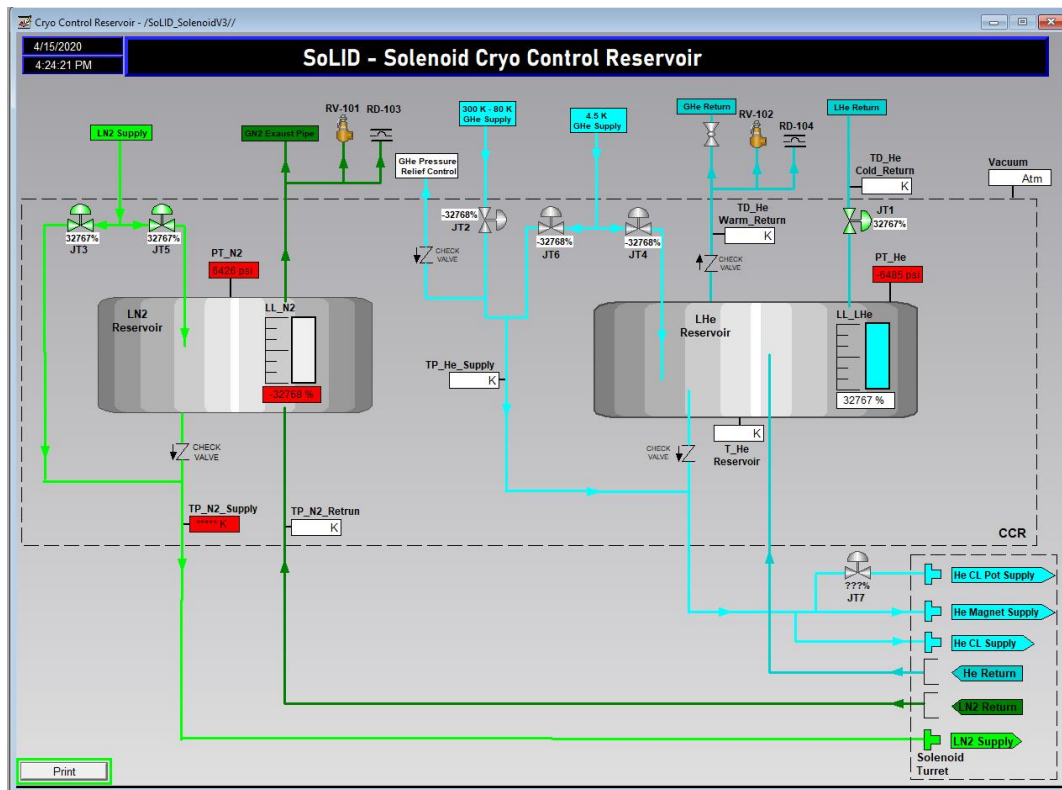


### Summary

#### Hall A – SoLID Magnet’s Instrumentation Controls

*Mary Ann Antonioli, Aaron Brown, Pablo Campero, Brian Eng*

- Developed PLC routine for monitoring magnet vacuum
- Developed PLC routines to monitor liquid levels and pressures inside LN<sub>2</sub> and LHe reservoirs
- Developed PLC routine to read positions of six JT valves
- Generating diagram to show details of control and readout of JT valves
- Developing AutoCAD drawing for Instrumentation Rack Layout
  - ★ Determining number of signal conditioners and terminal strips needed in rack
- Developing database to store Instrumentation and Control drawings
- Developing *Cryo Control Reservoir* HMI screen
  - ★ Assigned PLC tags for six JT Valves displayed on screen
  - ★ Added animation features to valves to change colors based on their state
    - Green indicates open, gray indicates closed
  - ★ Added feature to bring up JT valve set-up screen if valve is clicked
  - ★ Added feature to change color of HMI background if sensor readout fault occurs

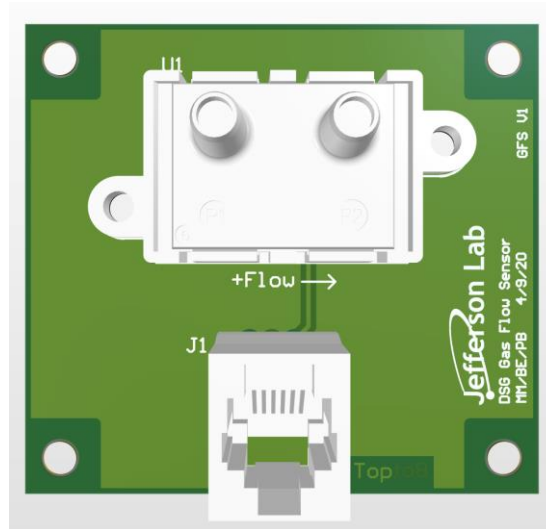


SoLID Solenoid Cryo Control Reservoir HMI showing values from Cleo II PLC. Indicators shown in red are due to signals not being connected to PLC.

