



Detector Support Group

Weekly Report, 2018-06-06

Summary

Hall C

- Worked on NRM PT2026 Tesla Meter communication with PLC task.
 - ★ Debugged Ethernet communication with PT2026 Tesla Meter.
 - ★ Assigned TCP port 1024 and 111, these ports enable connection with the PT2026 Tesla Meter but the sending and receiving of the SCPI commands still with problems.
 - Unable to find proper TCP port number for PT2026 seems to be the reason for the communication problem between 490 NBX modules and the PT2026 Tesla Meter.
 - VXI-11 is the communication protocol available in the PT2026 Tesla Meter.
 - Researched Remote Procedure Call (RPC) commands used for VXI-11 protocol
 - ★ Contacted ECCO vendors to see another optional module that can be used to communicate PLC with PT2026 Tesla Meter.
 - ★ Debugging and researching better communication options.
 - ★ Investigated possible use of NBX module as the interface between the PLC and NMR probe.
 - NBX module does not seem to work, as the probe uses VXI-11 which has dynamic ports.
- Instrumentation for PLC tasks identified/located in Hall and counting house.
 - ★ SHMS shutter, SHMS flexes I/O modules, Skylla7 server PC, three UPSs and terminal blocks for HMS I/O PLC modules found.
 - ★ Could not locate HMS flex I/O modules.
- PR submitted for AP9613 Dry Contact I/O (relay) card for APC UPS interface.
 - ★ APC UPS has no usable built-in interface with PLC, so the AP9613 Dry Contact I/O (relay) card is needed to read the UPS status using PLC.
- UPSes in the detector hut examined for UPS-to-PLC interface.
 - ★ Both HMS and SHMS use FERRUPS model Fe5.3KVA UPSs.
 - ★ UPSes have one built-in DB-25 port that contains two relay outputs:
 - UPS is on its inverter (relay 1)
 - Alarm status summary (relay 2).
- Began generating SHMS PLC network map.
- Began development of a program on DSG-PLC to test logic for UPS interface.
 - ★ Current version of program uses an analog input module with external power supply to mimic fault outputs of UPSs.



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SVT

- Control monitoring code updated to enable averaging and trip delay for individual sensors.
- One 24V version of PCB #2 installed.
- Fabrication of four HTSB2 cables completed.

HDice

- Triggering interface for NMR program received and tested successfully.
 - * Accepts the trigger output from the CT-box and drives the lock-in amplifier triggering input signal.
- NMR program, test programs, and all instrumentation device drivers upgraded to LabVIEW 2017.
- Repairs on RF box #1 and #2 completed.
 - * Box #1: attenuator B was replaced, pull-down resistors added, and fan installed.
 - * Box #2: current-limiting resistors added and LEDs replaced.

LTCC

- Sector 1 leak-testing concluded.
 - * Monitored values of the pressure showed insignificant leak rate; however, leakage was not quantified.
 - Usage rate would require recorded fill-times between a high and low pressure. Pressure was never low enough to for the pressure controls to open up the solenoid.

Gas System

- RTPC gas supply layout document created.
- Adapter fittings received for ppm H₂O sensors.



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Antonioli, Mary Ann

- Made corrections and additions to drawing of Hall C PLC network map.
- Installed fan in HDice RF box 1.
- Changed LEDs in HDice RF box 2.
- Completed changes to SVT control monitoring code.
 - ★ Completed updating code to enable averaging individual sensors and updated code to enable trip delay for individual sensors.
 - ★ Rearranged User Interface tab to make room for control arrays; added four control arrays for averaging and trip delay.
 - ★ Made changes to User Interface code (added event handling cases, updated type def., shared variable changes).
- Began Visio drawing of Solenoid cool-down PLC program communications.
- Edited and posted Notes -02, -03, -04, and -05.

