Detector Support Group

Weekly Report, 2016-04-13

Ongoing Projects

I. Hall B Magnet Slow Controls (**Brian**, Tyler, Peter, Amanda)

Task: Test Power supply's PLC to EPICS interface.

EDC: 03/15/2016

Activity:
- Corrected PLC code.
- Tested CSS GUI for negative currents.
- Power supply now accepts negative numbers.

Comments:
- Wiring of service tower is being done.
- GUI for voltage taps and cryogen developed, first pass.
- Distribution box (DBX) has leak, so back to Cryo. department.
- ERR review held on 04/13/16.

Status: **Completed on 04/12/16.**

II. Hall B Gas System: Slow Controls (**Marc**, Brian, George, Mary Ann,)

Task: Deploy LabVIEW based slow controls software system for **DC, LTCC, HTCC, SVT, MicroMegas, Forward Tagger,** and **RICH**.

EDC: 07/31/2016.

Activity: Developing software.

Comments: Present status:

#	Detector	Gas	Hardware		Software	Deployed	Tested
			Piping	Instrumentation			
1	DC	Ar/CO_2	X†	✓	✓	✓	X
2	HTCC in Hall B	N_2	X	X	X	X	X
3	HTCC in TEDF	N_2	✓	✓	✓	✓	✓
4	LTCC	C_4F_{10}	X†	✓	✓	✓	X
5	SVT	N_2	X	X	✓	✓	✓

6	RICH	N_2	X	X	X††	X††	X††
7	Micromegas in EEL V.1	Pre-mix Ar/C_4H_{10}	✓	✓	**N/A**	**N/A**	**N/A**
8	Micromegas in EEL V.2	Mix Ar/C_4H_{10}	X	X	**N/A**	**N/A**	**N/A**
9	Micromegas in Hall B	Ar, C_4H_{10}, C_2H_6, Ne††, CF_4	X††	X††	X††	X††	X††
10	Forward Tagger in EEL	N_2	✓	✓	**N/A**	**N/A**	**N/A**
11	Forward Tagger in Hall B	N_2	X††	X††	X††	X††	X††

† Waiting on Hall B Engineering. †† Waiting for more information.

Status: **Work in progress.**

II. Hall B Gas System: DC Hardware in hall (**George**, Marc, Mindy, Sahin, Anatoly)

Task: Install Gas System hardware.

EDC: N/A (Depends on HallB Engineering)

Activity: **None**

Comments: George: *"I updated the DCGAS and LTCC gas system critical path documents. In both cases we are waiting for critical path items to be completed by Hall B Engineering before we can continue."*

Status: **Work in progress.**

III. Hall B Gas System: LTCC Hardware in hall (**George**, Marc, Mindy, Sahin,Anatoly)

Task: Install Gas System hardware.

EDC: N/A (Depends on HallB Engineering)

Activity: LTCC instrumentation hardware done.

Comments: *George: "I updated the DCGAS and LTCC gas system critical path documents. In both cases we are waiting for critical path items to be completed by Hall B Engineering before we can continue."*

Status: **Work in progress.**

IV. Hall B HDICE (**Mary Ann**, Peter, Amanda, Tyler, Mindy, Sahin)

Task: Fabricate RF box. Task includes draw fabrication drawing in AutoCAD, write drivers for DIO modules, and develop RF box test program review.

EDC: N/A.

Activity:
- RF box fabrication in progress.
  - Front and back panels completed.
  - Figuring the length of RF cables.
  - Built safety cover shields for PS.
- Testing drivers.

Comments:
- Move of new power supply from HDICE lab to DSG lab completed
- New PS does not have GPIB. Need new drivers, will be VISA.
- Peter will send e-mail to HDICE informing that there is no GPIB.

Status: Work in progress.

V. Hall B HDICE (**Peter**, Amanda, Tyler, Mary Ann, Mindy, Sahin)

Task
- Develop calibration test program for the CAEN current transducer box.
- Develop and test instrument drivers.

EDC: N/A.

Comments: None.

Status: Work in progress.

VI. Hall B RICH (**Tyler**, Amanda, Peter, Brian, Mary Ann, George, Mindy, Sahin, Marc, Anatoly)

Task: Move optical benches to DSG clean room.

EDC: N/A.

Activity: Contacted Doug Tilles and Calvin Mealer.

Comments: None.

Status: Work in Progress.

