

Hall C Configuration Changes for SAD-24

**Summer SAD24 period from
May 20 to Sept 18 2024**

- NPS removal
- HB restored
- SHMS Quads Cool down
- Maintenance
- LAD/GEM installation
- Manpower

Steven Lassiter

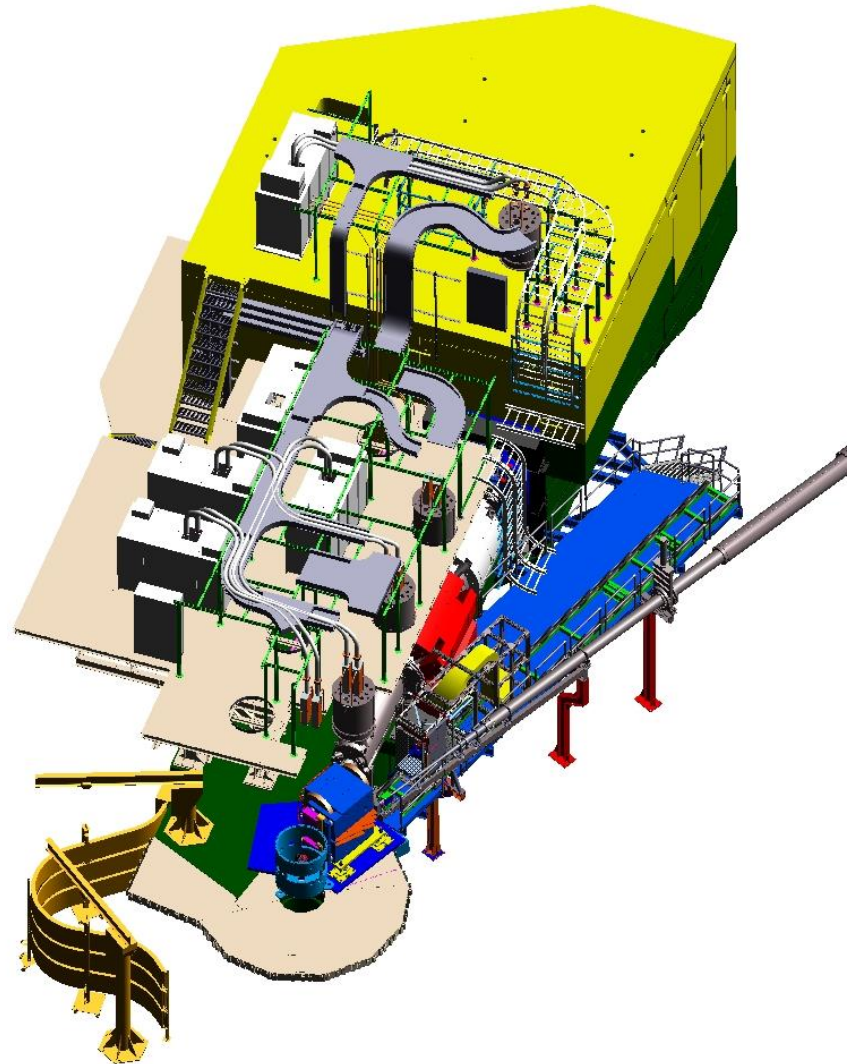
Thursday, Jan 18, 2024



NPS De-installation

- Cable Disconnection from detector panel to patch panel
- Dis-assembly of front portion of downstream beamline
- Removal of NPS magnet
- Removal of front section of NPS platform
- Removal of Detector
- Dis-assembly and removal of the remainder of the NPS platform

- Estimate time for NPS work is 3 weeks.



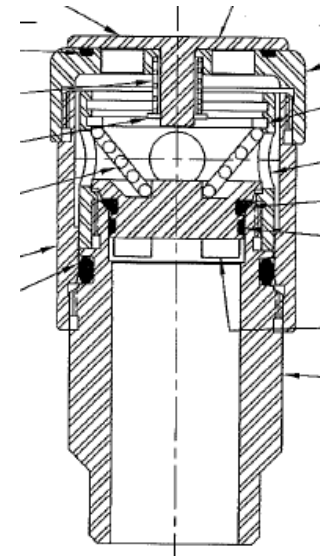
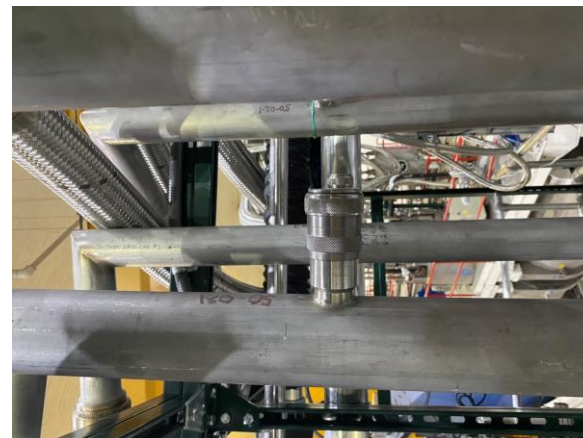
HB magnet Re-install, Cool Down & Re-train

- Re-install and survey HB on SHMS
- Can only be done after NPS magnet and front section of NPS is removed.
- Re-connect hardware, cables and protection devices
- Purge HB magnet with dry GN₂
- Connect HB to cryo lines
- Cool down HB magnet
- Re-train HB magnet (~1week)
- Estimate time for HB work is
- 3 to 4 weeks.

