



# Detector Support Group

Weekly Report, 2016-09-28

## Ongoing Projects

### Magnet Control System

Received approval from Dr. Patrizia Rossi for Brian Eng to work on Torus DSG will support magnet slow controls system; will not be *on-call*

### Torus

- Investigating LV cRIO problems.
  - ★ Not reading back when communicating with multiple excitation chassis.
- Sending VI fixes as well as suggestions for performance improvements of code to Christiana Wilson of magnet group.
- Troubleshooting Cryocon temperature monitors.
- Fixing LabVIEW for LV cRIO.
- Checking out interlocks for power up.

### HDice

- Equipment rack moved.
- RF Unit test program completed.

### DC

- DC wire test stand set up.

### SVT

- De-cabling R1—R3 to replace three modules in these regions.

### RICH

- Air tank received and valve panel mounted



Air tank and valve panel for RICH detector

- Compiling signal list for interlock system.
- Optical table for spot test being used for SVT not available till November.

### FT

- PIC 32 has problems again.
  - ★ Plan to replace I2C bus board.
- Two HV boards replaced.
- DSG assistance requested for light-leak proofing hodoscopes and for sealing calorimeter.

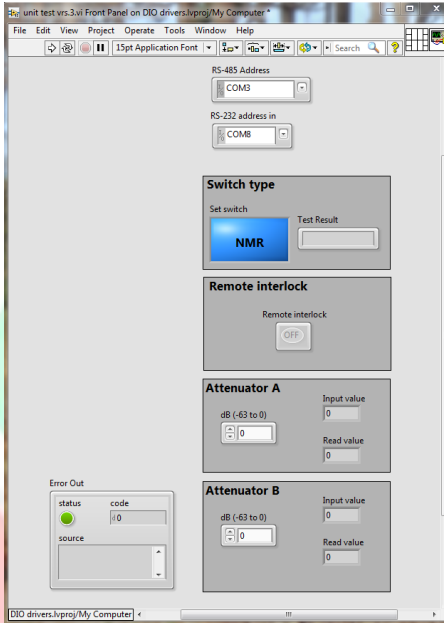


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### Antonioli, Mary Ann

- Changed LabVIEW code of **HDice** RF Attenuation / Switching Unit to display changes on LCD screen during key test. Unit test software is complete.



Front panel of unit test.

- Edited and posted on **DSG** website three DSG Notes, 2016-011, 2016-012, 2106-013.

### Arslan, Sahin

- Drilled holes in transportation pallet and installed **RICH** valve panel.
- Provided and replaced **FT** N<sub>2</sub> gas.
- Worked on cable management for **SVT** R4.
- Preparing for DC wire test set up and gas set up.
  - ★ HallB list approved for wire chamber test stand.

### Bonneau, Peter

#### Magnet Systems

- Working with Pablo on troubleshooting Torus instrumentation.
  - ★ Reviewed procedures and troubleshooting methods regarding fault of two channels of cryo-con temperature monitors.
  - ★ Pre-power up interlock checkout procedure investigated.
  - ★ Researched LV-cRIO software development requirements and recent communication errors.
- Monitored Torus cool-down status.
  - ★ Helium cool-down has been completed and Torus service tower liquid helium tank has filled.



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#### RICH

- Working with Tyler on development of RICH Interlock System.
  - \* cRIO chassis added to Hall B sub-net and set up for code development.
  - \* cRIO module and channel definitions in progress.

#### HDice

- Wrote thirteen VISA-based device drivers for iPS 120-10 power supplies and program to debug and test each driver.
- Researched and ordered cRIO processor replacement for IBC pump cart.
- Worked with Amanda on update of Rotation of Polarization Program to include both model types of power supplies in HDice lab.
- Met with Xiangdong Wei and Mike Lowry regarding installation and debugging of NMR instrumentation and replacement of IBC cRIO in HDice lab.
- Worked with Mary Ann on debugging test program of RF Attenuation / Switching Units; troubleshooting showed communication control conflict during LCD test.
- Updated **DSG** website with latest talks. Changed html index files to reflect updates.

