

To: tgs\_staff

From: Carey Myers

Date: February 23, 2004

Subject: Minutes of 02/18/04 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

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\*\*\* Next Meeting: Wednesday, March 3, 2004 9:00 A.M. \*\*\*  
\*\*\* Location: Bloomberg B448 \*\*\*  
\*\*\* Topic: Issues, action items, status \*\*\*  
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- Design Review post-mortem:
  - The overall feedback from the Design Review was very positive. Both GSFC and STScI personnel expressed opinions that the package was very well done and that the speakers all did a very good job of presenting their design areas.
  - We received only one official action from the review (from L. Dunham) regarding the gyro mode flag in the PRD, however Clif and Carey captured a number of other issues that were raised during the review. Carey handed out a writeup of the Design Review issues and we discussed them at the meeting. The issues, along with their statuses, are included below as new issues in the open issues list.
- Review comments on the draft TGS Phase I Test Plan were due from the teams. A meeting was scheduled for Thursday, February 19<sup>th</sup> to go over the review comments.
- Carey asked the teams to provide input for the HST weekly by Tuesday COB each week. Rodger has asked Carey to consolidate the teams' TGS inputs into a single submission each week.
- We will begin prioritizing Phase II capabilities and putting together a TGS Phase II schedule during the next several weeks.
- Attached are the open action item and issues lists. They also now appear on the TGS Project web page: [http://www.stsci.edu/org/ess/projects/two\\_gyro\\_science](http://www.stsci.edu/org/ess/projects/two_gyro_science)

Attachments

TGS Open Issues  
TGS Open Action Items

## TGS Open Issues

- Two-gyro mode flags (Design Review action) - Make flags multi-state vs. two-state to support potential future modes (one-gyro?)
  - Status: New
  - 02/18/04 – Two-state flag is already implemented in SPSS (Build 46.0) and PASS, and documented in DCR 5065 to ST-ICD-26, Part 2. The change to make it multi-state is relatively easy, and can be done in conjunction with other changes to the database parameters to support future modes, if and when they are needed. Recommendation is to leave as is for two-gyro mode.
- Are there internal risks that the Scheduling Systems should identify that might impact the TGS Project?
  - Status: New
  - 02/18/04 – Risks related to science schedulability and types of science that can be supported in TGS mode should be added. The HST Project is requesting that we use their format for defining / tracking risks and that we present our risks at the Project CDR.
- Are there additional variations that should be considered in the science impact studies?
  - Status: New
  - 02/18/04 – Potential variations include using different LAU values, varying the timing of activities, varying the number of science minutes / orbit, and showing the usable part of the sky by date.
- Dog-leg slews / two-part slews
  - Status: New
  - 2/18/04 – Can they be used to avoid sun constraint or mag field constraint, e.g. by slewing part way to the target, waiting for the constraint to pass, and then finishing the slew to the target? Although this capability exists for avoiding the sun constraint, it is not efficient for avoiding the mag field constraint due to FHST visibility requirements.
- Definition of new PCS scenarios
  - Status: New
  - 02/18/04 – M. Reinhart and A. Welty are defining them. It looks like there will be two new acquisition scenarios: base1t and base1tns.
- Loss of lock strategy - Is there any effect on scheduling?
  - Status: New
  - 02/18/04 – The number of loss of lock occurrences is expected to be so low that there shouldn't be any effect on scheduling. The scheduling systems will schedule for success and if there is a loss of lock, the schedule will get back into synch with the next set of OBADs.
- Magnetic field Gx vector parameters in the PRD
  - Status: New

- 02/18/04 – Provide parameter values for all gyro combinations (six) in the PRD and add a flag in PRD indicating which set to use. Only the designated set needs to be populated forward into the PMDB.
- Is there a minimum time that you must be in the bad mag field alignment before scheduling is constrained?
  - Status: New
  - 02/18/04 – It seems that it would be useful to provide a PRD parameter to define the minimum time, and to add a requirement to the Scheduling System to only constrain the schedule if the time during which there is bad mag field alignment exceeds the database parameter.
- Provide support for target reacquisitions using the save / restore quaternion feature.
  - Status: New
  - 02/18/04 – Determine with HST Project personnel what needs to be defined in order to be able to use this feature. Test with ACS (can be done in 3-gyro mode). Add to Phase II work.
- Astrometry observations and the take data flag.
  - Status: New
  - 02/18/04 – This is an issue that must be resolved in the flight software.
- Type 4 slews and the use of the slew rate parameter.
  - Status: New
  - 02/18/04 – The slew rate parameter is optional in the command template. Therefore, Type 4 slews can be supported in Phase I without specifying the slew rate parameter (no moving targets). In Phase II, the slew rate parameter can be specified for moving targets.
- 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.
  - 02/18/04 – The magnetic field requirements and initial design were presented at the Scheduling System Design Review on 02/12/04. Implementation of the IGRF model and a calendar post-analysis tool were added to SPSS Phase I builds. A SPSS build to implement mag field scheduling constraints was added to the end of Phase I.

### **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: Open  
 02/18/04 – DCR 5064 written for ICD-11 and distributed for review.  
 DCR 5065 written for ICD-26, Part 2 and distributed for review.
- 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: Open  
 02/18/04 – Requirements written for the mag field scheduling constraint and presented at the Scheduling System Design Review on 02/12/04.
- 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: Open  
 02/18/04 – Alan has notified M. Wenz with names of STScI participants for the PLCP definition workgroup.
- 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.  
 02/18/03 – Mary talked to H. Wynn and they will hold meetings later in the Spring.
- 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.