AD / Instrumentation Status Mtg.
October 30, 2018

We discussed the status of the many projects that we are working on.

## Linac Toroid Firmware Update and Maintenance

Dallas reported that the Linac Toroid system had two digitizer channels, 4 and 8, that were not reading back.

## NUMI Toroid Calibration / Re-scaling

Dallas reported that we are still waiting for access to make the modifications that extend the high end of the measurement range of the E:TOR101 and E:TORTGT devices.

Michelle A Ibrahim

Tue 10/23, 12:33 PM

Back in 2012, the integrators for the mi/rr abort and ring toroids were modified to a full-scale of 6E13; however, somehow the numi toroids were missed.

We found a couple spares this morning and can have them ready in a week. We would probably need at a least 4hrs (though 6-8hrs would be preferred) of no beam to swap the modules and do a calibration. E:TOR101 is instrumented in MI60N and E:TORTGT is at U65.  I will put a worklist entry today, but the job could be put off until we reach higher intensity.

In addition, I would strongly urge moving the NUMI toroid to the newer VME system, which all of MI/RR and MB are using. If desired (and space permitting), we can also run the VME system in parallel with the old MADC readouts.

Philip Schlabach

Tue 10/30, 1:30 PM

For now, I have configured the ~~target profile monitor~~ (E:TORTGT?) for the NUMI beam
permit protection in place of the 101 toroid. It allows a limit of
54e12. We only need one or the other for protection and there is no
reason to prefer one over the other. Phil

## PIP2IT ACCT and DCCT New Installation.

Dallas reported that they are waiting for some cable pulls. I believe ACCT and or DCCT devices are being purchased(?).

## MI / RR DCCT Update Obsolete Chassis.

This job is in progress. The requisition for PCBs for the transition modules has just gone out.

## Delivery Ring RFKO Slow Extraction

There was recently a Construction Readiness Review. The reviewers asked about the fiber optic cable that will be used for transmitting data. This cable will be run through beam enclosures and will be subjected to radiation. Peter said that they expect to use a rad-hard multimode fiber. Some have suggested using a cable used by CERN. They will be deciding on the cable soon.

## Booster CHG-0 Bergoz DCCT (active?).

Craig reported that Mary Convery told him that the AIP for this device will not be going through this year.

## Muon Toroid Upgrade

Dallas and Aisha may be meeting with Muon to discuss this upgrade soon.

## Current Booster Damper Operation

Nathan was not available to report on this.

## PIP2IT BPM Electronics Upgrade

John Van Bogaert reported that the PIP2IT BPM system is expected to inherit transition boards from FAST and FAST will be making new ones. They are currently procuring 5 prototype transition boards.

Parts are being bought for 35 new 250MHz digitizers using a combination of Booster and PIP-II money. John also warned that distributors have long lead-times on many discrete components like capacitors. If you are needing these components for a project you should check the lead-times early.

## PIP2IT BPM Linux Upgrade

We will need to procure more processors. This is waiting on PIP-II money. To develop the code they will need specifications regarding the firmware on the digitizers and soon after some digitizers running the firmware to develop/test the new code.

## IOTA BPM Operation

Brian Fellenz reported that they will need new transition boards next year when they expect to switch from accelerating electrons to accelerating protons. This will be a new transition board circuit for which they do not have all the information for yet. We should discuss with Jerry Leibfritz whether they have money in their project for these.

## Booster Damper AIP (Transverse / Longitudinal)

Craig reported that Mary Convery told him that the AIP for this device will not be going through this year.

## Booster BPM Upgrade

Many things have been fixed. There is currently a data collection problem where data collection will fail between 1 minute to 30 minutes after starting. Peter mentioned an issue related to when they give an enable to acquire the data.

Peter believes the problems with the Timing Cards have been solved.

The port of the Linux Front-End to the 8100s is completed and John Diamond is happy with the way it has been working. All the BPM houses in booster are using the 8100s now. They have reclaimed all the x86 nodes.

## PIP2IT RF Interlocks (HWR / SSR1)

Jim Galloway has been procuring parts and preparing to build one of the boards for the HWR interlocks. This is a lowpass filter on the forward/reflected power measurement (?). They are currently not working on the FPGA board. The RF interlocks for the HWR need to be ready to test in January 2019. The SSR1 RF interlock system still needs a budget and we are not cleared to purchase parts for this system.

## Recycler BPM Data Upgrade

Waiting.

## Recycler BPM Calibrations

Waiting. Could not recall what the issue here is.

## Switchyard Resonant BPM Intensity Calibration

Waiting.

## Mu2e Delivery Ring BPM Upgrade

Mu2e needs to come up with money and help provide a specification of the new system. Niral reported that the current system is only able to record up to 7 turns of beam. Duane Voy has looked at the code and felt that they may be able to get up to 15 turns, but no more.

## Current Delivery Ring BPM FE Code

Waiting. Peter mentioned that we were going to try to write code to build a closed orbit with the system we have now.

