March 3, 2008 GUG Meeting Minutes

Present (GUG members and Ex Officio Members):

Neil Gehrels, Chris Shrader, Wim Hermsen, Matt Baring, Jim Ulvestad, (NRAO), Reshmi Mukherjee, Henric Krawczynski, Josh Grindlay (chair), Alicia Soderberg, Scott Ransom, Pat Slane, Chip Megan, Rick Harnden, Steve Ritz, Don Kniffen, Julie McEnery

On the phone: Peter Michelson, Anne Wehrle, Buell Jannuzi (NOAO), Mitch Begelman, Lynn Cominsky

Colleagues present:
Dave Thompson, Kevin Grady, Dave Davis, Rita Sambruna, Analia Cillis, Mike Corcoran, Robin Corbet

Introductions and meeting goals – Josh Grindlay

Josh welcomed the group, and initiated around-the table introductions. He commented that the proposal review and upcoming beta test were two of the key items for discussion at this meeting. Josh also noted the absence of David Band at this meeting; the full GUG wished David a speedy recovery.

News from HQ; new GUG members & rotations – Rick Harnden

Rick welcomed new committee members (Pat Slane, Alicia Soderberg and Mitch Begelman), as well as thanking members rotating off (Ann Wehrle, Roger Brissenden & Wim Hermsen) for their fine service. Next year there will be a further 3 committee members who rotate off the GUG.

Rick also acknowledged the efforts of NRL for their support of the thermal vacuum tests on behalf of the agency and the GLAST project. There were no significant HQ issues.

Mission status - Kevin Grady

[See Kevin's slides]

Kevin reported on the mission status. GLAST had been shipped from NRL to Florida as of 3:30 AM that morning. Kevin also acknowledged the efforts of NRL, and of all involved in TVAC. There have been over 250 hours of end-to-end testing, and an additional end-to-end test from KSC (and through TDRSS) would be carried out. He reported that the Ku-band units, now in Cincinnati, would be re-integrated at the launch site and that this should be doable within the schedule. A known fix to the propulsion system thermal control due to an issue seen in TVAC is also required. The Mission Readiness Review (MRR, 4/22), Flight Readiness Review (FRR, 5/15), and Launch Readiness Review (LRR, 5/15) are planned. It was noted that in addition to any GLAST-specific payload or launch vehicle issues, the schedule could be impacted by the launches of other missions scheduled to go before and after GLAST as well. No delays were anticipated at the moment. Kevin noted that the launch vehicle will have additional

instrumentation (e.g. accelerometers) for engineering purposes. Neil inquired about tests needed because of the Ku-band transmitter work and Kevin described these.

Mission Status – Julie McEnery

[See Julie's slides]

Julie discussed spacecraft attitude control constraints and possible impacts on scheduling & planning issues. The two issues are: (i) slews between targets close to the Sun may result in maneuvers that take longer than expected, potentially triggering a safehold (ii) the spacecraft cannot slew to a target that is currently within 30 degrees of the Earth limb, even if it would be unocculted at the end of the maneuver. Issue (i) is now resolved and changes to flight software and/or operational workarounds able to deal with issue (ii).

Julie quantified the effects of the occultation issue. The bottom line was that there is some loss on efficiency, but this is negligible for TOOs and pointed observations. There would be a significant delay for some ARRs, but only a few per year all of which would occur outside the LAT FOV and so are less interesting.

Kevin noted that the FSW changes might not occur until post-launch, depending on the overall schedule and priority queue. Some FSW patches are planned to be done post-launch anyway (e.g. zero-wheel operation mode), and the proposed changes could be done at the same time. Neil mentioned that if FSW changes were now viewed as likely, it is advantageous to schedule them relatively early in the mission when the full Team is still available for support.

LAT news – Peter Michelson

Peter presented the LAT Team Status report. They were pleased with the TVAC results, and had no significant issues. He also acknowledged NRL and the TVAC team for their efforts. This week and next week the LAT collaboration is busy with operations simulation no. 2, followed by a LAT collaboration meeting. After that it is hopefully a straight trajectory toward launch. The schedule for preparation and submission of a LAT instrument paper was discussed, but not finalized. The goal is to complete this before launch. Steve mentioned an angular units communication issue between the LAT and the spacecraft and Kevin confirmed that this has been fixed.

