



# Detector Support Group

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

**Weekly Report, 2023-08-09**

## **Hall A - ECal**

*Brian Eng, Mindy Leffel, and Marc McMullen*

- Fabricated three high voltage cables with Fischer connectors; 13/23 completed
- Troubleshoot loss of heater control in six-module test stand
  - ★ Discovered issue with two channels outputting full power when it was not demanded by the controls
  - ★ Found to be loose wire at the cRIO; power supply adjustable control defaults to 10 V (full power output) when control power is not connected
  - ★ The power supply needs a minimum setpoint of 6% of the full scale (10 V) of the control voltage to remain remotely controlled; changed controls output minimum from 0 V to 0.6 V
- Modified software
  - ★ Software temperature limit should be less than the Omega safety interlock—can now be set for the system
    - Output power to all heaters will be removed if any channel exceeds the software temperature limit; power returns when the system is within limits
  - ★ Controls operator can manually shut off power to the heaters
- Procured one cRIO 16-channel thermocouple module and thermocouples with hardware mounts
- Received quote for the control and monitoring hardware for the full system

## **Hall B – Gas System**

*Brian Eng*

- Working on using existing ActiveMQ broker to accept MQTT protocol that is used by ActiveMQ to receive sensor data

## **Hall B – Magnets**

*Brian Eng*

- Added as approver for Power-Up and Down Procedures in document control, reviewed, and signed

## **Hall B- RICH**

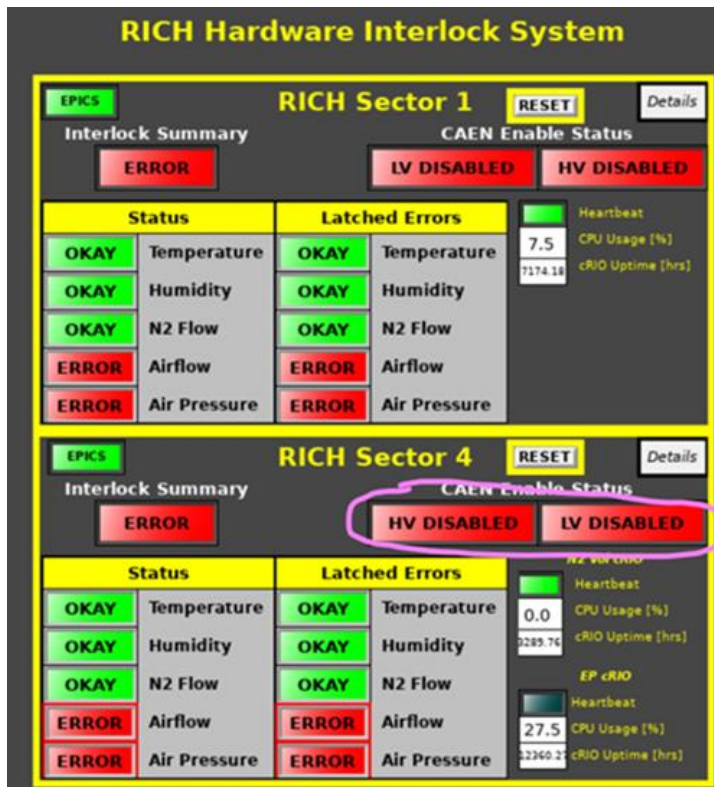
*Tyler Lemon*

- Debugged Sector 4 hardware interlocks' CAEN enable status indicators
  - ★ High voltage and low voltage statuses were displaying enabled when both were disabled
  - ★ Incorrect Boolean logic used on summary screen; logic should have been using AND instead of OR
  - ★ Screen updated

# Detector Support Group

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

Weekly Report, 2023-08-09



Updated screen showing correct status in pink circle

## Hall C – NPS

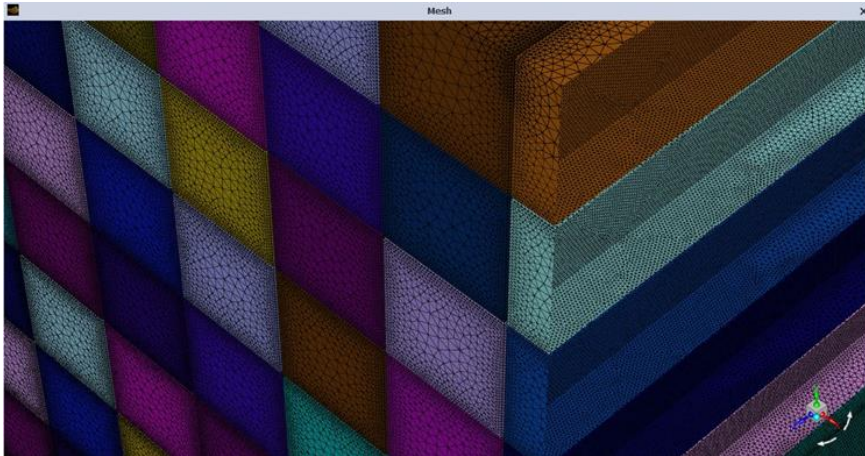
*Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen*