ID	Task Mode	Task Name	Duration
1	★	HB Re-Installation	24 days
2	→	Crane HB onto SHMS	1 day
3	→	Connect foot pads	0.5 days
4	→	Install Collimator	1 day
5	→	Install Front Shielding	1 day
6	→	Survey and align magnet on SHMS	3 days
7	→	Collimator Survey & Aligned	2 days
8	→	Re-assembly He and LN2 relief trees	1 day
9	→	Re-connect warm return line Valve [closed]	1 day
10	→	Hi-Pot Magnet	0.5 days
11	→	Re-connect I/O cables	2 days
12	→	Verify I/O signals and PLC functionality	2 days
13	→	Replace PHPK O-rings magnet and U-tubes	2 days
14	→	Replace O-rings on parallel plates	1 day
15	→	Purge with Dry N₂ gas	2 days
16	→	OVC	2 days
17	→	LHe Vessel	2 days
18	→	LN2 Vessel	2 days
19	→	U-Tubes	2 days
20	→	Current Lead Gas Lines	2 days
21	→	Purge / Pump on OVC insulation	2 days
22	→	Monitor H ₂ O contamination in He circuit	2 days
23	→	Verify He and LN ₂ circuits are positive pressure	0.5 days
24	→	Re-connect CL Mass flow controllers/Heaters	1 day
25	→	Connect He Warm return line	0.5 days
26	→	Connect He gas supply to magnet	0.5 days
27	→	Connect LN ₂ purge/vent hardware to Magnet side	0.5 days
28	→	Re-connect He Cryogenic U-Tubes	1 day
29	→	Cool Down magnet to 80K via Heat exchanger	6 days
30	→	Cool down to 4.5K, Turn off HX	2 days
31	→	Fill Magnet with LHe	1 day
32	→	Connect DC Bus lines	1 day
33	→	Connect LCW lines	0.5 days
34	→	Install Current lead shields	1 day
35	→	Re-calibrate Quench Detector	1 day
36	→	Re-training to full current	10 days

SHMS Quadrupoles Cool down

- Replace O-rings on parallel plate reliefs under cryocans.
- Replace O-rings on pump out devices (~50 devices)
- Pump /purge SHMS quad's insulation vacuum.
- Cool Down Quads ~10 days each - One Heat exchanger
- Retrain/certify magnet operations
- Estimated Time 7 weeks.



Maintenance: Cryo Vacuum PSU LCW

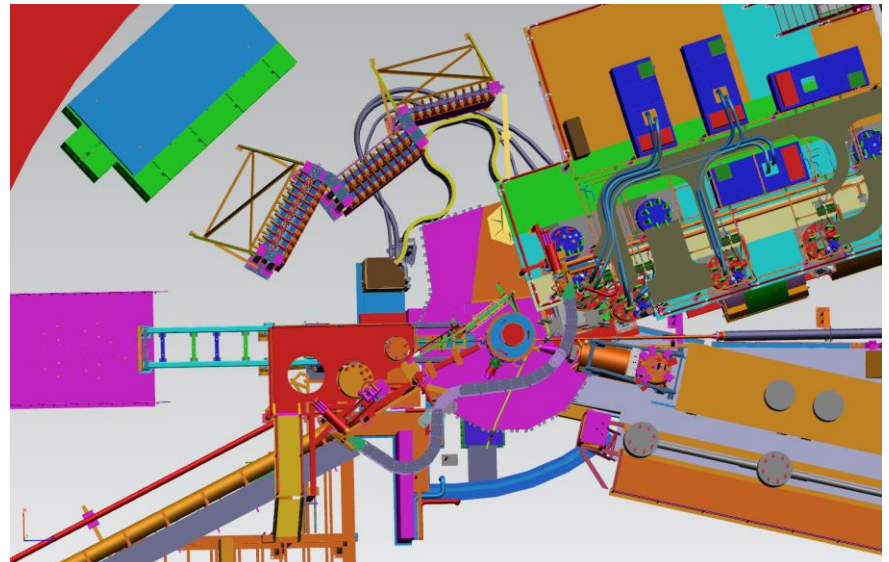
- Insulating Vacuum improvement on both Dipoles, Transfer line, A-can, U-tubes
- Repair 24" downstream gate valve
- Misc Cryo and vacuum work
- Replace HMS drift chamber low voltage supplies
- **Non-URL devices search and documented**
- **Hall C Sprinkler System replacement June - Aug**

Wish List:

- HMS Dipole NMR
- Re-wire/better organize rotation wiring
- LN2 Oscillators repair or replace
- PLC improvements/ Windows 11
- Vacuum pumping carts
- PSU Inspections/cleaning
- LCW filter replacements

LAD/GEM Installation

- Rotate target chamber
- Form/test & install new target chamber window
- Mods to girder
- Install Cable trays for LAD/GEM detectors
- Reroute existing SMS's cables around pivot area
- Install new stands, shielding bunkers, etc
- Install GEM detectors
- Install LAD detectors
- Install Downstream beam line
- Perform rotation check out



Expected Delays, Impacts on Schedule

- Manpower shortages
- EPASS – transition pains and delays
- ESR-II start up work and placed on line, replacing ESR-I

Summary

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- Installation schedule
 - NPS removal
 - HB restored
 - SHMS magnets cooled down
 - LAD/GEM installation
 - Hall C Maintenance
 - Other JLAB activities
 - Estimate time is -> All of SAD-24 and then some

