Detector Support Group
Weekly Report, 2018-09-20

Summary

Hall C

- Dipole field regulation PLC program completed.
  - ✶ Conditions to start/stop regulation routines added, based on PSU read-back status.
  - ✶ Filtering option for magnetic field readouts from PT2026 NMR unit completed.
  - ✶ Comments added for each of the three routines:
    - ▪ Dipole_Field_Regulation: Main routine, used to control regulation logic needed to start/stop regulation, set operational limits and calculate field offsets.
    - ▪ Calculate_DI_Current: Routine calculates and sends to the MPS the required current which is based on magnetic field.
    - ▪ NMR_Read_B: Routine used to read the magnetic field and status from the PT2026 NMR unit.
  - ✶ Program tested with Danfysik Python simulation program and HMI test screen.
- For 'End of life of Windows 7 and associated upgrade to Windows 10' task:
  - ✶ Dsg-hallc-6 computer was rebuilt with windows 10.
  - ✶ Changed graphics card.
  - ✶ .NET Framework 3.5 installed; pre-requisite to install Rockwell Software.
  - ✶ RSLogix5000 v.20.04.01 installed.
- Current Regulation PLC program for the HMS and SHMS quadrupoles tested using Danfysik Python simulation program.
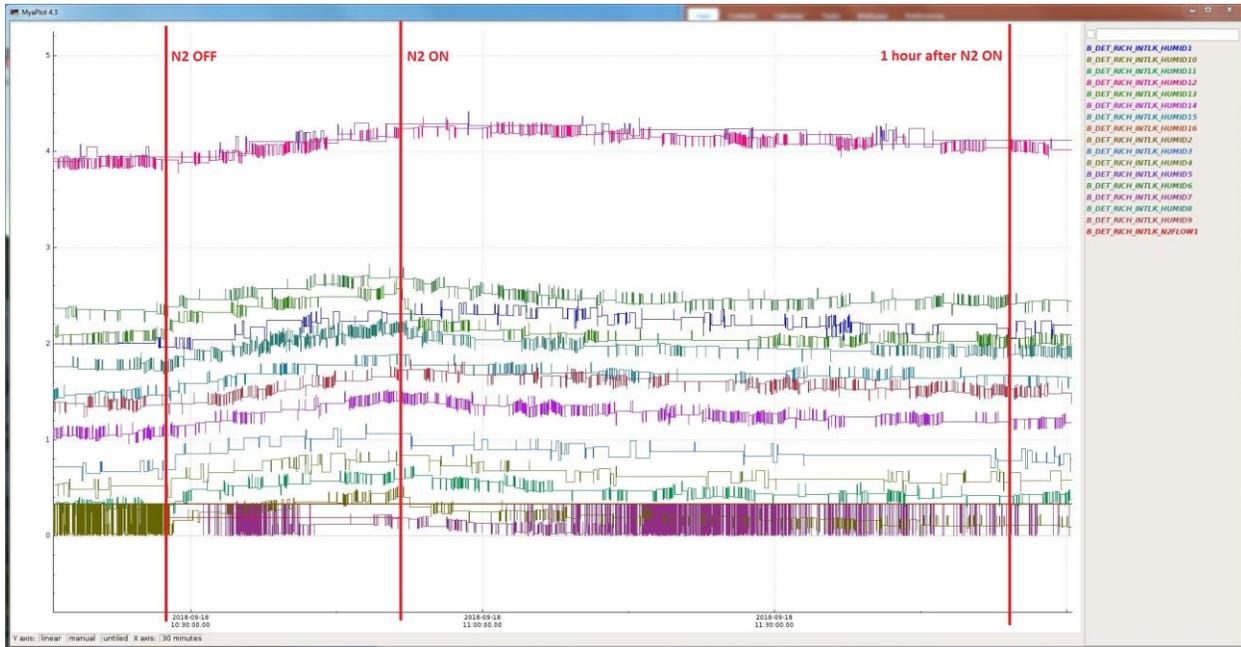
Hall B Magnets

- Solenoid Fast Dumps Event table updated.
  - ✶ Information added for the last three fast dump events that occurred at 2416 A on 08/27/2018, 08/30/2018 and 09/10/2018.

