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Gravity Probe B Relativity Mission

Command Timeout Reset Procedure

GP-B Procedure P0830 Rev -

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1. Revision History

Rev Level	Comments/notes	Date	Revised By
-	First release of this operational procedure	16-Apr-01	R. Campo

2. Scope

- 2.1. The Gravity Probe B Vehicle guards against a failure of the primary Command and Data Handling System (C&DH) by switching to the redundant C&DH. The means to switch to the backup system is via an Uplink Safing Check Application that examines the value of the No_Ground_Command_Counter. If that value exceeds the NGC_Upper_Limit, the Uplink Safing Check increments the Ground_Command_Counter, otherwise it sets it to zero. If the counter exceeds the limit, the test sets its status to 'activated' and sets the test's Safemode Macro response to 'activated.' The Safemode Macro (SMACRO01), when activated executes commands to perform the switch to the redundant systems.
- 2.2. The NGC_Upper_Limit is set to 72 hours, and so the Vehicle must process a ground based command before this time period is reached to reset the counter.
- 2.3. The current plan of operation will be such that ground commands will be required to activate the downlink for each contact and will therefore reset the No_Ground_Command_Counter, provided that TDRS or GN contacts are scheduled at intervals that are less than 72 hours. Since a C&DH switch includes a switch to the redundant ACE and GPS systems, the need to insure that a C&DH switch does not occur is highly important.
- 2.4. Every command that is processed by the Vehicle, resets the No_Ground_Command_Counter, but we will institute a NO_OP command to serve as a tag-marker, which will be tracked on a daily basis. This NO_OP command will be a LOG_EVENT Command which will have the number 255.

3. Operational Personnel Responsibilities and Qualifications

- 3.1. The responsible Mission Operations Supervisor (MOS) will work with scheduling and Mission Planner to insure that the track supports are such that the 72 hour time period between command contacts is not exceeded.
- 3.2. The MOS will insure that each passplan contains a LOG_EVENT Command. This check will be done during the sign-off process for the week's passplans.
- 3.3. The Mission Control Team (MCT) will confirm the transmission of the LOG_EVENT via telemetry, and will update the No_Ground_Command Status Board.
- 3.4. The (MOS) will insure that the Status Board is updated and check upcoming support schedule to insure that the 72 hour mark is not exceeded.

4. Requirements

- 4.1. Hardware and Software Requirements
The LOG_EVENT Command will be included in all passplans. Passplan generation are performed on the Sun workstations using any number of available text editors.
- 4.2. Configuration Requirements
None.

4.3. Verification and Success Criteria

During the sign-off process, the passplans will be checked to insure that the LOG_EVENT command is included in each passplan.

5. Reference Documents

- 5.1. LMMS/P480344 CCSE 16 Section 10, Flight Software Design Specification – Safemodesign Software

6. Test Facilities

- 6.1. Mission Operations Center at Gravity Probe B, Stanford University.

7. QA Provisions

N/A

8. Test Personnel

N/A

9. General Instructions

- 9.1. Each Passplan template will include the following command, check box and instructions:

LOG MISSION_SPCP EVENT WITH EVENTNUMBER 255

Enter Confirm Date/Time [] initial

Update the No_Ground_Command Status Board [] initial

- 9.2. Placement of the above is not critical. It could be entered at the mid-point in each support.