

APS/Users Operations Meeting

J. Murray Gibson

February 17, 2010

Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update – Murray Gibson
- 3:05 p.m. Current Status of Plans for the 2010 User Meeting and Workshops – Dave Tiede
- 3:25 p.m. Scanning Probe Diffraction Microscopy at the CNM/APS Hard X-ray Nanoprobe Beamline – Martin Holt
- 3:45 p.m. Adjourn

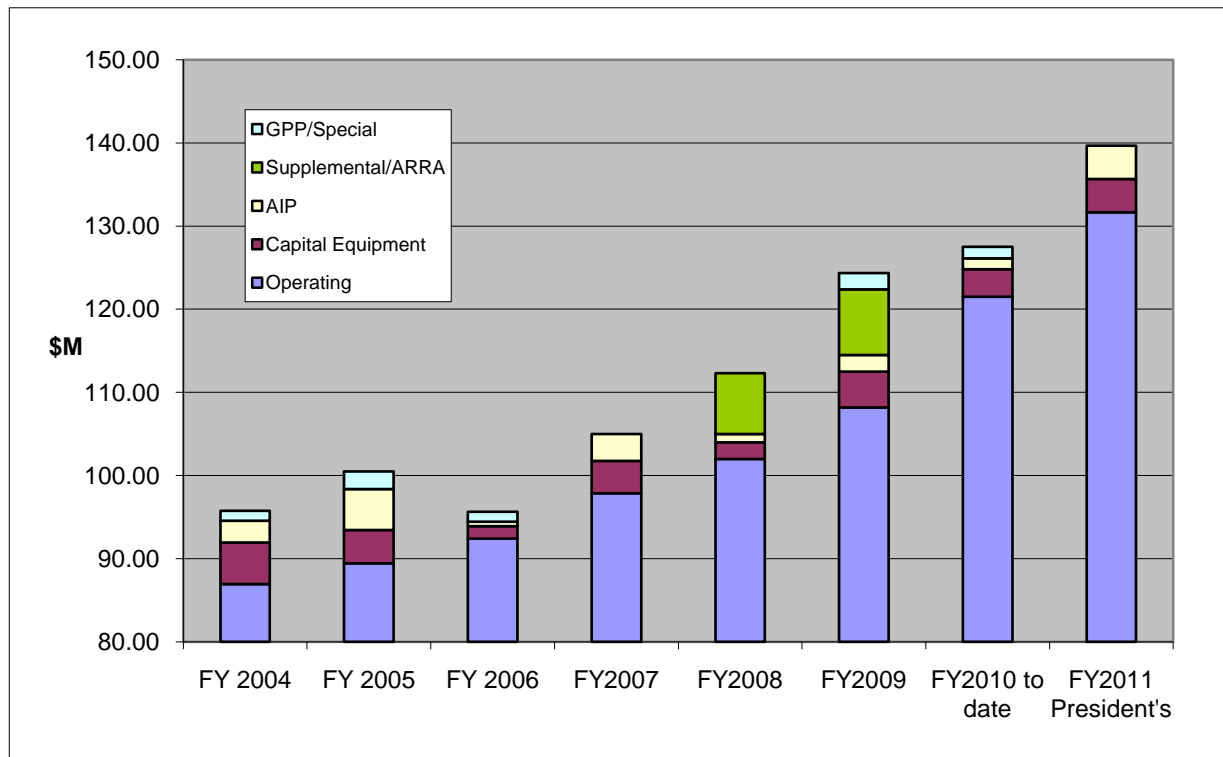


ANL ISM Day

- Planned for March 11th (and 12th)
- A periodic event at ANL to emphasize ISM, clean-up and work-planning and control
- Several recent incidents on work-planning and control have created concern
 - e.g. cutting of wires, miswired pump,...
- Format will involve APS-wide presentations in the morning, and then group-oriented discussions of key questions
 - Development of divisional safety improvement plans
 - Eric Isaacs to accentuate the difference between intellectual and actual risk...
- Afternoon will be clean-up (amnesty from WMO)
- We may do this on March 12th



Budget



We have \$127.5M this year-to-date, expecting perhaps \$3M extra for APS-U CDR planning leveraging with ~\$1.7M support from ANL +\$10.1M in PB next year associated with R&D for APS improvements (total \$139.6M)
Planning with DD's for strategic hiring ~15FTE's in next few months
Plan for ~\$6M equipment/AIP this year



