Minutes of the Joint Meeting of the APSUO Steering Committee and Partner User Council
Argonne National Laboratory
January 14, 2010

APSUO Steering Committee members in attendance: P. Eng, P. Fuoss, J. Kropf, and A. Sandy

Partner User Council members/alternates in attendance: R. Alkire, M. Capel, J. Chrzas, R. Fischetti, R. Gordon, T. Graber, T. Irving, D. Keane, L. Keefe, J. Maser, S. Sutton, J. Talsma, and J. Vicarro

APS Attendees: M. Beno, J. Cross, R. Fenner, L. Gades, D. Haeffner, J. Maclean, D. Mills, W. Ruzicka, C. Saunders, S. Strasser, C. Vanni, and L. Young

APS Update—D. Mills
Note: The details of Mills' presentation are found at
http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2010/20100114_mills.pdf
Highlights follow:

Budget: Mills reviewed the status of the FY2010 budget. As of January, the APS has received a satisfactory operating budget of $118M. The President's request, if granted, would bring the total budget to $127.5M. APS is negotiating with DOE for $10M in funding to support preparation of a Conceptual Design Report (CDR) for the proposed APS Upgrade. ANL has been supportive of CDR efforts as well.

New Faces at APS: Walter Lowe has been appointed as Science Advisor to the Photon Sciences Directorate, responsible for User Community Outreach and Development. Linda Young has been appointed as Director of the X-ray Science Division, staring January 2010. Sasha Zholents has been selected as Director of the Accelerator Systems Division, starting March 2010. Chris Jacobsen joins XSD as an Associate Division Director on January 18, 2010.

Search for Argonne Distinguished Fellow: The Search Committee invites suggestions of candidates for the position of Argonne Distinguished Fellow for Life Sciences at the Advanced Photon Source. Search committee members include Wayne Anderson (Northwestern) Lydia Finney (XSD/BIO), Bob Fischetti (BIO/GMCA), Carol Giometti (BIO), Wayne Hendrickson (Columbia/NSLS II), Andrzej Joachimiak (BIO/SBC), and Dennis Mills (Chair).

Proposal Review Panels: The General User Advisory Committee and APS have provided feedback on three main issues facing the Proposal Review Panels (PRPs): PRP overload, too many Project status requests, and industrial User access.

On the issue of PRP overload, APS will consider splitting panels with high proposal load and extending panel meetings to a second day, both in consultation with the panels involved. Guest reviewers may be invited if proposal load is high for a particular cycle. If overload is sustained, additional reviewers may be added as appropriate. The Rapid Access policy will not be changed for now.

On the issue of Project status requests, the APS will implement several changes to improve communication. Approval requirements will be clearly explained via a pop-up in the GUP system. Project status requests will require more justification. Finally, the APS User Office will communicate, via *User News*, statistics highlighting the rarity of approved Project proposals.

On the issue of improving access for industrial Users, the APS will create separate review criteria with input from each panel and will add industrial reviewers to current panels. A search for reviewers is underway.

Discussion of Project status requests:

- Would an either/or situation help to reduce the number of Project status requests? For example, either a user would receive time as a Project or they would receive no time at all because the proposer is claiming that they can't complete the work without Project status.
- One attendee suggested that accepted Project proposal titles could be listed on the GUP/PUP webpage. There was discussion of whether this would cause problems.
- Would a "sample Project proposal" be helpful?

Discussion of proposal aging process:

- It was noted that the aging process helps to compensate for possible inconsistencies between panels.
- How well is the system working? Mills answered that the system seems to be working well. He receives 1 or 2 appeals in each cycle out of approximately 500 proposals.
- Is there a metric showing how many new people are granted time? Strasser answered that at this time, the APS hasn't specifically looked at this issue, but we can certainly do so. Mills added that the APS currently monitors whether certain groups (e.g. industry, others) seem to be underrepresented.
- The aging process may favor groups (e.g. groups of researchers who submit several similar proposals, each with a different PI). Strasser responded that the PRPs are aware of this possibility and have been making comments on this phenomenon, sometimes rating one proposal high and the others low. At times, Mills has contacted such groups.
    - However, the APS should be careful not to penalize groups just because they have many people (e.g. "this group shouldn't get so much time"). If a group is well funded and submits deserving proposals, its researchers should receive time.

