

**Minutes of the Joint Meeting of the APSUO Steering Committee and  
Partner User Council  
Argonne National Laboratory  
September 16, 2009**

**APSUO Steering Committee members in attendance:** D. Brown, P. Fuoss, J. Kropf, L. Lurio, N. Leyarowska, W. Mao, A. Mondragon, A. Sandy, and D. Tiede

**Partner User Council members/alternates in attendance:** W. Anderson, B. Bunker, D. Crozier, R. Gordon, M. Guthrie, D. Keane, L. Keefe, D. Mao, L. Morisco, S. Sojitra, S. Sutton, J. Vicarro, and R. Winarski

**APS Attendees:** M. Beno, E. Dufresne, L. Gades, J. M. Gibson, D. Haeffner, S. Heald, B. Lai, D. Mills, C. Ogata, G. Pyle, J. Quintana, W. Ruzicka, G. Srajer, S. Strasser, M. Vigliocco-Hagen, and P. Zschack

**APS Update—J. M. Gibson**

*Note: The details of Gibson's presentation are found at*

[http://www.aps.anl.gov/About/Committees/APS Users Organization/Meetings/2009/20090916\\_Gibson.pdf](http://www.aps.anl.gov/About/Committees/APS%20Users%20Organization/Meetings/2009/20090916_Gibson.pdf)

*Highlights follow:*

*Management Changes:* Gibson announced that Linda Young has accepted the position of XSD Division Director with a start date of January 1, 2010. Mark Beno will be resuming his role of Deputy Division Director, and George Srajer will be continuing in his role of Associate Division Director for X-Ray Operation and Research.

*Budget:* Gibson reviewed the status of the FY2009 budget and discussed prospects for FY2010. The FY2009 budget was near \$125M, including a \$10M increase in the base budget in addition to supplemental/ARRA funding. The \$10M increase in base funding was very important to the APS because it is expected to recur. The President's budget for FY2010 includes \$127M capital and operating funds. This is the level we need to function properly. The House and Senate are likely to conference the FY2010 bill within the next month, but a date has not yet been scheduled.

*APS Renewal:* While the APS has not yet received a review from DOE on its CD0 request, Gibson stated that informal comments have been positive. The APS hopes to prepare the Conceptual Design Report in FY2010 and receive CD1 approval near the end of FY2010. The facility has requested \$10M extra funds for CDR and R&D in FY2010.

Gibson reviewed the major drivers behind the renewal. The CD0 proposal focused on enhancing APS unique capabilities to address two main scientific themes: (1)

mastering hierarchical structures through imaging and (2) real materials under real conditions in real time. The proposal includes improvements to the accelerator and technical capabilities. Proposed upgrades for the accelerator include longer straight sections, which allow for the installation of longer or multiple undulators, SPX “crab” cavities for beam slicing capabilities, and x-ray beam position monitors. The APS renewal will increase ring current to 200mA and provide for the installation of superconducting undulators. As a result, while NSLSII will be the brightest light source at 8keV, APS will be the brightest and highest flux source at higher energies. Thus, the two facilities will complement each other. Proposed upgrades to technical capabilities include newly developed and/or acquired detectors, software for data analysis, and optics capable of focusing on spots less than 5 nm.

During the renewal period, the accelerator will run on a normal operating schedule, with improvements being completed during regularly scheduled shutdown periods. Certain beamlines may be offline for one or two runs for beamline upgrades, as necessary. Management of the renewal project will be as follows:

- Murray Gibson: Project Director
- Geoff Pile: Project Manager
- Ed Temple: Senior Project Advisor
- Ron Lutha: Federal Project Director (unconfirmed)
- Harriet Kung: Federal Acquisition Executive
- In addition, Rod Gerig will take on the responsibility of maintaining normal operations.

Renewal Planning will be reviewed at the Oct 8&9 SAC Meeting. More information will be provided in D. Mills’ presentation (to follow).

### **Experiment Work Planning and Control—P. Zschack**

*Note: The details of Zschack’s presentation are found at*

[http://www.aps.anl.gov/About/Committees/APS Users Organization/Meetings/2009/20090916\\_Zschack.pdf](http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2009/20090916_Zschack.pdf)

*Highlights follow:*

Through its review process, DOE noted that while the same hazards might exist throughout Argonne divisions, different hazard analyses performed by each division could yield different hazard controls to be implemented. Work Planning and Control (WP&C) was identified as one important issue to address through the implementation of the Laboratory Management System (LMS) and through the ISO9001 and 14001 certification processes. The WP&C process was implemented on May 1, 2009.

The LMS identifies seventeen core processes, two of which are most important for user facilities:

1. Scientific User Facilities (SUF)
  - a. Non-experimental WP&C is addressed through the SUF core process

- i. At APS, may be used by non-sector personnel
  2. Research, Development, and Engineering (RD&E)
    - a. Experimental WP&C is addressed through the RD&E core process
      - i. Encompasses all experimental work regardless of who conducts it (staff, visiting scientists, users)
      - ii. Must be consistent with LMS principles
      - iii. Must integrate well with existing regulations
      - iv. At APS, used by all sector personnel

Zschack reviewed LMS-PROC-79, the purpose of which is “to establish the process for planning and controlling experimental work to provide for the health and safety of all Argonne employees, its visitors, the public, and the environment.” He summarized the pilot process for implementing LMS-PROC-79 in XSD. CATs will be expected to complete similar documentation after the XSD pilot is complete.

