



Detector Support Group

Weekly Report, 2016-12-21

A Retrospect of the Year 2016

Detector Support Group

Orta Recens Quam Pura Nites

(NSW coat of arms)

Twenty sixteen has been a successful year.

We made significant contributions to several major projects: Hall B Solenoid and Torus, Hall B Gas System, SVT, RICH, DC and HDICE, and additionally to innumerable maintenance and support tasks on Hall D PLC Systems, HTCC, LTCC, MVT, and FT. All this was possible because of each one's talents and dedication to work; and because of Patrizia's guidance and support.

We exemplified team work. With regards to the work, we neither prevaricated nor procrastinated, were not daunted by the complexity or schedule of any project; and on each project that we undertook, we did our damndest to finish the project on time, without compromising safety or quality.

It has been indeed an extraordinary privilege for me to have been able to work yet another year with DSG's dynamic, skilled, and gifted individuals and to have been able to work for Patrizia, a phenomenon

And as this work year draws to an end with the approaching holiday season, I wish each one of us a happy and peaceful time with our families and friends. I wish us a period of quiet and calm, a period of deliberation and rejuvenation, a period during which we look back at our endeavors and our achievements over this past year and take from these a deep sense of satisfaction.

And I pray that we come back with renewed vigor to face the challenges of the upcoming new year.

Season's Greetings and best wishes for the new year.



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Status of Projects

Magnet Control System

Solenoid:

- Made Visio drawing of voltage taps.
- Configured Solenoid IP address in D.Box and Torus PLC.
- Cleaned up minor failures in PLC program to be ready for instrumentation test in SST.
- Started work on instrumentation test for Solenoid Service Tower
- Documented shared variables added to cRIOs.
- Investigated how to move Fast-Daq scaling to cRIO FPGA.
- Corrected bug in Solenoid Fast-Daq LabVIEW causing all data to be multiplied by 1000.
- Created XML files to view Torus LV Excitation Chassis data on EPICS archiver.

Gas System

- Continued DC gas piping modifications in gas shed to bring system into compliance with pressure system requirements
- Began running DC lines from valve panel on L3 space frame to TORUS manifolds.
- Continued replacing valve panel components to comply with design authority's requirements.
- Discussions and meetings with Dave Kashy on pressure system requirements for KPP DC gas mixing and supply setup.
- DC gas P&I diagram being modified to be in compliance with pressure systems requirements.
- Developing KPP gas supply P&I diagrams for DC gas and HTCC gas.
- Created spreadsheet with DC components, pressure ratings, and component diagram names.
- Modified HTCC monitoring software to control gas flow; monitored gas flow.
- Submitted RICH TOSP for detector assembly.

HDice

- Tested Fast Resonance Scanner program.
- Wrote NMR program to include wait time.

RICH

- Packaged spherical mirrors in boxes to ship for final coating.

FT

- Modified five first generation preamplifier boards.





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Antonioli, Mary Ann

- Continued changing and cleaning up HDice NMR code. Tested and debugging problem with subVI that no longer works.
- Completed first draft of all Visio flowcharts for HDice pump cart code.
- Made Visio drawing of Solenoid voltage taps.

Arslan, Sahin

- Ran R1-2-3 DC gas supply and exhaust line from SFL3 solenoid panel to manifold with Mindy. Routing approved by George Jacobs and Bob Miller
- Continued analyzing cable routing and hardware of pump cart and transferring this info into wiring diagram in AutoCAD.
- Modified five regulators, by adding orifice and pressure relief valve, which will be used on various detectors.



Original Regulator

Modified Regulator

Bonneau, Peter

No report - absent

Campero, Pablo

Magnet- Solenoid

- Completed Solenoid PLC programming assigned.
 - ★ Uploaded first version program to GitHub.
 - ★ Downloaded Solenoid PLC program in controller.
- Configured Solenoid IP address in D.Box and Torus PLC.
 - ★ Changed Solenoid IP address on D.Box and Torus PLC to be able to set communication between PLC controllers.
 - ★ Downloaded new programs into D.Box and Torus PLCs.
 - ★ Monitored to be sure changes don't affect normal operations for D.Box PLC and Torus PLC.
- Cleaned up minor failures in PLC program to be ready for instrumentation test in SST.
- Worked on instrumentation test for Solenoid Service Tower
 - ★ Configured temperature units in [K] to Cryocon temperature monitors to monitor temperatures in Solenoid leads.



