

Detector Support Group

We choose to do these things "not because they are easy, but because they are hard". Weekly Report, 2022-05-04

Summary

<u>Hall A – ECal</u>

<u>George Jacobs, Mindy Leffel, and Marc McMullen</u>
Assembled supermodules – 59 of 59 complete

<u>Hall A – GEM</u>

Mary Ann Antonioli, Brian Eng, George Jacobs, and Marc McMullen

• Generated Visio diagram of gas flow control program



GEM gas flow control program flowchart

Hall A - SoLID

Pablo Campero, Mindy Leffel, and Marc McMullen

• Completed Solenoid Cooldown HMI screen



SoLID Solenoid Cooldown HMI screen



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• Developing SoLID Solenoid Cooldown Phoebus screen

<u>Hall B – RICH-II</u>

<u>Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, and Marc</u> <u>McMullen</u>

- Continued 3D printing of parts
- Investigated wavelength spectrum capability of new reflectivity test station
 - Modified program to use two integration times to be able to measure lower wavelengths
 - 575 μ s for 200 500 nm wavelengths
 - $125 \ \mu s$ for $450 1000 \ nm$ wavelengths
- Completed Aerogel dry-tent assembly added fire retardant plastic and tape, installed magnetic self-sealing door flaps

<u>Hall C – NPS</u>

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, and Marc McMullen

- Developing LabVIEW code for the hardware interlock system program
 - ★ Generated subVI to compute and display dew point
 - ★ Wrote code to generate an EPICS server and automatically create process variables using the shared network variables from the project's variable library
- Conducted Ansys steady-state thermal simulation for simplified model without cooling effects from heat exchangers
- Developing CFD thermal simulation using Ansys Fluent to include heat exchangers' heat removal effects
 - Modified model changed heat exchanger blocks to four cylinders to represent the heat exchanger fans (two for the top and two for the bottom)
 - ★ Added electronics volume space occupied by the PMTs, PMT bases, and dividers to the model
 - ★ Using Ansys Design Modeler, combined volume occupied by PMTs and volume that encloses all electronics and cooling system
 - ★ Imported model to Ansys Fluent; solving boundary conditions issues
- Back-potted four high voltage supply cable Radiall connectors 19 of 40 complete
- Testing high voltage supply cables after back-potting their Radiall connectors six of 40 complete

<u>Hall D – JEF</u>

Mary Ann Antonioli, Aaron Brown, George Jacobs, and Mindy Leffel

- ESR foil pre-shaping 868 of 1600 complete
- Wrapped 25 crystals with ESR foil and Tedlar

DSG R&D – EPICS Alarm System

Peter Bonneau

• Completed debugging Phoebus code for startup of alarm system, Kafka message streams, process variable (PV) configuration, alarm system initialization, and alarm user interface



- Developing an Input/Output Controller (IOC) using EPICS base 3.14
 - Completed a four channel softIOC for the development and testing of the alarm system
 - ★ Used Visual Database Configuration Tool (VisualDCT) for EPICS database development
 - Produces test PV signals via random number generators range and offset are user adjustable
 - * Allows setting of PV alarm limits for HIHI, HIGH, LOLO, and LOW
- Testing alarm system with PVs using a softIOC
- Developed an alarm system GUI consisting of an Alarm Area Panel, softIOC display & control, Alarm Tree, and an Alarm Table

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Hall-C-NPS Alarm Area Panel	Display ×															
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Hall-C-NPS Alarm Tree	Crystal-temp-2	18.12	21.00	21.00	20.00	20.00	13.00	13.00	14.00	14.00	1 second	*	5	15	20.00	
Hall-C-NPS 👻 📘 📴	CZ-Chiller-temp-1	16.88	21.00	21.00	20.00	20.00	13.00	13.00	14.00	14.00	1 second	*	5	15	20.00	
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Phoebus alarm user interface window; the test PV Crystal-temp-1 has an active alarm generated by the test softIOC

• Developing Python script to automatically generate XML configuration files for PVs – script extracts PVs from EPICS Phoebus GUIs