

To: tgs_staff

From: Carey Myers

Date: January 13, 2004

Subject: Minutes of 01/07/04 TGS Project Meeting

Attendees: C. Darby, G. Chapman, S. Speck, S. Stallcup, M. Reinhart,
M. Giuliano, D. Jones, C. Myers, L. Foor, B. Boyer,
I. Dashevsky, M. Boyer, A. Vick, A. Welty, B. McCutcheon

```
*****  
*** Next Meeting: Wednesday, January 14, 2004 9:00 A.M. ***  
*** Location: Bloomberg B448 ***  
*** Topic: TGSOWG notes, design status, design review presentation ***  
*****
```

- Preparations for Scheduling System design review - The following schedule was laid out for the February design review:
 - 1/14 – Detailed agenda due
 - 1/23 – Draft slides due (for review)
 - 1/30 – Final slides due
 - 2/02 – Dry run / walkthrough of slides
 - 2/04 – Tentative date for presentation
- Action items were reviewed – See attached for updated status of action items
- The bulk of the meeting was spent discussing the magnetic field modeling issue.
 - Scott Stallcup is working on a C++ class to implement the IGRF model. The class returns a magnetic field vector for a specific time, given HST's position (latitude, longitude, and altitude).
 - A post-analysis tool to analyze calendars would probably be part of calcheck. It would flag problem slews based on the magnetic field model. The approach would be: build a calendar, check for problem slews, rebuild calendar (if necessary), recheck, and so on until a clean calendar is obtained. Adds a lot of overhead and requires manual rescheduling.
 - Additional PRD parameters needed for TGS – magnetic field deadband angle, recovery time, IGRF coefficients and derivatives.
 - PR for station-keeping slews – currently point to north orbit pole, should make it a moving target with a separate target name.

- Magnetic field alignment check should be added to PASS – maybe Phase II?
- New requirements needed for magnetic field modeling. Should be handled as a CCR to our baseline set of requirements.
- For the remainder of the meeting, teams provided their current status.
 - Baseline set of scheduling system requirements reloaded into DOORS. Leslie has created a test verification module in DOORS and has already begun linking test procedures back to the requirements.
 - Earth avoidance code cleanup is underway in SPSS. A design review will be held.
 - Calendar display changes being made to calgraph, to display FHST visibility windows for TGS.
 - SPIKE prototyping tool supporting George and Alison in their full-sky survey analysis.
 - Design of attitude uncertainty windows underway in PASS. Skymap upgrade complete.
 - PR 49952 written for SCS to support SCPL pseudo-instruction upgrades for TGS.

Attachments

TGS Issues

TGS Action Items

TGS Open Issues

- FHST/GOB – Is it required and how does it work?
 - Status: Open
 - 11/12/03 - No new information.
 - 12/03/03 – The current understanding is that SPSS/SCS will generate an FHST GOB statement in the SMS at a database-specified time (could be 0) before the guide star acquisition. The statement will, optionally, specify the FHST to use during the first part of the guide star acquisition. It will also, if required, put the FHST in observer mode.
- Magnetic field modeling in SPSS
 - Status: Open
 - 12/10/03 – Need to understand the problem better and generate requirements so we can evaluate impact to the SPSS scheduling algorithm. A magnetic field modeling tool may benefit PASS and SPIKE as well.
 - 12/17/03 – Magnetic field modeling could be done in SPSS in Phase I. However, it would probably be used initially to support a calendar post-analysis tool as opposed to being incorporated into the SPSS scheduling algorithm directly.
 - 01/07/04 – C++ class being developed to implement IGRF model in SPSS.