Bonneau, Peter

HDice

- Received and tested CT-Box current shunt hardware triggering interface.
 - ★ The model PRL-444 hardware-triggering interface from Pulse Research Lab accepts the high-impedance trigger output from the CT-box and drives the lock-in amplifier 50-ohm triggering input signal.
 - ★ This unit replaces the prototype DSG triggering interface used for NMR synchronization program development.
 - ★ Triggering interface can drive 100ft of 50 ohm cable at frequencies greater than 60 MHz
 - ★ Successfully tested with lock-in amplifier triggering efficiency program and HDice NMR program.
- Worked with Mary Ann on the upgrade hardware debugging and testing on the RF splitter / attenuator boxes #1 and #2
 - ★ On RF Box #1, Attenuator B was replaced and pull-down resistors added on the 7053D input module. Box now passes all tests.
 - ★ On RF Box #2, Power supply monitoring LEDs were replaced and current-limiting resistors were added. Box now passes all tests.
- Completed installation and configuration of the rebuilt HDicePC3 computer.
 - ★ This computer will be transferred to the HDice group when the Rack #1 instrumentation hardware is reinstalled into the HDice lab.
- Upgraded and tested HDice NMR program, test programs, and all instrumentation device drivers to LabVIEW 2017.

Hall C

- Attended tasks meeting with Steve Lassiter, Jack Segal, and Mike Fowler regarding Hall C PLC control systems.
- Held daily status and planning meeting on HMS and SHMS PLC control systems.
 - ★ Work on UPS interface, NMR, and shutter PLC interface progressing.



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Campero, Pablo

Hall C

- Worked on NRM PT2026 Tesla Meter communication with PLC task.
 - ★ Debugged Ethernet communication with PT2026 Tesla Meter.
 - ★ Assigned TCP port 1024 and 111, they enable connection with the PT2026 Tesla Meter but the sending and receiving of the SCPI commands still with problems.
 - Unable to find proper TCP port number for PT2026 seems to be the reason for the communication problem between 490 NBX modules and the PT2026 Tesla Meter.
 - VXI-11 is the communication protocol available in the PT2026 Tesla Meter.
 - Researched about Remote Procedure Call (RPC) commands used for VXI-11 protocol
 - ★ Contacted with ECCO vendors to see another optional module that can be used to communicate PLC with PT2026 Tesla Meter.
 - ★ Debugging and research of better communication options are in progress.
- Setup meeting with Jack Segal, Steve Lassiter and Mike Fowler to discuss about DSG questions with regards to PLC tasks.
 - ★ 24 questions answered, details can be found on the meeting minutes generated on 06/04/2018.
 - ★ Drawings and HMI files will be sent by Mike and Steve.
 - ★ Only tasks completed will be implemented on August 20th, 2018.
- Investigated about licenses server configurations that will be use to run two new RS-Logix5000 full edition licenses.
 - ★ Modification of the code in the .LIC files allows restricted access for user to the licenses.
 - ★ Contacted Computer Center support and provided details about configurations for the licenses; set up is in progress.
- With Tyler and Amanda walkthrough in Hall C to find instrumentation related with the tasks
 - ★ SHMS shutter, SHMS flexes I/O modules, Skylla7 server PC, three UPSs and terminal blocks for HMS I/O PLC modules were found.
 - ★ Locations for HMS flex I/O modules still unknown.
- Revised and edited Solenoid Cooldown PLC DSG note
 - ★ Generated a new diagram with Cooldown PLC programs communications and functions.
- Edited and reformat DSG weekly report for the week of 5/30/2018.

Eng. Brian

SVT

- Installed one +24V version of PCB #2.

Hall B Magnets

- Tested modified QD board with increased turn pots.



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- ★ So far one of the channels isn't working properly, but appears to be a power supply/component issue; still troubleshooting.

Hall C

- Inspected use of NBX module as the interface between the PLC and NMR probe.
 - ★ Does not seem to work, as the probe uses VXI which has dynamic ports.