- The ESAF process will continue to be used for beamline experiments.
- Each sector will have a Work Control Document (ANL-839) with different Experiment Modules for each beamline and laboratory.
- Each Experiment Module will have a hazard analysis associated with it, with a Hazard Analysis Mitigation (HAM) form prepared for each hazard.

Currently, HAM forms to be used by the beamlines are being developed. LMS-PROC-79 is being designed to map closely to the CAT safety plans. Thus, most of the hazard controls are already in place; the process will mainly change the way in which beamlines document the controls. LMS-PROC-79 will be implemented based on the 3-year safety sector reviews schedule. In the interim, beamlines may attach their Final Design Report and Sector Safety Plan to the ANL-839.

In the discussion that followed, Beamline Staff discussed the degree to which LMS-PROC-79 might actually change how things are done. Issues raised included:

- Which User activities will be covered under ESAF?
- Will there be a change in the activities that Users are allowed to do?
- If there is a change, it would be helpful to provide examples to the Users of what activities are permitted and what activities are prohibited.
- What will be the responsibility of Beamline Staff in informing Users of the process?
- Documentation will be important for Beamline Staff. It is important to document training for use of a complicated piece of lab apparatus, for example.
- Where does the JHQ fit into LMS-PROC-79?
- Do we need to change User training to directly address certain tasks that Users typically perform?
- How do we identify which activities require specific training and which activities are considered “routine?”
- Perhaps Bruce Glagola should be involved in the discussion of which User activities could be added to the ESAF system.
- There could be an issue with conflicting ESAFs.

Zschack clarified that beamline activities (e.g. stringing a cable) will be covered under the experimental WP&C process and that User activities will be covered by ESAF process. LMS-PROC-79 is intended to integrate with JHQ, ESAF, the procurement process, etc. The goal is for relevant systems to be tied together electronically. It is in the best interest of the APS to make this process as transparent as possible to the User community. Users may notice that they might be expected to fill out an ESAF for a wider range of activities; beyond that, the goal is transparency. Gibson emphasized that the ESAF system is seen as a model of work planning and does not need to be changed.

### **APS Renewal Planning Process—D. Mills**

*Note: The details of Mill's presentation are found at*

[http://www.aps.anl.gov/About/Committees/APS\\_Users\\_Organization/Meetings/2009/20090916\\_Mills.pdf](http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2009/20090916_Mills.pdf)

*Highlights follow:*

Mills provided an update on the renewal planning process as it relates to beamline proposals. Dean Haeffner has agreed to act as coordinator for the organization of beamline proposals. Six working groups, representing the six themes to be addressed in upgrading the beamlines, have been evaluating beamline proposals in the areas of:

- Imaging/coherence
- Extreme conditions
- Ultrafast dynamics
- Interfaces
- Spectroscopy
- Proteins-to-organisms

The primary role of the working groups is to develop more detailed plans for beamline renewal, including budgets and timelines. Leaders of the working groups will present their summaries to the SAC on October 8. The SAC meeting will also include a presentation by Michael Borland of proposed accelerator enhancements and a discussion of infrastructure improvements. Prior to the SAC meeting, APS and local CAT staff members will be invited to provide input through a series of open presentations.

APS seeks several important areas of input from the SAC:

- Feedback on beamline proposals
- Advice on what cross-cut reviews should be conducted in order to make a well-informed decision about which beamlines to include in the renewal
- Advice on moving forward in developing a Conceptual Design Report (CDR)

In the discussion that followed, Beamline Staff emphasized the importance of linking the scientific goals of the renewal to the beamline upgrades: clarifying which upgrades are justified by which goals.

## **Renewal Beamline Summary—D. Haeffner**

*Note: The details of Haeffner's presentation are found at*

[http://www.aps.anl.gov/About/Committees/APS\\_Users\\_Organization/Meetings/2009/20090916\\_Haeffner.pdf](http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2009/20090916_Haeffner.pdf)

*Highlights follow:*

Haeffner began by thanking the APS leaders of the beamline renewal working groups for their help and cooperation. In addition to the six focuses outlined by Mills, Haeffner is leading a seventh working group focused on the "other" category. Haeffner encouraged APS and CAT staff members to contact him or one of the other six working group leaders with any ideas, technical questions, concerns, or criticisms.

Thus far, the working groups have spent time gathering information on proposed beamline projects and refining that information into a standard format, identifying duplicate projects and costs, and integrating new proposals as they come forward. Seventy projects have been submitted with cost estimates ranging from \$100K to \$20M. Requests total \$300M, while the CD0 budget for beamlines is \$115.4M. Because funding requested exceeds funding available, choices will need to be made. In addition, proposals for fifteen new beamlines have been submitted; this exceeds the space available.

