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SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 5/22/98
Authority: ADD
Name: P Chavez
2nd Review Date: 5-26-98
Authority: ADD
Name: W Layne
Determination (Check Numbers):
1. Classification Retained
2. Classification Changed to: UNCL
3. Contains No DOE Classified Information
4. Coordinate With:
5. Contains UCNI?
6. Comments:
RECLASSIFY

JUN 6 1961
File No. Z-49, 3-2
T-17434
13.784.10
RS 7321/9776

INVENTORIED
SEP 14 '65
3428-3
INVENTORIED
AUG 6 1964
3428-3
RECEIVED
JUN - 6 1961
CENTRAL RECORD FILE

TO: DISTRIBUTION

Re: Joint Qualification Salt Spray Test of Mk 3 Re-entry Vehicle with W-49-4, Unit "Z"

Summary of Test

A salt spray test of 50-hour duration was performed (12/13-15/60) on a General Electric Corporation Mk 3 Re-entry Vehicle, supported in a horizontal position. W-49-4, Unit Z, formed the center section of the re-entry vehicle. The test was one of a series of Joint Qualification Tests conducted on a Mk 3 R/V. Its purpose was to demonstrate that salt spray would not cause damage to the R/V or penetrate the R/V nose or flare section joints so that possible internal damage could result.

No deleterious results were noted as a result of the test.

Procedure

The Mk 3 R/V, supported on a trailer, was placed in the salt spray chamber as shown in Figure 1.

Measurements of the warhead ablative sleeve, taken prior to the test are listed in Table I.

Instrumentation during the test consisted of three thermocouples at the following locations:

T-1; on the aft end of Test Wt. No. 2 in the warhead
T-2; at 0° on the equatorial axis of Test Wt. No. 1 in the warhead
T-3; chamber air temperature near the R/V (Figure 1)

FILE
Mk-49
3-2

The thermocouples were recorded continuously on a Brown recorder, Model No. 153 X60P16-31F1, Serial No. 515968.

The salt solution was mixed according to SCS-7, Para. 4.12 specifications. To obtain the exact chemical composition, a sample of the vat solution was taken prior to the test for chemical analysis. In addition, two beakers (3-inch inside diameter) were placed on either side of the R/V (Figure 1) during the first 48 hours of the test, and the salt solution collected in them was chemically analyzed. All analyses were performed by Sandia Corporation Chemistry and Spectroscopy Division 1122.

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DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
AUTHORITY: W.C Layne
Emelda Selph 5/27/98
PERSON CHANGING MARKING & DATE
RECORD ID: 98SN2129
W C Layne 5/28/98
PERSON VERIFYING MARKING & DATE
DATED: 5/26/98

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The atomization collection rate (in ml/8.0 sq. cms. of area/hr., in conformance with SCS-7 specification) was also determined from these samples, by measuring with a graduated cylinder the volume of solution collected during each 24-hour period in each beaker.

Table II lists pertinent chemical and physical properties of the salt solution samples taken before and during the test, and the atomization collection rate.

The salt spray test was conducted for 50 hours per SCS-7, Para. 4.12.

Results

No damage to the R/V was noted as a result of the test.

Air temperature recorded near the R/V (Thermocouple T-3) remained at 85 ± 2°F throughout the test. Temperature of Test Wt. No. 1 (thermocouple T-2) climbed from 78°F at the beginning to a final temperature of 85°F corresponding temperatures from Thermocouple T-1 on Test Wt. No. 2 climbed from 77°F to 83°F.

Table I shows warhead ablative sleeve measurements taken after the test compared to corresponding measurements taken prior to the Test. No significant dimensional changes were noted.

Following the test, the R/V was disassembled into its three major sections (nose cap, warhead, and flare) and visually examined. No internal penetration of salt spray was detected. Resistance to ground of the contact fusing circuits, from megohmmeter readings made by Mr. G. E. Temple of G. E. Corporation, was within prescribed tolerances.

