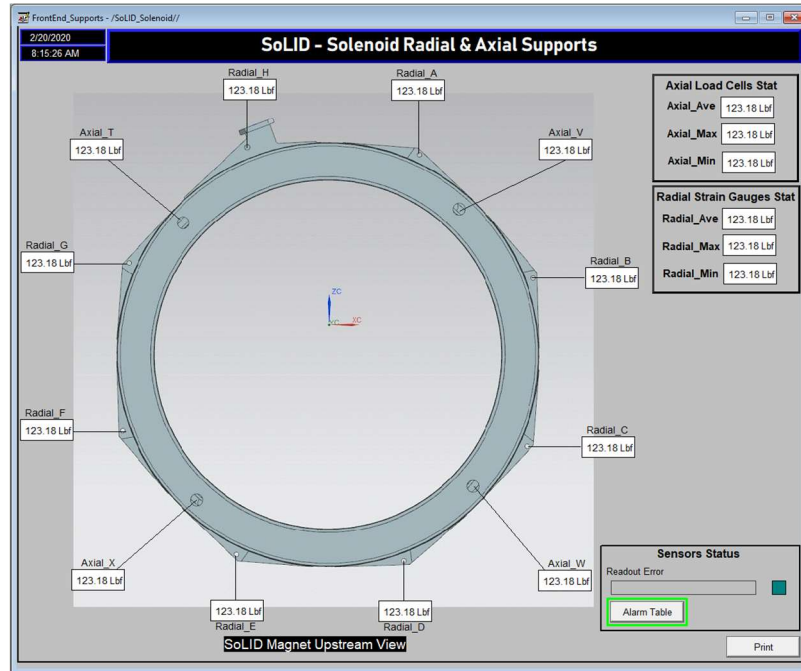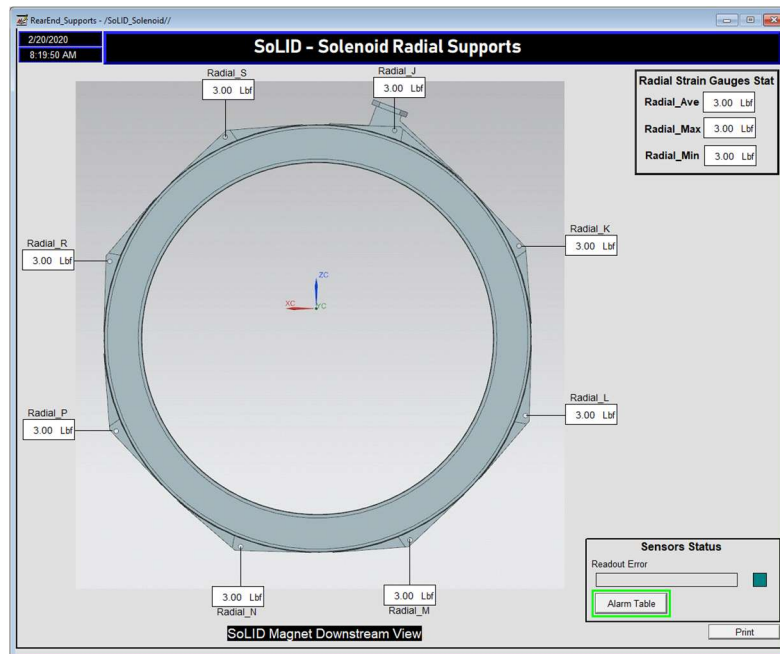# Summary

Hall A – SoLID Magnet Controls

- Developed two HMI screens to monitor axial and radial support forces in the magnet

SoLID Solenoid Upstream - Axial and Radial Supports HMI screen.
Displayed values are randomly generated by DSG PLC

SoLID Solenoid Downstream - Radial Supports HMI screen
Displayed values are randomly generated by DSG PLC

