Detector Support Group
Weekly Report, 2017-06-28

<u>Not-Fake News</u>

<u>Solenoid</u>
- Fast DAQ cRIO replaced with spare cRIO-9067.
  - ★ Fast DAQ cRIO stopped working because:
    - For the electrical work to be done in Hall B, the breaker for entire controls rack was turned off. All systems powered on UPS also crashed after UPS ran out of power.
- Local PLC chassis lost control of the DBX control systems immediately because it lost power (was not connected to UPS).
  - ★ PLC chassis is now connected to UPS.

<u>RICH</u>
- Computer for LTCC Reflectivity Test Station configured for RICH mirror measurements.
- Monochromator control and data acquisition programs for mirror measurements rebuilt, configured, and tested.
- EPICS Client mode added to Hardware Interlock System.
- THA and BList for spherical mirror optical tests created.
- Five 3-cm thick aerogel tiles arrived from Budker Institute of Nuclear Physics in Russia.
  - ★ All tiles had small chips on corners.

<u>SVT</u>
- DSG cRIO test stand set up.
  - ★ Used for debugging and verifying modifications to hardware interlock program, before deploying onto detector cRIO.

<u>Gas System</u>
- Pressure transducers for <u>**MVT**</u> mixing system ordered and received.

<u>Hall D</u>
- On 06/23/17, installation of new circuit on UPS required power down of UPS, resulting in loss of power for several computers.
  - ★ Loss of power caused MFC boxes on upstream platform to lose power. Flows for CDC and first package of FDC went to 0 L/min.
  - ★ Large fluctuations in N_2 liquid level caused 3—4 alarm trips per hour over weekend.

Antonioli, Mary Ann
- Debugged connection of test stand cRIO to computer.
- Edited Pablo's Solenoid ERR presentation.
- Completed major edit of Tyler's 325 K error Note.
- Formatted in InDesign Pablo's Note on Solenoid; began editing.
- Compiled, formatted, and edited DSG weekly report.

Arslan, Sahin
Absent

Bonneau, Peter
- Worked with Amanda on setting up DSG cRIO test stand to debug and verify programming modifications to **SVT** hardware interlock program, before deploying onto detector cRIO.
- Began developing a time-over-threshold interlock trip delay for **FT** hardware interlock system.

RICH
- Worked with Tyler on list of tasks needed to complete hardware and software of interlock system.
- Configured computer and debugged LTCC Reflectivity Test Station to be used for RICH mirror measurements.
  - ✦ Rebuilt, configured, and tested monochromator control and data acquisition programs.

- Held meetings on Hall D status and EPICS controls monitoring.
  - ✦ Solenoid had fluctuations in liquid level in N_2 can, causing 3-4 alarms per hour over weekend of 6/24 and 6/25. Maximum allowable JT7 open level was adjusted to 25%, which kept N_2 level to between 35% and 70% all weekend. More troubleshooting will be done this week to determine cause of fluctuations.

- Worked with Pablo, reviewing initial minimum hardware required for Allen-Bradley ContolLogix I/O module test station.

Campero, Pablo
- Contributed to setup of laser test stand to be used for **RICH** mirrors.

Solenoid
- Identified cables to be connected for initial testing, verified their lengths, and verified correct tags assigned—four load cells cables, five temperature sensor cables, and coils voltage taps cable.
- PLC was disconnected due to loss of power in DBX control systems. Noticed that PLC was not connected to UPS.

- ★ Connected Local PLC chassis to Remote chassis, which has safe circuit connected to UPS.
- ★ Reset Local and Remote PLC chassis.
- ★ Generated logbook entry 3477324.
- Corrected *Cooldown* and *Power up* ERR presentations with comments and corrections from dry run.

- Monitored and analyzed Logbook entries and EPICs screens daily.
  - ★ On 6/26, LN$_2$ levels alarm threshold was lowered from 40% to 30 %.
  - ★ On 6/26, PIX controls systems went down; no Ethernet connection and CPU was indicating 100 %. System was rebooted.

- Wrote *Cooldown Instrumentation and Controls for Solenoid Magnet* DSG Note.
- Wrote *RICH Hardware Interlocks- User Interface* DSG Note.

