

To: tgs_staff

From: Carey Myers

Date: June 27, 2003

Subject: Minutes of 6/26/03 TGS Project Meeting

Attendees: R. Doxsey, J. Pollizzi, C. Johnson, M. Abernathy, B. Boyer, M. Galloway,
G. Chapman, S. Speck, S. Stallcup, R. Rager, A. Welty, C. Darby, C. Myers

*** Next Meeting: Thursday, July 3, 9-11 A.M. Room N201A (CafeCon) ***
*** Topic: Working meeting on schedule & defining baseline system***

Rodger started the meeting by distributing a scenario diagram (labeled Scenario #3) for On-board Attitude Determination during CVZ. A short discussion contrasted this scenario to the non-CVZ case.

Support for on-board flight tests was discussed:

- First two flight tests (3/04 and 6/04): no s/w support needed; only a block of time on the calendar
- Third flight test (10/04): full-up ground support needed to demonstrate that the mode works (SPSS/PASS/CMD); SPIKE may not be required

Each of the ground system applications was then discussed, to review impacts and to identify issues/limitations/assumptions:

APT

- No impacts identified so far.
- Any concerns about multi-orbit observations will be addressed later; any changes should be scheduled to coincide with the proposal cycle

TRANS

- No major issues identified
- Implementation schedule should support testing for SPSS

SPIKE

- Turn on and evaluate FHST modeling capability
- Implementation should be two-phased (an early model to aid concept feasibility/requirements definition followed by a baseline operational support capability)
- Need schedule by 7/11 (A.I. for Mark G.)
- Maybe begin by evaluating Cycle 12 proposals to see what percentage of the observations is doable

- Maybe run with large pads and small pads to see how it affects schedulability (here the tradeoff is between the risk of failed observations vs. the # of unschedulable observations)
- Need to assess impacts to current work (including JWST support)
- Need operations support/input

CMD

- New command blocks needed in SMS for FHST control and guiding scenarios
- Key is defining interface between ground and flight software
- Work will likely be scheduled late in the overall development timeframe
- Need to allocate time for testing and command validation (bit-busting)
- Need to assess impacts to current work

SPSS

- FRSS is in good shape; SPSS currently doesn't use moon avoidance, although FRSS supports it
- SPSS checks bright object avoidance for FHSTs (FHSTs need 1 star for rate control, ~3 stars for mapping)
- Onboard will need same star catalog that PASS uses
- Moving targets – limitations may include guide star handoffs, gyro tracking
- PCS scenarios will drive the switching of SPSS modes between 3-gyro and 2-gyro
- SPSS won't support mixed modes of operation within one calendar
- SPSS prefers a simple sigma attitude uncertainty model vs. an axis-based attitude uncertainty model
- Magnetic field modeling would not be part of the baseline system (could be added later)
- Algorithm commonality between SPSS and PASS for FHST scheduling is not a priority for the baseline system
- Scheduling FHSTs for moving targets is a medium priority
- Key Question: How autonomous are the FHSTs?
- Key Question: How are reacquisitions performed following occultation?
- Need to assess impacts to current work (including JWST support)
- Need testing support; end-to-end testing needs to be in the schedule.

PASS

- Do LGAs need to be scheduled during periods of attitude inaccuracy (MSS mode); otherwise PASS scheduling is not impacted
- May need to drop parallels to reduce science downlink
- Current work priorities: MEGG SM4 support by 1/04, TDRSS flexibility
- Assumptions
 - Don't need MEGG for SMGT by 1/04
 - TDRSS flexibility is lower priority than TGS support
 - LGA scheduling is not in baseline system

A number of potential limitations to TGS support (at least in the baseline system) were identified during the discussions. They are listed below:

- 1) No gyro observations (e.g. for moving targets)
- 2) No guide star hand-offs
- 3) No guide star to gyro hand-offs
- 4) Large maneuvers within an orbit will be treated as new observations
- 5) No short snaps
- 6) No pure parallels?
- 7) Astrometry?
- 8) No LGA scheduling for engineering downlink
- 9) No magnetic field modeling
- 10) Switching to TGS mode must occur on calendar boundary

Action Items

- 06/26/03-1 Develop schedule by 7/11/03 for SPIKE early modeling capability.
Assignee: Mark G.

- 06/26/03-2 Create a distribution list on Majordomo for the TGS Project.
Assignee: Carey

- 06/26/03-3 Include a section on limitations/assumptions in the TGS Concept writeup.
Assignee: Carey

- 06/26/03-4 Create an initial TGS development schedule
Assignee: Carey and Leads