

**NSF Committee of Visitor's Report  
Upper Atmosphere Research Section  
Division of Atmospheric Science  
Directorate of Geosciences  
July 10-12, 2002**

Response of Richard Behnke  
Head, UARS

I am extremely pleased with the report of the Committee of Visitors that met on July 10-12, 2002 to review the Upper Atmosphere Research Section. I feel it is a very favorable report that justifies my pride in the work and accomplishments of the Section.

The first part of the review dealt with the efficiency and integrity of the proposal review process; the second part dealt with outputs and outcomes. I am delighted that the COV found "the section to be well managed and efficient, and the quality of the program directors to be uniformly high." And also that "the leadership of the UARS section is strong and effective. Important community-wide scientific research programs have been wisely designed, nurtured, sustained over time, leading to an unprecedented level of community cooperation and coordination and, as a consequence, world leadership in upper atmospheric research."

I am also very pleased with the COV's findings that "the Upper Atmosphere Research Section has a commitment to increasing diversity in the field and this is particularly evident in the encouragement and support for female scientists."

The COV did make some constructive suggestions and recommendations to improve UARS programs. Following are responses to each of these:

***Stress associated with a high and increasing workload for managers (page 7)***

The COV rightly noted that in the period under review there were prolonged periods of staffing vacancies and that these vacancies led to unfortunate increases in proposal processing time. As the COV points out, vacancies at UARS were filled by 2002. For a variety of reasons, NSF has found it increasingly difficult to fill rotator positions. In particular, UARS has always insisted on extremely high quality scientists to fill the vacancies and this demand, unfortunately, has exacerbated the situation. The Aeronomy program will become vacant in January of 2003 and we plan numerous new tactics – including part-time details and telecommuting, as well as aggressive recruiting. In addition, NSF as a whole is continuing to make the case to OMB and Congress of the need for more staff.

***Level of support and activity relating to education and outreach (page 7-8)***

The COV felt that the UARS educational efforts were more of a “byproduct” than a core component of the program. We do not totally agree. UARS highly values educational activities and has always encouraged collaborations with the Directorate for Education and Human Resources (EHR). There have been some spectacular successes with EHR in the past including EHR funding of the large format movie “SolarMax”, the museum exhibit “Electric Space” and a very generous grant to the National Astronomy and Ionosphere Center for displays in their visitor center. We will continue to encourage PIs to submit proposals to EHR, where appropriate. UARS also encourages PIs who are interested in education projects to submit proposals to the GEO Education program as well as the Opportunities to Enhance Diversity in the Geosciences program.

Although we feel that there have been some real successes in the education and outreach efforts of UARS, as a result of the COV suggestion we plan to set aside some funds annually for education/outreach projects that can be integrated with UARS research proposals. We also plan to increase the award to the Center for Integrated Space Weather Modeling (CISM) to allow approximately 6 high school teachers per year to attend the CISM space weather summer school.

***Getting more faculty positions (page 8, page 25 and page 51)***

UARS shares the COV’s concern about the dwindling number of tenured professors, and the concern that the present number is insufficient to train the next generation of space scientists. As a result, UARS has called for a preliminary meeting on October 22, 2002 to discuss with distinguished members of the community possible strategies to increase the number of tenured university professors. The staff is very dedicated to addressing this problem, although the best mechanism has not yet been determined.

***Jackets were hard to work with (page 8)***

We agree that the current procedures for locating jackets (particularly declined jackets and closed-out awards) are less than ideal and result in delays in the COV process. Consistent with the COV’s recommendation, we believe that by the time the next COV occurs, nearly all the jackets will be available electronically. The Electronic Jacket (EJ) system is under continual development at NSF and the development team has been made aware that procedures need to be established for providing COV access to jackets.

***Response to broader impacts is mixed (page 8)***

We fully agree that the response to the “broader impacts” review criterion was decidedly mixed during the 1999-2001 period that was being reviewed. NSF has

made several recent attempts to increase the awareness of both reviewers and PIs of the importance of responding to the “broader impacts” criterion.

The new Grant Proposal Guide (GPG) now requires that the project summary clearly and separately address the two review criteria. The GPG also requires that the two criteria be clearly and separately addressed in the main body of the proposal (the project description).

The FastLane proposal review function provides separate text boxes for the reviewer’s comments on intellectual merit and broader impacts. This has done much to improve the reviewer’s response to the “broader impacts” criterion. The email that requests a review has also been modified to clarify the importance of addressing both review criteria and it provides a link to the web pages that give examples of broader impacts.

The template that is used in ATM for preparing the Form 7 Analysis of the reviews now contains separate sections for the program officer to provide a summary of the reviewers’ comments on the two review criteria. In addition, the program assistants have been instructed to check the Form 7 Analysis to ensure that both criteria are addressed. We expect these changes to ensure that the program officers comment on both intellectual merit and broader impacts in all jackets.

