



# Detector Support Group

## Weekly Report, 2018-08-01

### Summary

#### Hall C

- PLC program for dipole field regulation in progress
  - ★ Implemented formula based on the sample data from the HMS curve I(B).
  - ★ Developed a HMI screen to simulate input values for magnetic field, magnetic field limits and alarm levels.
- Upgrading HMS PLC from version 16 to version 20.
  - ★ Requested quotation for communication and redundancy modules needed for upgrades in the HMS primary and secondary PLC chassis.
    - Two EN2T modules, two CN2 modules, and two RM2 modules
    - Estimated price for above modules ~ \$20,100
- With regards to Windows 7 upgrades to Windows 10.
  - ★ DSG-HallC-6 computer has been rebuilt to Windows 10.
    - Computer is on the Hall C sub-net and is being configured as a PLC test station.
    - Computer will be used to test the PLC software upgrade to V20.58 running on Windows 10 for HMS and SHMS.
    - Computer was returned because of failures in the operating system
    - Computer is being debugged by computer center.
- Found that the PTP time for the Hall C subnets are way off (says it's year 1970)
  - ★ Hall B & D subnets appear to be 33 seconds faster compared to the Hall C subnet.
  - ★ Filed a ticket with Rockwell (4007139001) to enquire about this.
- DSG is still waiting on information and/or cabling work from Hall C on:
  - ★ HMS & SHMS shutter controls
  - ★ Spectrometer break controls
  - ★ Valve tune responses
  - ★ SHMS LVDT I/O module work.

#### Hall B Magnets

- Solenoid Pre-power-up interlock and instrumentation checklists completed.
- Torus Pre-power-up interlock and instrumentation checklists completed.
- Completed instrumentation checkouts for Solenoid and Torus magnets.
- Started work on a script to automate the instrumentation checkouts that will collect the various sensor values and check they're in range and post the results to the logbook.

#### RICH

- Installed Easidew moisture transducer on N2 exhaust line.
  - ★ RICH's N2 exhaust reconfigured to use both exhaust ports.
  - ★ Easidew was installed in line on one exhaust line from RICH at its patch panel.
- Wired Easidew moisture transducer to N2 cRIO.
  - ★ Routed cable from RICH to N2 cRIO.
  - ★ Added additional 24V terminal blocks to accommodate new sensor.



# Detector Support Group

## Weekly Report, 2018-08-01

- Added readout of new sensors to N2 cRIO LabVIEW program.
  - \* Real-time program, configuration file, User Interface VI, and EPICS client modified to add new moisture transducer and N2 panel supply pressure transducer (PT).
  - \* Water concentration in N2 exhaust is ~65 ppm (~0.25 % RH).
  - \* Addition of new PVs for EPICS monitoring of sensors to softIOC in progress.
- Upgraded EP cRIO and N2 cRIO firmware/software and their respective hardware interlock programs to LabVIEW 2018.
- Updated EPICS CS-Studio screens for N2 cRIO to display N2 volume water concentration as measured by the Easidew moisture transducer.
  - \* Screen completed.
- EP cRIO hardware interlock program successfully converted to LabVIEW 2018 and tested on DSG's development cRIO.
  - \* N2 cRIO program conversion to LabVIEW 2018 in progress; waiting on availability of spare modules.

### HDice

- CT-box, RF box, and NMR synchronization mode documentation is being compiled.
- The Rack #1 instrumentation and computer has been installed and is running in the HDice lab for two weeks.
  - \* The upgraded rack is waiting for HDice group testing.

### SVT

- Moved HFCB Cables to make room on top of insertion cart.
- Upgraded the cRio processor firmware to version 6.0.0f1.
- Upgraded system software on cRio to NI Linux Real-Time x64 4.9.47-rt37-6.0.0f1 for LabVIEW version 2018.
- Upgraded, installed, and tested Hardware Interlock System control software to LabVIEW version 2018.
- Rebuilt and tested the threshold configuration file for the interlock system.
- Started the addition of monitoring and interlocking on the pressure in the SVT cooling system

### FT

- Upgraded the cRio processor firmware to version 6.
- Upgraded system software on cRio to NI Linux Real-Time x64 4.9.47-rt37-6.0.0f1 for LabVIEW version 2018.
- Upgraded, installed, and tested Hardware Interlock System control software to LabVIEW version 2018.
- Rebuilt and tested the threshold configuration file for the interlock system.



