Problem/Failure Report
THM_PFR_231

PFR-231 Title: Command uplink timer inaccurate

Assembly : BAU	**SubAssembly :** FSW	
Component : Counter	**Units Affected:**	**Units fixed:**
Originator: Ellen Taylor	X X X X X 0	X X X X X 0
Organization: SSL	**Date:** 10 October 02	
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Failure Occurred During (Check one √)

√ Functional test ☐ Qualification test ☐ S/C Integration ☐ Launch operations ☐ Other (Calibration)

Environment when failure occurred:

√ Ambient ☐ Vibration ☐ Shock ☐ Acoustic
☐ Thermal ☐ Vacuum ☐ Thermal-Vacuum ☐ EMI/EMC

Problem Description

During additional testing by Hammers in response to an action identified by IV&V, the FSW 3.19 command uplink timer was found to be inaccurate. The discrepancy was logged in Hammers Issue Tracking Log:

tHC Issue #445: Command Uplink Timer inaccuracy.
A value is reported in telemetry that indicates the number of minutes elapsed since the last valid command was received by FSW. A bug in Build 3.19 renders this value unreliable. This has been fixed in Build 3.20, and affected 7 lines of executing code. Preliminary testing has verified the fix. Formal testing on FlatSat-East Coast should be completed by 10/08/06.

Analyses Performed to Determine Cause

The nature of the issue is twofold:

1. When counting, count rate is 25% too high.
2. Counter enters long periods of time (many hours) where it does not increment at all.

From C. Xenophontos: The bug was identified and fixed in FSW Build 3.20, and is the result of an incorrect variable/usage/computation being done.

Corrective Action/ Resolution

The decision on this PFR is to "fly-as-is." Operations will NOT use the uplink_timer in any Limit Monitoring action. LM09 in FSW 3.19 EEPROM, which uses the counter to enter a "broadcast" mode will be disabled and left that way. The purpose of LM09 was to provide some action if the probe was not heard from in 5 days. Instead, if this condition is see on-orbit, Operations will follow a specific contingency plan to send "hardware" commands from the ground to reset the communications board.

However, FSW Build 3.20 will be delivered to UCB for loading into Image 2 on the FlatSat. Mission Readiness Testing on FSW Build 3.19 will be completed and then regression tests on 3.20 started. Therefore, if there is a compelling reason to upload new FSW later in the mission, this section of code will already be tested.

Acceptance:
MAM: Ron Jackson________________________; MSE: Ellen Taylor____________________________

PM: Peter Harvey__________________________; Cognizant Engineer____________________________

Date of Closure____________________