

Notes from the 05/16/06 MI BPM Upgrade Meeting
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These notes can be found in Beams docDB #1526.

Agenda as announced:

Project Announcements

Installation/commissioning schedule

Main Injector Status - Dave C.

Hardware status:

Transition Board: delivery, checkout and testing.

Transition Board controller status

Timing Board

Cables, crates, backplanes, other.

Software status:

Front-end software

Online software

Status of full system tests - Bill Haynes

Validation

AOB

0. Project Announcements

- Next week Jonathan Lewis will attend the MI BPM meeting (at the beginning) so we can discuss BLM/BPM installation issues. Marv is requested to come to discuss various installation options. This is documented in beams-doc-1822-v2 (Detailed rack configurations for BPMs installed first, BLMs installed first, and the final configuration).

1. MI Status - Dave Capista

- The MI is about ready to start up. Booster is running but not accelerating beam yet. Beam may be sent to MI this weekend.

- Dave needs to have the BPM system up and running. In particular the MI40 house 44 needs to be put back into the state we had it in before the shutdown. So the prototype transition boards need to be replaced and everything recabled and the software back in the condition we had it. Upgrades and modifications will proceed from there. (See a long discussion below for more details.)

- Changes need to be made to the current (old) MI BPM system to handle the new extra wide aperture BPM's (7 of them) and the moved wide aperture BPM (at location 521). Both the scaling factor and the offsets need to be adjusted. Brian Hendricks will deal with this, we assume, in the old system.

2. Installation/Commissioning Schedule - Steve W.

- Steve's slides can be found in beams-doc-2243-v3.

- In summary, we need to understand all of the many tasks involved to install and then commission the BPM electronics. We need to coordinate all of the activity with accelerator operations and the MI department. We need to satisfy the requirement of providing the functionality of the current system and the increased functionality (mainly pbar measurements). These can be decoupled some, allowing us to bring up the hardware more quickly while continuing to implement and debug the pbar-measurement capabilities.

- We discussed some options for communication, including AD logbooks, docDB, other.

- Some of the assignments of people to tasks is straightforward (Marv for installation, Luciano and Steve for FE software, Brian for online).

- More discussions and coordination will be required as we move forward.

3. Hardware status:

- Transition Board: delivery, checkout and testing.

- Transition Board controller status

- Timing Board

- Cables, crates, backplanes, other.

- Transition Module Testing (Manfred, Tim)

- Rick Mahlum is testing and then installing filters on the production transition boards. This is going well and should only take a couple more days.

- Testing of the boards is not quite ready to begin. The test procedure is in its final phases of development and should be ready by the end of the week. It is hoped that each board will take about 1 hour to test, but that is not yet well-known. The boards will not only be tested for proper functionality but will also have gains adjusted to match the A and B channels.

- Other hardware issues (Bob Forster)

- Bob's slides can be found in beams-doc-1526.

- The crates in MI40 are the TeV BPM-style crates and need to be swapped for MI BPM crates at some convenient time.

- The air dam modules have arrived.

- Transition Module Control Card (Stefano)

- Stefano's slides can be found in beams-doc-1526.

- The first two boards are assembled and are being tested. The front panels arrived today. The termination scheme for the backplane has been determined and the crates can be assembled.

- There are some nice photos of the test stand on p3-4 of Stefano's slides.

4. Installation/Commissioning

- There was some discussion of MI40, crates, gain setting, etc.

- We decided to reconnect MI40 as it was just before the shutdown. This will allow Dave to bring up the machine while seeing the MI40 BPM signals.

- But, we will not correct for the cable gain mismatch before startup.

- We will also not correct for the gain differences for short and long cables in a house before startup. This requires some more work in addressing the transition boards and some thought as to what we want to do here. A hardware implementation for setting the board-to-board gains is possible but is a bit tricky to properly track and maintain over long periods of time. More thought and planning will be required here.

- We will also not change the crates in MI40 until we have a plan for installation. The crates are not currently in their final positions in the racks and the next step requires some understanding of the BLM installation plans and how the two projects affect each other.

- We will also not install production transition boards before the startup. This will happen as we move forward and have a more careful plan to complete the installation and commissioning of the MI40 building.

- There was a short discussion of installation order. It seems likely that we will plan to finish MI40 before moving on. MI30 will be next. The order beyond that will depend on other work in MI, among other things.

- There is a request for a "live" test crate that is available for testing new configurations, making measurements, etc. Currently it is in MI30 and it may stay there or may move to other locations as needed.

3. Software status:

- Front-end software

- Online software

- Working on software required for the teststand for full system tests. This involves test signals (2.5 MHz and 53 MHz), recording and analysis of data, checking to see if the resultant signals are within range, etc.

- Brian is working on I44 to handle possible initialization problems. Otherwise things should be ready for the startup.

4. Validation

- Rob looked at various cases of cable attenuation differences - 0.5 dB, 1.0 dB, 2.0 dB and studied the effects on the position measurement of propagating the attenuation into the formula that computes the positions vs. just adding an offset. There is a difference, especially as one goes to larger distances from the center.

- After some discussion we decided that the right thing to do was the right thing. We will scale the A signal and propagate the value into the calculation of position using the polynomial in $(A-B)/(A+B)$.

- Implementation will require a little thought and some care so that we get the signs correct, etc.