VII. Hall D PLC Systems (Pablo, Peter, Brian, Tyler, Amanda, Mary Ann, Marc)

Task:	Generate Allen Bradley report for solenoid and check voltage tap channels.
EDC:	04/27/2016
Activity:	Generating reports.
Comments:	
Status:	**Work in progress.**

VIII. Hall D Data basing of solenoid Voltage Taps (Amanda)

Task:	Develop ROOT code to analyze PXI data
EDC:	07/31/2016
Activity:	Investigating current ROOT code.
Comments:	None.
Status:	**Work in progress.**

Antonioli, Mary Ann

Hall B

HDICE

- Troubleshooting of DIO module test setup.
- Wired four modules together and continued to test drivers.

DSG

- Laid out and began editing of Amanda's note on SVT spares testing.

Arslan, Sahin

Hall B

Gas System

- Modified LTCC's N_2 purge supply line.
- Provided N_2 gas bottle for Forward Tagger.
- Replaced N_2 gas bottle for SVT and provided extra bottle of N_2 gas.
- Replaced Ar/CO_2 gas bottle for DCR1S4 currently being tested.

HDICE

- Transferred obsolete Oxford power supply to HDICE test Lab and bring back new Oxford Power Supply to control room.
- Finished assembling and installing of RF box components: RF Load, Fan, N type Connectors RS232-RS485 connectors, screen, ground connector, and power supply connector and give it to Mary Ann for wiring.

Front Panel of RF box.

Rear Panel of RF box

Lower Shelf of RF box
Viewed from rear panel end.

Lower Shelf of RF box.
Viewed from front panel end.

Bonneau, Peter

Hall B

HDICE

- Progress Review on 4/5/2016.
  - ✶ Presented summary of the work done by DSG.
  - ✶ Demonstrated Rotation of Target Polarization program.
  - ✶ Presented summary of upcoming work for DSG.

Schedule emailed to DSG on 3/17/16 mentions a "Rack Lock Period" between 4/17/16 to 9/30/16, during which period no changes on a rack can be done. However, request made to complete first rack by October, 2016.

- Working with Sahin on the layout and assembly of the components in the RF Switching/Attenuation box.
  - ✶ Crate with front and rear panel assembled and connectors installed.
- Working with Tyler and Amanda on development of current calibration test station.
  - ✶ Reviewed drivers and DAq code for the CAENels CT-Box.
  - ✶ Reviewed integration plan for CT-Box code and Fluke/Krohn-Hite current calibration code.
- Working with MaryAnn on the testing of the ICP-CON DIO module device drivers.

SVT

- Monitored SVT Hardware Interlock System on a daily basis.
  - ✶ The coolant temperature has been lowered to ~ 5 [^{o}C].

Hall D

- Held daily meeting on status and EPICS controls monitoring.
- Showed Pablo the PLC project files and directory structure.
- Monitored slow control systems on a daily basis.
  - ✶ On Friday the solenoid magnet ramped down unexpectedly, when a fuse blew in the power supply. Fuse was replaced and magnet ramped-up normally.

DSG

- Revised DSG Web Site.
- Added password protected area for weekly reports.
- Showed Tyler, Amanda, and Pablo how to edit DSG Web Site.
- Setup test measurements for the Mpod Test Station.

Campero, Pablo

Hall B

HDICE

- Generated with Tyler and Amanda system diagram for target.
  - ✶ Visited HDICE test lab and took pictures, analyzed the locations and connections of each component of target system, to understand their roles in the target system.
  - ✶ Discussed with Amrit about what the system diagram should show.
    - ▪ Requested Computer Center for AutoCAD 2015.

SVT

- Took pictures with Amanda of spare modules in cleanroom EEL for her report.

Hall D

Slow Controls

- Checked PLC Station in room 121C
  - ✶ Reviewed main CPU PLC CompactLogix 1756 L35E, modules I/O, power supply 1606 XLP, and NBX communication.

Detector

- Monitored logbook with Peter, Tyler, and Amanda.
  - ✶ Noted on 04/07/16:
    - Magnet ramped back.
    - BCAL humidity sensors from US1 and US2 were clearly affected by the magnetic field during ramping.
  - ✶ BCAL chiller temperature was at 5 ºC.
    - Module temperature sensors were between 6.1 ºC—9.6 ºC for the upstream modules and 4.7 ºC—10.3 for the downstream modules.
    - Highest humidity in cooling plate was upstream in Mod 1 at 7%.
  - ✶ Solenoid power supply blew a fuse; fuse was replaced with an identical 0.5 [A], 250 VAC.
- Monitored Epics Screen.
  - ✶ Monitored screen of Solenoid Magnets Coils and also the BCAL upstream and downstream channels to compare with the result displayed in the logbook.

