

2014 AST COV: Summary for April 3 MPS AC meeting

COV Process

- **COV was able to review of much of the material before meeting**
 - e-Jackets starting Dec 1
 - Facilities information starting Dec 8
- **December 17-19 face to face at NSF**
 - All committee members were present
 - Prior access to much of the material greatly enhanced effectiveness of this meeting
 - Sadly, Bob Brown passed away the next day. His further participation was greatly missed
- **Report writing from 2nd week of January to end of February**
- **COV very pleased with openness and cooperation of AST staff.**
 - Grateful for the effort DDD Pat Knezek for organizing and keeping the COV on track
 - Also thanks Jim Neff and Dan Evans for prompt attention to questions and requests for statistics raised at the meeting.
- **Informal recommendation from chair:**
 - Do not hold CoV immediately before December Holiday break!
 - Many committee members from academia with 2-3 week with holiday and semester/quarter break.

Response to Prior Recommendations

- **2010 Decadal Survey**
 - The top ground based priority, LSST MREFC, has commenced
 - Mid-Scale program (MSIP) underway
- **2011 COV**
 - The 2011 PR (below) was perhaps the key recommendation
 - As detailed in the report, the recommendation that clearly resided in AST were addressed satisfactorily.
- **2011 Portfolio Review**
 - The 2011 PR was carried out in response to the 2011 COV.
 - » The substantial mismatch between emerging budget reality and the expectations of NWNH clearly demanded prioritization expenditures in the AST portfolio.
 - The COV feels that this difficult process was well executed.

Organization & Management: Commendations

- **The COV commends Division Director James Ulvestad and the entire AST staff for their outstanding efforts during the last four years since the last COV review in 2011. Two**
 - New MREFC projects (Large Synoptic Survey Telescope [LSST] and Daniel K. Inouye Solar Telescope [DKIST]),
 - Three MANDATED CA recompetitions
 - » National Optical Astronomy Observatory [NOAO]
 - » National Radio Astronomy Observatory [NRAO]
 - » Gemini International Observatory
 - Instituting the Mid-Scale Innovation Program (MSIP)
 - Handled a 25% increase in research grant proposal pressure
- ***The COV highly commends AST staff for their hard work in endeavoring to meet the needs of the US astronomical community, as expressed in:***
 - *2010 Decadal Survey New Worlds, New Horizons (NWNH),*
 - *2011 Committee of Visitors report*
 - *2011 Portfolio Review (2011 PR).*

Recommendation 1

- **Rapidly recruiting additional AST POs and replacements for key AST staff must be a high priority for NSF.**
 - Increased staffing also in the 2008 & 2011 COV reports
 - Continually increasing proposal pressure
 - Loss of key expertise in optical instrumentation & facility oversight
 - » Facility stewardship is a huge and VITAL mission for AST
 - Continued restructuring of AST portfolio
 - » Ongoing partial divestment of facilities is not decreasing accompanied by decreasing PO oversight
 - » Two large MREFC projects
 - Facility recompetition
 - Ever increasing government accountability and programmatic oversight effects us all
 - » Has increased cost of sponsored research activities in Universities

Recommendation 2

- **We recommend that MPS work with NSF high-level management, the National Science Board (NSB), and—if appropriate—the Office of Management and Budget (OMB) to identify funding mechanisms for decommissioning facilities. This is not an over-the-horizon issue, as funding for decommissioning may be needed prior to the next COV.**
 - **Passionate constituencies make clean divestment difficult**
 - » **Arecibo a good example**
 - **Some PR recommended divestment will lead to facilities being taken over by others**
 - » **Mayall and WIYN still at Kitt Peak and some NOAO support still needed**
 - **Other Divestments are at end of lifetime**
 - » **Kitt Peak solar facilities?**

Recommendation 3

- **We strongly encourage MPS to work with NSF management to enhance the Large Facility Office by recruiting and retaining a cadre of skilled professionals with expertise as scientific project managers so that they can be available to work with POs in times of increased contractually-based workload, such as MREFC starts, recompetitions, and facility divestments.**
 - **Individuals with management experience in the construction of large science facilities reside in NSF’s Large Facility Office.**
 - » **Given temporary work assignments in divisions engaged in building major new facilities**
 - » **Division POs should concentrate on optimizing the scientific output of the facilities, rather than becoming experts on the details of construction projects**
 - **A related issue report section 10.2: Large Facilities Manual (LFM) on MREFC projects.**
 - » **The LFM defines Project Life Cycle Stages from initial development to facility termination**
 - » **Specifies roles and responsibilities for NSF staff throughout the multi-step process.**
 - » **The LFM is a complicated document, which changes more quickly than projects can be completed.**

Grants Programs: Commendations

- **“We commend AST for providing the eJacket review materials as well as important facilities documents in a timely, organized and internet-accessible format. The COV commends the Division for this very effective use of technology to streamline the review process and to provide the Committee with a clear and detailed picture of AST’s functioning during the review period.”**
 - This was noted as desirable by the 2011 COV and greatly enhanced the effective use of the 2014 COV face-to face time in December.
- **The committee commends the Division for its handling of its review panels during this period of increasing proposal pressure.**
 - The COV commends AST on its continuing efforts to make the peer review process as fair and even-handed as possible while simultaneously endeavoring to use scarce resources to support the highest quality of scientific research.
 - The COV commends AST for its efforts to fund as many awards as possible, especially given the appallingly small fraction of proposals (currently about 16%) for which the Division is able to provide support.
- ***The COV commends AST for the breadth and depth of their efforts to increase participation by a diverse population of current and future scientists.***
 - *The COV commends the AST Division Director for his increasing emphasis on inclusion of early-career scientists on AST review panels and oversight committees.*

