



Detector Support Group

Weekly Report, 2017-12-13

Status

Magnets

- Torus magnet power supply SCR faults investigated.
 - ★ SCR wiring was incorrect, therefore SCR was replaced.
- Torus and Solenoid Interlock procedures updated, with the summary of changes performed for the last updated versions.

RICH

- Second cRIO chassis (“EP cRIO”) installed in EEL 124.
 - ★ Total of 32 temperature sensors and 32 humidity sensors monitored between EP cRIO and original cRIO chassis (“N₂ cRIO”).
 - ★ Relays of cRIO wired so RICH’s CAEN power supply is disabled if either the EP cRIO’s interlocks trip or the N₂ cRIO’s interlocks trip.
 - ★ Override switch wired to override all interlocks on either cRIO.
- Readout box installed for water transducer (hygrometer) readout to measure water concentration in air-cooling system’s tank.
- Moisture transducer added to N₂ cRIO’s LabVIEW program.
- EPICS client interface of Hardware Interlock E-Panel System Software completed and tested.
- Multi-dewar manifold installed for the N₂ circuit.

HDice

- Instrumentation removed from Rack #1 and brought to control room for upgrade.
- Connectors ordered for RF attenuation and switching unit.
- RS-232 and RS-485 hubs ordered for Rack #1.
- Diagram of Rack #1 created in AutoCAD.

Gas Systems

- Atlas Copco oil coalescing and 0.01 micron filter added to outlet of RICH air compressor.
- RICH N₂ Unistrut frame modified to fit larger Atlas Copco filter.
- Quarter-inch tube installed in RICH E-panel for differential pressure transducer.



Detector Support Group

Weekly Report, 2017-12-13

RICH Transport and Installation

Date: December 12, 2017

Time: 9:00AM – 10:00AM

Attendees: Marco Mirazita, Marco Contalbrigo, Dario Orecchini, Sandro Tomassini, Bob Miller, Marc McMullen, George Jacobs, Tyler Lemon

Schedule of RICH transport and installation tasks

December 18, 2017 – trolley moved to EEL
December 19, 2017 – RICH moved on to trolley
December 22, 2017 – INFN collaborators leave in morning
January 2, 2018 – begin moving electronics and cabling to Hall B
January 4, 2018 – Move RICH and gas panel to Hall B
January 5, 2018 – Install RICH on Forward Carriage
January 6, 2018 – Cabling of RICH
January 12, 2018 – Deadline for RICH installation, beam to Hall B

- **Moving RICH and detector systems.**
 - ★ INFN collaborators will return to JLab for RICH move and installation.
 - ★ Bob Miller will generate OSP and lift plan for move of RICH to trolley.
 - ★ Gas panel and air tank will move to Hall B on January 4, 2018 and be installed on top deck of Forward Carriage.
 - Allows connection of RICH to gas panel as soon as possible after installation on Forward Carriage.
 - ★ Need to determine how to carry nitrogen on truck with RICH as it goes to Hall B.
 - Quantity of bottles yet to be determined.
- **Gas System in Hall B**
 - ★ Bob Miller will run gas lines at the same time cables are ran from electronics to RICH.
 - ★ Temporary gas line will be run to RICH from gas panel when it is sitting in Hall B before installation on Forward Carriage.
 - ★ Line sizes:
 - Air-cooling will use two 1-inch lines from gas panel to RICH.
 - Nitrogen will use two ½-inch lines from gas panel to RICH for nitrogen inlet.
 - Nitrogen exhaust from RICH to bubblers will use two ½-inch lines.
 - Bubblers will be located in same position as LTCC sector 4 bubblers.
- **Items that must be determined before move:**
 - ★ Whether detector will be sealed better after aerogel installation to make it more gas-tight
 - Need to determine way sealing will be done (tape, silicon, or other)
 - ★ Whether RICH will be temporarily sealed with plastic to improve leaks and lower nitrogen flow requirements during move to Hall B.