RICH

- Analyzed data from N2 flow loss on September 18, 2018 at 10:27AM.
  - ✶ N2 flow lost in Hall B due to installation of isolation valve in the hall's nitrogen supply line.
    - ▪ New isolation valve allows flow to Forward Carriage or Space Frame to be stopped without affecting flow to the other.
    - ▪ N2 Flow lost for ~27 minutes.
  - ✶ During period with no N2 flow, humidity increased ~0.3% RH in N2 volume.
    - ▪ ~30% overall increase in humidity.
  - ✶ One hour after N2 flow was restored, humidity had decreased ~ 0.18% RH in N2 volume.
    - ▪ ~ 16% overall decrease in humidity.

RICH N2 Volume humidity sensors during time with no N2 flow to about one hour after flow was restored.

HDIce

- Fast Resonance Scanner (FRS) program debugged.
  - ✶ RF box failed to deliver RF while running the FRS.
  - ✶ An incorrect communication port setting was discovered for the RS-485 interface for the RF box.
    - ▪ The incorrect port setting was most likely caused by the frequent Rack #1 computer crashes.

SVT

- Broken connector repaired for external chiller pump relay box cable.

Gas Control

- DC gas quality measurements at the exhaust evaluated.
  - ✶ The R1-2 O_2 sensor read-back is off scale (> 1000ppm), while R3 ~400ppm.
  - ✶ The moisture content for R1-2 is up to ~450ppm from a pre-storm value of ~350ppm.

CRIO Test Station

- Module 9205 differential nonlinearity test written, tested, and debugged.

Antonioli, Mary Ann

- cRIO test station.
  - ✴ Cleaned up project file, so had to change all Excel file paths; retested for 9205 module.
  - ✴ Wrote 9205 module differential nonlinearity, with Krohn-Hite, test. Tested and debugged.
  - ✴ Added above test into manual mode; currently debugging.

- Made final edits to and posted Note 2018-12.
- Formatted, edited, and posted Note 2018-13.
- Began reformatting Notes webpage.
- Attended Monthly Workers Safety Committee meeting.
  - ✴ Heat stress presentation given by Jennifer Williams.
  - ✴ FY18 safety and health objectives and targets presentation given by Mary Logue.

Bonneau, Peter
HDice

- Worked with Amanda, Tyler, and Pablo on the troubleshooting of the Fast Resonance Scanner (FRS) program.
  - ✴ The FRS scan failed to produce correct spectrum.
  - ✴ RF switch box failed to deliver RF during while running the FRS.
  - ✴ An incorrect communication port setting was discovered for the National Instruments USB to RS-485 interface for the RF box.
  - ✴ The incorrect port setting was most likely caused by the frequent Rack #1 computer crashes.
  - ✴ Advised the HDice group to submit a CCPR for repair of their computer.
- HDice requested DSG to configure the computer in newly completed Rack #1 the same as the computer in Rack #2.
  - ✴ DSG cannot reconfigure NMR Rack #1.
  - ✴ Rack #2 disk was built from an HDice (non-CUE) Windows XP computer that was upgraded in 2015 to Windows 7.
  - ✴ Computer center configured the Rack #1 computer in 2018.
  - ✴ Any change to the configuration or repair of the Rack #1 computer must be done by the computer center.
  - ✴ DSG has initiated a property transfer (and therefore administrator rights) for both NRM computers to the HDice group.
  - ✴ The NMR computers must be upgraded by the computer center to Windows 10 in the coming year.
- Developing documentation on the use of the CAENels CT-box and DCCT head in the HDice NMR system.

DSG

- Investigation into the deletion of the link on the Hall D web page to the DSG webpage.
  - ✴ Contacted David Chopard in Jlab Public Affairs regarding the link deletion.

