

# SoLID Magnet Controls System Meeting Minutes

**Date:** January 27, 2023

**Time:** 11:00–12:00

*Attendees:* Peter Bonneau, Pablo Campero, Steven Lassiter, Tyler Lemon, and Marc McMullen

## 1. HMI screens

*Pablo Campero*

1. Implemented *Solenoid Menu* screen to be used during low current test and future applications
2. As per Whit Seay request, added touch options to pop-up trend screen for each radial and axial support load sensor indicator shown in the *Solenoid Radial & Axial Support – Expert* screen
3. Completed addition of plot for nitrogen delta temperature requested for *Solenoid Cooldown* screen
4. Added “sorb” to labels for sorb heaters on the *Solenoid Coil and Radiation Shield Temperatures* screen
  - Values of the sorb sensors are higher than others when sorb heaters are on
5. Added trends to the *Solenoid CCR Expert* screen for cryogenic variables CPI2721, CEV249BYUORBV, and CCT20N
  - Variables added and archived in FactoryTalk View data logger system
6. Created a trend screen for the vacuum variable
  - Needed due to the greater number of decimals displayed as compared to other variables, such as temperatures
7. Modifications required for *Solenoid CCR-Expert* screen
  - Dotted lines to show control variable for JT9, JT10, and JT2 valves
  - Change helium supply line to and add helium return line from current lead pot supply; need updated P&I diagram from Whit Seay to make changes
8. Will swap the location of indicators for temperature sensors TS8 and TS10 on *Solenoid Neck Temperature* screen

## 2. PLC programming

*Pablo Campero and Steven Lassiter*

1. New version of the PLC code Cleo\_Test\_setup-v2 was deployed to the PLC controller
  - After deployment, had to set some of the valves' PID instruction parameters since they were not kept from previous version
2. Added PLC code to calculate the delta temperature between the cryo control reservoir supply and return
3. Discussed findings in CLEOTEST logbook
  - Max values for JT9\_HX\_LN2 and JT10\_HX\_GHe\_Mix were raised from 60 to 70 and from 90 to 100 respectively
    - 60% max on the HX LN2 valve did not allow for enough flow to keep the LN2 line cold
    - Parameters changed from the valve page HMI screen
  - PT\_HX\_GN2\_exhaust temperature reading and PT\_HX\_GHe\_Mix temperature sensors were swapped in the PLC logic
    - TP\_HX\_GN2\_exhaust was referencing I/O channel remote\_B:1:I.ch4data
    - TP\_HX\_GHe\_Mix was referencing I/O channel remote\_B:1:I.ch5data

- Reviewed drawings and PLC layout spreadsheet; both matched PLC channel assignment. Therefore either the wiring between rack and HX-1 or the HX-1 connector pin-out is different than expected

### 3. PLC alarm handler and email sender

*Pablo Campero*

1. Requested a list of alarmed signals, to include name of signal, limit values, message text, alarm type (e.g. digital alarm, deviation alarm, or level alarm)
2. Will add digital alarms and email notification for all interlocks
3. Working on the email notification to experts when cooldown stage changes
  - Discuss details of stages and parameters
4. Steven Lassiter requested email notification when there is a change to liquid levels power status

### 4. Phoebus screens

*Mary Ann Antonioli and Pablo Campero*

1. *Solenoid Current Lead* screen in progress

### 5. Other Topics

All

1. Monitored cooldown progress
  - Temperature in magnet not changing even when the helium magnet supply temperature was  $\sim 250$  K over the past 30 hours
  - Investigation is ongoing



Fig 1. Helium temperature supply and return