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- Design of the 100μA Constant Current Source (CCS) PCB completed
  - ✶ Procurement of the new components and boards have started
- Wrote PLC routine to monitor temperature sensors located in the Cryo Control Reservoir
  - ✶ Need to add resistance vs temperature curves for each PT-100, diode and Cernox sensor
  - ✶ PLC logic completed
- Modified HMI screens
  - ✶ Adding trends for magnet temperature sensors, load cell and strain sensors
  - ✶ Added control buttons and changed background colors
- Working on the Rh-Fe Temperature Sensor Wiring Diagram drawing
  - ✶ Drawings shows details of the cable connection form the sensor to the to the signal conditioner terminal output panel

Hall A – BigBite Shower Calorimeter
- Terminated five of ten 34-contact coax ribbon cable to twisted-pair ribbon cables

HallA –GEM Gas System
- Modified Hall A GEM gas distribution diagrams
- Tentative dates for testing (June 2020) and full system tests (September 2020)

Hall B Magnets Controls
- Debugged and resolved communication problems between Solenoid PLC and magnet power supply and Cryo-con units
  - ✶ Problem was: Could not connect to NBX 435 module (PLC-to-RS232), NBX 490 module (PLC-to-RS485), or Cryo-con #1
  - ✶ Checked network connection by moving instruments to different network switch ports; able to reestablish communication and resolve issues
- Contacted Computing and Networking Infrastructure (CNI) about solenoid network failures
  - ✶ According to Computer Center, network switch was giving errors for those connections, indicating a faulty network switch as cause of issues.
    - ▪ Needs to be rebooted or replaced, during next time the magnets are ramped to zero and an access can be made

Hall B MVT
- Swapped Mix1 and Mix2 MFCs
  - ✶ C4H10 condensation got in as a consequence of the heaters not working properly

Hall B - SVT
- Made a script to replot and re-upload any attachments for gain scans
- Upgrading SVT Hardware Interlock System hardware and software
  - ✶ Made reconfiguration to mount NI Crio-9035 and relocate Panasonic water leak sensor controller and ADC ground bus interconnects
  - ✶ Researching on modification of coolant temperature and pressure monitoring sensor assembly external of the chiller

Hall B BoNuS

- Debugged automatic purge behavior
  - ✴ Target was always emptying after purge cycles instead of staying pressurized after automatic purge cycles were completed
  - ✴ Found target emptying at end of purge was caused by flow from the MFC being above set limit for normal operation, causing program to enter a fault state
  - ✴ Higher MFC flow at end of purge is a consequence of the purge pressure build level being lowered to 55 psi by collaborators shorten purge time
  - ✴ Increasing purge pressure build level to 60 psi resolved MFC flow limit issue, allowing target purge to behave correctly

Hall B Gas

- Debugged SF cRIO reporting alarms
  - ✴ Noticed that cRIO was still online but EPICS GUI values were not updating
  - ✴ Replaced bad network cable during access to Hall B
  - ✴ To solve the issue, rebooted cRIO via NI-MAX

Hall C – CAEN HV Hardware Testing

- Developed three Python programs to analyze testing data
  - ✴ One to check if set parameters have changed from their set point, one to plot average current for all channels, and one to plot average voltage for all channels
- Setting up necessary Python packages needed to run the programs and make plots

Hall C – Magnet Screen Conversion

- Completed Hall C Q1 PSU Setup screen

HMS-Q1 PSU Setup converted CSS-BOY screen

DSG R&D – MSELV Chassis

- Reconfigured FGPA DIO channels in LabVIEW code and on development breakout RMC wiring to match channels to be used on custom RMC
- Fabricated test connector for load cells, strain gauges, and Hall sensors

DSG R&D – EPICS Data Logger

- Setup a Grafana account on the Hall B subnet to plot logged data
  - ✶ Successfully connected to MySQL database, which has been created for DSG data logging
  - ✶ Need to change the MySQL timestamp data format to plot graphs in its current format

DSG R&D – RICH

- Developing hardware interface between sbRIO System on Chip and DSG designed PCB