# Detector Support Group

## Weekly Report, 2018-08-01

### DC

- Adjusted mix pressure set points.
  - \* The high limit for mix#2 has been lowered from 100 psi to 90 psi.

### Gas Sytem Controls

- Gas system cRIO firmware and software updated to LabVIEW 2018.

### LERF Cryomodule 2

- Terminated 14 cables.
- Used five different types of MS connectors, 108 pin total.

### SFR

- 5333 CAMAC card D-sub connector replacement, 50 pin.
  - \* Replaced one connector in south LINAC.
  - \* Replaced four connectors in north LINAC.

### cRIO Test Stand

- Wrote code for module 9205 automatic tests for  $\pm 10$  V range and for  $\pm 5$  V range
- Made drawing of 9205 test wiring.



# Detector Support Group

## Weekly Report, 2018-08-01

### Antonioli, Mary Ann

#### cRIO test stand

- Made detail of portion of Hall C HMS PLC Network map drawing.
- cRIO test stand
  - \* Wrote code for module 9205 automatic tests for  $\pm 10$  V range and for  $\pm 5$  V range
  - \* Tested, debugged, and currently retesting.
  - \* Made drawing of 9205 test wiring.
- Notes
  - \* Wrote first draft of Note on HDice RF Attenuation and Switching Unit.
  - \* Began formatting and editing of gas system upgrade Note.

### Bonneau, Peter

#### HDice

- CT-box, RF box, and NMR synchronization mode documentation is being compiled.
- The Rack #1 instrumentation and computer has been successfully installed and running in the HDice lab for two weeks.
  - \* The upgraded rack is waiting for HDice group testing.

#### SVT Hardware Interlock System

- Upgraded the cRio processor firmware to version 6.0.0f1.
- Upgraded system software on cRio to NI Linux Real-Time x64 4.9.47-rt37-6.0.0f1 for LabVIEW version 2018.
- Upgraded, installed, and tested Hardware Interlock System control software to LabVIEW version 2018.
- Rebuilt and tested the threshold configuration file.
- The addition of monitoring and interlocking on the pressure in the SVT cooling system has started

#### FT Hardware Interlock System

- Upgraded the cRio processor firmware to version 6.
- Upgraded system software on cRio to NI Linux Real-Time x64 4.9.47-rt37-6.0.0f1 for LabVIEW version 2018.
- Upgraded, installed, and tested Hardware Interlock System control software to LabVIEW version 2018.
- Rebuilt and tested the threshold configuration file.

#### Hall C PLC Control Systems

- Held daily status and planning meeting on HMS and SHMS PLC control systems.
  - \* The DSG-HallC-6 computer has been rebuilt to Windows 10.
    - This computer is on the Hall C sub-net and is being configured as a PLC test station.
    - Will be used to test the PLC software upgrade to V20.58 running on Windows 10 for HMS and SHMS.



# Detector Support Group

## Weekly Report, 2018-08-01

- \* DSG is waiting on information and/or cabling work from Hall C on HMS & SHMS shutter controls, UPS for spectrometer break controls, valve tune responses, and SHMS LVDT I/O module work.

### **Campero, Pablo**

#### **Hall C**

- Continuing upgrades for HMS PLC from version 16 to version 20.
  - \* Requested quotation for communication and redundancy modules needed for the proper upgrades in the HMS primary and secondary PLC chassis.
    - Two EN2T modules, two CN2 modules, and two RM2 modules
    - Estimated price for all mentioned modules ~ \$20,093
- Dipole field regulation PLC program in progress
  - \* Implemented formula based in the sample data from the HMS curve I(B) provided by Mike Fowler.
  - \* Developed a HMI screen to simulate input values for magnetic field, limits and alarm levels.
- With Peter configured “dsg-hallc-6” computer with windows 10 to continue compatibility test for upgrades in HMS and SHMS PLC software.
  - \* Requested to Computer Center for the installation of windows 10.
  - \* Computer was dropped with failures in the operating system.
    - Screen black after attempt to switch users.
    - Sent ccpr to request fixing in the PC.
- Updated DSG- Hall C PLC task list.
- Generated DSG Hall C PLC weekly report.

#### **Hall B**

- Completed all checks on P005- Hall B Solenoid Pre-Power up Interlock Checkout procedure
- Completed all checks on P027 – Hall B Torus Pre-Power up Interlock Checkouts procedure.
- Completed instrumentation checkouts for Solenoid and Torus magnets.

