Weekly Reporting

WBS 1.01.07 JLAB Management

Week of January 29 – February 4, 2016

**Issues:**

Need Niobium to be delivered to the cavity vendors. Sheet material may be there this week.

**Accomplishments this week:**

Hosted Hongyu, John, and Greg visit this week.

Procurement staff participated in “Duty Free Meeting.”

Progressed P6 schedules.

Prepared BCR and EAC files.

**Upcoming Activities:**

BESAC advisory meeting 10-11 February

Weekly Reporting

WBS 1.04.6 JLAB Cryomodules

Week of January 29- February 4, 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 vendors to begin first article fabrication. Project schedule driven by production cavity delivery schedule – need to recover float.

**Accomplishments this week:**

Actively working cavity production schedule issues in order to recover schedule float by accelerating vendor delivery rates. What-if schedule was developed and reviewed with SMs and Project Director. Note that initial acceleration is required to recover float along with reduction of CM production cycle times. Issues include material delivery from vendors, manufacturing drawing approval, parts in circulation and cavity tuning machine funding.

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 February) Cost, Production Tuner Schedule (planned for February) and Offsite Storage Cost (approved at CCB 1/28). Both approved BCRs required Cobra integration, P6 update and project sign-off.

Cavity string assembly awaits copper plated bellows - need two long bellows qualified. Parts are in-hand and expected complete by 4-Feb COB. Practice assembly is on-going in advance of bellows receipt. Evaluation of cold end FPCs is underway to ensure that component cleanliness and internal surfaces are acceptable. Re-test of AES033 to confirm performance after HTB disassembly planned for 4-Feb.

Progress on testing end cap fabrication continues. The first of two units is complete. The second unit is undergoing cold-shock, leak check and pressure testing.

NbTi materials, tubes and Ti materials are at RI so all materials needed for first articles are needed at vendor.

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

Vendor Qualification Cavity Status:

**Zanon -** passed Phase I qualification.

**RI -** AES023 – Reached 3 x 10^10 at 18 MV/m with no field emission. Further testing to determine quench limit and flux expulsion is planned.

RI023 – Field emission at 7.5 MV/m – test aborted. Indication of doping due to low field Q-rise. Plan to disassemble, re-rinse and re-test on Friday 5-Feb.

Manufacturing drawings for cavities from RI and Zanon have been reviewed by JLab and FNAL SOTRs. Vendors have received feedback. Expect acceptance of cavity drawings by the end of the month. Helium vessel weld joints counter-proposed by FNAL agreed by Zanon. Still awaiting helium vessel drawings from RI – expected next week.

GHRP parts received from FNAL. Some progress on resolution of major NCRs. Assembling Upper Cold Mass subassembly and welding Invar rod with defined procedure. Inspection of modified 50K thermal shields from FNAL ongoing. Need to receive welding plans and procedures from FNAL in order to complete GHRP gusset welds.

JLab certified weld inspector participated at PHPK for successful on-site inspection of vessel.

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

Performed electrical inspection on SC quad magnet and leads from FNAL. Most of the measurements match FNAL better than 1%. Current leakage measurements were out of specification, likely due to moisture, and will be remeasured. SOTR informed FNAL of the results.

Trip is scheduled next week with FNAL colleagues to visit production tuner component vendors, Phytron for stepper motors and PI for piezos.

Recovery plan for copper-plated bellows is being implemented. Two long bellows are needed for the JLab cavity string. Two long bellows expected complete (2/4). Need update from SLAC colleagues who are conducting material investigations of stainless steel used in bellows fabrication.

CMTF coax waveguide parts are being prepared for installation. Components for installation have been received. Sections are being cut to length. Installation in mezzanine is ongoing.

**QUALITY**

* Collaboration with Fermilab continues in the development of ACSs for key component procurements. Another ACS package was completed by JLab for the RF All Metal Gate Valve, a component that will be used on the cavity string assembly. The ACS was approved and a copy was sent to Mike Skonicki. The next ACS near completion is the one for the bellows and spools.
* JLab SOTR initiated an internal discussion on the serialization of the 2-phase pipe bellows. The discussion also probed the various other types of components that go into a cryomodule. Fermilab QA will be contacted to exchange ideas.
* A meeting took place at JLab on the topic of temporary file transfer location (i.e. Drop-Box) for bringing in what could sometimes be a large amount of electronic vendor documents. One option is to looking into having the vendors establish and provide this ‘Drop-Box’ service to JLab.

**Upcoming Activities:** Vendor Visit to Germany Feb 7-12, 2016

Weekly Reporting

WBS 1.04.08 JLAB Cryoplant System

Week of January 29 – February 4, 2016

**Issues:** None

**Accomplishments this week:**

The major warm helium compressor equipment consisting of heat exchangers, compressor bodies, motors, and frames have been placed on order by the assembly vendor. Billing was submitted and approved thus eliminating a schedule variance associated with late ordering in January 2016.

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 preliminary presentation by 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 14 March, shortly after the PDR.

A BCR was presented and approved for using the 2 core heat exchanger design for the 4.5K cold box. The vendor has incorporated the 2 core design into the exchanger thermal analysis for LCLSII.

Antonio C. de Lira (SLAC controls engineer) visited JLab Jan 11-15th as part of a plan for his relocation to JLab 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 signature but has been returned with new SLAC comments for revision. A meeting was held this past week to go over the comments which were resolved and the document is currently being revised for re-release and sign off.

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

**Upcoming Activities:**

4.5K Cold Box Turbine Brake Operations Demonstration, Post PDR, 14 March 2016

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

Weekly Reporting

WBS 1.02.03.05.12 LLRF

Week of January 29 – February 4, 2016

**Issues:** None

**Accomplishments this week:**

**JLAB**

* LLRF Coordination/Documentation:
  + Dave put together a schedule for his work and sent it out for review.
  + Reviewing LLRF P6
  + Working on PDR
* Resonance/Stepper Motor Board: Testing starts next week
* Interlock Board/Chassis: Onish Kumar and Rama had a phone conversation with Peter Prieto (FNAL) concerning the FEM electronics. Using newer op-amps will simplify the design.
* Common Power Supply: Dave is testing the voltage monitor this week. All supplies have been purchased.
* CMTF
  + Waveguide and Coax: Workers have begun installing the coax in the air vent.
  + Cable Tray drawings have been updated. Tray should be ordered this week.
  + Documentation: System block diagram is being updated weekly.
  + LLRF: Digital boards went back to assembly house for repair.
  + SSAs: The network connection for the SSAs is ready.

**Upcoming Activities:**

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