



GLAST Monthly PSR

Ground System/Mission Ops

November 2003

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GLAST Ground Sys/Ops Manager



Accomplishments

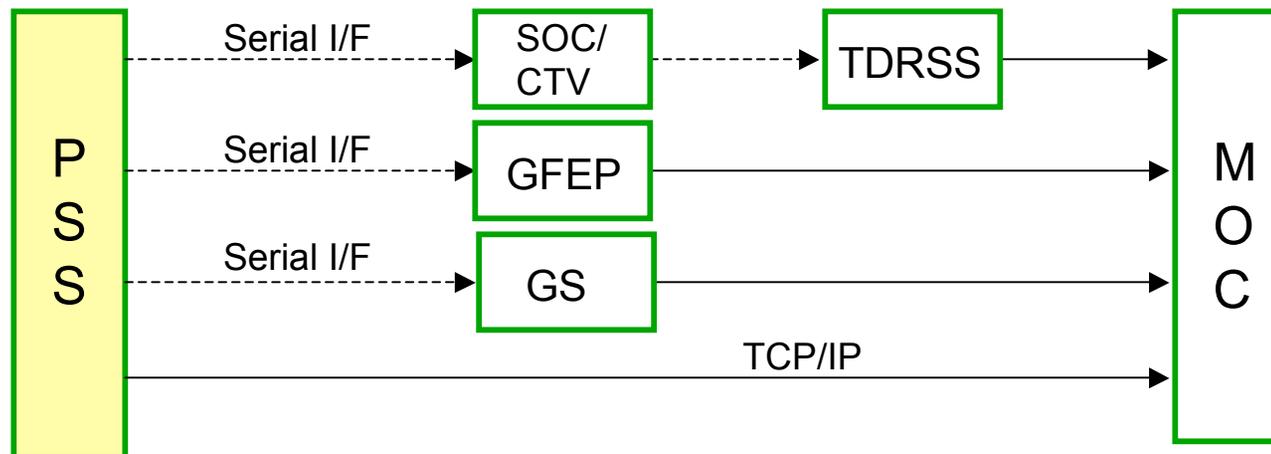
- ▶ **Continued ground system/ops impact analysis for handling a 4x LAT data generation rate increase**
 - *TDRSS view profile with rocking in Survey mode looks like it will provide opportunities to get needed contact time in 6 contacts per day*
 - *Recommend SRR be increased in size, as current size only supports approximately 15 hours of data, allowing only one to two missed contacts*
 - *Network impacts for WSC/MOC, MOC/LIOC & MOC/GSSC links*
- ▶ **Conducted GSSC Preliminary Design Peer Review**
 - *Details later in GSSC section*
- ▶ **Conducted MOC Preliminary Design Peer Review Dry Run**
 - *Updated version of slides generated*
- ▶ **Conducted first of two sessions to walkthrough the MOC Level 4 requirements**
- ▶ **Generated Procedures Style Guide document for review**
 - *Covers readable Procedures and executable PROC's*
 - *Plan is to have one Procedure template used by everyone for spacecraft, instrument, and ground procedures*



Accomplishments



- ▶ **Issued first draft of Operations Data Products ICD (MOC/GSSC/IOC's)**
- ▶ **Held kick-off meeting with the Portable Spacecraft Simulator (PSS) team**
 - *PSS to be used to support MOC testing and ground system readiness testing*
 - *GLAST impacts: 40 Mbps serial interface, synch marker on science packets, insertion of recorded instrument packets into frames*





Accomplishments



- ▶ **Continued to work ground station trade study**
 - *Received impact assessment from GN/Code450 for upgrades needed to support GLAST*
 - *These upgrades needed as part of a general upgrade of all the GN ground stations*
 - *Code 450 (Roger Clason) plans to fund the upgrades, where GLAST would only cover GLAST support costs (tbc in December)*
 - *Recommendation: plan to use USN and GN (Wallops & MILA) for L&EO support, and GN only for long term support*
 - *Can't count on MILA due to manned spaceflight commitments*
 - *USN provides better coverage than Wallops*
- ▶ **Developed estimate for expected latency delays in the ground system for handling burst alert telemetry**
 - *Delay from WSC to GCN should be approximately 1 second*



Accomplishments

- ▶ ***Supported TRMM MOC Reengineering Requirements Review***
 - *TRMM MOC planning to use GMSEC bus architecture and components, so will be a good beta test site for GMSEC*
- ▶ ***Generated GOWG Action Item list, mostly based on actions from previous TIM's***
 - *Currently coming up with need dates and confirming assignments*
 - *Plan is to review actions at each GOWG (those due within next 2 weeks or so)*
- ▶ ***Planned Operations TIM for day after the MOC Peer Review (12/16)***
 - *To be supported by Spectrum (Mark Davis), GSSC and IOC's*
- ▶ ***Generated initial detailed ground system network diagram for team review***
 - *Need to determine types of LAN's (e.g., Internet, leased line, NISN)*



