To: tgs_staff

From: Carey Myers

Date: December 12, 2003

Subject: Minutes of 12/10/03 TGS Project Meeting

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

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*** Next Meeting: Wednesday, December 17, 2003, 9:00 A.M. ***
*** Location: Bloomberg B448 ***
*** Topic: HST Project status, design issues, and action items ***
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- An HST Project status review is scheduled for Monday, December 15, 2003 in Building 7, Room N200.
- Merle brought up the need for incorporating a magnetic field model in SPSS, due to increased attitude errors when Type 2 slews occur during bad magnetic field alignments.
    - May need to avoid Type 2 slews (and the first OBAD?) during bad magnetic field times, because the attitude error can build up in the other axes during the slew. Bad magnetic times are defined as any time the magnetic field is within ~15 degrees of normal to the two-gyro plane. This is a scheduling problem for SPSS.
    - CVZ may not be an option because the increased sun angle constraint can block out a significant period (up to 14 days) of schedulability.
    - We need to look at a common magnetic field model for SPSS and PASS (and SPIKE?).
    - Failure to account for the bad magnetic field periods can result in OBAD failures, which could propagate across multiple orbits causing loss of more than just a single observation.
- We reviewed our TGS issues and action items. Updated statuses of each are attached below.
- Current status:
    - SPSS/SCS – Build 46.0 scheduled to go operational 1/5/04. This build contains updates to the C&C list and the SCIOPS database to support two-

gyro science. Currently working on code to calculate FHST windows. Plan to deliver this in an interim release in February. Also, working on cleaning up Earth avoidance code. An OPR was filed for SCS changes.

- TRANS/SPIKE – Working on parameterizing values in the prototype SPIKE to make it easier for George and Alison to run different scenarios. Will deliver an updated version of the SPIKE prototype later this month. An updated SPIKE to incorporate recent ASSIST changes will be delivered this week.
- Science/Observation Planning – Alison and George have continued to analyze a (nearly) full-sky set of observations using the SPIKE prototype. They're currently using worst-case constraints (8-10 degrees) and a 100-degree sun angle limit until they get the updated SPIKE prototype, which will allow them to adjust constraint values.
- PASS – Design work continues. Bob M. sent out his approach for handling MAPS and AutoMAPS in two-gyro mode to the PCS and FSW folks for review.
- Testing – Leslie has been accessing the DOORS system and will attend a DOORS demo by Rusty Whitman.

Attachments

TGS Issues
TGS Action Items

12/10/03

TGS 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.
- 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.

- 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.

- 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.

12/10/03

TGS Action Items

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.

12/03/03-3 Resolve with J. Reis whether the Star Catalog should be documented in HST-ICD-T1.
Assignee: C. Myers
Status: Open
12/10/03 – Carey will follow-up on this at the 12/11 TGSOWG.

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.

11/12/03-1 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 gryo 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.

11/12/03-2 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.

11/12/03-3 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.

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: Open
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.

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.