Eng, Brian
- Ordered and received pressure transducers for **MVT** mixing system.
- Attending meeting to discuss **LTCC** current leak rates.
- Troubleshooting **Magnets'** fast DAQ cRIOs (both died at the same time), replaced Solenoid cRIO with 9067 with Tyler.
- Got approval from Medical Imaging to use their 3D printer for **RICH** parts.

- Set up PXI to output to serial console: https://logbooks.jlab.org/entry/3477179
- Troubleshooting PXI issues: https://logbooks.jlab.org/entry/3477323
- Calibrated ADC modules: https://logbooks.jlab.org/entry/3477299

- Ran external calibration of KH 523 DC source with HP 3458A from Hall A; DC source was used for PXI ADC calibration.

Hoebel, Amanda
- Troubleshooting **SVT** hardware interlocks program.
  - ★ Removing region 4 caused controls to align to incorrect signals.

RICH
- Inspected crate of 5 aerogel tiles with Tyler.
  - ★ All had small dents in corners.
- Set up and calibrated software for mirror reflectivity test with Pete.
- Performed D0 background scan of mirror with Pablo.
  - ★ Set up mirror on test stand.
  - ★ Adjusted camera stand using Thorlabs program.
  - ★ Took background scan with mirror covered; background scan had too much light at smallest exposure level due to mirror having highly reflective coating.

- Monitored Hall D EPICS and logbook.
  - ✶ On 06/23/17, installation of new circuit on UPS required power down of UPS, resulting in loss of power for several gluon computers.
    - Loss of power caused MFC boxes on upstream platform to lose power. Flows for CDC and first package of FDC went to 0 L/min.
    - Since power loss, large fluctuations in N_2 liquid level caused 3-4 alarm trips per hour over weekend.

- Created summary page for weekly report.

Jacobs, George
GAS Systems
- Requested and received quote for 150 kg of C_4F_{10}.
- Created Hall B-Pressure-System-Status-06-26-2017.txt
- Attended LTCC leak check and fix meeting.
- Ordered CO_2 for DC.

Leffel, Mindy
RICH
- Worked on HFCBs.
  - ✶ Affixed 64 pieces of heat shrink to humidity sensor cables.
  - ✶ Cut sixteen 40' temperature sensor cables.
- Contributed to testing of mirrors with laser test stand.
  - ✶ Attended meeting to discuss setup.
  - ✶ Reviewed test procedure.
  - ✶ Started test stand setup.

- Continued wire bonding **SRF** NbTiN patterns.
  - ✶ Met with Anne-Marie to discuss project needs.
  - ✶ Reinforced bonds practice sample with conductive epoxy.
  - ✶ Started planning procedure to thread wires through holes in holder.

Lemon, Tyler
RICH
- Created spreadsheet of all upcoming assembly tasks, including estimated date of tasks, actions to complete tasks, staff to be assigned, and any comments.
- Wrote THA and BList for spherical mirror optical tests.
  - ✶ Approved 2017-06-22 and posted on small cleanroom door.
- Set up optical test station in small cleanroom with Pablo and Amanda.
  - ✶ Set up Debian PC, Windows PC, CCD stand, mirror stand, and optical tables.
  - ✶ Verified all programs needed for tests are on PCs and work correctly.
- Added EPICS Client mode to Hardware Interlock System.
  - ✶ Debugging still needed.

- ✦ Need to give list PVs and CSS/BOY screen to Nathan Baltzell to have softIOC created.
- Inspected five 3-cm thick aerogel tiles with Amanda.
  - ✦ As in previous shipments, all tiles had small chips on corners.

Magnets

- Debugging Solenoid and Torus FastDAQ cRIOs' malfunction with Brian.
  - ✦ On 6/26/2017, electrical work was done in Hall B and breaker for entire controls rack was turned off, all systems went to UPS, but lost power after UPS ran out.
  - ✦ Power-cycled cRIO, reinstalled firmware onto cRIO, reinstalled all software onto cRIO.
  - ✦ Solenoid FastDAQ cRIO was swapped for spare cRIO-9067, program modified and compiled.

McMullen, Marc

RICH

- Reviewed INFN documents on front panel and internal instrumentation documentation.
- Prepared draft for instrumentation procedure for OSP submission. Document will cover installation of mirrors, Aerogel, electronics, gas service, and instrumentation cables.

LTCC

- Attended meeting to discuss status detector leaks.
- Made changes to Pressure and Flow spreadsheet to allow user to select signal to display.