***Difficulties in understanding and interpreting “high risk” and “cross-disciplinary” categories (page 8)***

It is certainly true that an unambiguous definition of what is meant by “high risk” is difficult to come up with. Cross-disciplinary is somewhat easier, but the real difficulty is in providing the COV members lists of proposals that are high risk or cross-disciplinary. The NSF databases that hold information about proposals do not, unfortunately, provide any way of identifying projects that would be considered cross-disciplinary or high risk. The UARS section is therefore going to try to set up a database of our own that can be used for this purpose. Along with the database we will set up guidelines to help the program officers identify which proposals should be identified by one or more special categories. The database will also contain information on the broad research areas that are addressed by the proposal. This will make it easier for future COVs to identify those proposals that were categorized as cross-disciplinary or high risk and also to aid the COV in determining whether or not the programs have an appropriate mix and balance in research topics. Once the database has been set up, the program assistants will be instructed to make sure that every proposal is entered into the database as part of the process of making a recommendation to either fund or decline the proposal.

***Participation in cross-directorate initiatives (page 8)***

The COV correctly highlighted the difficulty that UARS faces in participating in many of the larger cross-directorate initiatives at NSF. In some initiatives, such as Biocomplexity, UARS programs simply do not fit well. Instead, UARS has concentrated its efforts in taking advantage of those cross-directorate programs with which there is a more natural fit. One particular recent success story is the selection of the Center for Integrated Space Weather Modeling as one of six Science and Technology Centers awarded in FY02. UARS programs have benefited from participation in the cross-directorate and multi-agency Plasma Science Initiative. In the last three years, six UARS proposals have been selected for Major Research Instrumentation awards totaling \$1.26M. A number of UARS proposals were also selected as part of the Information Technology Research program, as documented in the COV report. Given staff limitations, the Atmospheric Sciences Division (ATM) typically appoints one staff member to represent ATM interests in the implementation of cross-directorate programs. UARS will continue to actively participate in these efforts to ensure that the upper atmospheric research community is advised of all possible funding opportunities.

***Review of facilities (page 14)***

We agree with the COV's suggestion that the reviews of the UAF facilities would be enhanced by in-depth site reviews held on a regular basis. The 1996 facility review has been extremely helpful in providing guidance to reviewers during the evaluation of new facility proposals. It has been our intention to repeat this review, but this has been delayed because of competing workload commitments. We intend to conduct another such review in CY2003, although the review process might differ somewhat from that used in 1996. Because these reviews take a great deal of time and effort on the part of both NSF and the facilities, it is more reasonable to repeat them at five year intervals. To compensate for the large gap between these comprehensive reviews, we also plan to sponsor all-facility meetings every two years. We have had two such meetings in the past, and we find they represent excellent opportunities for facility staff to exchange information and describe scientific and technical progress.

Regarding procedures for tracking publications, all facilities are required to keep records of publications, facility and data usage, and student participation. This information is not always included in facility renewal proposals, but it is certainly possible to ask the facilities to provide these data in future proposals.

***Grant duration in the Solar Terrestrial Research Program (page 28)***

We agree with the COV that the STR program needs to make longer duration awards. In fact, the program is now doing just that and will continue to make longer awards when possible. This is, of course, an important NSF-wide goal and all UARS programs will be increasing the duration of grants in the coming years.

***Working remotely (page 52)***

The COV suggestion that we investigate the possibility of working remotely for the program staff is a very positive and perhaps necessary suggestion. We are seriously considering having a part-time Program Director for Aeronomy work remotely in conjunction with a part-time Program Director on site.

***Replacing infrastructure (page 52)***

UARS has taken steps in the last few years to address issues related to replacing aging infrastructure and seeding new technology development. One example is the special CEDAR competition aimed at developing new observational techniques. This was conducted about seven years ago and has not yet been repeated. New technologies have been developed under funding from the Major Research Instrumentation Program as well as from the core UARS programs, but the funds available have been limited. The Advanced Modular Incoherent Scatter Radar, will produce state-of-the-art instrumentation, not only in incoherent scatter radar, but also in other remote sensing techniques as soon as that vitally important project is approved. Finally, and perhaps most importantly, as budgets of our core programs continue their recent growth we will allocate a significant share of the increase for instrumentation and facilities.

***Better response rate of mail-in reviewers (page 52)***

We will carry out the suggestion of the COV to make the community aware of the critical role they play as reviewers during our presentations at national meetings. We may also, in some instances, call the reviewers to ascertain availability before sending out the proposals.

***K-12 Education (page 53)***

The COV suggested that UARS develop a strategic plan for K-12 education. However, we do not feel that UARS alone should develop such a plan. This is a GEO-wide issue and is being addressed by the efforts of the GEO Education Team which is currently embarking on such an activity.

Finally let me again thank Dr. Killeen and all the members of the Committee for their extraordinary effort and thoroughness.