



Detector Support Group

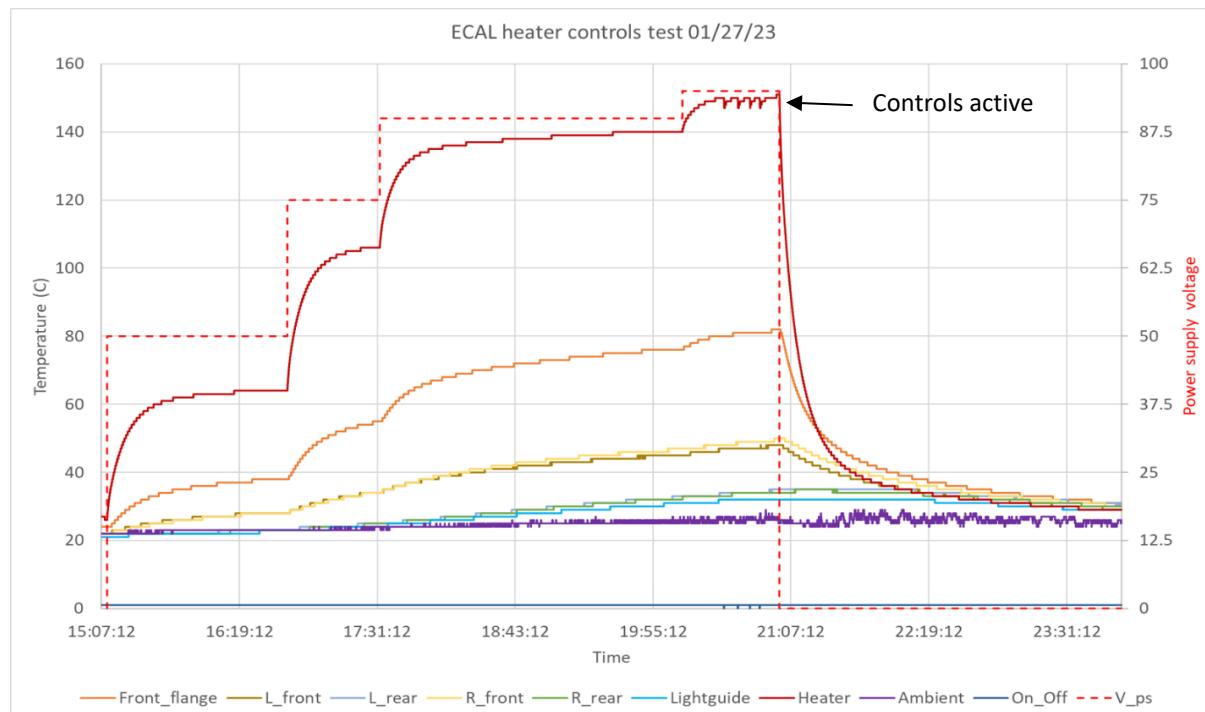
We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2023-02-01

Hall A – ECAL

Marc McMullen

- Completed testing ECAL heater at 50, 75, 90, and 95 V with measurements at eight locations—the heater, front flange, left front, left rear, right front, right rear, light guide, and inside the oven (ambient)
 - ★ Controls were set to 150°C, which opens the relay that supplies power to the heater
 - ★ The relay closes when the temperature is less than 0.5% of the setpoint



- Started assembling an insulated enclosure that will create a similar environment to the actual detector, to further test the supermodule heater controls
 - ★ Insulation structure is PTFE, which will be covered with mineral wool insulation
 - ★ All materials are rated above 300°C

Hall A – Møller

Mary Ann Antonioli and Brian Eng

- On magnet 3 RTD wiring drawing, changed terminal strip wiring and numbering, added a second terminal strip, and began adding PLCs

Hall A – SoLID

Mary Ann Antonioli and Pablo Campero

- Completed CL Mass Flow Control Phoebus screen
- Revised Menu Phoebus screen by adding, deleting, and rearranging buttons
- Debugged changes in PLC channel assignment for the heat exchanger's nitrogen exhaust temperature and helium mix temperature; channels were swapped in the PLC logic



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- Configured Alarms and Event Server
- Created a trend screen for the vacuum variable
- Modified *Solenoid CCR-Expert* screen
- Wrote code that causes the *Solenoid Interlock* screen to pop up automatically when an interlock is present

