Detector Support Group

Weekly Report, 2017-12-20

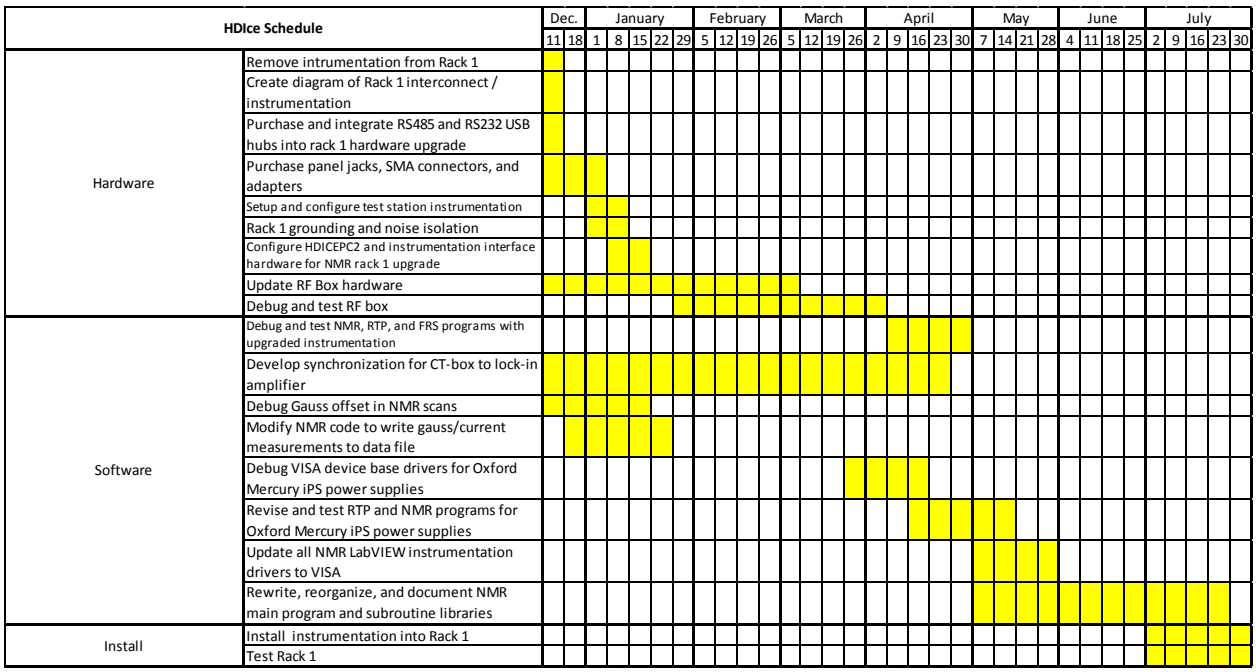
Summary

RICH

- RICH transferred to trolley for transport to Hall B.
  - ✶ Will move to Hall B on 1/4/2018.
- Two 2-ton chain hoists moved to one gantry trolley in EEL124 for lift of RICH to trolley.
  - ✶ Using chain hoists allows adjustments to ensure RICH is lifted evenly.
- 60’ extension and D-sub connector added to cable for moisture transducer.
- Second interlock cRIO crate fabricated and assembled.
- EPICS screen for N2 cRIO sensors updated to show sensor locations on a 3D sketch of RICH rather than 2D projection.
  - ✶ Updated screen to be posted to *clascss* after locations and numbering are finalized for all interlock sensors.
- EEL125 cleaned to clear room for trolley used to transport RICH to Hall B.
- Bad N2 volume humidity sensor #7 replaced with new sensor.
  - ✶ New sensor reads within 2% of the redundant sensor in the same location.
- Version of N2 cRIO hardware interlock program created that runs as an EPICS server.
  - ✶ Version will be deployed if issues with RICH’s softIOC persist.
- RICH front panels sealed with tape to improve gas-tightness of detector.

HDice

- HDice RF Box 1 reviewed for needed changes
  - ✶ Connectors and LCD screen ordered.
- Timetable for Rack 1 upgrade created.



Timetable for HDice Rack 1 Upgrade

Magnets

- Data analyzed from five Solenoid fast dumps that occurred between 12/13/2017 and 12/19/2017.
  - All fast dumps generated by QD #1 channel 1, QD #1 channel 3 and QD #2 channel 8.
  - QD #1 channel 3 trips caused by noise spikes of ~300 [mV] in VT_18DAQ's readouts.
- Python program written to convert PLC SOE module's timestamp format to regular date-time format.

MVT

- Tests on removed Mix 1 C_4H_{10} mass flow controller (MFC) completed.
  - MFC flows gas when pressure is at the supply side, even when its valve is closed.
    - Indicates valve is still partially open.
- Spare MFC added to system after installation.
  - Tested successfully with Argon by venting to atmosphere.

Gas Systems

- Replacement filter ordered for RICH N2 panel.
- PR placed for RICH N2 panel flow meters and transducers.
- CO2 ordered for Hall B DC and HTCC.

cRIO test stand.

- SubVIs written to test ADC module 9207 dynamic range test and offset error.
  - Can run tests for one user-selected channel or for all channels.
- LabVIEW code written to export voltage readout from ADC module 9207, channel 1 to Excel files.

Antonioli, Mary Ann

- Continued reviewing **HDice** RF Box 1 for needed changes
  - Ordered connectors and LCD screen.

cRIO test stand.

- Wrote subVIs for module 9207 dynamic range test for one user-selected channel (manual mode) and for all channels (automatic mode).
  - Added to main VI and tested.
- Researched making arrays into network shared variables.
  - Made shared variables to be used for sending data to Excel.
- Wrote subVI for module 9207 offset error test for one channel and subVI for all channels
  - Added subVI to main VI manual mode and automatic mode.

