

## 12GeV Trigger meeting notes:

28-Feb-2014: C. Cuevas, W. Gu, B. Raydo, B. Moffit, H. Dong, A. Somov, E. Jastrzembski

14-Feb-2014: C. Cuevas, W. Gu, B. Raydo, B. Moffit, H. Dong, A. Somov

7-Feb-2014: C. Cuevas, W. Gu, B. Raydo, B. Moffit, E. Jastrzembski, H. Dong, A. Somov, J. Wilson

24-Jan-2014: C. Cuevas, W. Gu, B. Raydo, B. Moffit, E. Jastrzembski, H. Dong, A. Somov

10-Jan-2014: C. Cuevas, W. Gu, B. Raydo, A. Somov, B. Moffit, E. Jastrzembski, H. Dong, J. Wilson

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### 1. Trigger/Clock/Sync – TI/TD

#### 28-Feb-2014

-->TD-TS and Global crates have been installed in U1-14 in Hall D

→SBC are installed in these crates

→Global crate includes SSP, TI, SD, GTP and should be ready for patch cable assignments

→TDs will be located soon!

→Start with connection from TD to BCAL-South TIs

→Bryan is writing code for the TD-TI link measurements.

→TS boards will need to be gathered by Alex. (3) One of these needs to be installed in the TS-TD crate in Hall D

→Install all of the Densi-Shield cables once the TS board is installed.

#### 14-Feb-2014

→Will move two crates from EEL109 to Hall D on Monday 17-Feb-2014

→Still need SBC and other boards, but Sergey or Alex will provide these (TID)

→TD <->TI Link Identification feature is being tested.

#### 7-Feb-2014

> TI Masters working well for FCAL and BCAL south.

> Move trigger crates to the hall as soon as trigger racks have power.

> TD, TS and SD crate will be installed, and the boards will be provided by Alex

> Will need to configure a few more TI to work as TI\_Masters.

> TD <-> TI Link Identification feature tested and complete? Work in progress,

#### 24-Jan-2014

- TI-Master configuration is working on FCAL. This configuration will remain permanently and the global link will occupy one port on the TI's. Other detector crates may be organized with the TI-Master mode as well. This will require additional fiber transceivers and fiber patch cords.

- TD <-> TI ID feature tested with CODA3? Will be ready for future CODA 3.0.release.

#### 10-Jan-2014

FCAL TI-Master configuration is progressing and as soon as the trigger fiber is installed the CTP boards and TI can be hooked to the global distribution crate. 14-Feb-2014 is my predicted installation date.

## **2. SUB-SYSTEM PROCESSOR (SSP)**

### **28-Feb-2014**

→Boards are installed in the global crate and ready to run.  
→Final firmware iterations will be needed to capture latest changes to the CTP changes  
-i.e. Bit definitions for external CTP front panel inputs  
Other bit fields have changes as well.  
→Good discussion of method to pulse the 1495 LED board with the TS. Best method is a solution of NO firmware changes and implement with the existing boards/software.  
Reference halldL1 mail regarding the 3 proposed methods.  
After the meeting a solution was proposed by Ben and he located a commercial VME vendor that has optical to electrical (and electrical to optical) translators. These boards will work with our fiber optic trunk cable. At some point, we will need to purchase MTP>>ST fiber patch cord, but that is a small detail.

### **14-Feb-2014**

- Ben has updated the SSP firmware with the latest features.
- Bryan will test the latest firmware with his library soon.
- Hall D SSP installed in the Global Trigger crate and will be moved on Monday 17-Feb.

### **7-Feb-2013**

- SSP end is ready for testing, but CTP side is work in progress.
- CODA library for SSP will be tested and verified by Bryan before release.
- Started loan paperwork for additional SSP that will be loaned to Saclay (uMegas)

### **24-Jan-2014**

- CTP → SSP ID link firmware has been updated. Library development in the queue.
- Hall A application is work in progress, and a meeting is planned.
- Send at least 4 SSP to Saclay.

### **10-Jan-2014**

- Ben and Hai have settled on the method to transfer the information that will identify the CTP through the SSP link.
- Some changes will be needed to the driver libraries for the SSP. (CTP too?)  
Testing and library verification can be completed in the EEL109 test stand.
- Hall A application for the SSP! Need to get details from Alexandre and J. Musson.

## **2. CUSTOMERS**

### **28-Feb-2014**

→CTP BCAL cosmic ray trigger function has been completed.  
→FADC250 firmware change for pedestal subtraction (trigger path) is progressing. Hai has distributed a document. This change is a 'global' change to all Hall D FADC250 boards.  
→Mode 6 feedback? Chris requested that the Hall B detector groups operate their detectors with the Mode 6(High resolution TDC) feature. Sergey's immediate feedback is that they will implement as detectors are connected to the DAQ system. HPS boards/crates can be tested soon also.