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- * Set communication between Cryocon unit and Solenoid PLC; running as expected.
- * Calibrated LVC-4000 linear variable differential transformer, used for each electro valve in SST.
- * Configured switch position hardware in the four LVDTs.
- * Using wire diagrams, verified correct wiring between LVDTs and electro valves.
- * Measured voltage in relay output module to ensure driving of the valves; testing will continue.
- * Calibrated scales (Max and Min) and engineering units in analog input modules.
- Troubleshooting faults in communication between Solenoid PLC and EPICS.
 - * Monitored and used EPICS screen for Solenoid; SST-Helium screen didn't communicate with PLC controller tags.
 - Problem solved by fixing EPICS.
 - The screen is available to check signals on SST.
 - * Updated tags in PLC program to match SST-Helium screen.

Eng. Brian

No report - absent

Hoebel, Amanda

HDice

- Tested Fast Resonance Scanner program.
 - * RF Box displays incorrect power setting.
- Wrote NMR program to include wait time.
- Troubleshooting NMR program.
 - * Times for Tdown, T_{up}, T_{bottom}, and T_{wait} times ½ s off.

Jacobs, George

DC

- Continued gas piping modifications in gas shed to bring system into compliance with pressure system requirements
- Began running lines from valve panel on L3 space frame to TORUS manifolds.

RICH

- Continued replacing valve panel components to comply with DA requirements.

GAS Systems

- Discussions and meetings with Dave Kashy on pressure system requirements for KPP DC gas mixing and supply setup.
- DC gas P&I diagram being modified to be in compliance with pressure systems program.
- KPP gas supply P&I diagrams for DC gas and HTCC being developed.
- Created spreadsheet with DC components, pressure ratings, and component diagram names.
- Discussions and meetings with Voker Burkert, Mac Mestayer, Stepan Stepanyan, and Dave Kashy on KPP gas system progress.



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- Ordered gas system components via ecommerce.
- Ordered pressure regulators for KPP DC Ar supply.
- Installed orifices and relief valves on CGA580 pressure regulators used for N₂ purge and Ar mixing.

Leffel, Mindy

DC

- Worked with Sahin running gas lines in Hall.
 - * R1-R3 supply lines.
 - * R1/R2 and R3 return lines.

HDICE

- Pump cart.
 - * Took more photos, created five new folders on M drive, and started organizing photos.

ET

- Modified five first generation preamplifier boards.
 - * Replaced two resistors on each cathode, eight cathodes per board.
 - * R23-R93, swapped 3.9 K Ω with 2.2 K Ω .
 - * R31-R101, swapped 51 Ω with 560 Ω .

Lemon, Tyler

- Compiled information on RICH mirror shipment for Shipping Authorization Form.
 - * Waiting on shipping cost estimate from Shipping & Receiving, which will determine which account to be charged.

Magnet

- Documented shared variables added to cRIOs.
 - * Details PC requirements and procedure to use shared variables.
- Investigated how to move Fast-Daq scaling to cRIO FPGA.
 - * Previous attempt (week of 2016-12-07) at moving scaling unsuccessful; array with scaling factors not processing correctly so had to change subVI.
 - * Wrote LabVIEW VIs to simulate how Fast-Daq cRIO processes data.
- Corrected bug in Solenoid Fast-Daq LabVIEW causing all data to be multiplied by 1000.
 - * Reverted changes to FPGA VI library; correctly scaled data is now read.
- Created XML files to view Torus LV Excitation Chassis data on EPICS archiver.

McMullen, Marc

Gas System

- Modified HTCC monitoring software to control gas flow; monitored gas flow.
- Submitted RICH TOSP for detector assembly.
- Worked on MKS 647 monitoring GUI, to be used for remote control and monitoring gas supply for DC during KPP.