Summary

Hall C Slow Control Systems

- DSG-C-LINUX1 PC set up for EPICS slow controls development.
- EPICS base and extensions installed on DSG-C-LINUX1. Versions installed are:
  - ✦ EPICS base version 3.14.12
  - ✦ Visual Database Configuration Tool (VDCT) version 2.8.1.
  - ✦ Controls System Studio (CSS) version 4.5.0
    - ▪ Also installed CSS-Phoebus 0.0.1 to investigate for future use.
    - ▪ "Phoebus" is newest version of CSS that does not rely on "Eclipse" Java IDE.
    - ▪ Currently, Hall B and Hall D use the Eclipse-based CSS.
- Currently investigating and installing additional EPICS extensions:
  - ✦ Extensible Display Manager (EDM)
    - ▪ Software used to generate GUIs used by accelerator for screens that currently look at Hall C PLC system.
  - ✦ Motif Editor and Display Manager (MEDM)
    - ▪ Software used to generate GUIs that is an improvement on EDM.
  - ✦ Alarm Handler (ALH)
    - ▪ Same alarm handler interface used by Halls B and D.
  - ✦ StripTool
    - ▪ Used to acquire PV data in real time and plot on strip charts.
  - ✦ Gateway
    - ▪ Channel-access gateway extension that runs as an intermediate process to allow many connections to a PV while making only one connection to the actual IOC.
- EPICS base installation verified by creating and starting a test IOC with no fields.
  - ✦ Creation of test IOC is successful.
  - ✦ Unable to reliably run IOC; iocsh (shell used to interface with ioc from terminal) gives error that connection is refused.
- Configuration of stand-alone EPICS test station for software development in progress.

Hall C Magnets

- Upgrading of 1756-IF4FXOF2F/A high speed module firmware from 1.4 to 3.5 in progress.
  - ✦ Firmware 1.4 allows a RTS of 400 µs compared with firmware 3.5 that allows a RTS of 300 µs.
  - ✦ Found issues during the upgrade; communication error status displayed.
  - ✦ Contacted Rockwell support, debugging in progress.
- Writing Python code on SBC card to keep checking for lock if the NMR PT2026 unit loses its present lock.
  - ✦ With code implemented noticed that lock maintained fine at ~1.65 T, but couldn't get an automatic lock at ~1.8 T (not sure of exact number) despite scanning up/down pulse width & amplitude.
    - ▪ So far only been able to get a lock manually at the higher fields.
  - ✦ Code didn't handle not having PLC tags present (when trying to debug "fast" ADC module the controller was reset) very gracefully, i.e. threw an exception.

Detector Support Group
Weekly Report, 2018-11-14

RICH
- Assembly of RICH N2 auto-change manifold started.
- Pressure transmitters for RICH N2 auto-change manifold ordered.

HDice
- Grounding connections modified for NMR Rack #1.
  - Added extensions to two cables, shortened one cable, and isolated there components/instrumentation with rubber insulation material.
- Meeting regarding DSG work on HDice.
  - Testing with Rack #1 - Noise for FRS reduced from ~ 250 to 40 µV.
  - NMR noise level testing ~ 1500 cycles of 60 s/scan to be tested next.
  - Development of a user's manual is underway for the July 2019 review.
  - New NMR program revision request that would combine the FRS & NMR programs to scan either field or frequency while the other is held constant.
  - New third NMR rack with a new design is being considered.
    - Next generation of lock-in amplifier with integral signal generator would be used. Specification will be emailed to dsg-hdice mailing list.
    - AFP mode will be needed for rack #3 requiring an amplifier & Attenuator box.

LTCC
- Repossessed twelve, unused, 120-VAC solenoid valves to be used in C_4F_{10} recirculation system.
  - Unused solenoid valves were removed from the old Hall B fire protection/sniffer system.
  - 120-VAC valves will allow cRIO control system operates within recommended current ranges.
  - Verified that those coils will open a 24 VAC valve that was previously used on the LTCC.
- Mechanical drawing of LTCC solenoid power chassis completed.
  - PR to order the chassis submitted; ordered chassis predrilled with silkscreen.
- Selecting connectors to replace LTCC solenoid power chassis, which will also add cRIO control of the valves.
  - Placed order for Conxall CPCs connectors.
- Terminated and connected the cables for the secondary pressure transducers for S3 and S5 in Hall B.

Gas Controls
- Submitted PR 381113 for continued funding of the Argon contract.

Hall A
Hadron Calorimeter
- Cabling project started.
  - Tested and removed labels from 30 cables.
  - Repaired cable tester, loose connection issue.
- Meeting held with Bogdan Wojtsekhowski regarding cabling project on the Hall A HCAL projects. Steps for the project include:
  - Inventory selection of cables for HCAL from storage cages.
  - Labeling of cables & installation in the Test Lab.

