Minutes of the Meeting of the Astronomy and Astrophysics Advisory Committee (AAAC)

1-2 February 2010
National Science Foundation, Arlington, VA

Members attending:	Wendy Freedman (Chair)	Gregory Laughlin
	Bruce Balick	Douglas Richstone
	Sarah Church	John Wefel
	Kim Griest	Brian Winer
	Rocky Kolb	Charles "Chick" Woodward
	David Koo	
Agency personnel:	Craig Foltz, NSF-AST	Kathy Turner, DOE-HEP
	Philip Puxley, NSF-AST	Dennis Kovar, DOE-HEP
	Elizabeth Pentecost, NSF-AST	Glen Crawford, DOE-HEP
	Nigel Sharp, NSF-AST	Jon Morse, NASA HQ (telecon)
	Craig McClure, NSF-AST	Michael Salamon, NASA HQ
	Vernon Pankonin, NSF-AST	Thierry Lanz, NASA HQ
	Wayne Van Citter, NSF-MPS	Richard Griffiths, NASA HQ
	Bill Miller, NSF-LFO	Hashima Hasan, NASA HQ
	Randy Phelps, NSF-OIA	James Green, NASA HQ
	Jean Rene Roy, NSF-LFO	Lindley Johnson, NASA HQ
	Joe Dehmer, NSF-PHY	Eric Smith, NASA HQ
	Steven Merkowitz, OSTP	Jean Cottam – NASA GSFC
	Joel Parriott, OMB	
Others:	Joel Parriott, OMB	Jay Frogel, AURA
	Randall Correll, Ball Aerospace	Katy Vickland- SRI Int'l
	Ron Allen, STSci	Abigail Sheffer, NAS-SSB
	Michael Moloney, NRC (telecon)	Anita Krishnamurthi, AAS (telecon)

MEETING CONVENED 9:00AM EST, 1 FEBRUARY 2010

The Chair called the meeting to order, and all participants identified themselves.

Elizabeth Pentecost, the AAAC Executive Secretary, reviewed the list of identified Conflicts of Interest (COIs) for the AAAC. The list will be updated and distributed at the start of each meeting.

The minutes from the 15-16 October 2009 meeting were approved by the Committee with a few minor changes from John Wefel.

The Chair indicated that much of the second day of the meeting would be devoted to writing the annual committee report. The report would be much shorter than in previous years.

The Chair thanked the agencies for the Budget "Primer" information. This helped the Committee better understand the budgetary process.

Craig Foltz reported on joint NSF and NASA activities. There are several programs that serve both agencies, the Virtual Astronomical Observatory (VAO), the Very Long Baseline Array (VLBA), and the study of near earth objects with connection to Arecibo Observatory, and the balloon program. NSF's participation in the balloon program is managed by the Office of Polar Programs (OPP).

The VAO is built on the very successful NVO effort to create a real astronomical observatory. There is an MOU and a Record of Agreement with NASA for the VAO. However, there have been delays in making the award. The agreement language is now being finalized and an award should be made shortly.

One of the recommendations from the Senior Review was to limit funding for the VLBA operations to half of the current costs and NRAO was to seek partners to share in operating costs. If partners were not found by 2011, AST was to consider closing the VLBA. To date, NRAO is actively seeking partners to share in the operations costs. Discussions between NSF, NASA, and USNO progressed through a preliminary agreement on an MOU for a total of $3M per year. A decision by NASA not to sign the MOU has stopped all progress toward a successful completion of this effort [Note: further discussions with NASA are ongoing].

The National Research Council (NRC) of the National Academies of Science conducted a study for NASA of near-Earth object (NEO) surveys and hazard mitigation strategies. A report was published prior to the AAAC meeting and was made available to the Committee. Some of the major findings that affected ground-based detection of NEOs included: (1) if completed and used on an optimistic schedule, PANSTARRS4 could not alone meet the 2020 deadline of any date for detecting 90 percent of all potentially hazardous NEOs larger than 140m; (2) LSST will be capable of detecting 90 percent of all potentially hazardous NEOs larger than 140m in about 17 years under normal operations; (3) using a modified cadence optimized for NEO detection on a shared LSST, the required time to meet the goal is 12 years; and, (4) the optimizations result in similar performance gains as for an entirely dedicated LSST.

Lindley Johnson provided an overview of the NEO Observations Program. The program is the US component to the International Spaceguard Survey effort that has provided 98% of new detections of NEOs. The program began with NASA's commitment to the House Committee on Science in May 1998. The scientific objective was to discover 90% of NEOs larger than 1 kilometer in size within 10 years. The NASA Authorization Act of 2005 provided additional direction but no additional funding.

