



UNITED STATES GOVERNMENT
M E M O R A N D U M

DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES

Date: March 31, 2011
From: Assistant Director, MPS
Subject: **Response to the Division of Astronomical Sciences Committee of Visitors Report**
To: MPS Advisory Committee

Please find attached the MPS response to the Committee of Visitors (COV) report from the 7-9 February 2011 COV review of the Division of Astronomical Sciences. The review was thorough and insightful, and the findings will be very helpful to me and to the Division of Astronomical Sciences in fulfilling our responsibilities to the scientific community and to the nation.

MPS and AST have prepared this response. I hope the full MPS Advisory Committee finds this COV review and the response useful and acceptable.

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Assistant Director

Attachment: Response to Division of Astronomical Sciences COV Report of 2011

MPS Response to the FY 2011 Division of Astronomical Sciences Committee of Visitors Recommendations

Introduction

MPS and AST thank the members for their willingness to serve on the Committee of Visitors for MPS/AST, particularly since some were invited with less advance notice than we would like to supply. The COV worked hard before, during, and after the February meeting, and we appreciated the chance to share with them our programs and the excitement of the research that is funded by the Division. We particularly thank the COV for the kind words expressed about the diligence, professionalism, and performance of our staff. This document is a response to the nine itemized recommendations in the COV report, described in the next section.

Recommendations and Responses

Recommendation-1: NSF should thoroughly review the staffing requirements of AST to determine the level required for AST to adequately support its base program while playing a leadership role in the complex, international development of the next generation of world-class observatories.

AST agrees with the implication of this recommendation, that more staff are needed to ameliorate both workload and risk, particularly for the complex international observatories that are in the AST portfolio. As discussed with the COV, we are actively identifying and training backup personnel as possible, but this is affected significantly by both workload and travel budget.

Recommendation-2: AST should conduct a thorough review of present and planned programs and activities across the division (a *portfolio review*) in order to establish a realistic fiscal baseline to accompany the community's scientific aspirations as enumerated in the Astro2010 decadal survey. MPS/AST management should seek community consultation prior to defining the makeup and charge of its portfolio review team.

AST has a program-officer team meeting weekly in order to draft a charge and management plan for the portfolio review, with a goal of presenting these to the MPS Advisory Committee in early April. Before embarking on the review, it will be described at the NSF Town Hall at the Boston AAS meeting in May. Because of the current budget scenarios, carrying out the review is rather urgent, so we believe it would be counterproductive to have a substantial public comment period on the review mechanism. The nature of the review has been discussed previously in numerous public meetings, including the NSF Town Hall at the January AAS meeting and the February meeting of the Astronomy and Astrophysics Advisory Committee; comments received at those meetings have been incorporated in AST planning.

Recommendation-3: As it prepares for a portfolio review, AST should consider establishing a set of metrics to measure success – that is, to measure the relative return on investment – of various segments of its portfolio, such as the individual investigator program and major facilities.

This is an interesting recommendation, and we will study the possibilities for implementing it. The development of metrics for program assessment is becoming more and more widespread throughout NSF, and COV's recommendation is consistent with this trend. Metrics for individual investigator grants would necessarily be very different from metrics for a national facility and cross-comparisons of the two are not likely to be meaningful. Even comparisons of facilities with each other are not straightforward and must be done very carefully. The members of the AST portfolio review team will look into developing useful metrics.

Recommendation-4: The Foundation should aggressively explore the innovative use of new technologies to facilitate effective and timely communication with the research community.

The COV made a number of interesting suggestions for ways to make information available. AST will form a group to discuss the suggestions by the COV, determine which provide the greatest return, and propose an implementation plan for trying the new communication methods.

Recommendation-5: AST should consider options to significantly expand the pool of potential panelists, such as: (a) establishing the expectation that past recipients of grants *should* participate in the review process; (b) communicating the benefits of participation to new investigators or those who have been previously unsuccessful; (c) gathering data on the pool of potential panelists earlier than the present practice; and (d) assembling review panels earlier and, perhaps, using a staggered distribution approach.