- Debugging thermal readback and chiller controls LabVIEW program
  - ★ Still awaiting response from chiller manufacturer (Boyd) regarding issue of chillers reading back incorrect temperature setpoint values
  - ★ Researched commands to disable chiller pumps instead of removing power from chillers in the event of an interlock
- Redoing plots of Ansys transient thermal simulation results
  - ★ Removed slopes from each plot
  - ★ Curve fitting in progress
- Continued making LabVIEW subVIs of shared variable arrays breaking out into individual shared variables; completed six subVIs
  - ★ Each subVI handles the same array type (such as sensor enable, average, or lo limit) for all detector areas (such as crystal zone or detector frame); one subVI can have up to 14 arrays which need to be broken out into individual variables
- NPS Ansys Fluent thermal analysis
  - ★ Completed surface mesh

# Detector Support Group

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

Weekly Report, 2023-08-09



Close-up of surface mesh, isometric view, of the crystal array

- ★ Received error message during volume mesh, due to memory allocation failure
  - Investigation revealed there are too many mesh cells for the amount of computer memory
  - Researching ways to reduce cell number without reducing quality

## HalD – JEF

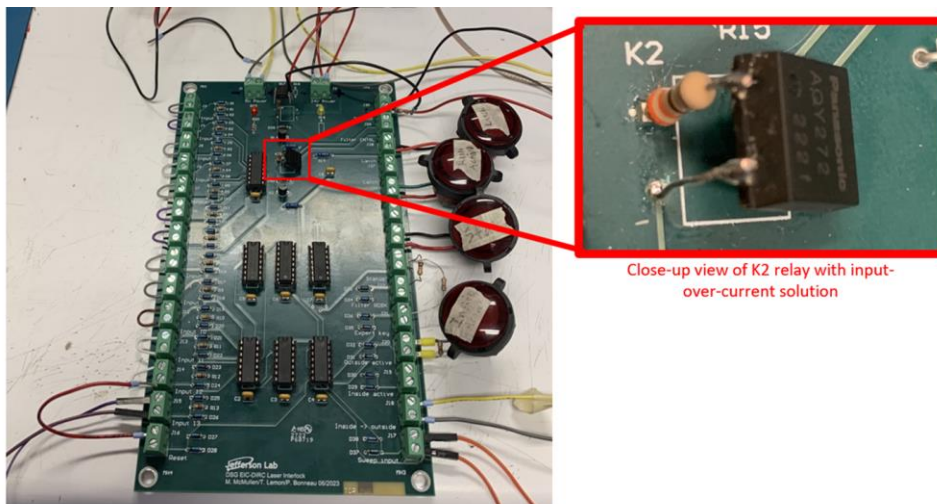
Mindy Leffel

- Populated 40 PMT bases; 525 of 1200 completed

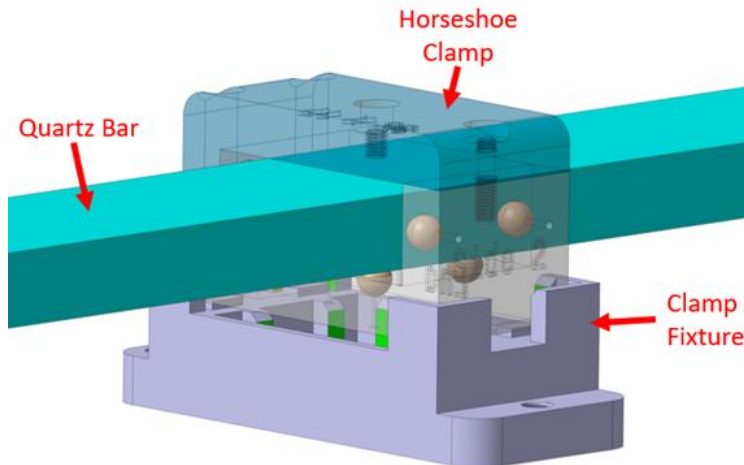
## EIC - DIRC

Mary Ann Antonioli, Mindy Leffel, Tyler Lemon, and Marc McMullen