NASA's NEO search program is handled through the NEO Program Office at JPL and the Minor Planet Center at Harvard University. The current systems searching and analyzing NEOs include the Wide-field Infrared Survey Explorer (WISE), the MIT Lincoln Near Earth Asteroid Research (LINEAR) program, PanStarrs, and the Catalina Sky Survey. WISE discovered its first NEO in January 2010 before the sky survey even began. Funding has been appropriated to support research with Arecibo's planetary radar through 2011. The US will continue to upgrade and acquire improved NEO detection/characterization capability and begin more focused research on mitigation methods and strategies.

Jon Morse provided an update of the NASA Astrophysics Division activities. There was a broad range of activities in 2009 from the launch of Kepler, Herschel and Planck, and WISE to the Hubble servicing mission, the SOFIA open door flight, and the White House Star Party. WISE was launched on December 14, 2009 and commenced its nine-month sky survey in January. SOFIA is continuing its open door tests. The balloon program is going well. The Cosmic Ray Energetics & Mass (CREAM) mission ended on January 8 after more than 37 days aloft. The CDR for NuStar is planned for February 2. Engineering peer reviews are underway in preparation for the March instrument PDR for Astro-H.

Jon Morse reported that Linda Sparke was the lead for the Astrophysics Research Program. Her previous position was at NSF. Felicia Jones-Seldon is acting Deputy Director of the Astrophysics Division while Richard Howard was on detail to the Office of Chief Engineer.

MEETING ADJOURNED AT 10:15AM AND – RECONVENED AT 10:30AM

Michael Salamon gave a presentation on the Astrophysics Division use of program analysis groups (PAGs). There are PAGs for the Exoplanet Exploration program, the Cosmic Origins programs, and the Physics of the Universe program. The purpose of the PAGs is to provide a community-based forum for analysis in support of program objectives, planning, and activity prioritization, provide the community with regular opportunities to provide unsolicited input to NASA via the NASA Advisory Council (NAC), and provide analysis on specific topics. The PAG chairs are members of the NAC Astrophysics subcommittee while the remaining members are solicited by a Dear Colleague letter and appointed by the Astrophysics Division Director. The PAGS may be directed to form ad hoc study groups that provide analysis and findings. The PAGS cannot replace the AAAC Task Forces since their reports constitute formal advice to the agencies.

Craig Foltz, Michael Salamon, and Glen Crawford answered questions about the budget process at their respective agencies.

MEETING ADJOURNED AT 11:35PM AND – RECONVENED AT 12:35PM

The Chair initiated preliminary discussion on the election of a new Chair.

The next session was with Craig Foltz, Joseph Dehmer, and Kathy Turner who reported on joint activities between DOE and NSF. DOE has several joint programs with the NSF Physics Division, including Veritas and Auger South, and DUSEL. Other DOE projects are with NSF Astronomy Division, including LSST and BOSS. Agency-level joint oversight groups have been established for all our joint projects including the Dark Energy Survey (DES).

Nigel Sharp and Eric Smith reported that it might be time to assess the goals of the CMB Task Force against the missions and projects that have been done since the report was released in 2005. NASA has provided around $6.2M for suborbital missions, detector development, technology support, and graduate students. NSF has provided ~$5M for ground-based experiments, technology development, theory and computation.

The next session was with Michael Moloney, Astro2010 Study Director at the NRC. He was representing Roger Blandford, the chair of the decadal survey committee. The Chair thanked him for providing an update on the decadal survey activities. The Astro2010 committee activities are on schedule. The committee were to have their fifth meeting at the end of February. The report

writing is continuing. The NRC will review the report during the summer with a release in the September/October timeframe.

The Chair indicated to Moloney that the AAAC stands ready to follow up on the recommendations of the report. Moloney replied that the NRC is looking forward to working with the AAAC.

The Chair thanked Moloney for his participation and update.

The Chair suggested that it might be beneficial to have decadal survey committee members serve on the AAAC. The other committee members agreed.

Richstone noted that the release date of the Decadal Survey report was important for two reasons, one being the implementation of the recommendations and the other in helping to convey community support for those recommendations.

The next session was a general discussion of AAAC report issues. There was consensus that there should be a follow up to all of the task forces. The Agencies would have to task the AAAC to have the assessment carried out by either the initial task force committee or a new committee.

Some highlights from the morning session pointed to the fact that joint projects and programs are complex and take a lot of time to establish and monitor; there is no substitute for advance planning. In turn, staffing has not increased with the increase in the number of projects.

Steven Merkowitz from OSTP informed the AAAC that OSTP is doing a study to look at large projects. It is not enough for projects to have useful products such as reports but maybe there should be a set of standard procedures for each of the agencies. Stewardship issues are important. Prioritization is a way for agencies to help OSTP look forward.

