

Summary Report of the SIRTf Users Panel (SUP) Meeting 9

The SIRTf SUP met (SUP9) on 02 and 03 November 2001 at the SIRTf Science Center (SSC), Pasadena, CA. The charge to the SUP was to: 1) provide user community perspective and input on software, user services, and observatory policies; and 2) develop recommendations to guide the SSC in setting development priorities. SUP members in attendance included, D. Clemens, R. D. Gehrz, M. A. Greenhouse, B. Jannuzi, D. Weedman, B. Wilkes, and C. E. Woodward. Peter Eisenhardt was representing M. Werner in his absence, while SUP member K. Noll participated by telephone. At the conclusion of the meeting, the SSC management was given an oral debrief by the acting SUP chair, Chick Woodward.

The SUP was impressed by the presentations and thanks SSC staff and management for their efforts to succinctly encapsulate issues. The SUP commends the SSC scientists and staff for their dogged perseverance and extraordinary commitment to push to completion all flight-critical development activities. The SUP also was encouraged that the SSC had responded positively to past SUP concerns and, within programmatic constraints, implemented SUP recommendations. Some general user issues arising from these presentations and SUP discussions are discussed below.

The SUP recommends (subject to revision based on potential launch slip) to the SSC that our next meeting (SUP10) should occur at the SSC site in Pasadena, CA during March or April of 2002, approximately 8 months prior to SIRTf launch, scheduled for December 2002.

[1] ISSUE: Legacy Science and Team Interactions with the SSC

The Legacy Science program is an important aspect of the SIRTf mission plan and has high community visibility. Furthermore, pre-launch Legacy Science activities, including Astronomical Observing Template (AOT) planning, help-desk inquiries, and post-Basic Calibrated Data (BCD) pipeline reduction tools, provide important "test-particles" with which the SSC can assess the functionality of observatory operation, planning and scheduling strategies, programmatic review processes, and user-support interactions. In part, effective communication between the Legacy Science teams and the SSC early in the implementation of the Legacy Science program is essential to success.

The SUP was encouraged that the initial quality of interaction between the SSC and the Legacy Science teams was mutually beneficial and that the dialogue was progressing. The SUP was pleased that the Legacy Observation Strategy Review process conducted by the SSC was successful. In general, the Legacy PIs found the reviews to be quite useful and effective. However, there was confusion about what to do with the written summaries sent to the Legacy PIs after their reviews. The SUP recommends that the SSC clarify the objectives and the response mechanisms prior to the next review cycle.

Several Legacy PIs requested release of test and simulated instrument data and header variables as soon as possible. The SUP recommends that the SSC provide test and simulated instrument data to the Legacy teams at the earliest possible juncture to facilitate testing and verification of post-BCD processing approaches, to validate observational strategies, and to expedite the maturation of data analysis expertise. We request that the SSC provide a status report on this activity at the next SUP meeting.

Several Legacy PIs also promoted the goal of modifying the nature of data embargoing from "Astronomical Observing Request (AOR)-level" to "frame-level" to be able to deliver quality data sets to the community in a timely fashion. The SUP recommends that the SSC study this issue, in the context of existing observing policy documents and programmatic objectives while balancing the scientific integrity of other observers' programs. The SSC should then articulate to the SUP (and broader user community) the outcomes of this exercise.

The independent assessment of the SSC responsiveness and flexibility to user issues provided by the Legacy program is an important feedback mechanism. The SUP recommends continuation of the explicit solicitation of the Legacy team's assessment of SSC processes, policies, and interactions. The SUP recommends that this polling be conducted by a SUP member who shall report to the committee as a whole and to the SSC during all future SUP meetings. The SUP recommends that SUP member Dan Clemens continue in this capacity.

[2.] ISSUE: Legacy Science Funding Profiles

The SUP expresses concern that the Legacy Program's ability to meet its core mission requirement, early delivery of high quality data products to increase the GO program discovery potential, is at high risk due to a pre-launch funding profile drawn out at a sub-critical level because of launch readiness delays. The recent assessment (discussed in [1.]) of Legacy team status revealed that many teams have identified inadequate C/D funding profile as a top risk item.

A modest increase in Legacy pre-operations funding would dramatically increase the success potential of this critical program. We note that,

since Legacy is an early SSC system pathfinder, it can serve as a barometer for the mission readiness of the science operations ground system as a whole. The SUP strongly recommends that Legacy Program late delivery risk be specifically assessed as part of the SIRTf risk management program (conducted by the SSC and/or the SIRTf Program management) so that Legacy and other science operations funding needs (e.g., pipeline development) can be balanced with flight segment cost issues.

