Detector Support Group

Weekly Report, 2017-12-06

Status

RICH

- Easidew hygrometer installed in Ferrara dry-box to compare its readings to the interlock system's humidity sensors.
- Code added to hardware interlock LabVIEW program to read current signal from Easidew hygrometer.
    - ✶ All interlock humidity sensors read within 2% of hygrometer, which read 0.03%, when dry-box is set to 0% internal humidity.
- Hardware interlock cRIO rewired to read all 14 humidity sensors installed in RICH's nitrogen volume.
    - ✶ All redundant sensors read within ~2% of main sensors in same location.
- Hardware interlocks EPICS screen updated to include PVs for temperatures and humidity readings monitored in the dual chassis hardware interlock system.
- Development, debugging, and testing of version 1 of the real-time Hardware Interlock E-Panel System Software completed.
- ODH form submitted to Industrial Hygiene for four-dewar set-up.

FT

- Troubleshoot calorimeter temperature signals with noise.
    - ✶ Noise found to be from detector side of cable, not cRIO side.
- LabVIEW interlocks program for condensation sensor developed, debugged, and tested.

HDice

- RF Switching/Attenuation Unit moved from HDice lab to DSG control room for Rack 1 upgrade.
- Rack 1 controls diagram generated.

Gas Systems

- Fittings and valves for RICH N_2 supply received.
- Line voltage thermostat and heat trace cable received for MVT mixing system's temperature control.
    - ✶ Heat tape attached to MVT gas lines and MFC mounting plate.
- Gas cylinder vendor contacted about increased usage of CO_2.

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Antonioli, Mary Ann

- For **cRIO test stand**, wrote subVI to set and read the NI-9207 with the channel number, beginning voltage, ending voltage, step-size, and number of samples chosen by the user.
  - ✶ Tested and debugged.
  - ✶ Added subVI to all-modules test.
- Attended Workers Safety Committee meeting.

Bonneau, Peter

RICH

- RICH Hardware Interlock E-Panel System Software.
  - ✶ Completed development, debug, and test of version 1 of the real-time interlock control program.
  - ✶ Developed and tested LabVIEW user interface for E-panel.
  - ✶ Debugging and testing of the RT support VI file library was completed.
  - ✶ EPICS interface for E-panel is under development.
  - ✶ cRio IP was assigned and name changed to RICHCRIOS1EP.
- RICH Hardware Interlock System Hardware.
  - ✶ Worked with Mindy on the implementation of the FT cRio chassis configuration.
    - ▪ Since two sectors of RICH E-Panel sensors will be used by this chassis, extra +5V and ground distribution was added for the humidity sensors.
  - ✶ The DSG development cRio is being used to implement the E-Panel sensors.
    - ▪ The delivery of the replacement cRio processor has been delayed until the first week in January.

FT

- Worked with Amanda and Pablo on FT Hardware Interlock System debugging.
  - ✶ Testing and troubleshooting procedures for calorimeter temperature sensors was reviewed.
  - ✶ Installation documentation of the condensation sensor electronics was discussed.
- Developed, debugged, and tested real-time and LabVIEW user interface code to support the condensation sensor installation.
- Worked with Nathan to implement the condensation sensor in FT EPICS interface.

HDice

- Worked with Amanda and Pablo on the debug, test, and documentation of the NMR LabVIEW programming and instrumentation.
  - ✶ Upgrade work on Rack #1 electronics has been started.

SVT

- SVT Hardware Interlock System
  - ✶ Continued development of the CS-Studio EPICS slow controls user interface.

- Worked with Pablo on development of the National Instruments Compact-Rio test station.
  - ✶ Next steps in the development of the test interface to Excel was discussed.

Campero, Pablo

Magnets

- Completed correction and updates for :
  - P005-Hall B Solenoid Pre-Power-Up checkout procedure.
  - P027- Hall B Torus Pre-Power-Up checkout procedure.

RICH

- Collaborated with Tyler to set up the test stand for seven humidity sensors used in the RICH E-panel.
  - Connected and powered the Easidew hygrometer sensor
    - Sensor located physically into the Ferrara dry-box.
    - Connected sensor to the ADC cRIO module to be monitored during the test.
  - Calibrated Dewpoint controlled with the parameters needed
    - Changed analog output settings from 4-20 mA to 0-20 mA
    - Set up dewpoint to be read in Celsius centigrade.
  - Placed seven humidity sensors into the Ferrara dry-box.
  - Implemented and verified formula to get relative humidity in LabVIEW code.
  - Monitored humidity readouts for the Easidew sensor, Dry box and humidity sensors
    - Results indicated that at 0 [%] humidity fixed value in the dry-box, the max humidity readout sensor was ~ 1.38 [%] which is better than the specs for this type of sensors (~3%).
- Connected all redundant humidity sensors for the nitrogen volume in the cRIO
  - Removed all humidity sensors used for the electronic panel to connect redundant sensors for the nitrogen volume.
  - Labeled temporarily redundant sensors connected.
- Swapped Nitrogen Dewar cylinders to supply nitrogen to the RICH
  - Dewar tanks swapped on 12/01/17 and 12/04/17.

