



... for a brighter future

U of C Review of the APS

Dennis Mills

Advanced Photon Source



U.S. Department
of Energy

UChicago ►
Argonne_{LLC}



A U.S. Department of Energy laboratory
managed by UChicago Argonne, LLC

Big Picture

- The University of Chicago, as contractor for operations of ANL, reviews programs at ANL approximately once every 3 years
- This year, the U of C decided to break up the review of the APS into three smaller reviews:
 - Accelerator and Operations (mostly ASD and AES) May 15 and 16
 - *Reported on by Efim Gluskin and Bill Ruzicka at July Monthly Ops*
 - Safety (all APS) August 27 and 28
 - Science Review (mostly XSD) September 17-19

APS Safety Review Charge

- The Committee's charge is to evaluate and benchmark the quality of the safety program at the Advanced Photon Source (APS) using comparable user facilities as a basis, addressing compliance with DOE regulations. Additionally, determine if the program is optimized to promote safe and effective research. Discuss both apparent strengths and challenges.

- Specific items for consideration include:
 - *Evaluate and benchmark the quality of the safety program at the Advanced Photon Source (APS) using comparable user facilities as a basis. Discuss both apparent strengths and challenges.*

 - *Is the safety program being implemented in a manner commensurate for a user facility of this size and complexity? Is the APS effectively implementing its safety program? How are the safety program practices received by the staff and by the users?*

 - *When safety problems are identified, are they corrected and is the mechanism for reporting and follow-up adequate? The committee should address both minor and inexpensive problems that could be rectified quickly if the appropriate mechanism is in place, and major & expensive problems that need large and unanticipated resources.*

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Safety Review Closeout (report not yet complete)

- APS is a world-class research facility with an excellent safety record.
- User training and the ESAF process particularly noteworthy.
- Establish clear directions and expectations for APS and CAT personnel regarding safety and compliance.
- Be responsive to observations and suggestions made by staff and users, as the amount of time being devoted by senior APS managers to safety may not be apparent to staff and users.
- Evaluate current workload of the Floor Coordinators.
- Provide Internet capability for users to take required training prior to their arrival.
- Acquire a radiation safety specialist.

APS Science Review Charge

The Committee's charge is to evaluate the quality of x-ray science, its relevance to DOE missions and national needs and the effectiveness and efficiency of research program management. Specific items for consideration include:

1. Evaluate the scientific productivity of the APS. Is the impact of the science being performed by users and staff at the APS at the world-class level?
2. Is the APS organized in such a way that it provides the proper balance between accelerator operations, user support and Argonne-led research and development appropriate to maximize scientific productivity?
3. Evaluate the APS Science Strategy with respect to maximizing the facility's current and future capabilities including strategic objectives; timeline; hiring plans; resource requirements (Laboratory, DOE, other); strategies for exploiting other funding opportunities; expected outcomes; measures of success; strategies for addressing future challenges and growth opportunities; and concepts for working with other Divisions within the Laboratory, academic institutions, and industry?
4. Evaluate the technical support for beamlines (i.e., optics fabrication and metrology, controls and data acquisition, instrumentation and detectors). Does the overall strategy strive to maintain a highly productive scientific program that serves the general user community while trying to develop more unique and challenging capabilities for the leaders in the field?
5. Evaluate the transition from Collaborative Access Team (CAT) governance to X-ray Operations and Research (XOR) governance of the DOE/BES sectors/beamlines. Has the transition increased the potential for scientific excellence and output? Evaluate the mechanism the APS has used to facilitate increasing the productivity of non DOE/BES supported beamlines (i.e., structural biology beamlines). Are there lessons learned from XOR that can be applied to structural biology beamlines?
6. Is the APS providing effective and sufficient support to facilitate easy and fair access to the facility by the user community?

Science Reviewers

A pretty impressive
bunch.....

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Great Science Presentations.....

- Structural dynamics of photoactive metal complexes using X-ray
transient absorption spectroscopy.....Lin Chen (CHM/ANL)
- How a liquid becomes a glass both on cooling AND on heating.....Simon Mochrie (Yale)
- Molecular dynamics of cyclically contracting insect flight muscle *in vivo*.....Tom Irving (IIT)
- Magnetic Spectroscopy of Functional MaterialsDaniel Haskel, (XSD/ANL)
- Structures of human insulin-degrading enzyme reveal a new substrate
recognition mechanism□Wei-Jen Tang, (U of C)
- Atomic-scale view of interfacial processes with X rays Michael J. Bedzyk (Northwestern)
- Direct observation of adsorbed H-2-framework interactions in a
Prussian Blue analogue.....Karena Chapman, (XSD/ANL)
- Electronic Interactions in a Highly Correlated
Liquid Metal.....Clement Burns, (Western Michigan University)

and 27 posters.

Thanks, especially the outside speakers....

Science Review Closeout (report not yet complete)

- Overall quality of science was of the highest standards
 - MX program likely the best in the world
 - Materials/physics productivity has improved to premier level
- Reorganization seems to have been a positive move and balance of resources between beamline and accelerator seems OK for now...
- The CAT-to-XOR transitions was seen as a success
- Beamline scientists
 - Workload is heavy
 - Career development for young scientists important to follow up on
 - Committee encourages the hiring of post docs and students
- Detectors need more resources....
- Work with the MX CATs for a more coherent approach to all aspects of crystallography
- Need to have input to APS management from life scientist