

NSF Division of Astronomical Sciences Senior Review

NAIC Senior Review Memo Series Memo #1: Background and NSF/AST Request to NAIC

Robert L. Brown
April 11, 2005

1. Background

Over the course of the past six months the astronomical community has been informed by the NSF Division of Astronomical Sciences (AST) about its planning for a “Senior Review”. The purpose of the Senior Review is to enable AST to reallocate its facilities support funding so that funds are available both to continue the operation of high priority existing facilities and for initiating new activities as informed by the recommendations of the recent Decade Review of Astronomy and Astrophysics. This AST plan to assess and reallocate its facilities support funding occurs now because it is clear that the underlying funding assumption on which earlier planning was based—a doubling of the NSF budget over ten years—could no longer be maintained.

As one of the AST facilities, the astronomy program at NAIC is directly affected by the Senior Review. (The SAS program at NAIC is funded by the Upper Atmospheres, ATM, division of NSF. ATM is not using the Senior Review approach to rebalance its facilities support to the new NSF funding trajectory). In a letter to Dr. Joe Burns, the Cornell Vice Provost for Physical Sciences, the AST Division Director Dr. G. Wayne Van Citters requests programmatic and budgetary information from NAIC as input to the Senior Review. NAIC is asked to respond to the AST request by July 31, 2005. Wayne’s letter is reproduced in section 2 of this memo.

It is important that the NAIC response to the NSF request be developed in close collaboration with the community of users. To this end, we will post all the information we receive from the NSF on the NAIC website in this Senior Review memo series. In addition, we will use the memo series to inform the NAIC staff and users of planning activities for which the involvement of all is necessary and desired; we also will post all NAIC draft response documents on the website for review and comment.

Clearly, the AST Senior Review is a critical exercise that affects the future of the entire U.S. astronomy community. We sincerely appreciate your involvement with all aspects of the process, most particularly in helping us formulate the NAIC response to the AST requests.

2. AST Request for NAIC Input to the Senior Review: Letter to Joe Burns

Dear Dr. Burns:

As I have mentioned on various occasions over the past six months, the Division of Astronomical Sciences is beginning the process of a “Senior Review” of its portfolio of facilities. This review, a recommendation of the most recent Decade Survey, is motivated at this particular time by a combination of the current Federal budget outlook, the ambitions of the astronomical community as evidenced in the Decade Survey and other reports such as “Connecting Quarks with the Cosmos,” and by the growth in the AST budget over the past five years.

This review is designed to examine the balance of our investments in the various facilities that we support. The primary goal of the review and the adjustment of balance that will result is to enable progress on the recommendations of the Decade Survey, including such things as operations funds for ALMA, and other priorities. At the same time we must preserve, indeed grow, a healthy core program of astronomical research. We regard this as essential to support the scientific programs that will be undertaken with the new facilities, to seed the next generation of capability, and to attract, train, and retain the next generation of astronomical researchers.

We have adopted the following boundary conditions for the review:

- The assumption is that the AST budget will grow no faster than inflationary increases for the remainder of the decade
- In concert with the advice of every community advisory body that we have asked (and in keeping with our own evaluation of balance and need), we will not use resources from the unrestricted grants programs (AAG) to address the challenges of facility operations or the design and development costs for new facilities of the scale of LSST, GSMT, SKA, etc.
- No facilities will be considered to be “off the table.”
- The process and the adjustments in balance that may result must be realistic and realizable
- Recommendations should be based on well-understood criteria
- There should be ample opportunity for community input at all stages.

The specific goal of the review is to examine the impact and the gains we might experience by redistributing \$30M of annual spending from Division funds. These funds would be obtained by selective reductions in the operations of existing facilities. The review will not revisit existing community priorities and recommendations for how these funds would be used. The near-term needs for new investment have lead us to conclude that we must try to generate the \$30M in annual redistributed funding by the end of FY2011. Even with this, there will be challenges to be met to satisfy projected need in FY2007-2008.

Over the past several months, we have considered a number of different ways that we might approach gathering the input necessary to estimate the impact of various decisions, so that we can then present a few different scenarios to a committee representing the community for their comment and advice. Our target is to have the advice of the committee in hand by September of this year.

In order to treat each of NRAO, NOAO, NSO, Gemini, and NAIC on an equal footing and to obtain an in-depth understanding of the contributions that each of our facilities makes, component by component, we are adopting a “zero-base” approach. Under this approach, we ask that Cornell consider and document:

- The case for, and priority of, each component of NAIC’s astronomical activity (radio astronomy, planetary radar, etc.), along with a defensible cost for each.
- In doing so, build the case for a forward-looking observatory operation, the highest priority components of which would exist in 2011
- Provide as realistic an estimate as possible of the cost and timescale that would be associated with divestiture of each component

We expect that your deliberations will:

- Be based on extensive consultation with your user community
- Involve evaluation of component facilities and capabilities using well-defined and carefully documented metrics to define productivity, cost effectiveness, and future utility. We will work with all facilities managers to arrive at a common set of metrics so various components can be compared.
- Take into consideration systemic issues such as complementing observations at other wavelengths, filling critical niches in the overall U.S. system, role in training and technical innovation, impact on shared infrastructure.
- Explore opportunities to deliver scientific knowledge at reduced cost or increased efficiency through new operating modes

We would like to have your input in hand by July 31, 2005.

With this information in hand from all of the facilities that we support, and with our best understanding of the needs for development and future programs, we will then present a number of scenarios to the senior review committee for their comment and advice. These scenarios will necessarily trade progress on the various recommendations before us

against preservation of existing capability. The challenge will be to strike an acceptable balance.

We recognize that this will be a difficult task and that the end result may well be that some facilities are judged to be no longer viable under the circumstances. We also recognize that the landscape of U.S. astronomy could almost certainly change dramatically as a result of some these actions. The question for all of us is to judge whether these changes are viable and lead to a vital and sustainable future, or whether the pace and scope of change necessary to realize the cumulative aspirations of the community under severely constrained budgets are too drastic.

We are ready and willing to interact with you and with your communities as this process gets underway. We welcome comments on our assumptions and on the tasks set for you above. However, as I have said on numerous occasions, I do not see any way to avoid this review or the difficult judgments that will be required. Done properly and wisely, I believe it can result in a healthier program in the long-term, and one that is poised to take advantage of improving outlooks when they occur.

Sincerely,

G. W. Van Citters
DD/AST