Detector Support Group

Weekly Report, 2017-12-13

Antonioli, Mary Ann

HDice

- Drew rack 1 in AutoCAD.
- Began reviewing RF box 1 for needed changes.
- Worked on **cRIO test stand.**
 - ★ Wrote subVIs for dynamic range calculation, offset error calculation, and gain error calculation.
 - ★ For manual mode, began setting up cases for tests and began adding tests written so far.
 - ★ For automatic mode, set up cases for all modules and began adding tests written so far.

Bonneau, Peter

RICH

- RICH Hardware Interlock E-Panel System Software.
 - ★ Completed development, debug, and test of EPICS client interface of the real-time interlock control program.
 - ★ Developed and tested EPICS to LabVIEW user interface threshold control sub-routines.
 - ★ Debugged with Nathan EPICS interface for humidity latched error indicators.
- RICH Hardware Interlock System Hardware.
 - ★ Worked with Mindy on the implementation of the FT cRio chassis configuration.
 - Installation and testing of chassis voltage distribution was completed. Chassis ready for install.
 - ★ The DSG development 8-slot cRio was used to instrument the e-Panel sensors.
 - Received delivery of the replacement cRio processor, instrumentation modules, power supplies, and mounting chassis.

HDice

- Worked with Amanda, Pablo, and Mary Ann on the debug, test, and documentation of the NMR LabVIEW programming and instrumentation.
 - ★ Upgrade work RF box one has started.
 - ★ Development of work plan in progress.
- Worked with Pablo and Mary on development of the National Instruments Compact-Rio test station.
 - ★ Next steps in the development of the ADC tests and the implementation of the Excel interface was discussed.

Campero, Pablo

Magnets

- Investigated Torus magnet power supply issues related with the SCR faults generated since September 27th to December 8th.



Detector Support Group

Weekly Report, 2017-12-13

- Monitored Solenoid and Torus during ramping up on 12/08/17.
- Updated Torus and Solenoid Interlock procedures with the summary of changes performed for the last updated versions.
 - * Contact Renuka to upload procedures in the Repository documents.

RICH

- Swapped Nitrogen dewar cylinders to supply nitrogen to the RICH
 - * Dewar tanks swapped on 12/08/17 and 12/11/17.

HDice

- With Mindy and Amanda worked on the upgrade for the NMR rack # 1.
 - * Disassembled Signal generator, Locking Amplifier, Power Supply from rack #1 at the HDice lab to be moved to DSG control room 121C.
- Discussed with Peter list of tasks that need to be done for the NMR rack #1 and # 2 by DSG in the upcoming year.
 - * Noticed hardware and software upgrades are required.
- Generated *Hall B Torus Power supply SCR Problems* power point presentation.
- With Amanda updated *DSG Photo Log*.
- With MaryAnn worked on the cRIO test station.
 - * Reorganized project file for cRIO Test Station LabVIEW project.
 - * Created shared variables to transmit data from the 9207 AI module measurements to excel file in DSGCOMP2 PC.
 - * Established equation to be used in test of: Offset Error, Dynamic Range, and Gain Error.
- Read and discussed *Hall B Magnets FastDAQ Filtering DSG* note.
 - * Wrote 10 questions to analyze missed information in the note.

Eng, Brian

Vacation

Hoebel, Amanda

HDICE

- Took instrumentation out of Rack 1 and brought to control room.
- Created timetable for Rack 1 upgrade, with Pete.
- Ordered RS-232 and RS-485 hubs.
- Created and edited weekly report.
- Updated photo log.
- Worked on corrections to Tyler's paper.

Jacobs, George

GAS Systems

- Assembled and leak tested RICH N₂ supply manifold to connect four LN₂ dewars.



