



Detector Support Group

Weekly Report, 2016-05-18

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: Leak checks and Torus pump down in progress.
 Making connections to the Cryo distribution can.

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 ^{††}	X ^{††}	X ^{††}	X ^{††}	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



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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: Completed and tested DC power distribution system. Developed and tested RF Box specific device drivers to set Attenuators.

Comments: None
Status: Work in progress.



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

Task: Development of specifications for RICH cooling and interlock system.
EDC: N/A.
Activity: Compiled list of tasks and equipment requested by RICH group.
Researched cRIO interlock system components and generated price list.
Researched hardware for cooling system, HV power, and temperature monitoring.
Comments: None.
Status: **Work in progress**

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

Task: Generate Allen Bradley report for the Start Counter/Hall Environment/HV Reset Controls PLC system.
EDC: 06/24/2016
Activity: Started review of Allen Bradley PLC project file.
Comments: None
Status: **Work in progress**

VII. **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: Generated code to synchronize the Real Time Clock of the PLC.
Comments: None
Status: **Work in progress**



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Antonioli, Mary Ann

Hall B

HDice

- Completed wiring of grounding in RF Switching/Attenuation Unit.
 - * Updated wiring diagram.
- Wrote LabVIEW code for RF Switching/Attenuation Unit.
 - * Set Attenuator A (NMR); tested.
 - * Set Attenuator B (AFP); tested.
 - * Read Attenuator A; needs testing.
 - * Read Attenuator B; needs testing.
 - * Read remote interlock; needs testing.
 - * Began code to set NMR/AFP switch.

DSG

- Posted *2016-008 Calibration Test of the HDice CAENels CT-Box* to website.
- Compiled, formatted, and edited weekly report.

Arslan, Sahin

Vacation

Bonneau, Peter

Hall B

HDice

- Tested DC low voltage distribution system in new 3rd RF Switching/Attenuation Unit.
 - * All 4 supply voltages were correctly distributed to the internal components.
- Configured NMR system components in test station.
 - * Test station, consisting of Oxford magnet power supply, RF generator, RF Switching/Attenuation Unit, and lock-in amplifier, will be used to test all NMR hardware and software.
- Worked with MaryAnn on the software development for the ICP-CON DIO modules.
 - * Tested VIs for setting NMR and AFP attenuators in RF Switching/Attenuation Unit.

SVT

- Monitored SVT Hardware Interlock System on a daily basis.
 - * On Tuesday morning, noticed SVT HV and LV had tripped by EPICS during the night, because of high humidity (>70%) at ~ 2:49 AM.
 - * Problems with gas controller were later reported. Set point went to 0.

RICH

- Researched slow controls requirements for interlock system.
 - * NI cRIO model 9035 (8 slot and local HMI capabilities) was chosen.
 - * Due to the high cost of VESDA smoke detection systems, an integrated approach as done in CLAS6 may be the best option.



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- * A daily meeting was held on RICH instrumentation and tasks.

PRad

- Investigated problems with slow controls after a computer and software upgrade.
 - * Device driver issues were found after the update to LabVIEW 2014.

Hall D

- A test on the solenoid vacuum system had unintentional consequences.
 - * Test tripped off cryo, causing the helium level to drop to 11%.
 - * Lesson learned: Contact cryo before doing tests that may affect the cryo system.
- Monitored Hall D slow control systems on a daily basis.

Campero, Pablo

Hall B

HDice

- Troubleshooting IPS power supply after firmware update.
 - * Obtained password to enter “Engineering Mode” and change ramp rate limits, but the speed ramp displayed in the home page “Current” continues too slow (~0.1 A/min).
 - * Sent an email to OXFORD Instruments to get support regarding the problem.

SVT

- Assisted Tyler and Amanda with testing of LV module.
 - * Swapped LV module from clean room with one from MPOD test stand.
 - * There was a failure after swap because tested module was an older type with 8-pin D-sub connector.
 - * Connector adapter revised to solve problem.

RICH

- Collaborated with Tyler on interlock hardware list.

PRad

- Worked with Tyler on software failure of LabVIEW 2014 in Hall B.
 - * Reinstalled LabVIEW and drivers.
 - * System error (nidaq32.dll missing) received when attempting to open VI; problem remains.

Hall D

- Monitored logbook.
 - * Noted on 5/13 that the temperatures in BCAL Chiller were changed from 5°C to 18°C.
- Worked on PLC Test Station.
 - * Generated code to synchronize the Real Time Clock of the PLC.
- Read Hall D Worker Safety Awareness Training to prepare for walkthrough.

DSG

- Assisted Tyler and Amanda in relocating MPOD station from EEL126 to 231.
 - * Installed MUSE software on Anatoly’s computer.
 - * Tested USB communication for MPOD to PC and connectors for LV card 3.



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Eng. Brian

Hall B

SVT

- Setting up for subzero (C) test with single module (P66).
- Wrapped module in superinsulation with Yuri; ran gain scans prior to cooling.
- Moved development cRIO to cleanroom to monitor module (temps, humidity).
 - * cRIO reads HFCB temps, RTD on heatsink, and HTSB.
- Added code to cRIO to save data to SQLite file on SD card.
- Added N₂ purge line to control humidity (was over 70%, now less than 20%).

Hoebel, Amanda

Hall B

RICH

- Met with Pete, Tyler, and Pablo to discuss purchase requests.
- Assisted Tyler in searching cRIO PRs for interlock system.
 - * Noted module types purchased and pricing for each.

