

UNCLASSIFIED

JAN 9 1959
W49-0, 3-2
Project No. ET-7106
Case No. 784.00
Completed 9-1-58

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW

Date: 5/18/98
 Authority: ADD
 Name: W. C. Layne
 Review Date: 5/26/98
 Authority: ADD
 Name: W. C. Layne

Declassification (Circle Numbers)
 Classification Retained
 Classification Changed to: UNCL
 Contains No DOE Classified Information
 Contains With
 Contains UCAIT
 Comments: [Signature]

Environmental Test on
W49-0 Warhead

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
 DOWNGRADING OR DECLASSIFICATION STAMP

CLASSIFICATION CHANGED TO: U
 Authority: W. C. Layne
 PERSON CHANGING MARKING & DATE: Emeda Selph 5/27/98
 RECORD ID: 98SN2111
 PERSON VERIFYING MARKING & DATE: W. C. Layne 5/28/98
 DATED: 5/26/98

Summary

Both warheads, consisting of: primary (dummy), secondary (dummy), A section, B section, and an afterbody, lost their internal pressure during environmental tests as follows:

TEST	LENGTH OF TEST	NUMBER OF TIMES UNIT REQUIRED REPRESSURIZING DURING TEST
<u>UNIT A</u>		
Tropical exposure	20 days	2
Temperature Shock	1 cycle	*
Salt Spray	50 hours	2
Rain	4 hours	0
Temperature Shock	2 cycles	**
<u>UNIT B</u>		
Temperature Shock	3 cycles	***

- * Unit lost pressure during first half cycle at -65°F. Due to leak around hanger lug insert.
- ** Temperature shock test extended 1/2 cycle in order to check for leaks at -65°F.
- *** Unit lost pressure during first half cycle at -65°F, and was not repressurized during remainder of test. Leak was around "O" ring between A and B section of the case.

There was no apparent damage to the case finish. Neither unit had any electrical components included.

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CENTRAL RECORD FILE

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Object of Test

The object of the environmental tests on engineering units of the W-49-0 warhead was to determine: (1) their ability to hold pressure and (2) the effects of the environments on the case finish.

Authorization for Test

This test was authorized by Division 1245 as a part of the development engineering program on the W-49-0. Mr. T. Oetman was the consultant.

Procedure and Results

Unit No. A was pressurized to 15 psig, then subjected to a 20-day tropical exposure test in accordance with SCS-5, paragraph 4.2. It was necessary to repressurize the unit after the second cycle and again after the sixth cycle of the test. The pressure inside the unit was zero at the end of the test.

When units A and B were pressure tested, leaks were found at the following locations: Unit A leaked around the hanger lug insert; Unit B leaked around the "O" ring between the A and B sections of this case. Both units were pressurized to 15 psig and a temperature shock test started. The thermocouples were mounted on the aft end of the secondary and on the primary (where the distance between the primary and the case was the shortest). Each unit was left in the 160°F chamber until the primary reached a temperature of 125°F and in the -65°F chamber until the temperature of the secondary reached -65°F. The curves showing the temperature lag at the two points monitored on unit No. A are shown in Figure 1. During the first 1/2 cycle (37 hours), unit A was in the -65°F chamber and unit B was in the +160°F chamber. After the primary of unit B reached a temperature of 125°F, the chamber temperature was reduced to 125°F and left for the remaining 25 hours. At this time, the temperature in the chamber, in which unit B was located, was changed to -65°F and the temperature in the chamber, in which unit A was located, was changed to +160°F. After 12 hours the primary of unit A was at 125°F. At this time unit A was removed from the test and the cycling continued on unit B. During the first exposure to -65°F, the pressure in both units went to zero. Unit B was not repressurized during the 3 cycles of thermal shock. At the conclusion of the thermal shock test, unit B was returned to the consultant.

While waiting on unit B to complete the temperature shock test, unit A was subjected to salt and rain tests. The unit was pressured to 15 psig before the salt test was started and it was necessary to repressurize the unit after 24 hours to make sure that a positive pressure was kept inside the case throughout the 50-hour salt spray test. At the conclusion of the salt spray test, the unit was again repressurized, then subjected

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to a 4-hour rain test. There was no apparent damage to the case as a result of the salt and rain tests.

Unit A was then started again on the temperature shock test. The temperature shock test was extended an extra 1/2 cycle so that leak tests could be made while the unit was at -65°F. No leaks other than the leak around the hanger lug insert were found on this unit. The unit was then returned to the consultant.