Upgrade planning

- On path to CD-0 in next few months
 - Harriet Kung presentation of FY12 budget and BES strategy to Bill Brinkman went very well → APS-U was proposed for establishment of a formal project
 - Briefing book materials were effective, and passed over to Bill
 - Next step is a technical presentation to Bill on March 11th (JMG with Eric Isaacs and Geoff Pile)
 - Mission Need Statement is ready to go if all goes well March 11th
- Meanwhile, we need to prepare for the Conceptual Design Report
 - Internal planning well advanced (Geoff Pile)
 - CDR will represent ~10% design, and include alternatives to scope and cost
 - Driven by the scientific vision from our CD-0 proposal and mission need statement
 - External web-pages and invitation to participate to users is ready to go in the next few days



User input to Conceptual Design Report planning

Argonne NATIONAL LABORATORY
U.S. DEPARTMENT OF ENERGY

Advanced Photon Source
A U.S. Department of Energy, Office of Science,
Office of Basic Energy Sciences national synchrotron x-ray research facility

APS Upgrade

Preparation for the APS Upgrade Conceptual Design Report

Communication with APS Users, 2/16/2010
J. Murray Gibson Associate Laboratory Director for Photon Sciences at Argonne National Laboratory.

We are planning, in anticipation of a positive Critical Decision-0 (CD-0) determination by the Department of Energy (DOE), to prepare for the next very important step in the proposed APS Upgrade project: development of a Conceptual Design Report (CDR). In the conceptual design we will describe the capabilities that we propose for the Upgrade at a level approximately 10% of the final design, and will include a range of alternatives. The CDR is one of the most important components needed to reach Critical Decision 1 and proceed with the preliminary engineering design phase of the project.

The Conceptual Design Report will be based on the scientific case that we articulated for the APS Upgrade (formerly the "Renewal"). In the CDR we must show how our choices flow from the scientific vision we have articulated, organizing the beamline sections in the six areas:

Imaging and Coherence; Extreme Conditions; Ultrafast Dynamics; Interfaces in Complex Systems; High-Resolution Spectroscopy; Proteins to Organisms.

In preparation for the CDR, we can build on the many beamline proposals that have been reviewed by the APS Scientific Advisory Committee (SAC). We also have extensive user community input from the 2008 Workshop that led to the CD-0 proposal. There is a significant range of scope for beamline projects—from brand-new beamlines to small-to-major beamline upgrades. With the SAC's help we identified a set of larger "flagship" projects within the Upgrade—listed below under the appropriate beamline areas—that we should include in the baseline of our conceptual planning. As a part of the Upgrade, we are planning to move some beamlines, consolidate techniques and programs, and invest in many of the existing beamlines. Although these activities might not rise to the level of "flagship" status, they are a very important part of the Upgrade and will set the stage for future science at APS. We strongly encourage our user community to continue to contribute ideas and feedback to the development of the proposed Upgrade.

For each of the beamline areas, we have assembled a technical advisory committee that is led by someone within the X-ray Science Division at APS who will be responsible for delivery of that portion of the conceptual design of that beamline. We have also identified a co-leader from Argonne or a local institution, a set of key users who have agreed to participate in planning for the CDR, and a liaison from the APS SAC. We expect each group to hold dialogs with the user community, facilitated through the Upgrade web pages. Any user who wishes to be involved in developing the CDR is encouraged to contact the appropriate team leader. If there are process concerns or more general issues, please contact Denny Mills or one of the members of the Upgrade Steering Committee.

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Beamline themes, technical advisory committees and flagship projects that will be included in the conceptual design planning:

- 1. Imaging and Coherence**
Advanced X-ray Imaging for Wide-Field Imaging; Coherent Diffraction Imaging; Enhanced X-ray Photon Correlation Spectroscopy; High-Energy Tomography
- 2. Extreme Conditions**
Enhanced High-Pressure Capabilities; X-ray High-Magnetic-Field Beamline; Enhanced High-Energy X-ray Stress Measurements
- 3. Ultrafast Dynamics**
Short-Pulse X-ray Beamline; Enhanced Ultra-Fast Imaging
- 4. Interfaces in Complex Systems**
Surface and Interface Scattering Beamline; Enhanced Catalysis in situ Capabilities
- 5. High-Resolution Spectroscopy**
X-ray Trains (EXTR), and Advanced X-ray Spectroscopy; Dedicated MERIX and HERIX Beamlines; Enhanced Nuclear Resonant Scattering
- 6. Proteins to Organisms**
Enhanced SAXSWAXS; Biosensor; Support to MX Beamline

A template (.doc) and some examples of CDR documents

Because the project is not yet formally approved, we do not have a formal process for user input. However, it seems likely that we should be ready to make

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APS Upgrade

Extreme Conditions

Flagship projects to consider: Enhanced High-Pressure Capabilities, X-ray High-Magnetic Field Beamline, Enhanced High-Energy X-ray Stress Measurements

Chair (APS)	Co-Chair	Team Members	SAC Liaison
Jonathan Lang (Argonne)	Guyon Dian (George Inst. of Washington)	Wak Chuan (U. of Chicago) Jennifer Jackson (Columbia) Ulrich Weig (Argonne) Carsten Detlefs (ESRF) Christie Nelson (BNL) Walt Miller (Cornell U.) Lynda Soderhain (Argonne)	Bill Stringer (ESRF) Shawn Waymouth (J.D.U.)