The Committee spent the rest of the day writing their sections of the annual report.

MEETING ADJOURNED AT 5:00PM EST, 1 FEBRUARY 2010

MEETING RECONVENED AT 9:00AM EST, 2 FEBRUARY 2010

The Chair called the meeting to order. The meeting started with the election of the new chair and vice chair. The Committee nominated candidates for both positions. Kim Griest and Douglas Richstone were nominated for Chair and Sarah Church and Chick Woodward were nominated for Vice Chair. The candidates were asked to leave the room while the discussions were held. The Committee elected Kim Griest as Chair and Sarah Church as Vice Chair. Both were congratulated by the committee.

The meeting continued with presentations from NSF and DOE on program and budget updates.

Craig Foltz reported on National Science Foundation's (NSF) Division of Astronomical Sciences (AST) activities. The Division has been without a full-time Division Director for 22 months and a Deputy Division Director for 7 months. A search for both positions was conducted during the summer and interviews with candidates were done. Dr. James Ulvestad from NRAO was the successful candidate for the Division Director position. He will arrive on March 1. The DDD position is still open. Dr. Gary Schmidt joined AST on February 1 as a permanent program officer. A search for a program officer to fill the position vacated by Linda Sparke was

conducted and a new program officer should be in place soon. With the addition of a new DDD, the Division will be back to its full FTE allotment. However, the rigors of the ARRA funding along with the workload imposed by new projects and solicitations, funding of ATST construction, additional requirements etc., are significant. Additional staff are clearly needed.

The FY 2010 budget was $244.8M, a 7% over FY2009, with $141M for facilities and $110M for research and education grants. AST received $85.5M in American Recovery and Reinvestment Act (ARRA) funds. There is administration and congressional support for doubling the NSF budget over the next 10 years, however there is uncertainty how AST will fare in this growth. Administration priorities are not well aligned with AST such as green energy, climate change and short economic recovery.

The Senior Review recommendation for NAIC was to ramp down to $8M by 2010 and to a level not to exceed half of the expected operational cost in years following. NAIC was to seek non-AST support to maintain operations or face closure. NSF's Atmospheric and Geospace Sciences (AGS) division will be increasing contributions to operations. The management of the Arecibo Observatory will be competed. The current cooperative agreement with Cornell University to operate the National Astronomy and Ionosphere Center (NAIC) will expire in 2010. The program solicitation is entering the NSF clearance process and full proposals will be due 5-6 months after publication. This is expected to lead to the award of a single, five-year cooperative agreement for the management and operation of NAIC for 2011-2015.

Foltz reported that the National Science Board (NSB) approved an award ($297,928,000, $146,000,000 from ARRA and $151,928,000 of appropriated MREFC funds) for the construction of the Advanced Technology Solar Telescope (ATST). The NSB resolution was contingent upon the publication of a record of decision authorizing the commencement of construction. This record of decision was signed on December 3, 2009.

Foltz reported that at the November meeting of the Gemini Board, all partners except the UK declared their intention to remain in the Gemini partnership post-2012, and extended the current international agreement through December 2015. The UK's position was that it had not yet completed its reprioritization process but it was almost certain that it would not continue in the partnership beyond December 31, 2012. The UK Science and Technology Facilities Council (STFC) officially communicated their decision to withdraw on December 22, 2009. The departure of the UK will result in a ~25% cut in the annual Gemini operations and instrumentation budget. In response to the UK announcement, the Gemini Board established a second assessment point of 19 March 2010, at which time the partners' positions and funding outlooks would be restated. The Board instructed the observatory to prepare plans for a 7-10% cut per annum in 2011-2013. Plans were to consider other operational models, staff makeups, etc. The Board was holding a retreat on 17-19 March to consider the observatory's plans and possible changes in the management structure, operations models, etc. A reduced or increased partners share in Gemini could have budgetary implications.

The next session was with Dennis Kovar, who provided a DOE program and budget update. The High Energy Physics (HEP) program, with input from the scientific community has developed a long-range plan that maintains a leadership role for the U.S. at three frontiers that define the field, the Energy Frontier, the Intensity Frontier, and the Cosmic Frontier. DOE needs to design and construct new research capabilities, while maintaining a world-leading scientific program and supporting targeted long-range R&D for the future.

The HEP FY 2011 funding was an increase of +2.3% compared to the FY2010 budget and the FY2010 was a +1.9% increase over the FT2009 budget. 2011 program highlights included support for ongoing programs such as DES, Fermi, Veritas, Pierre Auger, and BOSS for the Cosmic Frontier; on-going projects such as NOvA and Daya Bay for the Intensity Frontier; and, U.S. LHC support and Tevatron operations for the Energy Frontier.