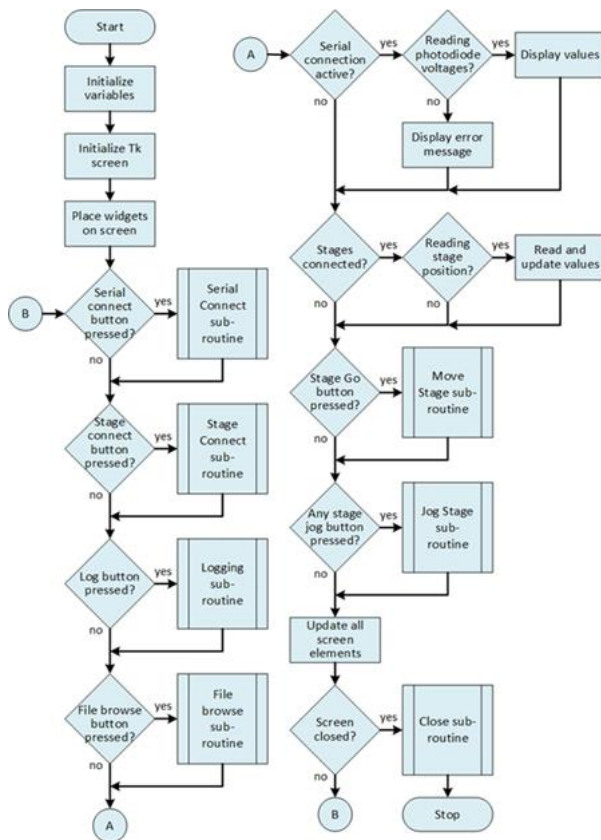
- Resolved over-current issue for relays on laser interlock system PCB
  - ★ Over-current condition ( $I > 50$  mA) caused relay and NPN transistor in circuit to fail into an “always on” state
  - ★ Adding 330- $\Omega$  resistor between +5 V and relay input fixed problem, reducing current draw of circuit segment to ~30 mA



- Started 3D printing clamp fixtures and horseshoe clamps used to hold quartz bars in test station
  - Fabricating four clamp fixtures and eight horseshoe clamps; anticipate one month to complete



- Creating Visio flowcharts of test stand user interface
  - Main (below) and five subroutines completed



EIC DIRC Remote User Interface – Main Program  
Mary Ann Antonilli  
7/28/23



# Detector Support Group

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

**Weekly Report, 2023-08-09**

- Building Phoebus development laptop
  - ★ Completed build of Linux and EPICS

## **EIC – RICH**

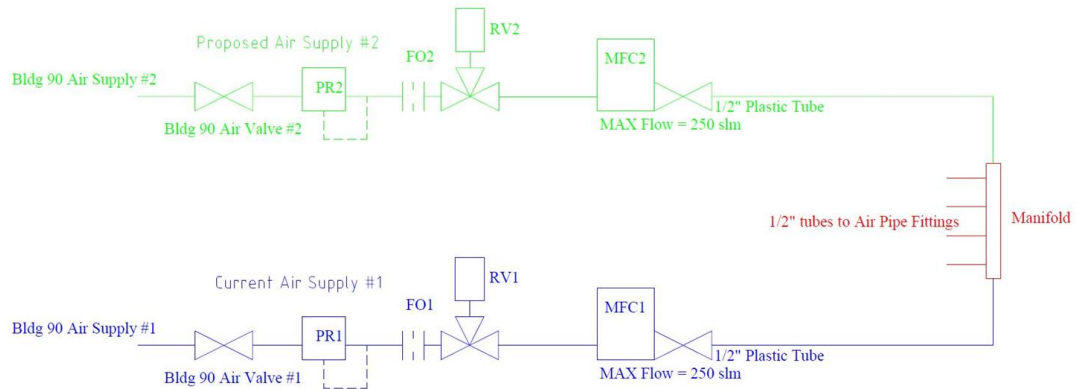
- Demonstrated current test station to collaborators

## **EIC - Thermal Test Stand**

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

- Revised air supply diagram to increase maximum air flow from 250 slm to 500 slm

EIC Thermal Test Stand Proposed Addition of Air Supply #2



- Discussed second airflow circuit with pressure systems design authority Dave Meekins, who will be ordering pressure systems components for the second line

## **DSG Website**

- Removed login requirement for weekly reports and memos