GBM News – Chip Megan

Chip reported on the GBM status. No significant post-TVAC issues. He noted plans for the resumption of the Huntsville Workshop series with the next one planned for October 20, 2008. The GIOC is finishing construction and a ribbon-cutting ceremony is planned for EPO purposes. Josh inquired about background modeling and the effects of scattering. Chip said that tests were done and were being analyzed. The results will go into an onboard table with a resolution of probably several degrees. Alicia inquired about ground based burst analysis. Chip doesn't expect as many untriggered bursts as with BATSE. Steve and Julie noted that the LAT may have more potential for untriggered bursts due to the low LAT background. This could be done within an hour after data arrival. Chip also noted that ground-based searches for non-triggering Swift bursts will also be done.

GSSC Status - Chris Shrader

[See Chris's slides]

Chris reported on the GSSC status. The departure of a staff member was noted, and plans for compensation via a redirection of existing staff and replacement-hire recruitment were presented. A summary of the GSSC presentation to the GLAST FOR (Flight Ops Review), which concluded that the GSSC had met its essential requirements and was "launch ready", was presented. A schedule of Cycle-1 and 2 milestones was also presented and briefly discussed. Reshmi asked about the release of catalogs and variability information. Julie said that the preliminary LAT catalog will contain sources detected at 20 sigma significance and give location, flux and hardness ratios. There is not a commitment to variability analysis. Conversely, a source could be in the flaring list but not in the preliminary catalog if it is not at 20 sigma for the entire dataset.

Chris then presented a summary of the Cycle-1 proposal review process and the results. An overview of the review process, panel-topical breakdown and detailed procedures was noted. Statistical breakdowns were presented and discussed. Over-selection, relative to target guidelines, was noted for theoretical proposals and large projects, but the rationale underlying this was deemed sound and reasonable. Some concerns were expressed by the committee:

1. A suggestion made that there may have been a bias against TeV related proposals. However, there were 8 such proposals submitted and 2 were accepted (in addition to several TeV-motivated theory proposals), which is consistent with the 4:1 over-subscription ratio of the overall program.
2. A comment that Galactic transient search projects are under represented in the approved program. However, only two such proposals were submitted and one was approved. The group noted that this topic will likely be more popular in Cycle 2.

It was additionally clear from the presented statistics that the approvals by topic were driven by requests, alleviating concerns of discipline bias on the part of the review committees. Nevertheless, care will again be taken in the next cycle review to try to minimize biases.

See additional comments about Cycle 1 review results below.

Rick Harnden and others involved with the Review thanked David Band for the excellent organization of the proposal review.

NRAO joint proposals – Jim Ulvestad

[See Jim's slides]

Jim reported on the joint NRAO proposals. The total allotment of ~10% of the time on NRAO facilities, or 1500 hours, was about 1/3 subscribed. The NRAO perspective was that a number of the proposals lacked sufficient technical/programmatic information regarding use of the various NRAO facilities, rendering the technical evaluation process tenuous. Approaches towards addressing this for cycle 2 were discussed; it was noted that Chandra allows an extra TWO pages of proposal text for proposals requesting joint time (not usually simultaneous) on other collaborating facilities (e.g. NOAO, HST, Spitzer); this additional space is to justify the additional science gain and to provide the joint-

observation details). A structured form associated with the RPS proposal forms was also considered viable. Rick said that the NRA should say more about specifying NRAO technical justification. **This will be an Action Item for the GUG at the next meeting.**

Jim also noted several separate issues which would be harder to address, as they were rooted in the relative phasing of the GLAST – NRAO proposal cycles. Jim said NRAO should have provided more information on the limited capability for GBT equipment changes. For example, one receiver is not available for half the year. They also had difficulty assessing technical considerations regarding observations of "not yet known" GLAST sources, alluded to in certain proposals. (The NRAO definition of Targets of Opportunity is different from that used in GLAST.) For cycle 2 it is hard to predict what configurations of the VLA will be available when. This could potentially have a large impact as, for example, very different spatial resolutions will be available at different times.

Some GLAST proposers also proposed directly to NRAO, thinking that GLAST gave money but they would gain an extra chance of NRAO time by also submitting a separate NRAO proposal. This was confusing because of timing. Essentially the same proposals were submitted to both programs. The reviewers managed to work through these issues. As anticipated, having Jim in the middle of process helped resolve a lot of issues, however this must be better clarified in the NRA for cycle 2. NRAO reviewers tended to reject proposals involving targets that were not yet known to be gamma-ray sources.

