

**Proposed Change Level (1, 2, 3, 4): 3**

**Proposed Change: Cant Mag Booms**

**Lead Engineer: Turin**

**Subsystem: Mag Booms**

## Reason for Change:

Shadowing from Mag Booms would decrease power generated from Solar Arrays.

## Reference Documentation Summary

SA Nom Shadows.zip (Brenneman, 1/29/3004)

Mag Shadow Avoidance.pdf (Turin, 2/3/2004)

THM\_SCM\_ICD\_001 SCM ICD Drawing, THM\_FGM\_ICD\_001 FGM ICD Drawing

## Subsystem Impacted: (Bold indicates an impact)

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

## Minutes Summary (Systems Engineering Meeting):

SCM boom can be canted approx. 10 degrees and the FGM boom approx. 5 degrees with very little impact (no mass increase, minimal schedule).

System effects:

1. Buys back a little power (about 3%, or 1W).
2. Requires axial booms to be shortened slightly for stability. Affects the ESC specification and the amount of allowable exposed area (< 2%).
3. Raises the CG slightly (7.5 in. upward CG shift for both the SCM and FGM deployed).

Booms will be canted per ICDs.

## 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**