



Detector Support Group

Weekly Report, 2017-06-18

State of Play

Magnets

Solenoid

- Modified *Distribution Box* PLC program.
- Generated spreadsheet of PV signals names for 13 Solenoid PV tags that exceed 16 characters.
- Troubleshooting I/O failures in Solenoid PLC program
- Researched instrumentation for Solenoid Service Tower.
- Monitored and used EPICs screen for Solenoid, SST-Helium

Torus

- Added six new PT100s to LV cRIO.
- Investigated adding digital filters to Fast-Daq cRIO.

Gas System

- Continuous N₂ purge, @ 500 sccm, currently underway to each sector of LTCC.

DC

- Assembled DC gas mixing system—three Ar and one CO₂ pressure regulators, MKS MFCs, mixing volume, and lines.
- DC gas mixing and supply system moved to Hall B.
- Waiting on Hall B to move gas into Hall.
- Received 10 HP Ar and two HP CO₂ gas cylinders.
 - ★ Waiting on Hall B to move gas into Hall.
- Ordered 10 more HP Ar, one HP CO₂, and two CO₂ dewars.

HTCC

- Assembled CO₂ regulator for HTCC gas supply.
- Received pressure regulator for KPP HTCC CO₂ supply.
- Ordered and received 60 psi ASME relief valve for KPP HTCC gas supply.

Pressure System Documentation

- Began Hall B N₂ gas supply diagram.
- Started Hall B N₂ supply system component spreadsheet for pressure systems folder.

HDice

- Updated and debugged five subVIs in HDice NMR program.
- Debugging FRS program.
- Debugging NMR program field reading error for Oxford PS 120.
- Documented NMR program for changes made to Tdown, Tup, Tbottom, and Twait times.
- Documented FRS program for changes made in drivers



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SVT

- Ran gain scans (both parallel and elog version).
- Completed cable lacing.
- Sealed gaps between HFCBs.
- Repaired LV cable.
- Ran a nitrogen line for R4.
- Sealed around R4.
- Prepared insertion cart and started de-cabling from crates.

Forward Tagger

- For the cRIO based Hardware Interlock System:
 - * Developed cRIO chassis initialization procedures for calorimeter and hodoscope.
 - * Hardware initialization was tested with modified SVT-based interlock code.
 - * Completed module test program for basic test of C-modules.



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Antonioli, Mary Ann

- Updated and debugged five subVIs in **HDice** NMR program. Appears to be working but needs further testing.
- Changed DSG website photo.
- Compiled and edited weekly report.

Arslan, Sahin

- Preparing clean room for incoming **RICH** detector parts and components.
- Continued adjusting oil levels of **LTCC** bubblers for correct pressure.

SVT

- Continued working on cable management and lacing, with Mindy.
- Ran a nitrogen line for R4.
- Sealed around R4.
- Prepared insertion cart and started de-cabing from crates.
- Modified another regulator by adding orifice and pressure relief valve.

Bonneau, Peter

HDice

- Worked with Amanda on debug, test, and documentation of NMR LabVIEW program.
- Provided analysis and comments on the HDice minimum requirements on Rack #2.
- Worked with Mary Ann on upgrade of DIO drivers in NMR program.

Magnet Systems

- Worked with Pablo and Tyler on development, debug, and testing of Solenoid and Torus magnet programs.
 - ★ Implementation and testing of FPGA-based digital filtering for Torus voltage taps was investigated.
 - ★ Application of GE pressure sensors for Solenoid tanks was researched.
- Monitored and analyzed data from Torus instrumentation and cryogenic system status via EPICS while parked at 80 K until re-cooldown for KPP run.

Forward Tagger

- FT Hardware Interlock System.
 - ★ Developed cRIO chassis initialization procedures for calorimeter and hodoscope.
 - ★ Hardware initialization was tested with modified SVT-based interlock code.
 - ★ Completed module test program for basic test of C-modules.
- Held daily meeting on Hall D status and EPICS controls monitoring.
- Corrected issues with DSG website photo log. Some pictures were not being found by webserver.



