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JUN 22 1960

10/17/98  
RB Crasur  
10/26/98  
wtopa  
TCG-SAFF-1

File: P-2.1 (Thermal)  
T-17092  
13.761.01  
Completed 6-10-60

TO: DISTRIBUTION

Re: Temperature Measurements on a Thermal Battery During Activation

Object of Test

This test was performed to determine the maximum surface temperature reached at various locations on a 28 volt thermal battery during the first 35 seconds after activation.

Summary

One 28 volt thermal battery was activated at ambient temperature. The output voltage and surface temperature were recorded during activation. The surface temperature was monitored at five locations. The highest temperature recorded during the first 35 seconds of activated life was 165° above the reference temperature of 75°F.

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CENTRAL RECORD FILE

Authorization for Test

This test was requested by Organization 1225 in a work order on activation dated 6-9-60. Mr. James Jacobs was the consultant. The material for test was received 6-9-60.

Functional Measurements and Methods

The equipment and instrumentation used in this test are listed below.

The surface temperature of the battery was monitored with thermocouples at five locations. The outputs of the thermocouples were amplified and fed to a twelve channel Heiland Visicorder Model, 906A, Serial Number 9-6457. Five Kintal Amplifiers, Serial Numbers 99370, 99366, 99062, 99063, and 99355 were used to amplify the thermocouple outputs. A 28 volt DC power supply was used to activate the battery.

P-2.1  
(Thermal)

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CLASSIFIED BY (SIC) (GEO) <i>W</i>	AUTHORITY: <i>W. L. Lagne</i>
PERSON VERIFYING MARKING & DATE <i>W. C. Crasur 10/28/98</i>	RECORD ID: <i>495N0192</i>
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The battery output voltage was monitored with the Visicorder. The Visicorder traces were calibrated in degrees above ambient temperature just prior to the test.

A time mark generator, Serial Number SW-421-11, was used to put time marks on two of the Visicorder traces.

Procedure and Results

One 28 Volt thermal battery was activated at ambient temperature. The output voltage and surface temperature of the battery were recorded during activation.

The locations of the five thermocouples used to monitor the surface temperature are shown in a sketch on Table I. The temperatures recorded at these locations are listed in Table I for 35 seconds of the activated life. The maximum temperature readings occurred at 35 seconds and were still increasing. The recording was actually run for 450 seconds, but the consultant was interested in only the first 35 seconds of activated life and this is all that is presented in Table I.

The output voltage of the battery for the first 35 seconds of activated is listed in Table I. The only load on the battery was the galvo of the Visicorder which drew approximately 30 milliamps of current.

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R. L. KURTZ - 1611-3

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RLK:1611-3:eg

Enc: Table I

## Copy to:

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TABLE I UNCLASSIFIED

THERMAL BATTERY TEMPERATURE AND OUTPUT VOLT

TIME (SEC)	TC OF 1	TC OF 2	TC OF 3	TC OF 4	TC OF 5	VOLT. OUT.
1	8.45	12.8	—	2.0	—	33.1
3	21.1	78	20.2	4.0	—	31.5
5	27.4	121.8	30.4	14.0	1.82	31.6
10	38.0	138	60.8	30.0	1.82	31.7
15	48.5	149	87.0	48.0	3.65	31.8
20	52.8	153	111.8	64.0	—	32.3
25	65.2	162	126	74.0	3.65	32.3
30	80.0	164	142	82.0	3.65	32.3
35	86.5	166	152	86.0	—	32.7

TC READINGS REPRESENT TEMPERATURE RISE IN DEGREE ABOVE AN AMBIENT TEMPERATURE OF 75°F

