



# Detector Support Group

*We choose to do these things "not because they are easy, but because they are hard".*

**Weekly Report, 2021-02-17**

## Summary

### Hall A – GEM

*Peter Bonneau, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen*

- Modified pressure readout code to acquire readings from two pressure transducers
- Modified the process variable database file on the Raspberry Pi to test the pressure readout code's ability to update an IOC

### Hall A – SoLID

*Mary Ann Antonioli, Pablo Campero*

- Wrote PLC code to interlock magnet based on its temperature; code includes 14 He temperature sensors located in the magnet coil shell
- Generated flow charts showing the logic to determine the set values, and the automatic and manual control modes, for the current leads' He mass flow controller
- Developing NX-12 model and mechanical drawing of valve panels to show the valves located in the cryo control reservoir and heat exchanger

### Hall B – RICH II

*Peter Bonneau, Tyler Lemon*

- Debugged SHT-35 drivers to run on sbRIO
  - ★ Reformatting sbRIO, re-installing all software, and redeploying project resolved issues
- Researched Sensirion recommendations for SHT-35 PCBs
  - ★ PCB should not allow heat sources to be near sensor or affect sensor through heat conduction via copper in PCB
- Plans for sbRIO Rio Mezzanine Card (RMC)
  - ★ RMC will have buffer drivers, Schottky diodes, sbRIO-to-RMC connector, and RMC-to-chassis backplane connector
- Developing SHT-35 based integrated temperature and humidity system
  - ★ RMC PCB will have interlock trip relays for temperature and humidity to turn off the detector HV

### Hall B – SVT

*Peter Bonneau, Mindy Leffel*

- Debugged +5 V power supply status which was intermittently reading back as ~2.4 V by repairing signal ground on the NI 9205 ADC module
- Tested, successfully, the ambient temperature and humidity interlock circuit to verify operation after the installation of the cable quick disconnect system
- Disabled coolant flow interlock in hardware interlock program as flow sensor has been removed



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## Hall C – NPS

*Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, George Jacobs, Mindy Leffel, Tyler Lemon*

- Developing Power On/Off CSS-BOY screen using Python script
  - ★ Buttons to turn on/off all individual channels have been placed
  - ★ Writing code to place buttons to turn on/off all channels of a module and all channels of a crate

00-35 ●	01-35 ●	02-35 ●
00-34 ●	01-34 ●	02-34 ●
00-33 ●	01-33 ●	02-33 ●
00-32 ●	01-32 ●	02-32 ●
00-31 ●	01-31 ●	02-31 ●

Snapshot of Power On/Off CSS-BOY screen

- Developing wiring diagram for load test box of Radiall 52-to-SAMTEC cable
- Generated Python code to test Radiall 52-to-SAMTEC connectors HV cables; analysis code development in progress
- Developed ramp test Python program to test the CAEN A7435 and A1535 HV modules
- Developing Hardware Interlock System; system design includes a National Instruments 8-slot cRIO controller located in the detector hut that will
  - ★ Initialize and readout the Keysight switch/measurement unit
  - ★ Turn off the CAEN HV and/or the chillers in accordance with the system fault charts
  - ★ Read the temperature and status from the chillers
  - ★ Function as an EPICS server and transmit/receive all interlock system PVs
- Terminated one Radiall 52-to-SAMTEC connectors HV cable; five of 40 cables completely terminated
- Added ground wires to four Radiall 52-to-SAMTEC connectors HV cables

## EIC

*Brian Eng*

- Researching general TPC/GEM information
- Updated silicon layout: services are going to have to come from both sides

## DSG – Implementation Team

*Marc McMullen*

- Attended second meeting of the Plan of Action and Milestone #10 implementation team
  - ★ Focused on how to implement the new EHS supplement – identifying experts across the lab who will be responsible for inspection of new designs and modifications, and review existing designs
  - ★ Focused on how to streamline documentation submission, review, and approval