

## **Response of the Division of Astronomical Sciences to the Committee of Visitors 2005 Report**

**January 2008**

The FY 2005 Committee of Visitors produced a thoughtful and constructive report of the Division of Astronomical Sciences which contained a number of important observations and valuable recommendations. Over the three years since the report was written, AST has made substantial progress in realizing many of the recommendations and our own goals, particularly with respect to community input to strategic planning and portfolio balance through the Senior Review, but also in areas of facility management and program development.

Here we note each of the major recommendations and provide a summary of the current status of implementation or response to its observations.

### **AST Division Management**

- *The COV recommends that the Division be given positions for additional scientific personnel in order to decrease the workload currently imposed on Division staff, to ensure adequate oversight and program management, and to allow progress on new programs and projects being generated in the community.*

The Division appreciated the Committee's recognition that the workload on AST staff was very high, and valued the recommendation that we be given additional positions for scientific personnel. Fortunately, following many discussions of these staffing needs with the Office of the Assistant Director of MPS, the Division was allocated 3 new FTE's beginning in FY 2006. Two of these positions were primarily for oversight and management of astronomical facilities and large projects and one was primarily for support of the individual investigator grants program. These positions were filled early in CY2006. These new positions, and some realignment of responsibilities among existing staff, led to a significant improvement in AST's ability to exercise its oversight responsibilities and to meet proposal dwell time goals.

Even with the additional positions, the workload remains very heavy, due to three primary factors. Firstly, the number of proposals received into the Division has risen by 45% in the past 4 years. In addition, the number of large and complex projects that require oversight has increased, many of those projects have expanded in scope and complexity, and NSF requirements for oversight of facilities has become much more involved and extensive, requiring more and more staff attention. In fact, AST program staff have been heavily involved in the formulation of new practices and policies associated with facility management at NSF. Lastly, carrying out the senior review and now implementing its recommendations has been a demanding, though critically important task of the Division that has resulted in a substantial increased work load, primarily for those involved in management of the facilities.

## Strategic Planning and Implementation

- *The COV strongly supports the planned Senior Review as the proper next step in the planning process.*
- *The COV recommends that the Senior Review focus on establishing a sustainable balanced program that is driven by science inquiry rather than the current wavelength-based structure.*

The Division appreciated the thoughtful, substantive discussion with the COV concerning the background, goals, and process for the Senior Review and welcomed their support of this major, but necessary, undertaking. In the period since the COV report, we constituted the Senior Review Committee as a subcommittee of the MPS Advisory Committee and supported their year-long activities, which resulted in their October 2006 report. The Senior Review committee did, in fact, focus on “establishing a sustainable balanced program that is driven by science inquiry rather than the current wavelength-based structure” and foremost among the 6 basic criteria on which their recommendations are based was ‘optimizing the science’ without regard to wavelength-based technique or administrative structure.

Since the time the report was issued we have been active in bringing the report and its recommendations to the community and discussing with them our plans for implementation of as many of the report’s recommendations as possible. In addition to a series of seven regional town meetings, we visited each of the national observatories, sometimes several times, to talk with staff about the report, what its recommendations meant and how we were developing an implementation plan. We have made progress in many areas addressed in the report, although work is ongoing:

- prospects for partnerships in the support of operational costs for Arecibo Observatory and NRAO’s VLBA are promising, although still under negotiation.
- NOAO’s mission and its role in the GSMT projects have been restructured to provide a more balanced program and substantial progress has been made in effecting a true OIR ‘system’ at all telescope apertures.
- recommended cost reviews of all facilities are underway with a report expected by the end of 2008
- studies to investigate and characterize the decommissioning costs for facilities recommended for possible closure (Arecibo, Sac Peak, Kitt Peak solar facilities, VLBA sites) are planned or underway, with the results of the Arecibo study due shortly.