D. G. Westfall
Test Conducted by: D. G. WESTFALL - 1611-1

C. M. Jones
Test Engineer: C. M. JONES - 1611-1

R. S. Hooper
Approved by: R. S. HOOPER - 1611-1

CNJ:1611-1:ec

Enc: Figure 1

Copy to.

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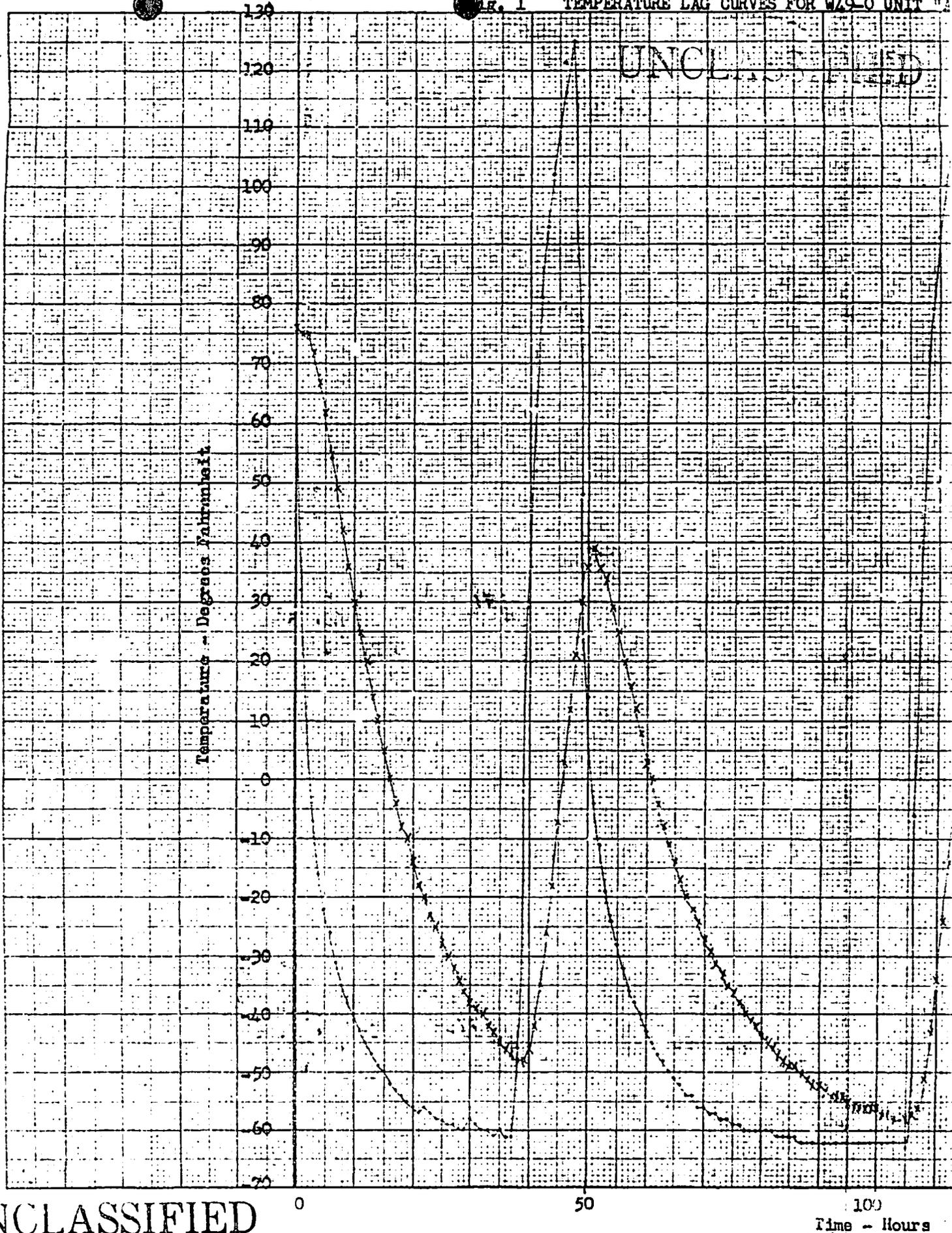
R. K. Smeltzer, ~~7221-9~~ 4721-8

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Time - Hours

R W49-O UNIT "A" DURING TEMPERATURE SHOCK

Code:

Symbol Thermocouple Location

Secondary
Primary

