



Detector Support Group

Weekly Report, 2018-03-28

Summary

Magnets

- Solenoid LV-cRIO controller debugged.
 - ★ Problems were:
 - Controller unable to connect to the network.
 - Reported cryo alarms on the Solenoid due to wrong temperatures.
 - ★ Reboot of cRIO caused program to run normally.
 - Temperature readout showing correct values.
- Spreadsheet generated to analyze how the Torus “Out Of Plane Support” (oops) forces are affected during the Torus and Solenoid ramp-ups.
 - ★ Computed for positive and negative polarities.
- All Magnet cRIOs connected to MOXA terminal server to allow for connection to cRIOs in event of network outage.

RICH

- Ten 3-cm aerogel tiles received and inspected.
 - ★ Tiles were part of order for first RICH sector that were not fabricated in time.
 - ★ Tiles will be used for second sector.

SVT

- HFCB temperature issues on Hardware Interlock System debugged.
 - ★ Temperatures would drop to zero, but will not go negative.
 - ★ Solution was that in the signal processing sub-VI for temperature sensor, the lookup table for temperatures below zero were not implemented.
 - ★ Lookup table updated for temperatures down to -50°C.

Hall D

- NI PXIe4300 terminal block for magnet wired for ADC calibration.

CRIO Test Station

- Voltage integral nonlinearity test written for one channel.



Detector Support Group

Weekly Report, 2018-03-28

Antonioli, Mary Ann

cRIO test stand

- Updated automatic 9207 mean, accuracy, standard deviation test for all channels. Tested OK.
- Rewrote computation of voltage full scale because of different method of reading samples. Tested and debugged.
- For both manual and automatic modes, updated dynamic range difference test, offset error difference test, gain error % test, and differential nonlinearity test. All tested OK.
- Wrote voltage integral nonlinearity test for one channel. Tested OK.
 - * Added test to manual mode and made Excel template. Tested and debugged.

Bonneau, Peter

HDice

- Continued development of current shunt data acquisition test program.
 - * Implemented histogram display of converted binary CT-Box data.
 - * Developed, debugged, and tested shunt current measurement to magnetic field conversion option for histogram display.
 - * Continued development of sub-VI library to process and convert raw binary data from current shunt and lock-in amplifier during a NMR data acquisition cycle.

SVT

- Debugged issue with HFCB temperatures on Hardware Interlock System.
 - * Temperatures will drop to zero, but will not go negative.
 - * In the signal processing sub-VI for the HFCBLM94002 temperature sensor, the lookup table for temperatures below zero were not implemented.
 - * Updated lookup table for temperatures down to -50°C.
 - * Tested revised code on DSG cRio test station.
 - * Will implement revised code on SVT interlock system in Hall B during next maintenance period.
- Worked with Nathan Baltzell on the implementation of 118 EPICS Hardware Interlock PV's to Mya database.
 - * Process variables will display correctly using accelerator based machines, but not Hall B.
 - * On Hall B computers, IO error 2 is shown on console when archived interlock PV's are displayed.
 - * Nathan will contact accelerator support for Mya regarding this issue.
- Reviewed recent operational history of the Hardware Interlock System performance.
 - * CPU usage is low, averaging 8% since the replacement of the NI cRio processor.

Hall D

- Held meetings on Hall D status and EPICS controls monitoring.



Detector Support Group

Weekly Report, 2018-03-28

Campero, Pablo

Magnets

- Debugged Solenoid LV-cRIO, controller unable to start up program and connect to the network, reported cryo alarms on the Solenoid due to wrong temperatures.
 - * Unknown reasons to cause disconnection of the cRIO controller. Nothing found in the NI error log.
 - Noticed an offset at the controller clock time, time was indicating an hour behind.
 - Set correct time and verified in NI controller web page.
 - * Verified User LED status indicator was not blinking (normal operations it blinks once a sec as the heartbeat).
 - * Rebooted cRIO with hardware reset button and communication and program started to run normally
 - Temperature readout re-established and showing correct values.
- Generated spreadsheet to analyze how the Torus “Out Of Plane Support” (oops) forces are affected during the Torus and Solenoid ramp ups.
 - * Computed data from Mya Archiver for the OOPS load cells values for different scenarios when the Solenoid and Torus are at positive and negative polarities.

HDice

- With Amanda and Tyler debugged Attenuation box.
 - * Verified hardware wiring for each component in the box.
 - * Updated NI LabVIEW and NI-MAX.
 - * Installed NI serial drivers (V16, V17) in PC used for testing at room eel 231.
 - * Run LabVIEW VI drivers to test proper RS232 and RS-485 serial communication.
 - Commands were properly send but readout for D-CON I/O # 3 module still conflicted.
 - * Downloaded D-CON Utility software used to verify proper address at the D-CON I/O modules.
 - Configured settings required: Baud rate, communication protocol.
 - Unable to connect with D-CON I/O modules, address verification for modules was not done.
- Took Radiation Worker I and General Employee Radiation trainings.
- Wrote LabVIEW program to test its precision to transfer data to excel files.
 - * Program wrote to transfer π and π^2 values from LabVIEW to Excel.
 - * Tested “Double integer” (64Bit), and “Extended precision” (128 Bit) data formats.
 - Found that the maximum number of significant digits that can be transfer from LabVIEW to excel is fourteen.
 - Used available “Excel Report” LabVIEW libraries.

