Detector Support Group

Weekly Report, 2016-1-13

Project Summary

Hall B

1. Gas System Hardware

Team: George, Marc, Mindy, Sahin
Goal: Setup for PID test
Due: 01/15/2016
Comment: **Hardware setup completed 01/13/2016**
Remaining Issues: Hall B Eng. needs to fix:circuit breaker (extension cord is being used), bolt rack, and solenoid panel.

2. Gas System Slow Controls

Team: Brian, George, Marc, Mary Ann, Amanda, Tyler
Goal: Complete PID test
Due: 01/31/2016
Comment: **Slow controls program installed, 01/12/2016**
Remaining Issues: Valve settings stick, PID program has scaling, set point, and set range errors.

3. Magnet Slow Controls

Team: Brian, Peter, Amanda, Tyler
Goal: Setup PLC workstations and look at code.
Due: 01/15/2016
Comment: PLC license installed by Computer Center, 01/06/16.
Josh loaned laptop, 01/07/2016.
Ordered new computer for PLC, 01/08/2016.
Updated PLC floating license to V27, 01/12/2016.
Able to read code, 01/12/2016.
Magnet task list attached at end of document.
Sent to Wesley Moore extracted PLC tags for EPICS CSS/BOY screens.
Researched Danfysik MPS control board setup for PLC interface.

4. Detector pre-installation, cleaning, repairing, and testing

Team: Mary Ann, Mindy, Anatoly, Sahin
Goal: Complete LV cables
Due: 02/29/2016
Comment: **R1 and R2 completed.**

5. DC Installation

Team: George, Marc, Mindy, Sahin
Goal: Prepare for August installation!
Due: N/A

Comment: Installation scheduled to start 08/01/2016. For an estimated installation time of a chamber per week, installation would be completed end of January 2017.

6. HDICE

Team: Peter, Brian, Mary Ann, Amanda, Tyler, Mindy, Sahin
Goal: Fabricate prototype RF cables.
Due: 01/31/2016
Comment: **Brian received the machined adapters for the connectors.**
Remaining Issues: Mathematica data file set incomplete.

7. HTCC

Team: Mary Ann, Mindy, Anatoly, Sahin
Goal: Fabricate cables.
Due: 07/31/2016
Comment: Meeting with Youri Sharabian. Youri will provide all needed components and tools.

DSG

8. Databasing in SQLite

Team: Amanda, Tyler, Brian
Goal: Database and histogram HV currents of SVT modules.
Due: 01/15/2016
Comment: **Histogramming of Hammatsu, burn-in, and December 2016 currents completed, 01/15/2016. Analysis in progress.**

9. Test Station

Team: Tyler, Amanda, Mary Ann, Peter, Brian
Goal: Communicate to cRIO/ output to excel
Due: 01/15/16
Comment: Communication established, 01/11/2016; trying to write output to EXCEL.

Antonioli, Mary Ann

Hall B

DC

- Tested 3 HV cards (72 channels).
  - ✶ Channel 18 failed on one card.
  - ✶ All available cards have been tested (32/42).
- Tested 3 HV crates. All available crates tested.
  - ✶ One crate is missing 3 upper rails and one is missing the power cord.
- Summary of LV cable work:
  - ✶ R1 and R2 are completed.
  - ✶ R3 is cut. S1, S2, and S4 are completed. S3 is fabricated, ready for testing.

DSG

- Updated website photo and archived old photo.

Arslan, Sahin

Hall B

- ✶ Brian and I changed N_2 bottle for SVT
- ✶ Mindy and I changed Ar/CO_2 for DC , provided spare bottle of N_2 for Forward Tagger.
- ✶ Transferred DC gas system 1” tubing from storage building to Hall B.