We feel that the recommendations and findings of the Senior Review report do, in fact, reflect a balanced program in which considerations of scientific inquiry are foremost. Many of the observations and findings of the Senior Review committee reflect the view that the need to ‘bridge artificial divisions,’ whether they be by wavelength, type of institution, or scientific discipline, is essential to the long-term health of the US community.

- *The COV recommends that the Division continue to identify and lead development of appropriate joint interagency initiatives.*

The Division has been active in fostering new interagency activities and forging partnerships. Examples include the interagency task forces on Cosmic Microwave Background Research, Dark Energy and ExoPlanet research that grew out of activities under the auspices of the joint NSF-NASA-DOE Astronomy and Astrophysics Advisory Committee. NSF and NASA have just issued a joint solicitation for the operation and management of the Virtual Astronomical Observatory, the long-term realization of the National Virtual Observatory development project; NSF took the lead in writing the MOU with NASA and the solicitation that serve as the basis for the joint activity and will be providing the majority of funding for the activity. The Division is engaged in a growing number of projects with DOE such as the Dark Energy Survey and the design and development work for the Large Synoptic Survey Telescope. AST is also working closely with NASA and DOE in the planning for the next Decadal Survey, and has led and coordinated the agency interactions with the NRC as the survey gets underway.

### **The Challenge of New Facilities**

- *The COV endorses the Division's new strategic plan to build a sustainable program using a community-based process that considers the scientific merits of extant facilities and programs as well as the advances that can be realized with new instruments and other initiatives.*
- *The COV strongly concurs with the recommendation of the AANM report and the conclusion of the Division that the AST grants program (AAG) should be maintained at or above its current funding level despite the severe budget pressure presented by ALMA and other proposed large facilities.*
- *The COV recommends that the Division continue to aggressively pursue its approach to the priority initiatives of the AANM report with a flexible, balanced response. This response should both advance the development of facilities and take advantage of opportunities associated with the scientific goals of those facilities to increase support for grants by means articulated in the AANM Decadal Survey and appropriate to the Division.*

The community-based process of the Senior Review was extremely successful in arriving at a recommended program that balanced the need for sustained support of the highest priority current facilities with the promise of future capability. First among the Senior Review's recommendations was a recognition of the primary importance of the unrestricted grants program, a priority the Division shares and that guides its decision-making in the continual adjustments necessary in response to budget realities. Over the period since the last COV, funding to the core Astronomy and Astrophysics Grants

program (AAG) has increased by 35% in recognition of the need to maintain a healthy grants program and in the face of increasing proposal pressure.

Within the many budget constraints, the Division has pursued at a modest, but steady pace, the technology development and design leading to the priority recommendations for future facilities recommended in the Decadal survey.

## **Programs**

- ***The COV recommends that the Division continue and expand its leadership role in fostering the next generation of scientists poised to take full advantage of new facilities.***

The Division continues its efforts to ensure that students and early career scientists become experienced users of new tools and are enabled to take full advantage of new facilities. AST-supported REU programs have grown in number and now include a number of programs co-funded with other NSF divisions. The Astronomy and Astrophysics Postdoctoral Fellowship Program continues to attract and support a diverse cadre of future leaders, who are now entering the faculty ranks in significant numbers. In FY 2007, AST launched a new program, Partnerships for Astronomy and Astrophysics Research and Education (PAARE), designed to build partnerships between researchers and students at minority serving institutions and those at research institutions, expanding opportunities for under-represented scientists, and providing research experiences and career paths for their students.

We also continue to support grantees in their efforts to prepare students for the future. One particular instance is the support of the National Virtual Observatory project annual summer school which introduces students and early career scientists to the capabilities of the VO and develops experienced future users within the community.

- ***The COV recommends that the Division continue to explore ways to unify and expand the EPO efforts within and across observatory enterprises.***

The EPO and PIO offices of our national observatories (NOAO, NSO, NRAO) and Gemini Observatory are in frequent contact through informal correspondence of key personnel and through more formal annual meetings and workshops of their staff and the staff of interested private observatories. In the last several years, they have initiated (and received AST funding for) larger workshops on topics such as “Public Understanding of Science” that have brought together those in the larger astronomical community interested and concerned about these issues.