Recommendation 4

- **We recommend that AST be given broad latitude to test and implement changes in IIP review and award administration processes, and to do so as quickly as feasible.**
 - **Since the 2011 COV, there has a 25% increase in the number of individuals submitting proposals as PIs.**
 - **Especially with the success rate at ~15% and expected to trend to 10%, more and more PI's are submitting multiple proposals adding to the increase proposal pressure.**
 - **AST currently request on one proposal per PI/year**
 - » **This request not being honored and is likely to get worse as success rate continues to trend down with flat funding.**

Recommendation 5

- **We recommend that AST pay particular attention to ensuring that sufficient computational astrophysics and/or astroinformatics expertise is present on all future review panels, or that it is provided via outside ad hoc reviews.**
 - **While computational astrophysics has been a fundamental to AST programs for decades, the emergence of large scale data bases and their sound analysis of adds an additional complication to having the relevant expertise on a panel.**

Recommendation 6

- **We recommend that solicitations for MSIP proposals alternate between solicitation cycles either by proposal category or by requested funding level.**
 - This is early in the MSIP implementation phase and we encourage NSF to experiment with the process in order to ensure appropriate balance in the future MSIP portfolio.
 - The AST funds available for the MSIP program remains well below the NWNH recommendation of \$40 million/year

Suggestions for consideration

- The COV asked whether the acceptance rates for the different types of panels are similar. **The COV recommends that AST compile statistics and track acceptance rates of proposals in traditional, virtual and mixed panels for the next COV.**
- The number of proposals from minority PIs remained at 4-5% level over the review period, consistent with rates from 2004. The success rates appear a bit lower than one would expect from the submitted population, but it is hard to tell due to limited statistics. ***AST should continue to follow this demographic to study the significance of this possible under-representation.***
- ***The COV concurs with the view that PLA should continue to be supported by AST, especially given the recent dramatic increase in exoplanet research.***
 - That said, the COV is concerned that the PLA program has had difficulty attracting Program Directors from the planetary science community.

Facilities Management: Commendations

- The COV feels that AST is doing an excellent job in working with the management organizations to assure that all facilities are serving their communities effectively.
- The COV was especially impressed in the deliberate planning and mentoring that enabled a smooth transition of the NSO and DKIST oversight and commends Dr. Foltz and AST management for enabling this process.
 - *This is an excellent model for facility oversight transitions and should be used to the extent possible*
- The COV is also very impressed that AST was able to undertake a new MREFC project for LSST in 2014. This took extraordinary effort in working with the LSST project, AURA, DOE, the NSB, and several internal NSF offices. The Division Director and the LSST facility Program Officer, Nigel Sharp, are to be especially commended for their considerable strategic planning that allowed them to circumvent the roadblock of the 2013 government shutdown that threatened to delay the project start by at least a year.

Recommendation 7

- **We strongly recommend that the circumstances and period of any future re-competitions be strongly guided by a comprehensive cost-benefit analysis with delivered science being the main criterion.**
 - *It would help to alleviate the pressure on the time and energy of the AST staff if the various recompetitions were not held simultaneously.*
 - Even more importantly than AST staff relief, re-competitions divert facility management and staff from serving the science community which is the key NSF mission for these facilities
 - » **Uncertainty associated with re-competitions can lead to loss of key staff**
 - It would greatly help to alleviate the pressure on the time and energy of the AST staff if the several recompetitions were not held simultaneously.

Facilities: other issues

- **The COV is concerned that lack of continuity in the position of the NRAO Program Officer (PO) does not serve NRAO or the U.S. astronomical community well.**
- **We commend AST for pursuing promising approaches to leveraging AST facilities with partnerships such as the WIYN telescope with NASA and the 4-m Mayall telescope on Kitt Peak with DOE for the Dark Energy Spectroscopic Instrument (DESI).**
 - **Such creative approaches to stretching the AST budget are a credit to Division management and help to ease the pain caused by the unprecedented loss of facility access due to flat budgets**
 - ***Overall the COV supports this approach, but the AST Division should apply a cost-benefit assessment where the cost of staff effort both within AST and the facilities are considered when doing such partnerships***

Recommendation 8

- **We recommend that AST continue to work with AGS, NASA's Heliophysics Division, and the solar research scientists to build a cohesive community that will become the future users for DKIST.**
 - **The US Solar community is primarily space missioned oriented and needs opportunities to understand and prepare for DKIST**
 - **The COV encourages AST to continue working on cross-agency opportunities that prepare the U.S. solar community to fully utilize the capabilities of DKIST**
 - **Workshops and other training opportunities are also needed to develop junior researchers and to broaden participation by mid-career and senior researchers in DKIST. ALMA user development programs might serve as a template.**

Recommendation 9

- **The COV recommends that AST personnel continue to try to improve the interface with XSEDE with the goal of reducing the proposal burden. One way to do this would be to allow simultaneous proposals for funding and computer time.**
 - **The last few years have seen very large oversubscription rates on NSF XSEDE resources, typically by factors of three or more.**
 - **The response to this oversubscription has typically been not to award most of the resources requested to roughly 1/3 of the projects, but instead to award to a significant fraction of the projects a reduced share of the amount requested– this does not get science done. At a minimum this process should be addressed.**