



Detector Support Group

Weekly Report, 2016-09-14

Ongoing Projects

Magnet Control System

Solenoid

- Checked PLC↔cRIO communication for temperature sensors (Cernox and PT100).

Torus

- Set up and performed voltage injection test cRIO↔PLC.
- Switched UPSs of four racks to generator outlet.
 - ★ Restarted PLC and cRIO systems.

Gas System

- Waiting for DC gas system's ASME valve approval
- DC gas operator's manual completed.

DC

- **Mindy is accommodating work request from Fast Electronics Group.**
 - ★ Installed rails, racks, and power supplies.
 - ★ Transferred HV modules and distribution boxes.
 - ★ Installed modules, started installing distribution boxes.

SVT

- HV/LV/Data/Pulser cables connected for R1— R3 modules.

RICH

- CMM measurements of last four mirrors completed.
- All components for interlock system received.

FT

- One FADC not working.
- LV trips occurring near readout crate.



Detector Support Group

Weekly Report, 2016-09-14

Antonioli, Mary Ann

- Made Visio diagram of EPICS and cRIO slow controls.

RICH

- Assisted Tyler with spot testing two mirrors.
- Using AutoCAD and NX, generated mirror measurement data for future analysis.

Arslan, Sahin

- Provided and replaced Argon gas for FT.

SVT

- Transferred insertion cart from EEL to Physic storage.
- Connected following modules from R4 to be tested:
 - ★ P54=R4M9, P10=R4M1, P30=R4M12, P47=R4M15, P60=R4M21.
- Attached R1-2-3 cables to MPOD and VME crates.
- Attached patch panel cables.

Bonneau, Peter

- Tested assembled RICH Hardware Interlock System chassis.
 - ★ The 24V distribution ADC test breakout cable and CPU passed all tests.
 - ★ The 5V power supply for sensors failed on first power-up and will be returned for replacement.
- Installed and tested driver interface software for HDice Oxford Mercury power supply onto two LabVIEW development computers.

Magnet Systems

- For Hall B PLC programming, a computer has been set up on Hall B subnet to allow direct PLC communication between DSG control room and Hall.
- Working with Pablo, reviewing solenoid instrumentation and PLC programming.
 - ★ Solenoid vacuum document defines some signals to be implemented, however information on connection to PLC system is inconsistent and needs to be investigated.

Forward Tagger

- Completed Hardware Interlock System (version 2) design documentation.
 - ★ List of NI components has been added.
 - ★ Gas flow measurement has direct 0-5 V input to cRIO ADC.
 - ★ Individual interlocks for the three CAEN HV board types has been implemented into design.
 - ★ The Mpod LV modules have individual interlocks via a cRIO TTL/DIO module.
 - ★ Chiller interlock interface uses 20 mA current control loop.
- Trained Pablo and Amanda on jAlbum software package, used to develop photo log for DSG website.
- Uploaded latest talks to DSG website. Changed html index files to reflect.



Detector Support Group

Weekly Report, 2016-09-14

Campero, Pablo

Magnet

- Tested PLC ↔ cRIO communications in solenoid control systems.
 - * Set up different resistor values to simulate Cernox (60, 50, 40 and 30 Ohms) and PT-100 (82 and 150 Ohms) temperature sensors.
 - * Connected resistors in DB9 connectors and they were plugged into LV chassis excitation box.
 - * Monitored readback values in PLC Solenoid from 9/9 to 9/13. Test was completed successfully for this type of sensor.
- Worked on transferring power of UPS for Torus system controls
 - * Reconnected all electric strips corresponding to racks controls into UPS power supply.
 - * Plugged UPS in outlet that is part of generator circuit for hall.
 - * Reset communication of PLC torus and D.Box PLC; cRIO systems were also reset.
- Worked on injection voltage test in cRIO Fast_Daq module for Torus magnet.
 - * Set up voltage injector at channel 1 of cRIO analog input module.
 - * Injected 2 V for first test and 3 V in second test.
 - * Monitored reading in PLC Torus — as expected for both values.
- Began to modify PID_Controls program and routines to set up control over cryo valves (EV and PV) and heaters in Solenoid PLC code.
- Update and install new versions of software RS-Logix 5000 v.27 on DSGTest1-PC.

