Detector Support Group

Weekly Report, 2016-03-30

Ongoing Projects

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

Task: Test Power supply PLC to EPICS interface.
EDC: 03/15/2016
Work done: **No Activity.**
Comments: Cable between supply and remote display broke, is being repaired.
Wiring of service tower being done.
GUI for voltage taps and cryo is being developed.
Status: **Delayed.**

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.
Work done: Continuing work on DC and LTCC codes. Pressure study on HTCC completed (see Marc's section)
Comments: Item #8 design ready. Present status:

#	Detector	Gas	Hardware		Software	Deployed	Tested
			Piping	Instrumentation			
1	DC	Ar/CO_2	X	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	✓	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	X	X	X
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

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)
Work done:	**No Activity**
Comments:	None.
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)
Work done:	Ran cables for 12 solenoids and 6 pressure transducers to controls chassis
Comments:	None
Status:	**Work in progress.**

IV. Hall B **Gas System: HTCC in TEDF** (**Brian**, Marc, George, Mindy, Sahin,Anatoly)

Task:	Conduct pressure study.
EDC:	N/A.
Work done:	Pressure study.
Comments:	See Marc's section for plot.
Status:	**Completed.**

V. 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.
Work done:	Nineteen drivers coded. AutoCAD drawing of front and back panels and panels sent to Cardinal Machines for machining; expected back by 04/06/2015.
Comments:	None.
Status:	**Work in progress.**

VI. 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.
Work done:	Testing drivers for Krohn-Hite current source and Fluke amplifier.
Comments:	None.
Status:	**Work in progress.**

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

Task:	Clear area in DSG clean room.
EDC:	N/A.
Work done:	7’ X 14’ area cleared. E-mailed Saptarshi Mandal about need for optical benches.
Comments:	None.
Status:	**Work in progress.**

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

Task:	Locate and document (including spares) the eight PLC systems in use.
EDC:	03/15/2016
Work done:	**No Activity.**
Comments:	Report due April 6. Need verified spares list of PLC components
Status:	**Delayed.**

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

Task:	SQLite databasing of Hall D solenoid voltage taps.
EDC:	07/31/2016
Work done:	Databased all availale voltage tap readings from solenoid.
Comments:	None.
Status:	**Completed.**

Antonioli, Mary Ann

Hall B

HDice

- Continued writing LabVIEW code for drivers for DIO modules of RF/Attenuation box.
  - ✶ "Completed" all drivers.
  - ✶ Adding code to some of the drivers to decipher the module's response to a command.
- Wired DIO modules for power, in preparation for testing of drivers.

Arslan, Sahin

Hall B

DC

- Replaced Ar/CO_2 gas on R1S4.
- Ran cables in gas shed for DC gas control: R1, R2, R3, and O_2 and H_2O sensors.

HDICE

- Prepping RF box fabrication.
  - ✶ Installed switch, splitter, attenuators, and power supply.

SVT

  - ✶ Replaced N_2 gas bottle and provided extra bottle.

DSG

- Moved 8' table from DSG clean room to EEL room 126 for test set up.

Bonneau, Peter

Hall B

SVT

- Examined system's operational performance via the National Instruments Distributed System Manager.
- Monitored SVT Hardware Interlock System on a daily basis.
  - ✶ Checked an EPICS interlock trip due to high humidity.
  - ✶ System responded correctly to fault.

HDICE

RF Switching/Attenuation Unit

- Instructing Sahin on the layout of components in RF Switching/Attenuation Unit.
- Developing project status summary and work summary for the HDICE review.
- Guiding Tyler and Amanda on development of NI-VISA device drivers for CT-Box calibration program.
- Working with MaryAnn on the interconnects needed for testing the ICP CON DAq module device drivers.

Hall D

- Held daily meeting on Hall D status and EPICS controls monitoring.
- Monitored Hall D slow control systems on a daily basis.

- On 03/28/2016 solenoid magnet tripped while ramping.

DSG

- Reviewed with Pablo first steps in setting up the PLC test Station.
- Troubleshooting Rockwell PLC program starting errors with Pablo.
  - Fault was corrected and RSLogix 5000 and Studio 5000 work correctly on his computer.

Campero, Pablo

Hall B

SVT

- Attended meeting.
  - Discussion on monitoring plugin to be deployed, readout of VSCM scalers, and checking of calibration software.