A workshop was suggested on multi-wavelength observations and the timing of the meeting was discussed. Timing may depend on the actual launch date, since that affects when the high-confidence catalog is released (for a May launch, this would be in late January or February), and the NRA deadline. Two issues were noted: something can break on a satellite so don't want to wait too long and in funding for VLA operations may be in jeopardy after 2011. **Planning for a Workshop on MW observations in support of GLAST will also be an AI for an upcoming GUG meeting.**

NOAO Issues - Buell Jannuzi (by phone)
Buell assessed the joint GLAST – NOAO proposal technical review process and related issues. Similar to the NRAO experience, his review team noted a lack of sufficient technical/programmatic information for viable assessment in a number of cases. For example, one proposal failed to mention the instrument required(!). He also noted logistical problems which, like NRAO, are rooted in the relative phasing of proposal cycles. Again, additional proposal materials directed at NOAO facility requirements and goals was advocated, and should be better clarified in the cycle 2 NRA.

Josh asked about using a TOO-like mechanism to do late scheduling. Buell responded that NOAO already have proposal opportunities for TOOs and some people did propose for that. However, this doesn't work if, for example, the proposers want a 5 night allocation on a high demand telescope since it is not feasible to bump current observations for a non-time critical proposal.

Cycle 1 comments from GUG – general discussion by GUG members

Anne W. noted that the overall sense of the review was that unsuccessful proposers were more disappointed than for other missions, but didn't necessarily object to the reviewer's comments. Henric K. also noted that that even proposals with positive reviews were rejected. Steve responded that even great proposals were rejected because of the over-subscription factor. Mitch, who disclosed he chaired a Review Panel, noted that it was very difficult to decide between very similar proposals. In several cases proposals were rejected because of similar competing proposals that were accepted. Nevertheless, Reshmi also noted that people were disappointed.

Several people commented negatively in the way sub-grants to co-investigators are now handled by NASA which results in double overhead. Rick said this was current NASA policy but that it might change.

Matt noted disappointment from theorists in regard to the nominal 10% number.
Josh noted disappointment from the TeV community in the small number of accepted proposals; it seemed particularly surprising that no proposals from the VERITAS team were accepted.

Pulsar timing ephemerides issue – Dave Thompson
[See Dave's slides]
Dave reported on the planned pulsar timing support program. An expression of reluctance on the part of the LAT-team affiliated radio astronomers to provide the extensive database of timing pulsar timing parameters needed to support GLAST analysis has recently emerged, and it is being addressed by forming a consortium for publications. The basis for these sentiments is rooted in both practical and intellectual property rights concerns. The level of effort involved, the availability of facilities have apparently been under-scoped. For example, Scott R. noted that the Parkes facility re-configuration plans could preclude or render untenable GLAST support plans. Some ideas were put forth; one was to ensure proper acknowledgment of all radio astronomers involved in the GLAST pulsar results (in addition to noting all contributors to the D4 database). For Cycle-1, a consensus plan emerged for the GUG to encourage publication of key pulsar timing results, and the release of associated ephemerides by the end of cycle 1.

Lunch break.
A ½ hour science talk on the extragalactic infrared background and blazar spectral absorption was presented by Sean Scully.

Software Gamma Test Overview, Plans– Chris Shrader
[See Chris's slides]
Chris S. presented the GSSC plans for beta testing of the GLAST science analysis software. A schedule for the beta release, with software release scheduled for March 17, and collecting of feedback was presented. Test goals were enumerated, and volunteers sought (with apparent success: Scott R., Reshmi M., Henric K., Alicia S., Don K.). Chris also noted outside (i.e. of the GUG) testers: members of other mission support facilities (Chandra, INTEGRAL), radio astronomers, and CGRO/EGRET veterans. Mitch suggested including some particle physics community representation. The LAT collaboration will be queried for volunteers. Chris asked the volunteers to install and run tools, use the help desk and check the documentation. It was discussed whether telecons

were be used with the testers, but the preferred interactions will be via the GSSC help desk.

Julie briefly described the data available for the beta tests which consists of two pointings and sky survey mode. After background subtraction the data rate is a few counts/s.

Currently the software is available for LINUX (32 bit) and OS X. Although Dave Davis has compiled and run the software on a 64 bit machine, there are issues with HEASARC software that will be resolved in the HEASARC's next release.

