



# Detector Support Group

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

**Weekly Report, 2023-07-26**

## Hall A - ECal

*Brian Eng, Mindy Leffel, and Marc McMullen*

- Completed heater controls main components list for full detector, with costs and links for procurement
- Started modifications to the heater controls software to control the output of five 48-V, 600-W supplies using PID controls
- Fabricated two high voltage cables with Fischer connectors; 9/23 completed

## Hall B - Central Calorimeter

*Mindy Leffel*

- Terminated 28 coax cables with SHV connectors; 28/28 completed

## Hall B – Gas System

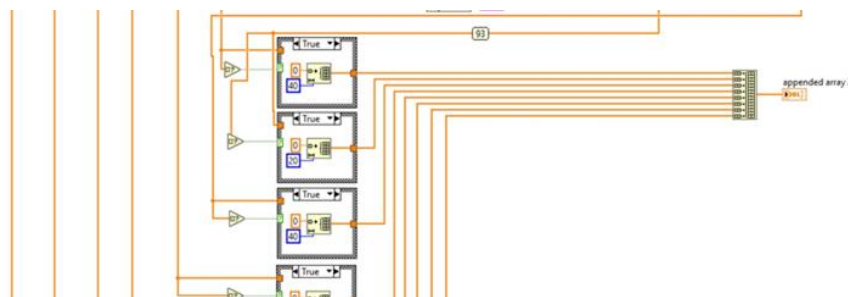
*Brian Eng*

- Switched microcontroller boards from those that only have built-in WiFi to ones that have an external power-over-Ethernet chip
  - ★ No display and uses a different I/O connector

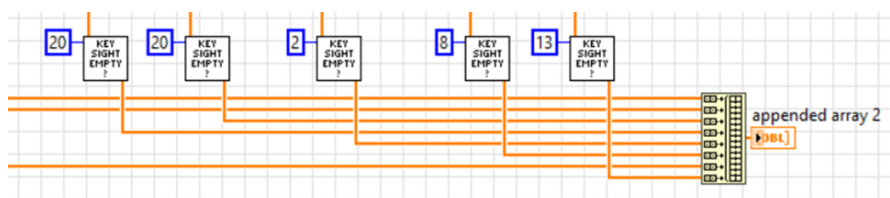
## Hall C – NPS

*Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen*

- Debugging thermal readback and chiller controls LabVIEW program
  - ★ Revised code to ensure that all replacements to the All Keysight Values array are in the same place; fixed issue of converted values not shown on Phoebus GUI
- Began making changes to the cleaned-up LabVIEW version that have been made to the version in use
  - ★ Made subVI of case structure added to Keysight scanning portion of LabVIEW code and added subVI to cleaned-up version



Version in use



Version using subVI for case structures

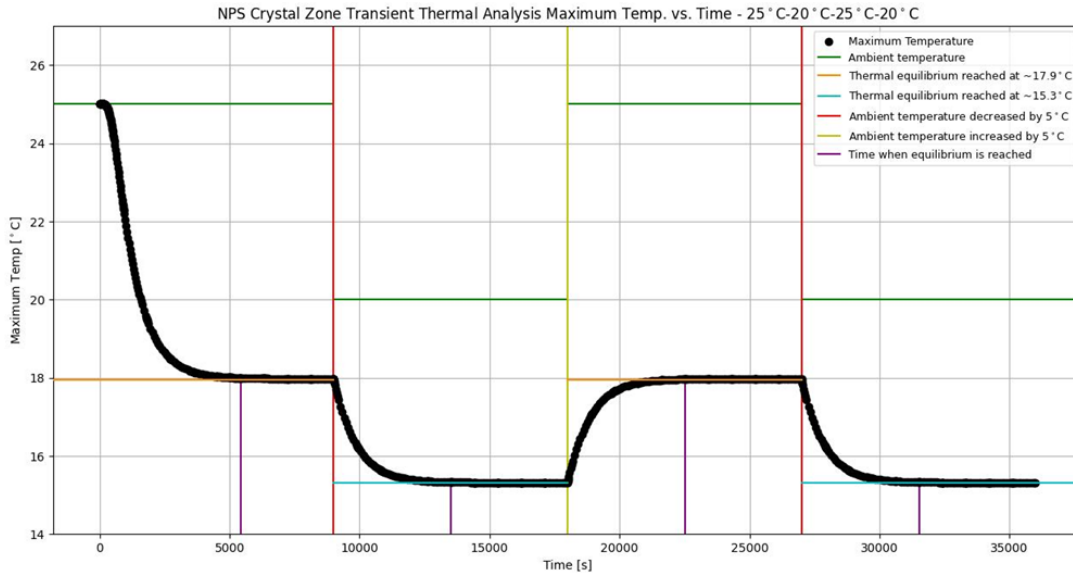


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- Submitted PRs for a spare cRIO, a remote power distribution unit (network-enabled power strip for remote reboots of cRIO), and a rack-mount UPS
- Ran Ansys transient thermal simulation where the ambient temperature was initially set to 25°C, reduced to 20°C, increased back to 25°C, and decreased to 20°C
  - ★ The time to thermal equilibrium for both ambient temperature reductions was roughly the same