- ✶ With the new the Drupal web development platform, webpage owners can edit their own pages including web links.
- ✶ Jlab Public Affairs can also change webpages in response to requests from webpage owners.
- ✶ David Chopard will return the DSG link to the webpage.
- ✶ A class for the Drupal web development platform has been scheduled for 9/27 and 9/28.

Campero, Pablo

Hall C

- Dipole field regulation PLC program completed
  - ✶ Added conditions to start/stop regulation routines based on PSU read-back status.
  - ✶ Completed filtering option for magnetic field readouts from PT2026 NMR unit.
  - ✶ Added comments for each of the tree routines wrote:
    - Dipole_Filed_Regualtion: Main routine, used to control regulation logic needed to start/stop regulation, set operational limits and calculates field offsets.
    - Calculate_DI_Current: Routine used to calculates the current based on magnetic field, which is then sending to the MPS.
    - NMR_Read_B: Routien used to read the magnetic field and status front the PT2026 NMT unit.
  - ✶ Tested program by using MPS Danfysik Python simulation program and HMI test screen.
- With regards to task: End of life for Windows 7 upgrade to windows 10
  - ✶ Dsg-hallc-6 computer was rebuilt with windows 10.
  - ✶ Fixed hardware issues; changed graphics card
  - ✶ Installed .NET Framework 3.5 as a pre-requisite to install Rockwell Software.
  - ✶ Installed RSLogix5000 v.20.04.01
- Collaborated with Amanda to test Current Regulation PLC program for the HMS and SHMS quadrupoles.
- Updated Hall C PLC tasks table and compiled Hall C weekly report.

Hall B Magents

- Updated *Solenoid Fast Dumps Event* table
  - ✶ Added information for the last three fast dump events occurred at 2416 A on:
    - 08/27/2018, 08/30/2018 and 09/10/2018
  - ✶ Analyzed potential causes for the trips.
  - ✶ Summarized the actions and task performed after each fast dump.

HDice

- Collaborated with Amanda and Tyler to debug Fast Resonance Scan FRS program running in NMR rack #2 (upgraded rack).
  - ✶ Program unable to set correct output in the Attenuator RF box.
  - ✶ Found communication issues between NI 485-Serial/USB adapter and PC.
    - Re-terminated and installed Ethernet cable to ensure correct connections.
    - Verified led status in NI485-Serial/USB adapter.
    - Check serial port assignment in the PC, rebooted it several times
  - ✶ Solved communication issues by changing properties for the serial communication in NI MAX
    - Changed NI485-Serial/USB adapter option from 4 wires to 2 wires.

* Ran FRS LabVIEW program to test proper outputs in of the Attenuation box.

Eng, Brian
Hall B Magnets
- More testing of QD units.
  - https://logbooks.jlab.org/entry/3594064
  - https://logbooks.jlab.org/entry/3594071
- Solenoid Fast dumped again.
  - https://logbooks.jlab.org/entry/3594105
- Tested QDs again.
  - Found that the calibrators uses to set the threshold were in HEX instead of DEC mode.
  - Threshold also raised from 100 to 200 mV for VCLs.
    - https://logbooks.jlab.org/entry/3594137
- Continued testing DAQmx as an alternative to using FPGA code for reading cRIO modules at full speed, so far testing has shown it can run at the same speeds.
  - Still investigating other features being used by the FPGA (filtering, etc).

Hall C
- Configured EN2T modules for HMS primary and SHMS remote I/O modules, also CN2 modules for HMS.
  - Needed CC to reconfigure hostnames for HMS ethernet modules since wanted to use the existing IPs.
  - The new redundancy module RM2 uses a different optical cable than the previous model so the upgrade has been postponed until the next shutdown.

Hall D
- Still troubleshooting PXI timestamps with NI, another round of sending information and calling them, but so far no solution found.

