Weekly Reporting

WBS 1.01.07 JLAB Management

Week of February 5-11, 2016

**Issues:**

Need Nb/NbTi material to be delivered to the cavity vendors. Some Nb sheet material has been delivered and we need to make sure the remainder goes in a timely fashion.

**Accomplishments this week:**

George Neil and Joe Preble attended the BESAC Meeting 11-12 February.

Monthly report submitted.

Procurement staff participated in meeting with SLAC customs consultant.

Tuner vendor visits in Germany.

Preparation of BCR and EAC files.

CTM repaired at Zanon allowing cavity tuning to happen.

**Upcoming Activities:**

Weekly Reporting

WBS 1.04.6 JLAB Cryomodules

Week of February 5-11, 2016

**Issues:** JLab pCM schedule is driven by the availability of parts including bellows, magnetic shielding, tuners and GHRP assembly. Need defined process for resolution of NCRs and resolution of NCRs for pCM GHRP. Need to ship cavity materials to one vendor. Project schedule driven by production cavity delivery schedule – need to recover float.

**Accomplishments this week:**

The following list of BCRs have been discussed with the SM and are in preparation: Cavity Parts in Circulation Cost (approved at CCB 1/28), Cavity Tuning Machine (CTM, planned for CCB 2/18) Cost, Production Tuner Schedule (planned for February) and Offsite Storage Cost (approved at CCB 1/28). Both approved BCRs still require Cobra integration, P6 update before final project sign-off.

EAC for infrastructure has been developed and is planned for presentation at CCB on 2/11. Test COBRA integration revealed some minor discrepancies that need to be resolved.

Actively working cavity production schedule issues in order to recover schedule float by accelerating vendor delivery rates. What-if schedule was developed and reviewed. Issues include material delivery from vendors, manufacturing drawing approval, parts in circulation and cavity tuning machine funding. Current vendor feedback is not consistent with accelerating schedule – discussions are on-going with both cavity vendors.

RI has received NbTi materials, tubes and Ti materials and first article production is underway.

Nb material has been released for Zanon. Nb tubes and Ti materials shipped from FNAL are on hold at DESY due to customs questions. NbTi materials shipped from JLab to Zanon are on-hold at Milan Airport awaiting information from DESY customs official. Delivery of materials needed for first articles is unknown at this time.

Zanon - passed Phase I qualification.

RI – passed Phase I qualification. Second VQ cavity (RI023) was retested and showed field emission below 10 MV/m. Low temperature tests indicated acceptable residual resistance. In addition there was evident of low field Q-rise indicating doping. Review of vendor process data during baking, doping and post-bake EP showed no adverse results. Cavity was accepted.

Manufacturing drawings for cavities from RI and Zanon have been reviewed by JLab and FNAL SOTRs. Vendors have received feedback and have agreed to use identical tolerances and dimensions (Some minor differences were allowed for XFEL production). Expect acceptance of cavity drawings by the end of the month. Still awaiting helium vessel drawings from RI.

Cavity string assembly awaits copper plated bellows - need two long bellows qualified. Evaluation of cold end FPCs is continuing to ensure that component cleanliness and internal surfaces are acceptable. Tested string cavity AES033 with results that showed quenching at 18.5 MV/m with field emission. The cavity is being high-pressure rinsed again and will be retested Thursday 2/11.

Progress on testing end cap fabrication continues. The first of two units is complete. The second unit developed a small leak during pressure testing that is being located and repaired.

GHRP parts received from FNAL. Some progress on resolution of major NCRs. Assembling Upper Cold Mass subassembly. Welded Invar rod with defined procedure. Inspection of modified 50K thermal shields from FNAL ongoing. Completed GHRP gusset welds.

Production CM lead and CM assembly lead technician plan to travel to FNAL next Monday through Wednesday to review FNAL cavity string activities and observe cold mass assembly activities.

Initial planning has started for vendor visit to production VV manufacturer – tentatively late April.

Peshehonoff, Huque and Daly along with FNAL colleagues visited production tuner component vendors, Phytron for stepper motors and PI for piezos. Overall, visit was useful to understand technical issues and overall schedule - trip report to follow.

Recovery plan for copper-plated bellows is being implemented. Two bellows received from SLAC did not pass blister test. Two more bellows received are undergoing inspection. Need update from SLAC colleagues who are conducting material investigations of stainless steel used in bellows fabrication.

K. Wilson (JLab SOTR) presented procurement strategy for production copper plated bellows. Awaiting final production bellows drawings from FNAL and statement of work from JLab SOTR. PRR date cannot be scheduled until these items are completed.