Detector

- Attended software meeting.
  - Discussion on estimating intrinsic inefficiency of DC by comparing GEMC and Cosmic data.
  - Discussion on trying to correct SVT misalignment to improve present resolution of ~ 65 μm.

Hall D

Detector

- Monitored logbook with Amanda, Tyler, and Peter.
- Monitored EPICS screens.
  - Viewed solenoid CRYO screen, noted tank level indicators on liquid He tank and LN_2 tank.
  - Checked threshold and parameters of input and output pressure, temperature.
  - Viewed FDC Interlock screens – LV and HV channels.

DSG

- Installed Software FT-View Rockwell Automation.
  - FT-View Site and Machine Edition installed successfully.
  - RS-Logix 5000 installed.
- Hall B Awareness Training.
- Introduced to CSS Control remote/ Epics Screens.
  - Request Cryptocard and learning how it works for run control access.
- Toured SRF.
  - Introduced to superconducting radiofrequency technology and procedures that scientist use to probe the nucleus of the atoms.
  - Toured installation and control room in SFR.
- Discussed with Peter about MPOD test station.
  - Introduced to programs to measure LV and HV.
  - Learned how Multimeter-2002/KEITHLEY runs and work in deferent types of configuration to measure the voltage and current.

Eng, Brian

Hall B

Gas System

- Reconfigured VI for/and installed cRIO-9075 for SVT gas control/monitoring so that cRIO-9035 could be used as development chassis.

Magnets

- Updated firmware on 435NBX to see if that fixes errant commands.
- Still waiting for magnet power supply to be brought back online after cable was damaged during installation of other equipment.

SVT

- Recompiled ROOT on Mac mini that is used for elog gain scans as an updated version of Xcode was released which caused silent failures when trying to plot scans.
- Performed gain scans on 8 the 8 modules that are currently being used for the long term stability test.

Hall D

- Tried reinstalling RSLogix 5000 v20 on computer that was temporarily used as Hall D computer (to replace Yi's), still get fatal errors when starting RSLogix so putting it on hold until new Hall D computer arrives.
- Looked into PXI timing issues (again), PXI system time is currently gaining ~1 sec a day. SNTP plugin isn't properly working, but can't make any changes as currently the magnet is powered on.

Hoebel, Amanda

Hall B

HDICE

- Wrote LabVIEW drivers with Tyler.
    - ✶ Driver connects Fluke Transconductance Amplifier to Krohn-Hite model 523. Input from Krohn-Hite is amplified in Fluke and read out by CT-box.

SVT

- Attended SVT meeting.
    - ✶ Module R2S6B had a current draw of ~650 [nA] before power-cycle, afterwards ~200 [nA].
    - ✶ Module is considered “good” despite the fact that it is running at 35[V].
    - ✶ SVT tripped due to high humidity.

Detector

- Attended software meeting.
    - ✶ Discussion on reconstruction status of central tracking, forward tracking, and FTOF.

Hall D

Detector

- Created spreadsheet of voltage taps (name and location on solenoid).
- Monitored logbook.
    - At 7:00 A.M. low available space on DAq raid volume caused alarm (gluonraid1 was at 93%). At 8:00 a.m. available space on gluonraid1 dropped to 82%, alarm handler reset, and DAq was fine.

DSG

- Set up small space in room 126 for MPOD crate testing.
    - Test space now has table, computer, MPOD, and DVM.
- Toured SRF area in Test Lab.

Jacobs, George

Hall B

Gas Systems

- Produced The Hall B LTCC Gas System document.
- Had meeting with Nathan Baltzell about cameras for gas system bubblers.

Safety

- Monthly Safety Warden Report for 96B completed

Leffel, Mindy

On vacation

Lemon, Tyler

Hall B

Detector

- Attended software meeting.
    - Discussed status of reconstruction programs for SVT+Micromegas, the Forward Micromegas Tracker, DC, and FTOF.
    - Presentation by Veronique of examples of what data will look like if reconstruction of tracks is done improperly.
    - Discussed information Gagik learned at a software workshop about Root and a new notebook-type way of sharing code called Jupyter.

