

Detector Support Group

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

Weekly Report, 2022-12-7

Hall A – CLEO Magnet

Aaron Brown, Brian Eng, Marc McMullen, Mindy Leffel

- Tested circuits for the remaining six mapping units
 - ★ Code change is needed to verify the units work
- Wired four field sensors to microSD breakout boards; eight of eight completed

Hall A – ECAL

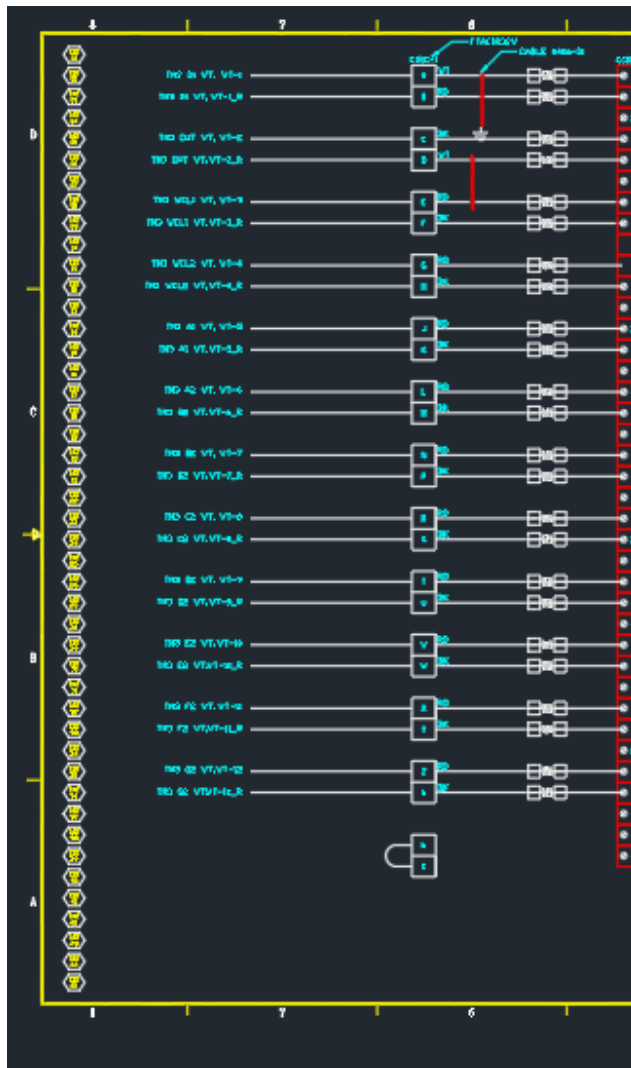
Marc McMullen

- Added to RTD data acquisition code to read temperature controller

Hall A – Møller

Brian Eng, Mary Ann Antonioli

- Completed known parts of drawings for magnet 3's RTD temperature sensors and voltage taps (below)





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Hall A – SoLID

Mary Ann Antonioli, Pablo Campero, Mindy Leffel

- Made CCS board control screen; tested buttons and LEDs locally
 - ★ Added button to Phoebus menu screen and cryo control reservoir expert screen that will open CCS board control screen

Board Name	Sensor Type/Location	Output Current	On/Off	PLC Relay Status
CCS Board 1	Rh-Fe/Magnet	100 μ A	On	
CCS Board 2	Rh-Fe/Magnet	100 μ A	On	
CCS Board 3	Rh-Fe/Magnet	100 μ A	On	
CCS Board 4	Rh-Fe/Magnet	100 μ A	On	
CCS Board 5	PT102/CCR, HX, CL	100 μ A	On	
CCS Board 6	Diode/CCR	10 μ A	On	

- Repaired broken wire on turret
- Completed fabrication of voltage tap and power supply cables
- Completed testing of power supply output signal monitoring
 - ★ Power supply current output shown on HMI screen nearly equal to values shown on power supply local display (± 0.01 A)
- Changed three HMI screen configurations so that a clicked screen is brought to the front if more than one screen is open
- Set up data transfer between EPICS and PLC; tested, with no issues found

