InterCAT Technical Working Group Meeting
June 17, 1999

Agenda Review and TWG Activity Summary: (Paul Zschack)
Paul reviewed the meeting agenda.

Facility Updates

Liquid Nitrogen Distribution Update: (Bob Ferry)
The contractor safety plan was approved on 6/14/99. Bob reported that two (A and B) of the four liquid-nitrogen modules are fabricated and should arrive at the APS soon. Module C is in fabrication. Staging for installation of the system will take place at sectors 23-24. Installation is expected to begin 6/21/99 and should take approximately three weeks per module. Acceptance will take place concurrently with the installation process; some time must be allowed between acceptance and operations in order to test control systems.

All CATs are encouraged to begin to plan their connection systems to the four main lines in the experiment hall now. The main lines will be approximately 6 ft. off the mezzanine floor and 1 ft. away from the railing. Liquid nitrogen will be supplied to each FOE at 51 psig. Dewars may take slightly longer to fill. All gas venting must be done outside of the enclosures. Bob informed the group that they should expect some pressure fluctuation (+/- 5 lbs.) when the main dewars are being filled, but pointed out that the lines will always be full up to the branch valve. Bob showed a possible method for linking to the central system involving an intermediate dewar, mentioning that he has spoken to Oxford about pressure compatibility with their cryo cooler.

For the time being, the current dewar-filling service will continue. He reminded the group that contracts for hook-up systems do not have to go through APS procurement. Bob informed the group that anyone who chooses to contract through Quality Cryogenics can contact either himself or Floor Coordinator Bill Wesolowski for further information. Bob indicated that he is interested in talking to anyone who is familiar with pumps.

Top-off Operation Update: (Tony Rauchas)
Tony reported that the first week of fill-on-fill with shutters open seems to be going well; 75 hours of straight operation passed without a close shutters command. Availability was at 98.8% last week. Tony indicated that plans are set to continue fill-on-fill with singlets operation for the rest of the run. Additionally, to help begin to evaluate the impact of top-up, Tony proposed the interjection of one session of top-up injections during the 8:00 a.m. fill period. The top-up injections would comprise a 10-minute test of 30-msec injections every two minutes (five cycles total). Two gating signals would still be provided. The hope is that these small tests will help build experience with the accelerator and also help CAT personnel begin to look at their beamline(s) and software (e.g., looking for data collection perturbations). Much discussion ensued about the potential implications of these tests. It was suggested that the subject of top-up operations be taken up by the TWG subgroup.

Reports

MX: A portable data acquisition and control tool kit: (Bill Lavender)

Bill began writing MX, an API layer (which lives on top of EPICS) for control of various beamline devices, in 1995. The project to develop a tool kit like MX began because beamline control software tends to be non-portable, environment-specific, and focused on a particular interface (e.g., CAMAC or VME). Additionally, users who bring their own equipment to interface to a beamline need a flexible, non-specific system. Among his goals for the program, Bill wanted to incorporate the primary functionality of the program in a library, make client-server functionality available, minimize the library's knowledge of the environment it was running in, and to use generic code to make incorporation of new devices easier. He designed the system to be portable across different operating systems (via TCP/IP sockets) and to be usable with as many beamlines and sources as possible.

Bill highlighted the dynamic and flexible nature of the program. He listed many of the different platforms that MX can be run on, the generic classes of MX available, and available drivers. He also reviewed an example program for a simple step scan, indicating that the code would hold for any motor or pseudomotor drivers. The code is available on the Web at http://www.imca.aps.anl.gov/~lavender/mx/.

BioCARS Activity Update: (Reinhard Pahl)
Reinhard reviewed the layout of sector 14, highlighting the primary programs in place on the BM and ID beamlines. He reviewed station parameters and showed the optical layout on 14-BM-C, highlighting its water-cooled bent mirror, which creates a virtual source point. The virtual source allows for low background (good for crystallography). Several structures have been solved on 14-BM-C, including a large virus that has become part of the logo for the beamline.

The 14-BM-D beamline includes a bent cylindrical mirror and a Si(111) double-crystal monochromator. BioCARS is planning to install an energy feedback system to expand the beamline's capabilities. Reinhard reviewed various beamline parameters, indicating that protein crystallography and MAD phasing are among the line's experimental programs.

On the insertion-device line, the optical layout (including the mirror and monochromator) is very similar to the 14-BM-D station. Laue and time-resolved diffraction (pink beam) experiments are being done. The beamline should be doing 2:1 imaging, but is only capable of 1:1 imaging due to the position of the ID (the gap cannot be closed all the way). The wiggler in use is really somewhere between a wiggler and an undulator. Reinhard presented data (including results from a photoactive yellow protein by Vukica Srajer) and showed photographs of equipment in the ID station. In future developments, a different ID is under consideration (because the wiggler position is slightly off). A new shutter is expected within the next couple months.

News and Other Business

Paul reported that the Beam Stability Subgroup met recently. A very thorough presentation of current stability issues was given by Glen Decker. At the next meeting (which will be scheduled soon), the subgroup wants to discuss user stories and observations related to beam stability.

Next Meeting

The meeting will be held Thursday, July 15, 1999, in conference room A1100.