## NUMI Button BPM FE Code

Waiting. There needs to be new hardware, firmware, processors and application specifications for this effort. NUMI has hopes to use these BPM in their machine protection at some point.

## VxWorks 5.5 to 6.4 Conversion

Bobby Santucci has joined us and has started on this effort. He has begun inventorying the nodes that need the conversion. He has identified 100+ front-ends.

## 8 GeV BPM FE Code Upgrade

Currently waiting on a specification and then people to work on it.

## 8 GeV BLM Log Amp Boards

Andrea will be working on this later in the year, after the PIP2IT run is completed.

## PIP2IT Wire Scanner Negative-Bias Circuit

Andrea is working on this currently and needs to complete this project by January 2019.

## PIP2IT Intensity Monitors (Scrapers, Ring Pickups, Faraday Cup, etc.) 50 Ohm Modifications

Andrea is working on this currently and needs to complete this project by January 2019.

## Laser Profile Monitor

Vic was not available to comment, but Todd Johnson reported that he had provided Vic some CCD sensors. They plan to have more discussions soon.

## Linac Laser Notcher

Todd reported that they had made some timing changes before they reinstalled it and that has improved the readbacks of the laser position. Working on the new laser notcher LDRD.

Todd has received additional requests from NOVA to resurrect the old Tevatron hydro static level for their beam line. He has found some of the heads and some of the readback chassis. He is hoping to hand this all over to NOVA people. He has also received requests from Mu2e to provide temperature readbacks for their target.

## Muon Schottky Tune Measurement

Brian and Vic will trying to coordinate beam studies in the Muon beam line.

## PIP2IT New RWCM / Toroid

This wall current monitor has not been decided on yet and specification will be needed before Brian can move forward with this.

## MI BLM Code Modifications & Studies

Randy will be looking to do turn-by-turn loss studies in the future.

## LBNF Hadron Monitor

Randy has been holding monthly meetings. There are no plans yet, to do prototyping or prototype testing here at Fermilab.

## MI-62 Electron Beam Profiler

Waiting

## FAST Bunch Length System Studies

Waiting for machine approval to do the studies.

## MI-8 Multiwire Repairs (switch, cable swap)

Waiting for access.

## Muon PWC and Ion Chamber work.

All the PWCs and Ion chambers have been hooked up except for PWCs 020, 021, 025 and ion Chamber 025. These are waiting for access.

## NUMI Target Alignment BLMs

Gianni reported that the target alignment BLMs will be undergoing refurbishment and testing at TSB. Katsuya, from the Target Systems Department will be developing new testing procedures to be used before the BLMs are installed for future target alignments.

## M-Test Fiber PWCs

Dan reported that old scintillator profile monitors in the M-Test line are being replaces with PWCs. There will be some time on Wednesday, November 7, to go down and finish the hookup of these PWCs. Dan is interfacing with Jason St. James.

## MI12A Dehumidifier Sensors

Dan reported that this work is now complete. Munter dehumidifiers in the upstream of MI-12

## Meson Ion Chamber and Digitizer Upgrade and Meson Electronics Update. ($50k in FWP)

Craig related that Tom Kobilarcik had specified money for upgrades in the FWP budget document. Dan said that he had not heard of a need for new BLM electronics, but had gotten requests for new Ion Chambers and SEMs. All the new digitizers for these devices have already been built. These are calibrated and ready to go. Ion chambers will need to be assembled. Dan said he is just waiting for the go ahead from the M-Test / Switchyard people. When the money comes through, they can send out for the parts for the SEMs. We can get the parts in house, get the SEMS assembled and go out and install them.

## MI-12B Target Sump Water Level

Dan reported that this has been installed.

## BNB Expand Target Cooling Instr. Rack

This is a long term item that is waiting. This will probably not be done this year.

## BNB Horn 5 Multiwire (money?)

This is waiting. Tom Kobilarcik has mentioned that he would like to change the design of the multiwire but has not come back with how he wants it.

## MI-8 Horn 4 Target Multiwire (cable termination)

Dan reported that they want to replace the 10 foot ribbon cable connection with discrete wires. Dan has gotten cost estimates for this. Chris Kelly was contacted for approval and will give Dan the cost code to go ahead and order the wire.

## MTA Refurbishment (2 BLMs, 9 multiwires)

Re-establishing MTA as a user’s radiation testing facility is still just a rumor as far as we know.

## UTA Multiwires (4 each)

Dan reported that there are 6 University of Texas multiwires that can be refurbished. These may cost $2k each to refurbish, plus the cost of new motors.

## Upgrade Gloor Multiwires to Gloor II (8 each)

This is not an active project but is on the back burner.

## Multiwire Work for Others

Gianni mentioned the multiwire slides (linear positioner) that Gianni and Matt Alvarez are designing for Japan

Two prototype multiwires for a university in Finland. The process of getting approvals through the DOE has been difficult.