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Gravity Probe B Relativity Mission

E28 Test Report Update

(Update to S0756 Rev -)

S0957, Rev. -

November 4, 2003

Prepared by:

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Date

Approved by:

Rob Brumley

Date

ITAR Assessment Performed _____

Tom Langenstein

ITAR Control Req'd? ☐ Yes ☐ No

Purpose:

This document updates the open items in S0756, Rev - of March 3, 2003. Due to some issue with the native MS Word file, several attempts to update that file to revision A resulted in a file corruption making that Rev A file unreadable. For that reason, this document can be considered a revision to that report.

Discussion

The report cover the SRE Algorithm Test (15.16) -- Flux Slip testing, RAV Functional Test (10.1.5), and Heater Test (15.6). Also included here is SRE Recovery from Safemode (15.34).

1. SRE Algorithm Test (15.16)

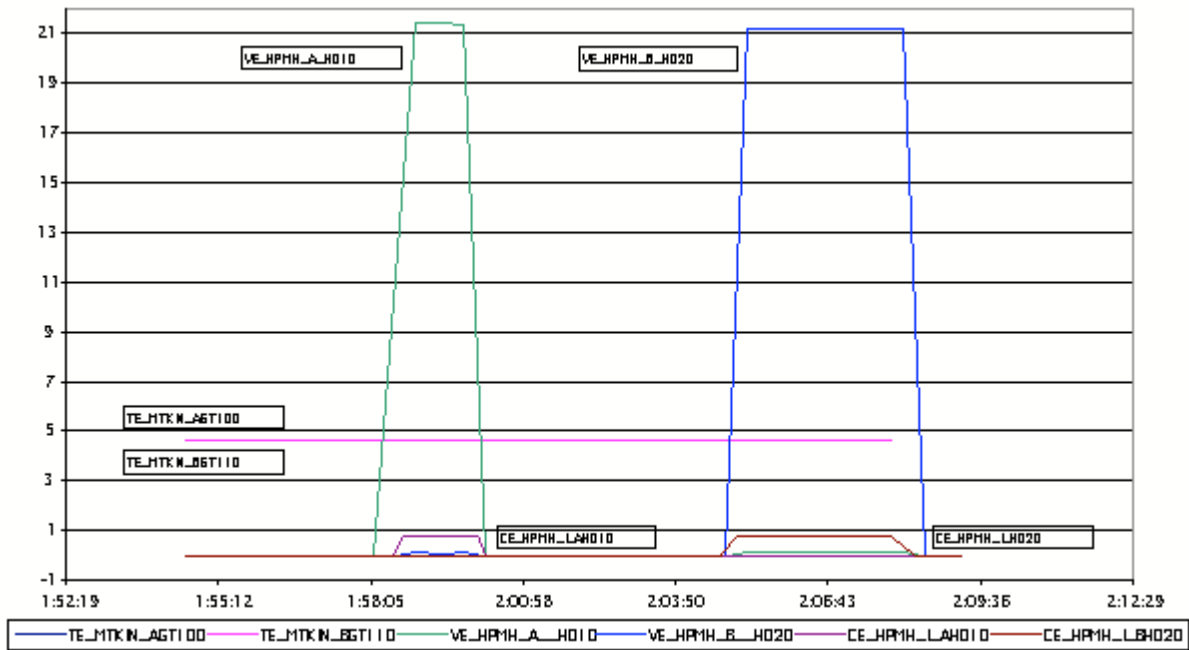
Flux slip run on the vehicle successfully on 10/1/2003 under SRE_A_EPSB_PRC. As run records delivered in LM / P480635B demonstrate successful completion of this test.

