HALL C PLC TASKS REPORT (07/19/2018 – 07/25/2018)
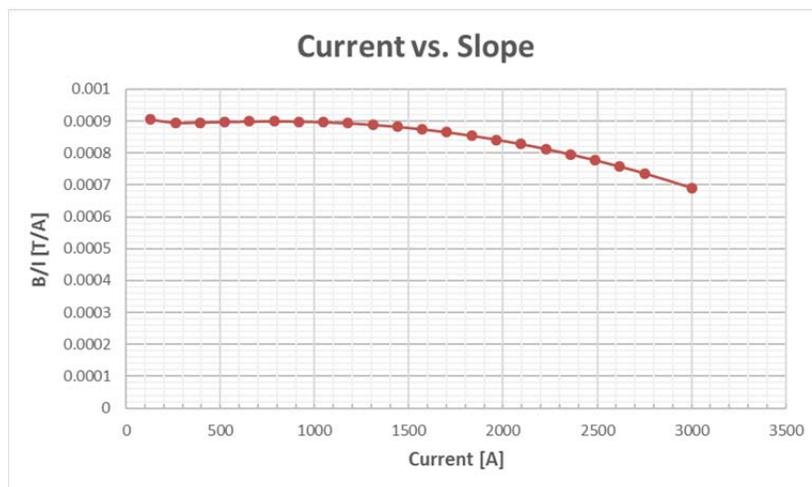
Item	Description	Priority	Primary Person	Start Date	Status	Comments	Suggested Duration (days) by Hall C
1	HMS & SHMS Dipole field regulation routine	1	Pablo	14-Jun-18	In Progress	PLC Code in progress, testing serial communication with Python code (simulating PSU)	10
2	New NMR communication through PLC to PSU	1	Brian	10-May-18	In Progress	Identifying proper magnet to test program	5
3	Test Ethernet vs Controlnet interface.	1	Pablo	7-Jun-18	Completed	Checked by Steve(w/o redundancy modules)	N/A
4	Swapping of Controlnet by Ethernet modules in SHMS	1	Pablo Brian	3-Jul-18	Completed	EN2T and ENBT modules for Q1 and HX PLC chassis installed and running without issues. Task completed successfully on 7/13/2018	N/A
5	Add spectrometer rotation electric break control	2	TBD	-	Waiting	Waiting for Hall C to determine and order parts	5
6	Add HMS Spectrometer Vacuum to controls	2	Tyler	29-May-18	Completed	WRG Vacuum gauge installed by Hall C on July 20, 2018. HMS PLC program chaged to read sensor. Updated program placed in M:dsg-hallc_controls on July 23, 2018. Changes will be downloaded or copied to PLC by Steve or Mike.	2
7	Data Logging upgrade, install and make operational	2	Pablo	-	Not started	210 SHMS HMI screens and 63 HMS HMI screens running on FTVIEW at Skylla and opened by Mike Fowler. To do this task DSG needs access to FTVIEW SE. DSG prefers EPICS data logging. **FT View SE SRV Unlimited Disp license is about $ 17,000**	20
8	Develop "on loop" current regulation routine for quads' (3) PSU.	2	Amanda	14-Jun-18	In Progress	PLC program completed; program will be tested against simulation Python program which will simulate Danfysik power supply.	10
9	Tune valve responses	2	TBD	-	Not started	Need more information	5
10	Wire UPS status to controls	2	Tyler	30-May-18	Waiting	**Waiting for cabling from PLC to UPS, task to be done by Hall C.**	2
11	Modify SHMS shutter not in place status	2	Amanda	-	Waiting	Mike will talk to Steve on implementing wire loop to determine "shutter in-place" status. **Email to request status was sent to the mailing list.**	1
12	Add HMS shutter controls and status	3	TBD	-	Waiting	Mike will talk to Steve on implementing wire loop to determine "shutter in-place" status. **Email to request status was sent to the mailing list.**	1
~~13~~	~~Alarm notification to on-call staff~~	~~3~~	~~TBD~~	-	~~Not started~~	Should be done by EPICS	~~4~~
14	Add HMS quadrupoles hall probe readouts to PLC	3	Tyler	-	Waiting	**Email sent requesting information on taks, probes and availability of spare probe**	3
15	Change SHMS LVDT I/O module from Differential to Single ended	3	TBD	-	Not started	Need information about available hardware	4
16	End of life for Windows 7 upgrade to windows 10 (next year?)	4	Pablo	-	In Progress	RSLOGIX5000 upgraded to v20 on Skylla7. Computer center needs to upgrade Skylla to windows 10.	10
17	Upgrade SHMS PLC from version 16 to version 20	1	Brian Pablo Amanda Tyler	3-Jul-18	Completed	SHMS PLC running with all firmware and software upgrades without problems. Task completed on 7/13/2018	N/A
18	Upgrade HMS PLC from version 16 to version 20	N/A	Pablo Brian Tyler	19-Jul-18	In Progress	Redundancy modules (SRM) and Communication modules (ENBT and CNB) have to be upgraded in order to upgrade HMS plc to v20.58	N/A

