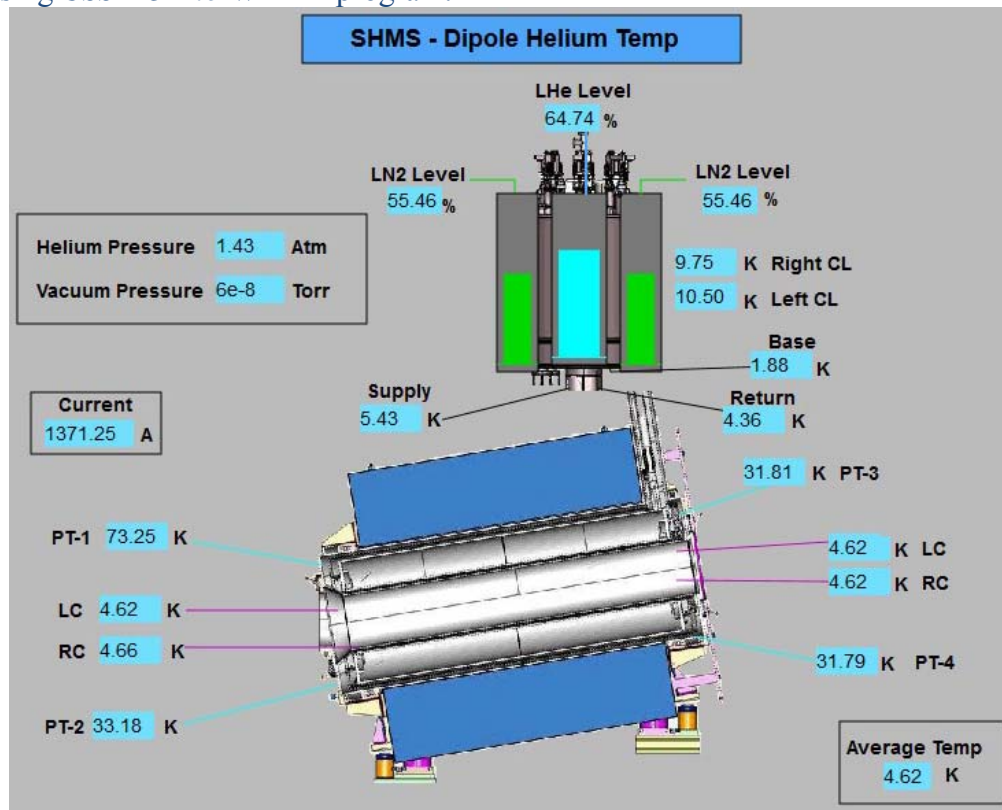


Summary

Hall C EPICS

- *SHMS Dipole Helium Temperatures* CSS-BOY screen developed.
 - ★ Temperature status indicator added to show the type of temperature sensor being used to calculate the overall average temperature in the dipole.
 - ★ Sign to show redundant Carbon Ceramics (CC) temperature sensors added.
 - ★ Testing rules and actions available on CSS-BOY to calculate temperature average from actual PT102 and CC sensors' PV readouts running on Skylla7.
- *CSS-BOY-to-WEDM* program improved.
 - ★ Program converts CSS-BOY (.opi) files to WEDM (.edl) files by parsing .opi file for widget properties and then creating equivalent widgets in WEDM.
 - ★ Function added to convert CSS widgets' colors to the closest WEDM color, based on widget's RGB color code.
 - ★ Ability to convert CSS "tank" widgets to WEDM added.
 - WEDM does not have a tank widget, but WEDM's progress bar can be modified (rotated to vertical, color of fill) to look like CSS's tank widget.
- *CSS-BOY* screen developed for *SHMS Dipole Helium temperatures* converted to WEDM using *CSS-BOY-to-WEDM* program.



Resulting WEDM screen converted from SHMS Dipole Helium Temperature CSS-BOY screen.

- *CAEN Test Stand* being developed to test HV modules.
 - ★ Setup started for the cRIO that will be used as part of the DSG CAEN Test Stand (CATS).
 - Reformatted cRIO-9075 controller and reloaded software.
 - Started populating EPICS client process variables to the cRIO
 - ★ Voltage, current, and power calculated for the HV measurements.
 - Max voltage across the HV CAEN resistor (380 K Ω) is 13.25 V
 - ★ DSG list with THA and supporting document submitted.



