Minutes, 3/02/05 Tevatron BPM Upgrade Meeting
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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 also showed a list of "issues" important to the project, based on discussions with Jim, Bob and others.

- Understanding A3, B3, C3 in terms of stability and reliability. Sort out the phase issues that we see. Understand pbar measurements.

- Version control. If we have not done so already the project needs version control for the front end software, all of the firmware in the system (Timing card, Filter board, Echotek), SDA and libraries, other software that changes.

- Diagnostics signal uniformity (discussed in today's meeting, see below)

- Talks. Mike Martens will give a talk at the instrumentation meeting, probably Wed March 9 at 1:30 P.M. Steve and Rob will give a pair of talks at the Run 2 meeting at a date to be determined. Some mention of the TeV BPM project will occur during the lab operations review in late March. We are not sure yet what is required for that.

- Test stand work will continue to be important to studying and understand various effects and problems that are seen in the service buildings. More people may be asked to participate if necessary.

- Diagnostics strategy and an application to implement it is being worked on by Bob and Marv, who will present a proposal that can be implemented by Brian/Bob West.

- Calibrations and calibration infrastructure is being pursued by Rob, Marc Mengel, Brian and others.

- Safe mode needs to be specified, designed, implemented and tested.

- Documentation needs to be written for all parts of the system.

- Next the schedule was shown. We are behind the nominal schedule, partially because we would like to understand the systems that we have and partially to stop and understand the diagnostic signal in case hardware changes are needed to make the signal uniform. The schedule is updated every Friday showing progress from the week and it will be linked from the TeV BPM home page.

2. Reports from L2 Managers

Vince Pavlicek, Bill Haynes, Ken Treptow

- Vince described the work that has been done to improve the uniformity of the diagnostic signal. Besides the firmware changes to the Timing board and Filter board to use the backplane at 26 MHz instead of 53 MHz it was found that a capacitative impedance was required on the driver and a resistive impedance on the backplane was also required to produce nice signals on the backplane.

- Once those signals were established tests were made of the variation of the Echotek output at both a high signal level and a lower input signal level. In both cases the variation was within 10% across all channels (as far as I can tell from looking at the numbers).

- Also some time variation of the signal was shown investigated and looks to be at the 1-2% level.

- The measurements are not as easy to make and to interpret as people would like. Some thought about how to streamline the measurement system and interpretation of the data would be quite useful to the project.

- Changes required include the firmware changes mentioned as well as one or two new boards to replace airdams in the crate. These are being engineered now. All new crates that go into the ring should at the very least get the latest firmware installed (easier on the teststand than in the service building) and the additional hardware if available. If the hardware installation is just an exchange of an airdam or two then it

can easily occur in the service building.

Jim Steimel:

- Jim showed quite a few slides concerning the 6 phases that have been seen on occasion on some of the BPMs. Jim showed that this can be interpreted as a timing issue related to the time delay between the SYNC and the zero crossing (rising) on the A/D clock. By adjusting that time Jim can make the 6 phases come and go.

- The other phase problem (drifting phases) seems to be caused by the lack of Graychip reset on SYNC triggers. This is not yet understood in the sense of how the Echotek/Graychip gets in and out of this state. So it will continue to be investigated.

Tim Kasza:

- Tim's slides can be found in Beams docDB #1381-v22.

- 11 Echotek boards still have problems with firmware loading. 2 of the boards will be returned to Echotek for further debugging.

- 6 of 7 boards that were sent to Echotek have been returned either as being repaired or having no trouble found. 1 board (one of the two that was shorted in the test stand accident) was not repairable. We should get that board back in any case.

- All filter pairs have been tested. Once the numbers are evaluated all of the failed pairs will be returned to Lark for replacement.

- Many crates have been assembled and are in the pipeline for installation.

Brian Hendricks:

- Brian has made changes to allow for a more natural mix of old and new systems when people are looking at closure data.

- A new version of W136 has been released.

- Brian reported some problems with some position readings not giving back proper values when there is no beam.

- New code for alarms in A3, B3 and C3 will be installed.

Luciano Piccoli:

- A bug in the slow abort buffer in B3 has been fixed.

- Working on FTP.

- We discussed the question of 100 and 500 Hz closed orbit measurements and concluded that we should run at 500 Hz now that it is thought that this has nothing to do with the phase drift problems in TBT.

Mike Martens:

- Mike is looking at positions and position offsets and BPM data in general.

- All BPMs are passing the beginning of store diagnostics and this is good.

- Mike is confused about what is seen in the positions when comparing old and new. But even with the confusion the measurements look good and are incorporated into the orbit smoothing programs using store 4006 as a reference for a good orbit.

Rob Kutschke:

- Rob is working with Marc Mengel and Brian on the calibrations database and infrastructure. Marc is working on a prototype.

- Rob is grabbing lumberjack data and is analyzing it for use in the pbar measurements using proton contamination subtraction. He has seen in some BPMs that the helix opens in the orthogonal coordinate to the measured coordinate and so there is not enough information to do the deconvolution. So far 3 out of 24 BPMs have this problem.

4. AOB.

- Bob Webber mentioned that there has been some discussion of removing at least one of the old TeV BPM electronics so that the space could be available for the new BLM system prototype.

- No meeting Thursday March 3.