#### Campero, Pablo

##### Magnet

- Troubleshooting Cryocon temperature monitors for Torus controls.
  - \* Four temperature signals (TR 8114R, TR8114S, TR8122A and TR8122B) were lost in channels A, B, C, and D when they reached values of ~80 K during Torus cooldown.
  - \* Measured input resistance of channels, which seemed to be normal.
  - \* Reset temperature monitors and communication in PLC program.
  - \* Compared calibration curve between data configured in monitor with actual calibration data.
- Worked with Brian and Peter on fixing algorithm of LabVIEW program for Torus LV cRIO.
  - \* Program crashed when more than one sub-VI ran at the same time, (issue appeared when temperatures reached ~80 K).
  - \* Solenoid cRIO controller system was swapped to use in Torus.
- Worked on Hall B Pre-Power-Up Interlocks Checkout Procedure.
  - \* Tested hardwire interlock for PLC chassis watchdog, and interlocks for leads temperature and low threshold in LHe level.
  - \* Tested PLC Fast Dump Bottom (Epics-PLC).
- Worked on Hall B Pre-Power-Up Instrumentation Checkout List.
  - \* Monitored and verified readouts of instruments and temperature signals in Distribution Box.
- Monitored EPICs screen of Torus Cryo system on a daily basis.
  - \* On 9/26/16, cool-down was running at about 8 K.
  - \* Readings problem with Cernox temperature sensor is still displaying on screens.



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### Eng. Brian

#### Magnets

- Investigating LV cRIO problems of not reading back properly when communicating with multiple excitation chassis.
- Sent VI fixes to Christiana Wilson, as well as suggestions for performance improvements.

#### SVT

- Completed cabling R4, powered on all modules, performed gain scans.
- M:\DSG\photos folder new\HALL B SVT\R4 in Vertical Position - Cable Bundles Separated by Type.jpg
- M:\DSG\photos folder new\HALL B SVT\R4 in Vertical Position - Cabling Complete.jpg
- Some modules have issues (bad gain on 7, coherent noise on 8, 12, etc); in process of debugging.

### Hoebel, Amanda

#### HDice

- Tested VISA drivers with Mercury iPS.
- Updated Rotation of Target Polarization VI with VISA drivers for Oxford iPS 120 written by Pete.
- Created CCPR for HDice lab port change to x86 subnet.

#### FT

- Oversaw insertion of HV cards into CAEN HV supply.
- Created LabVIEW thermometer VI for **DSG** VME test stand crate's RTD.

### Jacobs, George

- Supervised fitting of **RICH** valve panel on air tank pallet.

#### DC

- Created diagram for proposed automation upgrade for TCU calibration.
  - ★ TCU-setup-UPGRADE.pdf

#### LTCC

- Version 1.0 of gas system operator's manual is now complete.
  - ★ LTCC-gas-manual-V1-9-23-2016.doc
- Created LTCC gas system operator's manual appendixes.
  - ★ LTCC-gas-manual-appendix-V1-9-23-2016.doc

### Leffel, Mindy

- Accommodating work request from Fast Electronics Group, working with M. Taylor.
  - ★ Continued removing label residue from **DC** HV distribution boxes.

#### HDICE

- ★ Researched and found insulation material for rack shelves.
- ★ Inventoried components for RF cables.
- ★ Met with Xiangdong, Peter, Amanda, and Tyler to discuss rack and component locations.

# Detector Support Group

## Weekly Report, 2016-09-28

### RICH

- Interlock chassis.
  - ★ Made modifications to third one.
  - ★ Started fabrication of three jack-plug, D-sub, 37 contact cables.

### Safety

- ★ Documented and notified facilities about leaky roof of EEL.
- ★ Completed safety walk- through portion of Hall B safety training.

