

Hall C

Work Plan Activities for 2018

Spring Physics run ends May 6, 2018

Fall Physics run start Aug 23,2018, with accelerator close up occurring ~1 week before.

1. SHMS Dipole, Q3, Q2 Dump resistor test and optimization.
Objective: lower dump resistor and peak Voltage thus lowering di/dt to reduce Eddy current induced quenching of the magnet. This will reduce the He boil off and lower the pressure during fast dumps of the magnet. Less impact on He cryo system, other magnets and possible eliminate the opening of the relief devices; prevent venting of He into the Hall. Test needed to verify engineering calculations that predict safe magnet operation using lower dump resistor. Duration: 2 weeks. Manpower: 2 engineers and 1 tech. Requires superconducting magnets and coordination with Cryo.
2. Power Supply maintenance and tuning: Service call of Danfysik techs to perform maintenance and tuning of all PSU of the HMS and SHMS.
Duration: 2 weeks Manpower: 1 engineer or tech to escort Danfysik techs. Cost \$50k. Requires superconducting magnets and coordination with Cryo.
3. Spectrometer Rotation:
 - Test to repeat welding noise pick effect on angle encoders. 1 day, 1 engineer and 1 tech.
 - Design, procure, install and test electrical brakes on drive motors to eliminate surging during rotation and angle roll off. 1 designer, 2 engineers and 2 techs. Duration: 3 weeks. Cost \$10k.
 - Re-calibrate angle encoders for SHMS and HMS: 1 engineers and three techs. Duration 3 days.
4. SHMS Transfer Line blockage: Find source of high return pressure within SHMS transfer line. Depressurize Transfer line and pull U-tubes as needed

to perform visual and pressure purge of He return lines. 2 engineers and 2 techs. Duration 1 week.

5. SAD – Prep magnets for Summer Accelerator down. Start up heat exchangers (2x) and establish 80K He source. Monitor controls and pump on insulating vacuum as required. 2 engineers, 2 techs. Duration: length of SAD + recovery time afterward (4 to 5 weeks after SAD).
6. SHMS Stray Field Mapping: Measure the stray field along the beamline side of the HB , Q1,Q2 and part of Q3 magnets. Procure components, install and map fields. 2 engineers, 1 tech and 1 designer. Duration: 1 to 2 weeks of mapping. Cost: \$50k. Requires superconducting magnets and ability to rotate SHMS.
7. HMS Dipole Field regulation: continue work on NMR field regulation of the HMS Dipole over the entire excitation range. Develop the method of external NMR probes locations. Develop software to use new NMR probe in Field control regulation. 2 engineers, 1 software developer, 1 designer and 1 tech, Duration 2 to 3 months. If successful apply to SHMS dipole. Duration 2 months.
8. SHMS Liquid level meters: Replace outdated combined He and LN2 Liquid level meters with separate channels meter.
1 engineer, 1 designer and 1 software developer. Cost: ~40k. Duration 3 weeks after receipt of new meters to install and calibrate meters. Requires superconducting magnets and I/O rack re-configuration.
9. Fike Rupture Disc: Vendor site visit to understand fabrication process and determine reason why SHMS Dipole rupture disc opened 1 atm below set point, 1 engineer, Cost travel & time. Duration 3 to 4 days.
- 10.HMS Q1 elevation: Raise the HMS Q1 to correct beamline height. Needed for small angles and proper optics. 2 engineers, 1 designers and crew of techs, Survey crew to survey and then align magnet. Engineer and design duration 2 weeks. Survey and align magnet three days.
- 11.SHMS warm return valve modification: Update warm return controls such that they open in the event of a PLC failure. Add mechanical pressure switches and re-wire valves. 2 engineers, 1 designer and 1 tech. Duration 3 weeks. Cost \$5k.

- 12.Solid: Brindza with hallC support.
- 13.Moller work: Magnet Engineering Group
- 14.He3 A1n and D2n: 1 engineer, 1 designer. Duration 2 yrs.
- 15.Documentation of magnets/systems: Archive and transfer to electronic storage documentation of all HallC spectrometer magnets and pressure systems. 1 engineer and 1 tech support person.
 - Update drawings to as built and field modifications. 1 engineer and 1 designer or detailer. Duration 6 months.
- 16.NPS: 1 engineer, 2 designers Duration 1 yr
- 17.On call personal: Group of five key personal of which one is to be the on call person for the users, cryo group and security. Rotated on a weekly basis. Responsible for calling system experts or technical help as needed. To provide onsite physical support during the duration of the occurrence.
- 18.Moller Quadrupole power distribution: 1 electrical engineer, 1 to 2 spectrometer support staff.
- 19.Beamline radiator installation: Design and drawing assistance for radiator installation. Work is expected to be done by engineering group. Requires removal of small beam pipe and installation of 10 degree beam line. Expected to occur after Thanksgiving holidays.
- 20.Detectors:
 - Patch panel at the front of Hall. 1 spectrometer support tech.
 - HMS Cherenkov moved for PMT refurbishments.
 - SHMS Cherenkov – remove upper platform for PMT access.
- 21.PLC controls upgrade:
 - Alarm Notification to on-call staff.
 - Data Logging upgrade (Cost of new software Historian \$10k?)
 - End of life for windows 7. Upgrade to windows 10 could occur during SAD this year.
 - Develop “On Loop” magnet ramping routine. Automate the Hysteresis setting of the magnets. Requires superconducting magnets for testing. 1 engineer + 1 support engineer/programmer.