



Detector Support Group

Weekly Report, 2016-03-09

Glossary: EDC = Estimated Date of Completion.
MFC = Mass Flow Controller.

Ongoing Projects

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

Task: Test Power supply PLC to EPICS interface.

EDC: 3/15/2016

Work done: **No Activity**

Comments: Information from Glenn.

Dear Amrit,

Yes, thanks for the heads up. The Torus tower left the TEDF this morning and will be going in. It is the driving term to being able to pump down the Torus and so is getting lead billing in the play known as Hall B this week. Once Doug gives the all clear I hope Krister Brian et al can continue.

The next large cryo can to invade the space frame will ship from Chicago this Thursday we think. It will take a perhaps 2 week stay in the Test Lab to pass local qualifying tests (leak, pressure, cold shock, etc), then it will also move to the Hall, again closing the deck for a few days in very late March I believe.

Regards, Glenn

Status: Task 1a started of original list started.

II. Hall B Gas System Slow Controls (Brian, Marc, 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: Six of about ten Sub-VIs written for the DC Gas system.

Comments: None.

Status: Work in Progress.

III. 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: Supervised modification of gas lines in DCGAS R1/R3 and R2 supply cabinets.

Comments: None.

Status: Work in progress.



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IV. 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: Completed bubbler installation for S1, S2, and S6.
Ran six MFC power cables.
Comments: Waiting for installation of FTOF.
Status: Work in progress.

V. Hall B Gas System MVT Hardware in EEL (George, Marc, Mindy, Sahin, Anatoly)

Task: Deploy all LabVIEW based slow controls software system.
EDC: 07/31/2016.
Work done: Proposed MKS 647B and MKS 1179 based gas mixing system for MVT testing in EEL.
Produced diagram of proposed gas mixing system for MVT testing in EEL
Modified MVT 5 gas mixing system diagram gas shed.
Working on cost estimate for 5 gas MVT gas mixing system in 96B
Placed PR for C₄H₁₀ gas in 116lb FX cylinder.
Comments: None.
Status: Work in Progress.

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

Task: Replace cRIO.
EDC: N/A.
Work done: Requested networking connection.
Comments: None.
Status: Work in Progress.

VII. Hall B SVT Long Term Test (Amanda)

Task: Monitor long term test of the eight modules.
EDC: End of July 2016.
Work done: Looked at the change in current of each module between two consecutive weeks. Investigated change in humidity vs. current.
Comments: Current of all the channels decreased to [nA/week].
For details, see Amanda's section in the weekly report.
Status: Analyzing data on a weekly basis.



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- VIII. Hall B **HDICE** (Peter, Brian, Mary Ann, Amanda, Tyler, Mindy, Sahin)
Task: Fabricate RF box.
EDC: N/A.
Work done: Generating Autocad drawing of front and back metal panels.
Ordered 1,500 feet of RF cable.
Writing instrument drivers for calibration testing of CAEN current transducer.
Comments: None.
Status: Work in Progress.
- IX. Hall B **HTCC** (Mary Ann, Mindy, Anatoly, Sahin)
Task: Fabricate LV compensation coil cables.
EDC: 07/31/2016
Work done: Started fabrication.
Comments: None.
Status: Work in progress.
- X. Hall B **RICH** (Tyler, Amanda, Peter, Brian, Mary Ann, George, Mindy, Sahin, Marc, Anatoly)
Task: Darken cleanroom.
EDC: N/A.
Work done: Cleanroom darkened.
Comments: Peter scheduled meeting with Ben for Friday 3/11/16 @ 1000hrs.
Status: Work in progress.
- XI. Hall D **PLC Systems** (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: Hall D closed due to run. Still need pictures.
Status: Work in progress.



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Antonioli, Mary Ann

Hall B

HDice

- Completed drawing of back panel of RF/attenuation distribution box.

HTCC

- Connectors for one end and the cable for the compensation coils low voltage cables have been provided.
 - * Cable cut by Mindy and Sahin.

DSG

- Made final edits to SVT Hardware Interlock System note and posted as Note 2016-004.

Arslan, Sahin

Hall B

PRAD/SVT

- Anatoly and I provided two bottle of N₂ gas for PRAD detector and one spare bottle for SVT.

DC

- Modified gas supply cabinets, run new lines of pipes for the DC in the gas shed.
 - * Leak tested again to make sure there is no leakage of gas.

RICH

- Anatoly and I prepared small clean room for RICH detector. We have darkened the room by using light blocking black tedlar and black tedlar tape, covered all windows in the clean room and also the window on doors.