HDICE

- Wrote with Amanda LabVIEW code using Krohn-Hite Model 523 drivers and Fluke 52120A drivers to generate current to be read by the CAEN CT-Box. Sequence is as follows:
    - Model 523 drivers
        - *set output to a current or voltage source.*
        - *set source output value.*

- Fluke 52120A drivers
  - *set the amplified output range and amplified output leads used for output.*
- 3Model 523
  - *source is amplified by a gain constant in Fluke 52120A.*
- CAEN CT-Box
  - *Displays amplified output from Fluke 52120A.*

Slow Controls

- Attended Meeting.
  - Discussed status of EPICS screens for magnet, LTCC, DC, and HTCC.
  - Discussed that 4 cameras will be bought for LTCC bubblers

SVT

- Attended meeting.
  - Discussed monitoring plugin that is being written by Veronique.
  - Detector tripped on 3/27 due to high humidity *in detector* caused by N_2 supply running out.

Hall D

Detector

- Monitored EPICS
  - Noted that the flow in MFC9 on the FCAL gas system was low at ~94 [sccm].
- Monitored Logbook.
  - Noted that on 03/23/2016 that solenoid had tripped on a lead flow transient caused by cryo switching to a different compressor in the refrigerator.
  - Noted that on the morning of 03/28/2016 solenoid tripped again while ramping up to 800 [A] due to a voltage excursion in coil 2.
  - Noted that solenoid has ramped to 1200 [A] on the afternoon of 03/28/2016.

DSG

MPOD Test Station

- Moved test setup with Amanda and Pablo to test area in EEL 126.
  - Test setup includes MPOD crate, PC, Keithley multimeter, MPOD LV card, MPOD LV card output adaptor.
- Assisted Pablo in installing PLC software and license dongle drivers.
- Assisted Pablo in obtaining a cryptocard and access to the Accelerator Subnet.
- Toured SRF testing facility with Amanda, Pablo, and Leonard Page.
  - Met Leonard in Test Lab to discuss the Test Lab area and the process of manufacturing a SRF module.

An SRF cavity string being assembled inside helium jackets. Assembly is done inside a Class 100 clean room.

McMullen, Marc

Hall B

Gas System

DC

- Added TCUs (Thermal Conductivity Units), H_2O sensors, and O_2 sensors to DC GUI and acquisition software.
- Ran cables for H_2O, and O_2 sensors with Anatoly and Arslan.

HTCC

- Monitored ambient pressure in TEDF HTCC test area.
  - ✶ Plotted results suggest that changes in ambient pressure and differential pressure between the HTCC and the ambient are not related, validates the decision to not have PID.

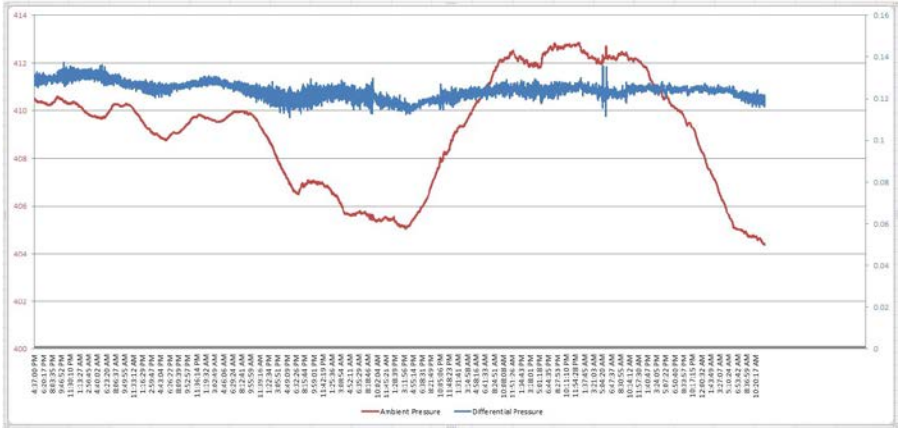

Figure 1. All measurements are in [inH2O] and were taken from 3/22 to 3/28. Left axis is ambient pressure and the right is differential.

LTCC

- Cabled Sector pressures from Omega DP25 controllers to FC gas controls chassis.
- Worked with Anatoly on installing solenoid power connectors.
- Added sector pressures to LabView LTCC software.
- Reviewed LTCC P&I drawing with Arslan.

LTCC valve panel.

Sitnikov, Anatoly

Hall B

Gas System

LTCC and DC

- Produced 6 cables for LTCC gas control, labeled them.
- Fixed 6 cables for gas control in gas shed.
- Labeled 6 cables (LTCC Supply) and 6 cables (LTCC Exhaust).
- Fixed 12 connectors and 12 cables on valve Panel in Hall B.
- Changed with Sahin, a gas cylinder for R1S4 and provided a gas cylinder for SVT.