DSG Semi-Annual Status Report
May 10, 2016

I. Data basing Voltage taps for Hall D solenoid.

Tasks

- Create GUI in Excel for database usage by technicians.

Accomplished

- Created database for Hall D solenoid voltage taps.
- Created Excel UserForm to define SQLite search parameters.
  - Will be used by technicians who do not know SQLite commands.

II. SVT Spares Test

Tasks

- Monitor test of spare modules for current increase.

Accomplished

- Wrote code for spares test.
  - Reads module currents from MPOD.
  - Currents are put into database.
- Wrote analysis code in Mathematica.
  - Generates graph of currents and of current change.

III. Hall B Gas Controls System

Task

- Design, develop, deploy, and test PAC (cRIO) based control and monitoring software.
  - Test software after detector installation, as well.
- Install and test RICH, MVT, HTCC, SVT and FT instrumentation and software.
- Develop PID controls.
- After installation test gas quality, pressure, and humidity on a regular basis.

Accomplished

- Installed controls interface chassis and cRIO stations in Hall B and Gas Shed.
- Completed PID loop test.
- Installed instrumentation for DC and LTCC in Hall B.
- Installed instrumentation for HTCC and SVT in TEDF and EEL, respectively.

IV. DC Gas System

Task

- Design, develop, implement and test gas system.

Accomplished

- Completed system diagrams and documentations.
- Completed piping from Gas Shed to Hall B Solenoid Valve Panel.

V.   LTCC Gas System

Task
- Design, develop, implement and test gas system.

Accomplished
- Completed system diagrams, documentation, and PID testing.
- Tested gas supply systems with N_2.

VI.   HTCC Gas System

Task
- Design, develop, implement and test gas system.

Accomplished
- Completed system diagram and documentation.
- Completed CO_2 supply line from gas shed to MFC in Hall B.
  - Installed CO_2 Pressure Regulator, Isolation Valve, Check Valve, and CO_2 MFC.

VII.   SVT Gas System

Task
- Design, develop, implement and test gas system.

Accomplished
- Completed system diagram and documentation.
- Installed pressure regulator, isolation valve, and check valve.

VIII.   MVT 5-Gas Mixing System

Task
- Design, develop, implement and test gas system.

Accomplished
- Completed system diagram and documentation.

IX.   RICH N_2 Gas Supply

Task
- Design, develop, implement and test gas system.
- Complete cost estimate.

Accomplished
- Completed system diagram and documentation.

X.   DC Test Stand Argon CO_2 Gas Mixing System

Task
- Design, develop, implement and test gas system.
- Need for hardware:
  - Control cables for MFC.
  - Order gas.

Accomplished
- Completed system diagram and documentation.

XI.   MVT Gas Mixing Test Stand

Task
- Design, develop, implement and test gas system.

Accomplished
- Completed system diagram and documentation.

XII.   HDIce Mathematica

Task
- Update Mathematica notebooks from version 5 to version 10.

Accomplished
- Updated 1/8 notebooks.

XIII.   Hall B Magnets

Task
- Assist in testing and development of magnet PLC systems.
  - Test power supply code, DBX can and TST screens, solenoid bore heater, and DBX code.

Accomplished
- Tested power supply code using solenoid magnet power supply.
- Tested EPICS screens.

XIV.   SVT

Task
- Provide support and maintenance of SVT during pre-commissioning.

Accomplished
- Changed gas bottles.
- Debugged code with test runs.
  - Trigger studies, gain scans, etc.
- Debugging problems with slow controls interfacing with ACC.

XV.   HDice Switching/Attenuation Unit

Task
- Design front and back panels in AutoCAD.
- Assemble front and back panels.
- Wire AC/DC power, DIO modules and related control system, and RF system.
- Update wiring diagram.
- Write and test drivers for DIO modules.
- Test software.
- Write program to test Switching/Attenuation Unit.

Accomplished
- Designed and assembled front and back panels and wire AC power.
- Updated wiring diagram.
- Wrote and tested DIO module drivers.

XVI.   HALL D SOLENOID PLC

Tasks

- Configure PLC GUI to auto-save and display time stamps of trips.
- Check coil 3 He return sporadic signal for solenoid controls.
- Replace PLC internal batteries.
- Update all controls and schematic drawings.
- Set MPS clock to synchronize with PLC.

XVII.   Test Station

Tasks

- Test voltage and current outputs of five spare MPOD LV cards.
- Fabricate adaptor for LV card with old connectors to be used with new connector cable.
- Analyze test results.

Accomplished

- Tested voltage and current output for LV card 1 and voltage for card 2.
- Analyzed results for LV card 1.

XVIII.   RICH Detector

Tasks

- Test mirrors on arrival.
- Run nitrogen and compressed air lines in EEL 124 for testing.
- Develop interlock system.
- Determine layout for air compressor cooling system in Hall B.

Accomplished

- EEL 121b optical benches set up and windows darkened.
- Pie Tower Level 3 investigated as possible location for cooling system components.
- Received all MAPMTs and 17 aerogel tiles.

XIX.   HDice NMR

Tasks

- Calibrate CAENels Current Transducer (CT) Box.
- Debug and test code for running positive and negative NMR scans.
- Update front panel user interface for RF cable type and termination readbacks.
- Develop, debug, and test instrumentation device drivers and variable scan times.

Accomplished

- Developed functions library, Daq code, and current calibration test for CT Box.
- Developed Labview sub-VI's for component-ID key portion of Daq module control.
- Installed and programmed RS-485 and RS-232 instrumentation communication hubs.
- Developed sub-VI's to display current status of NMR and RF Attenuator/switch box.