Detector Support Group
Weekly Report, 2019-02-06

Summary

Hall C EPICS

- Python EPICS channel access module ("pyepics") investigated for use in alarm handling and as a backup and restore tool.
  - Module has built-in auto-save and restore of PVs, but does not seem to consistently be able to record PV field values.
  - Module has alarm features that monitor PVs and then take action in Python if there is an alarm.
- *ProcServ* and telnet installed on DSG-C-LINUX1 PC.
  - *ProcServ* is a program that allows IOCs to run as a background process.
  - Telnet is used to access procServ process while it is running in background to be able to restart or kill process.
  - Developed shell script to start and stop a test IOC.
- Conversion from HV Tcl/Tk monitoring and control system to HV CSS analyzed for HMS and SHMS HV alarm systems.
- EPICS Alarm Specifications and Alarm Severity investigated, alarms to be implemented in future alarm handler for Hall C EPICS.
  - Four alarms types available: *Scan Alarms, read/write Alarms, Limits Alarms* and *State Alarms*
  - Four Alarm Severities available: *No Alarm, Minor, Major and Invalid.*
  - Some possible Alarm Status for analog value limits are: *High-High, Low-Low, High and Low*.
- Started DSG note on the *Hall C EPICS Slow Controls and Monitoring System Proposal.*

HDice

- Issue of increased NMR cycle time after the upgrade of computer to Windows 10 on rack 1 under investigation; considered items to check are:
  - GPIB hardware setup parameters.
  - Resources being used by system processes.
  - Computer specifications (new computer purchased by HDice Group)

LTCC

- Gas System LabVIEW code modified to update set points via auto-updating configuration file started.
  - Code will replace the hard coded values for each set point.
  - Code will allow the set points to be updated as they are changed on the GUI.
- Cabling for the H2O sensor and C4F10 supply solenoid fabricated and installed along with a 120VAC coil.
- New LTCC EPICS signals added to Gas Shed cRIO which required a reboot.
  - Signals added: Gas pressure, pump status, valve status and water ppm value.

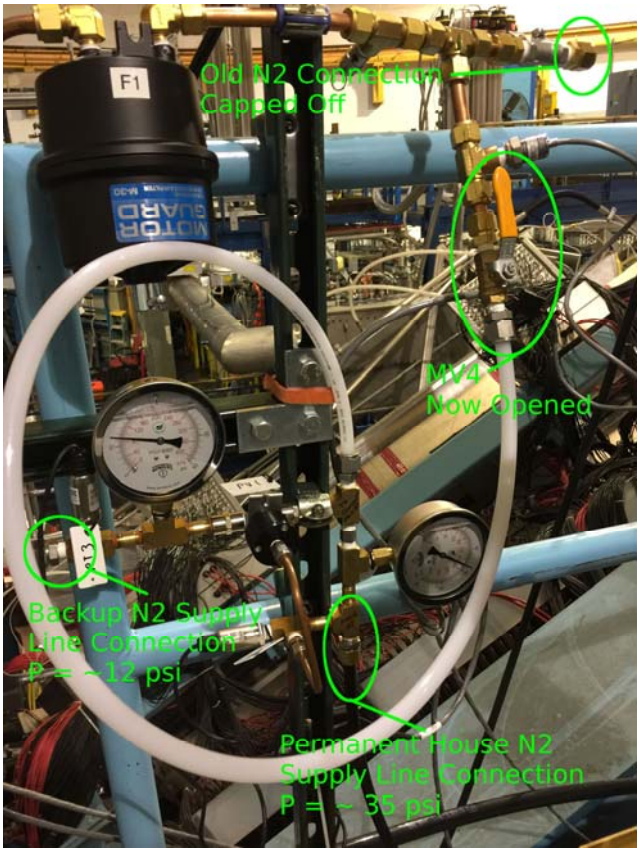
Hall B Gas

- Still waiting on NI to respond about Forward Carriage cRIO reboot problems.
  - Problem presented to NI Research and Development department.

RICH

- N2 backup manifold installed and operational in Hall B.
  - Backup manifold installed on N2 panel with two 12-bottle N2 banks acting as backup supply.
  - Backup supply should last ~5 hours with RICH's 40-slm N2 flow rate.
  - Two 0 – 50 psi absolute pressure transducers wired to RICH N2 cRIO with Pablo and Amanda.

- PTs measure backup supply pressure (normally ~12 psi) and main N2 supply pressure (normally ~35 psi).
- N2 cRIO LabVIEW program modified to convert PTs' absolute pressure reading to gauge pressure.
- Added indicators for new PTs to N2 cRIO EPICS screen.
- New PTs added to Mya.



Instrumentation for RICH N2 backup supply system installed

- Ways to improve *d0* test investigated, test is used to measure spherical mirrors' radius of curvature.
  - Possible improvements:
    - Development of one program that performs all actions for CCD stage movement, CCD data acquisition, image analysis, and mirror alignment.
    - Move of test program to a PC with network access.
    - Design, better mirror stand for test station.
  - Source code for test's executables requested from INFN collaborators.

RTPC

- RTPC Detector Gas System Status created.
- Agenda for Controls meeting distributed, meeting to be held on 2/7/2019.

Accelerator Division

- Population of one of six VME FSD boards continued for Machine Protection System. Engineering Division.
  - Second of six boards completed.
  - 210 capacitors (1uF, 25V, 10%, 0603) soldered on three boards.

cRIO test station

- Debugged "Unknown" LabVIEW error generated during the test of NI-9263 module.
  - Error defined as "Unknown (0x00000000)" by NI made LabVIEW crashing with no option for the regular debugging process.
  - Verified proper communication between cRIO controller and PC in Hall B Dev subnet; no issues found.
  - Checked LabVIEW libraries used to send and receive messages between Real Time running in cRIO and User Interface running in the computer; running with no problem
  - Found that the wiring between NI-9263 analog output module and Keithley 2002 Voltmeter was the cause to generate unknown LabVIEW error.
    - Internal wiring issue found in the module was making the LabVIEW crash every time that LabVIEW programs was setting a voltage output in the module.
  - Problem and errors solved by wiring the NI 9263 outputs to rear card of the Keithley, so that it can read up to 8 channels at once, isolating each channel.
- NI 9263 module wired and made drawing of wiring.
- LabVIEW code written to add drop-down menu on User Interface front panel.
- LabVIEW SubVI code written to read samples and added to cRIO Test Station program.

PLC Test Station

- New IP address assigned for dsg-plc-l35 PLC
  - PLC is intended to be used in the DSG- CompactLogix PLC test station.
  - Ran Ethernet cable and connected PLC to the Hall B Dev subnet.
- Connected power cable 110 VAC to the dsg-plc-l35 PLC power supply.
- Installation of Rockwell Software on DSG-COMP2 PC is in progress.

DSG Website

- Directory structure on the shared "O" drive and the DSG website web links created to link files with directory structures.