

Weekly Report – week of August 8, 2011
Fabrication and Assembly of ERL hardware
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Beam line: Magnets for G5 test high-energy beam line have been installed and surveyed.

Testing of ERL Magnets power supplies continues. Bottom half of all G5 downstream magnets have been installed in preparation for vacuum beam line assembly. Steel shielding and stands have been installed for both Faraday cups. Upstream solenoids installed. Preliminary design for window frame correctors started. Machining of G5-1 components initiated.

Cryogenics:

Transfer lines cryoplant side: Weld inspection: Inspection completed.

Vertical test Dewar side: Small vent line is continuing. Parts on ordered to be delivered.

Compressed Air System: Main hook up to be done yet of air dryer.

Cryoplant system: Pressure testing of warm lines (Plant supply and return, return line of 28" dewar) is set for Friday Aug 12 afternoon witness test by BNL safety QA.

Cryogenic transfer lines to ERL cryomodules: Safety review held with Lab's LESH-PCSS Aug 11 2:30-4:00pm and completed.

FMEA (Failure Mode Effect Analysis) is moving along for final review with Lab safety committee in Sept.

Controls: Kepco power supply testing has been completed: no significant issues were found, and the software development is also done. Work has begun on establishing serial communication links to the Danfysik power supplies in advance of testing. Much of the basic software interface has been written for the lens controllers, though further development is needed using a camera in the video lab.

Gun Cryomodule/5-cell cavity: 4 thick special Conflat gaskets and 2 spacers have been ordered from AES. These gaskets will be used for FPC's installation allowing the gun operation at higher accelerating voltage.

Instrumentation: The first article profile monitor was moved from its test bed for pre-installation survey. Class 3a Laser components have been ordered to implement a prototype scheme within the profile monitor's optics system for focus check on the YAG screen. Beam loss monitor locations are being assigned for the different phases of ERL while the interface electronics are in production. Faraday cup electronics are nearly complete. Device names and channel names are being coordinated with the controls group. Development of a controls interface for the 3-axis lens within the profile monitors has begun.

Laser: The 266 nm light generation is working now at low power. Work will continue, in this looser focusing geometry to look for thermal and mode problems before proceeding to higher power.

Large Grain Gun: Cavity has returned from Jefferson Laboratory after chemical processing and is awaiting final assembly for first cold test. Currently working on procedures for final assembly in clean room along with assembly of vacuum and other hardware components in preparation for first cold test.

Photocathode: New Cs and K sources have been installed into the deposition system along with a new stainless steel substrate. The entire system together with the source arms is being baked to establish adequate vacuum for deposition.

Project Management: Created + emailed files to be used to develop a resource loaded schedule. The email included the work breakdown structure, and points of contact, an estimating sheet for input, and a document on how to estimate contingency. Estimates are due 8/24.

Vacuum: ERL Zig-Zag Beam line: Detail design progressing. A beam line design misalignment was discovered while redesigning the two 30 degree dipole chambers to accommodate plunging profile monitors with YAG screens. This requires some additional changes to the injection beam line downstream of the last 30 degree dipole as well.

ERL G5 Beam line: Installation of chambers is underway downstream of the 5-cell. Upstream chamber subassemblies in 905 clean room continue. An intermediate G5 installation to support e-gun commissioning in December has been designed primarily due to delayed delivery of beam instrumentation.

The resistive paint for the HOM ceramic has been received. Two test ceramic breaks are ready but reconstituting this process will require ESSHQ involvement and may take time. The coating will also need a suitable oven for curing, which has yet to be defined and the sputter coating process will also need to be developed.

ERL Laser Transport: All vacuum material is available to fabricate the laser transport line including the new viewport holders. The line can be roughed in once the laser transport tower is freed from support of the waveguide in the FPC conditioning system. Mechanical tech support may be needed.

The hermetic gun string has been received from JLab and rolled into the new 10x20 clean room housed within the 905 clean tent. The string is being cleaned and blown down to reduce particulate levels generated from the trip to BNL. A meeting was held to review the procedure for installing the FPC's. The procedure was also reviewed by JLab. The vacuum components necessary to carry out the procedure are being assembled. The FPC alignment tool has been fabricated. The Conflat diffuser needed to vent the string is due the end of Aug. JLab has shipped us one for loan. The FPC conditioning cart is being "freed" for delivery to 905.

Resources: 2 vacuum technicians continue to work full time toward the completion of the ERL and G5 beam lines, working both in the 905 clean room and in 912. 2 additional vacuum technicians have been assigned to help support the assembly of the e-gun.