



# Detector Support Group

## Weekly Report, 2016-10-12

### Ongoing Projects

#### Magnet Control System

##### Torus

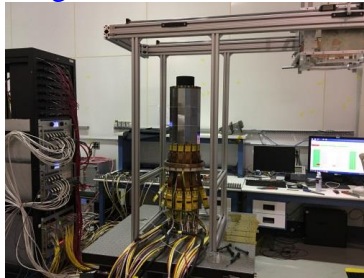
- Monitored Torus instrumentation and cryogenic system status via EPICS.
- Started development of Hall B Magnet documentation.
- Investigating issues with steps to check quench protection during Torus interlock checkout procedure.
- Hall B Pre-Power-Up Instrument Checkout Procedure- P025 completed.
- Hall B Pre-Power-Up Interlocks Checkout Procedure checklist- P027 completed.
- Began magnet commissioning. After several initial tests at 10 and 20 A in local mode, went to 100 A using CSS GUI in several ramp rates (0.5 mA/s, 1 A/s, 2 A/s) per checklist.

##### HDice

- Resolved issue of switch changing arbitrarily in RF Attenuation/Switching Unit test.
- Oxford iPS power supply VISA drivers ready for Rotation of Polarization Program.
- EPICs reset interlock button for Quench Detection Units works only in the manual mode..

##### SVT

- Tested R1 after module replacement.
- R2 Cabled and ready for testing.



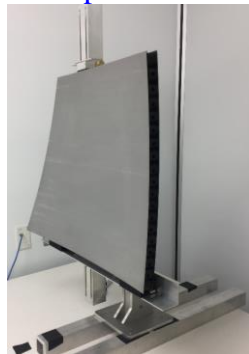
- Connected and verified R2 ambient sensors.

##### FT

- Defined Hardware Interlock System signal levels and module assignments for calorimeter temperatures, humidity, gas flow, and hodoscope temperatures.

##### RICH

- Performed optical measurements on spherical mirrors 2 and 6.



Mirror 2 on mirror stand in DSG clean room.

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- Compressors have arrived, one is in EEL125 and the other is in Hall B.
- Air tank with valve panel assembled.





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### Antonioli, Mary Ann

- Using a sub-VI written by Peter, and one written by me, resolved issue of switch changing in HDice RF Attenuation/Switching Unit test. Began update to add ability to choose an individual test, instead of all tests.

### Arslan, Sahin

- Provided and replaced Forward Tagger and SVT N<sub>2</sub> gas.
- With George, completed RICH valve panel assembly (below).

#### SVT

- Replaced modules that need debugging: R1: p67, p70; R2: p25.
- p80 and p51 from R4 and installed on R1; p22 from R4 and installed on R2.
- Cabled R1 for testing; calibration and stability test completed.
- Fixed faraday cage grounding brackets with conductive silver epoxy; mounted R2 on R1.
- Cabled R2 for testing (below).
- **Attended worker safety meeting.**

### Bonneau, Peter

#### Magnet Systems

- Monitored Torus instrumentation and cryogenic system status via EPICS.
- Started development of Hall B Magnet documentation.
- Working with Pablo investigating issues with steps to check quench protection during Torus interlock checkout procedure.

#### Forward Tagger

- INFN has received NI cRIO processor and instrumentation modules, which will be shipped to Jlab.
- Spoke with Raffaella Devita regarding calorimeter MKS flow meter— no control valve in meter needed, cRIO chassis 24 V supply will power meter.

#### HDice

- Completed debug of Attenuator “A” and coax switch control conflict in RF Attenuation/Switching Unit test.
- Completed debugging and testing Oxford iPS power supply VISA drivers for Rotation of Polarization Program.

### Campero, Pablo

#### Magnet

- Worked on Hall B Pre-Power-Up Instrument Checkout Procedure- P025.
  - ★ Verified readout of instruments for each individual signal, mainly thermometers, pressure transducers, strain gauges and load cells.
  - ★ On 10/07/16, recorded all signals’ values from Torus EPICs screens
  - ★ Deleted duplicate and nonexistent signals of list.
  - ★ Completed and uploaded instrument checkout list on Hall B Torus logbook.
- Worked with Tyler to complete 50/50 tasks on Hall B Pre-Power-Up Interlocks Checkout Procedure checklist- P027.
  - ★ At MPS EPICs screen, set point current option does not allow any current set point to be entered, whether or not current limit ( $\pm 370$  A) is exceeded.