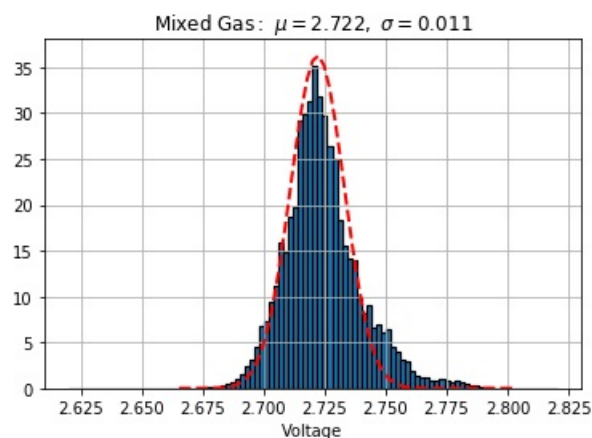
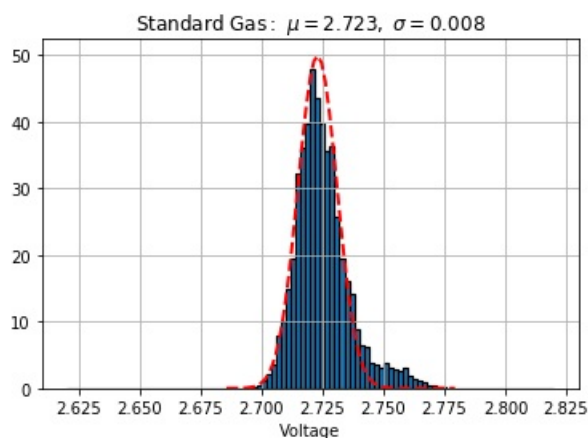
Hoebel, Amanda

HDIce

- Started converting Pete's NMR synch program from GPIB to VISA.

DC

- Created histograms in Python for standard and mixed gases with Gaussian fit.



Hall C

- Started on Excel list for SHMS PLC signals.
- Went to the hall with Tyler and Pablo to locate the PLCs for HMS and SHMS.

Jacobs, George

- Created RTPC gas supply layout doc.
- Received adapter fittings for the ppm H₂O sensors.
 - ★ ID is too small for the sensor tip, needs modifying.

Leffel, Mindy

SVT

- HTSB2 cables.
 - ★ Tested and identified as temperature 1 or 2 and humidity 1 or 2.
 - ★ Completed fabrication of four cables.
- MED01 training (paperwork and blood work).
- SAF108 fire safety.



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Lemon, Tyler

- Began generating SHMS PLC network map.
- Attended meeting to discuss DSG's questions on Hall C PLC tasks.
- Familiarized self with Hall C layout and equipment locations with Pablo and Amanda.
 - ★ Investigated reported locations of Hall C's UPSs, Flex I/O modules, PLCs, shutters, and other instrumentation
- Researched Hall C's detector hut UPSs for UPS-to-PLC interface.
 - ★ Both HMS and SHMS use FERRUPS model Fe5.3KVA UPSs.
 - ★ UPSs have one built-in DB-25 port that contains two relay outputs that indicate whether UPS is on its inverter (relay 1) and a general alarm status summary (relay 2).
- Submitted PR for AP9613 Dry Contact I/O (relay) card for APC UPS interface.
 - ★ APC UPS used to provide power to SHMS PLC controllers, HMS PLC controllers, and HMS I/O chassis.
 - ★ APC UPS has no usable built-in interface with PLC so the additional hardware is needed to read its status using PLC.
- Began development of a program on DSG-PLC to test logic for UPS interface.
 - ★ Current version of program uses an analog input module with external power supply to mimic fault outputs of UPSs.

McMullen, Marc

SVT

- Worked on patch panel cabling with Brian.
 - ★ Modified a single PCB 2 to remove a set of grounded pins from the overall ground plane. The new design of the PCB couples the 5V and 24V grounds, this coupling can be removed by isolating the grounds for P2 and P3. The hardware modification was not implemented due to the fact that a jumper could be removed from the power distribution blocks.

LTCC

- Sector 1 leak testing has been concluded.
 - ★ Monitored values of the pressure showed no significant leak rate, however, usage was not quantified. Usage rate would require recorded fill times between a high and low pressure. Pressure was never low enough to for the pressure controls to open up the solenoid.
 - ★ Hall B has dismantled and moved the station to the Hall where they will start on leak repairs on S3.