Detector Support Group
Weekly Report, 2016-11-02

Ongoing Projects

Magnet Control System

Solenoid
- Communication tests between FAST_DAQ/LV cRIO and PLC conducted.
- New version (09/08/16) of Vacuum controls and instrumentation diagram analyzed.
- PLC programming and instrumentation for Solenoid Service Tower work continuing.

Torus
- Cernox sensors still causing DAq hang-ups.
  - ★ Can be recovered by unplugging/re-plugging from LV cRIO chassis.

- Debugged **Hall A** Left Dipole magnet power supply's PLC.

Gas System
- First edits to gas system software manual and MVT gas system manual completed.
- Verified all cRIOs will recover after a reboot due to power outage.
- Hall B Gas System Operators Manual for Purge Type Systems completed.

RICH
- Spreadsheet with list of labels required for N_2 purge and air cooling system generated.

HDice
- PC installed in NMR rack.
- PC network connectivity issues on **HDice** Controls Rack 2 resolved.

DC
- Discussions continuing regarding DCGAS storage tanks relief valves.
- DC Gas manifold components delivered to Hall B technicians.
- Gas fittings for DC gas manifold connections to detectors ordered.

SVT
- Replaced modules M2 and M7 in region two.
- Fixed R3 and R4 faraday cage grounding brackets.
- Troubleshooting modules and ambient sensors; most problems found to be due to damaged connectors at L1C end.

Antonioli, Mary Ann

- Made first edits to **gas system** software manual and MVT gas system manual.
- Added cabling to **HDice** controls rack drawing.
- Began work on next updates to LabVIEW **HDice** RF Attenuation/Switching Unit test.

- Updated website photo.

Arslan, Sahin

SVT

- Replaced N_2 bottle.
- De-cabled R3, pulled faraday cage from R3, removed R3.
- Replaced M2 and M7 from R2.
    - ✦ M2 has broken wire bond on HV pad and on hybrid sensor; replaced with P55 from R4.
    - ✦ M7 has bad chip; replaced with P58 from R4.
- Cabled R2.
- Fixed R3 faraday cage grounding brackets, using conductive silver tape and two-part conductive silver epoxy.
- Removed faraday cage from R2 and integrated R3.
    - ✦ P08 was replaced with P83.
    - ✦ Repaired cable for HTSB3; one wire for H1 had gotten damaged on pigtail.
- Fixed R4 faraday cage grounding brackets, using conductive silver tape.
- Rotated R1-2-3 and attached to the support tube.
- Attached cooling line.

Bonneau, Peter
No report (Vacation)

Campero, Pablo

Magnet

- Worked with Tyler on communication tests between FAST_DAQ/LV cRIO and PLC Solenoid.
    - ✦ Configured new IP address used by Fast_Daq and LV cRIO in PLC software.
    - ✦ Tested communication for LV data using resistors values 350 Ω and 96 Ω in LV chassis 1 and 2 to generate temperature values for Cernox and PT100 sensors.
    - ✦ Injected 2 V and 3 V in ADC cRIO modules to test communication between Fast_Daq cRIO and PLC solenoid.
    - ✦ Communication is working properly for both systems; look up tables in LV cRIO need to be fixed.
- Worked with Peter on Solenoid Vacuum System.

* Analyzed new version (09/08/16) of Solenoid Vacuum controls and instrumentation diagram.
  ✴ Three analog inputs (0-10 V) and one signal (0-24 V) need to be added to PLC modules to monitor valve, gauges readings, and vacuum pumps.
  ✴ Corrected labels for main gate valve PV8600.
* Worked on Solenoid PLC programming and instrumentation for Solenoid Service Tower.
  ✴ Added four readback analog signal LVDTs for electric valves in Set_up_PID Routine.
  ✴ Modified Vapor_Cool_Lead_Flow routine to control flow rates and open/close of valves 8621A and 8621B.
  ✴ Wrote code to control PV8622 valve which is used to vent helium into atmosphere.
* Monitored EPICs screen for MPS, Cryo system and Buffer Dewar system, Torus on daily basis.
  ✴ MPS and Interlocks screens were modified to improve monitoring during Fast Dump and Controlled Ramp Down events.

