Detector Support Group
Weekly Report, 2017-03-15

State of Play

Solenoid
- Documentation for Cryogenic Control Systems in progress.
  - ★ Tables of principal variables and instrumentation generated.
  - ★ PLC operations during cryogenics operations documented.

Gas System
- DC buffer tank and detector supply relief valve assemblies installed.
- DC solenoid safety panel in Hall B L3 space frame installed.

HDice
- Lock-in amplifier/CT-box integration test program being developed.
  - ★ Program will test external triggering capability of CT-box while connected to lock-in amplifier.
  - ★ Routines that initialize lock-in amplifier internal buffering used for data acquisition developed.
- FRS program updated to LabVIEW 2016

SVT
- CSS crashes when run on local machine.
- R4 M23 U2 has bad gain scans.
  - ★ Module will be debugged after current cosmic run is completed.

RICH
- LabVIEW code for interlocks being developed.
  - ★ Code for sensor monitoring and latch status sequence completed.
- Detector shell assembled.

FT
- Error handling support subroutines for messaging commands between user interface and real-time cRIO program developed.
- Error handling code for threshold configuration file completed.
- Interlock subVIs for default thresholds, in case of configuration file error, modified.
- Set up initial contact for collaborators with Hall B Design Authority.

MVT
- Set up initial contact for collaborators with Hall B Design Authority.

Antonioli, Mary Ann
- Continued drawing **HDice** Rotation of Target Polarization flowchart in Visio.
- Continued writing **RICH** interlocks LabVIEW code, completing sensor monitoring and latch status sequence.

- Compiled, edited, and formatted weekly report.

Arslan, Sahin
- Replaced **SVT** N_2 bottle.
- Continued working on **RICH** detector assembly.
- Transferred Box 2 and 4 to CMS area.

Bonneau, Peter
- Worked on **Forward Tagger** interlock system.
  - Developed error handling support subroutines for messaging commands between user interface and real-time cRIO program.
  - Completed threshold configuration file error handling code.
  - Modified interlock subVIs for default thresholds in case of configuration file error.
- Reviewed with Mary Ann code for scanning **RICH** interlock signals, latching of interlock errors, and overview of software architecture.
- Started **HDice** lock-in amplifier/CT-box integration test program, which will test external triggering capability of CT-box while connected to lock-in amplifier.
  - Developed routines that initialize lock-in amplifier internal buffering used for data acquisition.
  - Worked with Amanda on troubleshooting remote access to CT-box for noise tests and reviewed test results.

- Held meeting on Hall D status and EPICS controls monitoring.
  - Transistor fault on solenoid power supply has cleared.
  - BCAL humidity has remained stable since redirect of cooling duct.
  - Solenoid was ramped down during accelerator down time.

- Trained Pablo on initial hardware and software setup of VME test station.
  - Configuration of Weiner USB-VME controller.
  - Architecture for VME based-systems.
  - LabVIEW-based library of VME read/write commands.

Campero, Pablo
- Began writing Hall B **Magnet** and Cryogenic Control Systems.
  - Generated tables of principal variables and instrumentation.
  - Described PLC operations during cryogenics operations.
- Investigated software to simulate safety lift of **RICH** frame.
  - Installed NX Nastran as integrated software that works with NX9.

* ✦ Validated NX licenses to work with Advanced Simulations FEM.

* Monitored and analyzed logbook entries and EPICs screens for Hall D.
    * ✦ On 3/14 noticed that magnet is off due to open contactors on MPS.

* Worked on VME Test Station
    * ✦ Discussed VME-V450ADC board with Peter.
    * ✦ Running VME Test 1 Program, verified serial number, DIP switch configuration, base address and registers of V450 board.

Eng, Brian
SVT
* Noticed that CSS crashes when run on local machine.
    * ✦ Nathan thinks this is because ACC has an older version and the problem should go away when moved to Hall B machines.
* Took gain scans.
    * ✦ R4 M23 U2 has bad gain scans; need to debug this module after current cosmic run is completed.

RICH
* Assisted in partial lift test done using gantry rotated 90 degrees to see how smoothly dolly tracks detector.
* Used Medical Imaging Group's 3-D printer for some parts (bracket and gas nozzle). Because of printer type, finished part is not very smooth; for bracket, this is no problem, but might be issue for gas nozzle.

Gas System
* Working on stand-alone GUI that can be run from any Hall B subnet computer with LabVIEW.
* Cleaned up more shared variables (renaming/adding/etc).
* Identified functionality in current controls GUI that will be moved to subVIs in cRIO main VIs.

Hoebel, Amanda
HDice
* Updated FRS program to LabVIEW 2016 with Pablo.
    * ✦ Debugging CT-Box Daq program problem of not running at 50 KHz at 16 K buffer.
    * ✦ Swapped Ethernet chip with faster chip and replaced cable; did not fix problem:
    * ✦ Problem possibly related to cable length.
* Began writing FRS software and NMR software notes.
* Created status report in PowerPoint.

* Set up PLC test station.
    * ✦ Discussed hardware and software with Pablo.

Jacobs, George

Gas Systems

- Ordered relief valve for N_2 purge gas system, liquid Ar and CO_2 dewars for DC, and high pressure CO_2 for DC due to CO_2 dewar shortage
- Discussions with Dave Kashy about pressure system brazing requirements.
- Installed DC buffer tank and detector supply relief valve assemblies.
- Installed DC solenoid safety panel in Hall B L3 space frame.
- Discussions with Dave Kashy on testing relief valves, pressure testing tanks, and piping.
- Contacted Al DeC and AirGas reps with go ahead on Ar dewar hot fill.
- Discussions with Dave Kashy concerning MVT gas mixing system "Plan B".
- Created N_2 gas supply RV installation sketch for braze work.

Leffel, Mindy

RICH

- Contributed to assembly of detector shell.
- Assisted with lift.
- Continued fabricating HTSBs.
  - ★ Terminating wires.

- Completed Peter's property inventory.

Lemon, Tyler

- Contributed to completion of RICH detector shell assembly.

- Monitored Hall D Logbook and EPICS.
  - ★ Noted BCAL humidity ~3% since CDC cooling vent moved; before vent moved, humidity was ~12%.

- Wrote program for **cRIO Test Station** to test NI-9219 Isolated ADC module.
  - ★ LabVIEW program records ADC data for user-set run time, calculates mean and standard deviation of data, and generates histogram of measurements.

McMullen, Marc

- Modifying **Gas System** code to move gas-mixing logic from GUI to main, as a subVI.

RICH

- Assisted in partial rotation of detector frame.
- Assisted INFN with solicitation of vendors to fabricate stiffening assembly. Received feedback from local fabrication shop; set up meeting with vendor and INFN to discuss design.
- Wrote B List for assembly of electronics support; approved.

Pressure Systems

- Set up initial contact between Saclay and Hall B Design Authority for MVT and FT.

- Set up aerial platform training for INFN and DSG staff.