

## InterCAT Technical Working Group Meeting September 19, 2002

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

### APS Updates

(Steve Davey, AOD)

Steve reported on the 'record setting' fiscal year 2002. Over 1950hrs of user beam time were scheduled with ~97.4% availability in the longest run in the history of APS. The mean time between faults (MTBF) was calculated to 42.3hrs.

A revised schedule for the implementation of the Decker distortion was presented:

Completed sectors:

2-8, 15-17, 22, 23, 32-35.

September 2002 shutdown:

Sectors 18, 19 and 20 (cleaning up transition 18/19).

January 2003 shutdown:

Sectors 9 and 10 (cleaning up for 8/9).

May 2003 shutdown:

Sectors 11, 12 and 13 (cleaning up for 10/11/12).

September 2003 shutdown:

Sectors 14, 21 and 31 (cleaning up for 13/14/31).

January 2004 shutdown:

Sectors 24 and 25 (cleaning up for 23/24).

(Roger Klaffky, AOD)

A workshop on APS operations parameters will be held on November 6. Possible modes of operation will be discussed (e.g. bunch pattern and timing issues) in preparation for the June – December 2003 schedule.

(Glenn Decker, AOD)

By popular demand Glen explained in detail the functions and interpretation of the beam-position monitor screens (a.k.a. Beamline Steering Displays) and process variables (PVs). The source code for the latest version of the MEDM screens plus additional information on this topic can be found at

<http://www.aps.anl.gov/asd/diagnostics/xbpmDisplays/index.html>.

User comment: Can the signal from an X-ray BPM in the beamline downstream of the ratchet wall be included in the steering algorithm?

G. Decker: This would be beneficial for accurate steering but is generally not easy as hardware and beamline configuration issues need to be addressed. The beamline stability taskforce will interview interested CATs and explore the possibility of integration.

## **Presentations**

### **KB-mirrors for micro- and nano-focusing** (E.Dufresne, MHATT-CAT)

Eric presented an update on his TWG February announcement for small KB mirror flats for the GSE-CARS style bender. WavePrecision has fabricated for sectors 4-ID and 7-ID several 100mm long flats with residual slope errors between 0.3-1.5  $\mu\text{rad}$  (RMS) slope errors and about 0.7-0.8  $\text{\AA}$  (RMS) roughness; the residual curvatures were well within the specification. A standard method was used to ensure alignment of the optics to the center of the undulator radiation cone. Preliminary results on the performance of the mirrors were presented: foci of approx. 1.5 $\mu\text{m}$  (vertical) have been achieved. For more details on this presentation, see the minutes section of the TWG web site and Eric's webpage <http://www.mhatt.aps.anl.gov/~dufresne/optics/KB-CARS/> for quotes and metrology data.

### **APS operation parameters – High or low emittance?** (G.Decker, L.Emery, AOD)

[A copy of this presentation can be found at the TWG WebPages.]

Glenn described the efforts of the accelerator group to reduce the emittance of the storage ring. In the next run machine will operate with a new lattice of 3.0nm-rad (effective) and 3% coupling. This will reduce the source parameters (size and divergence) for the bending magnets but increase them for the insertion device (see TWG WebPages for detailed information). M.Borland and L.Emery developed the parameters for the lower emittance lattice and, according to the machine physicists; this is the best parameter-set achievable with the current hard- and software available. Future developments include (but are not limited to) increased beam current, increased single bunch current, ID-Xbpm feedforward, etc.

### **Next TWG meeting:**

The next meeting will be held at 10h30 on October 17, 2002 in Bldg.401, Room A1100.