

Notes from the 07/18/06 MI BPM Upgrade Meeting  
Bob Webber

These notes can be found in Beams docDB #1526.

Agenda as announced:

- Project Announcements
- Main Injector Status - Dave C.
- Installation Planning
- Hardware status:
  - Transition Board Re-calibration - Andrea
  - Transition Board controller status - Stefano
- Software status:
  - 2.5MHz GreyChip "problem"
  - Maintenance and Test Signal Exercising Online software
- AOB

- The official installation order is:

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*      MI40, MI30, MI20, MI60S, MI60N, MI10, MI50      *  
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#### 0. Announcements.

- Steve W. is away the next two weeks and Manfred will be away the remainder of this week. Some combination of Bob, Dave, others will keep the project moving along, call or cancel the Tuesday meetings, help to organize the installations, etc.

- Dave will be gone Friday of this week.

#### 1. MI operation status, status of MI BPM upgrades.

- According to Dave the four installed systems are working well. There are still issues that still need to be dealt with:

- The reverse injection of protons from Tevatron to MI issue is still being sorted out. They have discovered that the beam and the MIRF are not happy together with present machine set-up and tuning and MI Group is working to resolve that part of the problem. In addition they are attempting to calibrate some of the new BPM channels for BLT use with injection flash TBT data. Dave hopes this is accomplished this afternoon.

- Steve F. showed BPM data that he collected during reverse injection on Saturday. This showed horizontal beam motion (but not vertical) a few millisecond after beam entered MI. He also showed sequence and time separation between BPM system events on reverse injection.

- Dave reports problem with BPM channel VP121. Marv will investigate.

- Problem of potentially bad Transition Board to EchoTek cables was discussed. Marv has been assigned the job of defining a cable test to which all these cables (installed and awaiting installation) will eventually be subjected. Vince will talk with Bob Forster to plan how to proceed with procuring replacements for at least as many as fail Marv's test.

## 2. Discussion of replacement and installations:

- All current installations MI40, MI30, MI20, and 60S now have updated DAWN VME crates and re-calibrated Transition Boards.

- Dave has given the 'go-ahead' for MI60N installation tomorrow assuming they find a satisfactory way to do injection closing. Marv will pull in clock and RF cables to MI60N location this afternoon in preparation for tomorrow's installation.

- Tentatively schedule MI10 installation next Tuesday, July 25.

- Transition board recalibration completed on 56 boards. This effort will not impact installation schedule.

- Transition crate power cable modifications are being worked on today. One new cable is operating in FCC. Plan is to install new type cables on MI60S and MI10 as they are installed and if they operate well then proceed to replace cables in other locations.

### Remaining work:

- Transition board controller
- Board by board gain control
- Gain settings for 53 MHz
- Diagnostic mode
- Other?

- Now that he is finished smoking Manfred's boards and re-designing the transition crate power cable, Stefano's attention will turn back to transition board readbacks and addressable gain settings.

## 3. 2.5MHz GreyChip "problem"

As part of the effort to set up antiproton timing, a measurement was made in the test stand the brought into question the 2.5 MHz wideband GreyChip set-up. The measurement suggested that the 2.5 MHz signal integration window was a factor of two too short. Steve has made additional measurements that need to be digested. Rob will help think about this data to resolve the apparent confusion.

## 4. Maintenance and Test Signal Exercising Online software

There was discussion on what should be implemented for application to exercise built-in test signal features to facilitate long-term maintenance of the BPM system. Manfred and Marv agreed to investigate the needs and possibilities and then specify the application with help from Peter, Dave, and anyone else they wish to involve. The NUMI BPM system application for this purpose was noted as an example that might be used as a starting point.

We should ask for a report on this work in two weeks.

## 5. AOB

- Bob Dysert reported little progress so far in measurements to establish suitable 53MHz transition board gains for different beam conditions. He needs opportunity to run various beam batch structures in the MI. He and Dave will coordinate to accomplish this.

- Vince raised issue of crate monitoring and alarms, i.e who sees alarms and how. Vince, Brian, Dave and Charlie need to work toward satisfactory solution.

- Bob Webber presented video clips of data taken with Peter Prieto and Steve Foulkes last Friday. The motivation is to understand raw mode and to use it to help with pbar timing. The large amplitude variations in the sum signal from BPM-to-BPM reported last week are explained by signal splitters in respective BPMs that Marv has identified.

- The issue of RF signal leakage into the BPM cables, especially VP605, was discussed. This causes intensity sensitive errors in reported positions especially in narrowband closed orbit measurements. This was previously noted to be a problem with MI BPM HP606 in the NuMI BPM Orbit Verifier system. The only resolution was replacement of the RG-8 cables by heliax. Leakage on all channels of houses 60S and 60N should be measured after 60N installation tomorrow. Webber provides a model of the leakage effect on reported beam position in BeamsDoc #2348.