SWALES AEROSPACE
Beltsville, Maryland 20705

THEMIS System Change Notice

SCN#: *023*
Date: 14 March 2006

Proposed Change Level (Circle): 3 **Proposed Change:** **MRD G.4 to G.5 Updates**	**Lead Engineer:** Taylor **Subsystem:** Systems

Reason for Change:

An update to the MRD was required to collect changes that have been made since the last update.

Reference Documentation Summary

thm_sys_001f_MRD_ResourceChangeLog.xls

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

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

Minutes Summary (Systems Engineering Meeting):

Based on Swales PRB 196 and Hammer ITS 190, it has been determined that a complete memory scrub must be performed following Cold restarts. In order to do that, more time is needed prior to responding to commands and servicing the watchdog timer. The amount needed is slightly less than 150 seconds, so the following changes need to be made the MRD to reflect this.

PB.FSW-10, change 60 to 150, and PB.FSW-14, change 60 to 150

Since this is a self imposed requirement, there is no issue with parents (general FD&C and process commands) being adversly effected.

Regarding PB.EPS-9, a rational was included in the past which is inconsistent with the single fault tolerant requirement of this mission. PB.EPS-9 requirement says "The Solar Array shall be sized to meet worst case power requirements at EOL.", but the rational says "… Worst-case assumes failure of one solar array string and one battery cell, charging at minimum voltage of 22V." First of all, this is two failures which is out of the scope of the mission. Per M-5: " To the maximum extent possible, THEMIS shall be designed to be single fault tolerant and still meet minimum mission success criteria". Thus analysis with one solar string OR one battery string would have to be measured against the minimum mission, not the nominal mission, and should be done as part of contingency analysis and planning. Secondly "charging at a minimum voltage of 22V" is not pertinent to this requirement since battery voltage is determined by the orbit and power requirements, and if 22V is ever reached, the Probe may never recover depending on the solar attitude. Therefore, this sentence will be removed from the rationale.

Approval

PROPRIETARY YES ☐ NO ☐

Project Manager _____ **Date**

Systems _____

Impacted Subsystem Lead _____ **Date**

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.