Most recently, Tammy Bosler, an AAAS Fellow with AST in FY 2007 and 2008, has carried out a survey of the EPO programs in all of the AST-supported facilities, conducting site visits and interviews with staff at all the observatories. Her report and thorough inventory provide the background for an analysis of the large array of EPO

activities at the observatories and point out a number of areas where EPO activities can be coordinated or ‘lessons learned’ can be shared. Over the next year, we expect to follow up on this study and look for more specific ways in which programs can be more effectively coordinated and shared as appropriate.

- ***The COV encourages the Division to aggressively defend the spectrum allocations for scientific research and to expand efforts to keep the astronomical community apprised of critical issues.***

The Division increased the number of staff in AST responsible for addressing issues of Electromagnetic Spectrum Management, and so is better able to balance workload and provide a greater U.S. presence at international meetings and working group activities. We have expanded the AST web site to provide more background material and useful references and links, and we have begun to include ESM news in the NSF submission to the AAS newsletter. We note that the ESM program represents not just astronomy, but all of NSF concerns at governmental and world conferences on spectrum management; in the internal allocation of resources to support this activity this broader responsibility is often not taken into consideration.

- ***Additional information to PIs regarding context of funding decision is desirable. There were some cases of disconnects between the individual reviews and panel summaries as documented.***

The Division now uses the ‘context statement’ in the electronic jacket to provide a more complete discussion of the review process and anticipated success rate in all of its grants programs which review proposals by panel, which is almost all proposals we receive. The Division also continues its policy to make every attempt to contact PI’s personally with notification of the funding decision before the official declination letter goes out, and program officers use these phone calls or emails to provide information on the rationale for the funding decision that may not be included in individual reviews, but that often appears in the program director’s analysis. Workload and the volume of proposals we handle means that program directors cannot always make personal contact, but every effort is made to do so.

***The COV found that the processes used to solicit, review, recommend, and document proposal actions were done with the highest level of integrity, both with respect to the sensitivities of the proposers and to the merit of the science. The committee took special note of the care with which thorough summaries of proposal evaluations and decisions were documented by the Program Officers. {However}***

- ***There are concerns with respect to the consistency with which merit review Criterion II (i.e., “broader impacts”) is being applied in the review panels. COV members found examples in their review of the jackets of reviewers who injected broader impacts rationale where this rationale was not provided explicitly in the proposal.***

- ***Broader impacts criterion sometimes not explicitly addressed in individual reviews.***

It is now standard practice for AST panels to receive instruction on what broader impact means and the need to address both review criteria in their evaluation of proposals and in writing the panel summaries. Following the observation by the COV, program officers have been careful to caution review panels against interjecting their own 'broader impacts' in a proposal that did not explicitly address them. Instead, program officers urge the panel members to use the panel summary to point out opportunities the PI might have missed in broadening the impacts of their work. AST also continues to bring to the community's attention the need to address broader impacts in their proposals and explain the scope and nature of activities that qualify as broader impacts, by using AAS town halls, AAS meeting special sessions, articles in the AAS newsletter and talks as part of outreach and site visits when possible.

### **Response to the 2002 COV report**

- ***Continued education within the astronomical community of opportunities to apply for NSF-wide programs is needed. To this end, utilization of the Division's website for providing information about these programs is encouraged. At the same time, the astronomical community must assume greater responsibility in making fuller use of the Division staff for education about these opportunities.***

AST agrees that the astronomical community could take better advantage of some NSF-wide funding opportunities, and continues to bring them to the attention of the community at its town halls and sessions at the AAS meetings, through posting to the AAS email exploder and regular newsletter and other means of dissemination. For example, we now bring program announcements for a wide range of programs to the NSF booth at the AAS meetings. However, AST has relatively little control over the appearance and the content of its web site and so cannot rely on this mechanism as a means of communicating directly with the community.