[3.] ISSUE: Early Observations/Validation

The SUP is concerned about the flow of activities, observations, and decisions concentrated into the early part of the SIRTf mission. These Science Validation (SV), First Look Survey (FLS), and In-Orbit Checkout (IOC) periods were not described in detail for the SUP9 meeting. However, Legacy PIs report that several of their programs are contingent on positive evaluations of their observing methods during the early operations period.

For the SUP10 meeting, we would like to hear a presentation on the flow of activities during these early mission periods.

[4.] ISSUE: Form of SIRTf data release (push/pull)

With SIRTf data release planning well underway, SUP members reacted with a broad range of opinions regarding how SIRTf data would be transferred to users. The present plan of "pushing" large SIRTf data sets onto users' computers using the LIE software parallels current Hubble Space Telescope (HST) practice. However, retaining significant "pull" capability to support some users is an important recommendation.

Trial "push" experiments with some Legacy teams over the next few months would seem warranted. Reporting the results from these trials at the SUP10 meeting would help the SUP advise the SSC in this area.

[5.] ISSUE: SSC ATLO Support

The SUP was informed about the considerable effort that SSC personnel must now contribute to the Assembly Test and Launch Operations (ATLO) effort at Lockheed Martin Missiles and Space Company (LMMS). We recognize the importance of the SSC's support for ATLO but remain concerned that this extra effort must be expended within the existing limited resource structure. SSC management should endeavor to structure these activities so as to maximize the support for ATLO with as little negative impact as possible on the timely development of user tools, Cycle-2 AOTs, and completion of data pipelines.

[6.] ISSUE: Description of IOC and SV Activities

Key to effective use of SIRTf will be the knowledge of the integrated observatory performance during IOC and SV. The choreography and articulation of scheduled tests will directly impact the user community. The SUP requests for the SUP10 meeting a substantive discussion of activities and decision processes during the IOC and SV phases. Much of this vital activity is the responsibility of instrument teams, GTO-users, and Legacy teams. The SUP wishes to understand the obligations and timing of the efforts of these teams in demonstrating SIRTf performance, both for instruments and for the data analysis pipelines. While the SUP understands that such activities are carefully reviewed by the SIRTf project through readiness reviews, the SUP desires to review IOC and SV in context of requirements placed on users. Feedback from the users who comprise GTO and Legacy teams is crucial to timely decisions affecting the operational efficiency of SIRTf, and the SUP would like insight into how these teams will provide this.

This discussion should address specifically how validations of Legacy plans will proceed, including SIRTf data collection, SSC pipeline data processing, data release to Legacy teams, rendering of decisions regarding Legacy observation viability, and release of holds on Legacy AORs. We also suggest that decisions currently deferred to the early observations period be examined to assess whether some of these choices could be made before early observations commence.

[7.] ISSUE: Contingency Planning

The lifetime of SIRTf is constrained by the cryogen reserve necessary to cool the telescope and instrument packages. Therefore, contingency planning and risk mitigation strategies must be carefully developed and mature prior to launch. Development of contingency plans is critical in case SIRTf does not meet pre-launch performance expectations, especially if an instrument capability is significantly degraded. In such circumstances, it would be vital to move quickly to rearrange GTO and Legacy observing programs which required that capability. However, major programmatic and policy questions remain, including (but not limited to): 1) how will this rearrangement be done? 2) how quickly can observing program re-work be accomplished? 3) what rights will GTO and Legacy observers have to previously granted time? and 4) what constitutes abnormal observatory performance? The SUP understands that policies for such contingencies are being developed at SSC. The SUP requests a thorough discussion of these issues at SUP10 because of the importance of assuring that policies be fully determined and understood by the users in advance of executing science programs.

The SUP feels that understanding the above topics in time to provide useful feedback to SSC requires that the discussion take place at least 6 months before the SIRTf launch date.

[8.] Issue: User Support

The SUP was pleased that the SSC is developing User Support infrastructure and mechanisms for supporting inquiries from the user community. In particular the plan for cross-talk between User Support and the instrument groups, facilitated in terms of a scientist who is a member of both teams, is likely to be key during the first few months of mission operation. During this operational phase, instrument and observing conditions may change rapidly. The SSC's ability to promptly convey this information to the user community, including recommendations regarding instrument performance and AOT efficiency, is critical.

However, the SUP is seriously concerned with the present staff level and the proposed staffing wedge discussed by the SSC for this unit. There are only 2 full-time members in place and 1 due imminently; the remainder of the ramp-up is planned over the next 12 months. The SUP's consensus is that this staffing profile is inadequate for the myriad tasks and development activities needed for robust user support at launch. In order to provide strong support to Users, both for the early observations (Legacy, FLS and GTO observers) and to GOs writing their Cycle-1 proposals, the SSC must hire new staff early enough to enable these individuals to become familiar with all aspects of the spacecraft before the major load of User Support begins. This means certainly before launch and, if possible, before the NRA is released, to ensure that the new group members are sufficiently familiar with the details of the NRA-related material and any changes that may result from in-flight calibration and testing.