Software Gamma Test: Documentation status – Chris Shrader
Discussion of the posted documentation was entertained; only several issues were noted: Wim Hermsen questioned the organization of the pulsar analysis section of the Cicerone and made several suggestions for a different approach [see separate notes].

Searching for sources was discussed. Julie noted that grid search is challenging and slow. In DC2 the starting point was to use the catalog as the starting point. Expect this to be true for wider use. Use a grid to refine results as a detailed step in the analysis rather than the starting point. Prior to DC2 it wasn't clear this would be the case.

In response to a question Chris noted that this isn't a public release of the tools, but is only limited to the beta testers.

E/PO report and plans – Lynn Cominsky (by phone)
[See Lynn's slides]
Lynn is waiting for comments from Steve on GLAST Launch Materials before she can go ahead. The GLAST renaming suggestion web page was discussed. Josh asked what EPO activities will happen at launch and Lynn said that KSC organizes this. There was discussion of the certainty of the launch date and it was advised that it's still too early for people to buy non-exchangeable tickets. The submission of names to attend launch was discussed. Lucy Zhou at Stanford is about to submit her list of LAT team names and Bev Townsend is collecting a GLAST Project list.

Discuss/resolve open AIs
Action Items were then discussed.

AI 38 (J. McEnery) – compile threads from DC2 experiences – was closed, based on the rationale that the beta test and expanded documentation sets would address this adequately.

AI 43, (Julie McEnery) – pointing vs scanning considerations – remains open. Julie and a GUG sub-committee (previously identified) agreed to compile report to be reviewed at the next GUG gathering.

AI 46 (C. Shrader) – SOOG parameter tracking – was closed, with the proviso that it could reemerge later. Steve reported that more traditionally organized mission level CCB is now planned to replace the functions planned for the SOOG, since it is not useful to

separate science-related parameters from other operational parameters. The same science operations and oversight membership that was planned for the SOOG will be present on the CCB. The CCB minutes will be used to track changes. Now that the CCB will be at the mission level the GUG chair will no longer be directly involved, although the GUG will be made aware of relevant changes by either the Project Scientist or the GSSC members, and this will be one of the actions for any change affecting science performance.

AI 52. On David Band's advice it was decided to hold off discussion on this item.

AI 53 (C. Shrader for D. Band) – Multi-wavelength planning and tracking web form – screen shots were shown, and the underlying functionality presented. It was considered satisfactory to close this AI. A. Wehrle requested an additional field for FAX number be added to the observer information page. Josh emphasized that the community should be made aware of this utility.

GLAST Fellows Program – Don Kniffen
[See Don's slides]
Don reviewed the Cycle-1 GLAST Fellowship selection process. A two-tier process was implemented to handle the 45 proposals with a review committee with 8 participants. A triage strategy, involving 3 independent reviews per proposal led to a subset of 28 first tier proposals. The 28 were then read by all 8 reviewers, then scored and ranked. The top 3 candidates all accepted their GLAST fellowship offers. Lots of discussion ensued on limits on the number of fellows per institution per year. Two seemed to be the consensus limit in total, with a limit of one per year. The movement of fellows between institutions was also discussed. Neil noted that flexibility should be retained in policy formulations. A clear policy should be decided on before the next round.

The winners were enumerated:

Vasiliki Pavlidou (University Of Chicago). Blazar and gamma-ray background studies (Fellowship host institution: Caltech)
Nathaniel Butler, (UC Berkeley). Transient searches (Fellowship host institution: Berkeley)
Uri Keshet (IAS, Princeton). Shocks & particle acceleration (Fellowship host institution: Harvard/CfA)

New Business
The date of the 1st post-launch symposium (i.e. the 2nd GLAST symposium) was discussed. Steve suggested it should be held long enough after the first-year data release that significant GI results could be reported. This would nominally be around October-November 2009. The Symposium will be held in the Washington, DC area.

Planning for GUG meeting at Launch in May
Finally, scheduling of the next meeting was discussed. The plan is to tie this to launch and hold it at KSC, probably the afternoon prior to launch. This was not finalized however, and Steve R. emphasized that a launch slip, while not expected, is still a

possibility. Steve also asked for GUG member information for launch invitations and offered some nominal guidelines (e.g. please minimize number of family members, etc.).

The meeting was adjourned at 445pm.