

Detector Support Group

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

Weekly Report, 2020-08-19

Summary

<u>Hall A – SoLID Magnet Controls</u>

Mary Ann Antonioli, Aaron Brown, Pablo Campero, Brian Eng, Tyler Lemon, Marc McMullen

- Developing PLC code to control and monitor current lead heaters
 - Determined number of PLC terminal blocks needed to connect heaters to the PLC relay modules
- Completed *PLC Rack Frame Layout* and *Instrumentation Rack Frame Layout Front View* drawings
- Developing Instrumentation Rack Layout Drawing A00000-16-03-0200
 - * Added quench detector unit, PSU crate, liquid level controller, and valve panels
- Reviewing motor controller relay PCB

Hall A – GEM Detector Gas System

Peter Bonneau, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen

- Procured level translators to allow 3.3 V Raspberry Pi to communicate with the 5 V gas flow sensor boards
- Generated NX12 assembly drawing for Super BigBite gas panel
- Generated dimensional drawings of regulator panel and rotameter panel for fabrication
- Developed Python code to verify the operation of test gas flow sensor
- Developed LabVIEW code to operate gas flow sensors and provide data to EPICS

<u> HDice – fsNMR Program</u>

<u>Peter Bonneau, Tyler Lemon</u>

- Developed LabVIEW subVI for fitting peak of the lock-in amplifier's signal to background's amplitude to find peak's value
 - SubVI then interpolates amplitude and phase data to determine values used to scale X and Y data
- Installed data logging VI in the fsNMR program

Hall C - NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, George Jacobs, Mindy Leffel, Tyler Lemon

- Investigating sensors and supporting instrumentation for use in the high radiation environment within the NPS detector
 - * E.g. the Ohmic Instruments UPS-600 humidity sensor used at CERN in high radiation environment
 - * Resistive based sensor that has a relative humidity range of 10% to 95%
- Developing CSS-BOY voltage and current readback screen
 - * Changing 1080 PMT readback grid to 30x36 instead of 36x30
- Submitted PRs for Radiall connectors and tools needed for cable fabrication



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- Continued voltage stability testing (with load) using EPICS on CAEN crate and modules
- Six hundred and twenty of 1100 high voltage divider cables fabricated

Hall C- HMS/SHMS Magnets' CSS Screen Development

Mary Ann Antonioli, Aaron Brown, Pablo Campero, Brian Eng, Tyler Lemon

- Completed SHMS Dipole Valve Setup screen
- Started SHMS Dipole NMR Setup and SHMS Dipole PSU screens

*****			SH	MS Dipole	e Va	ve Set	tup		
Valve Timeout Time	s	Valve Rate	% / s	LVDT Max	%	EPICS 4 K	Flow Limit		
Deadband Max.	%	Valve Cycle Time	s	LVDT Min	%				
Deadband Min.	%	Max. On Time	s	Max. Setting	%	PLC 4 K Flo	ow Limitg/:	s 4K Flow Lir	nit l
Min. On Time			s Min. Setting % Override Flow Limit g/s Override						
JT5 - Liqui	d Helium	Click to DBL Click to Save / Restore Values			JT3 - Warm Gas to Magnet				
LHe Level	LHe Level Flow POSP				7110510		??	Flor	N POSP
Level Set Point	% Integral	Gain %		_					
Integral Gain	% Proport					Integral Gain	% Integral	Gain %	
Proportional Gain	%	Louis Maters Off			Proportional Gain	% Proporti	onal Gain %		
			Level Meters Off				IT2 I N2 Top Fill		
JT4 - Liquid Helium Bottom Fill			He Level Only				JIZ-LNZ TOP FIL		
LHe Level	Flov	V POSP		The Level Only				Level	POSP
				N2 Level Only					
Integral Gain % Integral Gain %							Level Set Point		
Proportional Gain	% Proport	He Le	evel Offset			Integral Gain	% Proporti	onal Gain %	
JT6 - Heli	um Cold	WR - Helium Warm Return				Current Leads			
Close if Warm Return i	s > %	POSP	Open if He Pre	essure is > B	ar	POSP		Flow	POSP POSP
Pressure Set Point	mB	la	Open if Magne	et Temp is > K	(
Valve Rate	%/s					Integral Gain % Proportional Gain %			
Integral Gain	% Proport	ional Gain %					Flow Increasing Fact	or	
									Print

Screenshot of the SHMS Dipole Valve Setup CSS-BOY screen

DSG – Website Design

Mary Ann Antonioli, Peter Bonneau, Aaron Brown

• Restructuring of the website's technical documentation sections