

Weekly Report – week of September 26th, 2011  
Fabrication and Assembly of ERL hardware  
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**Controls:** The software controls for the Main Magnet power supply (IE Power) have been configured in preparation for testing. A Gigabit Ethernet camera has been delivered, and testing of the software interface with the Controls System can begin. Effort was spent on additions for the DG645 delay generator software.

**Cryogenics:** CryoControls: The wiring of the last bit of instrumentation on the cryoplant side continues.

Electric feeds: The facilities engineer is scheduling the installation of the remaining electric feeds.

Cryolines plant: Last remaining field jacket has been welded up. Mass spec leak checking is next.

LN2 Storage Dewar: The mounting of the pressure transmitter and DP-transmitter on the inside bldg wall is still to be completed.

Cryogenic transfer lines to ERL cryomodules: The fabrication continues on the valve boxes for cryomodules at the vendor. The vendor has not finish reworking the schedule, but is most likely scheduled for a November start for installation.

Cryogenic transfer lines to ERL cryomodules, piping supports: The engineering and design for the piping supports for these lines has resumed. The cable tray layout has been discussed and details worked out with the facilities Engineer.

Cryo System: FMEA (Failure Mode Effect Analysis) is continuing.

Sullair compressor: The relief line from inside of the building to outside still requires installation.

SRF Gun Cryomodule interfaces: The relief header system materials requisition has been placed.

SRF Gun Cryomodule cryo instrumentation: The vacuum cross and fitting has been received.

A review meeting has been scheduled with the Labs safety committee.

**Gun Cryomodule/5-cell cavity:** FPC installation work continues with preparation of air side components (i.e. center conductor, door knob and waveguide) to look at coupling and frequency with the network analyzer.

**Instrumentation:** The two pepper pots were received this week with slit masks loaded in both. We have begun the receiving QA and have already received clarifications from the vendor. We expect to begin vacuum and cleanroom testing on the two articles next week. The remaining controls hardware is being ordered to support the two VME control chassis in addition to the motion control VME that's already installed and loaded with control cards. Wiring schematics and layout drawings for the control of the profile monitors & pepper pots have begun. Work continues to prepare the new PMT beam loss system to take some comparative data during the upcoming RF cold emission test. Design discussions continue in order to

provide relevant data from the Integrated Beam Current Transformer to the Machine Protection System

**Laser:** A new piezo assembly for the Lumera laser has been fabricated; the purpose of this is to improve laser phase-locking stability. The laser transport trajectory on then ERL floor has been surveyed. Trade work for cable tray and electrical installations will interfere with transport line construction in the immediate future. The mount points will be surveyed so that assembly and disassembly can occur around competing projects. Also testing the control program for the timing system module and working with the RF group on specifications for LLRF system's phase-locking and phase measurement capabilities.

**Large Grain Gun:** The preparations for magnetic measurements of the dewar with magnetic shielding are underway, with measurements scheduled for next week. The baffles have been attached to the top plate in preparation for these measurements. In addition the support table for the assembly of the top plate components is complete. The drive system components for the power coupler actuator are in progress.

**Mezzanine:** The process for lifting the mezzanine to accommodate the new clean room height continues this week with concrete block piers being assembled and the structure being unbolted from the floor.

**PASS System:** The six month recertification of the ERL PASS system is near completion. The critical device relays still need testing prior to the next scheduled 5-cell cavity cooldown test.

**Photocathode:** The deposition pieces have been inventoried with pictures and a parts list. The metal cathode vacuum chamber antennae loop is finished. All parts of the chamber have been photographed and inventoried. Parts were delivered to the vacuum group for cleaning and bake out. Hardware for the chamber is also assembled. The laser bread board has been purchased.

**Vacuum:**

1. The FPC flange seal problem is being analyzed. The custom seal did not work and will be redesigned after the ANSYS analysis.
2. The vacuum process for the polished mirrors is acceptable. A change to a coated mirror to eliminate need to break vacuum for different laser wavelengths has been adopted. The coated mirror is currently being processed like the uncoated mirrors. Ring shims are being fabricated to lock the mirror in place in the mirror holder.
3. The detail layout of the zig-zag injection beam line is complete.
4. Vacuum system design of the laser transport system is complete. Brackets have been completed by Central Shops
5. The clean room compatible prototype bake out heater jacket tests continue.

6. Coordinating the schedule to complete installation of the double solenoid chamber in the G5 injection beam line
7. Coordinating with Beam Components to QA the recently received pepper pots.
8. The deposition chamber parts cleaning continues