

Minutes, 2/23/05 Tevatron BPM Upgrade Meeting
Stephen Wolbers

This set of minutes, and all future minutes, are or will be deposited in the Beams Document Database as document number 792.

The agenda as announced consisted of:

1. Report from Bob and Steve
2. Report from subproject leaders
3. Report from Jim Steimel
4. AOB

1. Report from Bob and Steve

- Steve showed the schedule for installation (no change from last week's proposed schedule) and the status of installation and commissioning.

- Steve also showed a list of "hot issues" that were the result of conversation with Bob Webber and Jim Steimel. These include:

- Integration of the new BPMs in to the operation of the Tevatron. This includes understanding the difference of the new and old systems, a calibration strategy, use of the new system's values in operations, and teaching others to use the new system.
- A talk at Jean Slaughter's Run 2 meeting. This is currently scheduled for March 3 and we need to discuss with Jean the topics and audience for the talk or talks.
- Test stand work. We need to have working test stands with input signals to use to study timing issues, other behavior seen by these BPMs or other systems, other effects, filter and FPGA studies, etc.
- Diagnostics signals and an application for running and checking the diagnostics.
- Calibrations

2. Reports from L2 Managers

Vince Pavlicek, Bill Haynes, Ken Treptow

- Vince, Bill and Ken reported on the variation of the diagnostic signal in different filter boards. A solution that is being tried is to use 4 signals on the backplane at 26 MHz, separated by 90 degrees, to get a much more uniform 53 MHz signal on the filter boards. This uses FPGA logic on the filter boards.

- The results so far are very encouraging. Bill showed a plot of the 53 MHz signal that shows variations of under 10% and possibly even less if only the 53MHz component after filtering is taken into account.

- Additional studies of terminating the backplane may be tried.

- Given the results seen so far it makes sense to try different crate configurations, measure the variation of signals, and decide soon what course of action to follow.

Margaret Votava:

- Margaret, Luciano and Kurt have been looking at the tasks needed in the front-end software to finish that part of the project.

Identified jobs include:

- Documentation

- Alarms, what to alarm about, who to alarm to <- needs help defining

- Asynchronous injection mode (Finding and measuring the beam when timing is not properly established)

- FTP > 15 Hz

- Electrical offsets and other corrections

- Time-dependent calibrations

This led to a long discussion of calibrations, raw data and corrected data, time-independent and time-dependent corrections, etc. We should have a calibration database that allows for the functionality people need to use this data.

- 500 Hz operation. This works now in A3 but needs to be further tested before confidence is gained that whatever problem existed has been fixed.

- Bob mentioned that pbar measurements may require more from the front end. If we find that the narrow-band proton subtraction scheme does not produce the desired accuracy, precision and stability we may be using the short-gate sampling mode to make the measurements.

Brian Hendricks:

- W25 bugs have been fixed. Will add all houses and will start on the diagnostics application/interface request.

3. Jim Steimel:

- Jim gave his talk out of order as he was expected to be paged to do EOS studies of the longitudinal dampers.

- Jim discussed having a standard for cable panel labels and for connecting cables to the Echotek boards. Some standard should be agreed on. We decided to always use increasing proton direction when deciding which BPM is cabled before other BPMs. (Protons travel clockwise in the Tevatron from A0->B0->C0-> etc.) If two BPMs are at the same location horizontal will be chosen to be before vertical.

- Marv is looking for all of the non-standard BPMs so we can decide what attenuation values are needed. Once these are all known the final filter boards can be assembled.

- Just after the 9:00 meeting on Tuesday Feb 22 a meeting was held to discuss the installation of crates. Agreement was made on how to request installation time, who makes the request, when it can be requested, etc. Once we are in full-scale installation and if the accelerator is running really well we may be installing during off-hours when such opportunities arise.

- Part of the discussion mentioned above concerned the use of the new system in operations. Mike tells us that A3 is being used in operations, at least for smoothing. Mike is also looking carefully at B3 and the shift in position new vs old. He is looking at the survey offsets and electrical offsets (applied to the old and not the new) to see if they explain some or all of the shift. Once that is done he will decide along with Rob, Luciano, Jim, others how to correct either the front-end or the reference orbit, or both, to include B3 (and eventually C3) into the smoothing program.

- Jim would like to study the phase behavior of the signals on the test stand. This includes trying to understand the 6 phase behavior that is seen in the data as well as understanding the anti-proton timing on the Echotek boards.

- Jim would like to finish the crate commissioning document.

Tim Kasza:

- Tim's slides can be found in Beams docDB #1381-v21.
- 85% of the Echotek boards have been modified with a 50 ohm input on the SYNC. 11 boards still need to have their firmware upgraded. 7 boards are at Echotek for repair.
- Filter tests are almost completed. Once done the bad pairs can be returned to Lark for replacement. 4 filter boards are being assembled for B0/D0.
- All MVME processors are upgraded to VxWorks 5.5. Still working on the broken board (from the test stand incident a few weeks back).
- Helping to prepare crates for C3, D3, E3, F2, B0, D0, A2.

Mike Martens:

- Thinking about BPM measurements, how to get them into operations, how to teach others how to use the new BPM measurements.

Rob Kutschke:

- Starting to think about the calibration infrastructure. Looking at pbar measurements, including more sophisticated algorithm for proton cancellation, using all of the proton data from injection.

4. AOB.

- No meeting Thursday February 24.