G. Willson by DOV
7321 Project Engineer: G. WILLSON, 7321-5

Approved By: R. S. HOOPER, 7321-5

GW:mr

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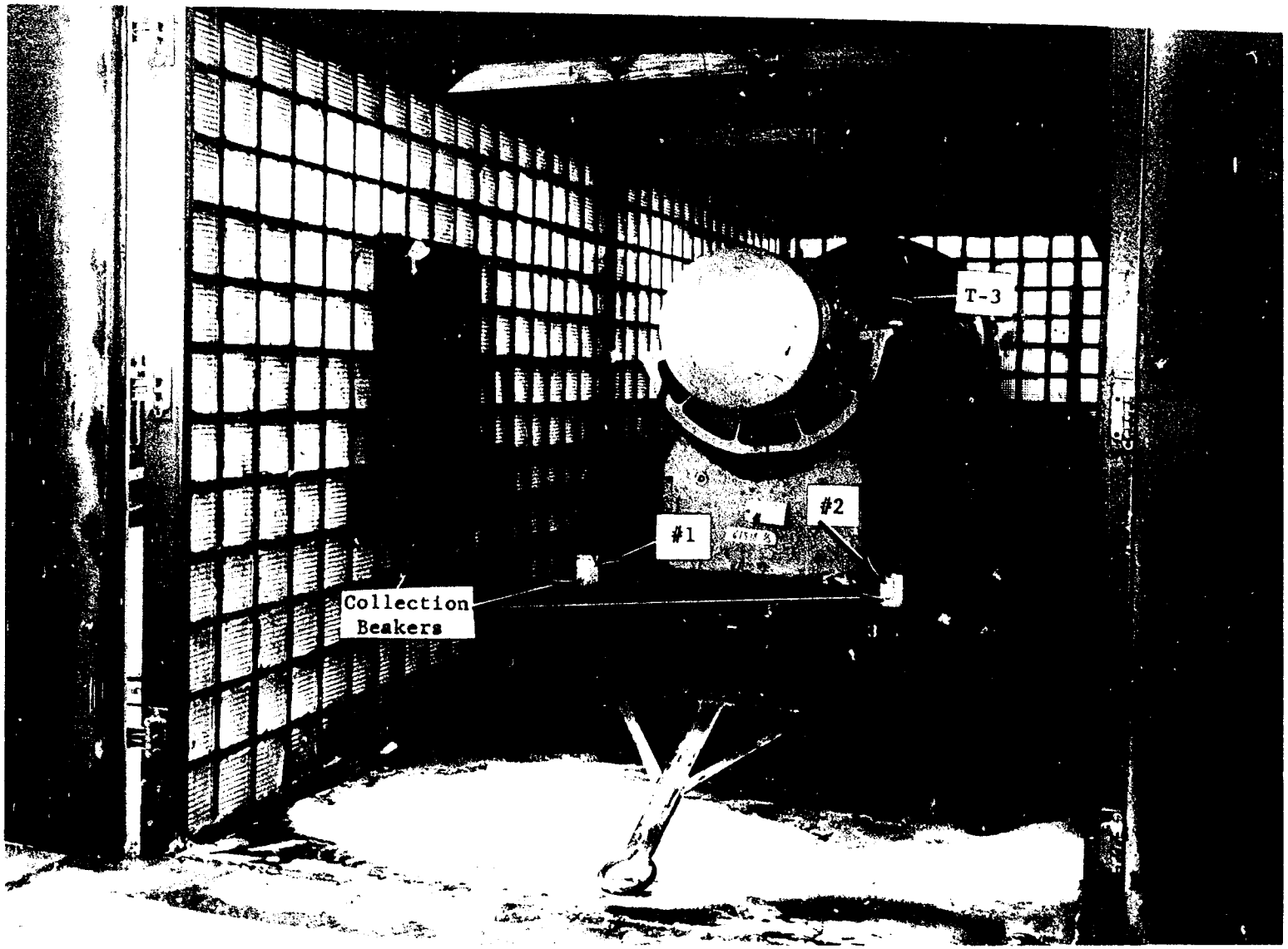

