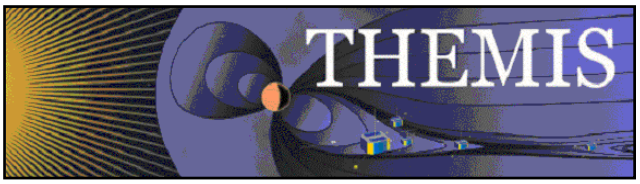

Problem/Failure Report
THM_PFR_123

PFR-123 Title: Data drop out during IDPU Integration (BAU Reset)

Assembly : BAU	**SubAssembly :** DPM	
Component : FSW	**Units Affected:** - X - - - -	**Units fixed:** - X - - - -
Originator: Ellen Taylor		
Organization: Swales/UCB	**Date:** 12/06/05	
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Failure Occurred During (Check one √)

√ Functional test □ Qualification test □ S/C Integration □ Launch operations □ Other (Flight Assy)

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.)

During the final step of P2 IDPU Electrical Integration on 12/6/05, ITOS data went static. Scope plots of the BAU hardline showed that no data was coming from the Probe. Commands to the Probe to turn off the IDPU were not recognized and a number of reset commands appeared to be unsuccessful. Scope plots of the IDPU/BAU Interface showed data coming from the IDPU, but the ready line was inactive and no command activity (typ. 1 command/sec) was present.

Update 1/11/06: In subsequent testing with the BAU, additional resets occurred not coincident with playing out IDPU data. This happened on

Analyses Performed to Determine Cause

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

The final step of the IDPU Electrical Integration procedure is to play out simulated high-speed telemetry on VC3. About 5 minutes after the playback started, the data link was lost. The following steps were performed in sequence in an attempt to recover data from the Probe:

1. Downlink was reset on the BAU (cpt01_gotodl(1M)). This had no effect on the ability to recover data.

2. The IDPU was commanded to stop sending high-speed telemetry (ITLMENABLE 0), put in safe mode (IDPUSAFE), and then turned off (PIDPUPWROFF). None of the commands were executed and the IDPU remained powered. Scope plots of the IDPU Interface showed data on the low and high speed link, but no commands activity, and the ready line was steady.

3. The following reset commands were sent in sequence (CHSWARMRESET, BHWPROCRESET, BHWBAURESET, BHWCIMRESET, BHWPCMRESET) waiting at least 60 seconds between them to allow enough time for successful FSW boot-up. All of the resets appeared to be unsuccessful and had no effect on the ability to recover data.

4. The probe was powered down, matching Battery/Bus voltage as well as possible without telemetry readback. The probe was powered back on (baupoweron(SAS)). All core system telemetry looked nominal.

6. The same reset commands were sent in sequence. CHSWARMRESET provided the expected telemetry response showing 1 warm restart. However, CHSPROCRESET resulted in another loss of telemetry.

7. The probe was powered down again and the IDPU Interface was removed. The probe was powered up with all core system telemetry nominal. The CHSPROCRESET command was sent again using the reset procedure and sequence of steps from CPT01. The CPT procedure included turning off the checksum, resending the transmit line, enabling the gse and restarting the downlink (CPTTXHI, CTPLM, CTPGSEENA, CTPRSTDL). Telemetry was recovered following this procedure.

8. On 12/7/05, the IDPU was connected again to try and recreate the problem. The probe was powered on (baupoweron(SAS)). The IDPU was turned on and the command and data links enabled. ITOS procedure "startsim_v2" was sent to generate simulated telemetry. Approx. 5000 packets were collected and played out (ITMENABLE, ITMPLAY) without a problem. Approx. 9000 more packets were collected and played out again (ITMPLAY). Telemetry was lost when the packet count on the ISSR ITOS page got down to about 3800 packets.

9. A warm restart was sent to the BAU (CHSWARMRESET). The telemetry link was then re-established using the CPT01 procedure. Telemetry readback showed that the IDPU remained on, although the telemetry and command links were disabled. Readback also showed the BAU reset count as COLD=2 and WARM =1.

Corrective Action/ Resolution

Swales/Hammers recreated and solved the BAU reset problem as described during the Flight BAU PSR. At UCB, this PFR was officially closed per THM-MINT-PROC-101 F2 PFR Close-out Procedure on 3/2/06. More than 10,000 high-speed science packets were collected and played out without issue.

Acceptance:
MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____