The first two suggestions about community responsibility have been attempted with varying success, and we try hard to bring in new investigators when possible. Anecdotal evidence tells us that one of the biggest problems we face may be our low success rate compared to the workload involved in reviewing a proposal. People find it difficult to devote a week of their professional lives to a panel from which only four proposals may be funded. With respect to panel operations, the suggestion that we have a more uniform "panel-training" methodology is a good one, and one that we will try to implement after we name a new coordinator for Individual Investigator Programs.

With respect to the un-numbered reiteration of a 2008 COV recommendation that proposers be told what quartile their proposals fall in, the response is under active discussion within AST. The program officers in the AAG programs have now begun communicating this information to PIs at the time of decision in a way that puts the review and ranking of the proposal into the context of the panel in which it was reviewed. This communication will be filed in eJacket.

Gathering data sooner and assembling panels earlier are ideas that we have tried to implement every year, but the efforts require significant increases in workload, already an issue due to the insufficient staffing in AST. The “staggered distribution approach” of generating a large pool of panelists and then distributing them among panels has been tried, but has limited application because of the varied nature of the panels.

There were suggestions in the text of the report about gathering information in advance via letters of intent or other means of acquiring data about proposer research areas, institutions, etc. While this is a worthwhile concept, the impact on staff workload would be significant.

Recommendation-6: ATST’s ultimate “programmatic home” within NSF should be decided before AST conducts its portfolio review because the portfolio review team will need to know whether or not ATST’s operations cost will be borne by the AST division.

MPS and AST continue to work with GEO to conclude discussions on the programmatic home of ATST and other solar research. We will not delay the beginning of the portfolio review for this issue, but we expect the answer to become clear, at least, during the course of the review if not before, and to be taken into consideration by the panel.

Recommendation-7: A decision regarding whether or not to invest in D&D costs for GSMT should await the results of the portfolio review.

The potential impact of the NSF not investing could be huge on the public/private partnerships in play for each GSMT candidate, and could result in there being no telescope larger than 8-10m available to the U.S. community until after 2025. It is possible that waiting until after the portfolio review for a decision will severely damage one or both GSMT candidates, so deferring a decision for a year could in fact be a decision never to invest. Because of this possibility, we continue to consider our options very carefully, and may not be able to adopt this recommendation.

Recommendation-8: AST and, more broadly, MPS must develop a realistic plan for decommissioning instruments and phasing out the M&O costs of its current and planned facilities. In particular, AST/MPS should establish and implement finite lifetimes for major research facilities built with NSF funds.

For the past year AST has been thinking about such a plan. Unfortunately, the problems with decommissioning and phasing out facilities are dominated by observatories that were built many years ago and will be very costly to decommission. In fact, the problem is not the lack of planning, it is the unavailability of funding from within the AST Division to execute any feasible plan except to continue a facility funding line for as long as it takes to decommission a site. This is a problem that must be addressed at a broader NSF level if the aforementioned portfolio review is to be truly successful at creating room for future projects.

Recommendation-9: Given the importance of ESM to the NSF and the growing external pressures that are being placed by international commerce on ESM, a decision needs to be made regarding the proper home for the ESM program. The home for ESM must be chosen to ensure that ESM retains a sufficiently high profile to protect scientifically significant parts of the electromagnetic spectrum for research purposes.

The home of ESM is under active discussion. To a certain extent, it will remain hostage to the implementation (or not) of the National Broadband Plan and the Wireless Innovation Fund, as well as the beginning of the EARS (Enhancing Access to the Radio Spectrum) program. We note that ESM has not been a desirable career path for young Ph.D. astronomers; the “graying” of the ESM community leads to significant concerns that there will be almost no astronomers left to carry on ESM work in a decade.