



Detector Support Group

Weekly Report, 2019-03-06

Summary

Hall C EPICS

- Addition of alarm indication on WEDM (EPICS GUI through web browser) investigated.
 - * WEDM can display alarm status of process variables based on the status of the alarm fields.
 - * PLC systems and KEPServerEX in use do not generate or implement the alarm fields of the PVs.
 - * Steve Wood will give KEPServerEX database file to DSG to be able to add alarm fields.
- Archived data plotting and heartbeat indicator in WEDM investigated.
 - * Archived data plotter is not available for WEDM.
 - * Implementation of a heartbeat indicator is possible if a new signal is added to HMS and SHMS PLC programs and passed by KEPServerEX to an EPICS PV.
- Development started of start-up script for new HV CSS-BOY screens.
 - * Start-up script allows all users to open screens in similar workspace in runtime mode.
 - * Script uses CSS command line options to open .OPI files in runtime mode in detached tabs.
- Display of channel information on HV monitoring bar plots when mouse is hovered over channel investigated.
 - * CSS has option for plots that displays value on mouse over, but resulting information is based on XY coordinate of plot.

Hall C CAEN-SY4527 Test Station

- Test load assembled using one 25 M Ω resistor and a 20 k Ω resistor in series.
- Development of VI started to set and read back voltage on the CAEN and read the measurement from Keithley 2001 multi-meter.
- Development of software started to test mainframe's EPICS interface.
- General Control for CAEN HV ("*GECO2020*") and CAEN HV OPC Server Configurator installed on *dsg-test1* PC to connect to CAEN.

Hall A Magnets

- PR submitted for Allen-Bradley CompactLogix PLCs to replace current SLC 500 series PLC used in the Dynapower magnet power supplies for both dipoles.
- Existing SLC 500 PLC project exported to Studio 5000 for development of program to run on new CompactLogix PLC.
- Update of program started to allow it to run on new CompactLogix PLC controller.

LTCC

- NI's Replication and Deployment Utility used to get the system image of the Forward Carriage cRIO to help NI with troubleshooting of cRIO's frequent self-reboots.
- Daily flow averages for the week calculated.

Daily Flow Averages for LTCC

Sector	Liters per day	Estimated Total Kgs Used (after filling)
S3 Supply	21.13	4.86
S5 Supply	35.55	6.75
Combined Return	46.52	10.70

Average C₄F₁₀ usage in liters per day and calculated estimated total kilograms of C₄F₁₀ used after sectors were filled. Total kilograms used is only an estimate; calculation based on liters per day.



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RTPC

- Gas controls chassis design completed and submitted to Par-metals for manufacturing.

Accelerator Engineering Division

- Populating of VME FSD boards for Machine Protection System continued.
 - ★ Last components on three boards soldered in parallel:
 - 36 fiber optic receivers (eight pins)
 - 12 LEDs, six right angle DIN connectors (96 pins)
 - 37 various components (diodes, LEDs)
 - ★ All tacked components soldered on back of the sixth partially populated board.

Accelerator Division R&D

- Meeting with Gigi Ciovati and Junki Makita to discuss wire bonding 1 cm x 1 cm superconducting strip resonators to a casing test box.

PLC Test Station

- Program in development to calculate dynamic range and offset, and to perform dynamic range test.
- Data acquisition and scaling factors tested for 1769-IF8 analog input module.
 - ★ PLC code written to read channel inputs in engineering units and row proportional format.
 - Engineering units and row proportional format are most common formats used with instrumentation.
 - ★ Scaling factors provided from Allen Bradley module specifications tested to convert data from decimal format to proper voltage units for test station measurements.

cRIO Test Station

- Mechanical layout of the National Instrument test development chassis revised.
- NI-9265 analog current output module installed and configured in test station cRIO.
- Keithley 2002 multi-meter connected to NI 9265 module to read current values.
- LabVIEW driver developed to read current measured by Keithley 2002 multi-meter.

FPGA Test Station

- Test programs developed:
 - ★ “3-bit counter” program that converts binary input to a decimal, displaying result on the dev board’s LED number display.
 - ★ “Counter” program that uses FPGA’s internal clock to continuously count from 0 to 9, displaying result on dev board’s LED number display.
 - ★ Development in progress of program to read dev board’s temperature sensor using I²C protocol.

DSG Website

- Revision of Drupal version of DSG website to replace HTML-based version in progress.
- Layout of the DSG photo log revised, compiled and posted.
- Note 2019-09 *Population of VME Fast Shut Down Boards* posted.
- Note 2019-10 *Supply and Recovery Controls for Perfluorobutane Used in Low Threshold Cerenkov Counter* edited and posted.
- LTCC presentation and RTCP meeting minutes edited and posted.