### **14-Feb-2014**

- No feedback from Users regarding the latest release of the FADC250 firmware.
- Firmware development priorities on track.
- Details of BCAL cosmic ray trigger functions released and explained by Alex. Firmware changes will affect FADC250 and CTP. New features will allow control of each channel that is summed to the CTP from each board.

### **7-Feb-2013**

- Mode 6 is RELEASED! Hai and Ed have made it bullet proof!
  - Firmware Priorities:
    - CTPV2 testing - Complete (30 of 33 boards passed)
    - Mode 6 repair - Complete
    - BCAL cosmics
      - Changes to the CTP for 'hit bits'
      - These bits are already defined for the SSP
      - BCAL/FCAL (FADC250 changes to trigger output data)
- Tagger Hit bit application  
TOF application  
Pair Spectrometer  
CTPV2->SSP ID

### **24-Jan-2014**

- Hai said (with witnesses) Mode6 will be ready by end of January 2014.
- CTPV2 contract is in the process of termination. 30 of 33 boards were completed. Hall D has all the boards they need for commissioning.

### **10-Jan-2014**

→Mode 6 even closer to release! Bug fixes are in progress.

## **3. "B" Switch - Signal Distribution Module (SD)**

### **28-Feb-2014**

- A few requests for additional SD boards for Hall D. (Spares) I think that before the end of FY14, we will be purchasing additional SD. Good time for the other halls to verify their needs too.

### **7-Feb-2014**

- Not a high priority but Ed has compiled Nick's project, so testing will progress as time permits.

### **24-Jan-2014**

- Still a few bug issues with the A5 release. Maybe William and Ed can investigate??

## **4. System Diagrams/Fiber Optics**

### **28-Feb-2014**

→All trunk lines installed and tested with the Fluke power meter. OK  
→Fiber patch cables due TODAY!!  
→Begin connection and testing with BCAL South crates

### **14-Feb-2014**

- FCAL fiber has been installed and connected to FO patch panel ports
- Short (1m) cables have been ordered. Procurement slows the process but these will be here soon enough

- Fiber spool for Tagger building (380ft) will be here soon. Not a priority to install yet.
- UPDATE drawings!

### **7-Feb-2014**

- 3 more spools delivered for FCAL run. Tagger spool is on the way. Install week of 10-Feb.
- Order short patch cords. Plenty of 2m cables for crates to patch panel connections.

### **10-Jan-2014**

- 5 of 11 trunk lines are installed and tested.
- PR signed for 4 more trunk lines for the FCAL and Tagger.

## **5. Global Trigger & Trigger Distribution Testing**

### **28-Feb-2014**

→CODA3 library is progressing but not critical at the moment  
 →Will need this as soon as the CTP to SSP testing begins.

### **14-Feb-2014**

- No update, but Ben mentions that the new document is released.
- CODA3 Library driver status? (I do not have any notes)

### **7-Feb-2014**

- Version 1.0 has been released for the GTP firmware. Document is updated and includes all the latest register definitions as well as a new section that describes the embedded Linux addition.
- CODA3 Library driver development will begin.

### **24-Jan-2014**

- Linux OS is stable and ported to the GTP NiosII processor. Chris H. has completed the sections relevant to the embedded code and has updated the GTP manual.
- Ben has signed off on the release and is using the embedded Linux OS on the production GTP boards.

**20-JAN-2012 (Keep this date to reference full DAq crate procedure)**

**3-June-2011**

**→ Successful testing with the two crates each with a single FADC250-V2, CTP, TI, SD and one SSP!!**

**16-July-2010 (Keep this note because it needs to be implemented and tested at some point) See older note dates for the list of items.**

## **6. Crate Trigger Processor (CTP)**

### **28-Feb-2014**

-->No bids received yet for the additional CTP  
 →Hai has completed the cosmic ray firmware changes for Hall D  
 →Thermal testing in the EEL109 can be started using the FCAT crate.  
 →MTEQ received 3 dead boards. Memorial services at noon,

### **14-Feb-2014**

- New PR approved for 4 more CTPV2 boards. See below:
  - Hall A – 1
  - Hall C – 2
  - Hall D – 1

- 3 boards that never passed acceptance testing will be returned to MTEQ
- Verify BOM and fabrication files for new order.

#### **7-Feb-2014**

- Contract has been cancelled and new PR issued for replacement of 3 boards
- Discussion with procurement and 12GeV PM to find funds for an additional 2.
- See 'Customer' section for activity priorities for CTPV2 firmware.

#### **24-Jan-2014**

- 3 of 33 still have a few issues. Hall D has 30 boards!
- Two of the boards will need additional rework to swap parts to the correct location. MTEQ is working with their sub-contractor to get these two boards finished.
- One board has significant issues and will take sequential rework to identify which BGA is the problem.

**ACTION ITEMS: Next meeting -Friday 7-March-2014@10:30AM in L210A**