



Detector Support Group

Weekly Report, 2017-08-02

Status

Solenoid

- PLC/EPICS control systems readout for vacuum gauges found to have switched values between two gauges CG8606 and CG8600TB, due to incorrect wiring.

RICH

- Initial power-up of Atlas Copco compressors performed.
 - * Compressor in EEL 125 powered and tested with output up to 70 psi.
 - * Compressor in Hall B powered but not tested.
 - Could not be tested because there is no gas panel and tank to test output.
- Hardware Interlock System EPICS Interface changed from server mode to client mode.
 - * CSS/BOY screen now posted under RICH menu in clascss.
- Calibration stability and alignment repeatability tests performed to begin mirror reflectivity.
- Procurement completed for RICH construction:
 - * Hardware for Stiffener and mirror supports.
 - * Silicon caulk to seal detector.

ET

- Temporary LV cable modified for Tracker.

HDice

- Pause feature of NMR program fixed.
 - * Pause button caused power supply to ramp to 0A and crash the program.
 - * Part of the initial programming was removed and program no longer crashes.

GAS Systems

- DC mix gas calibration test performed by comparing the mixed gas with standard sample gas of 10% CO₂, 90% Argon.
 - * Thermal Conductivity Units used to check quality of the mixture and output a 4 – 20mA signal, which is converted to 0 – 10V by the Omega process controller.
 - * Mix 1 measured 2.78V. Mix 1's TCU measured 2.92V for the standard sample (5% higher).
 - * Mix 2 measured 0.597V. Mix 2's TCU measured 0.674V for the standard sample (13% higher).



Detector Support Group

Weekly Report, 2017-08-02

Antonioli, Mary Ann

Absent

Arslan, Sahin

Absent

Bonneau, Peter

Absent

Campero, Pablo

- Powered on the **RICH** compressor with Tyler and Amanda.
 - * Added safety tags to compressor so power can be left on.

Solenoid

- Performed tests for Vaporizer instrumentation.
 - * Tested two solenoid valves (SV8678DV and SV8678CR) and a temperature sensor.
 - * Verified hardware, wiring, PLC logic and EPICS readouts of valves and sensor.
- Tested three solenoid Cryo-con units.
 - * Units correctly caused EPICS screen to indicate a failure when unit loses power.
- Re-calibrated LVDTs for EV8611JT, EV8611CD, and EV8612 valves.
 - * Inspected valves at open and closed positions.
 - * Readout values had less than $\pm 1\%$ offset for each LVDT readout.
- Monitored three vacuum signals (CG8606, CG8600TB, and TB8600).
 - * Verified channel assignments and engineering unit configuration (0—10 V) in the analog input PLC module.
 - * Modified Turbo pump TC-1200 connector.
 - Pin 1 for remote option was disabled to avoid power-on of the turbo pump.
 - Remote option is not required by our control system; connector only used to monitor the speed in the turbo pump.
 - * Discovered readout for vacuum gauges in PLC/EPICS control systems was switched due to wrong wiring.
 - Wiring from Pfeiffer vacuum controller to analog input PLC module was switched.
 - Corrected wiring and drawings to fix PLC/EPICS vacuum gauge values.
- Troubleshoot RS-Logix500 v.27 software installation on AYLifebook laptop.
- Made Solenoid Status Report presentation at DSG meeting.

Eng, Brian

- Tested Thermal Conductivity Units (TCUs) for **DC gas system** with 10% calibrated standard.

Solenoid

- Tested SVs and TP on vaporizer with Pablo.



Detector Support Group

Weekly Report, 2017-08-02

- * Found that changing to static IP addresses meant “search domain on DNS” wasn't being used anymore.
- * Switched code to use FQDN instead (i.e. from hb-mfc-svt to hb-mfc-svt.jlab.org).

Hoebel, Amanda

- Performed power-up of **RICH** compressor with Tyler, Brian, and Pablo.

FT

- Modified temporary LV Tracker cable, with Mindy and Pete.
 - * Temporary LV cable had plastic connectors, which were removed and replaced with ring terminals and a bolt.
- Discussed adding another humidity sensor to calorimeter.
 - * Cable would be 15m long.
 - * Sensor given by FT group will be mounted on RTD board.