### Hall A – SBS GEM

*Brian Eng, Marc McMullen*

- Routed, reviewed and sent flow sensor PCB files for manufacturing.
  - ★ The board is a substrate for the Honeywell Zephyr flow sensor used to measure mixed gas flow to detectors.



DSG Gas Flow Sensor PCB.

Zephyr flow sensor is on top of PCB. RJ-11 jack for disconnect on bottom.

### Hall B - SVT Hardware Interlock System

*Peter Bonneau, Marc McMullen*

- Designed and procured keyed, locking circular plastic connectors for a cable disconnect on Hardware Interlock cRIO crate.
  - ★ Disconnect will allow removal of cRIO crate without removing all the cables.

### Hall C – HMI-to-CS-Studio Conversion

*Mary Ann Antonioli, Aaron Brown, Pablo Campero, Tyler Lemon*

- Completed HMS Heat Exchanger (*HMS HX*) *JT Setup* screen
- Developing *HMS Cryo* screen
- Developing database to store converted screens

### Hall C – CAEN HV Testing

*Aaron Brown, George Jacobs*

- Analyzing high voltage stability data



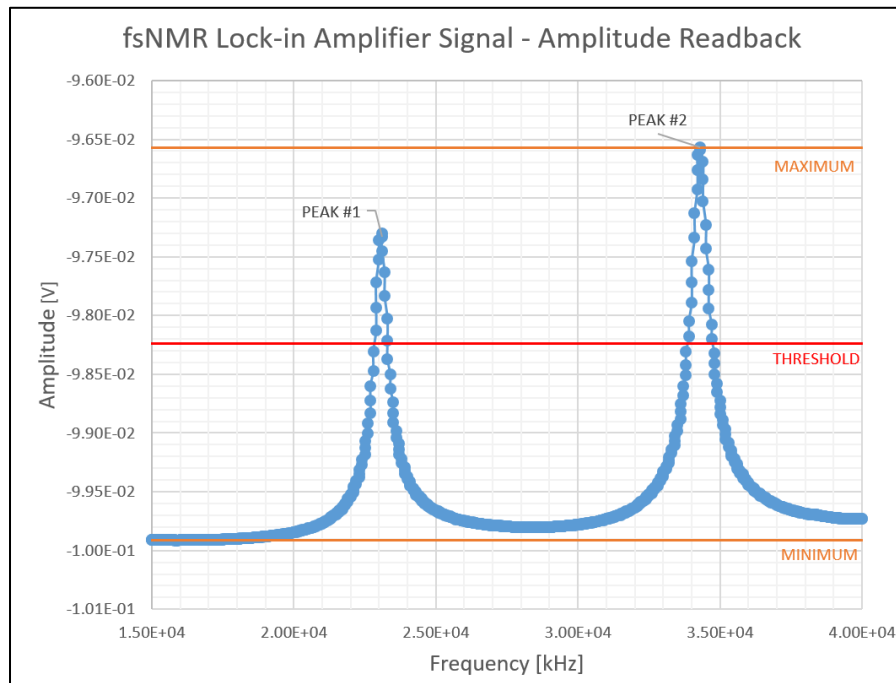
# Detector Support Group

## Weekly Report, 2020-04-15

### HDice – fsNMR

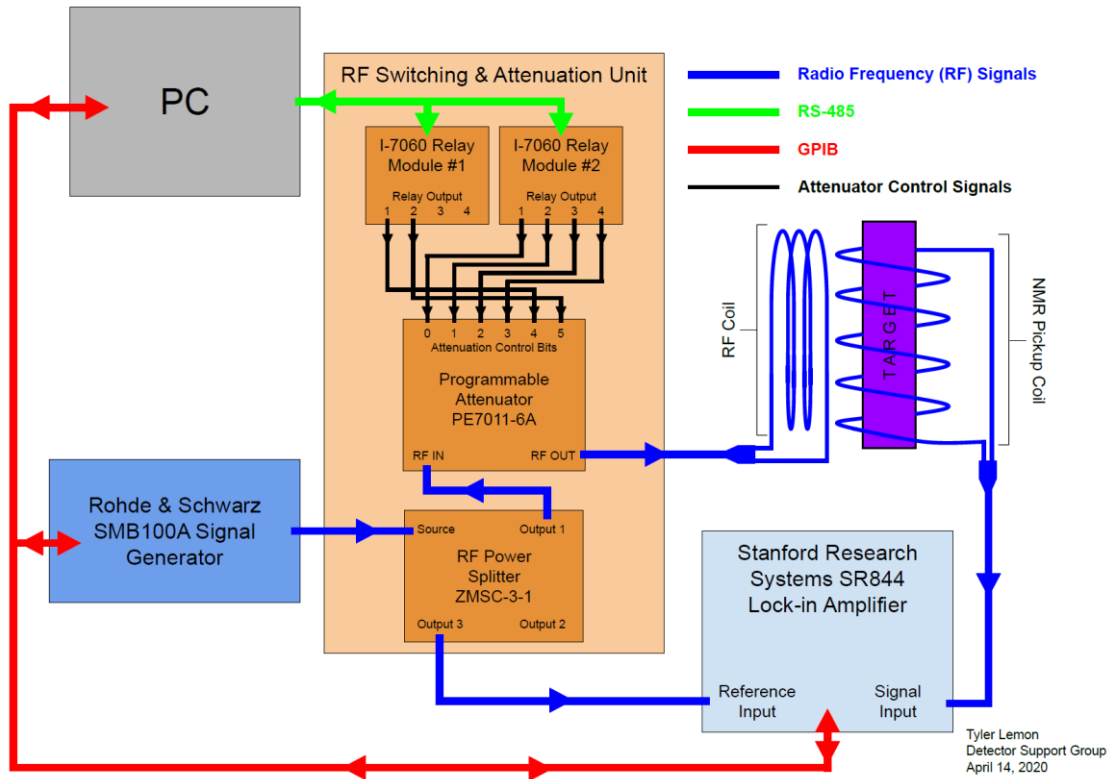
*Peter Bonneau, Tyler Lemon*

- Debugged occasional freezing of program due to non-zero return of lock-in amplifier.
  - ★ Resolved issue by adding logic to exclude display overload statuses of lock-in amplifier channels from requiring additional gain adjustments
    - Since method to read data from lock-in amplifier was changed, display overload statuses are irrelevant.
- Debugged peak detection for data acquired when program was run on Rack 2.
  - ★ LabVIEW's peak detect subVI incorrectly returned that there were no peaks found due to subVI's threshold being set, by default, to zero.