DSG

- Discussed with Peter about DSG Web Page.
  - ✶ Installed software Adobe Dreamweaver CS5.5.
  - ✶ Learned how to edit the web page with Dreamweaver CS5.5 and load images, fields, documents, and how to edit text.
  - ✶ Requested write permission for the directory to get access for edit and save change of DSG web page.
- Established new table to start the calibration of the MPOD module with Tyler and Amanda

Eng, Brian

Hall B

Gas System

- Updated forward carriage and gas shed MFC VIs to use individual shared variables instead of an array, allows view/control of set-points outside of LabVIEW.
- Updated gas tables on MFCs that use non-standard gases (C_4F_{10} and 10%CO_2/Ar)
- Fixed scale string parsing for LTCC

Magnets

- Installed Mac mini (clonxt4) on SFL2N
- Updated PLC code to make voltage negative when in negative polarity.

Hall D

- Updated:
  - PXI code to manually update the time every 4 hours via NTP.
  - NI TimeSync to version 15.
- Installed on new Hall D computer Windows updates, LabVIEW 2015, and RSLogix 20.04.

Hoebel, Amanda

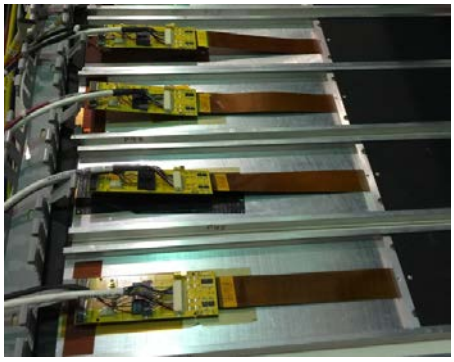
Hall B

HDICE

- Coded calibration test of CT-Box with Tyler.

SVT

- Proofread and added to report on eight spare modules.
  - Included two pictures of test setup.



Pictures included in paper of spare modules (left) and MPOD crate (right).

- Monitored SVT.
  - Assembly temperature lowered to 5°C (from 6°C).
  - Overall module currents dropped by ~50[nA].

Hall D

Magnet

- Wrote ROOT program to read from PXI file voltage tap data leaves.
  - Debugging code. Returned values consistently 0.

Detector

- Monitored logbook.
  - Metal bracket sucked into solenoid. No apparent damage done.
  - HV alarm disabled for FCAL:hv:-26:2

DSG

- Worked with Tyler, Pablo, Pete, and Amrit to set up DSG website.
  - Downloaded Adobe CS 5.5
  - Made CCPR for write permission.

Jacobs, George

Hall B

Gas Systems

- Added check valve to LTCC N_2 supply and redressed the line.
- Replaced last R3 DCGAS pump with 3 smaller units.
- Reviewed BOM on DCGAS manifolds drawings to determine what components have not been purchased.
- Purchased DCGAS system components from e-commerce.
- Requested quote for DCGAS nylon tubing from New Age Plastics.
- Requested quote for DCGAS Corrlok corragated nylon conduit for TORUS manifolds from Graybar.
- Updated and placed the following items on the M drive:
  - CriticalPath-DCGAS-OPS-4-7-2016.pdf
  - CriticalPath-LTCC-gas-04-06-2016.pdf
  - Micromegas-5gasMIXING-4-7-2016
- Requested update from vendor on 03/09 Isobutane gas order for MVT.
- Searched storage locations for HTCC gas system components lost by Youri Sharabian, *items are still lost.*

Safety

- Provided safety feedback on PRAD test setup in EEL room 125 to PRAD group and Physics DSO.

DSG

- Discussions with Renee Carter, Praxair, and Bert Manzlak about timely vendor pick up of empty gas cylinders

Leffel, Mindy

Hall B

SVT

- Wire bonding FSSR2 chips to HFCB.
  - Attached all four chips with conductive epoxy.
  - Prepared protective cover.
  - Made improvements to original bond settings.
  - Started wire bonding chip U2.

Hall D

- Weekly tech. meeting cancelled.