HTCC

- Tested and labeled 8 signal cables
- Bundled in group of 8 and transferred to room 108A
- Mindy and I cut a total of 16 compensations cables

Bonneau, Peter

Hall B

Magnet Systems

- Next DSG – Hall B Magnet Controls Meeting will be on Tuesday 3/15/16.
- Testing of the EPICS controls for the MPS has been delayed due to the closing of level 2 and 3 of the Space Frame for the installation of the Torus Service Module.

HDice

RF Switching/Attenuation Unit

- Completed debugging issues with NI-USB to RS-485 converter.
 - * The setup program for the DAq modules within the RF Switching/Attenuation Unit was not working.
 - * Forcing the RS-485 transceiver port to 2-wire mode upon power-up fixed the problem.



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- ★ Have received 96% of the components for the 3rd RF Switching/Attenuation Unit
- Working with Tyler and Amanda on the development of NI-VISA device drivers for the CT-Box calibration program.

SVT

- Monitored SVT Hardware Interlock System on a daily basis.
- Started upgrade of SVT Hardware Interlock System control software to LabVIEW version 2015

Hall D

- Monitored Hall D slow control systems on a daily basis
 - ★ Solenoid has been running at 1200 [A] without incident.

Eng. Brian

Hall B

Gas System

- Updated firmware and software on cRIO-9030 that will replace the 90-35 that is being used for HTCC monitoring as this is the cRIO for the Forward Carriage.

Magnets

- Reviewing Distribution Box PLC code.
- Confirmed could run CSS screens remotely, waiting for MPS to be available.

SVT

- Meeting to discuss software issues, as well as upcoming plans with Micromegas.
- The week before the collaboration meeting in June Micromegas is to be removed to be taken back to Saclay for repairs and survey.
- R4 modules on the SVT will also be replaced after that.

Hoebel, Amanda

Hall B

HDICE

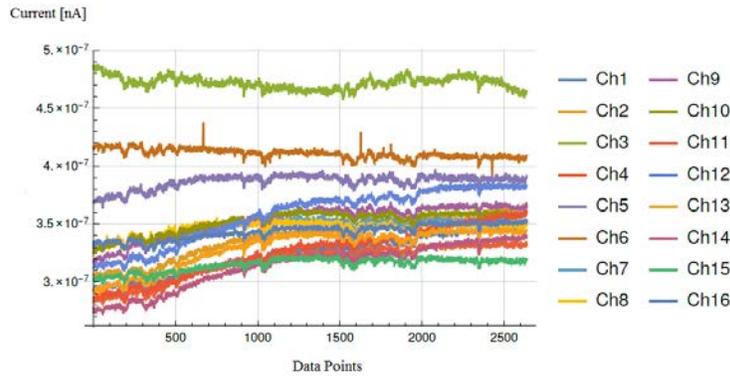
- Created 31 drivers for Fluke Transconductance Amplifier 52120A in LabVIEW.
 - ★ Driver to establish communication (*IDN? query) works but others are having problems. Problems include crashes and timeout errors.

SVT

- Attended SVT meeting.
 - ★ Discussed track reconstruction histograms for momentum in p_x , p_y , p_z for pion π^- .
- Continued monitoring spare modules.
 - ★ Added last week data to strip chart- now covers 3 weeks of data. Currents appear to be flattening.

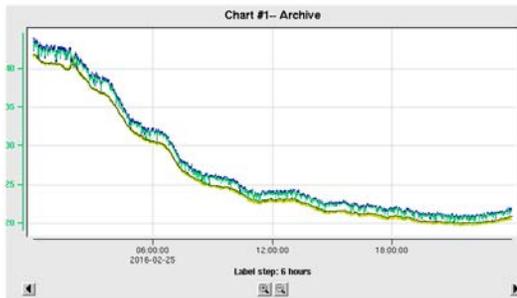


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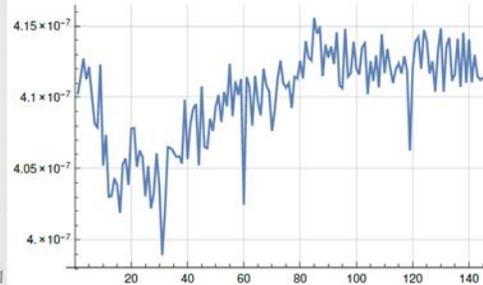


Current strip chart showing three weeks of data.