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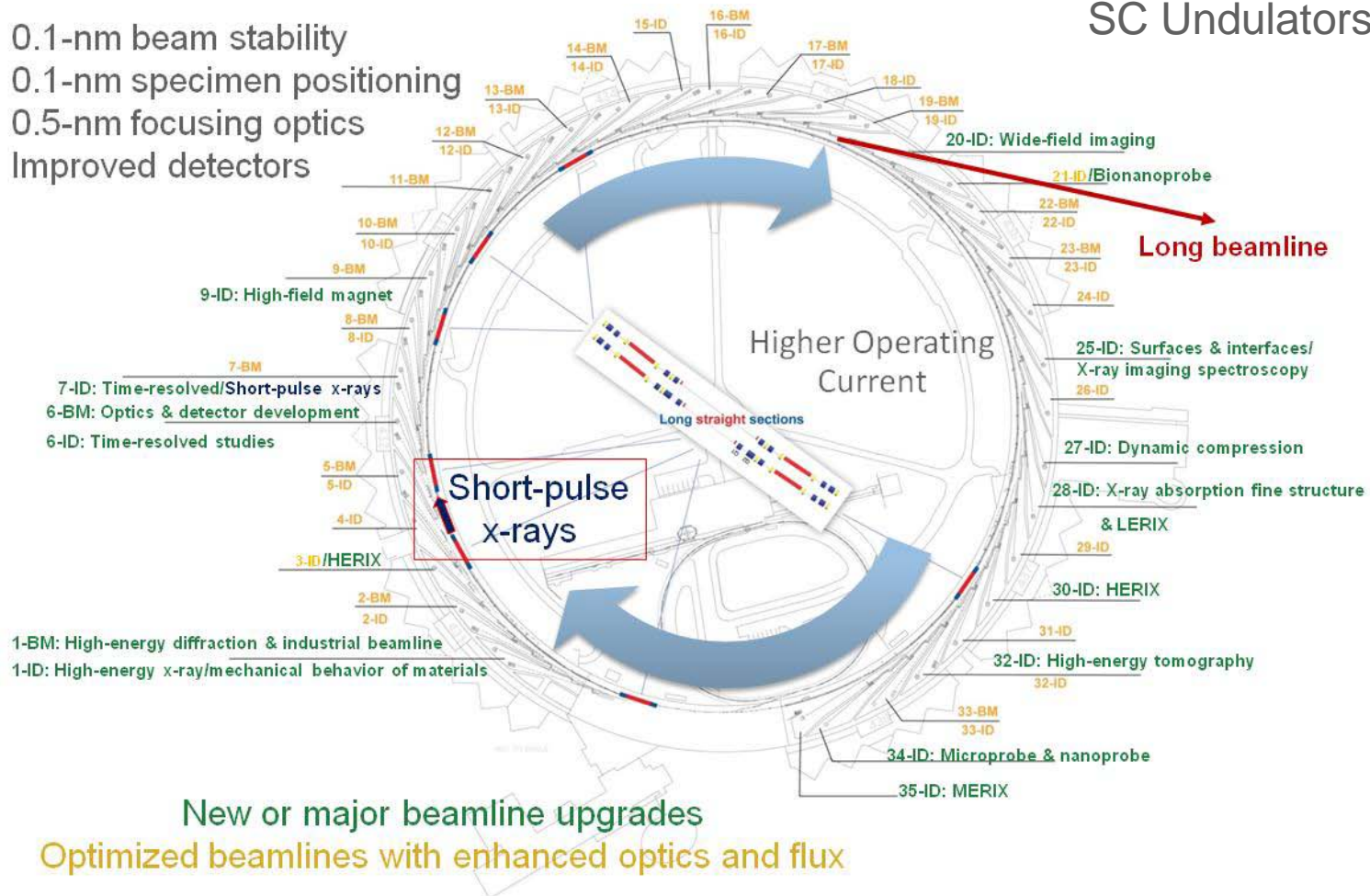
Draft pages – plan for release next week



Roadmap for beamline configuration

- 0.1-nm beam stability
- 0.1-nm specimen positioning
- 0.5-nm focusing optics
- Improved detectors

SC Undulators



Will be optimized in parallel with CDR development



Tentative milestones for critical decisions

Milestone Event	Fiscal Year
CD-0 Approval	FY 1
CD-1 Approval	FY 3
CD-2/3a Approval	FY 4
CD-3 Approval	FY 5
CD-4 Approval	FY 8

