

To: tgs_staff

From: Carey Myers

Date: January 16, 2004

Subject: Minutes of 01/14/04 TGS Project Meeting

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

```
*****  
*** Next Meeting: Wednesday, January 21, 2004 9:00 A.M. ***  
*** Location: Bloomberg B448 ***  
*** Topic: Design Review presentation, action items, issues ***  
*****
```

- Notes from the TGSOWG meeting held 1/9/04:
 - The 5° roll restriction is correct for sun angles between 50 and 90 degrees. It's not a structural problem, but a contamination/outgassing problem of sunlight encroaching on the baffle. The project will look at how long the restriction can be violated before contamination becomes a problem.
 - The PCS team is updating the control law algorithms for M2G mode in an effort to minimize attitude error ramp-up during periods of bad magnetic field alignment. Analysis is ongoing, with algorithm results expected next week. The project is evaluating the impact to the FSW implementation schedule.
 - The Danbury tests of the FGS jitter model and the ability to achieve fine lock in two-gyro mode continues to be promising. The test set is expected to be completed by 1/15, with post-analysis results available 1/23.
 - The PCS team stated that the FHST observer mode is not needed during the guide star acquisition sequence. An FHST is still needed during the initial portion of the acquisition for the purposes of rate control until fine lock is achieved. This closes a design issue for us.
- The TGS Project status was presented at the HST Monthly Status Review on 1/13/04.
- George presented some initial results from the all-sky science impact study. The color-coded Excel plot showed schedulability of targets across a 360° grid from +60° to -60° declination. The study will continue with an expanded target range (+85° to -85° degree dec) and varying attitude uncertainty pads.

- We reviewed the TGS implementation schedule. The schedule was recently updated to add need dates for the FHST PLCP definitions (3/1/04) and the acquisition PLCP definitions (6/1/04). Overall, we're staying on schedule very well.
- We went over a draft agenda for the Scheduling System Design Review. Several suggestions were incorporated into the agenda. The review is tentatively scheduled for 2/4. An updated agenda will be sent out to everyone. Draft slides are due 1/23.
- Scott Speck handed out and discussed a rough draft of the Two-Gyro SPSS Design Specification. He will use that as a way of documenting his design and as a basis for generating slides for the design review. It was agreed that the design review would present a fairly high-level picture of the two-gyro design and that the detailed design information would be captured in release notes, PR responses, and working papers.
- After the meeting, we held a splinter to review Bob McCutcheon's diagram for the Health and Safety scenario in two-gyro mode.
- There were several new action items assigned at the meeting. Attached are updated action item and issues lists.

Attachments

TGS Issues

TGS Action Items

TGS Open Issues

- FHST/GOB – Is it required and how does it work?
 - Status: Closed 01/14/04
 - 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.
 - 01/14/04 – At the 1/9/04 TGSOWG, PCS team lead D. Smith indicated that they do not need an FHST observer during the guide star acquisition sequence. An FHST is still needed for rate control purposes until fine lock is achieved. The scheduling system will retain (and issue) the FHST GOB statement using the FHST_GOB_TIMES parameter, in case the need for an observer resurfaces, but the delta time pad can be set to 0.
- 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.
 - 01/14/04 – Carey met with the SPSS team to discuss the impact of adding a magnetic field modeling constraint to the scheduling system.

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

- 01/14/04-1 Turn updates for ICD-26, Part 2 and ICD-11 into DCRs for formal review and approval.
Assignee: M. Galloway
Status: New
- 01/14/04-2 Generate requirements for the new magnetic field scheduling constraint (in the form of a CCR to the baseline scheduling system requirements).
Assignee: S. Stallcup, C. Darby
Status: New
- 01/14/04-3 Notify Mike Wenz of the command group contact who will participate in the PLCP design for FHST and GSACQ commanding.
Assignee: A. Welty
Status: New
- 01/07/04-1 Write a PR for NGSS to support FGS primary/secondary designations.
Assignee: M. Reinhart
Status: Closed 01/14/04
01/14/04 – PR 50100 was written against the NGSS system.
- 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.
01/14/04 – Bob McCutcheon generated a Health and Safety scenario diagram for two-gyro mode.
- 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.