



Detector Support Group

Weekly Report, 2016-05-11

Ongoing Projects

I. Hall B Magnet Slow Controls (Brian, Tyler, Peter, Amanda)

Task: Define/develop EPICS screen(s) for power supply status/control
 EDC: 03/15/2016
 Activity: None
 Comments: Torus pump down in progress.
Status: Delayed

II. Hall B Gas System: Slow Controls (Marc, Brian, George, Mary Ann.)

Task: Deploy LabVIEW based slow controls software system for **DC, LTCC, HTCC, SVT, MicroMegas, Forward Tagger, and RICH.**
 EDC: 07/31/2016.
 Activity: Developing software.
 Comments: Present status:

† Waiting on Hall B Engineering. †† Waiting for more information.

#	Location	Detector	Gas	Hardware		Software	Deployed	Tested
				Piping	Instrumentation			
1	Hall B	DC	Ar/CO ₂	X [†]	✓	✓	✓	X
2		HTCC	N ₂	X [†]	X	✓	✓	X
4		LTCC	C ₄ F ₁₀	X [†]	✓	✓	X	X
5		SVT	N ₂	X [†]	X	✓	✓	X
6		RICH	N ₂	X [†]	X	X	X	X
7		MicroMegas	Ar, C ₄ H ₁₀ , C ₂ H ₆ , Ne ^{††} , CF ₄	X ^{††}				
8		Forward Tagger	N ₂	X	X	X	X	
9		EEL	SVT	N ₂	✓	✓	✓	✓
10	MicroMegas V.1		Pre-mix Ar/C ₄ H ₁₀	✓	✓	N/A	N/A	N/A



Detector Support Group

Weekly Report, 2016-05-11

11		Micromegas V.2	Mix Ar/C ₄ H ₁₀	✓	✓	N/A	N/A	N/A
12		Forward Tagger	N ₂	✓	✓	N/A	N/A	N/A
13	TEDF	HTCC	N ₂	✓	✓	✓	✓	✓

Status: Work in progress.

II. Hall B Gas System: DC Hardware in hall (George, Marc, Mindy, Sahin, Anatoly)

Task: Install Gas System hardware.
 EDC: N/A (Depends on Hall B Engineering)
 Activity: None.
 Comments: George: "I updated the DCGAS and LTCC gas system critical path documents. In both cases we are waiting for critical path items to be completed by Hall B Engineering before we can continue."

Status: No progress.

III. Hall B Gas System: LTCC Hardware in hall (George, Marc, Mindy, Sahin, Anatoly)

Task: Install Gas System hardware.
 EDC: N/A (Depends on Hall B Engineering)
 Activity: LTCC instrumentation hardware done.
 Comments: George: "I updated the DCGAS and LTCC gas system critical path documents. In both cases we are waiting for critical path items to be completed by Hall B Engineering before we can continue."

Status: No progress.

IV. Hall B HDICE (Mary Ann, Peter, Amanda, Tyler, Mindy, Sahin)

Task: Fabricate RF box. Task includes draw fabrication drawing in AutoCAD, write drivers for DIO modules, and develop RF box test program review.
 EDC: N/A.
 Activity: Fabricate DC power distribution system. Develop RF Box specific device drivers.
 Comments: None

Status: Work in progress.



Detector Support Group

Weekly Report, 2016-05-11

V. Hall B HDICE (Peter, Amanda, Tyler, Mary Ann, Mindy, Sahin)

- Task
- Develop calibration test program for the CAEN current transducer box.
 - Develop and test instrument drivers.
 - Calibration test 0—25 A, step size 1 A, 1000 measurements/step.

EDC: N/A.

Activity: Completed all measurements.
DSG note written on the calibration test.

Comments: None.

Status: Completed on 05/04/2016

VI. Hall B RICH (Tyler, Amanda, Peter, Brian, Mary Ann, George, Mindy, Sahin, Marc, Anatoly)

Task: Development of specifications for RICH interlock system.

EDC: N/A.

Activity: Research into interlocking methods for RICH electronics & cooling.
Created PDF document explaining RICH cooling circuit and interlocks.

Comments: None.

Status: Work in progress

VII. Hall D PLC Systems (Pablo, Peter, Brian, Tyler, Amanda, Mary Ann, Marc)

Task: Generate Allen Bradley report for solenoid and check voltage tap channels.

EDC: 04/27/2016

Activity: Reviewed PLC wiring schematic for inconsistencies with Allen Bradley programming tags

Comments: None

Status: Completed on 05/05/2016

VIII. Hall D PLC Systems (Pablo, Peter, Brian, Tyler, Amanda, Mary Ann, Marc)

Task: Maintenance and system upgrades for PLC Systems.

EDC: 09/15/2016

Activity: Programming diagnostic PLC HMI screens for solenoid magnet.

Comments: None

Status: Work in progress



Detector Support Group

Weekly Report, 2016-05-11

Antonioli, Mary Ann

Hall B

HDice

- Completed wiring of DC power in RF Switching/Attenuation Unit.
 - ★ Updated wiring diagram.
- Began writing LabVIEW code to set Attenuator A in RF Switching/Attenuation Unit.

