



Detector Support Group

Weekly Report, 2017-05-10

Status

Solenoid

- MPS communication and functionality test completed.
- Work continuing on monitoring of Guard Vacuum Pump Status.
- Sequence of Events interlock response and MPS dump switch functionality tested.
 - * Hardware interlocks of quench detection units 1 and 2 tested.
 - * Water-cooled lead flow rates and interlocks responses tested.
 - * Voltage taps cable interlock tested.

Gas System

DC

- Ar CO₂ (90:10) purge of mixing system, storage tanks, and of all 18 sectors using started.
- Liquid Ar and liquid CO₂ dewars ordered.

MVT

- Supply P&I diagram for MVT EEL test setup, edited as per DA's instructions.

RICH

- Bertha transformer moved to EEL 125.
- Work order for powering RICH air compressor using bertha transformer setup submitted.
 - * Walt Akers contacted.
- RICH air and N₂ panels complete.
- Review of work-schedule completed.
 - * All work covered by current TOSP.

FT

- Loss of communication between EPICS and NI cRIO 90XX series processors investigated.
- One hundred and fifty foot long, chiller cable with DIN connector to ferrule, fabricated and tested.

Hall D

- Logbook entries and EPICS screens monitored and analyzed daily.
 - * BCAL chillers lost communication to network. Resetting DHCP server in rack room restored EPICS connection.
 - * On 5/08, downstream BCAL at module 1 showed 4.35 % humidity and 25 °C.
 - * Noted on 2017-05-05, Solenoid VCL flow setpoint lowered from ~31 slm to ~28 slm.



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Antonioli, Mary Ann

- Worked on debugging RICH interlock code file problems.
- Made layout changes and text edits to Note 2017-03 and posted to website.
- Made layout changes and text edits to Note 2017-04 and posted to website.

Arslan, Sahin

Absent

Bonneau, Peter

Forward Tagger

- Debugged issue of loss of communication between EPICS and NI cRIO 90XX series processors.
 - * Upon reboot of cRIO, EPICS server interface would intermittently not connect to network.
 - * Investigated multiple EPICS deployment methods on cRIO.
 - * Deletion of old server process and deploying new server via EPICS VI library corrected issue.
 - * Programmed initialization sequence into FT real-time program.
 - * An automatic reboot is required as part of initialization sequence.
 - * Tested in EPICS server mode. Will try client mode next.
- Discussed cRIO chassis signal cables with Mindy.

RICH

- Discussed program integration and issues with cross-linked VIs in interlock system project file with Mary Ann.
- Worked with Amanda, Tyler, and Pablo on development of LabVIEW-to-EPICS interface in real-time and user interface programs.
 - * Code segments and steps in development procedure were shown using completed code from FT EPICS interface as an example.
- Discussed design of front panel controls for LabVIEW User Interface of interlock system with Pablo.
- Held daily meeting on Hall D status and EPICS controls monitoring.
 - * BCAL chillers lost communication to network. Resetting DHCP server in rack room restored EPICS connection.
- Tested newly-received NI cRIO modules for DSG Test Station.

Campero, Pablo

- Working on Interlock Status and Signal Monitoring front panel view of RICH Hardware - User Interface LabVIEW program.

Solenoid

- Worked on monitoring of Guard Vacuum Pump Status.



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- ★ Changed calibration on MOOG pump controller to have output range (operation frequency) of 0–110 Hz.
- ★ Modified PLC configuration in analog input module with latest frequency range: 4 mA = 0 RPM, 20 mA = 660 RPM (max).
- With Brian, completed Solenoid MPS communication and functionality test.
- Tested Sequence of Events interlock response and MPS dump switch functionality.
 - ★ Tested quench detection units 1 and 2 hardware interlocks.
 - Set assigned threshold on QD 1 and QD 2 units.
 - Injected 60 mV in channels 1, 2, 7, and 8 of QD units; tripped at ~61 mV
 - Injected 100 mV in channels 3, 4, 5, and 6 of QD units; tripped at ~101 mV.
 - ★ Tested water-cooled lead flow rates and interlocks responses.
 - Measured flow rates in supply and return water-cooled lead switches.
 - Calibrated supply switch at 3.2 GPM and return switch at 3.4 GPM.
 - Verified and corrected wiring on supply and return water-cooled lead switches.
 - Generated interlock by closing water flows for supply and return.
 - Wire jumpers were used to loop circuit and simulate Solenoid voltage tap connections.
 - Verified that interlock tripped at Magnet, splices, and cooled lead terminals.
 - ★ Verified MPS dump switch functionality (open/close).
 - ★ Checked EPICS interlock status screen, SOE PLC module, and relays hardware.
 - ★ Updated *Solenoid SOE Checkouts* spreadsheet with results of tests.
- Performed Hall B Solenoid Power Up Instrumentation and Controls Power Point presentation for ERR review.
- Monitored and analyzed logbook entries and EPICs screens daily.
 - ★ On 5/08, downstream BCAL at module 1 showed 4.35 % humidity and 25 °C.