Gas System

- Installed, with Mindy, Marc, and George, supply and exhaust gas lines for R1, R2, R3 to solenoid control panel and to 250 gal tanks.
- Re-adjusted solenoid unistruts support frame, using band saw.
  - ✶ Adjusted the length of legs.
- We have installed cable tray for gas lines.
- the controls chassis, touchscreen monitor, controls cables are installed.
  - ✶ I have cut 14 solenoid control cables with Anatoli.
  - ✶ Fabricated these cables and installed in solenoid control box.
  - ✶ Refurbished the existing solenoid control box from 1995 and re-wired new cables and all of the cables have been labeled.
- Attend Worker Safety Meeting

Bonneau, Peter

Hall B

SVT

- Monitored SVT Hardware Monitoring System Interlocks on a daily basis.
  - ✶ SVT coolant temperature measured by cRio chassis averaged ~ 10.5°C.

Magnet Systems

- Obtained and started install of Rockwell Studio 5000 V27 on PLC development computer.

DSG

- Trained A. Hoeble and T. Lemon on Allen Bradley PLC systems
  - ✶ Showed how to set up serial communication device drivers on PLC using Rockwell RSLinx.
- Updated Mathematica software to version 10.3.1 on a DSG computer.

Eng, Brian

Hall B

SVT

- Manually added plots to logbook after Java errors failed to add them.
- Lowered N_2 flow per Yuri's request due to low room humidity (~20%), however this was reverted after the humidity in the room went up again (~50%).
- Yuri brought up HV spikes as possible issue, after looking at data it is due to ramping up the HV, specifically an issue with voltage not matching the ramp rate initially. Contacted vendor again (previously brought to their attention in 2014).

DC Gas

- Installed cRIO and related hardware on SFL3 with Marc and Sahin.
- Corrected a few minor issues in the code: the scaling was set incorrectly and some variables for the SetPoint weren't initialized properly.
- Started running the code with George, Marc and Tyler.

HDIce

- Received 50 brass adapters for RF cable assemblies.

Magnets

- Installed AB version 27 and started reviewing PLC code for Torus.
- Copied files and manuals to M drive, also made PDF reports.
- Ordered workstation which will be a Windows computer on the Hall B subnet in order to communicate with PLC and cRIO in the end station.

Hall D

- Controls meeting - Beni found that the PXI time is off by 1 hour compared to IOC time.
  - ✶ According to MAX & built-in webserver the time is correct (to within a few seconds). Suspected to be a daylight savings issue since it's off by an hour.
- Changed the PXI code to force updating the time via NTP once every 6 hours. I suspect the SNTP module no longer functions in LV 2015.
- Will debug PXI time issue and deploy changes after system isn't being used, currently taking data.

Hoebel, Amanda

No report – Sick

Jacobs, George

Hall B

DC

- Participated in Hall B engineering meeting
- Restored gas flow to the DC test stand in EEL rm 125

Gas System

- Finalized design of valve panel stand for L3 DCGAS installation
- Supervised fabrication and installation of valve panel stand for L3 DCGAS installation
- Supervised gas line installation for PID loop test
- Commenced PID development testing

Leffel, Mindy

Hall B

DC

- Continued working on LV cables.
  - Finished printing R3 cable labels
  - Terminated R3S1SL6, R3S2SL5-SL6, R3S3SL5-SL6, and R3S4SL5-SL6.

Gas System

- Worked in the hall,with others on the following tasks.
  - Moving gas lines from physics storage to the hall.
  - Setting up the rack.
  - Rerouting cables from L1 to L3.
  - Adjusting gas line fittings and connecting cables.

Lemon, Tyler

Hall B

Gas System

- Worked with Marc, Brian, and George to update and test in Hall B PID loop program written in Labview.
  - Accessed CRIO on Space Frame Level 3 South.
  - Debugging Gas Control crate connections in order to get PID loop test to work properly.
  - Adjusted the proportional gain, integral time, and derivative time in order to get the proper pressure regulation behavior.

Hall D

- Attended safety walk through given by Elton with Amanda and Amrit

Slow Controls

- Attended bi-weekly meeting.
  - Discussed solenoid PXI issues.
  - First second of every new data file is lost.
  - Still trying to determine cause and a solution for the loss of 1 second.

