Detector Support Group

Weekly Report, 2017-03-29

State of Play

Announcement

- Sahin Arslan will be leaving for USAF Reserve duty.
  - Sahin will be absent from the lab from 04/10/2017 to 08/28/2017.
  - Sahin, good luck and God bless.
- In Sahin's absence:
  - Marc Mcmullen and George Jacobs will be responsible for change out of gas cylinders, for which DSG is responsible.
  - George, as Master Rigger, will develop lift plans and supervise lifts, for which DSG is responsible.
  - Mindy Leffel will take over moves of equipment and accessories with pallet jack and forklift, on an as needed basis.

HDice

- Test program to measure Lock-in Amplifier external trigger efficiency developed.

SVT

- User interface computer, cRIO system software, and interlock system program upgraded to LabVIEW 2016.
- CSS screens running from clon machines have been up for nearly a week, which is a big improvement over version from ACC machines.

RICH

- Detector shell rotated back to horizontal position.
- Electronics panel reworked to accommodate connectors.
- Quotes received for stiffner assembly.

FT

- "Health" status routines for cRIO developed for interlock system.
  - Routines debugged and integrated into real-time and user interface programs.

Antonioli, Mary Ann

- Continued working on **HDice** NMR software flowchart.
- Continued writing **RICH** interlock LabVIEW code — two global subVIs and initialization of variables.
  - ✶ Tested and debugged.
  - ✶ Loaded SD card code from Peter's project, reviewed, and tested.
  - ✶ Discussed configuration file and communications loop with Peter.
- Compiled, edited, and formatted weekly report.
- Changed website photo.

Arslan, Sahin

- Replaced SVT N_2 bottle and inventoried N_2 gas bottles.

RICH

- Continued working on detector assembly, fabricating, assembling, and modifying
- Assisted with fit test of electronic panel on detector and necessary adjustment and modifications
- With Mindy and Tyler, drilled 16 missing HV connector holes on carbon fiber electronic panel
- Reduced width of gasket on front panel per Sandro's request.
- Assisted in removal of two front panels, top bar, installed back bottom bar, and rotated assembly back to horizontal, using winch and gantry.
- Fabricated ½" aluminum plate and drilled holes, to be used to fill gap between structure and detector.
- With Mindy, cleaned up semi clean room and relocated compressor and air tank to designated area. Transferred basket of DC signal and LV cables to ESB.

Bonneau, Peter

- Upgraded **SVT** user interface computer, cRIO system software, and interlock system program to LabVIEW 2016.
- Developed cRIO health status routines for **Forward Tagger** interlock system, debugged, and integrated into real-time and user interface programs.

RICH

- Met with Marco Mirazita regarding interlock system temperature and humidity sensors.
  - ✶ Marco thought sensor boards would fit into detector.
  - ✶ Sent information to mailing list on board connectors, for possible integration into patch panel.
- Worked with Mary Ann on hardware interlock code.
  - ✶ Discussed interlock control subroutine integration into real-time main program. Interlock-enable shared variable was expanded to include entire array depth.
  - ✶ Solved configuration issues with NI9205 module, which was reprogrammed for differential mode operation.
  - ✶ Debugged and corrected indexing problem that was causing incorrect data in interlock subroutine.

- Discussed program messaging and its role in interlock user interface and real-time main.

HDice

- Developed test program to measure Lock-in Amplifier external trigger efficiency.
  - Program used cRIO in FPGA mode programmed as scaler to measure actual trigger count vs. buffer counter in lock-in amplifier.
  - Lock-in amplifier trigger efficiency dropped below 100% at frequencies above 425 Hz.
  - Discussed test program with Amanda.
  - The NMR test station is being reassembled in EEL lab in preparation for synchronization testing.

- Held daily meeting on Hall D status and EPICS controls monitoring.
  - Humidity levels in BCAL have remained low after cooling duct repair.

Campero, Pablo

- For **RICH** assembly, contributed to:
  - Removal of detector front panel.
  - Re-assembly of lower horizontal bar with foot for detector frame.
  - Rotation of frame structure to horizontal position, for ease of exit window installation.

- Monitored and analyzed logbook entries and EPICs screens for Hall D daily.
  - FDC HV channels were turned off.
  - Upstream BCAL PLC has communication issues with EPICs.

- Worked on VME Test Station
  - Wrote LabVIEW program to read out RTD signals from V450 ADC board, connected RTD temperature sensor, and tested.
- Wrote LabVIEW program to test ADC channels on V450 board.
  - Used voltage source to test inputs to channel 0 at 0–5 V range and 16 bits resolution.
  - Performed 1000 measurements at 1 V steps, from 0 through 5 V.

Eng, Brian

- Reconnected SFL3N cRIO with Marc after **gas** panel was reinstalled. DC read-only indicators added to stand-alone GUI.
- 3D printed panel templates for **RICH** received.

