Weekly Report – week of September 19th, 2011
Fabrication and Assembly of ERL hardware
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Controls: The main development work for the DG645 delay generator and lens controller projects have been completed, though testing and administrative efforts remain to be done for each. Troubleshooting of the Digi terminal server configuration continued as part of the serial communication setup for the Danfysik power supplies. Discussions on critical issues involving the Machine Protection System yielded two systems that require further efforts to elucidate the technical requirements and the suitable implementations. Lenny DeSanto will investigate whether or not the gun cathode "locked" input can be generated by an existing relay in the motion control system, which might otherwise need to be monitored by slower software. On the subject of the two ICT inputs to the MPS (beam current and heartbeat/calibrate pulse status), it was identified that the analog output from the transformer cannot be sampled directly by the CRiO I/O module since it requires triggered sampling of the signal. An intermediate set of electronics will be needed in order to perform the sampling and to pass on the data or (preferably) a discrete pair of signals to the MPS.

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: One remaining field jacket needs to be closed up.
Instrument Air: Misc lines connections to the valves require completion.
LN2 Storage Dewar: The mounting of the pressure transmitter and DP-transmitter on the inside bldg wall is scheduled to be completed.
Cryogenic transfer lines to ERL cryomodules: The fabrication continues on the valve boxes for cryomodules at the vendor. The delivery date of Oct 24 is most likely going to shift, the vendor is reworking the schedule.
Cryogenic transfer lines to ERL cryomodules: 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 building to outside still requires installation.
Large grain gun test: The instrumentation installation and DAQ preparation is underway.
SRF Gun Cryomodule interfaces: The 5K intercept return mass flow meters are installed on their manifold.
SRF Gun Cryomodule interfaces: The relief header system materials list has been completed.
SRF Gun Cryomodule cryo instrumentation: The vacuum cross and fitting has been ordered.

Gun Cryomodule/5-cell cavity: FPC installation work continues as the second and final FP Coupler was attached to the cavity string. The string is expected out of the cleanroom next Monday. The cryomodule assembly traveler was completed and reviewed. HTSS assembly steps were reviewed and resource aligned for the start of final assembly.

Mezzanine: The VTF cleanroom vendor, Cleanrooms West, is committing to a completion date of November 30, 2011 with certification out two week beyond this date. The process for lifting the mezzanine two feet to accommodate the new clean room height started this week.

Instrumentation: The bench testing of the PMT beam loss monitor is complete, plans to install the associated signal processing electronics in ERL begin. The VME chassis planned for the PMT and Ionization Chamber loss monitors was installed. A temporary HV bias supply chassis was installed to support PMT testing in the blockhouse. The NIM chassis holding the Bias and Integrator cards for the Heliax beam loss monitors was installed. It has been agreed that although most of the Controls for G0, G5, ERL early stages will be based on PET pages, the Beam Position Monitors (5 planned for G5 tests) will require, early on, a graphical representation of the vertical & horizontal beam position. With the new cable tray layout announced, work has begun to route the new cable runs from the new cable list. Efforts begin to transfer the measurement data from the Integrating Current Transformer into the MPS system to accommodate protection efforts within a multimode operating environment. The stepper motion controllers were installed in the motion control VME chassis, Controls ado's are being configured. The new Libera BPM electronics Controls integration and testing begins, IP address have been assigned.

Laser: Working on faster out-of-lock signal with RF group for better photocathode/machine protection; plan would utilize faster phase detection available in the LLRF system. Investigating designs for fast gate to incorporate into timing system, that will permit MPS to inhibit laser firing. Measurements were made demonstrating that the in-vacuum mirrors designed for 355/532 nm operation may be adapted for use in the 266 nm operation phase, if materials and optical issues can be resolved. This will remove the need for a mirror change between operation phases, which requires disassembling a portion of the XHV system, and better protect the system again contamination.

Large Grain Gun: The dewar has been moved into building 905 in preparation for magnetic measurements of the dewar with shielding in place. The table for assembly of the top plate has been received. It is being readied to accept the dewar top plate so that vacuum system connections can begin. All the vacuum components have been received. The large grain cavity has been placed in the 905 transition area and RF measurements have been performed in preparation for cooldown. The cleaning of required components has also commenced in preparation for assembly.

Photocathode: The entire deposition system is completely dismantled. Each component has been delivered to the vacuum group to be cleaned and fired in the furnace. The antimony arm gate valve repair purchase order is completed and shipped. The metal cathode vacuum chamber antennae loop is being made in the central shops. EVAC flange to nipple welding for this camber is completed.

Vacuum:

1. The second FPC was installed on the gun. A visual inspection of the vacuum side showed no signs of damage.
2. The FPC conditioning cart was blanked off and purged with nitrogen. The FPC cart was picked up by AES for NAVY coupler installation.
3. The laser/ion-pump cross is fully assembled with vacuum components and optical components except laser mirror holder and mirror.
4. Detail layout of the zig-zag injection beam line is complete. Detail chamber design continues with the long lead aluminum dipole chambers
5. Vacuum system design of the laser transport system is complete. Material and parts have been provided to Central Shops for fabrication.
6. Some low particulate clean room compatible prototype bake out heater jackets have been tested with mixed results.
7. The deposition chamber has been completely dismantled and parts are in the process of being cleaned
8. Five vacuum techs have been assigned to the project for the week