

- Worked on NMR PT2026 Tesla Meter communication with PLC.
 - ★ Debugged Ethernet communication with PT2026 Tesla Meter.
 - Configured DNS and Domain to set up PT2026 Tesla Meter on the Hall C Dev subnet.
 - Created Ethernet VISA TCP/IP resources to connect PT2026 Tesla Meter via its Ethernet port.
 - Tested LabVIEW Ethernet communication with LabVIEW drivers.
 - Tested Ethernet communications by sending SCPI commands, verified proper responses.
 - ★ Upgraded firmware for 490 NBX module.
 - ★ Configure and connected 490 NBX modules to talk with DSG-PLC and PT2026 Tesla Meter.
 - Configured TCP Port number and IP address.
 - Connected 490 NBX modules with PT2026 Tesla Meter.

- Found problems sending commands and reading responses from the PT2026. Debugging in progress.
- ★ Assigned new IP address for the 1756-L72 ControlLogix PLC (dsg-plc) to connect with Hall C Dev Subnet.
 - Dsg-PLC is intended to be used for the NMR communication test.
 - Configured and updated firmware for 1756-EN2T module.
 - Configured Ethernet/IP drivers on RS-Link Classis to communicate PLC in Hall C Dev Subnet.
- ★ Wrote PLC test program to send and receive command from PT2026 Tesla Meter through 490NBX module.
 - Test program sent commands to 490 NBX modules without problem.
 - Debugging reading data from the PT2026 Tesla Meter.
- Acquired two RS-Logix5000 licenses Full edition
 - ★ Generated CCPR to run licenses on Computer Center server.
 - ★ Server computer will be supported by computer center
 - ★ Requested limited access for users to use the licenses.
- Generated first version of PLC layouts spreadsheet for HMS PLCs
 - ★ Spreadsheets show detailed information about the type and locations of PLC controllers and all I/O modules distributed on eight PLC chassis.
 - ★ Spreadsheets show for each module the channel description and the # of available channel spares.
 - ★ Documentation based on HMS PLC program, drawing will be required to verify channel description.
- Generated spreadsheet containing all vacuum-related tags in HMS PLC program.
 - ★ Existing vacuum monitoring for HMS magnets use two gauges:
 - Pirani gauge if vacuum is between 10^{-2} torr – 760 torr.
 - Penning (cold-cathode) gauge if vacuum is between 10^{-10} torr – 10^{-2} torr
- Researched Edwards vacuum gauge that will be added in HMS spectrometer vacuum controls.
 - ★ Edwards vacuum gauge measures vacuum from 7.5×10^{-10} torr – 750 torr.
 - Normal voltage signal from Edwards gauge is 2 – 10 V.
 - Gauge has built-in error reporting using voltages from 1 – 1.3 V.
 - ★ Output of Edwards gauge will go through signal conditioner to PLC analog input.
 - I/O chassis and analog input module are yet to be determined.
- Researched Hall C's UPS for UPS-to-PLC interface.
 - ★ Hall C uses an APC UPS model SMT1500RM2U.
 - ★ UPS has RJ-45 serial port on back to use with proprietary monitoring program.
 - ★ UPS can use expansion cards to give Modbus or relay interface.
 - ★ Contacted APC to request more information on built-in serial port, Modbus interface, and relay interface and whether either one could be used for monitoring the UPS via PLC.