SVT

- Replacement chiller is broken. Attempted to connect original chiller (which already was repaired) but no plugs in EEL/124. Working with Fast Electronics to figure out how to power it.

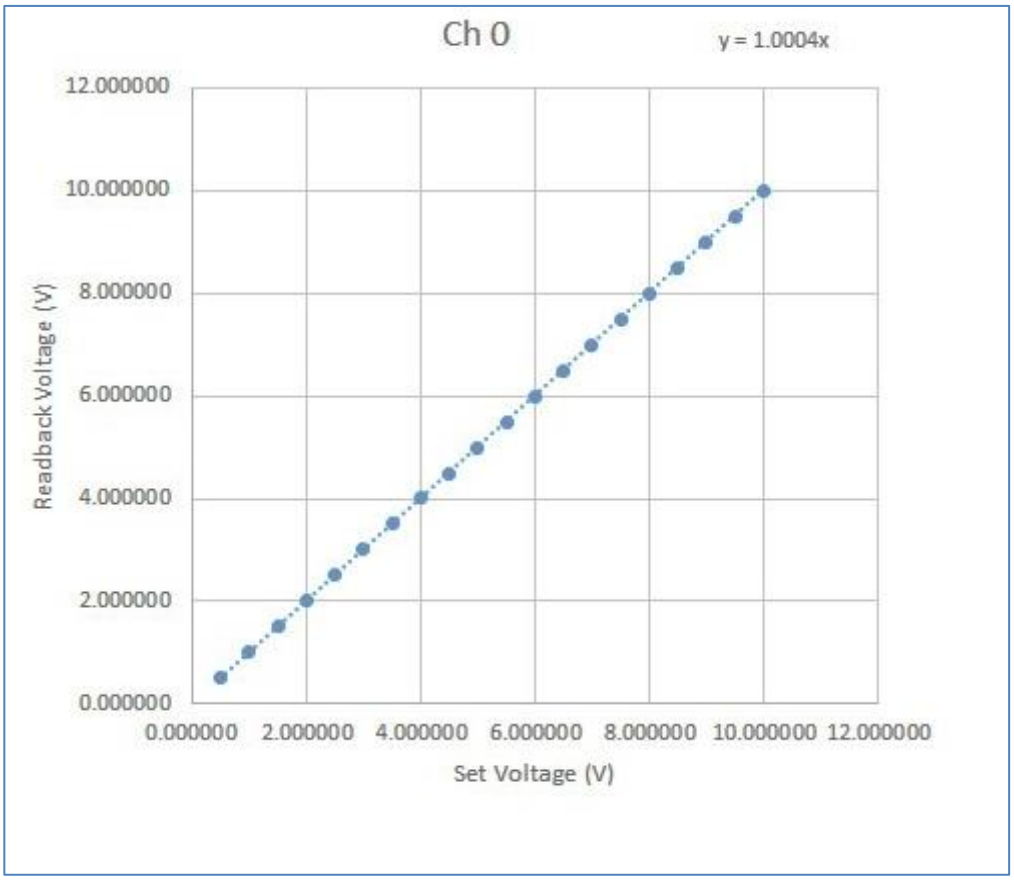
- CSS screens running from clon machines have been up for nearly a week, which is a big improvement over version from ACC machines.

Hoebel, Amanda

RICH

- Took pictures of electronics panel frame installation for DSG website.
- Attended talk for collaboration meeting.

- Tested PLC analog input module with voltage source for varying voltages.
  - ✶ Tested eight channels.
  - ✶ Created graphs of voltages.
  - ✶ Relationship is linear.



Graph showing linear relationship between PLC voltage set and readback for Ch 0.

Jacobs, George

GAS Systems

- Connected gas lines to DC solenoid panel.
- Determined that there is a significant leak in R1-2 DC gas exhaust manifold on Torus.
- Labeled DC system manual valves with numbered brass tags.

- Wired DC Magnahelic pressure transducers, verified proper read back in gas shed and EPICS.
- Pre-job planning for N_2 gas supply work.
- Discussed pressure testing gas systems with Dave Kashy.

