



Detector Support Group

Weekly Report, 2017-07-12

Status

Solenoid

- Axial load cell sensor AL_01 replaced due to incorrect reading.
- Instrumentation and Controls for Cooldown and Power up of Solenoid talks presented during ERR.
- E-WEB module installed in local PLC to synchronize Solenoid PLC controls clock time with JLab NTP time.

RICH

- Time over threshold interlock's trip delay and signal-averaging option for hardware interlock system's Real-Time program implemented.
- Eight 3-cm thick Aerogel tiles received, inspected, and stored in EEL 124 dry box.
- Mirror reflectivity test performed on spherical mirror samples.
 - * Dark box is too small for actual mirrors. Clean room will be used for reflectivity test of actual mirrors.
- Electronic panel test fitted to frame to check holes in panel for air cooling.
 - * Hole-centers on electronic panel are off by ~2 mm with holes on detector shell.

ET

- Time over threshold's interlock trip delay and signal-averaging option for hardware interlock system's Real-Time program implemented.
- Hardware interlocks cRIO installed in hall.
 - * Calorimeter and hodoscope HV, hodoscope LV, and chiller interlock cables connected.
 - * Waiting on network switches. Once received, IP address will be assigned.

HDICE

- GPIB card in NMR rack #2 computer installed.
- Blown fuse replaced in RF amplification box.

Gas System

- Gas cylinder heater blanket for C₄H₁₀ cylinder ordered, at \$3395.
- PR placed for CF₄ gas for MVT ops (\$3623 for 29.5kg).

Hall D

- On 07/10/17, CO₂ changeover regulator for CDC gas system failed to switch automatically after left bank of gas cylinders was used up.
 - * Also fails to switch manually.
 - * Supply line from left bank of cylinders has been temporarily connected to right bank.



Detector Support Group

Weekly Report, 2017-07-12

Antonioli, Mary Ann

- Completed LabVIEW code for manual mode of cRIO test stand.
 - * Tested and debugged.
 - * Began code for automatic mode.
- Made final edits to and posted to website Note 2017-06.
- Continued editing Pablo's Note on Solenoid cooldown.
- Formatted and began editing Pablo's Note on Solenoid power-up.
- Formatted, laid out, and completed major editing of Peter's Note on FT interlock system.
- Attended Worker Safety Committee meeting.
 - * Bicycles on walking paths are still an issue, possibly because of summer students.
 - * Drivers are running stop signs on Pauli Dr., at parking lot.

Arslan, Sahin

Absent

Bonneau, Peter

- Worked with Tyler on integration of **RICH** threshold interlock trip delay and signal-averaging option for hardware interlock system.
- #### FT interlock system
- Completed time over threshold interlock trip delay for Real-Time program.
 - * Trip delay is used to prevent spurious interlock signal trips.
 - * Each monitored signal has programmable timer that can trip associated interlock.
 - Completed signal-averaging option for Real-Time program.
 - * Each monitored signal has programmable signal averaging.
 - * Number of samples per acquisition is adjustable.
 - Met with M. Battaglieri regarding installation, test, and operation of interlock system.
 - Held meetings on Hall D status and EPICS controls monitoring.
 - * On 07/10/17, CO₂ changeover regulator for CDC gas system failed to switch automatically after left bank was emptied, nor will it switch manually. Supply line from left bank has been temporarily connected to bottle on right bank.
 - Discussed design architecture of cRIO test program with Mary Ann.
 - Researched and ordered instrumentation for test stations and test equipment.
 - Started rebuild of laptop to be used for testing and debugging in Hall.

Campero, Pablo

Solenoid

- Tested axial load cells.
 - * Replaced damaged axial load cell AL_01.
 - * Connected eight radial and eight axial load cells.



Detector Support Group

Weekly Report, 2017-07-12

- ★ Replaced 2.5” screws on each load cell flange by 2” screws because they were too long and did not put any compression on load cell.
- ★ Tightened and loosened bolts in each load cell plate to test variations in readout signals.
- ★ Verified readouts for all axial load cells in Solenoid Load Cell EPICS screen and Mya viewer.
 - Analyzed Mya strip charts for all axial load cell to verify that axial load cells affect radial load cells and that axial load cells connected downstream affect axial load cells in upstream.
- Installed E-WEB module in local PLC to synchronize clock time between Solenoid PLC controls and Jlab time.
- Gave talks to ERR on Instrumentation and Controls for Cooldown and Power up of Solenoid.

RICH

- With Amanda, received, inspected, and photographed eight 3-cm thick Aerogel tiles.
 - ★ Stored tiles in dry box in EEL124 clean room.
- Monitored and analyzed Logbook entries and EPICs screens daily.
 - ★ On 7/10, CDC LV crates and VXS were powered on only for signal hardware testing

Eng. Brian

- Changed Magnets cRIOs to use static IP, then found out NI MAX won't accept new DNS server: <https://logbooks.jlab.org/entry/3477943> & <https://logbooks.jlab.org/entry/3478052>
- Changed Gas System cRIOs to use static IP: <https://logbooks.jlab.org/entry/3478077>

Solenoid

- Modified cRIO code to handle new axial load cell which uses different range than others: <https://logbooks.jlab.org/entry/3478286>
- Tested axial load cells with Pablo and Dave: <https://logbooks.jlab.org/entry/3478574>
- Tested LabVIEW 2017 on cRIO to see if CPU usage works with real-time executable and it doesn't, despite being missing from the known issues. 2016 issues: <http://www.ni.com/product-documentation/53098/en/#523232> by Date 2017: <http://www.ni.com/product-documentation/53578/en/>

Hoebel, Amanda

- Set up test station for testing SVT interlocks program after removal of region 4.
 - ★ Needed to prevent damage to detector in case of program issues.
- Installed ET hardware interlocks cRIO in hall, with Mindy.
 - ★ Connected calorimeter HV, hodoscope HV and LV, and chiller to cRIO.
 - ★ Waiting on network switches for hall IP address.