TGS Closed Issues

- Handling of Type 2 slew FHST shutter/availability commanding.
 - Status: Closed 12/03/03
 - 11/12/03 - The OBADWG has concluded that the Type 2 slew command group should remain essentially unchanged, i.e. the command group will continue to command the FHST shutters closed (thus forcing M2G mode), regardless of the length or magnitude of the slew and regardless of FHST visibility during the slew. This means PASS needs to 1) turn off FHST availability (and close the FHST shutters?) prior to the Type 2 slew (maybe as part of the PCPTERM group?), and 2) open shutters and turn on availability at the beginning of FHST visibility only if we're not slewing.
 - 12/03/03 – Using the Autogroup feature, PASS will issue FHST shutter and availability commanding based on FHST visibility windows. PASS will adjust FHST visibility windows to not overlap Type 2 slews.
- Placement of Type 4 slews.
 - Status: Closed 11/12/03
 - 11/12/03 - SPSS will only schedule Type 4 slews between the second OBAD and the GSACQ. SPSS will limit the slew magnitude to .5 degrees.
- FHST maps/automaps.
 - Status: Closed 12/11/03

- 11/12/03 - A suggestion from J. Wirzburger is to command an OBAD (map only, without an attitude correction). R. McCutcheon will assess how PASS would command this, including limiting the duration of the map (see Action Item list).
- 12/03/03 – Bob M. wrote up a proposal for commanding FHST MAPS and AutoMAPS in two-gyro mode. The proposal was reviewed by the TGS project team and will be sent to the FSW and PCS groups for concurrence.
- 12/10/03 – Proposal sent to FSW and PCS groups for concurrence.
- 12/11/03 – Concurrence received at TGSOWG meeting.
- Is the second OAD always required?
 - Status: Closed 12/03/03
 - 11/12/03 - Consider adding a SCHF parameter to make the second OAD optional (for SPSS scheduling and PASS checking). The problem is more complicated than that, but at least this would give us a simple way in Phase I of turning the second OAD off.
 - 11/19/03 – Added a SCHF parameter to the proposed ST-ICD-26 updates to make the second OAD optional.
 - 12/03/03 – SPSS and PASS will use the SCHF database parameter to make the second OAD optional. The need to make it optional in SPIKE will be assessed later, if necessary.
- Earth Calibrations.
 - Status: Closed 11/12/03
 - 11/12/03 - SPSS will schedule them in two-gyro mode in a similar fashion to how they are currently scheduled, using M2G pointing constraints.

TGS Open Action Items

- 01/07/04-1 Write a PR for NGSS to support FGS primary/secondary designations.
Assignee: M. Reinhart?
Status: New
- 12/03/03-1 Meet with H. Wynn to discuss PASS options for HGA scheduling in two-gyro mode.
Assignee: M. Galloway
Status: Open
12/10/03 – Needs to be addressed before the Design Review.
- 12/03/03-2 Evaluate changes needed for Health and Safety SMSs in two-gyro mode.
Assignee: Commanding, Ops
Status: Open
12/10/03 – Merle will coordinate next Spring.
- 11/12/03-1 Review Gx values provided by D. Smith and assess how the various gyro combinations constrain the scheduling system.
Assignee: M. Reinhart
Status: Open
11/19/03 – Merle discussed this further with Dan Smith and feels this may become an issue, particularly in regards to whether steps should be taken to ensure that gyro 1 is one of the last two working gyros. Merle will write up his assessment.
12/03/03 – Merle wrote up an initial assessment of the constraining effect of various gyro combinations on the scheduling system. However, after receiving some new information, Merle wants to study this issue further.
12/10/03 – This may have more to do with the mag field modeling in SPSS than with particular gyro combinations. More evaluation is needed.
- 11/12/03-3 Review additional SCHF parameters, such as slew settle times and GSACQ times, to see whether the current operational values are OK for two-gyro mode.
Assignee: R. McCutcheon
Status: Open
11/19/03 – Bob M. looked at additional SCHF parameters, but won't know whether the values are appropriate for two-gyro mode until PCS provides firmer definitions.
12/10/03 – Waiting for PCS definitions.
- 11/12/03-4 Identify all basefile parameters in TRANS, SPIKE, SPSS, and PASS that may need to be changed for two-gyro mode and trace each parameter back to its source (e.g. CARD, PDB).
Assignee: M. Reinhart (with support from the teams)

Status: Open

11/19/03 – PASS provided Merle with a handout of existing Mission Scheduler basefile parameters, noting any that may be impacted by two-gyro mode.