Leffel, Mindy

RICH

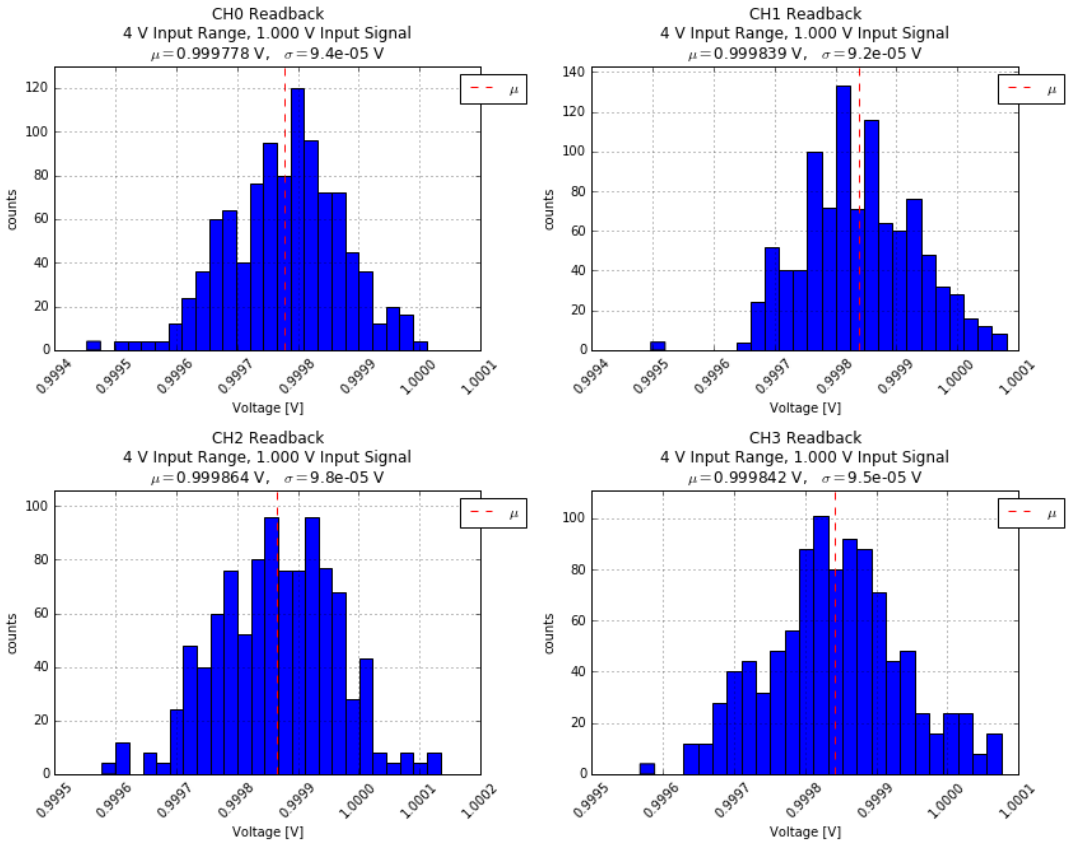
- Continued fabricating HTSBs.
- Contributed to rotating shell back to horizontal.
- Worked with Sahin to organize curtain room and relocate compressor and tank.
- Worked on carbon fiber electronic panel.
  - ✶ Contributed to cutting missing slots for HV connectors.
  - ✶ Filed slots that were too small.
  - ✶ Worked with Mary Ann to verify connector fit after filing.

Lemon, Tyler

- Contributed to **RICH** assembly.
  - ✶ Removed detector front panel.
  - ✶ Replaced bottom horizontal bar of assembly structure.
  - ✶ Removed top horizontal bar of assembly structure.
  - ✶ Assisted with rotation of detector back to horizontal.

- Monitored logbook and EPICS on daily basis.
  - ✶ Noted entry stating LCW leak repairs in progress for Solenoid power supply.

- Completed first version of LabVIEW test program for NI-9219 ADC modules, measuring voltage from Krohn-Hite Model 523 Precision DC Source using NI-9219 ADC module at user-specified ranges.
  - ✶ Measures voltage on all four ADC channels.
  - ✶ Available input ranges: ±60 V, ±15 V, ±4 V, ±1 V, ±125 mV.
  - ✶ Uses updated Krohn-Hite LabVIEW 2016 drivers.
  - ✶ Writes data to .txt file.
- Wrote Python program to generate histograms from ADC module test results.
  - ✶ Test parameters: 1000 samples per channel; 4 V ADC input range; 1 V input signal from Krohn-Hite.
  - ✶ Below: Histograms generated for each channel.



Histograms generated in Python using resulting data from NI-9219 ADC module test.
Vertical, red, dashed line indicates mean of 1000 samples taken for each channel.

McMullen, Marc

Gas System

- Continued modifying gas system GUI to work with new gas mixing VI through networked variables. Completed mix calibration subVI.
- Reconnected pressure transducers and valve drivers to interface chassis on SFL3.
- With Brian, debugged some Gas Shed signals; manifold pressure, return flow, and moisture signals were not updating.

RICH

- Met with Bob Miller to discuss stiffener quote received from Precise.
  - ✶ Suggested that we get more quotes, and that quotes will be random in amount.
  - ✶ Hall B Mechanical would have needed a lot of overhead to fabricate assembly.
- Met with GandR Machinery to discuss fabrication of stiffener assembly.
  - ✶ Received quote. INFN is waiting for more quotes before final decision.
- Started Electronics Installation and Testing TOSP.
  - ✶ Reviewed procedure and wrote THA.
  - ✶ Contacted Valery to clarify testing to be done in EEL.
  - ✶ Received installation procedure from Marco.

- Completed monthly safety walk-through.