As part of their effort to organize proposed upgrades, the working groups have identified six "major impact requests:"

- Long straight sections
  - Increased room for IDs
  - Trade-offs with emittance and other beam parameters
  - Michael Borland is reviewing scenarios for installing eight, ten, or twelve.
  - The working groups have received requests for eleven, and ten other beamlines have expressed interest.
- Long beamlines
  - The APS can consider two types
    - Very long (e.g. 200m) for AXI Wide Field Imaging
    - "Just across the aisle" for X-Ray Interfacial Science, Phase II
  - Placement is complicated due to existing beamlines and the necessity for new LOM space.
  - The working groups have received requests for three, and four other beamlines have expressed interest.
- Canting of straight sections
  - The working groups have received requests for sixteen.
- Specialized IDs
- Special accelerator requests
- Major R&D needs

Heaffner presented the schedule for community input talks prior to the October 8 SAC meeting. Following the presentations to the SAC, Haeffner suggested that the APS consider how to refine the working groups into a formal structure to prepare for CD1, pending approval of CD0. In addition, workshops would be helpful to discuss what is possible for:

- IDs
- Optics, including high heat load
- Detector development and acquisition on a five year time frame
- Crosscut reviews for scientific areas needing clarification

In the discussion that followed, Beamline Staff noted that we need to be thinking forward to the hard decisions that will need to be made.

- Gibson noted that the SAC needs to be engaged, and facility advisory committees need to be created. The process must be very formal, with DOE reviewing it along the way. In addition, upgrades will be limited by funding for staffing that may be required for maintenance and operation.
- Criteria to be used in evaluating proposals needs to be clarified. For example, proposals should be evaluated in terms of scientific impact vs. cost.
- Heaffner noted that APS and CAT staff will be encouraged to be involved in developing contingency plans (i.e. if you can't have exactly what you want, would this work?)
- Srajer noted that the APS has begun a strategic scientific planning process for XOR beamlines, and that planning will play a role.

Secondly, Beamline Staff acknowledged that changing the topology of the storage ring has the potential to affect many beamlines.

- Emittance, beam stability, impedance budget around the ring, beta function, etc.
- More interaction between Michael Borland and the user community should be encouraged.
- Simulations are needed to understand the impact of proposed accelerator enhancements.
- A process for collecting User input will be needed.

Srajer previously had collected information about the current usage of undulators and shared some interesting results.

- Some beamlines change gap frequently vs. staying at the same gap. One could examine whether a different device would be optimal based on expected use.
- Different optics upgrades might be suggested based on desired performance.
- This is an important issue to discuss with beamlines.
- A summary report will be available, and a workshop on IDs will be conducted later this fall.

### **Open Discussion**

Beamline Staff recommended that there be a mechanism for people to defend their proposals. Strasser suggested an open forum specifically for discussing the beamline proposals; Gibson suggested that each of the six working groups might conduct such forums.

Beamline Staff suggested that the summaries from the 6 working groups would be important information for guiding the proposals of APS and CAT staff. Mills suggested that perhaps the open presentations to the SAC could be organized directly into summaries and made available. A discussion followed examining what is the best way to get information out to the User community and to collect response for this important project. Suggestions are welcome.

The question arose as to whether there are other programs we could leverage for funding (e.g. NSF, NIH, etc.)

**PUC Executive Session  
September 16, 2009**

**Partner User Council members/alternates in attendance:** W. Anderson, B. Bunker, D. Crozier, R. Gordon, M. Guthrie, D. Keane, L. Keefe, D. Mao, L. Morisco, S. Sojitra, S. Sutton, J. Vicarro, and R. Winarski

**APS Attendees:** M. Beno, E. Dufresne, J. M. Gibson, D. Haeffner, S. Heald, B. Lai, D. Mills, C. Ogata, G. Pyle, J. Quintana, W. Ruzicka, G. Srajer, M. Vigliocco-Hagen, and P. Zschack

**Routine Business:** The minutes from the July 20, 2009, Partner User Council meeting were approved.

***New Business—D. Keane***

Denis Keane thanked Lisa Keefe and Tom Irving for agreeing to run for the chair of the PUC. Keane announced that Irving was elected as the next chair and will be taking over at the next PUC meeting. Keane also reminded the members that Irving may be asking them to fill in for him in various APS meetings, since Irving is not local.

***Renewal Issues—D. Keane***

Keane asked members to let Irving know if there are issues that they feel should be addressed regarding the APS renewal. Irving will be taking over the duties as the PUC representative on the Renewal Committee. Keane reminded all that the PUC has a voice in the renewal process. Members felt that this renewal is an opportunity to partner and that the machine should operate better or as well as it does at the present time. There was some concern expressed regarding the long straight sections; the movement of beamlines should be avoided as much as possible. The PUC and Life Science Committee chairs should be involved in the process as much as possible.

The members thanked Keane for the time and effort he has put into his duties as the Chair of the PUC.