DSG

- Imported, laid out, formatted, and edited Tyler's note on calibration of the HDice CT-box.

Arslan, Sahin

Hall B

HDice

- Fabricated current loop for current transducer to measure current on Oxford power supply.
- Reconfigured test set-up area.

DC

- Provided 99.9% Ar and 99.9% CO₂ for testing.

SVT

- Replaced N₂ gas bottle and provided extra bottle.

DSG

- Prepared DSG clean room for RICH detector
- Transferred test equipment to mezzanine area.
 - ★ Put in a service request to move tables.

Safety

- Replaced two recalled surge protectors in Gas Shed control room.

Bonneau, Peter

Hall B

HDice

- Met with Xiangdong Wei regarding new Oxford Mercury power supply and HDice work.
 - ★ New supply is a replacement model for Oxford IPS 120-10, which is no longer manufactured.
 - ★ Initial use of power supply will be to power transverse coil during rotation of target polarization.
 - ★ HDice would like the option of choosing either older Oxford IPS supply or new Mercury supply in rotation of polarization program.
 - ★ New supply requires complete rewrite of LabVIEW device drivers due to change in communication interfaces (GPIB to USB or Ethernet).
 - ★ NMR program will exclusively use older IPS 120-10 supplies.
 - ★ Firmware on new supply has been updated.
 - ★ Control of ramp speed needs to be investigated in new firmware version.



Detector Support Group

Weekly Report, 2016-05-11

- Replaced and tested front panel display program for NMR RF Switching/Attenuation Unit.
 - * Communication cable between display and rear panel also replaced.
 - * Display worked correctly at 19200 baud rate.

SVT

- Monitored SVT Hardware Interlock System on a daily basis.
- Noted Monday morning that SVT system had tripped off during the weekend.
 - * Upon investigation via Mya, SVT had been tripped off by main EPICS control system because of high humidity (>70%) on 5/7/16 (Saturday night) ~ 18:37.
 - * Problems with gas controller were later reported.

Hall D

- Current measurements on control power of solenoid power supply revealed that fuse which blew during the run was overloaded by addition of 10 SOE relays. Manufacturer was contacted and larger fuse (1A) was installed to correct problem.
- Monitored Hall D slow control systems on a daily basis.

DSG

- Disassembled probe station electronics for storage to make room for RICH in DSG cleanroom.

Campero, Pablo

Hall B

HDice

- Worked with Tyler, Amanda, and Sahin to arrange clean room 121b.
 - * Moved all unnecessary items (power supply, crates, modules, PCs, monitors, cables) to make room for RICH testing.
- Worked on IPS Mercury power supply.
 - * Re-located and connected at new position in 121c.
 - * Set up connection (RS-485) between master and slave.
 - * Familiarized myself with commands and options of LCD display.
 - * Updated firmware version from 1.4 to 2.4.
 - * Noted problem with speed displayed for ramp rate current.

Hall D

Slow Controls

- Met with Nick Sandoval.
 - * Discussed the assignments for development for Hall D.
 - * Defined specific tasks in which DSG will be collaborating.
 - * Created new distribution list (Hall d-solenoid-controls) for DSG and Hall D.
- Added button to solenoid controls interlock screen to generate new window for time stamps, with Tyler and Amanda.
- Started to generate new HMI display window in FT-View software.
 - * Window displays SOE time stamps auto-saved to hard drive for any “real” dump.
- Revised PLC control system solenoid report with Tyler.



Detector Support Group

Weekly Report, 2016-05-11

- * Completed and sent to Mary Ann.

Detectors

- Collaborated with Nick to check BCAL humidity problem.
 - * Turned off CDC cooling air at ~10:30 a.m. The humidity dropped from 77% to ~5%. Then turned on cooling fan at 1:30 p.m.
 - * Monitored humidity and observed failure persisted; the humidity rose in a short time (~20 min).

Eng. Brian

Hall B

SVT

- Swapped out five modules in HV current test stand.
 - * Ran gain scans prior to removal and after addition of new modules.
- Fixed issue running old ROOT testchan code which generates the plots.
 - * Moved to svtsystem1 on Linux prior to that.
- Worked with Wesley/Nathan on getting N₂ flow added to new EPICS alarm handler.

Gas System

- Debugged shared variables not updating properly.
 - * Isolated to only occurring on Gas Shed cRIO and only on variables that were aliased to EPICS. Neither rebooting the cRIO nor cleaning the deployed application fixed it, but removing the startup application did.

DSG

- Studied for and took Rad Worker I.

Hoebel, Amanda

Hall B

Gas System

- Discussed Hall B End Station Gas System LabVIEW VI with Marc.
 - * Set values for drift chamber Ar and CO₂ set points.
 - * Observed PID loop on pressure chart.

SVT

- Created new database for new spare modules test.
 - * Tested spares were swapped with untested spares.

