Notes from the 09/05/06 MI BPM Upgrade Meeting
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These notes can be found in Beams docDB #1526.

Agenda as announced:

Project announcements - Steve and Bob
MI BPM status list ("punch list") - Dave
53 MHz gains - Bob Dysert
Transition board controller status - Stefano
& Board by board gain control - Stefano
Alarms - Dave, Luciano, Brian
Diagnostic/testing - Marv, Manfred, Peter
Software, FLASH, Seam - Steve, Luciano, Brian
Validation - Rob
AOB

0. Announcements.

- None.

1. Validation - Rob Kutschke

- Rob showed quite a few slides (found in beams-doc-2438) examining noise and signals using raw pbar 2.5 MHz data. Approximately 2.5 turns of data was used from 3 transfers from accumulator to recycler.

- The conclusion (so far) is that this noise exists at both high and low frequencies, is sometimes quite large in amplitude, seems to be larger in the MI60N, MI60S and MI10 locations.

2. Noise studies - Manfred

- Manfred showed some work that he has been doing looking at the same signals. There are clearly large oscillations in some locations (e.g. 620) and the frequency of that noise is about 260-270 kHz. In this location the amplitude is larger than the pbar signals.

- One option Manfred explored (in Mathematica) is a high bandpass filter that falls off around 1.5 MHz. One possible implementation is a capacitor change on the transition board. His simulations show a factor 5 decrease of the noise component at low frequencies.

- Dave pointed out that the source of the noise is not yet known - a change in the transition board may not solve the problem. Further investigation with a scope or spectrum analyzer will be needed.

- Bob W. asked about the 1st and last turns - is the noise better or worse or the same? A measurement will have to be made to sort this out.

- In any case Manfred will investigate buying some capacitors.

3. Rob Kutschke - continuation

- Rob also looked at the phase information and believes that the pbar timing is good to about 1/2 tick of the 10/7 RF clock.

- He also showed plots of the EWA BPMs to study horizontal and vertical behavior, looking for clues to the noise. No conclusions yet.

- We hope to hear from Rob about TBT pbar measurements (how to get reliable first turn, last turn, CO resolutions).

4. MI BPM status list ("punch list") - Dave

- Dave mentioned an emergency communication cable that runs around the tunnel that we may be able to use to further investigate the noise source.

- Trying to prioritize the measurements that need to be properly working. 2.5 MHz CO, Injection 1st turn flash, Extraction last turn Flash are high on the list. These will be a focus for the project.

- Timestamps in I39 are not complete. This should be fixed.

- Profiles are off by about a second in some cases in I39. It is not consistently repeatable so is hard to debug.

- Waiting for gain setting for protons under various beam conditions.

- The short batch high intensity Flash is important to get working properly.

- Also coalesced beam in the $2B cycle.

- There was some discussion of the threshold used for defining beam and where it should be set and how it should be changed.

5. 53 MHz gains - Bob Dysert

- Bob D and Bob W are working on the 53 MHz gains. Updates will be sent out as they are available. The work will focus on the general gains needed under different beam

conditions as well as the board-by-board gain settings that will be set to help correct for cable length attenuation differences.

6. Transition board controller status - Stefano
& Board by board gain control - Stefano

- Stefano continues to work on the ability to set and readback values to the transition boards. Much of the design and implementation work is done. There is a problem with latching the data on the timing board and that will be fixed when Bill returns from vacation.

- Beams-doc-2155 is the current version of the manual for the transition board control module. It is 70 pages long and has an impressive amount of detail.

- In any case work can begin on implementation of the board-by-board gain setting. One question to what to do if a value is found to be incorrect. What alarm is set and what happens? Also the question of what interface (I43?) will be used to set the individual board gains and how to specify the gains (dB, whatever).

7. Alarms - Dave, Luciano, Brian

- Beams-doc-2428 has Dave's slides. People should read the slides and implementation can begin. There are a few issues that need to be resolved and discussed but some of the conditions that should be put on alarms are straightforward.

8. Diagnostic/testing - Marv, Manfred, Peter

- An updated proposal for diagnostic/testing using signals was put in the beams-doc-2435. People should read and comment. Implementation can begin.

9. FLASH measurement details - Steve Foulkes

- Steve showed slides with details of the FLASH measurement. The slides can be found in beams-doc-2437. The details and discussions were quite useful.

- There is a question about the seam, its location, how it can be verified, and whether it can exist in the middle of an Echotek module. Some teststand work can be done to help answer the questions.

10. AOB.

- Replacement cables have been received from CASCO.

- A DAWN rush card replacement has been received.