### Lemon, Tyler

- Wrote LabVIEW VI for MPOD Test Station to set and read voltage output for a single channel, using previously written SNMP communication drivers.
- Finalized RICH status update presentation for DSG weekly meeting

### McMullen, Marc

- Completed HTCC, DC, and SVT sections of the Gas Controls manual.
  - ★ Began LTCC portion.

### DC

- Added expert tab to gas controls GUI, will be used to change PID gains and pressure set point, and calibrate CO<sub>2</sub>% for mixture.
- Wrote subroutine to perform CO<sub>2</sub>% calibration for gas mixture.

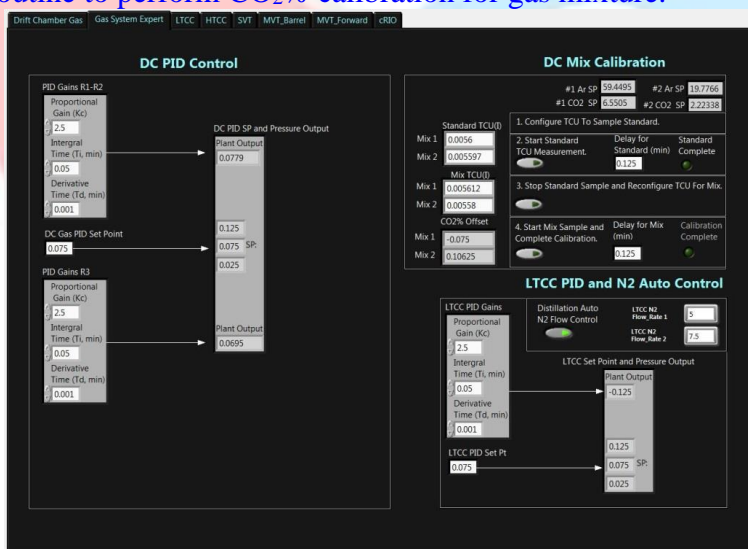


Figure 1 Gas System Expert tab in Gas System Controls GUI.

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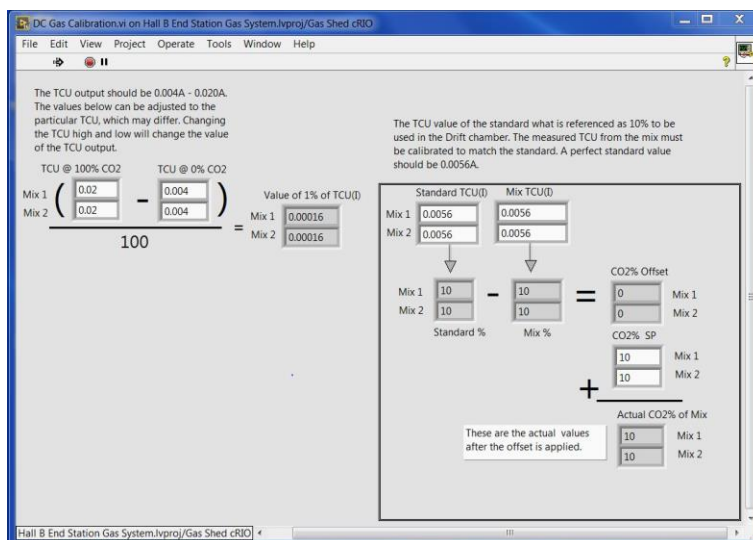


Figure 2 DC Calibration subroutine, used to calculate and calibrate CO<sub>2</sub>% offset.

### LTCC

- Added automatic flow controls for N<sub>2</sub> flow controller used in C<sub>4</sub>F<sub>10</sub> distillation.
- Reviewing LTCC Gas Manual.

### SVT

- Worked with Eng on modifications to current patch panel boards.
  - ★ Jumpers hardwired to board, obviating need for inserting jumpers in screw terminals.
- Installed ground wires to region 4 LIC terminal blocks and faraday cage.