12/03/03 – Merle hopes to have a complete list by the end of the year.

TGS Closed Action Items

- 12/03/03-3 Resolve with J. Reis whether the Star Catalog should be documented in HST-ICD-T1.
Assignee: C. Myers
Status: Closed 12/17/03
12/10/03 – Carey will follow-up on this at the 12/11 TGSOWG.
12/17/03 – At the 12/11 TGSOWG, John Gainsborough confirmed that he had talked with Jim Reis and that Jim was satisfied with documenting the Star Catalog in HST-ICD-T1.
- 11/19/03-1 Talk to PRD group (M. Bielefeld) about philosophy for PDB updates, IMTOOL changes, and whether quick updates can be supported.
Assignee: C. Myers
Status: Closed 12/03/03
12/03/03 – Merle reported after talking with Mike B. that the PRD group can track multiple sets of constraint parameters using database versions and can switch sets using their quick update procedures.
- 11/19/03-2 Incorporate the discussed changes into the proposed ST-ICD-26 updates, i.e. three values for the OAD times instead of two, and a single set of uncertainty pads (small, medium, and large) instead of pads for each constraint parameter.
Assignee: M. Galloway
Status: Closed 12/10/03
12/03/03 – Mary provided a revised update to ST-ICD-26, Part 2 that incorporates the described changes. After making a few final wording changes, the ICD should be ready for review.
12/10/03 – The ICD update is complete and ready for review.
- 11/12/03-2 As an aid in reviewing ST-ICD-26 updates, extract the relevant sections of the SCHF and CRPF PDB files for each parameter being updated for two-gyro mode in order to provide current value and origin information.
Assignee: R. McCutcheon
Status: Closed 11/19/03
11/19/03 – PASS provided handouts of the proposed ST-ICD-26 updates (FROM/TO pages) along with a handout of the relevant information extracted from the SCHF and CRPF PDB files.

- 11/12/03-5 Determine need dates for definition of FHST and GSACQ PLCPs, including their parameter and scenario definitions.
Assignee: All
Status: Closed 12/03/03
11/19/03 – The teams agreed that the PLCPs need to be defined by 3/1/04. PASS will provide a first-cut definition of what they think is needed by 1/1/04 and we'll push for a commanding subgroup (off of the TGSOWG or the OBADWG) to finalize the definitions by our need date. Carey will forward this plan and schedule to the TGSOWG.
12/03/03 – Carey provided the following dates to project: 3/01/04 for design of FHST PLCPs and 6/01/04 for design of GSACQ PLCPs. These dates will be added to the project-level schedule and tracked as scheduling system need dates.
- 11/12/03-6 Determine how PASS would issue, and limit the duration of, FHST maps and automaps using an OBAD without attitude correction.
Assignee: R. McCutcheon
Status: Closed 12/17/03
11/19/03 – Discussion on whether SPSS should issue the current FHST MAP statement in the SMS which PASS would turn into a map-only OAD, or whether SPSS should issue a FHST OAD statement in the SMS with a map-only parameter set (requires an additional minor change to ICD-11). Bob will write up a proposal (with options) for evaluation.
12/03/03 – Bob wrote up a proposal, which the group reviewed. After a few updates, the proposal will go to FSW and PCS for concurrence.
12/10/03 – Bob sent out proposal for review. Need to complete update to ICD 11.
12/17/03 – At the 12/11 TGSOWG, Bob's proposal was discussed and approved.
- 11/12/03-7 Provide comments on draft scheduling system requirements document.
Assignee: All
Status: Closed 12/10/03
11/19/03 – Comments received and reviewed on the SPSS/SCS and PASS sections of the document. Updates incorporated. The updated requirements will be sent out for final review next week.
12/03/03 – The scheduling system requirements document is out for review. Comments are due by 12/05/03.
12/10/03 – Several sets of comments received and incorporated into document.