Hoebel, Amanda
HDIce
- Debugged NMR Rack #1 with Tyler and Pablo.
  - FRS program was not working properly.
  - Problem found to be incorrect setting in computer for RS485.
- Debugged NMR Rack #1 a second time.
  - FRS program was not working properly again.
  - Problem was found to be the RF generator unit stopped working.
    - Status light was blinking and gave error code "level not satisfied".

Hall C
- Made current loop regulation routine for Q1 of HMS, with Hall C's suggestions.

DSG
- Monitored EPICS and logbooks for Halls B, C, and D.

- Put together the weekly report.

Jacobs, George
No report

Leffel, Mindy
HDICE
- Worked with Amanda, Pablo, and Tyler to replace RF box.
Gas System
- Continued fabricating MFC power chassis.
  - ★ Wired fuse holders and D-sub connectors.
  - ★ Installed redundancy modules and 24V DC supplies.
SVT
- Pump relay interlock CPC connector replacement.
  - ★ Attended meeting to discuss procedure and materials.
  - ★ Gathered materials with Marc.
  - ★ Worked in hall with Tyler replacing connector.

Lemon, Tyler
Hall C
- Completed note on UPS monitoring task.

RICH
- Analyzed data from N2 flow loss on September 18, 2018 at 10:27AM.
  - ★ N2 flow lost in Hall B temporarily for installation of isolation valve into the hall's nitrogen supply line.
    - ▪ New isolation valve allows flow to Forward Carriage or Space Frame to be stopped without affecting flow to the other.
    - ▪ N2 Flow lost for ~27 minutes.
  - ★ During period with no N2 flow, humidity increased ~0.3% RH in N2 volume.
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RICH N2 Volume humidity sensors during time with no N2 flow to about one hour after flow was restored.

HDice
- Debugged RF Box operations with Pablo and Amanda.
  - ✦ RS-485 communication was not working for new rack in HDice lab.
  - ✦ With Mindy, swapped RF box with spare, thinking that RF Box previously installed had issue.
    - ▪ Swapping RF Boxes had no effect on communication errors.
  - ✦ Found that RS-485-to-USB adapter needed to be configured to 2-wire communication mode.
  - ✦ Once settings of adapter corrected, communication errors stopped and all programs worked correctly.

SVT
- Repaired broken connector on cable for SVT external chiller pump relay box with Mindy.
  - ✦ Verified correct operation of relay box using its LED indicators and the SVT hardware interlock system's LabVIEW User Interface.

McMullen, Marc
Gas Controls
- Continued work on Gas Controls daily report upgrade.
  - ✦ Started modifying data-logger to change files at a specific time instead of at midnight.
    - ▪ This would allow the report to run until the open of the work day, while still changing at 24 hours.
  - ✦ Additionally, the new modifications should allow the report to append to the file if it is stopped and restarted during the file cycle (24 hours).

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- All Gas subsystems have been returned to operational set points.
  - All values are at the previous nominal ranges with the exception of the DC gas quality measurements for the exhaust.
  - The R1-2 O2 sensor read-back is off scale (> 1000ppm), while the R3 has come down to ~400ppm, previously it was ~70ppm.
  - The moisture content for R1-2 is marginally higher (up to ~450ppm from a pre-storm ~350ppm).
  - The R3 moisture content is ~100ppm, about 50ppm higher than before storm preparations. The progress is being monitored.
- Hall B mechanical has installed an isolation valve for the N2.
  - This will allow the gas supply to be turned off on one of the areas (space frame or forward carriage) without affecting the other.
  - During installation of the new valve, N2 was cut off to the RICH for ~25min. DSG has communicated with Hall B Engineering about the need to relay information anytime gas is being shut off, especially to the RICH.

DSG

- Made edits to the Gas Controls document. Added information about the short term SVT set up which used 3 additional MFCs to supply gas to specific areas of the detector in order to provide a flow specification for the manual rotameters.
- Rearranged DC flow diagram so that it reads vertically, top to bottom in order to format properly in the document.