- Understanding the aging process is important for the User community. Some people keep submitting proposals when they would receive time simply by waiting.
- About half of proposals do not receive time in a given cycle, although this varies from beamline to beamline.
- How many new Users are "stand alone" rather than coming in through an existing program? Strasser responded that W. Lowe will be looking into this issue.

Discussion of industrial use:

- Timely access is particularly important for industrial Users.
- An effort should be made to ensure that the people and project are a good fit with beamline.

General Discussion: There is currently some confusion regarding the scheduling of Users. Users are asked to submit a proposal, a beam time request (BTR), and supporting data (which they do not yet have) all at the same time. It was suggested that the schedule be changed so that Users request beam time once they know that their proposal has been approved. Separating submission of proposals from the BTR might lead to less confusion. Also, the closer the BTR to the actual beam time, the lower the chance of scheduling time on a date that does not actually work for the User. Saunders responded that the new scheduling system will allow blackout dates to be entered later. One attendee commented that he sends out an e-mail months after the proposal cycle to ask "what is your real schedule, now that you know you are getting beam time and it's closer to the date?" Strasser agreed that this issue should be discussed further and will be put on the agenda for the next General User Program Advisory Committee meeting. The new beamline scheduling system already allows for this option with Partner User, CAT, and staff proposals/BTRs.

Events: Several Meetings and Conferences will be held in and around Chicago during 2010.

- The Small-Angle Scattering Short Course will be held at the APS from March 27-31. (*Full*)
- The Eleventh International Conference on Surface X-ray and Neutron Scattering will be held at Northwestern University from July 13-17.
- X-ray Microscopy 2010 will be held in Chicago from August 15-20.
- The 16th Pan-American Synchrotron Radiation Instrumentation Conference will be held at ANL from September 20-24.

APS Upgrade (APS-U): Mills presented a proposed timeline for APS-U; APS estimates that CD-0 approval will be obtained during the first quarter of calendar year 2010. Mills also discussed several scenarios, contingent on funding for APS-U. Main differences between scenarios include:

- Accelerator upgrades allowing 150mA vs. 200mA operation

- Upgrading existing beamlines to meet specialized needs instead of building new beamlines (e.g. coherent diffraction imaging; high magnetic field facility, x-ray interfacial science)
- Level of funding for detector development and detector pool
- Level of funding for displaced office space, storage and staging areas

D. Heaffner's presentation (to follow) will discuss in more detail a "strawman" beamline configuration roadmap for discussion with the community. This, along with comments from attendees at this meeting, will be shared with the SAC. A draft roadmap was distributed via e-mail prior to this meeting.

Discussion of APS-U:

- Mills confirmed that the APS plans to upgrade aging optics and that all beamlines are included in APS-U, not only the XOR beamlines.
- Members of the community expressed concerns regarding accelerator or beamline downtime. Mills stated that no additional accelerator downtime is planned.
- Will there be extra costs to CATs? Haeffner stated that shielding was installed with higher current in mind and should not need to be upgraded. However, according to Mills, some beamlines did design shutters, slits, etc. for 100mA. They may have to be swapped out.
- Regarding the balance of spending on the accelerator vs. the beamlines
    - It was suggested that the "bang for the buck" at beamlines is higher, and more money should be allocated to beamlines (eg. replacing slow CCDs with fast detector arrays). The accelerator is already working fairly well; at most beamlines, the source is not the limiting factor.
    - Mills responded that while APS agrees that spending on beamlines is important, DOE wants to see a balance (i.e. the same amount of funding for accelerator and beamlines).
    - Haeffner pointed out that several accelerator improvements directly benefit the beamlines (e.g. long straight sections, new insertion devices and front ends, upgraded transition chambers providing greater flexibility of operation).

Beamline Scheduling System Status Report—C. Saunders
Note: The details of Saunders' presentation are found at
http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2010/20100114_saunders.pdf
Highlights follow:

The pilot program for the new Beamline Scheduling System began in September, 2009. In December, the pilot program was expanded to include anyone who wanted to participate. Participation will become mandatory in June, 2010.

Completed: Main features of the system have been completed. The system can be used to schedule all APS-defined time (e.g. GUP, CAT, Staff, PUP, commissioning , set-

up, start-up, non-x-ray). In addition, beamlines can use the system to schedule beamline staff support. The system has been customized to allow fine-grained authorization and data visibility to different parties. Scheduling guidance, warnings, and statistics are provided, and management can view all beamline schedules.

