

Notes from the 01/10/06 MI BPM Upgrade Meeting  
Stephen Wolbers  
These notes can be found in Beams docDB #1526.

Agenda as announced:

Project Announcements : Bob and Steve  
Combiner Board status : Marv, Tim, Bob Forster, Vince  
Transition Board: Manfred, Stefano, Vince, Bob Forster  
Timing Board : Bill  
MI requirements for functionality: Dave  
Front-end software : Steve, Margaret  
MI40 status : Marv, Peter, Manfred, Bill, Rob, Bob, others  
Online software : Brian  
Validation: Rob Kutschke  
Software specification document  
AOB

#### 0. Project Announcements

- We will continue to work toward our goal of one house functioning with the upgraded hardware and software in mid-January.

#### 1. Combiner Board/other hardware status : Marv, Tim, Bob Forster, Vince

- Bob wrote a detailed mail with information about VME crates, cables, transition board production details, etc. I include the extract of that mail here:

=====  
=====

MI-BPM Status Report  
Bob Forster, 1/9/06

- > DAWN VME Chassis Req#182408 PO#566244
  - the first DAWN Chassis was delivered for approval, per the terms of the specification and contract.
  - logistics arrangements have been made with CD/ESS to receive, test, tag, and issue the chassis on delivery.
  - the hole added for the connector cabling these Echotek chassis to the Transition module chassis was determined to be in the correct orientation, location, and size (read: The connector conveniently fits!).

- Identified a safety issue that was ECO'd on all previously purchased DAWN chassis (Shrink Tubing the AC switch). I'd thought I (or someone) had informed DAWN about this, but I could find no record of any such communication.

(pictures are attached:

"DawnChassis-FrontPanel\_AC\_Switch-From\_Factory .jpg"  
shows the switch as delivered,

"DawnChassis-FrontPanel\_AC\_Switch-After\_Re-Shrinking .jpg"  
shows the switch after retrofitting our ECO.)

I drafted a new email, but held it for a couple of days pending DAWN's reply to a Charlie Briegel inquiry regarding the Rush card firmware.

(as of this writing, I'm not aware of a reply.)

I even prompted the DAWN salesman to prompt DAWN for a reply, which hasn't happened yet.

CD/ESS's Bill Barker is also waiting for a reply from DAWN on another issue, replacement of an out-of-warranty Rush monitor card.

- In the draft email I also asked DAWN to annotate the hardware network address on a tag on the outside of the chassis. It's easy to do during chassis assembly, but pretty clumsy to do and prone to error when someone

(Mike Behnke) has to stick his head into the chassis card cage with a flashlight and try to read a tag that is barely visible. A user convenience.

---

-> MI-BPM Cables Req#183724 PO#566784

- Label File finalized and emailed to CASCO Tues Jan 3. CASCO reviewed the file and didn't have any questions, so all the work at being specific was worth the bother.
- Loan of 2 Environflex Crimp Tools along with (500 + 30 extra) inserts delivered to Joe Morgans Office Weds Jan 4.
- CASCO picked them up the same day.
- CASCO delivered the first group of cables :

Quantity 175 SMB - 20"RG188 - SMB  
(no labels go on these cables) Fri Jan 6.

---

-> MI-BPM Transition Board

- Finalized the Assembly Specification.
  - decision: fabricate the Front Panels outside,  
rather than thru the Fermi Machine Shop.
- Finalized the Parts List and Bill Of Materials,  
with Andrea Saewert and Manfred Wendt.
- Assembly Req#184529 was submitted Fri Jan6.  
At 4:30pm Mon Jan 09, Steve Holmes had signed the req  
and it was on its way to Mari Mendez.
- I'm all ready - except for a front panel drawing.  
The person I'd planned on assigning it to hasn't  
been available, so I'm reverting to plan B.
- All public assembly documentation is collected at URL:  
[http://www.cdserver.fnal.gov/cd\\_public/cep/ese/MI-BPM/MI-TrBoard/](http://www.cdserver.fnal.gov/cd_public/cep/ese/MI-BPM/MI-TrBoard/)

---

-> MI-BPM Air Dam Modules

- I think the Main Injector needs 278 Air Dam Modules:

The number was estimated as follows:

"The MI Plan" as I understand it is to  
Install 11 DAWN/Echotek chassis,  
paired with 11 TransitionModule/Analog chassis,  
for 22 chassis total.  
So 22 chassis x 21 slots/chassis gives 462 slots total.

231 installed slots in 11 Transition Module chassis  
(=11x21),  
- 70 Transition Boards (assembling 75, but a few are  
spares),  
- 11 Controller boards (one in each Analog chassis).