Eng. Brian

Gas System

- Zeroed LTCC MFCs per MKS instructions (closing both upstream and downstream valves, previously only downstream valves were closed when zeroed).
- Set all DC MFCs to their proper gas instance (Ar, CO₂ or 10%CO₂/Ar).
- Verifying DC pressure signals (control and manifold) with Marc; all cabling was correct.
- Found work-around to power supply issue with SF chassis (when AC power is removed, sometimes the ±15 VDC supplies do not come back online). Unplugging valve drivers from chassis allows it to come back, then valve drivers can be plugged back in. Marc is investigating different power supply setups.
- Changed O₂ scaling for DC gas shed sensors after George installed fuel cell for supply O₂ sensor.
- Updated SF cRIO GUI display and real-time executable.

Magnets

- Completed MPS communication and low current testing for Solenoid.



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- No errors in Torus cernox sensors since last start-up.

Hoebel, Amanda

Absent

Jacobs, George

GAS Systems

- Commenced gas purge of DC mixing system and storage tanks.
- Commenced purge of all 18 DC sectors using 10% CO₂ in Ar .
- Updated DC P&I diagram with CO₂ heaters.
- Revised supply P&I diagram for MVT EEL test setup, according to DA's instructions.
- Ordered liquid Ar and liquid CO₂ dewars for DC.
- Discovered reason for R2 DC window failure, took corrective action to prevent recurrence.
- Turned on H₂O and O₂ sensors for gas supply.
- Airgas conducted safety inspection of Ar dewar.
- Met MVT DA multiple times.
- Placed work order for powering RICH air compressor using bertha transformer setup; contacted Walt A to set up bertha transformer in EEL rm 125.
- RICH air and N₂ panels are complete; accepted turnover from DA.

Leffel, Mindy

- Worked on **Forward Tagger** cables.
 - * Met with Peter to discuss more cables.
 - * Fabricated and tested 150', DIN connector to ferrule, chiller cable.
 - * Started fabricating gas flow cable.
 - * Rewired HTSB cable, separating contacts from one connector into two.

Lemon, Tyler

RICH

- Wrote LabVIEW subVIs for Hardware Interlock System EPICS interface.
 - * Wrote subVIs for Real-Time loop that writes RICH Interlock values to EPICS.
 - * 19 of 30 subVIs complete.
- Coordinated shipment of spherical mirrors for final reflective coating.
 - * Mirrors shipping from support manufacturer in Arizona to facility for final coating in Pennsylvania.

Solenoid

- Power-cycled Solenoid LV cRIO to re-establish communication.
 - * Could not connect to cRIO remotely.
 - * Power-cycling re-established network communication and allowed redeployment of Solenoid LV cRIO program.
 - * Cause of network communication freeze unknown; will continue monitoring and swap with spare cRIO if freeze happens again.



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- Monitored EPICS and logbook on a daily basis.
 - * Noted on 2017-05-05, Solenoid VCL flow setpoint lowered from ~31 slm to ~28 slm.
- Installed LabVIEW 2016 on new PC with Mary Ann.
 - * Debugged network licensing errors; able to get license from JLab's license server.

McMullen, Marc

Gas System

- Continued LTCC gas leak study; started formatting data collected since 4/27.
- Completed review of RICH work schedule from collaborator.
 - * All work will be covered by current TOSP.

DC

- Zeroing differential pressure transducers with Brian.
- Troubleshooting gas signal issues with Brian.
 - * MKS 223b signal wire was disconnected.
- Replaced R3 solenoid coil, which provides manifold pressure to transducer.
- Troubleshooting SFL3 controls interface chassis with Brian.
 - * Pressure signals were max indicating a power problem to transducers.
 - * Transducers and valve drivers are sourcing too much in-rush current, which causes +/-15 V supply to malfunction.