The tasks added recently to the Hall C PLC task list are shown in blue font color

- Upgrade continued of Hall C PLC system from RSLogix 5000 version 16 to version 20.
  - ✶ RSLogix 5000 v20 and RSNetworx v27 installed on Hall C's controls PCs.

- HMS PLC updated to from RSLogix 5000 v16 to v20, but firmware incompatibilities in redundancy modules, ControlNet modules, and Ethernet modules prompted system to be downgraded back to v16.
  - ✶ Primary and Secondary chassis ENBT Ethernet modules' firmware upgraded from v4.8 to v6.6.
  - ✶ Firmware upgrade not available for Primary and Secondary chassis' ControlNet modules (CNB/D) due to modules being older models.
  - ✶ Converted HMS PLC project to RSLogix 5000 v20 and downloaded program to the controller.
  - ✶ Redundancy modules (1757-SRM) caused errors after update to v20.
    - ▪ Redundancy modules in HMS PLC system are older model than SHMS's and are not compatible with RSLogix 5000 v20 (highest compatible version is v16 for HMS redundancy modules).
    - ▪ In redundant systems, ENBT modules are not supported with controller firmware v20.58
  - ✶ If redundancy is not used, HMS PLC program can run in v20 with no issues.
  - ✶ Incompatibilities and need for redundancy prompted downgrade of system back to v16.

- New redundancy modules, ControlNet modules, and Ethernet modules are needed for the HMS Primary and Secondary PLC chassis to be able to upgrade from v16 to v20.
  - ✶ CNB/D ControlNet modules in Primary and Secondary HMS PLC chassis must be replaced with CN2 ControlNet modules.
    - ▪ Confirmed with Rockwell technical support that 1756-CNB ControlNet modules used for the five HMS Remote PLC chassis do not need to be replaced.
  - ✶ 1756-RM redundant module must be replaced with the newer 1756-RM2 module.
  - ✶ 1756-ENBT Ethernet modules in redundant and primary PLC chassis must be replaced with 1756-EN2T modules.

- Analysis of current vs magnetic field relation for HMS Dipole continued.
  - ✶ Plot generated to study how magnetic field changes as current changes and how the Dipole's magnetic field starts to become saturated at higher currents.

- PLC code for HMS spectrometer vacuum task completed.
  - HMS PLC program updated to add WRG vacuum gauge to HMS Q3 I/O chassis and turned over to Hall C.
    - Hall C will determine when to download changes to HMS PLC system.
  - DSG's portion of task is completed.

- Python Magnet Power Supply (MPS) simulation (version 1) developed to simulate communication to/from Hall C's Danfysik power supply.
  - Since DSG cannot use actual MPS and PLC system to test/debug code changes, program will allow debugging of new PLC logic and serial communication.
  - NBX 435 module used as PLC-to-serial gateway.

- Current monitoring loop program successfully tested on DSG-PLC using Python MPS simulation.

- DSG is still waiting on information and/or cabling work from Hall C on:
  - HMS & SHMS shutter controls
  - UPS status read-back
  - Spectrometer break controls
  - Valve tune responses
  - SHMS LVDT I/O module work.