Detector Support Group
Weekly Report, 2017-06-14

Summary

Solenoid
- Solenoid and DBX PLC codes checked against calculations and modified to match updates on *interlock threshold spreadsheet* and in *Solenoid Cooldown and Cryogenic Operations procedure*.
- PLC code written to implement cascading PID loops to control *MIN PID* parameters for electric valve EV8611JT and *MAX PID* parameters for electric valve 8611CD.
- Discrepancies corrected in *interlock threshold spreadsheet*.
  - ✶ Three signal names misspelled and 3 signal names incorrect.
- Discrepancies found in *PID setup and checkoff spreadsheet*.
  - ✶ Two valves named incorrectly.

RICH
- LabVIEW User Interface integrated into Hardware Interlock System project.
  - ✶ Debugged connection to cRIO successful.
  - ✶ Debugged sensor status and values display.
  - ✶ Compressor and power supply status indicators added.

FT
- AutoCAD wiring diagram of cRIO chassis created.
- Calorimeter chiller pump and pressure status signals added to real-time and user interface programs.
- Forty foot RTD temperature sensor cable for hodoscope fabricated and installed.
- D-sub, 15-pin, F/M connector adaptor for chiller and LV interconnects researched and ordered.

MVT
- Relief valve on EEL setup replaced.
- Six hundred psi gauge to replace 4000 psi gauge for high pressure side ordered.

Gas System
- Two dewars of CO_2 ordered for DC.
- Four cylinders of N_2 ordered for SVT and two cylinders of Ar ordered for MVT.
- Components for eCAL purge connections ordered.
- PR for Hall B LN_2 contract funding placed.

Hall D
- Solenoid warmed to 80 K for summer shutdown and maintenance period, on 6/12/17.
  - ✶ Helium cryo-can and coils empty of helium.
  - ✶ Vacuum pump on distribution box tripped during warmup. Pump was reset without incident.
- All VME, VXS, CAEN, and WIENER crates in Hall D and Tagger Hall were turned off on 06/09/17, with exception of trigger and BCAL pulser racks.

Antonioli, Mary Ann
- Made AutoCAD wiring diagram of **FT** cRIO chasis.

- Imported, formatted, laid out, and began editing Tyler's Note on RICH exit window.

Arslan, Sahin
Absent

Bonneau, Peter
FT
- Worked with Amanda on FT interlock system installation, testing, and debug in EEL.
  - Calorimeter chiller pump and pressure status signals were added to real-time and user interface programs.
  - Installed and tested hodoscope RTD temperature sensor assembly.
  - Tested EPICS calorimeter HV/LV response to trips made by interlock system.
- Working with Nathan Baltzell, found softIOC issue regarding use of EPICS interface client mode. Upon softIOC restart, some signals will not connect without refresh. Under further investigation.
- Provided information to Mary Ann for cRIO crate wiring diagram.
- Worked with Mindy on cRIO cables.
RICH
- Worked with Tyler and Pablo on hardware interlock system.
  - Investigated type of signal interface between interlock system and LV/HV.
  - Discussed and demonstrated debugging LabVIEW user interface.
  - Debugged interlock reset of EPICS real-time program. Reset is now available via LabVIEW and EPICS interfaces simultaneously.

- Held meetings on Hall D status and EPICS controls monitoring.
  - Vacuum pump on distribution box tripped during solenoid warmup to 80 K. Pump was reset without incident.

Campero, Pablo
Solenoid
- Verified and modified Solenoid and DBX PLC codes to match updates on spreadsheet and in procedure.
  - Modified thresholds in PLC codes to match latest spreadsheet.
  - Wrote PLC code to add calculation to Solenoid cooldown signal.
  - Added signal to PV array.
  - Ensured that all calculations to check cooldown parameters were implemented in PLC program.

- ✶ Wrote PLC code to implement cascading PID loop to control *MIN PID* and *MAX PID* parameters.
- Updated spreadsheet.
    - ✶ Corrected discrepancies in signals names.
    - ✶ Added position elements that were missed.
    - ✶ Found discrepancies in formulas to calculate control over pressure in Solenoid and Torus. Dave Kashy needs to confirm calculations.
    - ✶ Found discrepancies in two valve names. Waiting for Dave Kashy to clarify names.
- Generated procedure to test PT-100 sensors that were added in relief valve and vaporizer.
    - ✶ Modified spreadsheet.