Hall B HTCC

Marc McMullen

- Held pre-job brief on controls and monitoring of gas system while HTCC is being moved
 - ★ The detector manager is informed of the Hall B engineering procedure
 - ★ DSG will provide remote monitoring support

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Brian Eng, Tyler Lemon,

Marc McMullen

- Added voltage difference and current difference indicators to low voltage Phoebus screen



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Low Voltage Control and Monitoring

Card	Channel	Power	Voltage			Current		
			Set	Readback	Difference	Set	Readback	Difference
0	0	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	1	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	2	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	3	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	4	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	5	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	6	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	7	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
1	0	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	1	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	2	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	3	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	4	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	5	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	6	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	7	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
2	0	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	1	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	2	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	3	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	4	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	5	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	6	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps
	7	● Off	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps	<hcnps

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- Received four-pair cable to power humidity sensors
- Worked on noise shield for the NPS enclosure
- Tested seventeen Phoebus screens (third iteration); documented results
- Debugging hardware interlock system's LabVIEW program for thermal readback and chiller readback
- Investigating issue of a PV not updating and the Phoebus widget has to be deleted and replaced to operate properly
- Met with Bob Michaels and Chris Stanislav to discuss new work request for DSG
 - ★ Requested an antenna built to probe for source of noise inside NPS detector
 - ★ Requested four, 4-m low voltage cables to test low voltage using a benchtop power supply
- Procured backshells and 500 ft. of 27-twisted pair, 22 awg, cable to make 50-pin, D-sub, extension cables
 - ★ Backshells on hand missing thumbscrews to lock the extension cable to the manufacturer's cable

Hall D – JEF

Mindy Leffel

- Cut, stripped, and tinned 48 wires for the PMT bases

EIC Test Stand

Pablo Campero, Brian Eng, George Jacobs, Marc McMullen

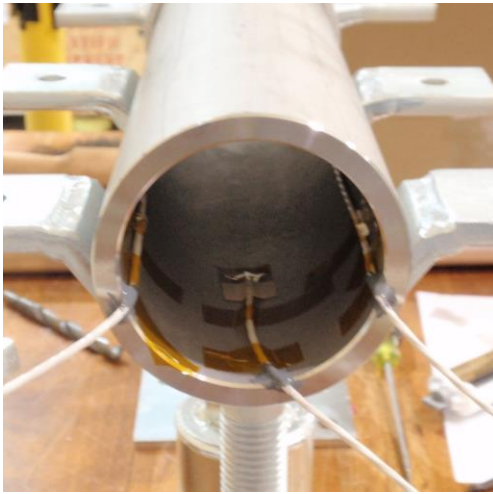
- Tested compressed air line and determined there was too much pressure for the relief valve
 - ★ The DA added a regulator; the line is approved for use

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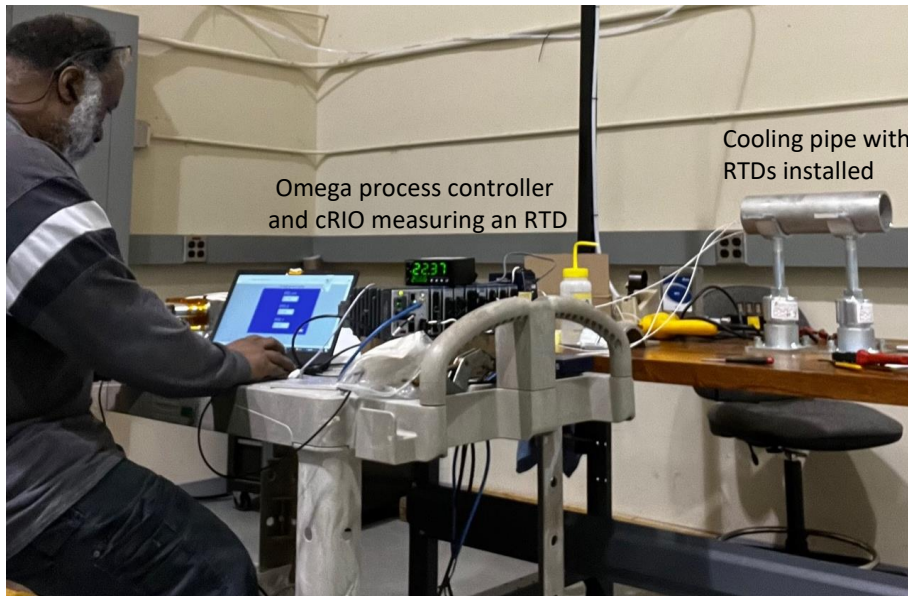
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- Mounted pipe stands to the table and glued RTD wires to pipe ends



