

LSD: Cryogenic Scope, Constraints, Risks

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Let's Start Easy - ESR

Maintenance:

- No major maintenance activities are planned for the next 24 months

Operations for Customers - Requirements & Desires (After May 18, 2012):

- Hall B – HDice requires 10 days of operation after beam delivery terminates.
- Hall C would like continued operations until Dec. '12 for HMS recommissioning and then 12 GeV power supply checkout. (Glenn – do I have this right and is it long enough?)

Constraints/Dependencies:

- ESR operations requires:
 - CHL recovery compressor operational
 - CHL purifier operation
 - LN2 supplies & power

CHL 2

Equipment Delivery and Hookup:

- Compressors – delivery complete, hookup ~5/1, bump comp. ~5/15
- Coldbox – Delivery 3/1-15, Hookup 6/1
- Cooling towers: complete and operational BUT need to be elevated for access – shutdown length ?????

Commissioning:

- Initial test: 2 weeks in August (Harwood schedule) *Note: if earlier then artificially high demand charge set for next 12 months w/ CHL 1 ops*
- Full blown operational testing starting October (Harwood schedule) available for linac cooling ~Nov/Dec. (Must also commission 2K CB#2)

Constraints/Dependencies:

- Hardware to connect CHL 2 to transfer lines is **not** designed. Design-fab requires about 45 person-months of labor This is not possible to deliver by Nov. with present cryo workload /schedule and staff. Resources currently assigned to: Operations, CHL 2 construction, Hall D fridge & distribution, Cryomodule u-tubes.....

CHL 1

Major Maintenance (Full warmup required ~3 months):

- Heat x-changer cleaning
- Valve rebuilds/repair
- Charcoal bed replacement
- Carbon bed replacement
- Oil cooler repair
- Repair soft vacuums in 2K and 4K coldboxes (could be 2 cans of worms!)
- Descaling of H₂O pipes – could be a bloody mess!
- Cooling tower replacement (2-3 month duration ????? Bob???)

Operations for Customers

- One CHL is needed for cryomodule commissioning – Assume CHL 1 is it for May 18 – Aug 1)

CHL 1

Constraints/Dependencies:

- Cooling towers will not last for another year. Assume they are not viable after mid-May. Alternative being planned w/o rental towers with switch in mid-May. (Can't run CHL 1 & 2 simultaneously with this arrangement)
- If towers fail without this alternative then it is equivalent to a hurricane – He inventory is lost.
- Operation requires power and LN2
- A CHL is needed for cryomodule commissioning
- **Point of ignorance for Will:** CHL 1 & 2 controls and electrical feeds are comingled making electrical outages quite complex – Jonathon and Paul working on alternatives.

Linac Transfer Lines

Maintenance/12 GeV Mods:

- Major maintenance activities are needed:
 - Relief & turnaround valve maintenance
 - Seal replacement
 - Insulating vacuum pump out
- 12 GeV mods
 - Return valve bullet changes in new zones – both Linacs
 - Warm gas piping mods & extension to Hall D – N. Linac
 - Dummy cryomodule removal – both Linacs

Operations for Customers - Requirements & Desires (After May 18, 2012):

- Cryomodule commissioning activities – both linacs,
- FEL Ops

Linac Transfer Lines

Constraints/Dependencies:

- N & S TL can be warmed up separately and maintenance done at different times.
- S. Linac TL must be cold for FEL to be cold

Hall D

Equipment Delivery and Hookup (Refrigerator and distribution):

- Compressors/tanks – will be moved into the building but not hooked up within the month
- Coldbox – Delivered last week (CB#3 from CTF)
- Machine layout, piping, distribution system, controls, LN2 distribution, etc. – design underway
- Fabrication of parts starts soon

Commissioning:

- Plant must be operational to cool the magnet by mid-November '12

Constraints/Dependencies:

- Competition for Cryo-group resources.