HDICE

- Troubleshoot pause feature of NMR program.
 - * Pause button caused power supply to ramp to 0G and crash the program.
 - * Pause button appears to have been written to allow for pausing during a ramp, when it should be used to pause only after the completion of a sweep.
 - Feature was left over from old program, written by Brookhaven.
 - * Removed part of pause button section that attempted to reset “set point” and “sweep rate”. Pause works correctly and does not crash program.

- Created and edited weekly report.

Jacobs, George

Absent

Leffel, Mindy

Absent

Lemon, Tyler

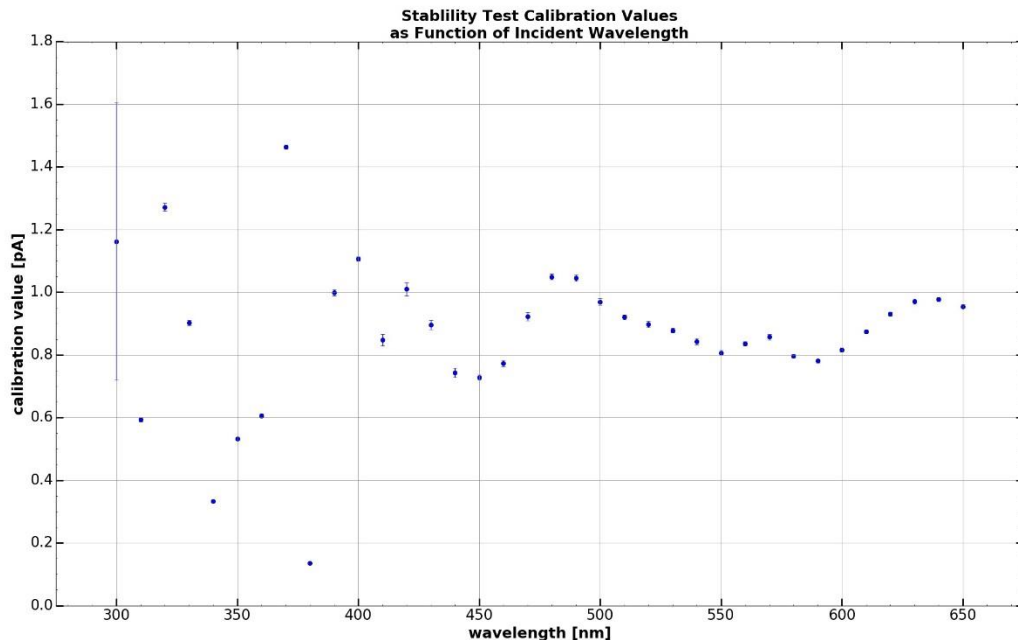
RICH

- Changed Hardware Interlock System EPICS Interface from server mode to client mode.
 - * CSS/BOY screen now posted under RICH menu in clascss.
- Performed initial power-up of Atlas Copco compressors used for RICH's air-cooling with Brian, Amanda, and Pablo.
 - * Compressor in EEL 125 powered and tested with output up to 70 psi.
 - Set maximum output pressure to 70 psi.
 - Charged gas tank to 70 psi.
 - Verified that compressor turned off when it reached 70 psi.
 - Vented gas tank to test flow through mass flow meter.
 - Compressor left powered with emergency stop button pressed to prevent compressor from being used.