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- \* VT10\_DAQ and VT6\_DAQ used for comparators 4 and 6 in voltage tap panel had high noise; limits set up in PLC code were 1<sup>st</sup> (150 mV) and 2<sup>nd</sup> (200 mV) threshold; issue solved.
- \* MPS could not be reset from EPICS when each channel of quench detection units was tested.
- Worked on testing reset interlock button (EPICs) for Quench Detection Units.
  - \* Generated interlock trip by injecting voltage in channels of quench detection units.
  - \* Confirmed that reset button does not work in REMOTE mode for the three Quench Detection Units.
  - \* This reset has to do with setting on control board, which needs "RS & F" commands to fully clear remotely.
  - \* Reset can be made only manually in LOCAL mode on control board of MPS.
- Collaborated with Brian and Wesley to debug set point option to set current in MPS.
  - \* Verified common tag used in EPICs side to set current in PLC.
  - \* Discovered that "Cryo Interlock" status bit was causing crashing in MPS screen after any values set for current.

#### **Eng, Brian**

##### **SVT**

- Tested R1 after module replacement.
- Connected and verified R2 ambient sensors.

##### **Magnets**

- Nearly completed with converting LV cRIO code to 2016; only remaining item is writing data to PLC (still waiting for EtherNet/IP toolkit to arrive [my evaluation period expired])
- Continuing to debug Cernox issues; found to increase current as resistance drops (increasing temperature), but not decrease current.
- Began magnet commissioning. After several initial tests at 10 and 20 A in local mode, went to 100 A using CSS GUI in several ramp rates (0.5 mA/s, 1 A/s, 2 A/s) per checklist.

#### **Hoebel, Amanda**

##### **Magnet**

- Worked on Hall B Pre-Power-Up Interlocks Checkout Procedure with Pablo.

##### **HDice**

- Debugged Mercury iPS connection issue, with Pete.
  - \* Problem determined to be incorrect baud rate setting.
- Provided information concerning HDice Controls Rack 2 to Mary Ann so that an AutoCAD drawing can be made.

#### **Jacobs, George**

##### **RICH**

- Completed air cooling valve panel, with Sahin.
- Compressors have arrived, 1 is in EEL125, 1 in Hall B.
- Mounted N<sub>2</sub> purge valve panel to support frame.
- Completed air cooling and N<sub>2</sub> purge mechanical assembly on air tank pallet.



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### Leffel, Mindy

- Worked on **HDice** controls racks.
  - \* Labeled both racks.
  - \* Rubber insulation and corner brackets: cut, attached adhesive, and affixed.
  - \* Met with Tyler and Peter to discuss placement of components.

### Lemon, Tyler

- Completed **Torus** Pre-Power-Up Interlock Checklist Procedure (P027) with Pablo.
  - \* Completed 50 tasks that check Torus power supply interlocks.
  - \* Two checks unsuccessful.
    - Verifying interlock to prevent overcurrent.
      - EPICS does not allow any current set point to be entered.
      - EPICS indicators all turn pink and set point reset to 0 A.
    - Testing Danfysik Quench Detectors.
      - Cannot reset interlock in EPICS when Quench Detector is tripped.
      - Has since been determined that this is correct behavior of interlock.
- Performed optical measurements of **RICH** spherical mirrors 2 and 6.
  - \* Repeated d0 measurements using mirror stand CCD stand motors.
    - Mirror 6 measured d0 = 1.8 mm
    - Mirror 2 measured d0 = 1.3 mm
  - \* Measured surface quality of mirror using Shack-Hartmann sensor.
    - Mirror 2: center of mirror has surface variations of ~3  $\mu\text{m}$ .

### McMullen, Marc

No report. (Vacation)