Eng, Brian

SVT

- Worked with Marc to get a parts list for the patch panel boards.



Detector Support Group

Weekly Report, 2018-03-28

Magnets

- Looking into logging information after NI requested CPU/memory information after Torus Fast DAQ died.
 - ★ Was hoping to use existing infrastructure since most run Linux, but CC uses Nagios which NI doesn't package. Will try sysstat package which saves files to the disk of the cRIO, if that works we'll see if we can get an NFS mount to store those files externally.
- Connected all the cRIOs to the terminal server.
 - ★ 3/4 already had console out enabled, the solenoid LV cRIO has a hardware switch. Verified console out and logging works: <https://logbooks.jlab.org/entry/3546032>

Hall D

- Verified that the gaussmeter reading is correct based on voltage to the PXI: <https://logbooks.jlab.org/entry/3548270>
- Verified new wiring Mindy made for the ADC calibration works with spare module, still passes verification with new cabling.

Hoebel, Amanda

RICH

- 10 Aerogel tiles inspected, with Tyler.

DC

- Created histograms of TCU voltages in Python.
- Made TCU presentation.

FT

- Finished interlocks LabVIEW and EPICS screens.
- Troubleshoot problem with LabVIEW interlock program.
 - ★ Program would crash on application run.
 - ★ Unused part of program was supposed to be disabled but was not.

Jacobs, George

GAS Systems

- Updated list of RTPC gas system components with ordering info.
- Monitoring LTCC S5 single sector test detector pressure and gas usage.
- Updated Increased LTCC C4F10 gas pressure setpoint for running with beam.
- Discussion about temperature sensors for RTPC detector.
- Discussions about gas system and recovery unit for C4F10 based Cerenkov for Hall A SOLID experiment.

Leffel, Mindy

Hall D

- Wired NI PXIe4300 terminal block for ADC calibration, for magnet.
 - ★ Trial and error to determine wire and ferrule gauges, and best crimp tool.
 - ★ First attempt unsuccessful, 22 AWG wire too big and crimp tool crimped too much.
 - ★ Final version, 25 AWG, 20 gauge ferrules, and flat crimp tool.



Detector Support Group

Weekly Report, 2018-03-28

- Took training.
 - * GEN133 Activity Hazard Analysis, for identifying hazards and the control measures in place to eliminate/reduce risk and communicate information.
 - * GEN035kd.1 Control of Nonconforming Material or Product Procedure, for identifying, controlling, and disposing of these items using a graded system.
- Researched ferrule crimp tools and submitted PR for hexagon crimper.

Lemon, Tyler

RICH

- Inspected ten 3-cm aerogel tiles with Amanda.
 - * Ten tiles received were part of order for first RICH sector that were not fabricated in time.
 - * Tiles will be used for second RICH sector.
- Compiled information for detector health report.
 - * Generated plots for temperatures, humidity, airflow, nitrogen flow, air pressure, and differential pressures in Python.
 - * Retrieved data from EPICS to create correlation plots to show relationship between scaler counts and beam current, differential pressures and humidity, and air pressure and airflow.

Magnets

- Connected all Hall B Magnet cRIOs to MOXA terminal server and tested connection with Brian.
 - * Labeled cables that run from cRIOs on SF L2 to MOXA terminal server on SF L1.
 - * Checked cables using Ethernet cable tester, found one was not terminated correctly; reterminated both ends of cable.
 - * Used spare cRIOs to test communication settings of MOXA.
 - Tested that MOXA logs data received from cRIOs.
 - * Rebooted Solenoid LV cRIO to enable console output.
 - All other cRIOs had console output previously enabled.
- Reorganized and recabled DSG control room in preparation for new screen with Pablo, Amanda, and Mindy.
 - * Unused items moved to cabinets in hallway.
 - * PCs consolidated to one shelf in control room.
 - * Video connections to existing screen re-routed and cables labeled.
 - * Exiting screen moved to accommodate new screen and allow further organizing of test equipment in DSG control room.

McMullen, Marc

RTPC

- Looked into procurement for gas controls.
 - * William and Mary will start procuring components. George has provided and expanded parts list for hardware. W&M will also procure an analog input module



Detector Support Group

Weekly Report, 2018-03-28

which will be added the Space Frame cRIO to input the pressure and temperature signals into the gas controls.

SVT

- Purchased components for patch panel boards. 30 total boards will be assembled.

DC

- Added the mixing system TCU value to the curve produced by the 5 standard samples.