- Increased distance between widgets on four Phoebus screens to allow room for alarm borders on widgets
- Working on mesh of Ansys-Fluent model
  - ★ Completed surface mesh; added face size options for each of the 1080 crystals
  - ★ Unable to complete mesh due to an error at ~42% progress; debugging in progress
- Programming simulated NPS detector PVs into alarm server
  - ★ Debugged alarm server non-acceptance into alarm server of some PVs
    - Developed and imported an alarm server .XML configuration file

## Hall D – JEF

Mindy Leffel

- Populated 10 PMT bases; 445 of 1200 completed

## EIC

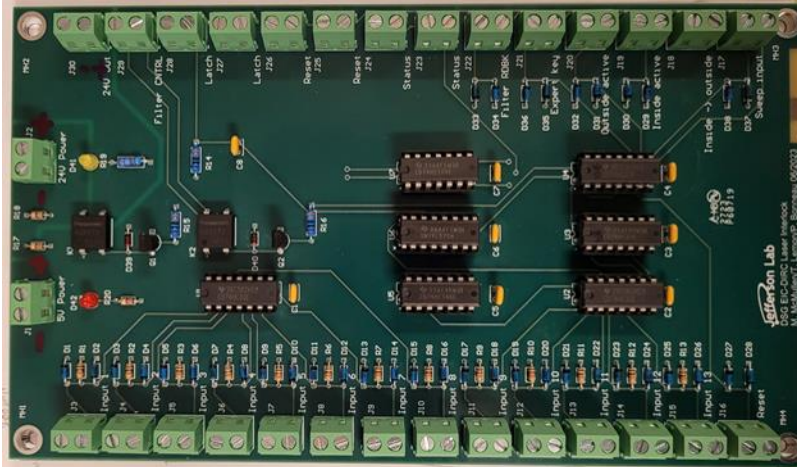
Brian Eng

- Attended meeting with Silicon consortium to go over current WBS (work breakdown structure)
  - ★ Internal WBS will be updated during ePIC user's group meeting this week
  - ★ Will have another meeting in two weeks to try to converge the schedules based on current design

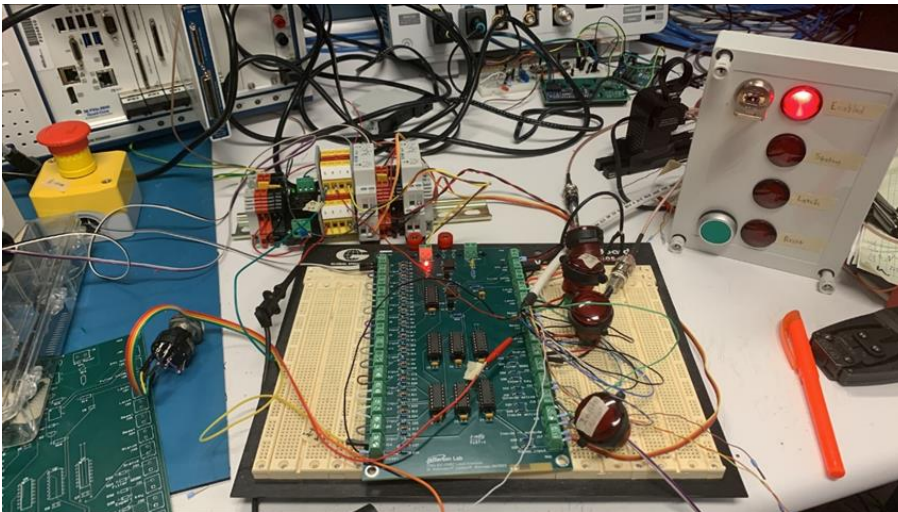
## EIC - DIRC

*Mindy Leffel, Tyler Lemon, and Marc McMullen*

- Populated laser interlock circuit PCB



- Tested assembled laser interlock circuit PCB



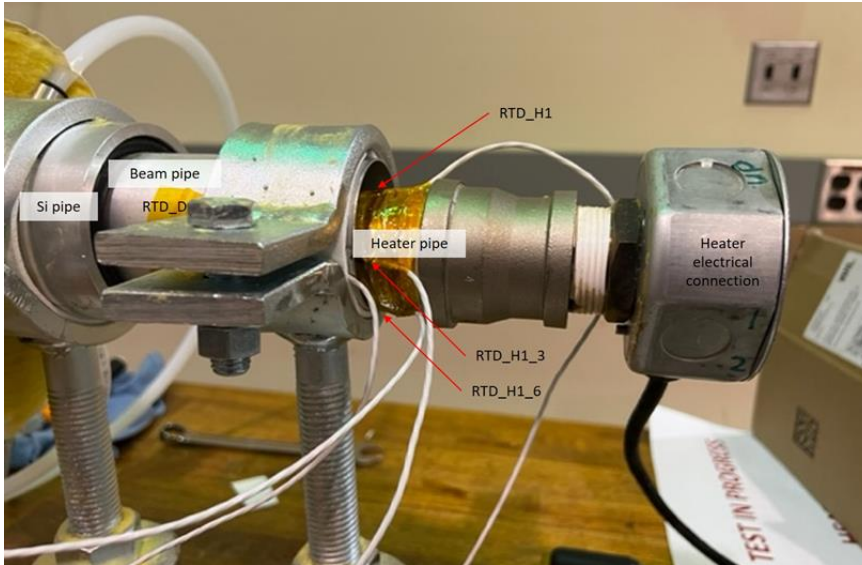
Assembled laser interlock circuit PCB operating under normal conditions (all interlocks clear, laser is enabled) during testing