2. RAV Functional Test (10.1.5)

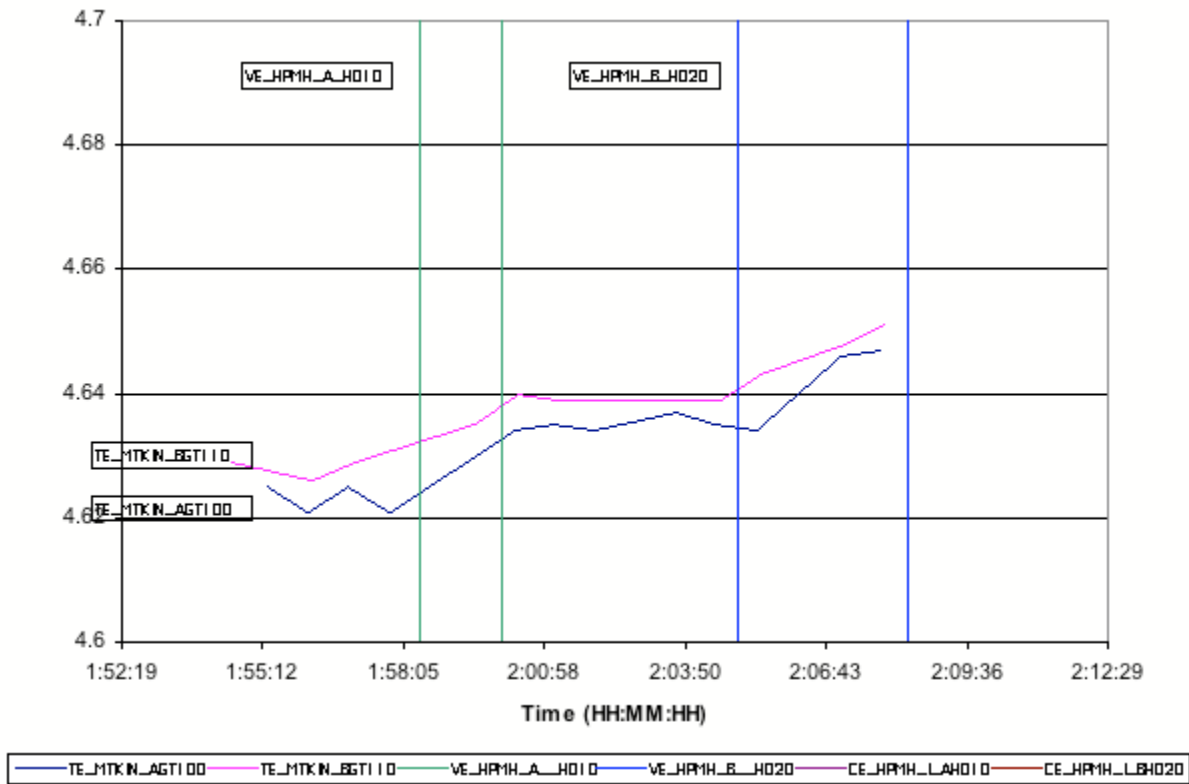
On 12 June 2003 and 15 June 2003, the RAVs were successfully operated via the ACE. As run records delivered in LM / P480635B demonstrate successful completion of this test.

3. Heater Test (15.6)

The Heater Plot shows when the heater was activated. The Temperature plot shows that the system responded as expected. Test Successful.



Heater Plot



Temp Plot

4. SRE Recovery from Safemode

The intent of the SRE recovery from Safemode is to test clock switching functionality.

Plots from Sim6 (delivered in LM / P480635B) during safemode activation, where the SRE was turned off, but not the GSS and ECU shows that an SRE clock is not required to run the remainder of the payload when the SRE is off.

Functional tests (A / B) have not demonstrated that the GSS and ECU remain functional when the clock is turned on and off. This data shows that indeed the GSS and ECU perform nominally without an SRE which was the intent of the 15.34 test segment in E28. The 15.34 test was a verifier for T003 16.8.1.

MSFC (Looney, Gandy) approved the verification of T003 16.8.1 based on this data which closed the MSFC action Item V-58 associated with this requirement.

SRE Recovery from Safemode has been successfully verified.