UITF to-do list February 18, 2021, Poelker

We have LHe until the “end of March” at latest, mid-March if SRF finishes the CEBAF CM sooner. So that means 4 to 6 weeks of UITF operations remaining

Tasks:

HDIce run2b, Feb 26 through March 15 (9 days of beam) **(Matt, Yan, Max, Mike, plus assistance from Ops for two shift running)**

1. krypton process the gun to reduce FE, start Tuesday Feb 23 **(Carlos, Yan, Mike, Matt, Mamun?)**
2. Heat/reactivate the photocathode **(Matt)**
3. Before Tuesday, load old file, but with new GSets, restore beam to ITVM905: harp swipes (give to Dennis), aperture motion, FCup reading, magnets reinstalled/recabled? This is our hot check out, better to do sooner rather than later
4. Raster magnet checkout
5. Put a steering magnet back? Which one?
6. Thursday p.m., Feb 25, lock out gun and RF, rooftile dance, Beam Authorization after rooftiles replaced
7. Work with Team HDice to find golden orbit
8. Facilitate their measurements with unpolarized target, ~ nA beam current with different duty factors: 1/3 and 2/3 and 1
9. More harp swipes if we need them. Recall we promised to provide HDIce and student emittance measurements with M905 and beam envelope along elevated line, for publications

Booster studies (beam centering, 2-cell amplitude, deflection, x/y rotation, phasing sensitivities, minimum gun voltage, buncher settings) **(Yan)**

Bunchlength measurement with yao cavity **(Yan, Reza, Tomasz, Curt, HLA)**

1. Tough because we are only allowed to deliver 25 nA average current, 1.7uA in tune mode
2. Can try 200 keV beam at current up to 10uA, but I don’t see that that tells you. Just laser and buncher
3. Is chopper needed? It is not setup, chopper slit does not work

Optics evaluation: predicting the observed beam sizes, needed to maximize adiabatic damping, to quantify energy spread **(Dennis, can you direct the effort related to qsUtility? Alicia, Hannes and Xi, can you lead the GPT effort?)**

1. all element locations known, everyone working from same file?
2. All field maps correct? Including the cathode/anode
3. All quads wired properly
4. Laser parameters accurate, well known? Ask Shukui for help
5. Parmela?, qsUtility, elegant – using all harps including keV harp. Pursue emittance measurement with YAG viewers?
6. Raytrace (need BPMs)
7. GPT

BPMs, reduce the background, same orbits tune mode and CW, no orbit in BS. Need BPMs for Raytrace, Need BPMs for water irradiation experiment. What can be done to make the BPMs useful? More work than installing sheet metal, or absorber material? **(John Musson)**

LLRF 3.0 development (don’t want to upgrade if this changes GSets, at least not until after HDIce run2b) **(Rama and Tomasz)**

Then we take a break from Ops while LHe goes to CMTF. During break we…..

Submit change request to SAD task force, detail all the tasks performed by “service providers”, obtain permission to proceed

Fix:

1. Gun
2. Prep chamber, add load lock
3. Align the gun properly, bake the gun
4. Swap YAGs for chromox in as many locations as possible, everywhere we vent the beamline
5. Rebuild FCup3 region, with fast valve, lead brick on FCup2
6. New yao cavity location
7. Fix harp M703
8. Fix chopper slit
9. Replace chopper ion pump
10. Install Wien filter
11. Install polarimeter
12. Bake, bake, bake

keV beam studies, plenty of time to “nail” the settings for good input into booster

pull HDIce equipment that might get damaged by radiation, add shielding to protect equipment if necessary

build the water irradiation beamline, taking things from elevated beamline (two BPMs, viewer?, FCup4, harp?)

epics screens, wall improvements, songsheets and UED updates

SAD change request must be submitted

Commissioning plan, write it, vet it

Facilities installs more concrete ~ 1st week of June

PSS certification will expire this timeframe, recertify

Commissioning, Water Irradiation experiment

1. keV beamline verified good, in advance
2. all MeV beamline modifications complete
3. verify functionality of fast valve, no beam required
4. verify functionality of solenoid current MPS
5. verify target position MPS (window comparator looking at stepper motor position, five acceptable ranges I guess)
6. Replumb the CTF, cool the booster to 2K
7. Restore beam to FCup3, M703 dump, and FCup4 (taken from the elevated beamline dump, moved to the end of the water irradiation line)
   1. Work with RadCon to perform breakpoint measurements: measure radiation outside the enclosure with beam parked at stated locations, at different energy and current, up to 10uA
   2. Install local shielding as recommended by RadCon for the intended 100 nA operation to water samples
   3. Update operational restrictions, update beam authorization page
8. BLM re-commissioning
9. Commission the MPS BCM, verify fsd trip when beam current > 100 nA, and trip within 2 seconds
10. Perform dose measurements with empty target cells or cells filled with ultrapure water
11. Ozone measurements
12. Optics measurements, save a file
13. Irradiate water