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National Science Foundation Major Multi-User Research Facilities Management: Ensuring Fiscal Responsibility and Accountability

Witnesses:

Ethan Schreir

President, Associated Universities, Inc.

William Smith

President, Association of Universities for Research in Astronomy

David Divins

Vice President and Director of Ocean Drilling Programs, Consortium for Ocean Leadership, Inc.

Gregory Boebinger

Director, National High Magnetic Field Laboratory and Professor, University of Florida and Florida State University

Sol Michael Gruner

Director, Cornell High Energy Synchrotron Source and Professor, Cornell University

Subcommittee Members Present:

Mo Brooks (R-AL), Chair

Daniel Lipinski (D-IL), Ranking Member

Suzanne Bonamici (D-OR)

On April 18, the House Committee on Science, Space and Technology Subcommittee on Research and Science Education held a hearing to discuss the management, planning and stewardship of major multi-user research facilities funded by the National Science Foundation (NSF). The subcommittee examined standard operations of these facilities, stressing financial responsibility and the feasibility of a recompetitiveness of NSF contracts.

Chairman Mo Brooks (R-AL) began his opening statement stating that 15 percent of the NSF budget and \$1.1 billion was requested for FY 2013 to fund major multi-user facilities. This money is to support research at these facilities and their construction and maintenance. Facilities of this nature include telescopes and marine research vessels. The chairman said he hoped to "ensure planning, operations, management and overall stewardship of ... projects is being carried out responsibly" with this hearing. He emphasized the possibility of a recompetitiveness, the ability to renegotiate terms of a contract upon its completion.

Ranking Member Daniel Lipinski (D-IL) expressed gratitude for the series of hearings on NSF policies in his opening statement. He pointed out that the most recent review of NSF policies by the subcommittee was ten years prior. Lipinski said he hoped to gain understanding of the recompetition procedure of a contract when a facility has significant international partnerships and the allocation of funds when a facility is decommissioned. However, he noted that no NSF board members were present to fully investigate his questions.

Ethan Schreier, president of Associated Universities Inc. (AUI), a contract group which promotes scientific research by uniting university and government resources, oversees the National Radio Astronomy Observatory (NRAO) which manages three major multi-user NSF facilities and is constructing a fourth. The Atacama Large Millimeter/Submillimeter Array (ALMA) is being built in Atacama, Peru. In his testimony, Schreier stated that despite the NRAO's leadership in building the array, a recompetitiveness could cause a transfer of ALMA's ownership to a Peruvian or other foreign agency. He lauded the benefits of international cooperation in building ALMA, but said he would regret the loss to American astronomers if they could not "reap the benefits of the large U.S. investment in ALMA."

The testimony of William Smith focused on the effects of recompetition and international collaboration to Association of Universities for Research in Astronomy (AURA) projects. He praised NSF's management policy, stating that financial responsibility is a "prerequisite" to NSF projects and that AURA operations are constantly changing because of "dialogue with NSF." Smith suggested

decommission costs be outlined in the NSF budget similarly to how construction costs are presented.

David Divins, manager of the scientific programs of the Integrated Ocean Drilling Program (IODP) through the Consortium for Ocean Leadership, discussed the U.S. branch of the IODP, the United States Implementing Organization (IODP-USIO). Drilling operations for IODP are an international effort and IODP receives contributions from the U.S., Japan and the European Union. IODP-USIO operates the Joint Oceanographic Institutions for Deep-Earth Sampling Resolution (*JOIDES* Resolution or JR), a drilling vessel which is used for paleoclimate, solid earth, plate tectonic and polar magnetic reversal research. The JR recently underwent a retrofit funded by NSF's Major Research Equipment and Facilities Construction (MREFC) account in 2009.

In his testimony, Divins explained that after the JR's renovation the high price of oil and gas reduced its number of operational days from 12 to eight months per year. This jeopardizes the U.S. contribution to international ocean drilling studies, especially with the possibility of a recompetete. The JR is not owned by the Consortium for Ocean Leadership or even the NSF, IODP leases it from Overseas Drilling Limited, a subsidiary of Siem Offshore AS. The IODP contract with NSF ends in 2013 and a recompetete puts IODP's contract for the JR in jeopardy if the cost becomes "prohibitive or out of reach for NSF."

Gregory Boebinger testified that competitive review and a "winner-take-all" recompetete is a basic part of the National High Magnetic Field Laboratory (MagLab) fund allocation process. MagLab is run by the state of Florida with current research in superconductors, fuel cells, and petroleum in biofuel.

Michael Gruner runs the Cornell High Energy Synchrotron Source (CHESS), which is used by researchers in many fields including geology and environmental science. CHESS is a high intensity X-ray source using synchrotron radiation. His testimony stressed NSF's difficulty in defining ownership to interdisciplinary research. Gruner said he fears NSF will push to terminate highly disciplinary facilities.

When questioned about the possible effects of a recompetition by Chairman Brooks, Divins reiterated the importance of oil prices to IODP's ability to continue use of the JR. If oil prices are high and NSF chooses to further decrease its operational days, the vessel could be leased by another organization with a larger budget. If the JR is not in demand, regular competition could lower the leasing rate.

Ranking Member Lipinski asked Smith to elaborate on his statement that there are other, possibly more effective ways to build effective managing organizations other than recompetition. Smith suggested consolidation, citing AURA and National Optical Astronomy Observatory's involvement with the Gemini Observatory. Both organizations are similar and in similar locations, but the National Science Board opposed consolidation as it would impede recompetition, though Smith felt consolidation was a better choice.

Lipinski questioned the witnesses on the feasibility of having funds for decommission in the NSF budget. Divins explained that the JR's refit was provided by the MREFC over decommission even after 20 years of use. He said he saw value in transitioning research to a new facility rather than shutting down an old one. Schrier supported his statement, saying "[renovation] is a cost-effective way to get new capabilities." Divins added that a significant process to compare cost of decommissioning to cost of upgrading would likely influence a choice to renovate or decommission.

Senator Suzanne Bonamici (D-OR) asked the witnesses about STEM education outreach being done by their facilities. Schrier discussed a program called the Pulsar Search Collaboratory with West Virginia University that gives high school students and teachers in West Virginia access to data from the NRAO telescope in their state. Students can search for pulsars with the data and have a chance for publication. Schrier, Smith, and Boebinger discussed Research Experience for Undergraduates (REU) opportunities with their facilities.

Majority statements, witness testimony, and a web cast of the hearing can be found on the House Science Space and Technology web site.