Figure 1 - MK 2 Re-entry Vehicle in [illegible] Chamber

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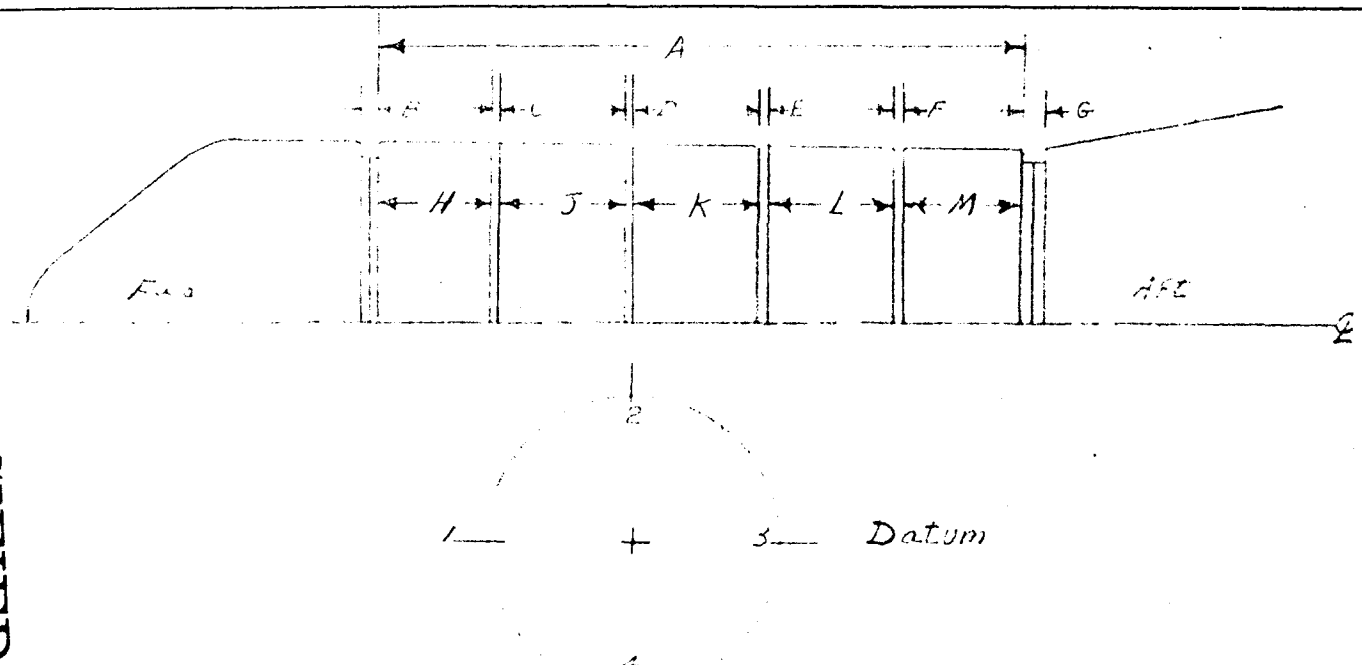

Nuclear Section - Locking Aft

Measurements Before Test (Dec. 12, 1960), at Stabilized Temp. of 72°F

Location	A	B	C	D	E	F	G	H	J	K	L	M
1	—	.061	.040	.046	.049	.050	.050	8.965	8.955	7.965	7.960	8.810
2	—	.065	.041	.050	.054	.054	.045	8.963	8.949	7.951	7.949	8.806
3	—	.061	.043	.045	.055	.052	.045	8.959	8.951	7.955	7.952	8.808
4	—	.053	—	—	—	—	.052	—	—	—	—	—

Measurements After Test (Dec. 15, 1960), at Stabilized Temp. of 85°F

Location	A	B	C	D	E	F	G	H	J	K	L	M
1	—	.061	.040	.045	.049	.050	.050	8.964	8.961	7.961	7.956	8.809
2	—	.065	.041	.050	.054	.054	.044	8.962	8.951	7.951	7.945	8.807
3	—	.061	.042	.045	.055	.052	.043	8.961	8.956	7.956	7.953	8.806
4	—	.055	—	—	—	—	.055	—	—	—	—	—

Table-1 Ablative Sleeve Measurements

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SC 9302-A (9-54) SKETCH SHEET-8X8

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REPORT NO.
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TABLE II

Chemical and Physical Properties of Salt Solution

	Specific Gravity	PH (77°F	%NaCl (by wt.)	Atomization Collections Rate[3] (ml/80 cm^2 area/hr) Beaker No. 1	Beaker No. 2
Solution, before test[1]	1.107	9.9	14.93	--	--
Sample collected during first 24 hrs of test[2]	1.177	8.1	23.8	0.40 (5.5 ml. collected)	0.62 8.5 ml. collected)
Sample collected during second 24 hrs of test[2]	1.173	8.0	23.3	0.44 (6 ml. collected)	0.64 8.75 ml. collected)

NOTES: 1. Sample was taken from salt solution vat before test.

2. Samples collected in both beakers were mixed for analysis.

3. Collected in 3-inch diamter (45.6 cm^2 area) beakers shown in Figure 1.

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