Detector Support Group

Weekly Report, 2019-02-27

- Python scripts to develop HMS/SHMS screens resumed.
 - ★ Bar chart of HMS Hodo 1 X high voltage created.
 - ★ Drop-down menu that lets user click to another graph in progress.
- Group map and channel map of *Tcl/Tk-to-CSS-BOY* program corrected.
 - ★ Spacing in output files improved.
 - ★ Corrected bug where only first two pages were written to output file.
 - ★ Corrected bug causing SHMS channel map to have crates listed in non-sequential order.
- WEDM, epics2web, and *runchart webapps* installed on tomcat server running on *dsg-c-linux1* PC for debug/development of WEDM screens.

Magnets

- Solenoid and Torus supported during controlled ramp down on February 21, 2019 and February 24, 2019 caused by reduction of LCW $\Delta P_{(sup-ret)}$.
 - ★ During normal operation LCW $\Delta P_{(sup-ret)}$ ~ 69 psi.
 - ★ Usually prior to magnets trips, LCW return pressure increments from ~43 psi to 64 psi when makeup pump is turned on, reducing the $\Delta P_{(sup-ret)}$ to ~ 52 psi.
 - PLC interlock configure to execute a controlled ramp down if the $\Delta P_{(sup-ret)}$ drop below set threshold, which is 55 psi.
 - ★ Solenoid and Torus controlled ramp down stopped at 500 A and 667 A respectively
 - To save time ramping up once conditions had stabilized.
 - ★ $\Delta P_{(Sup-Ret)}$ monitored until it stabilized and ramped Torus and Solenoid to full current.
 - ★ Limit for Solenoid and Torus PLCs interlock based on LCW $\Delta P_{(sup-ret)}$ changed from 55 to 48 psi to attempt to stop controlled ramp downs, and still be safe.
- Control systems supported after Solenoid fast dump on February 25, 2019.
 - ★ Solenoid PLC lost ACD project file, disabling controls and monitoring for Solenoid.
 - ★ Solenoid PLC reported major power up fault. According to Allen Bradley documentation:
 - PLC detected a “non-recoverable fault”
 - PLC in this state does not open any connections or allow transitions to run-mode.
 - ★ PLC project file was downloaded to the PLC after it was rebooted.
 - ★ PLC communication re-established to enable Solenoid controls and monitoring.
- Functionalities added to the DBox, Solenoid, and Torus PLCs:
 - ★ Controller Fault Handler routine writes the current control log to the SD card
 - ★ Saved ACD project to SD card with options set to load on memory and configured PLC in run-mode.
- Test performed to measure the Solenoid and Torus MPS flow thresholds.
 - ★ Hall B LCW level 1 supply valve throttled until the supply pressure for the Solenoid and Torus MPS was ~ 78 psi (Normal operation value ~ 112 psi)
 - ★ Test performed slightly different to the real scenario (When LCW:92_Flow_makeup is on, it causes Hall B LCW Level return pressure increases), since there is no way to control the LCW return pressure.
 - ★ After supply pressure dropped to 78 psi; Solenoid MPS did not trip, only Torus tripped at ΔP (Sup-Ret) ~ 45 psi. More testing required to be confident about these trip values.
- Torus controlled ramp down on February 26, 2019 monitored.
 - ★ Controlled ramp down caused by Supercritical Helium under pressure, sensor PT8111.
 - ★ Torus ramp down stopped and parked at 500 A to avoid any Fast Dump until pressure was stabilized.

RTPC

- Controls interface chassis design started.
- Absolute pressure transducer added to the solenoid bore in the *RTPC gas system's* P&I diagram.



Detector Support Group

Weekly Report, 2019-02-27

- Visit to William & Mary University to view valve panel and parts inventory.
 - ★ Cabling components brought back to JLAB.



Assembled RTPC gas panel at William & Mary

LTCC

- Supply and recovery control system upgrade to the gas system completed.
- On a daily bases monitored C₄F₁₀ flow for S3, S5 and combined return lines.

Sector	Ave Flow [L/Day]	Est. Total Used (after filling) [Kg]
S3 Supply	24.69	4.69 (~28 days)
S5 Supply	38.35	6.52 (~23 days)
Combined Return	50.38	9.57 (~28 days)

Table shows the C₄F₁₀ gas daily flow average and estimated total Kilograms used

Hall A

- Documentation review started for current AB PLC used to control Dynapower MPS.
 - ★ Investigating possible replacements: AB PLC (Control or Compact Logix), NI cRIO, or something custom.

Accelerator Division

- Population of one of six VME FSD boards continued for Machine Protection System.
 - ★ Working on last three boards in parallel.
 - ★ Soldered: 36 resistors, 54 IC HEX inverters, 78 LEDs, and 54 various components.

DSG Website

- *Usage of Perfluorobutane in the Hall B Low Threshold Cerenkov Counter* note posted
- Four DSG meeting minutes posted.
- New webpage created for meeting minutes to breakdown minutes of each Hall and category into years.