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Campero, Pablo

Magnet-Solenoid

- Modified D.Box PLC program.
 - * *Solenoid_Valve_Interlock* routine was added as part of Solenoid cryogenics operations requirements.
 - * Added four PV signals in *PV_ArrayFiller* Routine. They will be used to monitor values during operations for Solenoid cryogenics.
- Generated spreadsheet of proposed shorter PV signals names for 13 Solenoid PV tags that exceed 16 characters.
 - * Spreadsheet sent to Dave Kashy.
 - * PLC programs in controllers for Torus, Solenoid, and D.Box systems are configured to send and receive as many as 500 bytes of data in single connection, limiting names to 16 characters.
- Troubleshooting I/O failures in Solenoid PLC program
 - * Changed configuration for Ethernet modules that communicate with Torus PLC and D.Box PLC, changing Requested Packet Interval (RPI) from 10 ms to 100 ms.
 - * Changed chassis size backplane configuration from 17 to 10.
- Researched instrumentation for Solenoid Service Tower.
 - * Found that operation range for pressure transducers PT8620 and PT8670 used for Lead and Magnet Helium reservoirs should be 0–165 PSIA.
 - * Range used in Solenoid PLC code was same as Torus, which is 0–150 PSIA.
 - * Model of pressure sensors used for Solenoid needs to be confirmed.
- Monitored and used EPICs screen for Solenoid, SST-Helium
 - * Solenoid *LHe Temperature Detail* screens display errors of communication for all of the variables.
- Monitored and analyzed on a daily bases, logbook entries and EPICs screens for Hall D.
 - * CDC and FDC gas systems pressures are below low limits at ~67.5 Pa.
- Updated Mailing Lists *dsg-hallb_magents* and *dsg-halld_plc* with new members.

Eng, Brian

SVT

- Ran gain scans (both parallel and elog version).
- Started de-cabling in preparation for move to Hall B for KPP.

Gas System

- Updated MFC for HTCC to use units of SLM (was using sccm) and added CO₂ to the gas selection.
- Moved standalone cRIO (9082) for DC KPP run, only to interface with MKS 647C controller.
- Many EPICs PVs for gas system had to be renamed to separate voltage and gas system signals in alarm tree.



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Hoebel, Amanda

HDice

- Debugging FRS program with Mary Ann.
 - * Program was not producing correct signal.
 - * Error found to be incorrect NMR setting.
- Debugging NMR program field reading error for Oxford PS 120.
 - * Current read from CT-box is ~ -8 mA when Oxford PS 120 is at 0 A.
 - 8 mA corresponds to a field reading of ~4 G.
 - Error seems to result from incorrect CT-box calibration and explains field reading of 4 G less than set value for graphs.
- Documented NMR program for changes made to Tdown, Tup, Tbottom, and Twait times.
- Documented FRS program for changes made in drivers.

Jacobs, George

KPP

- Assembled DC gas mixing system—three Ar and one CO₂ pressure regulators, MKS MFCs, mixing volume, and lines.
- Assembled CO₂ regulator for HTCC gas supply.
- DC gas mixing and supply system moved to Hall B.
- Waiting on Hall B to move gas into Hall.

Gas Systems

- Received 10 HP Ar and two HP CO₂ gas cylinders.
- Received pressure regulator for KPP HTCC CO₂ supply.
- Ordered and received 60 psi ASME relief valve for KPP HTCC gas supply.
- Began Hall B N₂ gas supply diagram.
- Ordered 10 more HP Ar, one HP CO₂, and two CO₂ dewars.
- Started Hall B N₂ supply system component spreadsheet for pressure systems folder.

LTCC

- Continuous N₂ purge currently underway to each sector, @ 500 sccm.

Leffel, Mindy

- Cleaned cleanroom, in preparation for **RICH** equipment.
- Removed 1” of oil from all six bubblers in **LTCC** gas system, with Sahin.

SVT

- Worked with Sahin on R4.
 - * Completed cable lacing.
 - * Sealed gaps between HFCBs.
 - * Repaired LV cable.
- Worked with Sahin removing cable trays and attaching cable mounts to insertion cart.

Lemon, Tyler

Torus

- Added six new PT100s to LV cRIO.
 - * Six new PT100s added to Torus LV Excitation Chassis 1 for relief valves.



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- ★ Sensors had not yet been added to configuration table in LV cRIO LabVIEW.
- ★ Added new sensors to configuration table for LV Excitation Chassis 1.
- Investigated adding digital filters to Fast-Daq cRIO.
 - ★ Want to filter 60 Hz noise in Fast-Daq data.
 - ★ Implemented filter in FPGA code for Fast-Daq cRIO.
 - Initial test on 2017-01-13 unsuccessful; FPGA error.
 - Attempted second test; compilation failed.
 - Compilation successful 2017-01-17.
 - ★ Investigating where to add filter and how to implement in FPGA code to avoid FPGA error seen on 2017-01-13.
- Monitored logbook and EPICS on a daily basis.
 - ★ Reviewed entries from Solenoid quench in December 2016.

McMullen, Marc

- Started code modifications for [HTCC](#) multiple gas type supply. Upgraded gas controls to auto-start on reboot. Removed MKS example and replaced with DSG flow control software.
- Started decabling [SVT](#) from crate end with Brian Eng, Sahin Arslan, and Mindy Leffel.
- Worked on MKS 647 monitoring [DC](#) GUI. Modified software to be operated from Hall B Gas Controls software.
 - ★ Added KPP gas controls into main Gas Controls GUI.
- Received Axetris mass flow controller.