The HEPAP Particle Astrophysics Scientific Assessment Group (PASAG)'s report was submitted to the HEPAP at their meeting on October 22, 2009. The report was to provide recommendation on the priorities for an optimized particle astrophysics program over the next ten years. Experiments to be considered that were addressed in the PASAG report included dark matter, dark energy, cosmic particles, and cosmic microwave background.

The Committee took time to work on the annual report before breaking for lunch.

MEETING ADJOURNED AT 11:15PM AND – RECONVENED AT 12:15PM

Jon Morse was not able to participate in the second day of the meeting. There was no NASA program and budget update.

Richard Griffiths and Kathy Turner presented an update on joint DOE and NASA projects. NASA was the lead agency for the Fermi Gamma-ray Space Telescope (formerly GLAST). DOE hosted the Large Area Telescope (LAT) instrument science operations center. The first year of data was released in August 2009. A Fermi symposium was held in October 2009 and was widely attended. The partnership is working well at all levels.

The Joint Dark Energy Mission (JDEM) is a joint NASA-DOE mission. The mission framework was laid out in a DOE and NASA Memorandum of Understanding in 2008 following designs funded both by DOE and NASA. Project offices and an interagency management group have been established. Two mission architectures were presented to Astro2010 in June 2009, both being expensive and putting them in a "facility-class" status. The costs of both these missions are not obviously compatible with current budget projections without significant revisions of priorities. In September 2009, NASA and DOE agreed to examine a "probe-class" cost-capped mission concept. The project offices are currently studying the probe-class architecture with cost goals of $650M plus launch services. The agencies are now awaiting recommendation for a U.S. dark energy science program and JDEM from Astro2010.

The next session was with Joel Parriott, the NSF Examiner at OMB.

Richstone commented to Parriott that that universities are implementing stringent rules regarding expenses on grants because of A-21 Compliance audits. This has led financial departments to implement very defensive procedures that have placed numerous burdens on university departments. It makes it harder for the universities to do the research on the grants. He inquired whether there was a way to make progress on this or whether there was someone to talk with at OMB. Parriott replied that OMB issues the circulars but it is up to the agencies to interpret and implement in their standard terms and conditions of the awards. Parriott explained that it is not the program officers who make these types of decisions but the grants officials. Nigel Sharp noted that the names of the grants officials are on the award letters that are issued to the universities and universities that have compliance questions should contact them. Another way to be involved is through an organization called the Council on Governmental Relations (COGR),

an association of research universities that interacts with the government on behalf of member universities on issues such as grants policy.

Kolb commented that the AAAC annual report goes to OMB and a longer list of recipients. He asked Parriott about what OMB finds useful in the reports that OMB would not see in other reports. Parriott replied that it is the interagency collaboration and coordination activities with constructive criticism with suggestions on what is not working. That is part of the report that he finds most useful. For example, LSST is a potential three-agency partnership. Interagency collaborations are extremely difficult for everyone involved, but when there is clear scientific mission, then it makes sense for agency collaboration and coordination. It will be interesting to find out what the agencies will do after the Survey report is issued from a scientific community's perspective.

Koo asked Parriott his opinion on international collaborations. Parriott replied that it depends on size of the projects. Large projects at NSF are in the range of $150M (MREFC). If the project was big and there was a clear reason for international collaboration, then OMB was supportive. NASA has a close working relationship with ESA; for NSF it is largely left to the PI. When proposals for big projects come to OMB, it is expected that agencies have done their homework on interagency and international collaboration. Due diligence and what makes sense are the general guidelines.

The Chair commented that large projects take a lot of time. The Survey may only have one project as number 1. Parriott was asked what else does OMB need in light of the fact that timelines are long. Parriott replied that he makes recommendations not decisions. Decisions are made by policy officials in the White House and in the agencies. One project may only get done in the next decade but the agencies, the community, and the AAAC need to agree that it is the right project to fund. Astronomy should not exclusively try to be societally relevant; they should sell projects on the scientific excitement and a chance for scientific discovery. It is up to the community to influence those in the agencies, the Hill, and the White House.

Parriott further commented that there will probably not be double-digit percentage increases for AST in the next few years but there won't be decreases either. The community needs to set priorities. Changes in policy such as the MREFC account are handled by the National Science Board. The decadal survey is nice to have, but the agencies need to come up with an implementation plan that works within budget envelopes. Unless that happens, it is difficult for OSTP and OMB to help.

The Chair thanked Parriott for participating in the discussions.

The Committee took the remaining time to work on the annual report. The Chair will put together a draft of the report and circulate it to the AAAC for comment. The Committee would discuss the report at the March 4 telecon.

MEETING ADJOURNED AT 3:00 PM EDT, 2 FEBRUARY 2010