

Hall A - Magnet Control Systems for SoLID – Meeting Minutes

Date: October 14, 2019

Time: 11:00 – 12:00

Attendees: Aaron Brown, Peter Bonneau, Pablo Campero, Steven Lassiter, and Tyler Lemon.

1. Assigned task scope for Detector Support Group

1.1. Hardware

- 1.1.1. Installation of PLC control systems, including PLC I/O modules, communication modules, redundant modules and PLC controllers.
- 1.1.2. Installation of instrumentation, sensors, and control devices.
- 1.1.3. Design and installation of the controls rack, planning final rack layout.
- 1.1.4. Testing and calibration of instrumentation as needed.
- 1.1.5. Wiring instrumentation.
- 1.1.6. Adding labels for each cable as needed.

1.2. Software

- 1.2.1. Developing/modifying PLC program based in Hall C-HMS Dipole PLC program to perform Cleo II controls/monitoring in the following areas:
 - 1.2.1.1. Cryogenics operations (cool-down of the magnet up to 4.5 K)
 - 1.2.1.2. Power up/down of the magnet
 - 1.2.1.3. Power supply communications
 - 1.2.1.4. Communications with NMR unit to read magnetic field
 - 1.2.1.5. Interlocks system
 - 1.2.1.6. Sensors readout (Temp, Load cells, voltage taps)
 - 1.2.1.7. Controls of instrumentation (MFC, EVs, Vacuum gauges)
- 1.2.2. Developing of the HMI screens
 - 1.2.2.1. Screens required to monitor and control Cleo II magnet.
- 1.2.3. Configuring OPC Server (Most likely KepServer)
- 1.2.4. Developing of EPICS IOC to archive data.

2. PLC system status and information

- 2.1. Cleo II magnet is currently located at Test Lab building.
- 2.2. Two 4-slot PLC chassis (Locals) and one 10-slot PLC chassis (Remote) installed.
 - 2.2.1. Extra remote PLC chassis could be added as needed.
- 2.3. PLC system currently installed and running in the Hall A-dev subnet.
- 2.4. Assigned network communication type between remote and local PLC chassis via controlnet modules.
- 2.5. Instrumentation and devices required will be received in the upcoming year, 2020.
- 2.6. *Controls Cleo II –DSG* spreadsheet sent by Steve Lassiter to DSG shows a detailed, but not limited list of sensors and instrumentation required, more sensors/signals could be added.
- 2.7. Steve Lassiter mentioned that PLC firmware implemented in the Cleo II PLC controller is version 20.058, same as Hall C-HMS/SHMS.
 - 2.7.1. Selection of the Cleo II PLC firmware revision is based on standardization with Hall C PLC systems.
- 2.8. Redundant system will be implemented for the new Cleo II PLC control systems.
- 2.9. Possibly, in hand Danfysik power supply will be used for Cleo II, to be defined.
- 2.10. Hall A management will define the final location of instrumentation racks and PLC racks.

3. **Schedule to complete the tasks**
 - 3.1. Expected time to implement Cleo II PLC control system is in the next two years, 2021.
 - 3.2. Low current test for Cleo II will be performed in the Test Lab building prior to its re-location in Hall A.
 - 3.2.1. Test will check proper operations for controls systems and mechanical components.
4. **Discussed about procedure to implement code in the Cleo II PLC**
 - 4.1. Steve Lassiter mentioned that only PLC code written from workstation PHYCAD58 would be loaded in the Cleo II PLC.
 - 4.2. DSG requested remote access permissions to the PHYCAD58 computer.
 - 4.2.1. Pablo Campero will send the list of DSG members that requires the access to the workstation.
5. **Potentially, Hall A Target controls could be added to the Cleo II PLC control systems**
 - 5.1. DSG will be helping with the development and implementation, if this happen.
6. **Documentation/information, contact person and resources available for the project**
 - 6.1. Information and documentation related with Cleo II control system is located in the M: Drive /HallA_Eng folder.
 - 6.2. Whit Seay is the project engineer to be contacted.