The SUP strongly advocates that the SSC provide the community with excellent User Support services. We view this as a high priority activity. The SUP recommends that SSC management review staffing levels within the User Support group and identify mechanisms and strategies that will ramp-up this group quickly within the existing cost-constrained environment.

[9.] ISSUE: Data Archives

The preliminary plans for the SIRTf data archive were outlined and they appear satisfactory. The data distribution medium was a topic of discussion, particularly considering the large size of the data sets that the Legacy projects will generate. The SUP suggests polling the Legacy teams to see how many could not work with electronic only and what other media they would prefer. The SSC may wish to provide a short questionnaire (HTML webform) that they can fill out to encourage their response. There was concern among the committee that the electronic "push" option might not work for everyone given increasing security issues. The Space Telescope Science Institute (STScI) is apparently using it with some success. The SUP suggests that the archive group contact STScI to find out how it is working and what kind of problems they encounter with what

fraction of users.

[10.] ISSUE: AOT Development -- At-Launch Capability

The SUP commends the SSC for their diligent efforts to provide 4 fully commissioned AOTs and data reduction pipelines to the user community as IOC and SV milestones. Although development is fairly advanced, the SUP encourages SSC management to complete remaining development tasks and "close out" flight-ready versions of these AOTs as a priority. The SUP notes that the shutterless operation of IRAC presents new, unexpected challenges that may require additional resource allocation to develop work-arounds. As IRAC observations are a key element of many Legacy Science programs, FLS, and GTO initiatives, observational requirements and pipeline issues must be carefully scoped to mitigate risk. In particular, the SUP was concerned with the potential bottle-neck introduced by the proposed flat-fielding schemes. The SUP requests that the SSC detail complete end-to-end operational plans for shutterless operation of IRAC at SUP10.

The SUP commends the SSC for implementing a more efficient IRS step-and-stare capability within an existing AOT framework, and also for plans to provide an efficient "snapshot" IRS imaging mode for 15 and 24 microns.

[11.] ISSUE: AOT Development -- Deferred Capability

Recognizing the limited resources available to the SSC for pre-launch development activities, the SUP has endorsed deferring commissioning of three AOTs. The SSC has adopted this position, and the SUP reiterates their support for this programmatic decision. However, the SUP strongly advocates that the three deferred AOTs be made available to the Legacy science teams and to all GTOs no later than 10 months after launch, phased with the Cycle-2 GO call. Of particular interest to the SUP was the development schedule for the MIPS Spectral Energy Distribution (SED) AOT, which will provide spectra from 50 to 100 microns at a resolution of approximately 15, at sensitivities far beyond any previously available to the scientific community. The SUP was informed by SSC that internal development of the MIPS SED AOT would be completed by December 2001, and that SIRTf system testing would be the pacing item in releasing this AOT. The SUP urges the SSC and the SIRTf project to maintain high priority on making the MIPS SED AOT fully commissioned and available no later than the Cycle-2 call for proposals.

[12.] ISSUE: SSC Science Environment

The SUP recommends that SSC management diligently protect the science staff's time allocated to independent research programs. Although we recognize that the majority of personnel effort prior to SIRTf launch is

primarily devoted to successful completion and systems verification of flight-critical tasks, opportunities to maintain individual science programs, to promote intellectual exchange, and to disseminate research results (via attendance at topical conferences, internal science seminars, mentoring of post-doctoral students, etc.) is essential for maintaining a high-level of scientific inquiry and leadership and to provide avenues for career development. The SUP is unequivocal in our opinion that a vibrant scientific culture within SSC must be deeply integrated into the organizational culture.

The SUP appreciated that a mechanism appears to be in place, through the staff survey conducted by SSC scientist William Reach, to provide input to the SSC director from the scientific staff regarding their opinions and ideas for improving their scientific productivity. This kind of feedback should continue to be strongly supported.

The SUP further suggests that staff research presentations continue as a regular aspect of SSC presentations to the committee.

[13.] ISSUE: Acronym Dictionary

The SUP encourages the SSC to maintain an up-to-date listing of all acronyms used in SIRTF documents for the benefit of the general user community.

[14.] ISSUE: Community Dissemination of SUP Recommendations

The SUP would like to reiterate its recommendation that the SSC continue to archive and make available to the community our report and the accompanying director's response. At a minimum, executive summaries should be posted on the SIRTF website. Both the community and the SSC will benefit from wide public access to user issues discussed by the SUP and the SSC response to our recommendations.