FY1 is FY2010

This schedule allows more time for CD1 than our previous schedule (which had CD1 mid FY-2) , but it is still fluid



SAC met in January and discussed upgrade planning

Stirling, William, Chair – European Synchrotron Radiation Facility

Bucksbaum, Philip – Stanford University

Corlett, John – Lawrence Berkeley National Laboratory

Einspahr, Howard – Retired

Hedman, Britt – Stanford Synchrotron Radiation Laboratory

Johnson, Louise – University of Oxford

Kirz, Janos – Lawrence Berkeley National Laboratory

Klein, Miles – University of Illinois at Urbana-Champaign

Leach, Roger – E.I. DuPont de Nemours & Company

Lee, Ka Yee – The University of Chicago

Neumann, Dan – National Institute of Standards and Technology

Van der Veen, J. Friso – Paul Scherrer Institut

Wakatsuki, Soichi – Photon Factory (KEK)

Waychunas, Glenn – Lawrence Berkeley National Laboratory

Fuoss, Paul – Argonne National Laboratory (APSUCO, Chair)

Irving, Tom – IIT, BIO-CAT (PUC, Chair)

Other SAC issues

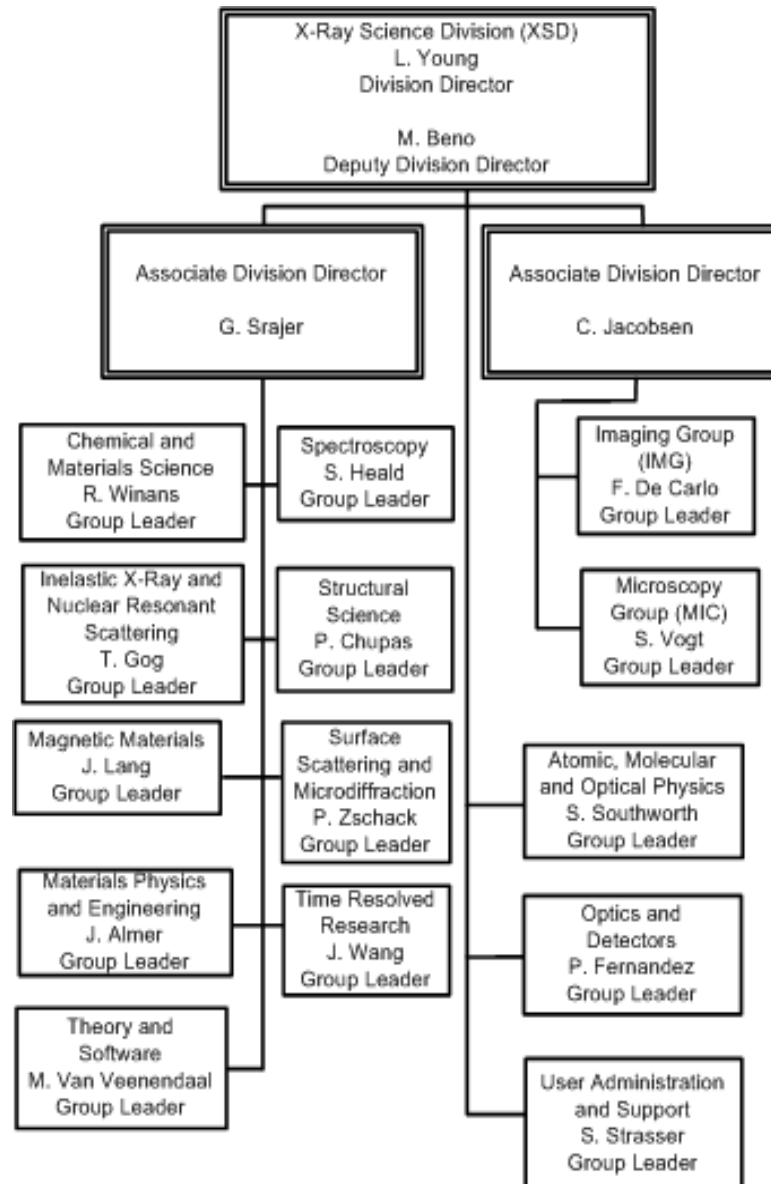
-twice yearly meetings

-cross-cut review

(October) on
surface/interface science



XOR is no more - long live XSD



Recent awards

- Nino Miceli (XSD) gets DOE Early Career Award



- Denny Mills elected a Fellow of the American Physical Society



- Rick Fenner and Nancy Lazarz (CARS) win 2009 Chicago Chapter of the Society for Technical Communications (STC) awards



Pacesetter: Andrew Johnson (AES)



Organized and contributed to the success of EPICS codeathons that have resulted in continuing timely development and extension of the EPICS control system by an international team of developers.



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