Detector Support Group

Weekly Report, 2017-12-13

- Requested quote for Ashcroft CLXdp transducer (CX3FO14310IWL) +/- 10”wc differential pressure +/-0.25% accuracy.
- Added Atlas Copco oil coalescing and 0.01 micron filter to outlet of RICH air compressor.
- Modified RICH N₂ Unistrut frame to fit larger Atlas Copco filter.
- Ran ¼” tube into e-panel along cables for differential pressure transducer.
- Ordered CO₂ for Hall B DC and HTCC.
- Coordinated power and thermostat install for MVT gas mixing system.
- Coordinated power install for MVT has heating blanket.
- RTPC meeting with Carlos Ayerbe and Narbe Kalantarians.
- Ordered two each of Ashcroft differential pressure transducers, four week lead time.
- Discussions with Sandro and Mark L about RICH transfer to trolley and then to high bay.
- Participated in Hall B Eng meeting.

Leffel, Mindy

RICH

- Worked with Tyler to install cRIO crate in clean room rack.
- Met with Peter to discuss fabrication of second cRIO crate.
- Modified two cables, moisture transducer and interface CAEN crate for interlocks.

HDICE

- RF attenuation and switching unit.
 - ★ Inventoried, researched, and ordered connectors.
- Second rack upgrade.
 - ★ Worked with Amanda and Pablo removing and transporting components.

Lemon, Tyler

RICH

- Installed second cRIO chassis (“EP cRIO”) in EEL 124.
 - ★ Can now monitor a total of 32 temperature sensors and 32 humidity sensors between EP cRIO and original cRIO chassis (“N₂ cRIO”).
 - EP cRIO monitors 16 temperature sensors and 16 humidity sensors to be installed in RICH’s electronic panel.
 - N₂ cRIO monitors 14 temperature sensors and 14 humidity sensors installed in RICH’s nitrogen volume.
 - N₂ cRIO also monitors all gas system interlocks.
 - ★ Wired relays of cRIO so RICH’s CAEN power supply is disabled if either the EP cRIO’s interlocks trip or the N₂ cRIO’s interlocks trip.
 - ★ Override switch wired to override all interlocks on either cRIO.
 - Added additional terminal blocks to accommodate wiring of override switch in parallel with relays.
- Installed readout box for water transducer (hygrometer) readout to measure water concentration in air-cooling system’s tank.



Detector Support Group

Weekly Report, 2017-12-13

- ★ Installed readout box in EEL 124 rack.
- ★ Connected readout box to cRIO.
- ★ Fabrication of cabling between transducer and readout box in progress by Mindy.
- Added moisture transducer to N2 cRIO's LabVIEW program.
 - ★ Moisture transducer will be read water concentration in PPM by volume to cRIO.
 - ★ N2 cRIO will display water concentration to EPICS.
- Reviewed three DSG notes with Amanda, Pablo, Peter, and Amrit.
 - ★ Notes discussed were on RICH spherical mirror $d\theta$ measurements, Hall B Magnet FastDAQ filtering, and Hall B Solenoid control and monitoring system.

McMullen, Marc

MVT

- Performed trouble shooting on mixing system. C4H10 mfc are erratic. Attempted zeroing procedure, but the mfc reads >360sccm once the C4H10 valve is opened.
 - ★ Temperature in the MFC enclosure is frequently < 50 degrees due to the weather.
- Developed testing procedure for the spare mass flow controller.

RICH

- Completed upgrades to compressed air circuit with George and Tyler.
 - ★ The system is signed off by the D.A.
- Installed multi dewar manifold with George for the N2 circuit.
- The filters leaked during testing.
 - ★ Contacted Atlas Copco. The filters have a valve that seats with > 75psi.
 - ★ Modified the filter so that the float valve was removed and replaced with a ball valve.
- Met with INFN and Hall B Engineering to plan RICH installation to transport trolley.
- Four-dewar setup was approved by Jlab Industrial Hygiene.
- Approved DSG list to modified installation of Aerogel with the modified hydraulic jack.