



Detector Support Group

Weekly Report, 2017-07-19

Status

Solenoid

- Configuration of LVDT for four electric valves in Solenoid Service Tower verified.
- Polarity in terminal blocks for Solenoid Service Tower temperature sensors swapped to solve issues with out-of-range readout.

RICH

- Reflectivity of seven spherical mirror samples tested.
 - ★ Two for mirror #3, five for mirror #4.
- Reflectivity test station dark box modified to make dark box big enough to test actual spherical mirrors.
- Stability test of calibration for reflectivity test station performed.
 - ★ All but one wavelength (300 nm) have calculated errors less than 1%.

FT

- Hardware interlock cRIO's real-time and user interface reprogrammed and tested for Hall B network operation.
- Interlock's capability to control of FT LV and HV power supplies verified after Hall B installation.

HDice

- NMR program modified to allow for manual control of power supply.
- Program developed to measure external trigger efficiency of lock-in amplifier.
 - ★ Trigger efficiency drops below 100% at frequencies above 425 Hz.

GAS Systems

- Hoist rings for **RICH** front panel lifts ordered.



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Antonioli, Mary Ann

- Continued writing code for automatic mode of **cRIO test stand**.
 - * Wrote two sub-routines to display error in case of test failure.
 - * Wrote state machine for testing of channel 0.
- Made final edits to and posted Note 2017-07.
- Made first edit to Pablo's Solenoid cooldown Note.

Arslan, Sahin

Absent

Bonneau, Peter

- Worked with Tyler on **RICH** hardware implementation of LV-HV power supply sequencing.

FT

- Reprogrammed and tested interlock system cRIO's real-time and user interface programs for Hall B network operation.
- Verified interlock control of FT LV and HV power supplies after Hall B installation.
- Met with Marco Battaglieri and Raffaella Devita regarding installation, test, and operation of interlock system.

HDice

- Worked with Amanda on testing and debugging NMR program and instrumentation.
 - * Investigated programming for power supply manual mode operation.
 - * Discussed and investigated He temperature monitoring.
- Developed program to measure lock-in amplifier external trigger efficiency.
 - * Trigger efficiency drops below 100% at frequencies above 425 Hz.
- Held meetings on Hall D status and EPICS controls monitoring.
 - * Solenoid LN₂ liquid level started dropping after dewar fills, even after supply valve opened to its maximum set-point.
 - * Possible contamination (ice) is working its way to valve after dewar fill.
- Discussed with Mary Ann automatic mode testing for cRIO test station.
- Tested manual mode of cRIO test station. Program is working as expected.
- Contacted computer center and increased quota for DSG and DSG Slow Controls directories to 80 GB each.

Campero, Pablo

- Assisted in modification of Reflectivity Test Stand's dark box, making it taller to allow testing of **RICH** mirrors.

Solenoid

- With Brian, tested changes to LV cRIO program for axial load cells AL_01, AL_08 and AL_04.



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- Configured E-WEB PLC module.
- Tested operation of four electric valves in Solenoid Service Tower.
 - ★ Noticed incorrect Master-Slave indicator status between the four LVDTs.
 - ★ Corrected wiring diagram for LVDTs.
- Solved issues with out-of-range readout of temperature sensors in Solenoid Service Tower.
 - ★ Swapped polarity in terminal blocks.

Eng. Brian

- Leak tested **MVT** with Marc; found that relief valves leak even as low as 5 psi: <https://logbooks.jlab.org/entry/3479200> Working with DA to find improved replacement (have some kind of leak tightness spec).
- Yuri said **SVT R2 S6** had faults in register test, but when I ran it there were no errors.
- All **magnet** cRIOs have NTP enabled for time synchronization: <https://logbooks.jlab.org/entry/3478890>

RICH

- Set up taller dark box in EEL/108 with Tyler, Marc and Pablo. Used extruded AL legs from old SVT dark box to raise height and tedlar/mylar to cover gaps in panels.
- Submitted work request to have ground wire for compressor added in EEL/125—completed.

Solenoid

- Made data available from Axial LC tests (along with simple plot): <https://logbooks.jlab.org/entry/3478625>
- Changed LC calibration tables: <https://logbooks.jlab.org/entry/3478798>
- Tested axial LC with Pablo at no load to get baseline values, in case it is decided to use that for zero.
 - ★ Incomplete. Will finish once genie lift access is available and no welding is taking place.
- Debugging cryo-con units with Pablo. Scot fixed some wiring, switched a redundant sensor, reconfigured units to use static IP and disabled some network functions that aren't used: <https://logbooks.jlab.org/entry/3479273>

Hoebel, Amanda

- Performed **RICH** mirror reflectivity test with Pablo and Mindy.

