

Writeup MI BPM Meeting, Tuesday 6/6/06

- Discussion on operational problems at MI-40

Changes on TCLK-signals (10 Ohm resistor at the signal source) causes problems at the FCC test setup, i.e. change of signal transition times and duty cycles. A modification in the TGF firmware seem to correct the issues, such that the closed orbit mode works fine again.

This firmware modification was implemented at MI-40, which corrected in fact the closed orbit measurement issue; but it is not clear that at MI-40 the TCLK signal has been changed (according to Greg Vogels email nothing has been changed at MI-40). Bill Haynes is inquiring the situation.

Another problem which has been addressed with TGF firmware changes is a TCLK decoding error.

There are still at least two more operational problems at MI-40:

1. The Echotek times out randomly during closed orbit measurements due to missing sync pulses. This problem is different from the one described above which caused permanent failures in closed orbit mode. Bill and Steve are analyzing the problem. This error occurs quite often and hangs up the BPM system. The problem has to be solved before installation of a full house BPM system at MI-40.

Dave proposed to implement a parity check on the TCLK decoding in the TGF, to check for this kind of random TCLK decoding errors.

2. The reboot of the system through the VME controller continues to be unreliable. There was never a successful reboot using the reboot feature on page D31. Rebooting the system with the ACL script sometimes works, sometimes does not work. According to Brian (based on discussions with Charlie), there is not much hope to improve reliability using the current implemented reboot mechanism. A better way would be using the Optologic box for rebooting. We have to decide what to do!

Dave reported on other (minor) issues with the MI-40 setup:

Offsets at BPM 410 (7 mm) and BPM 411 (4 mm) are not understood.

Once the system hung up during a multiframe mode, but this happened as Dave at the same time also changed the operation mode of the BPM system.

- Hardware status reports

Tim reported the status on the Transitionboards. 10 boards are temperature cycled, tested and now equipped in the integrated system test at FCC.

The temperature cycling takes about 8 h, 4 times a cycle between 3 - 60 degree celsius is processed. 8-10 boards can be cycled at a time.

8 more Transitionboards were recently temperature cycled, 6 of them also tested (three failed, but one could be repaired immediately).

This now gives a total of 14 tested O.K. Transitionboards.

Stefano presented the status of the Transitionboard controller. All 11 boards are assembled, he is working on improvements of the firmware. We decided to shuffle the boards through PREP for labeling.

- Integrated system test

Steve presented the status of the integrated system test. Due to the variation of the test signal level in the individual channels (this already showed up at the TB test) a spread of equivalent  $\sim 2$  mm displacement appears between channel groups. The absolute channel levels may vary by 25 % or more! All this is consistent with the Transitionboard measurements.

Currently the integrated system test is setup for 53 MHz burst signals and 2.5 MHz CW signals. Steve needs some time for further improvements on the software. The 53 MHz levels were close to the limit of the digitizer, the 53 MHz gain should be reduced by 20-30 %.

- Others

We discussed on the granularity of the delay setting, currently 1/2 bucket.

This seems to lead sometimes to confusion. According to Dave there is no need for this high resolution, and we agreed to change the granularity to 1 bucket to minimize confusion and misunderstandings in the MCR.

- Based on the discussions of the previous week, Luciano analyzed the memory requirements. It turns out that approximately  $13+13=26$  MB per state (for 2.5 and 53 MHz data) are sufficient. Having a total of 1 GB memory, up to 38 different states can be handled.

- Beside some more discussion on the "final goal" system we tried to find out how to start. A minimum prototype BPM hardware is setup at MI-30 and ready for use. As transition module (analog interface) a prototype of the rapid transfer line transition module is installed into a recycler type crate. With the new combiner and a modified Echotek board first test on 53 and 2.5 MHz signals are underway. Currently the recycler BPM software is used. Bob Webber proposed to implement a slightly modified Tevatron BPM software, and learn to operate this BPM setup in closed orbit and TBT mode for 53 and 2.5 MHz signals.