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PLC Test Station

- Re-installed drivers to communicate to PLC from desktop PC using RS232 cable.

CRIO Test Station

- Debugged with Mary Ann and Amanda issues that arose when writing to files after program is deployed.
  - Example: Will not write to any type of file if the program is fully deployed onto the CRIO.
- Researched processor and module specifications.
- Familiarized myself with how to import text files to Mathematica.
  - Imported text file to Mathematica.
  - Created histogram of data in text file.

McMullen, Marc

Hall B

Gas System

- Worked with Jacobs, Arslan, Leffel, Eng, and Lemon on installation of Hall B gas system PID test stand on SFL1 south.
- Installed gas lines, controls chassis, monitor, and cRIO.
- Installed LabView program on cRIO.
  - Debugging issues..

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Safety

- Printed and posted BList for PID test at the teststand.

Sitnikov, Anatoly

Hall B

DC

- Tested continuity on 12-pin connectors of DC LV cables and confirmed color code.
  - Completed 42 cables.
- Moved 112 LV cables for DC Reg.#2 to building 23 with Sahin.
- Prepared 970 pins for assembling LV connectors (for Mindy).

Gas System

- Measured and cut 14 cables for gas system with Sahin.

Work Request for Hall B Magnet Slow Controls

November 6th, 2015

I. **Task 1:** Test power supply PLC code with actual Danfysik Power supply.
Background: Josh has written a new PLC driver and did some limited testing (simulation) for communicating with the 4000 A Danfysik power supplies. Prospective PLC programmer will need knowledge of Danfysik power supply communication protocols, serial communications through RTA 435-NBX module, and will need to coordinate testing with the DC Power group. The code is intended to be reusable, so it will be relevant for both Torus and Solenoid. Actual testing will likely occur with the Solenoid power supply.
Time Estimated: 2 man-weeks: 1 each for testing and debugging.

II. **Task 1a:** Work with Wesley Moore to define/develop EPICS screen(s) for power supply status/control
Background: Hall B is using CSS/BOY (VERY similar to Hall D). Programmer would need to understand the underlying data structure for the MPS control, be familiar (or be made familiar) with Hall D's PSU EPICS screens and work with Wesley to get the screens defined and functioning. Test the power supply control through the EPICS interface. Assuming this is the same person as 1, above.
Time Estimated: Anticipate this would be 2 weeks of effort.

III. **Task 2:** Work with Wesley Moore to define/develop Cryo EPICS screens for Distribution Can and Torus Service Tower.
Background: Familiarity with the Hall D and Cryo group practices, specifically those regarding valve control. Programmer will need to be able to navigate the PLC programs to determine which tags are relevant, understand the underlying data structures, simplify the P&ID's in order to get 'enough' information onto the EPICS screens for Cryo control.
Time estimated: 1 week each for Distribution Can and Torus Service Tower.

IV. **Task 3:** Solenoid Bore Heater control (out of scope work):
Background: Krister and Josh have put together a preliminary control system for the solenoid bore heaters. If their preliminary system is approved, this could be a stand-alone task within the overall Solenoid PLC program. This is ON-OFF control of 32 heaters based on the readout of 16 thermocouples. Task would include some definition of wiring, generation of wiring diagrams, hardware configuration, and actual control code.
Time Estimated: 2-3 man-weeks.

V. **Task 3b:** Work with Wesley Moore to define/develop EPICS screen for Solenoid Bore Heater Control
Background: Not available
Time Estimate: 1 week

VI. **Task 4:** Coordinate checkout of Distribution Box PLC program after Distribution Box installation.
Background: Download PLC code to PLC, verify all IO, verify operation and read-back from valves, perform initial setup of temperature readout units and LN2 readout unit. Ensure data is being transferred to/from EPICS correctly. During checkout, identify and correct any wiring problems or software bugs.
Time Estimated: 2 weeks.