

**Proposed Change Level (Circle): 3**

**Proposed Change:** SPBs doors re-designed to stay open

**Lead Engineer:** Donakowski

**Subsystem:** EFI SPBs

**Reason for Change:**

To afford a more robust design in terms of the initial deployment of the Sphere and Preamp, the EFI Spin Plane Boom doors were re-designed to flip open and stay open.

**Reference Documentation Summary**

spb\_solar\_shade.zip

**Subsystem Impacted:** (Bold indicates an impact)

ACS	C&DH	Mechanical	Propulsion	Booms	IDPU S/W
Battery	EGSE	MGSE	RF Comm	<b>EFI</b>	SST
Bus	Harness	Mission Ops	Solar Array	ESA	SCM
Avionics Unit	I&T	<b>Power</b>	<b>Thermal</b>	FGM	
BUS S/W	Launch Vehicle			IDPU	

**Minutes Summary (Systems Engineering Meeting):**

The advantages and disadvantages of the proposed SPB design change were evaluated and captured in JB e-mail, dated 11/1/04, Subject: flip-open door re-design for THEMIS SPBs (John Bonnell, Bill Donakowski, Paul Turin, Greg Dalton, Ellen Taylor, Peter Harvey).

**Advantages:**

- More robust design.
- Would gain a positive indication of door opening by the change in the electrical behavior of the sensors.

**Disadvantages:**

- Possible shading of the solar panels during nominal science operation
- Possible adverse thermal affects during nominal science operation

Based on UCB analysis, it was decided that the disadvantages were not significant enough to outweigh the advantages of the proposed design change. Additional shadowing and thermal analysis will be completed by Swales to verify.

**Approval**

**PROPRIETARY**  
YES ☐ NO ☐

**Project Manager**

Date

**Systems**

Date

**Impacted Subsystem Lead**

**Distribution**

- Subsystem trades (level 4) can be made within the resources of the subsystem. Systems Engineer insight and involvement.
- Trades that impact subsystem/system interfaces or resource allocations (level 3/level 2) require concurrence by the Configuration Control Board (CCB): Principal Investigator, Project Manager, Mission Systems Engineer (MSE), Probe Systems Engineer, Mission Operations Manager and affected Team Leads. GSFC Mission Manager insight.
- Trades that impact Level 1 *baseline* science/programmatic requirements must include approval by Principal Investigator and GSFC Mission Manager.
- Trades that impact Level 1 *minimum* science/programmatic requirements must include approval by NASA HQ.