- ★ Dips in currents over all channels appear to be related to changes in humidity- seen below from February 25. Left graph shows humidity in clean room, right graph shows current fluctuations from Ch6.

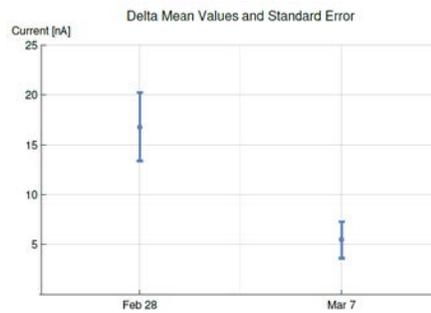


Relative Humidity [%] vs. time



Current [nA] vs. time

- Calculated average mean and standard error for change in currents ($\langle \Delta I \rangle$) for week of Feb 29 minus week of Feb 22 and for week of Feb 22 minus week of Feb 15.
- ★ Data indicates current is becoming more consistent.



$\langle \Delta I \rangle$ vs. time.

Hall D

Detector

- Monitored logbook.
- ★ FCAL is reporting hits with energy sum below threshold ($<0.5\text{GeV}$); blocks reporting those hits are localized to bottom of detector.

DSG

- Attended RICH meeting.



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Jacobs, George

Hall B

Gas System

LTCC

- Supervised LTCC gas line and bubbler installation for S1, S2, and S6
- Requested quote, received quote, and placed PR for C₄H₁₀ gas in 116lb FX cylinder.

DC

- Supervised modification of gas lines in DCGAS R1/R3 and R2 supply cabinets
- Discussion with Mac Mestayer about modifying DC test stand scintillator setup in EEL Rm. 125
- Discussion with Bob Miller about DCGAS pressure protection bubbler locations and flow testing.

MVT

- Discussions with Stephan Aune about MVT gas mixing system
- Modified MVT 5 gas mixing system diagram.
- Proposed MKS 647B and MKS 1179 based gas mixing system for MVT testing in EEL
- Produced diagram of proposed gas mixing system for MVT testing in EEL
- Working on cost estimate for 5 gas MVT gas mixing system in 96B

Miscellaneous

- Ordered 6 cylinders of N₂ via ecommerce
- Ordered 2 cylinders of Ultra High Purity Argon via ecommerce

Leffel, Mindy

Hall B

Gas System

- Terminated 6-20' D-Sub MFC cables.

CND

- Terminated 12-2ns LEMO cables.

HTCC

- Cables for compensation coils.
 - * Received connectors, cable, and cable lengths from Will Phelps.
 - * Worked with Sahin cutting all 16-81' cables.

Lemon, Tyler

Hall B

RICH

- Reviewed information and documents on front end electronics and aerogel.

HDICE

- Wrote and tested drivers for Krohn-Hite Model 523 Calibrator.
 - * Used Prologix GPIB-Ethernet controller device to test driver VIs, was unsuccessful due to issues setting up communication between device and PC.
 - * Used drivers to communicate to Model 523 through GPIB and issue commands.
 - * Debugged driver VIs when response from the Model 523 was not as expected.



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- ★ Added VISA property node to get the number of bytes the VI was to read back from the Model 523.
 - Property node does not work as expected; VI expects a serial device for the query of the number of bytes.

Hall D

- Monitored Logbook.
 - ★ Noted that the diamond radiator had blue glow for an unknown reason, beam was tuned and glow disappeared, thought that glow is due to untuned beam hitting the edge of diamond radiator.

DSG

- Submitted PR for two new desktop PCs.
 - ★ Created a Dell eQuote for two PCs identical to previously purchased PCs.

McMullen, Marc

Hall B

Gas System

- Wrote sub-VIs for the DC Gas system. The gas system currently has the following VIs:
 - ★ MFC control.
 - ★ DC pressure acquisition
 - ★ DC GUI (control panel)
 - ★ DC return flow acquisition
 - ★ DC Daily Logger
 - ★ DC PID
- VIs are being tested while working.
 - ★ After testing a main VI will be written to operate the DC gas.
- Evaluated HTCC cRIO replacement with Eng and Arslan.
- Provided pinout and components to Mindy Leffel for the LTCC MFC power cables.

Sitnikov, Anatoly

Hall B

Gas System

- Assembled gas system in shed with Sahin.
- Produced 6 bundles(6*8) for HTCC with Sahin.
- Isolated clean room from light with Sahin.
- Changed 3 gas cylinders for GEM detector and for SVT with Sahin