Hall B – HPS

Tyler Lemon

- Added heartbeat process variable to HPS storage freezer monitoring program
 - ★ Monitoring program is a Python program run on a Raspberry Pi that reads humidity and temperature inside the storage freezer with an SHT35 sensor
 - ★ Heartbeat process variable added to program as a running indicator; toggles between 1 and 0 at 1 Hz

Hall B – Magnets

Aaron Brown and Brian Eng

- Completed interlock and instrumentation checkouts of solenoid magnet
 - ★ <https://logbooks.jlab.org/entry/4118395>
- Added three RTDs to low voltage cRIO
 - ★ One each on the magnet power supply leads, one on the dump resistor
- Solenoid current is hard-coded in PLC to be positive
 - ★ <https://logbooks.jlab.org/entry/4120548>
- Ramped solenoid and torus to full current for the first time since MPS failure
 - ★ <https://logbooks.jlab.org/entry/4120625>

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng,

Mindy Leffel, and Marc McMullen

- Debugging hardware interlock system's LabVIEW program for thermal readback
- Writing troubleshooting instructions to be posted to NPS controls wiki page
 - ★ Researching methods for remotely restarting Keysight mainframe
 - ★ Researching meaning of Keysight error codes and how to resolve those errors
- Met with Simona Malace to review high and low voltage controls
 - ★ Debugging issue of skipped channels when high voltage setting command is sent to all channels
- Tested low voltage EPICS interface
 - ★ Revised low voltage Phoebus screen; changed PVs, changed label, removed column
- Tested pin 1 of Keysight cables for signal attenuation
 - ★ Krohn-Hite Model 523 used as DC signal source for test
 - ★ Oscilloscope used to capture 10-K samples of the voltage before and after the cable
 - ★ No major difference between when the cable was present and when not
- Terminated two 50-conductor, D-sub connectors

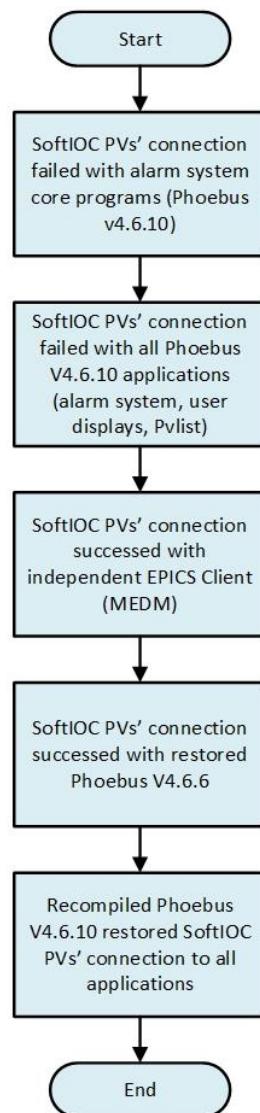


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- Completed debugging Phoebus V4.6.10 communication failure with EPICS
 - ★ Independent EPICS client MEDM successfully connected and communicated with process variables from the test system SoftIOC via EPICS channel access.
 - ★ Tested EPICS communication with last version of Phoebus (V4.6.6) that was compiled for alarm system development; worked normally
 - ★ Rebuilt all Phoebus V4.6.10 applications from original source code and configuration files; after recompiling Phoebus, worked normally with V4.6.10
 - ★ Concluded that one of the Phoebus V4.6.10 executable files associated with EPICS channel access had become corrupt
 - ★ Made debugging flowchart



Phoebus V4.4.10 Debugging Flowchart

Mary Ann Antonioli

1/30/23



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Hall D – JEF

George Jacobs and Mindy Leffel

- Disassembled, cleaned, and inspected 15 crystals (25 total to date)

EIC

Brian Eng and Pablo Campero

- Modified 3D model of the beryllium pipe section for thermal analysis
 - ★ Created new aerogel part, which is a solid cylinder with the inner diameter equal to the outer beryllium pipe diameter and outer diameter equal to the inner diameter of silicon layer 1
 - ★ Located aerogel on the annulus space formed between the beryllium pipe and silicon layer 1
- Researched aerogel material properties to implement in the simulation