- ✶ Cable Types: BNC-lemo, RG58, Qty: 1152, ~2-m, bundles of 8. Lemo-lemo – Qty: 320, ~2-m, bundles of 8. BNC-BNC, RG58, Qty: 288, 100-m, bundles of 8.
- Dsg-halla mailing list is now active for communication regarding DSG work for Hall A.

cRIO Test Station

- Tested wiring at channel 1 of NI-9239 input module.
  - ✶ No issues found, so wiring for next three remaining channels in module will be continued.

PLC test station.

- Created LabVIEW program that reads tag values for I_Target and I_MPS from current regulation routine.
- Downloaded CSS EPICS to Hall C PC.
  - ✶ Developed CSS screen that reads Target and MPS currents from PLC, and alarms if Target current is over the specified value.

DSG

- Made final edits and posted Notes 2018-18 and 2018-19.
- Four DSG members completed Human Performance Improvement training.
- Solved permissions problem to edit and update DSG web page.
- Added DSG to Jlab's Supporting Technologies web page.
- Resolved editing permissions errors with the Drupal web development system.

Antonioli, Mary Ann

cRIO Test Station

- Tested channel 1 of next cRIO module to be tested (9239), with Pablo.
  - ★ Tested OK, so wired remaining three channels into banana plugs.

DSG

- Made final edits to and posted Notes 2018-18 and 2018-19.
- Completed Human Performance training.
- Attended Workers Safety Committee meeting.
  - ★ Presentation by Mary Logue on FY19 Safety and Health Objectives and Targets
  - ★ New lines painted on road at back way out of lab. A reflective, bumpy strip to be added.

Bonneau, Peter

HDice

- Meeting with Xiangdong Wei regarding DSG work on HDice.
  - ★ Testing with Rack #1 - Noise for FRS reduced from ~ 250 to 40
  - ★ NMR noise level testing ~ 1500 cycles of 60 sec scan is next.
  - ★ Development of a user's manual is underway for the July 2019 review.
  - ★ New NMR program revision request that would combine the FRS & NMR programs to scan either field or frequency while the other is held constant.
  - ★ New third NMR rack with a new design is being considered.
    - ▪ Next generation of lock-in amplifier with integral signal generator would be used. Xiangdong will email specifications to the mailing list.
    - ▪ AFP mode will be needed for rack #3 requiring an amplifier & Attenuator box.
- DSG note completed on the LabVIEW hardware drivers needed for the development of CAENels CT-box current measurement system on HDice.

Hall C Slow Control Systems

- Implementation of EPICS in Hall C slow control systems.
  - ★ Worked with Tyler to develop first Hall C CSS GUI to monitor the Hall C magnets variables from EPICS PV's available on the network.
  - ★ Configuration of stand-alone EPICS test station for software development.
  - ★ Two DSG computers have been converted to Linux-based EPICS machines for system development. A third has been sent to the computer center for installation of EPICS.
- Held status and planning meetings on the implementation of EPICS in Hall C Control systems

Hall A - Hadron Calorimeter

- Meeting with Bogdan Wojtsekhowski regarding cabling project on the Hall A HCAL projects. Steps for the project include:
  - ★ Inventory selection of cables for HCAL from storage cages.
  - ★ Labeling of cables & installation in the Test Lab.

✦ Cable Types: BNC-lemo, RG58, Qty: 1152, ~2-m, bundles of 8. Lemo-lemo – Qty: 320, ~2-m, bundles of 8. BNC-BNC, RG58, Qty: 288, 100-m, bundles of 8.
- Dsg-halla mailing list is now active for communication regarding DSG work for Hall A.

- Worked with Amrit, Patrizia, and David Chopard to add DSG to the Jlab webpage for Physics Support Groups.
- Worked with David Chopard to resolve Physics group editing permissions errors with the Drupal web development system.

Campero, Pablo
Hall C
- Upgrading 1756-IF4FXOF2F/A firmware from 1.4 to 3.5 in progress.
  - ✦ Firmware 1.4 allows a RTS of 400 µs compared with firmware 3.5 with a RTS of 300 µs.
  - ✦ Found issues during the upgrade; communication error status displayed.
  - ✦ Contacted Rockwell support, debugging in progress.
- Edited Hall C PLC weekly report

LTCC
- With Brian, Tyler and Amanda got twelve 120-VAC solenoid valves to be used as a replacement of 3.5 VDC valves for C_4F_{10} recirculation system.
  - ✦ Unused solenoid valves were removed from the old Hall B fire protection/sniffer system.
  - ✦ 120-VAC valves will allow cRIO control system operates within recommended current ranges.

- Edited and compile DSG weekly report.
- Solved permissions problem to edit and update DSG web page.
  - ✦ Copied missing Hall B- Magnets minutes meeting to the DSG web directory.
  - ✦ Updated DSG web page with Hall B Magnets minutes meetings for 2017.
- Collaborated with Mary Ann to start next test in the **cRIO Test Station**.
  - ✦ Tested wiring at channel 1 of NI-9239 input module.
    - ▪ No issues found, wiring for next three modules were confirmed.