- ★ Found that inputs to XOR gate used to monitor that only one control unit is active float high, causing XOR gate output to always be false, preventing clearing of interlock
- ★ Resolved issue by adding 10-kΩ pull-down resistors to the XOR gate inputs
- Planning layout of inside of laser interlock system's interior control unit and the wiring between interior control unit and exterior control unit

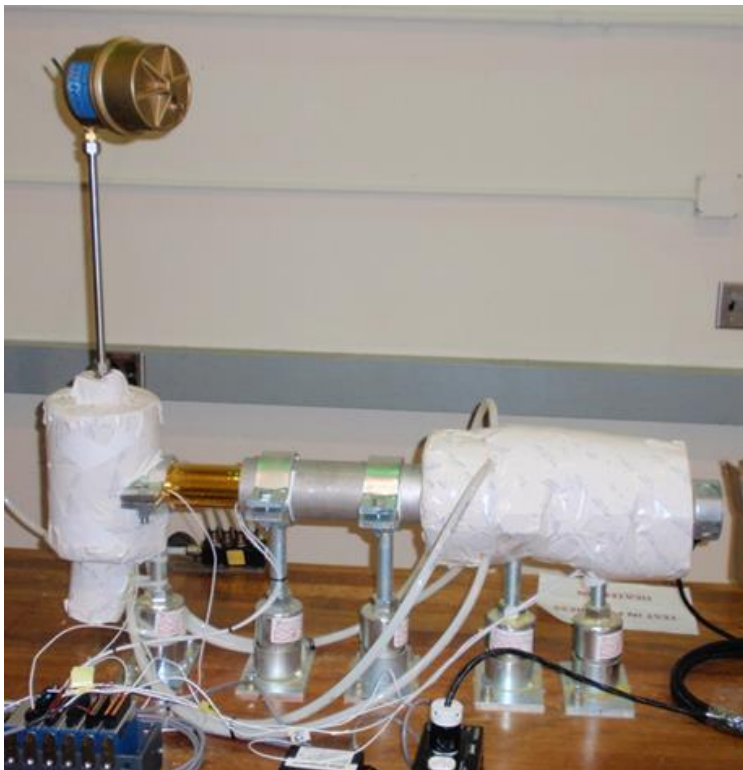
### EIC - Thermal Test Stand

*Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen*

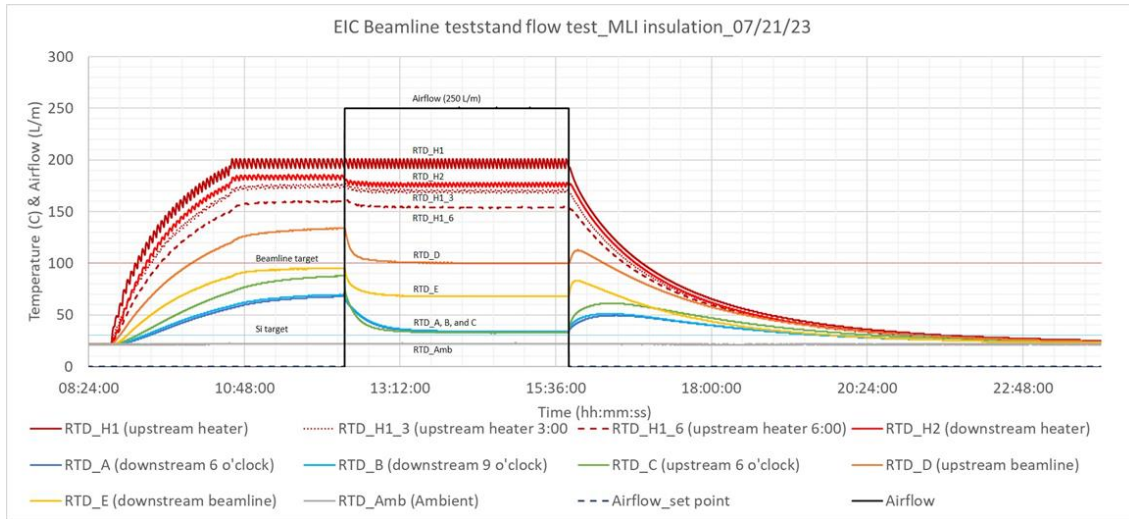
- Installed a new RTD on the downstream heater pipe and moved the old sensor to measure ambient
- Installed two additional RTDs (H1\_3 and H1\_6) on the heater pipe



- Completed re-insulation



- Ran test with airflow at 250 l/m (maximum) and beamline at 100°C; silicon surface remained above 32°C



- Started testing a second MFC to install on the test stand when a pressure system DA is assigned