



OFFICE OF THE
ASSISTANT DIRECTOR
FOR MATHEMATICAL AND
PHYSICAL SCIENCES

NATIONAL SCIENCE FOUNDATION

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October 5, 2005

Dr. W. Carl Lineberger
Joint Institute for Laboratory Astrophysics and
Department of Chemistry and Biochemistry
440 UCB
University of Colorado
Boulder, CO 80309-0440

Dear Carl,

This letter is to request that the *MPS Division of Astronomical Sciences (AST) Senior Review* be a subcommittee of the MPS Advisory Committee (MPSAC).

A primary goal of the review is to enable progress on the recommendations of the National Academy of Sciences Decade Survey, including such things as operating funds for ALMA, and other priorities such as those recommended in "*Connecting Quarks with the Cosmos*."

The review is designed to examine the balance of investments in current facilities and other activities that AST supports and make recommendations about possible redistribution of funding within these activities. I want to note, however, that resources from AST's unrestricted grants programs will not be used to address facility operations or the design and development costs for new facilities.

At the November 2005 MPSAC meeting Dr. van Citters, the AST Division Director, will provide an update on the Senior Review to the MPSAC, with discussion and acceptance of the report of the Senior Review at the April 2006 meeting of the MPSAC. Dr. John Huchra, a member of the MPSAC, serves on this subcommittee.

Sincerely yours,

A handwritten signature in black ink, appearing to read "M. S. Turner".

Michael S. Turner
Assistant Director

Attachment

Division of Astronomical Sciences
Senior Review
Charge to the Subcommittee

Background

This review, a recommendation of the most recent Decade Survey¹, is motivated at this particular time by a confluence of the current flat outlook for the Federal budget, the increased cost (relative to previous programs) of 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 Division of Astronomical Sciences (AST) budget over the past five years, which provides ~\$60 million a year more to spend on astronomical research than was available in FY2000.

This review is designed to examine the balance of the (AST) investments in the various facilities and selected other activities that we support. The primary goal of the review and the resultant adjustment of balance is to enable progress on the recommendations of the Decade Survey, including such things as operations funds for ALMA, and other priorities such as those recommended in “Connecting Quarks with the Cosmos”. At the same time AST seeks to preserve, indeed grow, a healthy core program of astronomical research. Possible reinvestment of some of the Division’s resources in the highest priority components of the existing facilities and programs is therefore an important consideration.

The following boundary conditions should be adopted for the review:

- The review will assume that the AST budget will grow no faster than inflationary increases for the remainder of the decade
- AST 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.
- The Committee will not revisit the priorities and recommendations of community reports such as the Decade Survey; the committee will not consider proposals for future individual projects nor will it determine how funds are to be distributed among individual ongoing development efforts, but rather identify resources that can be distributed to these future efforts through AST’s normal review and priority setting processes.
- The adjustments in balance that may result must be realistic and realizable; the committee should recognize that savings will not be immediate and additional costs may be associated with reprogramming.

- The committee’s deliberations should take into consideration systemic issues such as U.S. scientific leadership within a global context, the ability to complement observations at other wavelengths, filling critical niches in the overall U.S. system, and the needs for training and technical innovation.
- Recommendations should be based on well-understood criteria established by the committee and articulated to the community.
- There should be ample opportunity for community input.

The Charge

The committee is asked to examine the impact and the gains that would result by redistributing ~\$30 million of annual spending from Division funds. These funds would be obtained by selective reductions in the operations of existing facilities and instrumentation development programs, possibly in combination with opportunities to deliver scientific knowledge at reduced cost to NSF or increased efficiency through new operating modes. Near-term needs for new investment lead us to conclude that we must try to generate the \$30 million in annual redistributed funding by the end of FY 2011. The \$30 million (annual) would be used to bolster the highest priority components of existing facilities, to begin to cover ALMA operations costs, and as a source of support for implementation of Decade Survey and other recommendations.

In short, the committee is asked to trade progress on new and enhanced programs against the preservation of existing capability by proposing changes that are viable and that lead to a vital and sustainable future.

The committee is asked to provide its recommendations by 31 March 2006, if possible, so the report can be presented to the MPSAC at its April meeting and considered in formulating the FY2008 budget.

1) “ Cross disciplinary competitive reviews should be held about every 5 years for all NSF astronomy facilities. In these reviews, it should be standard policy to set priorities and consider possible closure or privatization.”

**Membership of the Division of Astronomical Sciences
Senior Review Subcommittee**

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Dr. Donald Backer – University of California, Berkeley – dbacker@astro.berkeley.edu

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