HDICE

- Modified program to allow for manual control of PS.
 - ★ Manual control function was already implemented in program; however, it did not work correctly.
 - ★ “Read current” indicators do not read correct current.
- Troubleshoot temperature sensor and LHe level sensor.
 - ★ LabVIEW cannot query temperature or liquid level.
- Monitored EPICS and logbook.



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- ★ On 07/14/17, two single-stage regulators were installed on each bank of CDC's CO₂ bottles to correct for automatic and manual switch-over failure which occurred on 07/10/17.

- Discussed Pablo's note on Controls and Instrumentation for Solenoid power-up, with Tyler.
- Created summary page for weekly report.

Jacobs, George

GAS Systems

- Discussed MVT mixing system with DA. Analysis in progress.
- Discussed Hall A GRINCH detector's C₄F₁₀ gas recovery with Carlos Gayoso.
- Updated MVT gas mixing system P&I and components spreadsheet.
- Discussed DC endplate deflections, wire tensions, and gravitational deflections with Mac.
- Ordered hoist rings for front panel lifts.
- Lift plans for RICH are in progress.

- Participated in quarterly safety walk-through of 96B gas shed and surrounding area

Leffel, Mindy

RICH

- Continued working on HTSB jumpers.
 - ★ Humidity jumpers all 16 terminated, 48 wires soldered.
 - ★ Temperature jumpers 6 terminated, 24 wires soldered.
- Started modifications to cRIO chassis.
 - ★ Drilled holes on back of box.
 - ★ Cut cable tray to size and attached to box.
- Worked with Tyler on laser test stand.
 - ★ Did initial setup, ran multiple calibrations and mirror tests, and tested first 10 sample mirrors.
 - ★ Realigned test stand after modification to allow for spherical mirrors.

Lemon, Tyler

RICH

- Tested reflectivity of spherical mirror samples with Mindy.
 - ★ Seven samples tested: two for mirror 3, five for mirror 4.
- Modified reflectivity test station dark box with Marc and Brian to make dark box big enough to test spherical mirrors.
 - ★ Replaced vertical supports with longer aluminum pieces.
 - ★ Covered gaps caused by making dark box taller with Mylar/Tedlar sheet and tape.
 - ★ Covered dark box with fabric to make it more light-tight.



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- ★ Measurements with photodiodes inside modified dark box are similar to measurements before modification.
- Performed calibration stability test of reflectivity test station.
 - ★ Set up test station for calibration runs in morning.
 - ★ Took calibration runs on every hour (seven measurements from 10:00AM to 4:00PM) without changing any test station optics.
 - ★ Found that calibrations do not vary over course of a few hours.
 - ★ All but one wavelength (300 nm) have calculated errors less than 1%.
- Added features to Hardware Interlock System program.
 - ★ To UI, added interlock over-threshold trip delay and HV-LV trip delay.
 - ★ To Real-Time subVI, added signal averaging.

McMullen, Marc

MVT

- Continued investigation of pressure loss with Brian.
 - ★ Installed pressure gauge to verify pressure downstream of regulator, per DA recommendation.
 - ★ Tested each relief individually. RV is specified to relieve at 40 psi; it leaks at 5 psi.
 - ★ Confirmed that SVT valve leaks as well.
 - ★ Reassembled, and requested minimum operating pressure from Saclay, to minimize gas loss during operation.
 - ★ Gas controls interface received.

RICH

- Completed changes to OSP and THA that were requested by Pressure Systems SME.
 - ★ Waiting on gas distribution document before resubmission.
- Visited GandR Metals with Tyler, INFN, and EH&S materials handling specialist.
 - ★ Stiffening tool has been fabricated. To mate device to other materials handling tools, adapter plate design has been submitted.
 - ★ Jlab EH&S has received all welding inspection documentation from GandR, except for Visual Inspection Report.
 - Items received: Welders Qualification, Welding Procedure, Inspector's License, and Procedure Qualification Results.
 - Received invoice for welding inspector, which needs to be paid to complete inspection.
- Lifting "eye" bolt on Electronics Panel installation tool was replaced with hoist ring. Two mounting bolt holes required countersinking, due to interference with hoist ring.
- Approved DSG-List for Mirror Spot testing.
- Worked with Tyler, Brian, and Pablo on modifying Winston Cone Laser dark box.
 - ★ Vertical legs were replaced with taller legs, tedlar and additional black-out fabric used to ensure light tightness.
 - ★ Photo diode readout confirmed acceptable light tightness.