Detector Support Group
Weekly Report, 2017-02-15

State of Play

Magnets
Solenoid
- Failure of PLC relay module for Solenoid control system investigated.
  - ✦ Determined that due to incorrect wiring, excess current fused the relay contacts.
- Two more hall sensors added to PLC program, in all 3; location 0º, 60º , and 120º
- Interlock Threshold Solenoid Spreadsheet updated.
- Hall B Solenoid Pre-Power-Up Instrument Checkout Procedure corrected.
- New tasks to test interlocks for temperatures of Vapor Cooled Leads and Splices added to *Solenoid Interlocks Checkout Procedure*.

Torus
- Issues regarding Torus' intermittent Cerenox sensor read error investigated.
  - ✦ Latching of raw text data confirmed that error not in LabVIEW software conversion.

Gas System (KPP)
- **DC** gas P&I diagrams generated/updated for compliance with Pressure System Program

HDice
- NMR program modified to record current values (with each array loop).

SVT
- SVT moved back to EEL and reconnected.

RICH
- Two Visio drawings generated: interlock fault charts and interlock system.
- Assembly crates moved to EEL
- Baseplate assembled and holes for drilling marked.

Contents of RICH box #1

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Antonioli, Mary Ann
RICH
- Made two Visio drawings: interlock fault charts and interlock system.
- Continued Note about interlock system.
- With Tyler, wrote subVI for temperature comparison.
- Assisted with empting of large box.

- Changed website photo.
- Compiled, edited, and formatted weekly report.

Arslan, Sahin
SVT
- De-cabled SVT after KPP run, and helped with move to cleanroom.
- With Mindy, moved power supplies and hardware from insertion cart back to cleanroom
- Started re-cabling.
RICH
- Helped with parts' movement into cleanroom from box 1.
- With Brian and Marc, assembled base template.

Bonneau, Peter
- Met with Marco Battaglieri and Raffaella Devita regarding **Forward Tagger** interlock system.
- Reviewed with Mary Ann and Tyler next steps for development of **RICH** LabVIEW interlock program.
HDice
- Developing subroutines that decode status and acquisition number during data acquisition in oscilloscope mode, using CAENels CT-Box.
- Discussed with Amanda new code needed to add current measurements with Lock-in amplifier date for data output file in NMR program.
Magnet Systems
- Issues regarding Torus intermittent Cerenox sensor read error were investigated. Latching of raw text data confirmed that error not in LabVIEW software conversion.
- Failure of PLC relay module for Solenoid control system was researched. Contacts on relay were fused together caused by excess current, resulting from incorrect wiring.
- Monitored Torus magnet system and analyzed Mya data-logged signals after completion of the KPP run.

- Held daily meeting on Hall D status and EPICS controls monitoring.
  - ✴ A transistor fault is now present on the CSS MPS GUI.

Campero, Pablo
Magnet- Solenoid
- Added two hall sensors to PLC program.

- Replaced PLC module, which was burned due to incorrect wiring.
    - ✦ Corrected wiring on terminal block according to dwg 0638.
    - ✦ Modified PLC program to match correct wiring.
- Noticed that some EPICS screens need to be updated.
    - ✦ Discussed with Renuka interlocks signals that need to be added to Interlock Status screen.
    - ✦ Revised *Interlock Threshold solenoid* spreadsheet.
- Began to correct draft versions of documentation.
    - ✦ Corrected Hall B Solenoid Pre-Power-Up Instrument Checkout Procedure.
    - ✦ Added new task to test interlocks for VCL and Splices temperatures to *Solenoid Interlocks Checkout Procedure*.

RICH
- Helped move assembly structure into cleanroom
- With Tyler, inventoried assembly structure parts; some items unlabeled.
    - ✦ Found cans of epoxy thinner and paint not reported in inventory.
- With Tyler, inspected and stored recently received five aerogel tiles.

- Monitored and analyzed logbook entries and EPICs screens for Hall D, daily.
    - ✦ Solenoid power supply tripped due to fault on transistor.
    - ✦ Humidity on BCAL Upstream increased ~9.5% on module 25.

Eng, Brian
- Monitored **Torus** status during KPP; controlled ramp on first day due to cryo issues.
- Moved **SVT** back to EEL, removed equipment from insertion cart.
    - ✦ Recabling is in progress.
    - ✦ Networking re-established, ACC and slow controls computers set up and running.
- Assisted with **RICH** boxes 1 & 4 move to EEL and unloading of box 1 contents into EEL/124
- Set up **RICH** drilling template with Marc and Sahin.
- Discussions on failing Cernox sensors (reading/getting stuck at 325 K). **Magnet** group wants to reinitialize sensor on a bad reading.
- Loaner cRIO from NI works with EPICS client (however it is a slightly different model [9035 Sync]).
- Tried switching three **gas system** cRIOs over to real-time executable, but still found issues with EPICS; reverted back to source distribution. In process, found that rebooting or connecting to one cRIO would occasionally affect others. Currently working with Marc to reorganize LabVIEW project file and code to eliminate this issue.