----

150 Air Dam Modules needed

in the Main Injector Transition Module chassis,  
(an average of 13.6 per chassis).

- 231 installed slots in 11 DAWN/Echotek chassis (=11x21)
- 70 Echotek modules (one for each Transition Board),
- 22 timing slots (11 Timing Modules at 2 slots each)
- 11 Motorola processors (one in each DAWN chassis),

----

128 Air Dam Modules needed  
in the Main Injector DAWN/Echotek chassis  
(an average of 11.6 per chassis).

Grand Total: 426 installed slots in 22 installed chassis  
will need: 278 Air Dam modules using this scheme.

(In our Tev-BPM experience, we ordered quantity 100 from  
Elma and they cost \$17.16 each, on Sept30, 2004)

For estimation,  
Ordering 150 @ 17.16 costs \$2,574,  
Ordering 300 @ 17.16 costs \$5,148.

Should I be thinking about more than just the Main Injector?

---

Verbally, at the meeting you'll only hear :

- 1) the first DAWN VME chassis is here  
with a small safety issue being addressed,
- 2) CASCO delivered the first group of cables,
- 3) Steve Holmes signed the Transition Board Assembly req  
yesterday and its on its way to procurement
- 4) the MI-BPM project needs about 300 Air-Dam modules,  
about \$5,100 at \$17.16 each (in Sept, 2004).

=====  
=====

2. Transition Board: Manfred, Stefano, Vince, Bob Forster

- Detailed testing over the past few days has revealed at least one problem that has tentatively been solved. Manfred described the problem as noise that appeared when the test input was connected (this was not done on the 2-channel prototype). A workaround has been identified and tested and work proceeds to implement it and complete the testing of the prototype board.

- Almost all of the parts required for the production of the boards are here with the exception of some capacitors. They are scheduled to arrive Jan 22. In the meantime there are samples available to allow the assembly of the 3 prototype boards.

- There was some discussion of possible assembly help if that is necessary. No commitments were made but the project will be flexible and this will be discussed at the appropriate time.

- There is not a good chance that the three boards needed for the Jan 15 one-house replacement will be ready by this weekend. Some discussion of possibilities and related requirements (chassis, cables, etc.) was brought up at this time.

- Stefano showed the status of the transition board controller. Work is proceeding very nicely. Stefano's status can be found in beams-doc-1526. Stefano brought the first assembled board (missing a connector or two) and a second board can be assembled relatively quickly.

### 3. MI requirements for functionality and installation: Dave

- Dave had 5 slides that described the issues (very clearly) involved in the initial single house installation and the final full-system installation. His slides can be found as beams-doc-2099.

- Dave's presentation generated a great deal of discussion, and this focussed on the functionality that we have and/or need for the first house installation, the fuller functionality required soon after and finally the issues involved in installing the complete new system.

- Given the large number of changes to the Main Injector during this long shutdown (begins March 1, ends approx. June 12) the MI Department is not comfortable replacing the entire BPM system during the shutdown.

- Once the beam is established after the shutdown is over it is possible to get into the service buildings for full installation of the new system.

- The discussion is helpful for the project and we will be using it to help plan the work during the coming months.

#### 4. Timing Board : Bill

- Work continues on the timing board and its interface with the transition board (via Stefano's board), the test signals, etc.

- Some problems were found (and fixed) with MDAT timing. Other problems were found with BES signals that generate false triggers.

- Next week we will hear from Bill and others about the details of the timing used for the MI40 triggering and readout.

#### 5. Front-end software : Steve, Margaret Software specification document

- Work continues on tracking down and solving various problems.

- The software specification document was discussed on Friday and changes and updates will be made soon.

- Timing for the data will come from MDAT. It was also decided that the front ends should have the "correct time", or at least as close to it as needed (about 1 second).

- The front end is ready for the Jan 15 one house installation.

#### 6. Online software : Brian

- Working on state selection in the libraries.

- Brian believes that the online system (and the applications required by Dave) can be ready for the Jan 15 one house installation by the end of this week if necessary.

- There was some discussion of the scaling and offsets as we move to the new system. Also how to get the correct signs when the new system is installed. The detailed scaling formula will be provided by Bob W. based on wire scans of the aperture and this will be used in the new system. We will not try to reproduce the exact numbers/formula used in the old system.

#### 7. Validation - Rob Kutschke

- Steve W. had to leave at this time but it can be assumed that Rob showed some interesting plots and that the information and the plots will be released as a beams-doc note in the near future so look for it!