Bonneau, Peter

Vacation

Campero, Pablo

Magnets

- With Tyler, set up "dsgcontrols1" PC for remote support during ramping up of Solenoid and Torus magnets
  - Installed Studio5000, Version 27 to run PLC programs for Solenoid and Torus.
  - Contacted Computer Center to enable remote log in from home for "dsgcontrols1" PC.
- Analyzed Solenoid fast dumps that occurred from 12/13/2017 to 12/19/2017.
  - All fast dumps generated by QD #1 channel 1, QD #1 channel 3 and QD #2 channel 8.
    - QD channel 3 trip caused by noise spikes of ~300 [mV] in VT_18DAQ.
  - With Tyler, converted SOE module's timestamp from RSLogix format to UNIX time.

RICH

- Swapped Nitrogen dewars to supply nitrogen to the RICH
  - Dewar tanks swapped on 12/15/2017 and 12/18/2017
- Cleaned up EEL 125 to provide enough space for the RICH trolley to enter EEL 124.
- Sealed RICH nitrogen volume using electrical tape.

DSG

- Updated "cRIO Modules" spreadsheet with the modules and cRIO controller spares available for the Solenoid and Torus magnets.
- With MaryAnn, worked on the cRIO test station
  - Wrote LabVIEW code to export voltage readout from 9207 AI module, channel 1 to Excel files.
  - Reorganized project file for cRIO Test Station LabVIEW project.
    - Debugged conflicts of directory location in the project file after the creation of new folders.
- Edited *Hall B Magnets FastDAQ Filtering* DSG note.
  - Complemented note with information extracted from magnet documentation.

Eng, Brian

Vacation

Hoebel, Amanda

HDICE

- Created timetable for Rack 1 upgrade.

RICH

- Sealed detector frame with tape, with Pablo and Tyler.

- Installed RS Logix and RS Studio 5000.
- Edited Pablo's note.
- Debugged LabVIEW not working on the computer.
    - Needed to be added to license list.

Jacobs, George

GAS Systems

- Ordered replacement filter for RICH N2 panel
- Placed PR for RICH N2 panel flow meters and transducers
- Discussed with AirGas and JLab Procurement on bulk liquid argon deliveries
- Discussed with Mac M. about purging and filling DC gas MIX1 and MIX2 offline tanks
- Ordered CO2 for Hall B DC and HTCC

RICH

- Discussed lift of RICH onto trolley with Mark Loewus.
- Modified chain hoist configuration on EEL124 gantry in preparation for lift.

- Completed SAF108 fire safety training.

Leffel, Mindy

RICH

- Added a 60' extension and D-sub connector to cable for moisture transducer.
- Fabricated second cRIO crate.
    - Gathered materials (screws, DIN rail, and cable).
    - Fabricated jumper cables.
    - Cut DIN rail and marked locations of screw holes.
- Replaced bad nitrogen humidity sensor with Tyler
- Removed waste from EEL 125 with Pablo and Tyler to make room for the trolley.

Lemon, Tyler

RICH

- Updated EPICS screen for N2 cRIO sensors to show sensor locations on a 3D sketch of RICH rather than 2D projection.
  - Updated screen to be posted to *clascss* after locations and numbering are finalized for all interlock sensors.
- Cleaned EEL 125 with Pablo and Mindy to clear room for trolley.
- Replaced N2 volume humidity sensor #7 ("N2 H#7") with Mindy.
  - N2 H#7's humidity reading was ~30% higher than all other humidity sensors in nitrogen volume.
  - Mindy removed bad sensor and soldered new sensor to board.
  - New sensor reads within 2% of the redundant sensor in the same location.
- Created version of N2 cRIO hardware interlock program that runs as an EPICS server.
  - Within the past week, the EPICS client interface for N2 cRIO has stopped working on two occasions.
    - Both times the EPICS interface recovered on its own overnight for unknown reasons.
  - After debugging, determined cause of issue is most likely the softIOC.
  - Running N2 cRIO program as EPICS server bypasses need for softIOC.
  - If error happens again before RICH's installation in Hall B, EPICS server will be deployed to ensure EPICS interface is available for remote monitoring of detector conditions.
- Sealed RICH front panels with tape to improve gas-tightness of detector.

Magnets

- Installed Studio 5000 version 27 on PC DSGCONTROLS1 for use in Magnet PLC tasks.
- Wrote Python program to convert PLC SOE module's timestamp format to regular date-time format.
  - SOE module's timestamps are in the form of two 32-bit unsigned integers given in an array due to resolution limitations of PLC.
    - Timestamp with microsecond resolution in Unix format is one unsigned 64-bit integer.
  - To convert SOE timestamp to regular date-time format:
    1. Convert the two 32-bit integers to 32-bit binary numbers.
    2. Concatenate the binary numbers with the second integer in the timestamp array first.
    3. Convert concatenated binary number to decimal to get Unix timestamp with microsecond resolution.
    4. Convert Unix timestamp to regular date-time format.
  - Compiled program in executable to be able to run it on any PC.

McMullen, Marc

MVT

- Completed tests on removed Mix 1 C_4H_{10} mass flow controller (MFC).
  - ✶ MFC flows gas when pressure is at the supply side, even when closed.
  - ✶ Indicates that the valve is still partially open.
- Added spare MFC to system after installation.
  - ✶ Tested MFC with Argon, venting to atmosphere; MFC passed tests.

RICH

- Completed upgrades to nitrogen circuit with George and Tyler.
- Completed transfer of RICH to trolley with DSG.
- Upgraded orifices for four nitrogen dewar regulators.
  - ✶ 0.031” orifice installed for two dewars.
  - ✶ 0.064” orifice installed for two dewars.