

Proposed Change Level (1, 2, 3, 4): 2
Proposed Change: Change Boom Length for Stability

Lead Engineer: Turin
Subsystem: EFI Booms

Reason for Change:

A mass properties constraint was discovered while running simulations for PDR. Namely, the rigid body stability criteria of the ratio of spin to transverse axis inertia > 1 (1.04 empirically) must be applied to the spinning rigid central body. To obtain this ratio, the axial boom length will be reduced and spin plane boom length increased per analysis.

Reference Documentation Summary

THEMIS ACS Stability Analysis, Swales Memorandum (LeBoeuf, 10/23/2003)
Probe Central Body Mass Properties (Eppler 1/6/2004)
Th_Booms4_Preview2d (Pankow 1/30/2004)

Subsystem Impacted: (Bold indicates an impact)

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

Minutes Summary (Systems Engineering Meeting):

John Bonnell (2/10/2004): SPB: 50-m/40-m; AXB: 7.67-m

Approval

PROPRIETARY
YES ☐ NO ☐

Project Manager _____ **Date** _____
Systems _____
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.

Date