- Tested the RTDs using LabVIEW



EIC-DIRC

Tyler Lemon

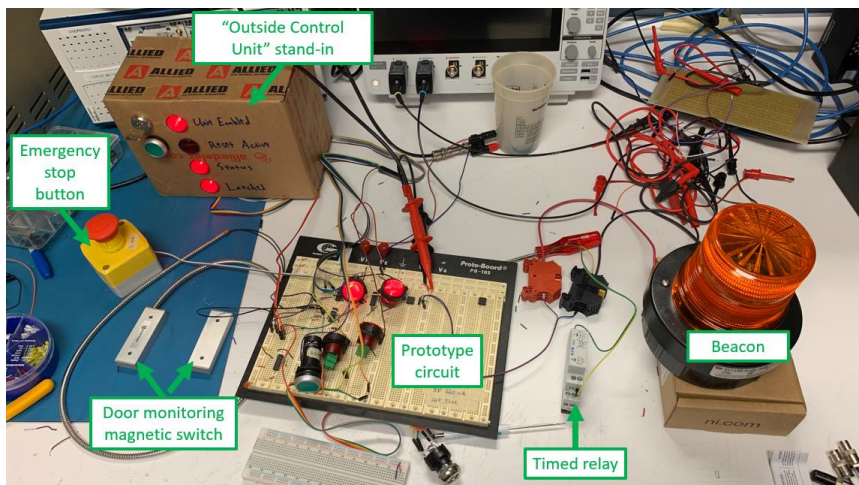
- Developing sweep function for interlock system
 - ★ Function will require user to press a button inside room, after ensuring no one else is in room, before being able to enable the laser
 - ★ Testing different methods with an additional timed relay and latch circuit

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- Created prototype of laser test station's interlock system
 - ★ Design previously tested in software simulation
 - ★ System uses NAND gates, NOR gates, relays, and timed relays to monitor interlock conditions, such as emergency stop presses, door monitoring contacts open, optical table walls are not in place, key is not present in either inside or outside control unit
 - ★ Prototype interlock system shown in photo below
 - Prototype of logic gates and circuitry are on a breadboard
 - Outside Control Unit is in use (indicated by its red Unit Enabled LED and key installed into key switch)
 - The red Status LED on the unit indicates an interlock is present, in this case the door monitoring magnetic switch is not closed (magnetic plate faces apart)
 - When the magnetic plate faces are moved within 3" of each other, the Status LED will turn off, and the user can power the beacon and timed relay by using the green reset button on the control unit
 - The timed relay waits 10 seconds before closing its contacts, enabling the laser



- Reviewed LOSP, received comments, and started making changes to the document

DSG Phoebus R&D

Peter Bonneau

- For Phoebus alarm system computer programming and configuration, developed automated start, initialization, and sequencing of the core alarm system support programs
 - ★ Upon boot of the alarm development computer, four core programs must be initialized in sequence and operational before the alarm system can be used in any capacity
 - ★ Tested, debugged, and implemented programs and Linux computer configuration files for the four programs