To do: Capabilities to be implemented include schedule printing, reporting (Astheimer as well as Beamline- and User-specific), and integration of beamlines with existing scheduling systems and mail-in handling. Saunders continues to implement improvements based on user feedback.

The implementation of the scheduling system has magnified a policy issue that has always been present: a given BTR, once allocated or claimed, can only be scheduled on one beamline. Some Users want to schedule time on more than one beamline. The solution for now is to submit multiple BTRs for such proposals, each with the respective beamline listed as first choice. E-mail correspondence from the User Office states that the User needs a BTR for each beamline, but this information is often overlooked.

APS Upgrade Proposed Beamlines—D. Haeffner
Note: The details of Haeffner's presentation are found at
http://www.aps.anl.gov/About/Committees/APS_Users_Organization/Meetings/2010/20100114_haeffner.pdf
Highlights follow:

Haeffner presented a strawman beamline configuration roadmap for discussion. The roadmap included input from many parties including D. Mills, G. Srajer, M. Beno, the APSUO Steering Committee, and many APS/XOR staff. M. Borland provided technical information necessary for coordinating the beamline roadmap with the accelerator upgrade.

Many flagship beamline programs emerged during discussion. A complete list can be found in Haeffner's presentation; the following programs were highlighted in M. Gibson's presentation to DOE:

- Wide Field Imaging (AXI-WF 200m beamline)
- Coherent Diffraction Imaging (AXI-CDI)
- Surfaces and Interfaces (XIS)
- High Magnetic Field Diffraction (In-field Diffraction)
- Advanced Spectroscopy (LERIX/XAFS)
- Bionanoprobe
- Short Pulse X-ray Beamline (SPX)
- High Pressure Microbeam Upgrade

Several factors constrain APS-U:

- There are only 3 open ports for ID beamlines, while 12 have been proposed.

- Long straight sections (LSS) have symmetry constraints for acceptable accelerator performance; CD0 proposes eight.
- $350M upper limit
- Strong desire to have LSS for crab cavities
    - 7-ID was chosen for the main SPX beamline due to its existing program.
- Long beamlines (e.g. 200m) work best at sectors 18, 19, 20
    - Beamlines that extend just outside the storage ring have many more options.

Highlights of the roadmap are as follows:

- 20-ID would move to a currently unused sector and be upgraded to a canted beamline.
- AXI-WF (200M) would move to 20-ID.
- Crab cavities would be installed downstream on 6-ID and upstream on 8-ID
- 6-ID programs would move to various locations; ultrafast programs from 11-ID-D and 20-ID would move to 6-ID in an effort to consolidate the ultrafast programs.
- Bragg CDI would move to 32-ID, which would receive a canted undulator.
- 2-ID microdiffraction would move to 34-ID.
- Liquid scattering would be consolidated at 15-ID.
- New XIS beamline would be constructed.
- MERIX would move to 9-ID; HERIX would be expanded at 30-ID.
- 1-ID would receive a canted undulator.
- In-field diffraction beamline (with possible large magnet) would be constructed 11-ID-D.
- Initial LSS: 1, 6, 8, 11, 13 (M), 16 (M), 28, 33

Other options include:

- Keep the sector 20 program where it is, move SBC to an open sector, and build the long beamline at sector 19.
- Keep the sector 20 program where it is, move BioCAT to an open sector, and build the long beamline at sector 18.
- Keep the TR-EXAFS at 11-ID-D and dedicate sector 6 to the in-field diffraction (magnet scattering) program.
- Swap programs in sectors 25 and 28.
- Consolidate PX programs to liberate a beamline/sector through canting a currently un-canted sector.
- Explore partnerships between XOR and CAT programs to build out un-utilized hutches or develop beamlines on canted front ends.

Summary: The roadmap presented today is a strawman proposal, not written in stone. Better solutions may be found with more CAT interaction (e.g. CATs that ask to move). The APS will continue to examine LSS symmetry to make sure that the best option is chosen. It may be possible to expand LSS implementation if more funds become available. In the current strawman proposal, BM beamlines are not

discussed. For example, there are several open spots. In addition, a high-energy tomography program could be considered for a BM beamline, and 1-BM could be converted to a high-energy diffraction program. Users are encouraged to e-mail Dean with questions and suggestions as they arise.