RICH
- Debugged user interface of interlock system LabVIEW program.
    - ✶ Configured and implemented program to main project V6.
        - ▪ Connected to Real Time program; matched loop names between Real Time and User Interface programs.
        - ▪ Connected with EPICS Interface program.
        - ▪ Wrote code to add compressor and power supply status indicators to LabVIEW user interface.

LTCC
- Using Python, calculated estimated leak rate over change in ambient pressure for all six sectors, using a period of time on 5-29-17.

- Monitored and analyzed Logbook entries and EPICs screens daily.
    - ✶ On 6/12, Solenoid started to warm up to 80 K; helium cryo-can and coils were empty of helium.

Eng, Brian
MVT
- Replaced relief valve on EEL setup with Marc, troubleshooting pressure regulator (old one was fine).
- Ordered 600 psi gauge for high side of regulator, using part number from Matt (DA).

Gas System
- Added RTD to monitor gas shed temperature to see if TCU changes correlate with temperature.
- Modified MFC VI to restart itself up to 3 times if any errors communicating with MFC.
    - ✶ Flow went bad again over weekend.
    - ✶ Still working with Computer Center to troubleshoot issue.

- Reinstalled Windows 7 on CAD computer.

Hoebel, Amanda

- Analyzed **LTCC** leakage rates.
  - ✶ Made table of leak rates and total flow for 4/25/17-5/30/17, excluding 5/10 and 5/11.
  - ✶ Sector 5 shown to be best sector with less leakage.
  - ✶ Sector 6 shown to be worst sector with most leakage.
  - ✶ Created PowerPoint presentation of leakage.
- Worked with Pete to remove **SVT** Region 4 from hardware interlocks LabVIEW program.
  - ✶ Removed array elements and front panel indicators containing R4 from user interface.

- Monitored EPICS and logbook.
  - ✶ All VME, VXS, CAEN, and WIENER crates in Hall D and Tagger Hall were turned off on 06/09/17, with exception of trigger and BCAL pulser racks.

Jacobs, George

GAS Systems

- Produced MVT-MIXING-06-07-2017.pdf for pressure systems analysis.
- Produced MVT-mixing-componenets-06-07-2017.xlsx for pressure systems analysis.
- Ran gas lines for eCAL purge; connected S1, S4, S5, and S6 to N_2 purge. S2 and S3 will require boatswains chair to access detector side wall.
- Ordered two dewars of CO_2 for DC.
- Ordered four cylinders of N_2 for SVT and two cylinders of Ar for MVT.
- Ordered supplies for eCAL purge connections.
- Placed PR for Hall B LN_2 contract funding.

Leffel, Mindy

- Repaired **HTCC** signal cable 36A, replacing BNC connector at patch panel.
- Repaired **RICH** HTSB cable, replacing three-wire temperature sensor cables, with four-wire.

FT

- Worked on cables.
  - ✶ Fabricated 40' temperature sensor cable for hodoscope.
  - ✶ Researched and ordered D-sub, 15-pin, F/M connector adaptor.

Lemon, Tyler

RICH

- Debugged integration of LabVIEW User Interface (UI) into Hardware Interlock System project.
  - ✶ UI is able to connect to cRIO and displays sensor status and values.

- ✶ Checked that string commands sent to UI and Real-Time messaging queues match between Real-Time VIs and UI VIs.
- ✶ Tested functionality of controls and debugged programming if controls did not work.
  - ▪ ~60% of controls work correctly.
  - ▪ All sensor enables and limit controls still require debugging.
- Completed note on exit window assembly.

LTCC
- Discussed leak analysis results with Pablo and Amanda.
- Wrote slides on leak calculations using pressure drop for Amanda's presentation in DSG meeting.

- Monitored logbook and EPICS on a daily basis.
  - ✶ Noted on 2017-06-12 that Solenoid is warming to 80 K for summer shutdown and maintenance period.

McMullen, Marc
Absent