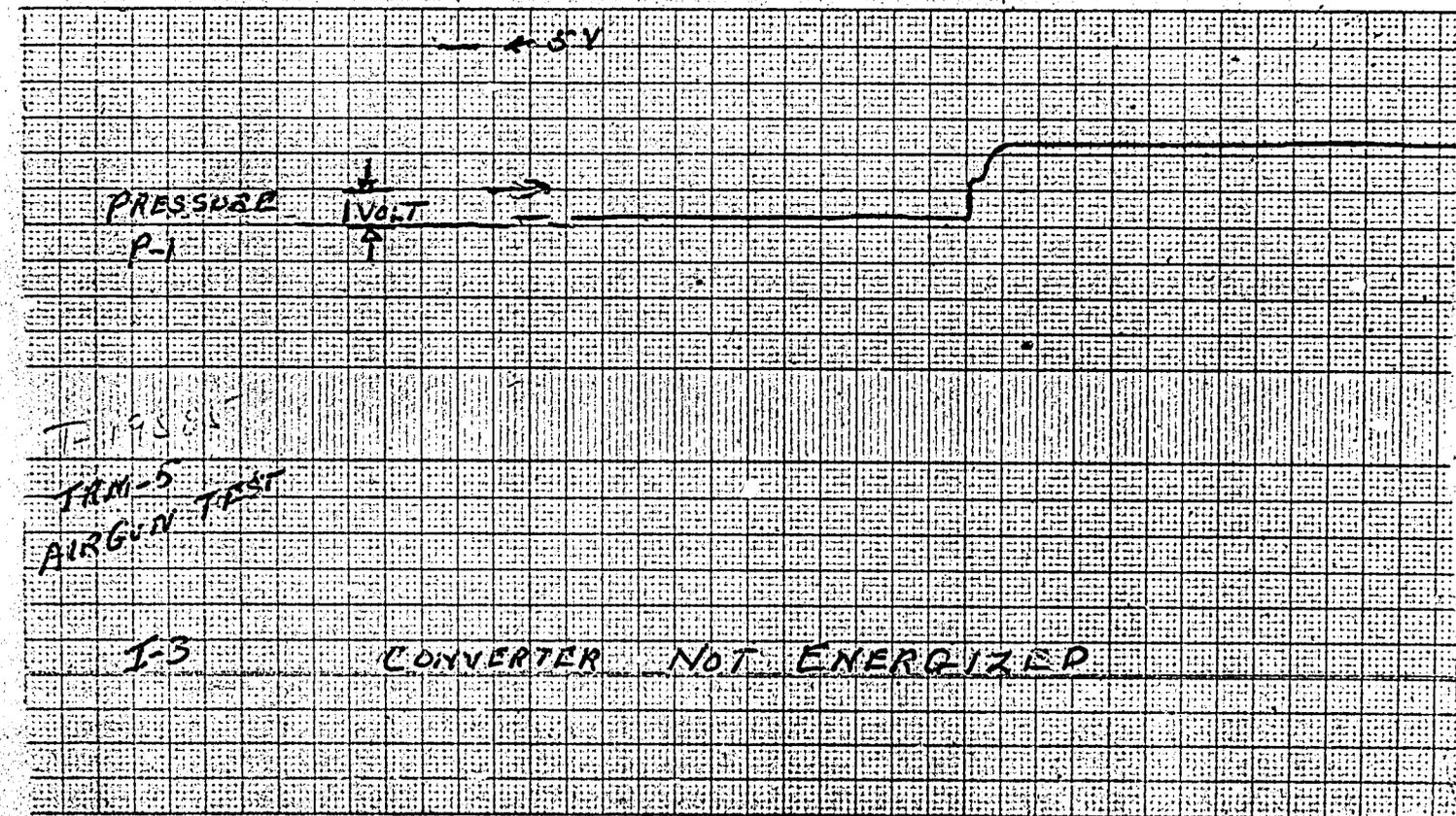
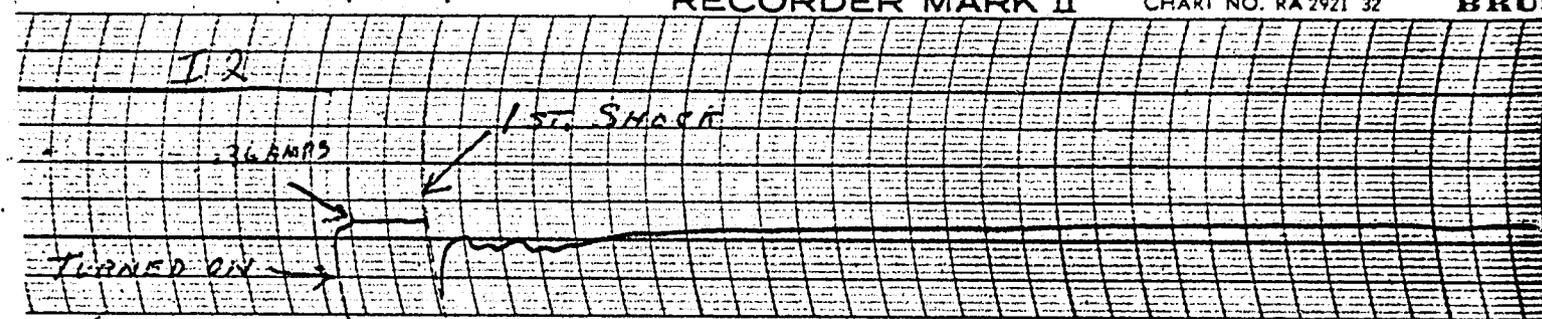
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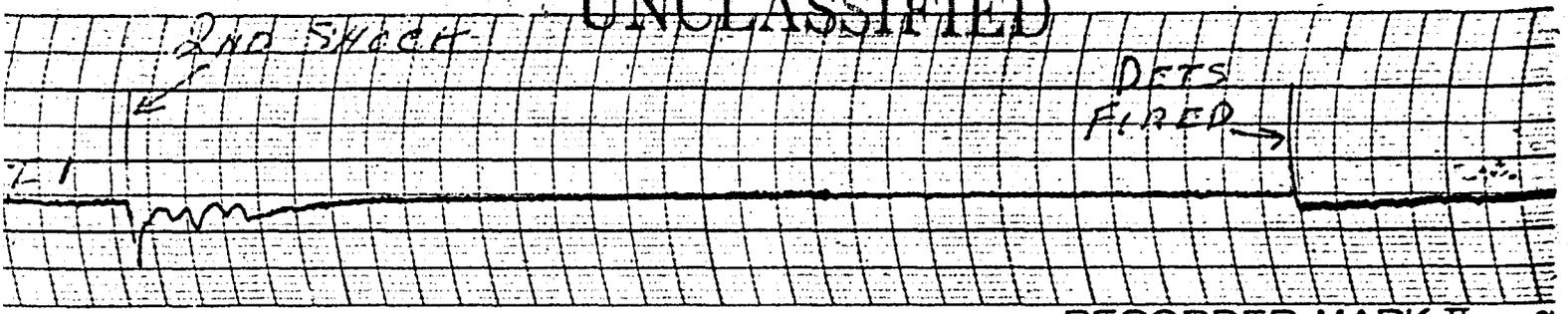
RECORDER MARK II

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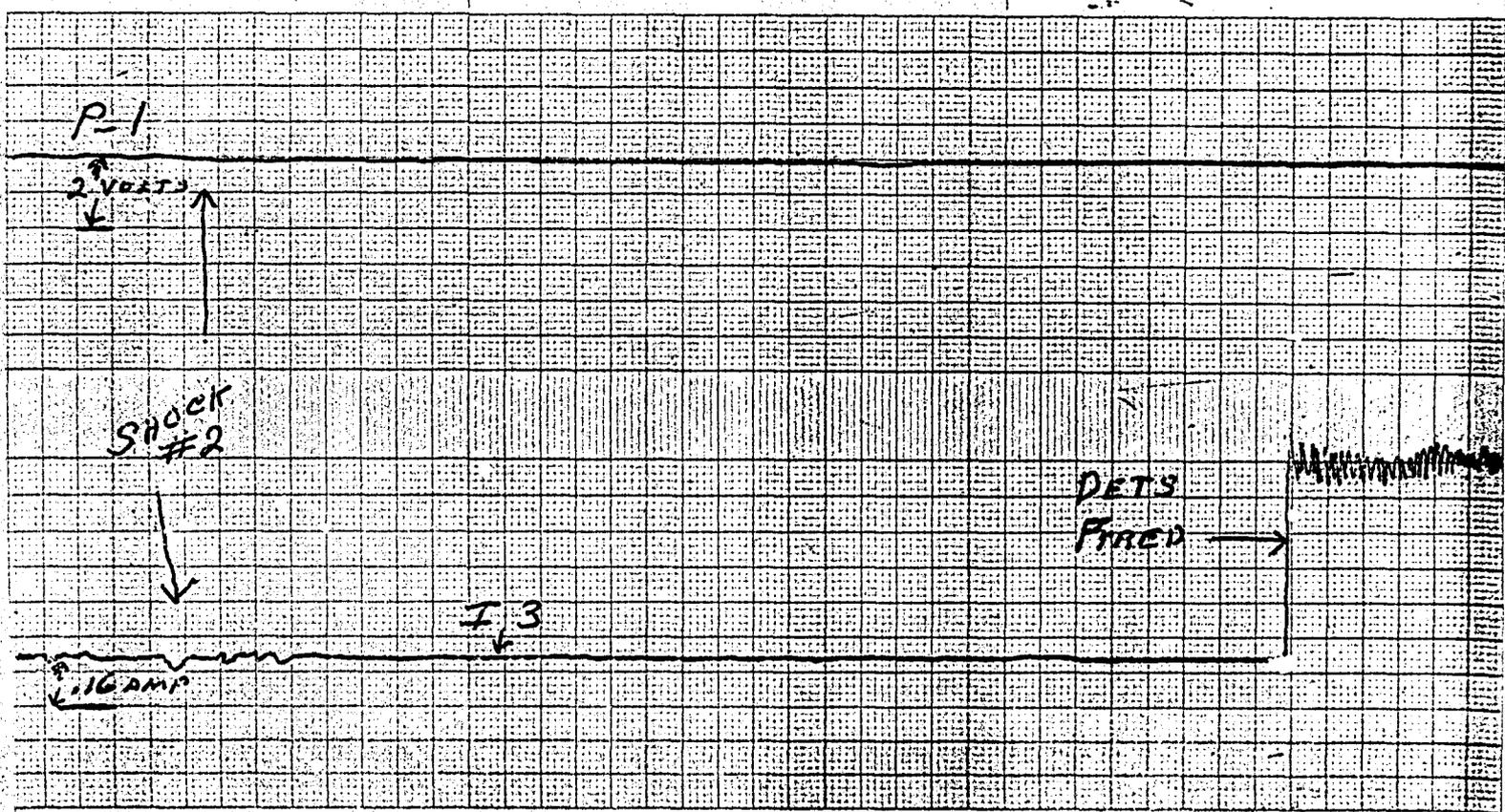
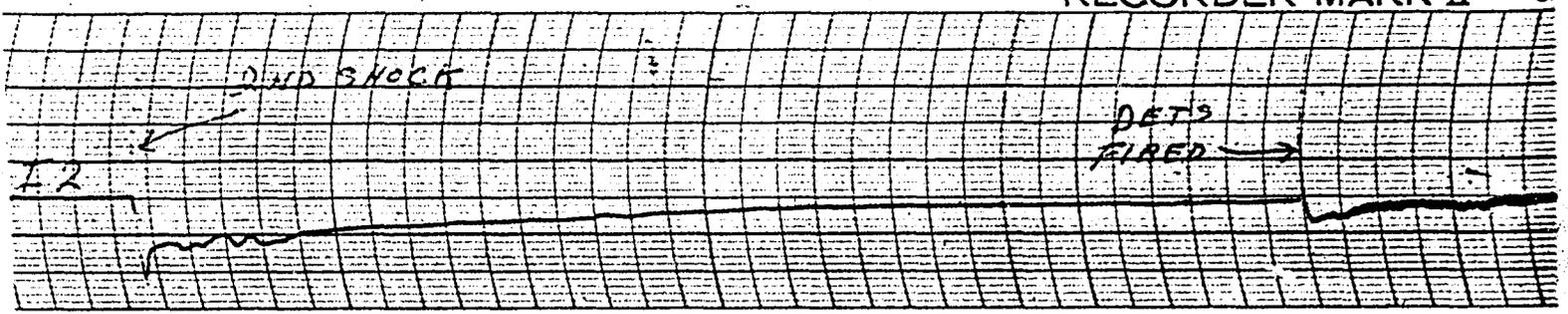
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FIGURE 3 - LEAK RATE TESTS OF XW-55 TRM-5

<u>Date</u> Date	<u>* Leak Rate</u> cc/sec STP	<u>Environment</u>
4-8-63	1.7×10^{-6}	Before any environmental tests
4-18-63	1.6×10^{-5}	After 1st high temp cycle
4-23-63	1.7×10^{-5}	After 1st low temp shock
4-29-63	1.9×10^{-5}	After 2nd low temp shock
5-8-63	2.1×10^{-5}	After 2nd high temp cycle
5-28-63	1.3×10^{-4}	After shipboard vibration and linear acceleration
5-29-63	3.2×10^{-5}	Rerun of leak test
6-3-63	2.2×10^{-5}	Rerun of leak test in A-I chamber
6-10-63	4.2×10^{-5}	After salt fog
8-30-63	4.9×10^{-5}	After tactical vibration

* All of the tests were performed in the Area III chamber except as noted. Reading taken on 5-28-63 was considered invalid due to excessive background in chamber. This was verified by readings taken on 5-29-63 and 6-3-63 in two separate chambers.

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