Eng, Brian
Hall B LTCC
- Removed 120 VAC solenoid valves from old sniffer system with Amanda, Pablo and Tyler.
  - ✦ Verified that those coils will open a 24 VAC valve that was previously used on the LTCC.
- Selecting connectors to replace solenoid power chassis which will also add cRIO control of the valves.

Hall B Gas System
- Added individual stops to separate MFC VI, however error messages are less than desirable when an MFC fails so will need to improve that.

SVT
- Tested 4 more modules with bottom HV modification.

Hall C Magnets
- Developing Python code on SBC card to read filed from NMR PT2026 unit and transmit to the PLC controller
  - ★ With code implemented noticed that lock maintained fine at ~1.65 T, but couldn't get an automatic lock at ~1.8 T (not sure of exact number) despite scanning up/down pulse width & amplitude.
    - ▪ So far only been able to get a lock manually at the higher fields.
  - ★ Code didn't handle not having PLC tags present (when trying to debug "fast" ADC module the controller was reset) very gracefully, i.e. threw an exception.

Hoebel, Amanda
HDIce
- Finished CT-Box note.

LTCC
- Uninstalled 10 solenoid valves from the labyrinth with Brian, Tyler, and Pablo.

DSG
- Started work on PLC test station.
  - ★ Created LabVIEW program that reads tag values for I_Target and I_MPS from current regulation routine.
  - ★ Downloaded CSS EPICS to Hall C PC.
  - ★ EPICS reads Target current and MPS current from PLC and alarms if current is over specified value.

Jacobs, George
Hall A SOLID-HGC
- Hall A SOLID HGC gas system note in progress
- More work on SOLID-HGC gas system P&I diagram and Components spreadsheet

Hall B Gas System
- Submitted PR 381113 for continued funding of the argon contract.
- Started assembly of RICH N2 auto-change manifold
- Ordered pressure transmitters for RICH N2 auto-change manifold.

- Meeting with Gabriel Charles from Institut de Physique Nucleaire d'Orsay; discussed about the ALERT drift chamber and wire chamber stringing
  - ✦ https://clasweb.jlab.org/wiki/index.php/File:2018-11_ALERT_CollabMeeting_DC.pdf

Leffel, Mindy
LTCC
- Placed order for Conxall CPCs.

HDICE
- Worked with Amanda modifying grounding connections.
  - ✦ Added extensions to two cables, shortened one cable, and isolated there components with rubber insulation material.

Hall A - Hadron Calorimeter
- Cabling project.
  - ✦ Tested and removed labels from 30 cables.
  - ✦ Repaired cable tester, loose connection issue.

- Attended DOE Human Performance Improvement orientation (four hours).

Lemon, Tyler
Hall C Slow Controls
- Set up DSG-C-LINUX1 for slow controls development.
- Installed EPICS base and extensions on DSG-C-LINUX1. Versions installed are:
  - ✦ EPICS base version 3.14.12
  - ✦ Visual Database Configuration Tool (VDCT) version 2.8.1.
  - ✦ Controls System Studio (CSS) version 4.5.0
    - ▪ Also installed CSS-Phoebus 0.0.1 to investigate for future use.
    - ▪ "Phoebus" is newest version of CSS that does not rely on "Eclipse" Java IDE.
    - ▪ Currently, Hall B and Hall D use the Eclipse-based CSS.
- Currently investigating and installing additional EPICS extensions:
  - ✦ Extensible Display Manager (EDM)
    - ▪ Software used to generate GUIs used by accelerator for screens that currently look at Hall C PLC system.
  - ✦ Motif Editor and Display Manager (MEDM)
    - ▪ Software used to generate GUIs that is an improvement on EDM.
  - ✦ Alarm Handler (ALH)
    - ▪ Same alarm handler interface used by Halls B and D.
  - ✦ StripTool
    - ▪ Used to acquire PV data in real time and plot on strip charts.
  - ✦ Gateway

- Channel-access gateway extension that runs as an intermediate process to allow many connections to a PV while making only one connection to the actual IOC.
- Verified EPICS base installation by creating and starting a test IOC with no fields.
  - Creation of test IOC is successful.
  - Unable to reliably run IOC; iocsh (shell used to interface with ioc from terminal) gives error that connection is refused.
    - After research and debugging, error may be caused by firewall or other network communication using port that the IOC is trying to use.

LTCC

- Repossessed twelve, unused, 120-VAC solenoid valves with Brian, Pablo, and Amanda for use in new C_4F_{10} recirculation system.

DSG

- Attended Human Performance Improvement training.

McMullen, Marc

LTCC

- Completed mechanical drawing of LTCC solenoid power chassis.
  - Submitted a PR to order the chassis, predrilled with silkscreen.
- Terminated and connected the cables for the secondary pressure transducers for S3 and S5 in Hall B.
- Reviewed Gas System CLAS notes to verify accuracy in the information provided.