

# **Report of the Space Telescope Users' Committee (STUC) Meeting, September 1994**

STUC REPORT (Sept. 1994)

The Space Telescope Users Committee met on September 8-9, 1994, at STScI.

The STUC met jointly with the Servicing Science Working Group (SSWG) on the first day to review the project status, budget, and prospects for long-term operation of the spacecraft. The second day was concerned largely with interaction of HST users with STScI.

With regards to material presented jointly to the STUC and SSWG, we summarize as follows:

1. The HST project manager presented a somber status report on flight spares for the 1997 refurbishment mission, as well as the long-term plans for developing advanced spare components (fine guidance sensors, batteries, solid-state data recorders, gyros, and so on) that would be required to ensure operation of HST over its full 15-year mission.

The recent budget cuts applied to the project have essentially curtailed all work on second-generation flight spares, leaving the project with a small inventory of parts on hand to service any component failures that may occur prior to the 1997 mission. The project also reported that additional 10% budget reductions have been requested from 1996 on.

The project could not identify additional savings to be obtained

without resorting to a number of options that the STUC considers to be extremely unattractive. These include waiving the HST Level I requirements, terminating the Advanced Camera, reducing the data analysis money by greater than 50%, and so on.

We find that at the very minimum, the HST project is not being allowed to plan sensibly for long-term support of the 15-year mission due to the projected shortage of money required to develop and support the hardware required. We are further concerned that if component failures on orbit continue as they have in the past, operation of the spacecraft more than a few years into the future may be at serious risk. We further find this situation remarkable, given 1) the investment made to the program so far, 2) the success of the repair mission, 3) the demonstrated performance of the repaired telescope, all leading to 4) the keen interest of the public in the recent discoveries made by the repaired telescope.

The STUC has the distinct impression that the perception still exists, both within NASA and without, that the HST budget can be further reduced without seriously jeopardizing the future scientific returns from HST. We are surprised by the persistence of this perception, given that none of the six reviews of the project budget conducted so far this year (one by the STUC itself) have been able to identify excess moneys or savings to be obtained that did not have an adverse effect on the operation of HST.

2. The STUC was briefed on the current plans to expand the role of the STScI in NASA's educational and public outreach activities and views the STScI role as an important way to disseminate to Congress, NASA, and the general public the remarkable scientific results now being obtained in spite of a dangerously tight budget. The STUC is willing to contribute to this effort in any way that it can.

3. The STUC commends the Project on restoring the Advanced Camera to the program and issuing an AO to which all qualified proposers may respond. However, we are concerned that at the level of funding envisaged, the resulting instrument may not be a significant advance over WFPC-II; in this case we feel that the question of proceeding with funding for the AC as opposed to other pressing HST needs should be carefully examined. We strongly support efforts to enlist funding support from other individual nations or groups to enhance the performance of the AC. We note that the "Frontiers of Space Imaging Study" clearly identified the Advanced Camera as a means to enhance and ensure continued scientific returns over the lifetime of the HST mission, a point of view that we endorse.

4. STIS and NIC remain on schedule and budget for the 1997 mission. The project clearly understands that withholding money from either instrument at this late stage will ultimately only result in delayed deployment of the instruments and larger long-term costs. We understand that with modest effort, it may be possible to equip STIS with additional optical and UV filters. This may be an attractive "insurance" option

for providing some UV, or even optical imaging capability, should FOC or WFPC2 fail prior to deployment of the Advanced Camera.

We encourage the project and STIS team to investigate this option.

With regards to material presented solely to the STUC, we summarize as follows:

1. The STUC was very impressed by both the execution and the high quality of the scientific data that came out of the HST observing campaign during the impact of the fragments of comet Shoemaker-Levy 9 with Jupiter in July 1994. We commend the STScI and all of the individuals involved. Of particular note was the organization beginning with the call for proposals, through the mini-TAC review and selection, and the subsequent prompt funding of investigators which ensured adequate planning and preparation. This latter contributed not only to the high quality of the results but also to their prompt dissemination to both the public and the astronomical community. This experience should provide a model for future HST observing campaigns.

2. The STUC notes a minor breakdown in communications regarding the completion of on-orbit characterization and calibration of the scientific instruments following the successful repair mission. In one particular example, GHRS side 1 data obtained through mid-summer 1994 were processed in the pipeline using pre-repair mission theoretical sensitivity curves, yet users of this instrument were not directly notified when the on-orbit

calibration files became available. This information was duly placed in STEIS (dated July 20, 1994), but it is clear that the members of STUC (and probably most users) do not browse in STEIS unless notified of the need to do so, preferably by e-mail. In general, we ask that STScI alert observers upon receipt of their observations of any outstanding calibration problems.

3. We reviewed the plans for evaluating Cycle 5 proposals, and note that the number of panels has expanded from 6 to 8. We note that the division of proposals into various categories, while necessary, is somewhat arbitrary and should not in any case be used as criteria for dividing telescope time among the various sub-fields of interest. STScI has expressed its goal of encouraging the TAC to allocate time in an attempt to define the best science program overall, regardless of the mix of problems, and we encourage this approach. We also commend STScI for changing the allocation from spacecraft time to orbits for Cycle 5, as well as for implementing greatly simplified proposal forms.

4. We commend STScI for development of the PRESTO and POSS programs to assist observers with development of their Phase II proposals and reduction of observations once their observations have been obtained. We find it attractive to be able to interact with a small group of individuals for the wide variety of problems that may arise in the planning and reduction of observations. We especially endorse having a responsible PhD level person (with associated support staff) as being THE contact for any given program. At the same time, we strongly support

the creation of a single database structure where the status of any proposal or problem is tracked by the system itself, rather than the memory or availability of any single person. It is extremely important to ensure that programs do not "fall through the cracks" at any stage of their implementation. Portions of this database should be available to the outside users, with due regard to the security of the individual GO proposal.

A key aspect of the POSS approach is the analysis "hotseat," which provides a constantly available and monitored point of contact to STScI.

We recommend adoption of a hotseat phone or email contact by the PRESTO program, and all other STScI programs involving extensive contact or interaction with HST users. We also urge that all such hotseat or general points of contact be clearly posted as an ongoing feature in each STScI Newsletter issue.

5. The STUC is also concerned with having the best scientific advice available for preparation and analysis of the observations.

In short, understanding what an observer is attempting to accomplish and forestalling problems will in many cases require interaction with STScI staff capable of understanding both the technical and scientific aims of the proposals. We thus encourage involvement of the STScI research staff in both the PRESTO and POSS programs.

6. We suggest that STScI clarify the definition and utility of dark-time (that is the portion of the orbit during which the spacecraft is within

the earth's shadow) for programs that require the lowest backgrounds.

This has become especially important now that users must fill entire orbits.

We wish to know under what imaging and spectroscopy conditions dark-time should be requested, and suggest clear instructions be added to the

Phase II handbooks. Similarly, we recommend that STScI work with T. Ake from GSFC to implement a low particle background scheduling algorithm for those programs for which this is an important requirement, along with the relevant documentation and instructions.

7. We were pleased to see that the STSDAS group continues to upgrade this software package in a time of decreasing man-power, and were pleased to see their cautious approach in converting (parts of) STSDAS to a C or C++ environment, avoiding the many pitfalls that other observatories have encountered in similar transitions. We urge that the STSDAS group be able to continue their important work, as many HST users depend on this software package as their sole environment to reduce and analyze HST data.