Partner User Council Executive Session
January 14, 2010

PUC members in attendance: R. Alkire, R. Fischetti, R. Gordon, T. Graber, T. Irving, D. Keane, L. Keefe, C. Ogata, G. Shen, S. Sutton, J. Talsma, J. Vicarro, R. Winarski

APS Attendees: M. Beno, L. Gades, D. Mills

Routine Business: The minutes of the September 16, 2009 PUC meeting were approved.

Life Sciences Council Report—R. Fischetti

The Life Sciences Council (LSC) is in the process of preparing a strategic plan.

Fischetti gave a preview of the presentation he will be making on behalf of the Life Sciences Council (LSC) as part of their upcoming Crosscut Review. As part of the presentation, he addressed SAC concerns that the APS-U objective "proteins to organisms" included very little macromolecular crystallography (MX). MX, in fact, stands to benefit from APS-U.

Current Status: APS MX beamlines have a large, growing User community. Almost 50% of all Users self-declare as life sciences, and 17 beamlines at the APS serve this community. Beamlines are fully subscribed or slightly oversubscribed, with a User base that is still growing. MX Users point to significant achievements. APS MX beamlines contribute more protein data bank deposits than any other facility and 20% annually of all synchrotron based deposits. Work conducted at an APS MX beamline recently received a Nobel Prize, and Users frequently submit landmark publications. While independently funded and operated in a competitive environment, beamlines collaborate and are able to work together for the good of the community.

APS-U: Fischetti provided a summary of the ways in which the MX community expects to benefit from APS-U.

- Greater beam stability is a highly significant benefit. Beamlines lose time in realigning optics when the beam moves. For an MX beamline, a long BTR is 24 hours, so that any time required for realignment consumes a significant percentage of the User's beamtime. As a precursor to the upgrade, new beam position monitors are currently being installed and are much more sensitive.
- New detectors, for example PAD type detectors like the Pilatus, will increase the amount of data collected in a given period. MX Users would like to see the detector pool expanded to enhance support and maintenance of these detectors.
- Similar to other beamlines, MX beamlines stand to benefit from new insertion devices (IDs). Many beamlines have requested new IDs: a dual or

short period undulator for BioCAT and a canted undulator for 19-ID, for example.
- Older beamlines will receive new front ends and optics.
- Reliability of instruments will be improved.
- APS-U will be highly competitive with NSLS-II in flux and brightness in the range that MX beamlines use.
- BioCARS has requested a new experimental hutch to accommodate a fast read-out, large-area detector.

MX beamlines also have a few concerns about APS-U.
- Any loss of beam stability would be detrimental.
- Horizontal source size is a concern.
- Many of the beamlines are not designed for 200mA.
- At what cost and on what timeframe is APS planning to provided upgraded optics to beamlines?
- MX beamlines do not expect to benefit from LSS, which provide more flux but larger beam size.
- MX beamlines do not expect to benefit from the 200m beamline configuration.
- MX beamlines all have different funding sources and sponsors to satisfy, which can pose several logistical challenges.
    - Beamlines cannot be required to upgrade uniformly.
    - Any costs to the beamlines associated with APS-U could become an issue.
    - That said, capital investment to this point has been an astounding number. Plans for the future also include a large investment; MX beamlines are upgrading in parallel with APS.
        - Detectors
        - Sample mounting automation
        - Similar GUI interfaces between beamlines, at the recommendation of the SAC

New Business—T. Irving

Argonne rental charge: Costs are increasing so quickly that CATs have no way of absorbing the expense, as their budgets do not increase quickly enough. This seems to be an Argonne issue rather than an APS issue. The increase in the past year, for example, may have been due to construction of the TCS building. As a starting point for voicing CAT concerns, Irving will draft a memo to M. Gibson, send it around for comment, and ask people to sign.

Scheduling System: Irving suggests that people try to use the new scheduling system during the next month and send suggestions to irving@iit.edu.

APS-U: Irving requested comments on the impact of APS-U on Partner Users, beyond what had already been discussed. Attendees noted that the APS seems committed to building the "flagship beamlines" and also claims to be obligated to upgrade the beamlines to handle 200mA. Partnering with APS/XOR may be an option for CATs, perhaps through a model similar to the Partner User Program (PUP). However, procedural and cultural barriers would need to be overcome. It was noted that APS is still open to receiving proposals if a CAT identifies a need.

Irving encourages members to contact him at irving@iit.edu regarding any issues–related to APS-U or otherwise–that may be common to the group.