Hoebel, Amanda
HDice
- Modified NMR program to record current values with each array loop.
- Working on program to analyze relationship between lock-in amplifier data and changing current.
- Started flow chart of NMR program.

RICH
- Discussed interlocks with Pete, Tyler, and Mary Ann.
- Assisted in unloading contents of box #1.

Jacobs, George

GAS System
- Updated Hall B N_2 distribution system P&I diagram.
- Drew P&I diagram for using LAr and LCO_2 dewars to supply drift chambers during testing.
- Updated temporary DC gas P&I diagram in accordance to pressure system DA.
- Updated DC gas system component spreadsheet with relief valves, orifices, and valves required for installations.
- Ordered DC gas system relief valves, ball valves, and orifices; pump electrical boxes; and C_4F_{10} tank replacement.
- Determined components required for adding relief valves to DC gas system at 96B.
- Ordered liquid argon for DC testing setup in Hall B.
- Trained Morgan Cooke on how to adjust DC back pressure by adjusting bubbler oil levels
- Meeting with Mac Mestayer, Bob Miller, Eugene Pasyuk, Morgan Cooke about temporary DC gas supply for testing.
- Met with Dave Kashy about pressure systems.
- Provided Hall B, Morgan Cooke, with Magnahelic gauges for DC testing.

RICH
- Placed ecommerce order for rotary hammer drill bits.
- Conversations with Dave M. about pre-swaging of 1" SS tubing and using copper tubing in place of ½" nylon.

Leffel, Mindy

SVT
- Worked in hall de-cabling equipment.
- Transferred computers from counting house to cleanroom.
- Removed components from insertion cart and reinstalled them in cleanroom.
- Sorted cables and started connecting them.

RICH
- Organized cleanroom to make room for assembly structure.
  - ✦ Cleared and sorted contents of two tables.
  - ✦ Replaced stationary table with wheeled one.
  - ✦ Reorganized cabinets to accommodate items cleared from table.

Lemon, Tyler

RICH
- Assisted with moving RICH Box 1 components into EEL 124.
- Inventoried materials moved into EEL 124 with Pablo Campero.
- Visually inspected new shipment of five aerogel tiles with Pablo Campero.

Magnet

- Investigated LV Chassis Cerenox 325 K error.
  - ★ Modified LabVIEW to latch an indicator to value of raw hexadecimal data from LV Chassis for V1 and V2 when 325 K error occurs.
    - ▪ V1 and V2 used to calculate resistance for Cerenox sensors.
  - ★ Indicators showed identical raw hexadecimal data from LV Chassis when 325 K error occurred.
  - ★ Implemented subVI that runs Cerenox start-up algorithm for a Cerenox if it reads 325 K, at Magnet Group's request.
  - ★ If automatically running Cerenox, start-up algorithm does not work; potential solution includes using a fixed excitation voltage.
- Determined FastDAQ system will use hardware filters rather than digital filters.
  - ★ Digital filters caused long response time, preventing comparators interlocks from tripping.
  - ★ Hardware filter boards will be developed and placed between iso-amps and FastDAQ cRIO to filter FastDAQ data.

- Monitored Hall D logbook and EPICS on a daily basis.
  - ★ Noted BCAL Upstream Module 25 humidity reached 15.9% on 2017-02-09; has since decreased to 9.3%.

McMullen, Marc

Gas System

- Worked with Brian on troubleshooting real time application issue.
  - ★ Some EPICS variables did not update after a reboot.
  - ★ Project file requires a reboot sequence. File will be converted into three separate projects and use network variables to exchange data between Gas Controls setups.
- HTCC
  - ★ Flowing CO_2 @ 10 Lpm during purge; moisture reading 215 ppm (250 ppm last week).
- DC
  - ★ Conducted training session with Morgan Cook on operation of DC KPP Gas Controls.
  - ★ Flowing Ar/CO_2 @ 11 Lpm on sector 1 for all regions.
- LTCC
  - ★ Flowing N_2 @ 0.5 Lpm per sector.

RICH

- Assisted with unloading box 1 in EEL.
- Worked with Brian and Sahin to set up assembly structure template.

- Connected components for test set up of **Axetris MFC** product evaluation; performed initial flow tests.