Eng, Brian
SVT
* Troubleshooting modules and ambient sensors; most were found to be damaged connectors on the L1C end, H2 on HTSB4 is bad and was disconnected, see various logbook entries.

Gas System
* Switched to using Source Distributions (aka Startup VIs) on all cRIOs. Verified that all cRIOs will recover after a reboot.
* Added more EPICSs PVs for the Drift Chamber and worked with Wesley on cleaning up the CSS screen.

Magnets
* Planned fast dump at 850 A.
* Cernox sensors still causing issues, but can be recovered by unplugging/re-plugging from LV chassis. Magnet tripped at 200 A due to strain gauges over the weekend.

Hoebel, Amanda
HDice
* Installed PC in NMR rack, with Tyler.
* Debugged NMR program.
  ✴ Program would crash on multiple cycles.
  ✴ Problem found to be at array concatenation.

Torus
* Monitored logbook daily.
  ✴ Torus Relief Valve RV8114R not sealing properly on 10/31.
* Monitored EPICS daily.

★ Two new screens were added: "Analyzer" shows recorded ROOT files during magnet operation and "EM Forces" shows strain gauges and load cells.

Jacobs, George
- Created spreadsheet with list of labels required for **RICH** N_2 purge and air cooling system.

DC
- Discussions with Saptarshi about DCGAS storage tanks relief valves.
- Delivered DC Gas manifold components to Hall B techs.
- Ordered gas fittings for DC gas manifold connections to detectors.
- Ordered 12 flow tubes, Dwyer Instruments, for DC gas connections to manifolds.

GAS Systems
- Wrote Hall B Gas System Operators Manual for Purge Type Systems.
- Wrote Hall B Gas System Operators Manual for Purge Type Systems Appendixes.

- Submitted FM work request to replace EEL clean room air shower pre-filters.

Leffel, Mindy
- Worked with Amanda identifying cables for **HDice** controls rack diagram.
- Modified **FT** interlock chassis.
  - ★ Installed AC power connector.
  - ★ Added an additional DIN rail.

- Terminated 37-contact D-sub cable for National Instruments cRIO test station.
- Researched parts for spare interlock chassis

Lemon, Tyler
- Resolved PC network connectivity issues on **HDice** Controls Rack 2 with Amanda.
- Checked communication between **Solenoid** cRIOs and PLC with Pablo.
  - ★ Simulated sensor values to read on PLC.
  - ★ Used resistors to create dummy temperatures on Cernox sensors and PT100s to check communication between LV cRIO and PLC.
  - ★ Injected voltages into Voltage Taps to check communication between Fast-DAQ cRIO and PLC.
  - ★ All communication checks successful.

- Troubleshoot **Hall A** Left Dipole magnet power supply PLC with Pablo.
  - ★ Allen Bradley 1747-L511 PLC controller showed CPU fault.
  - ★ Could not communicate to PLC controller.
  - ★ Reinstalling drivers for communication interface unsuccessful; unable to communicate to PLC controller or resolve issue.
    - ▪ Issue resolved later by Hall A staff (see Hall A logbook entry 3433727).

McMullen, Marc

Gas System

- Updated gas system status spreadsheet.

DC

- Worked with Brian Eng to test start-up VI as restart method of cRIOs.
  - ★ All three cRIOs now restart and provide necessary process variables to EPICS after restart.

LTCC

- Updated software with Brian Eng.
  - ★ Operator can now select either N_2 or C_4F_{10} to run on an individual LTCC sector during purge or normal operations (respectively).

- Provided answers to Valery Kubarovsky concerning **RICH** OSPs for ERR.