InterCAT Technical Working Group Meeting
December 18, 2003

Agenda Review and TWG Activity Summary:
Reinhard called the meeting to order and reviewed the agenda.

APS Updates/News

APS Shutdown (John Noonan, APS/AOD)
John explained the main activities scheduled during the upcoming APS shutdown:

- PFS will perform switchgear maintenance on Jan-2 (Zone B) and Jan-10 (Zone C). E-power will be provided to the sectors affected.
- A new injection section will be installed.
- Front-end components for Sectors 21 and 23 will be installed.
- Insertion devices from Sectors 3 and 4 will receive preventative maintenance.
- Xbpm from Sectors 17-BM and 18-ID will be inspected and repaired as necessary.
- Due to the amount of vacuum activities a bake-out will be necessary in Sectors 3, 4, 25, 26 and 39.
- PSS will inspect cable on radiation damage and perform various beamline revalidations.
- Sectors 1, 17, 33 and 34 will be connected to the APS LCW (DI water) system.

John also provided the latest information on the planned machine studies on December 22: The accelerator group will test the capacity and performance of the linac and injector – the maximum current for this test will be 225 mA. As previously announced the experimental hall will be declared a "Radiation Controlled Area" during this test, radiation badges are required for entering the area.

APS Computer and Network Upgrades (Kenneth Sidorowicz, APS/AOD)
Ken announced upgrades of the Cisco Switch to 10 Gigabit capacity and the associated unavailability to various user groups. Between Dec-26 and Jan-3 the visitor and wireless networks in the LOMs will be turned off, in addition CAT internet access will be temporarily interrupted as the installations progress.

Stockroom Advisory Committee (Steve Downey, APS/AOD)
Steve is asking for volunteers to serve on the Stockroom Advisory Committee. This institution has large influence in the stockroom inventory. Therefore, if you are not satisfied with the services provided here is a good opportunity to support the user's interests. Please contact Steve at downey@aps.anl.gov if you are interested to join the group or have other stockroom related comments or suggestions.

Presentations

The following is only a brief summary of the presentations at this month's meeting. For detailed information, copies of the viewgraphs and other references please visit the Minutes section of the TWG WebPages at http://www.aps.anl.gov/cats/twg/minutes.html.

PV Naming Convention (Ned Arnold, ASD)
Ned summarized the presentation on PV naming convention given by John Maclean in October

and presented the summary of a survey conducted in the weeks after that meeting. 22 sectors responded to the request for input and –to some surprise– there were no catastrophic conflicts found. Although significant conflicts were discovered the majority of present naming conventions can be accommodated. Some changes will be necessary to adopt a general convention:

- all beamline PVs should begin with their sector number or lower case letters
- all accelerator PVs (those on the .2 subnet) should begin with capital letters

with the current exceptions of

- Sectors 10, 17 and 19 which use capital letters at the beginning
- all accelerator PVs beginning with ioc*
- PV Gateway PVs on subnets Snn

Of these exceptions only the beamline PVs S10ID*, S17ID*, S17BM* and ID* conflict with other existing PV prefixes. These will require some special efforts and it is suggested that these sectors change their naming in the long term. Other changes include the APS templates for the bunch clock and msl-mrd100 modules.

In conclusion, Ned posted the following action items:

- Beamlines will need to install new template databases and should consider the "preferred" naming over the "self-created".
- The Beamline Controls and Data Acquisition (BCDA) Group will publicize the suggested ("preferred") naming convention on their webpage and provide assistance in converting templates and client applications.
- Accelerator systems will have to adopt/stay consistent with the convention and maintain the PV gateway access lists concurrent with the convention.

To learn more about the topic and other efforts of the BCDA group please visit their WebPages at http://www.aps.anl.gov/aod/bcda/.

Fast Fly-scanning for X-ray microscopy (Stefan Vogt, XOR/XFD)
Stefan presented the soft- and hardware implementation of fast, on-the-fly scanning used at Sector-2 for X-ray microscopy. The development of this technique was driven by the requirement for large, high resolution and fast overview scans. The overhead associated with standard step-scans proved to be approx. 1000× larger than the effective accumulation time for this application. In order to realize this technique some special hardware is required: A multi-channel scaler is essential; the application of a V-to-F converter is depending on the detector used. A schematic of the experiment clarified the instrument and communication requirements. The controls software is based on EPICS. Installation and testing was quick (the efforts by the BCDA group and M. Rivers at CARS were much appreciated), developing an adequate user interface and tweaking the controls parameters took more time. But with the correct hardware in place the fly-scanning technique can be implemented in about two days.
Experience shows that the data acquisition rate is improved by about 10× for signal detection that is not photon limited. Surely, there are some issues that could be improved, e.g. an option to trigger (arm) the detector with a variable delay before scanning and also to allow for different motor speeds during fly-scan and fly-back motions.

Focusing of 80 keV X-rays using silicon saw tooth silicon lenses at 1-ID: First results. (Jon Almer, XFD)
Scientists at Sector-1 have been working with high-energy photons for a number of years (*ref.* S. Shastri, July 2002). Jon reported on the latest optics developments: Use of Compound Refractive Lenses (CRL) with saw-tooth shape at 80 keV for improved focusing quality and variable focusing length. Initial tests of this style CRL made from polyester were done at ESRF using 18 – 25 keV photons. The XOR group obtained their Si-based CRLs in fall 2003 and first measurements showed focal spot sizes of ~20 µm and an associated gain of 19. These results are

a significant improvement over aluminum cylindrical lenses and important for the high-energy SAXS experiments at Sector 1.

Next TWG meeting:
The next meeting will be held at 10h00 on Thursday January 22, 2004 in Bldg.401, Room A1100.