### **Eng, Brian**

#### **SVT**

- Moved HFCB Cables to make room on top of insertion cart:
  - \* <https://logbooks.jlab.org/entry/3582387>

#### **DC**

- Adjusted mix pressure setpoints after failure on mix 2 CO2:
  - \* <https://logbooks.jlab.org/entry/3582860>

#### **Hall B Magnets**

- Completed Instrumentation and Interlock Checkouts for both magnets with Amanda, Pablo and Tyler:
  - \* <https://logbooks.jlab.org/entry/3582737>
  - \* <https://logbooks.jlab.org/entry/3582691>



# Detector Support Group

## Weekly Report, 2018-08-01

- \* <https://logbooks.jlab.org/entry/3582692>
- \* <https://logbooks.jlab.org/entry/3582813>
- \* <https://logbooks.jlab.org/entry/3582797>
- \* <https://logbooks.jlab.org/entry/3582802>
- Started work on a script to automate the instrumentation checkouts that will collect the various sensor values and check they're in range and post the results to the logbook.

### Hall C

- Found that the PTP time for the Hall C subnets are extremely off (says it's 1970!), Hall B & D appear to be 33 seconds fast. Filed a ticket with Rockwell (4007139001)

### Hoebel, Amanda

Absent

### Jacobs, George

#### GAS Systems

- Installed ppm H2O sensor in RICH N2 exhaust line
- Meeting on RTPC gas system with Carlos and student
- Ran a 2<sup>nd</sup> exhaust line from RICH to bubbler

### Leffel, Mindy

#### LERF

- Cryomodule 2 cable termination.
  - \* Terminated 14 cables.
  - \* Five different types of MS connectors, 108 pin total.

#### SRF

- 5333 CAMAC card D-sub connector replacement, 50 pin.
  - \* Replaced one connector in south LINAC.
  - \* Replaced four connectors in north LINAC.

### Lemon, Tyler

#### Hall B Magnets

- Completed Solenoid and Torus Pre-power-up interlock checkout procedure with Pablo, Amanda, and Brian.

#### RICH

- Installed Easidew moisture transducer on N2 exhaust line with George.
  - \* RICH's N2 exhaust reconfigured to use both exhaust ports.
  - \* Easidew was installed in line on one exhaust line from RICH at its patch panel.
- Wired Easidew moisture transducer to N2 cRIO.
  - \* Ran cable from RICH to N2 cRIO with Pablo.
  - \* Added additional 24V terminal blocks to accommodate new sensor.
- Added readout of new sensors to N2 cRIO LabVIEW program.



# Detector Support Group

## Weekly Report, 2018-08-01

- ★ Real-time program, configuration file, User Interface VI, and EPICS client modified to add new moisture transducer and N2 panel supply pressure transducer (PT).
  - N2 Supply PT not yet wired to cRIO, but code added to read sensor since cRIO was being taken offline to add moisture transducer.
- ★ Water concentration in N2 exhaust is ~65 ppm (~0.25 % RH).
- ★ Addition of new PVs for EPICS monitoring of sensors to softIOC in progress by Nathan Baltzell.
- Upgraded EP cRIO and N2 cRIO firmware/software and their respective hardware interlock programs to LabVIEW 2018.
- Updated EPICS CS-Studio screens for N2 cRIO to display N2 volume water concentration as measured by the Easidew moisture transducer.
  - ★ Screen complete; will be debugged once PVs are added to softIOC.
- EP cRIO hardware interlock program successfully converted to LabVIEW 2018 and tested on DSG's development cRIO.
  - ★ N2 cRIO program conversion to LabVIEW 2018 in progress; waiting on availability of spare modules.
  - ★ Will wait to update both interlock cRIOs in Hall B at the same time.

### McMullen, Marc

#### Gas System Controls

- Started work on the Daily Log display in LabView.
  - ★ Completed code to read in logged data and display multiple graphs.
  - ★ Starting work on x scale (time) for the graphs.

#### LTCC

- Met with Hall B Engineering on LTCC system changes.
  - ★ S3 and S5 will have two new transducers installed
  - ★ Controls system for S3 and S5 will be modified to use them instead of the magnehelics.

#### RICH

- Worked with George and Tyler on installation of the hygrometer and troubleshooting the RICH interlocks cRIO controls chassis.
- Started work on a CLASNote on gas system controls overview.