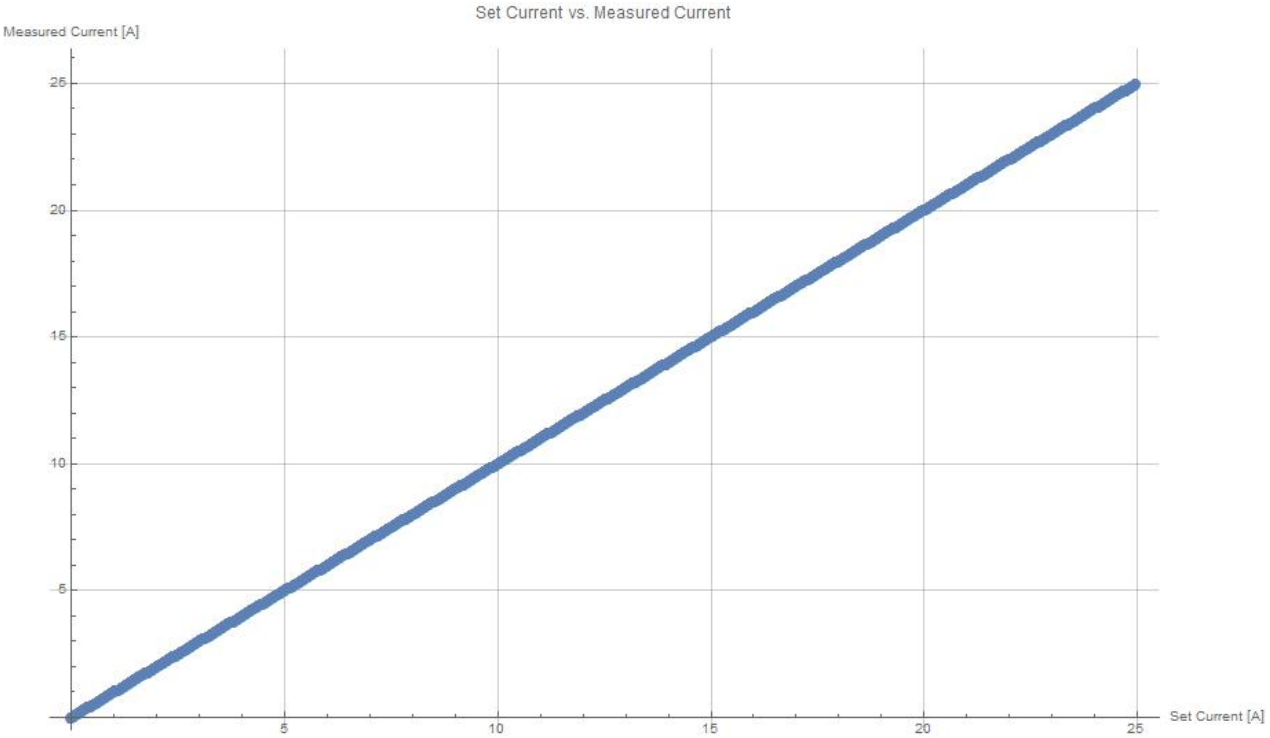
Lemon, Tyler

Hall B

HDICE

- Edited paper on CT-Box Test.
- Created systems diagram drawing.

- Coding calibration test of CT-Box with Amanda.
  - ✶ Uses VI to set a demand current and plot measured current vs. set current.
  - ✶ Increases demand current from 0 – 25 [A] with 0.05 [A] step size.
  - ✶ Writes above data to text file.
- Plotted text file in Mathematica.



Plot of set current vs. current measured by CT-Box. The range of the test was from 0–25 [A] with step-size of 0.05 [A]. A linear regression line was fitted in Mathematica with the equation: $y = 0.00240318 + 0.999936x$.

Hall D

Detectors

- Monitored Logbook.
  - ✶ Noted Solenoid tripped twice during past week
    - Afternoon of 4/5 due to loose wire in vacuum pump speed sensor.
    - On 4/8 at 1450 hrs due to blown fuse in power supply.
  - ✶ Noted that on 4/8 at 21:16 solenoid was at 1200 [A] after ramping to 1220 [A] for a few minutes.
  - ✶ Momentary ramp to 1220 [A] and then ramp down to 1200 [A] to compensate small hysteresis caused by iron return yoke
- Monitored EPICS
  - ✶ Noted warnings on five FCAL high voltage channels: :16:7, :9:31, :18:42, :29:42, :52:53.

DSG

MPOD Test Station

- Guided Anatoly with Amanda and Pablo through the steps of the MPOD LV card test.

McMullen, Marc

Hall B

Gas System

DC Gas

- Ran cables for remote control of exhaust pumps.
- Coding in LabView to control the vacuum pumps remotely.

LTCC

- Troubleshooting C_4F_{10} supply and distillation unit scales.
- Worked on code to display and send commands to scales.
- Making Hall B gas controls slides for readiness review.

Sitnikov, Anatoly

Hall B

- Calibrating MPOD LV card.
    - ✶ Using MPOD computer program to set low voltage value and measure output using multi-meter