HDice

- Met with Pete, Tyler, and Pablo to discuss NMR rack LabVIEW program.

SVT

- Swapped new-style LV module with old-style LV module with Tyler and Pablo for spares test.
- Added adapter to old-style LV module in spares test.
 - * Brian noted incorrect LV current on modules indicated adapters not working properly and had Mindy fix them.

PRad

- Assisted Tyler and Pablo in troubleshooting LabVIEW file.
 - * PRad upgraded LabVIEW 2014 and project file no longer worked.

Hall D

- Presented program for voltage tap databasing in Excel slow controls meeting.
- Added insert option to voltage tap databasing in Excel program, as suggested by Hovanes.

Jacobs, George

Absent

Leffel, Mindy

Hall B

SVT

- Mpod test stand connectors.
 - * Rewired resistors on one.



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- * Reconfigured pin-out on two.

HDICE

- RF Switching/Attenuation Unit
 - * Terminated nine-position, D-sub connector for LED display.
 - * Began terminating replacement RF cables for older Unit; completed one BNC – N cable.
- Durability testing of RF cable needs to be completed by HDice and lengths supplied by HDice before fabrication can be done of longer cables.

Gas System

- Terminated MKS MFC cables.
 - * Two 25', nine-position, D-sub jack – D-sub plug.

Lemon, Tyler

Hall B

RICH

- Compiled list of tasks and equipment requested by RICH group.
- Discussed and compiled price list for cRIO interlock system components with Pete, Amanda, and Pablo.
- Researched hardware for cooling system, HV power, and temperature monitoring to determine cRIO modules needed for interlock system.
- Prepared presentation for DSG meeting about DSG-RICH meeting on 4/26/2016 and requests for ERR.

PRad

- Troubleshooting update of temperature monitoring VI with Pablo and Amanda.
 - * PRad group requested help after updating VI to LabVIEW 2014 on Windows 7.
 - * Error when opening VI caused by missing NI-DAQ system file.
 - * Reinstalled LabVIEW 2014 and NI-DAQ drivers; did not fix error.
 - * Researched how to upgrade unsupported NI-DAQ drivers in VI– would have to rewrite drivers.
 - * Suspended troubleshooting because:
 - Previous version of VI works on old Windows XP PC with LabVIEW 6; front panel is viewed remotely using a webcam.
 - Time to fully troubleshoot and fix LabVIEW 2014 version was out of scope of work.

Hall D

- Monitored Logbook.
 - * Noted BCAL chillers set to 64F for shutdown period.

DSG

- Uploaded report for week of 5/11/2016 to DSG website.

MPOD Test Station

- Troubleshooting test adaptor for LV cards with new D-sub connector.
 - * Test adaptor began to overheat, so Mindy changed adaptor to have a pin-disconnect.



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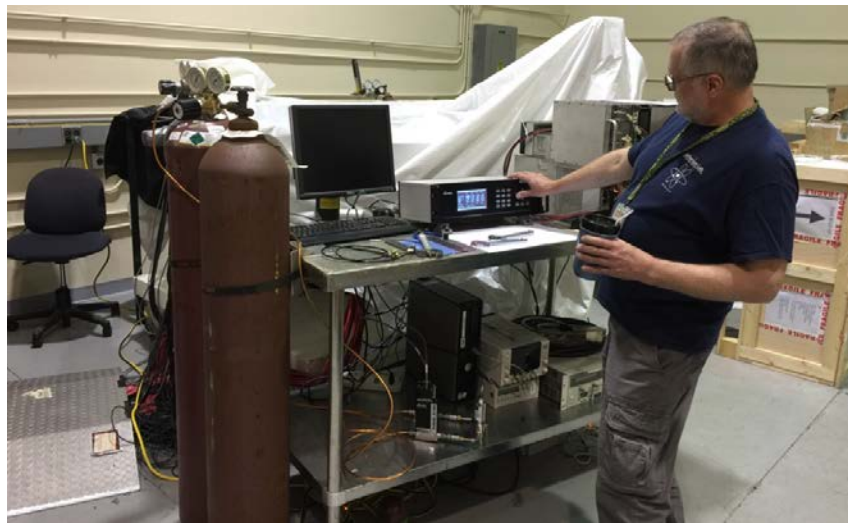
- Guided Anatoly's work in performing voltage test for MPOD LV card 3.

McMullen, Marc

Hall B

Gas System

- Gave presentation at DSG meeting on Hall B Gas Controls.
- DC Gas
 - ★ Set up gas system in EEL125 with Jacobs to supply a 90/10 ratio of Ar/CO₂, using an MKS-647c gas controller and two mass flow controllers (shown below).



- ★ Discussed CPU usage of gas shed cRIO with Eng. Should run at about 20%, but running ~50%. Troubleshooting to begin this week.
- ★ Started writing LabVIEW serial communications program to be used for monitoring gas system setups that use MKS-647 series gas controller.
- HTCC
 - ★ Monitored HTCC gas flow.
- MVT
 - ★ Set up gas system in EEL124 with Jacobs to supply a 90/10 mixture of C₄H₁₀/Ar to MVT detector, using MKS-647b gas controller and two mass flow controllers.

Sitnikov, Anatoly

Hall B

SVT

- Calibrated Mpod LV card #3.
 - ★ Voltage test- 486 measurements.