Weekly Report – week of September 12th, 2011
Fabrication and Assembly of ERL hardware
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Controls: Remote communications have been established with the Danfysik power supplies using RS232 after it was established that the equipment documentation had omitted key information. The focus has shifted to establishing a working RS485 serial connection since it will be needed in order to support the full complement of supplies over the remote connection. Most of the necessary functionality has been added to the lens controller and DG645 delay generator interface programs, which should be ready for testing soon. Further details of the Machine Protection System requirements for the G5 test were established at a special meeting this week: an additional CRiO module will be needed to incorporate support for slower types of inputs while maintaining the required interlock speed of the existing set of faster inputs, the halo scraper inputs will only need to be discrete, and ideas for implementing the electronics for a laser pulse selector in conjunction with an MPS output signal were discussed. Hardware Group personnel will investigate the possibility of using an in-house VME board (V294) to act as a pulse selector. The question of whether or not an MPS input should be included for the gun cathode clamp pressure was also raised.

Cryogenics:
CryoControls: The wiring of last bit of instrumentation on the cryoplant side continues. The programming and operator screen development will resume.
Electric feeds: Remaining electric feeds to be installed. Facilities engineer is scheduling work for this.
Cryolines plant: Two field joint vacuum jackets completed, one left to be closed up.
Instrument Air: Tubing being routed to valve actuators this week.
LN2 Storage Dewar: New relief valve and burst disk installed, new instrumentation valves installed, new liquid head level gage installed. Pressure transmitter and DP-transmitter to be mounted on inside bldg wall next.
Cryogenic transfer lines to ERL cryomodules: Fabrication continues on valve boxes for cryomodules at the vendor.
Cryogenic transfer lines to ERL cryomodules: piping supports for these lines: engineering & design resumed
Cryo System: FMEA (Failure Mode Effect Analysis) is continuing.
Sullair compressor: Waiting for gas management logic to be completed before testing. Relief line from inside building to outside to be installed still.
Large grain gun test: instrumentations installation and DAQ preparation underway
SRF Gun Cryomodule interfaces: 5K intercept return mass flow meters installed on manifold. Reliefs for circuits just received and will be installed.
SRF Gun Cryomodule interfaces: Relief header system. Materials list completed.
SRF Gun Cryomodule cryo instrumentation: Vacuum cross and fitting ordered.

Gun Cryomodule/5-cell cavity: Work on cathode transporter slowed as resources were diverted into RHIC shutdown work. FPC installation work continues the first FP Coupler was attached to the cavity string.

Mezzanine: The drawing set for the under mezzanine VTF cleanroom vendor has been received and is being reviewed for approval. The cleanroom vendor, Cleanrooms West, is producing the required schedule through installation and certification dependent on drawing approval outcome.

Instrumentation: The Libera BPM electronics for the G5 transport have arrived on site. Configuration of Controls interface parameters continues. Details of the Machine Protection System specifications are being reviewed for the subsystems. The pepper pot emittance monitors beam line components with the slit heads are scheduled to be delivered in a few weeks. The image analysis software written in Visual C++ for the EBIS project pepper pot is being reviewed for use at the ERL. The 8ch prototype Beam Loss Monitor interface module has been fabricated, and will be tested in a RHIC style BLM VME chassis with test signals from the PMT based detector. Work on the cable routing and tray installation details inside the blockhouse is underway.

Laser: In vacuum mirror holder test completed. Reflectivity of in-vacuum mirror tested. Mounting brackets for optical breadboards in the transport line designed and being fabricated in the machine shop, arrangements for trades work needed for support structures are being made. Alignment plan coordinated with survey and vacuum groups. Pipe lengths for vacuum transport line determined and fabrication is underway. UV windows received from vendor.

Large Grain Gun: Rolling table has arrived for preparation of top plate for dewar. Preparations for assembly of cavity continues. Preparation for Dewar baseline magnetic measurements will be scheduled now the mu metal jacket has been installed around the outside of the dewar.

Photocathode: The cesium, potassium, and antimony valves have been removed. Each valve has been delivered to the vacuum group to be cleaned and fired in the furnace. VAT Inc. has been contacted for a quote on repairing the gate valve for the antimony arm. Thermal couple replacements are pending vacuum group support. The copper cathode vacuum chamber parts have arrived and are waiting to be picked up in 966 for flange to nipple welding.

Vacuum:

1. The gun was vented to atmosphere. The first FPC has been installed on the gun with a new thicker seal and backing ring. Prior to installation, it was checked visually on the vacuum side for any possible signs of arcing and none was found. A torque value of 190-195 inch lbs. for the FPC flange bolts will be used and flange gaps will be monitored. Planning and preparations for bakeout are underway.

2. Control boxes for two ERL dry pump stations are being wired by outside vendor.
3. Additional components for the large grain cavity test were ordered. An assembly method was discussed. Awaiting vendor quote for a horizontal HEPA unit.
4. The laser/ion-pump cross is fully assembled with vacuum components. Optical components are processed including the laser mirror holder, laser viewport and temporary beam line viewport for alignment studies. The mirror holder is getting prepped for installation in the laser/ion-pump cross once the mirror is processed and installed in the holder.
5. Detail layout of the zig-zag injection beam line is complete. Detail chamber design is underway, beginning with the long lead aluminum dipole chambers.
6. Vacuum system design of the laser transport system has been simplified and is complete. Material and parts to be provided to Central Shops for fabrication.
7. The G5 solenoid chambers have been delivered to the ERL blockhouse for installation upstream of the 5-cell cavity.
8. Some vacuum parts have been received for the G-0 intermediate e-gun commissioning configuration.
9. Cathode chamber part cleaning continues. The arm bellows are in the Central Shops to remove trapped aluminum plates in order to vacuum fire the bellows.

ERL injection line: Assessment of the laser mirror mount is completed with a consensus that it is ready for installation. The mirror mount, laser cross, and other associated hardware will be prepared for installation by the vacuum group and Brian Sheehy. The vacuum group, when man power permits will install the G5 upstream solenoid chambers.