Accomplishments



- ▶ **Conducted End-to-End Test meeting within Project to discuss these tests in terms of scope, responsibilities, documentation, test goals, schedule, etc.**
 - *We generally seemed to be in synch across the board*
 - *Tests to be planned, documented, conducted by the ground/ops team*
 - *Lead: Ground System Test Lead (Beth Pumphrey)*
 - *Test objectives, configurations, players, etc. to be documented in the Ground System Test Plan*
 - *Systems will use these tests and the Ground Readiness Tests to support the “end-to-end”-oriented MSS requirements check-off*
 - *Spectrum must approve all PROC’s used against spacecraft, and has “plug-pulling” authority during the tests*
 - *Instrument teams expected to support tests (observatory presence)*
 - *Generated and distributed detailed meeting summary*



Accomplishments



- ▶ **GBM team conducted review board meeting to disposition the RFA's received from the GBM IOC CDR**
 - *Received and accepted 5 RFA's – nothing major*
 - *A few of the issues raised also apply to the ground system in general, so they have been raised as GOWG action items*

- ▶ **Started process of determining modified approach to presenting/reviewing the element detailed designs**
 - *Becoming clear that each element (MOC, GSSC, IOC's) needs to have at least a detailed design peer review to give review panels a chance to evaluate the detailed design*
 - *To do so at a combined GSDR would just be too difficult*
 - *GSDR would occur after completion of detailed design peer reviews, and would focus more on system level topics (e.g., end-to-end data flows and ops scenarios, interfaces, ground system testing, operation readiness approach, data bases)*
 - *Discussed at 12/4 GOWG meeting*
 - *Results to be reflected in Ground System Project Plan*



Issues/Problems

- ▶ ***Finalization of MOC contract award to Golbelt Orca***
 - *Need to wrap up approval of RFP documentation and get issued to Goldbelt/Omitron*

- ▶ ***Effect of the upcoming schedule changes for the instrument and spacecraft on the ground system schedule***
 - *Corresponding slips of CDRL's, such as the Observatory/Ground ICD, and the Simulators, could pose a problem*

- ▶ ***Need a more firm plan for getting the instrument simulators developed for use to support PROC development, simulations, and FOT training***
 - *Ground/ops team developing set of instrument simulator requirements that will be worked with John and Erik*



Upcoming Events/Work Items

- ▶ ***Complete walkthroughs for MOC Level 4 Requirements Document***
- ▶ ***Conduct MOC Preliminary Design Peer Review (12/15)***
- ▶ ***Conduct Data Challenge 1 workshop and software meeting (week of Dec 8th, at Stanford/SLAC)***
- ▶ ***Generate GLAST Front-End Processor (GFEP) requirements and conduct design peer review (Jan)***
- ▶ ***Close-out of GSRR RFA's***
- ▶ ***Investigate Goddard/SLAC network link that SLAC has been using/testing***
- ▶ ***Complete Hiatus period risk mitigation strategies/schedule package***
- ▶ ***Complete Ground station trade study package***
- ▶ ***Generate Instrument simulator requirements from ground and ops perspectives (for MTS) – will work with John Teter***



Upcoming Events/Work Items



▶ **Documents:**

- *Baseline GSRD & Ops Concept Document*
- *Submit GS Project Plan to CCB*
- *Generate Draft Operations Agreement for Ops Roles and Responsibilities*
- *Generate Draft Ground System Test Plan*