Detector Support Group Weekly Report, 2017-08-02

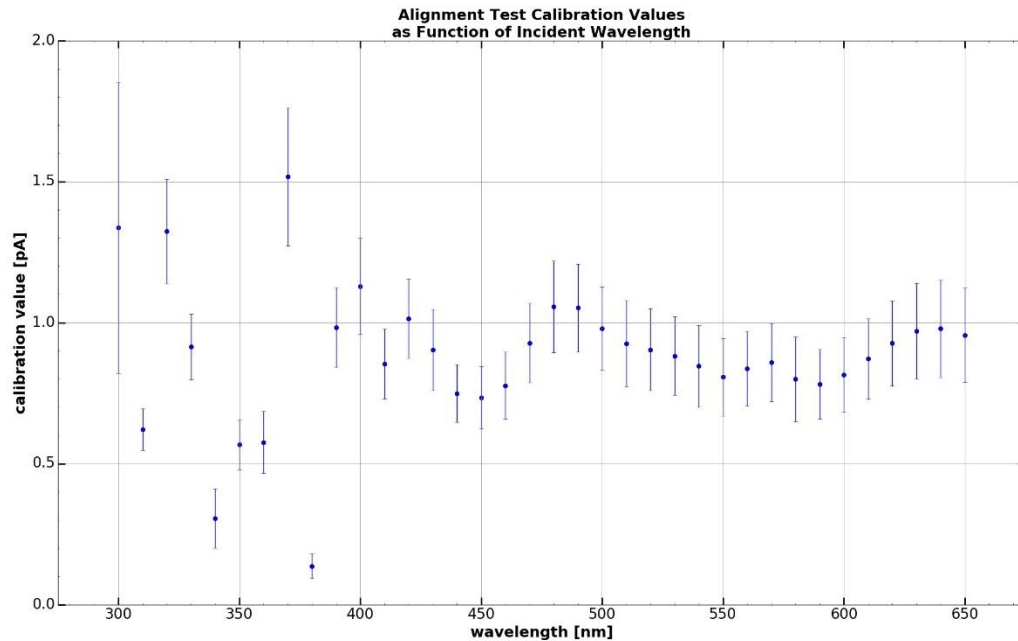
- ★ Compressor in Hall B powered but not tested.
 - Could not be tested because there is no gas panel and tank to test output.
 - Compressor left powered with emergency stop button pressed and admin tag applied to prevent compressor from being used.
- Completed SAF603S training for electrical circuit switching safety.
- Performed calibration stability test.
 - ★ Set up reflectivity test station for calibration measurements.
 - ★ Took seven calibration measurements throughout the day without changing anything or changing the alignment of photodiodes.
- Performed alignment repeatability test.
 - ★ Set up and ran test station for calibration measurements.
 - ★ Realigned test station for reflectivity test using control mirror and ran reflectivity measurements.
 - ★ Repeated for total of three measurements.
- Generated plots for reflectivity test station error analysis.
 - ★ Plots (below) show results for calibration stability test and alignment repeatability test with error bars showing calculated errors.



Plot 1: Results for calibration stability test with error bars for calibration values. All values had <1% error with exception of calibration value for 300 nm.



Detector Support Group Weekly Report, 2017-08-02



Plot 2: Results for calibrations during alignment repeatability test with error bars for calibration value. All errors were greater than stability test errors (Plot 1).

McMullen, Marc

Gas System

- Tested DC mix gas calibration with Brian.
 - * Compared standard sample gas (10% CO₂, 90% Argon) with mixed gas using the Thermal Conductivity Units (TCU).
 - TCU checks the quality of the mixture and outputs a 4 – 20mA signal, which is converted to 0 – 10V from the Omega process controller.
 - * Mix 1 measured 2.78V on 7/31 at 16:30, with an ambient temperature of 85.2F. The Mix 1 TCU measured the standard to be 2.92V at 16:50 (5% higher).
 - * Mix 2 measured 0.597V at the same time, while the standard measured 0.674V (13% higher).

RICH

- Resubmitted OSP with additional documentation.
 - * OSP is approved.
 - * Added an area map, and other supporting documents.
- Completed procurement for RICH construction.
 - * Hardware for Stiffener and mirror supports.
 - * Silicon caulk to seal the detector.
- Met with INFN to discuss procurement of additional machined parts.



Detector Support Group

Weekly Report, 2017-08-02

- Tested gas controls interface chassis during initial start-up.
 - ★ The chassis was used to power the mass flow meters and pressure transducers.

MVT

- Attended meeting with Hall B Engineering, the MVT DA, Saclay, and Brian regarding mixing system controls.
 - ★ The controls will be similar to the DC mix controls with some exceptions.
 - ★ The PLC based gas distribution will send demand flow; however the pressure will be monitored and adjusted for over/under pressure.