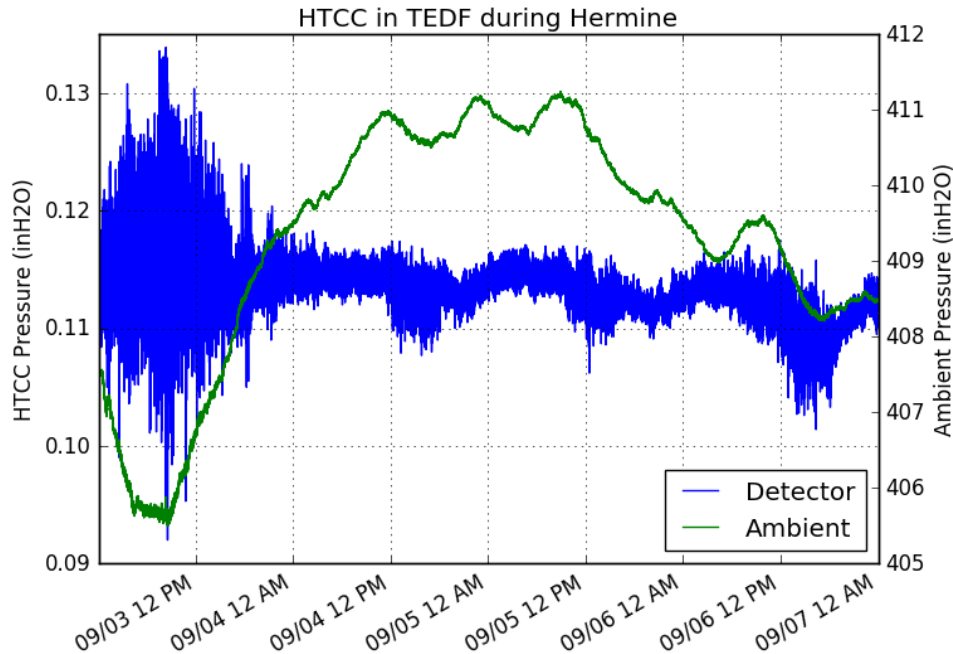
Eng. Brian

- Connected SVT R3 cables.
 - * R1-3 are now cabled.
- Verified LV and slow controls connections.
 - * Still need to get cRIO back online prior to fully powering SVT.
- Debugging issues with Gas System cRIO startup applications with NI engineer.
 - * Using a different API to get CPU load, but error code received when running that.
- Made plot during previous storm showing detector and ambient pressure of HTCC.



Detector Support Group

Weekly Report, 2016-09-14



Hoebel, Amanda

FT

- Checked on status:
 - ★ Gains for Hodoscope channels set to $10 \text{ mV} \pm 1 \text{ mV}$.
 - ★ MOXA fixed to correctly display chiller temperatures.
- Sent updated interlock system document to group.

RICH

- Computed arc lengths of 10 spherical mirrors in Python.
 - ★ Values have error $\sim \pm 3.5 \text{ mm}$ from ideal.

DSG

- Wrote note on CompactRIO interlock system.
- Uploaded pictures to website with Tyler and Pablo.

Jacobs, George

- Discussing argon gas requirements for bulk contract with Procurement and AirGas.
- RICH air cooling and N_2 valve panel assembly in progress.

DC

- Version 1.0 of DC Gas Operators manual now complete.
 - ★ DCGAS-manual-CLAS12-V1-9-9-2016.doc
- Created Appendixes for V1.0 DC Gas Operators Manual.
 - ★ DCGAS-manual-appendix-CLAS12-V1-9-9-2016.doc
- Received quote on gas return pumps—\$5500 each, need min of 5.
- Received quote for alternative for gas return pumps—\$549.81 each, need min of 8.



Detector Support Group

Weekly Report, 2016-09-14

- Placed PR366060 for 9 gas pumps.
- Discussions with Volker and Mac about timeline for gas operation.

LTCC

- Discussions on gas monitoring.
- Gas system manual in progress.

Leffel, Mindy

DC

- Accommodating work request from Fast Electronics Group.
 - * Installed rails, racks, and power supplies.
 - * Transferred HV modules and distribution boxes.
 - * Installed modules, started installing distribution boxes.

RICH

- Interlock chassis.
 - * Made modifications.
 - * Terminated 20 ferrule jumpers.

Lemon, Tyler

RICH

- Performed spot test with Mary Ann for mirrors 5 and 6.
 - * Test approximates mirror radius of curvature by finding at what distance R from mirror the smallest observed diameter $d0$ of reflected light's image is observed.
 - * Mirror 5: $d0 = 1.210$ mm, $R = 2695$ mm.
 - * Mirror 6: $d0 = 1.151$ mm, $R = 2695$ mm.
- Troubleshoot fit- $d0$ macro for spot test results.
 - * Macro performs parabolic fit on spot test results to find fit- $d0$ and calculates corresponding radius of curvature.
 - * Fit- $d0$ tends to be greater than observed- $d0$ (see plot below for example).
- Analyzed Mirrors 1, 2, 5, and 6 CMM data in Python.
- Compiled Excel sheet of CMM analysis results for future talk.

McMullen, Marc

- Installed cover over exposed AC contacts on DC gas safety system chassis.
- Made temporary plastic cover for MVT LV supply and added signage.
 - * Covered exposed LV leads on detector front end boards.
- Assisted FT student with FTM LV supply.
 - * Supply leads needed to be moved from one set of bus bars to another. Noticed that supply leads were exposed, so made a temporary plastic cover with signage. Advised student not to go past the cover.
- Continued fabrication of RICH gas system interface chassis.
- Signed MVT OSP after safety requirements were met.



Detector Support Group

Weekly Report, 2016-09-14