RICH

- Performed mirror reflectivity test with mirror samples.



Detector Support Group

Weekly Report, 2017-07-12

- * Ran program for monochromator control and LabVIEW program for recording photodiode current values in Excel.
- * Dark box is too small for actual mirrors. Clean room may be used for optical test setup or may enlarge dark box in EEL .
- Added averaging array to reflectivity program to keep current readings more consistent.
- Inspected eight 3-cm blocks of Aerogel with Pablo.
 - * Stored Aerogel in EEL 124 dry box.
 - * Need more room in dry box for future Aerogel tiles.

HDICE

- Installed GPIB card in NMR rack #2 computer.
 - * GPIB-USB connector used for program was removed for use in RICH mirror measurements.
- Tested NMR program.
 - * RF attenuator box does not identify module.
 - * 12 V LED was out.
- Monitored EPICS and logbook.
 - * CDC LV crates and VXS crates were powered on for signal testing on 07/05/17, 07/06/17, and 07/10/17.
- Created PowerPoint presentation on reflectivity equation used for RICH mirrors.

Jacobs, George

Gas Systems

- Requested and received price quote on gas cylinder heater blanket for C₄H₁₀ cylinder; ordered (\$3395).
- Discussed MVT mixing system with DA, Matt M.
- Discussed C₄F₁₀ gas recovery for GRINCH detector with Robin W.
- Updated LTCC-single-sector-controls P&I diagram, copied to M:\hallb_eng\CLAS12\pressure systems\LTCC.
- Placed PR for CF₄ gas for MVT ops (\$3623 for 29.5kg or \$123/kg).
- Ordered HP CO₂ dewar for DC.
- Met with FT crew in Hall B, supplied N₂ gas line, rotometer, bubbler, fittings.
- Met with Doug T, Ed F, Marc M, on RICH lift plans.
- Ordered M12 hoist ring for RICH e-panel lift.

Leffel, Mindy

- Worked with Amanda on installation of FT hardware interlock system cRIO in Hall B.

RICH

- Continued working on HTSB humidity jumpers.
- Worked with Amanda, Tyler, and Sandro to move electronics panel from cart to shell.
 - * Measurements were taken to determine gap size between exhaust holes.



Detector Support Group

Weekly Report, 2017-07-12

SRF

- Wire bonding NbTiN patterns.
 - * Completed five bonds on one sample.
 - * Met with Anne-Marie Valente to inspect sample; one bond needs to be repositioned.

Lemon, Tyler

RICH

- Wrote THA and BList for mirror reflectivity tests.
- Reviewed reflectivity test station documentation for DSG weekly meeting discussion.
- Added two features to hardware interlock system program:
 - * Time delay between HV turning off and LV turning off
 - New code allows LV to be automatically turned off a user-set amount of time after HV is turned off, instead of turning off at the same time.
 - * Time over threshold before tripping interlock
 - Allows user to set time sensor's value must be out of bounds before interlock trips off, instead of an immediate trip.
 - * Both features added to Real-Time program and configuration file subVIs.
- Ran power cable for compressor to outlet in EEL 125 with Amanda, Brian, and Pablo.
 - * Contacted Atlas Copco to arrange for complementary factory start-up.
- Test fit electronic panel to check holes in panel for air-cooling, with Mindy and Amanda.
 - * Holes on electronic panel are misaligned by ~2 mm with holes on detector shell.
 - Misalignment should not cause problems for air-cooling tubing as test plug (tube found in cleanroom of diameter ~35 mm) still fits through-holes.

McMullen, Marc

MVT

- Changed pre-mix bottle.
- Monitoring mix bottle pressure loss. Saclay reports a loss of ~100 psi after stopping flow via software over weekend.
 - * Leak checked line with snoop from regulator to transition to plastic tube. No noticeable leaks.
 - * Valved off at ball valve just upstream of flow meter.
 - Pressure loss overnight of ~40 psi.

RICH

- Completed mirror and electronics THA.
- Submitted mirror and electronics OSP with supporting documents, with Mary Ann and Tyler.
 - * OSP covers installation, alignment, and testing of all internal parts (mirrors, Aerogel, panels, electronics, and services)
- Submitted BList for initial compressor start up; approved.
- Contacted GandR Fabrication for status update on Stiffening tool.



Detector Support Group

Weekly Report, 2017-07-12

- ★ Completion scheduled for next week.
- ★ Scheduling local visit with INFN, DSG, and Jlab materials handling personnel.
- Met with Physics safety and materials handling to discuss lift plan development.
 - ★ Front panel installation tooling will need to be approved for use as BTH lifting device.
 - ★ Worked with INFN on Below The Hook Lifting Device Engineering Note form.
 - ★ Electronics panel eyebolt will need to be replaced with 360° hoist ring.
- Tested DSG-List. Will need to contact Accelerator Ops to verify status of task list form.