    - All data acquired in tests were negative, so nothing was over peak-detect threshold.
  - ★ Changed threshold from zero to mean of maximum and minimum of amplitude measurement, allowing peaks to be found.



Example fsNMR data where all data is negative. Threshold used by peak detect subVI is average of Maximum and Minimum.

- Created system diagram of instrumentation used in fsNMR program.



System diagram of instrumentation and target in used by fsNMR program.

### Engineering

#### Mindy Leffel

- Completed populating two BPM boards.
  - ★ Six of ten boards complete.

### DSG R&D – RICH

#### Peter Bonneau

- Researched Raspberry Pi 4 as alternate signal sources for RIO Mezzanine Card (RMC)

### DSG R&D – MSELV Chassis

#### Peter Bonneau, Tyler Lemon, Marc McMullen

- Reviewed final layout of RMC design.
- Investigated Raspberry Pi 4 as alternate controller for chassis
  - ★ Able to generate necessary communication signals using GPIO pins, but with GPIO library used, timing is inconsistent at higher data rates.



# Detector Support Group

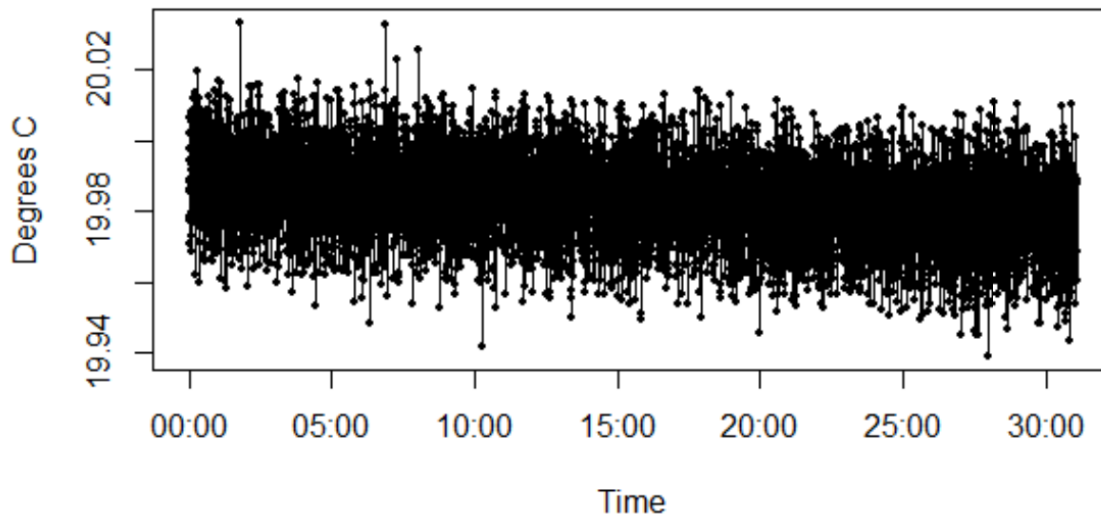
Weekly Report, 2020-04-15

## DSG R&D – EPICS Data Logger

Aaron Brown

- Establishing remote connection to database to allow users to access database regardless of which PC they are logged in to
- Developing code in R to plot data directly from database
  - ★ Debugging timestamps and x-axis plotting.

### **RICH Data: B\_DET\_RICH\_INTLK\_TEMP11**



Databased data for RICH N2 Volume temperature sensor #11.  
X-axis is not in correct format and still being debugged.