RICH

- Assisted Tyler, Pablo, Marc, and Sahin in clearing out items from EEL 121b cleanroom for RICH mirror tests.

HDice

- Troubleshooting of new power supply after firmware update caused incorrect ramp rate.
 - * Ramp rate seems to be 0.1 A/min when set to 2 A/min.



Detector Support Group

Weekly Report, 2016-05-11

Hall D

Detectors

- Attended Hall D meeting to discuss DSG contributions to Hall D for the summer.
- Met with Nick Sandoval, Tyler, and Pablo to discuss individual projects.
- Worked with Tyler and Pablo on PLC HMI screen.
 - * Added pop-up window to display SOE timestamp for interlock trips.
- Monitored logbook.
 - * BCAL chiller tripped, humidity sensor read ~75%.
- Assisted Nick with troubleshooting BCAL humidity sensor trip, with Tyler and Pablo.
 - * Turned CDC cooling fan off, humidity dropped to ~5%. Humidity rose when turned fan back on.

DSG

- Installed AutoCAD and NX 9.0 on DSGCONTROLS1 PC.

Jacobs, George

Hall B

Gas Systems

- Created RICH Cooling Circuit Diagram showing system components and power supply interlocks.
- Created PDF document explaining RICH cooling circuit and interlocks.
- Ordered UHP Ar (99.999%) and Coleman grade CO₂ (99.999%) for DC Test Stand in EEL 125.
- Discussed specification for ASME relief valve required for DCGAS storage tanks with Saptarshi M.
- Supported PRAD detector gas setup, 30% CO₂ in Ar for GEM, from target gas pad cylinder location to L1 space frame.
- Submitted loan authorization form for sending Helmholtz coils to ODU Physics.
- Investigated missing gas cylinder order that was marked complete and delivered by JLAB receiving.
- EEL 125 gas mixing setup ready to mix 10% CO₂ in Ar once MFC cables are made.

Leffel, Mindy

Hall B

SVT

- Replaced two N₂ gas cylinders.
- Fabricated spare D-sub to D-sub connector for module test stand.
- Wire bonding.
 - * Finished bonding all four FSSR2 chips to HFCB.
 - * Researched bonding issues and bond settings to improve bonds.
 - * Replaced wedge- it made no improvements.



Detector Support Group

Weekly Report, 2016-05-11

HDICE

- Attached nine-pin D-sub connector to RF cable to be used in RF Switching/Attenuation Unit.
- RF cable has arrived, but awaiting lengths from HDice in order to fabricate cables.

DSG

- Worked with Sahin to remove excess equipment from mezzanine and submit a property move.

Lemon, Tyler

Hall B

RICH

- Moved equipment out of EEL 121b with Sahin, Pablo, and Amanda to prepare for mirror testing.
- Researched VESDA systems for smoke detection interlocks.

Hall D

Detectors

BCAL

- Troubleshooting up-stream humidity sensor with Pablo, Amanda, and Nick Sandoval.
 - * Up-stream chiller tripped off due to humidity alarm.
 - * Noted BCAL humidity jumps to ~75% when CDC cooling fan is on. When fan is off, BCAL humidity ~5%.

Slow Controls

- Met with Nick Sandoval, Pablo, and Amanda to finalize DSG contributions.
 - * Tasks include adding timestamps to PLC interlocks GUI, replacing internal PLC batteries, verifying documentation, synchronizing MPS clock with PLC clock, and debugging Coil 3 He Return signal issues.
- Assisted Pablo in editing PLC interlocks GUI to add timestamps.
 - * Added button to GUI that brings up new screen for timestamps.
 - * Troubleshooting adding indicators to new screen to show timestamp.

DSG

- Uploaded report for week of 5/4/2016 to DSG website.
- Updated photos folders on M Drive.

MPOD Test Station

- Guided Anatoly's work in performing current and voltage test of MPOD LV card 2.
- Analyzed test results of voltage test for MPOD LV card 2.

McMullen, Marc

Hall B

Gas System

- Improved gas mixing portion of controls software.
 - * Wrote simplified method of adjusting Ar and CO₂ that allows for direct changes to the CO₂ by entering a value for flow set point.



Detector Support Group

Weekly Report, 2016-05-11

- Worked with Brian to debug shared variable issue on cRIO.
 - * Issue caused by enabled aliasing project variables to EPICs.
 - * Fixed by rebooting Gas Shed cRIO and updating start-up app.
- Produced pinout for MFC cable to be used in DC test setup in EEL 125.
- Discussed gas system GUI operation, GUI components, and operating procedure for DC PID with Hoebel.

HTCC

- Monitored HTCC gas flow.
 - * Gas flow is ~10 lpm
 - * RH = 2.14%.

DSG

- Prepared for DC gas controls system talk to be given at DSG meeting on 5/11/2016.

Safety

- Performed quarterly safety walkthrough.

Sitnikov, Anatoly

Hall B

- Completed calibration of MPOD LV card #2.
 - * Voltage test- 1296 measurements.
 - * Current test- 456 measurements.