HDice

- With Amanda worked on the upgrade for the NMR rack # 1
  - Moved RF Switching/Attenuation Unit from HDice lab to DSG control room 121C.
  - Made Rack # 1 controls diagram
    - Showed the layout of the current devices with their locations and space dimensions used.
    - Indicated the actual connections between the hardware devices on the control rack.

- Generated power point presentation for the cRIO Test Station.

Eng, Brian

Vacation

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Hoebel, Amanda

FT

- Troubleshoot noisy channels.
  - ✶ Signal noise from calorimeter temperature sensors was high.
  - ✶ Swapped sensors on cRIO end.
    - Noise went away, showing the problem was not on cRIO side.
  - ✶ Signal averaging was turned on.
- Troubleshoot chiller.
  - ✶ Chiller started warming.
  - ✶ Chiller was power-cycled and started working properly again.

RICH

- Sat in for Tyler during DSG-RICH meeting.
  - ✶ Collaborators want to take out electronics panel and use glue to seal leaks.

HDICE

- Took RF box out of Rack 1 with Pablo and brought back to DSG control room for upgrade.
- Created drawing of Rack 1 for Mary Ann to make in Visio.

- Created and edited weekly report.
- Took Gas Systems training with Marc.
- Installed LabVIEW on PC.

Jacobs, George

GAS Systems

- Received additional fittings and valves for RICH N_2 supply changes.
- Requested quote for Ashcroft CLXdp transducer (CX3FO14310IWL) +/- 10”wc differential pressure +/-0.25% accuracy.
- Received Hazardous Location line voltage thermostat and heat trace cable for MVT mixing system temp control.
- Supervised heat tape attachment to MVT gas lines and MFC mounting plate.
- Had discussions with Morgan C. about DC Gas flow balancing individual sectors.
- Had discussions with Mac M. about DC Gas to do list.
- Had discussions with Jason W. about power hook up for MVT gas cyl blanket and heat tape.
- Tested the heat tape to determine maximum safe % on controller to prevent overheating the MFCs. A setting of 12% results in heat tape temp warm to the touch.
- Mounted thermostat heat bulb on MVT MFC mounting plate.
- Ordered CO2 for Hall B DC and HTCC.
- Contacted gas cylinder vendor about increased usage of CO2 now that the HTCC in online.
- Had discussions with Maxime D. about temperature control for MVT gas mixing equipment.

Leffel, Mindy

RICH

- Worked on cRIO chassis for measuring humidity and temperature.
  - ✶ Attached DIN rails and cable tray.
  - ✶ Fabricated jumper cables.
- Continued working on HTSB cables.

HTCC

- Terminated and labeled two LV cables.

MVT

- Worked with Mark Taylor to complete the running of termination of signal cable.

Lemon, Tyler

RICH

- Installed Easidew hygrometer in dry-box to compare its reading to interlock humidity sensors during INFN's interlock humidity study.
  - ✶ Hygrometer measures dew point of environment and allows precise measurements of water concentration.
  - ✶ Hygrometer also outputs 0 – 20 mA signal to hardware interlock cRIO.
- Added code to hardware interlock LabVIEW program to read current signal from Easidew hygrometer.
  - ✶ cRIO reads current and its program converts current to dew point.
  - ✶ Program calculates relative humidity from dew point for comparison with interlock system's humidity sensors.
  - ✶ All interlock humidity sensors read within 2% of hygrometer when dry-box set to 0% internal humidity.
- Rewired hardware interlock cRIO to read all humidity sensors installed in RICH's nitrogen volume.
  - ✶ Only one humidity sensor (H1) previously monitored on each sensor board.
  - ✶ Redundant sensors (H2) used to verify humidity read by previously monitored sensors is correct.
  - ✶ All H2 sensors within ~2% of H1 sensor in same location.
- Updated hardware interlocks EPICS screen to include PVs for temperatures and humidity readings monitored in the dual chassis hardware interlock system.
  - ✶ Dual chassis hardware interlock system uses two cRIO-9035 chassis to monitor all interlock sensors installed in RICH.
    - ▪ Total of 32 humidity sensors and 32 RTDs will be monitored after dual chassis is installed.

McMullen, Marc

Gas System

- Completed individual system training for HTCC, and MVT. Completed system operation training for DSG members.

- Provided system status update for all detectors.

DC

- Trouble shot a high pressure signal on DC Mix 1 Pressure with Brian. The analog signal cable has issues, we will need to fabricate a replacement.

MVT

- Added variables for pressure set points for the mixing software. Updated the Real Time applications.

RICH

- Submitted ODH form for the 4 dewar set up to Industrial Hygiene.
- Met with Materials Handling Manager on writing a lift plan for the e-panel to be lifted with the RICH at 0 degrees angle. Will start lift plan sketch and purchase hoist rings.
- Current fresh dewar count is ~8.
- Working with the DA to complete pressure systems review sign off for modifications of the gas panel. This includes adding oil coalescing filters, a moisture transducer on the air tank, and a supply manifold.
- Met with DSG management, we will look for upgrades to the rotometer and the flow meter, to provide 50-100% more flow from the N2 circuit.

HTCC

- Removed temporary monitoring equipment, completed power connection to SF gas interface.

RTPC

- Met with two members from the RTPC group to discuss gas supply and controls needs with George. George is updating the P&I diagram.