Rolling Wave Schedule



| Activ ID | Activity Description | Current Start | Current Finish | 2003 | | 2004 | | | | | | | | | | | | | | | | | |
|------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|-----|------|----------|---------|----------|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | NOV | DEC | JAN | FEB | | | | | | | | | | | | | | | | |
| Ground System & Mission Operations | | | | | | | | | | | | | | | | | | | | | | | |
| Ground System Wide Reviews | | | | | | | | | | | | | | | | | | | | | | | |
| Ground System Wide Reviews | | | | | | | | | | | | | | | | | | | | | | | |
| Ground System Preliminary Design Phase | | | | | | | | | | | | | | | | | | | | | | | |
| 0117 | GSSC Design Peer Review | 24NOV03* | 24NOV03 | ▲ | | | | | | | | | | | | | | | | | | | |
| 0123 | MOC Design Peer Review | 11DEC03* | 11DEC03 | | ▲ | | | | | | | | | | | | | | | | | | |
| 0129 | Ku Front End Design Peer Review | 14JAN04* | 14JAN04 | | | ▲ | | | | | | | | | | | | | | | | | |
| 0102 | LAT IOC Design Peer Review | 25FEB04* | 25FEB04 | | | | ▲ | | | | | | | | | | | | | | | | |
| 0103 | Ground System Preliminary Design Phase Complete | 25FEB04 | 25FEB04 | | | | ▲ | | | | | | | | | | | | | | | | |
| Ground System Wide Documentation | | | | | | | | | | | | | | | | | | | | | | | |
| Ground System Wide Documentation | | | | | | | | | | | | | | | | | | | | | | | |
| 0216 | Ground System Project Plan-Baseline Ver. | 23JUL03A | 19NOV03 | ▼ | | | | | | | | | | | | | | | | | | | |
| Ground System Development | | | | | | | | | | | | | | | | | | | | | | | |
| Ground System Development Documentation | | | | | | | | | | | | | | | | | | | | | | | |
| 0604 | Ground Operations Data Products ICD - Prelim Ver | 23JUL03A | 07NOV03 | ▼ | | | | | | | | | | | | | | | | | | | |
| 0646 | MOC/FDF ICD - Prelim Ver | 23JUL03A | 30JAN04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0661 | SC/Ground ICD - Prelim Ver (CDRL 4 From SAI) | 23JUL03A | 10FEB04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0613 | Ground System Verification Plan-Prelim Ver | 02SEP03A | 14NOV03 | ▼ | | | | | | | | | | | | | | | | | | | |
| 0692 | Ground Science Data Products ICD - Final Ver | 03NOV03 | 27APR04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0655 | Ground Operations Data Products ICD - Final Ver | 11NOV03 | 04MAY04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0713 | Ground System Verification Plan - Final Ver | 17NOV03 | 30APR04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0694 | MOC/FDF ICD - Final Ver | 02FEB04 | 15JUL04 | | | | ▶ | | | | | | | | | | | | | | | | |
| 0712 | SC/Ground ICD - Final Ver (CDRL 4 From SAI) | 11FEB04 | 26JUL04 | | | | ▶ | | | | | | | | | | | | | | | | |
| 0209 | MOC/Commercial Ground Station ICD - Final Ver | 26FEB04 | 09AUG04 | | | | ▶ | | | | | | | | | | | | | | | | |
| Ground System MOC Development | | | | | | | | | | | | | | | | | | | | | | | |
| 0631 | MOC Requirements Document (SRD) | 31JUL03A | 06FEB04 | | ▶ | | | | | | | | | | | | | | | | | | |
| 0169 | Design MOC Document | 02JAN04* | 30JUL04 | | | ▶ | | | | | | | | | | | | | | | | | |
| Start Date | 03APR00 | Early Bar | | GL10 | | | | | | | | | | | | | | | | | | | |
| Finish Date | 21DEC06 | Progress Bar | | Sheet 1A of 2B | | | | | | | | | | | | | | | | | | | |
| Data Date | 01NOV03 | Critical Activity | | <table border="1"> <thead> <tr> <th>Date</th> <th>Revision</th> <th>Checked</th> <th>Approved</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> | | | | Date | Revision | Checked | Approved | | | | | | | | | | | | |
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| Run Date | 04DEC03 16:16 | GLAST Ground System Rolling Wave Status as of 11/1/03 | | | | | | | | | | | | | | | | | | | | | |
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| Activ ID | Activity Description | Current Start | Current Finish | 2003 | | 2004 | |
|------------------------------------------|----------------------------------------------|---------------|----------------|------|-----|------|-----|
| | | | | NOV | DEC | JAN | FEB |
| Ground System SSC Development | | | | | | | |
| 0616 | GSSC Design Spec | 24NOV03* | 03MAY04 | ▲ | | | |
| 1012 | GSSC Verification Plan | 24NOV03* | 03MAY04 | ▲ | | | |
| 1015 | GSSC Development Plan | 24NOV03* | 03MAY04 | ▲ | | | |
| 0994 | GSSC Hardware Phase 1 (Single) | 09FEB04 | 01MAR04 | | | | ▲ |
| Ground System LAT IOC Development | | | | | | | |
| 1081 | LAT IOC (SAS/DPF) Release 2 | 03NOV03 | 06DEC04 | ▲ | | | |
| Ground System GBM IOC Development | | | | | | | |
| 1039 | GBM IOC (DA/MO) CDR | 03NOV03* | 03NOV03 | ▲ | | | |
| 1096 | GBM IOC Plan - Final | 03NOV03 | 13FEB04 | ▲ | | | |
| 1099 | Prepare GBM IOC H/W Req's/Funct Spec - Draft | 03NOV03 | 17FEB04 | ▲ | | | |
| 1042 | GBM IOC (DA/MO) Release 1 | 04NOV03 | 13AUG04 | ▲ | | | |
| 1102 | Prepare GBM IOC H/W Req's/Funct Spec - Final | 18FEB04 | 03AUG04 | | | | ▲ |