PFR-018 Title: Simulated SPB Door Open Failed

Assembly : F1 Instrument	**SubAssembly : EFI**
Component : SPB - 901, 902	
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Failure Occurred During (Check one √)

√ Functional test □ Qualification test □ S/C Integration □ Launch operations

Environment when failure occurred:

√ Ambient □ Vibration □ Shock □ Acoustic
□ Thermal □ Vacuum □ Thermal-Vacuum □ EMI/EMC

Problem Description

(In this section it is important to document the specific symptoms which exhibited the problem. In the event we see it happen again, we would like to know as much as possible.)

With the ETU IDPU, EFI Flight Cable and SPBs in the integration area, a test of the SPB Door Open procedure was performed using the SPB Simulator attached via cable to the SPB unit. The IDPU was commanded to open the X doors but there was no current drawn in the circuit. This indicated that the door SMA simulator failed to fire.

Analyses Performed to Determine Cause

(How do we know how the failure happened? Was it a bad part, bad handling, what?)

The SPB simulator unit and test cable to the SPB were removed from the test platform for diagnosis.

The SPB test cable was a 1-to-1 Male-to-Female with a Male-to-Male add-on. This cable would therefore connect pin 1 to pin 1, etc, on each of the SPB JY and the SPB Simulator JY connectors. Since the JY connector is an arming plug, it was immediately obvious that a 1-to-1 connection would not provide connections needed to activate the door simulator.

The SPB Simulator and test cable were attached to a BOB. In the above test, pin 4 was given 24V wrt pin 5. SPB Simulator JY pins 4, 5 measured for no-continuity. This explains why there was no activity seen in the above firing test. The SPB Simulator JY pins 10, 5 were verified as having 7 Ohms impedance, indicating the proper function of the simulator.

Corrective Action/ Resolution

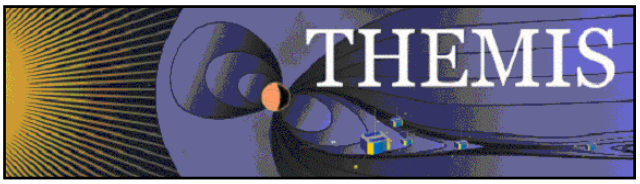
(How do we fix the unit? And how do we make sure it doesn't happen again?)

[1] ***New cables were made*** having the correct pin-out and appropriate gender as shown in Figure 1.
[2] The safe-to-mate procedure was modified to add the SPB Simulator cable.

Acceptance:
MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____



SPB JY SDD15M	Signal Function	SPB Simulator SDD15M
1	Motor P28VA	2
6	Motor P28VA_RTN	7
13	ACTest In	14
14	ACTest Out	13
3	Turns Cnt	9
8	Turns Cnt RTN	8
4	Door SMA	10
5	Door SMA RTN	5

Figure 1. SPB -to- SPB_Simulator Test Cable (Length=25')