CMTF coax waveguide parts are being prepared for installation. Sections are being cut to length. Installation in mezzanine is ongoing. First section has been installed in test cave.

**QUALITY**

* Providing support in the qualification of the remaining bellows for the prototype cavity string while N. Huque and E. Daly visit the tuner vendor. The final set of bellows that was copper plated by SLAC is being pushed through the various work centers. At the moment, two new NCRs have been generated on the new bellows. The target is to get all the necessary bellows qualified and NCRs dispositioned by the end of this week, if not early next week.
* SLAC has recently provided to the partner labs a newly released Quality Assurance procedure on ‘Managing Significant Nonconformance Doc # LCLSII-1.1-QA-0563-R0.’ In addition, a template for a Dashboard was provided by SLAC for the monthly reporting of significant NCRs. The Fermilab and JLab QARs have reviewed and discussed about these documents. Additional discussion will also take place internally at JLab.
* The Documentation Team has created a sub-directory on the M:drive for permanently storing certain vendor supplied documents. This is the final storage location whereby the files are protected and backed-up regularly by the JLab Computer Center. A document describing the usages of these new folders is being created for the staff members.

**Upcoming Activities:** Vendor Visit to China April 24-29, 2016

Weekly Reporting

WBS 1.04.08 JLAB Cryoplant System

Week of February 5-11, 2016

**Issues:** None

**Accomplishments this week:**

A BCR presentation was developed to capture the vendor submitted milestones for the 4.5K cold box for CP2.

A list of possible items for de-scoping equipment to offset the 4.5K cold box HX-1 cost was developed and submitted.

The weekly design coordination meeting was held with the 4.5K cold box vendor (Air Liquide). All action items are being properly addressed in preparation of a preliminary design review for 9-10 March 2016. Engineering topics this past week included a discussion continuation with the vendor for the heat exchanger design calculations. A plan to witness a performance test of the turbine brake system is also being schedule for 17 March, shortly after the PDR.

A presentation of the 2K cold box assembly was presented for the cryogenic cam meeting. A follow up discussion is planned for next week’s meeting.

Antonio C. de Lira (SLAC controls engineer) will be joining the JLab design team to work on the LCLSII cryoplant controls beginning 15 February 2016.

JLab completed the 2K cold compressor specification changes per SLAC comment request. The specification was released for signatures.

Design work continued for the compressor room warm helium gas piping installation design. Design completion remains set for March 2016.

**Upcoming Activities:**

Antonio de Lira joining the JLab design team, 15 Feb 2016

Warm Helium Compressor CDR, 29 Feb 2016

4.5K Cold Box PDR, 9-10 March 2016

4.5K Cold Box Turbine Brake Operations Demonstration, Post PDR, 17 March 2016

Weekly Reporting

WBS 1.02.03.05.12 LLRF

Week of February 5-11, 2016

**Issues:** None

**Accomplishments this week:**

**JLAB**

* LLRF Coordination/Documentation:
  + Reviewed LLRF P6 with the JLAB team. Made some edits and sent to Sandeep.
  + JLAB Effort: Sent Sandeep JLAB’s effort between 3/16 and 3/17.
  + Working on PDR
* Resonance/Stepper Motor Board:
  + First channel has been tested with good results (operates the same as the eval board). Next step is to test it on the exact stepper motor that will be in the cryomodule.
  + Chassis design has started. Dave contacting Josh/Brian to get the piezo connector part number.
* Interlock Board/Chassis:
  + FEM: New design has been modeled in spice and parts ordered. Schematic and layout will start next week.
  + Arc-IR: Tests start next week (same circuits have been used in CEBAF).
  + Temp diode board: Board is in (same board has been used throughout JLAB for other cryo projects).
* Common Power Supply: Modified (fuse) break out board is in layout. -15 volt will be derived from +15 on the filter board in the resonance and interlock chassis (only place it is used).
* CMTF
  + Waveguide and Coax: Workers are installing the coax in the air vent.
  + Cable Tray: Ordered should be in next week.
  + Documentation: System block diagram is being updated weekly.
  + LLRF: Digital boards are back from vendor. Chassis assemble (RF & digital boards) is to begin next week.
  + SSAs: Power (480 and 110) will be complete next week.

**Upcoming Activities:**

* JLAB:
  + Continue prototype tests and assembly (resonance, interlocks, power supply)
  + Work on PDR (presentations)
  + CMTF: Continue working on documentation, installation and instrumentation.
* LLRF PDR Planned for March 3/4 at SLAC