**LCLS-II OCTOBER PROJECT STATUS REPORT**

**DATE:** November 2, 2015

**LOCATION OF PROJECT:** Jefferson Lab

**SENIOR TEAM LEAD:** Joe Preble

**MONTHLY PROGRESS**

Summary

Overall progress on the JLab scope for LCLS II is progressing well. JLab has participated in numerous reviews and workshops for Cryo Plant, Cryomodule, Controls, and integrated systems. JLab continues to answer comments and recommendations from the reviews. JLab continues to support the preparations for the CD 2/3 review with appropriate cost and schedule inputs. JLab is ready for CD2/3.

Preparations for the assembly of the Prototype Cryomodule (pCM) are complete with all required tooling in place. The pCM cavity string assembly is delayed and waiting for the delivery of acceptable copper plated bellows and spool pieces (see cryomodule report for details). All other components are qualified and waiting for assembly. Production procurement activities for LLP are progressing. Purchase Requisitions for several components are in place and advancing well.

The Cryo Plant LLPs are progressing with major procurements placed and kick-off meetings completed. The 4.5 K Cold Box and the Warm Compressor contracts are progressing well. Regular progress meetings have been established and the working relationships with vendors are very good. Specifications and design work continues with the inclusion of SLAC personnel in the JLab cryogenic group and project teams.

Management

New procurement staff member hired and started work.

Prepared and participated in FAC and Director’s Reviews. Prepared for ICER and OPA Review.

Finished September progress updates, and submitted Cryomodule Variance.

Participated in Cavity and CM Testing Workshop October 29-30, 2015, at FNAL.

Update of BCR P6 schedule with warm compressor contract information Report and proper linking of CP#2 commissioning.

Received the September Earned Value reports and a single variance report which we are working.

APPs were updated and forwarded to SLAC for sign-off.

Procurements status:

1. Received the DOE signoff on 4.5K Coldbox package. Procurement Clearance Request was sent to SLAC. Vendor signed the CP#1 contract. Vendor kick-off meeting on October 8-9 in Columbus, Ohio.
2. Warm Helium Compressor Bid Package best value evaluation was completed. We held the Cryoplant warm compressor procurement recommendation briefing with SLAC project management and DOE. Warm compressor award approved by DOE. Award notification was sent to vendor. Participated in vendor kick-off meeting 15 October, 2015.
3. Received approval to release the production Gate Valves and HOM and field probe feedthrough procurements; therefore, submitted PRs for production HOM and Field Probe FTs, Cavities and Gate Valves.
4. Plating contract placed for the cavity string beamline components. Final pCM copper plated beamline spool pieces and bellows were shipped by vendor and received at JLab. Problems with plating adherence required rework of components by the vendor. Expect RFI input for production copper plated bellows and beamline spool pieces in 1-2 weeks.
5. RFI issued for closed chemistry tool. PRR for HEP held September 30, 2015.

ESH - QA

Reviewed and approved the Quality Assurance requirements in the Technical Specification for the 2K cold compressor.

Reviewed the technical specification and supported the Procurement Readiness Review for a new Horizontal Electropolish (HEP) machine that will be used by JLab SRF for processing LCLS-II cavities.

We had various discussions on the plan, structure, and level of reporting of QA/QC documents to SLAC. More work needs to be done to solidify a plan or policy going forward.

Provided QA support with the plating issue on the cavity string bellows and spool pieces. Inspected and reviewed the defective areas of the various non-conformances. Participated in vendor conference call and planning a trip to visit Epner the plating vendor in two weeks to conduct an onsite audit.

Work continued with the ACS documents. The revised and signed ACS document for the dressed cavity was sent to Mike Skonicki. The ACS development continued for the bellows and spool pieces, pending processing of the new batch of parts. The draft ACS for the all metal gate valve will likely change pending a decision on test and inspection of the gate valves while inside the cleanroom. The draft ACS for the HOMFTs awaits a response from Fermilab. The ACSs for the Tuner and HOM Absorbers are under development at JLab.

Cryomodules

Received approval to proceed with production component orders for gate valves, HOM & FP feedthroughs. Submitted PRs for production HOM & FP feedthroughs, cavities (Phase II & III) and gate valves. Worked with Procurement on updated APPs.

Participated in the FAC Review on 13-15 and the Director’s Review on 20-22 Oct 2015 at SLAC.

Participated in Cavity and CM Testing Workshop October 29-30, 2015, at FNAL.

Prepared back-up documentation for the upcoming ICER in Nov 2015, including justifications for pre-2014 estimates.

Attended Cavity and CM Testing workshop at FNAL.

HTB is disassembled. Cavity AES033 delivered to the cleanroom. All cavities, cold couplers and tooling needed for string assembly are in the cleanroom.

Completed installation of the Cantilever fixture rails.

Spreader bar and CM lifting fixture was load tested. Received vertical supports for second Phase II assembly station.

Progress on testing end cap fabrication continued. The bayonets were welded. A second fixture was made to hold the second bayonet box assembly. End cap vacuum enclosure was ordered. MLI for shields was fabricated and piping sub-assemblies were welded.

Inspection report completed for the 300 mm pipe needed for the GHRP sub-assembly. Non-compliances were reviewed with FNAL SOTR. A basic assembly procedure was developed. The BOM provided by FNAL was reviewed.

Five bellows were received, cleaned, optically inspected, cycled to 400 deg C in the furnace and re-inspected optically. Adhesion was generally very good, and almost no staining was evident – a significant improvement in quality. However, during evaluation pin holes in the stainless steel were found. The vendor was instructed to stop rework. An order for 18 long bellows was placed on Tuesday. Recovery plan for copper-plated bellows is being implemented. Flanges were recovered from four bellows and sent to the bellows manufacturer to expedite a small shipment. Four long bellows are expected to arrive on 6-NOV at JLab; balance of 14 expected 12-NOV. Long spools will be returned to vendor for rework. Four short bellows ordered. Plating vendor process will be reviewed by SLAC plating expert prior to continuing. Next round of plating at vendor scheduled for week beginning 16-NOV.

BPM and quad spool are cleaned and being assembled in the clean room. A leak between the valve and spool piece was found. The parts were disassembled and the cause is being investigated.

AES036 is being re-tested opportunistically – had exhibited some field emission during previous vertical tests.

SC Magnet SOTR visited FNAL to witness magnet testing.

Cryoplant

Continued to address the recommendations of the Cryogenic System Final Design Review.

Attended FAC Review on Oct 13-15 and presented talk on Double-Cryoplant Design. Presented system status presentation for 1.04.08 at the Director’s Review 20-22 Oct 2015.

Preparations for the ICER 17-19 Nov 2015 continued.

A 50% load 4.5K cold box design study was conducted with good results.

The 2K cold compressors specification (JLab 79222-S001) was updated with review comments and released for SLAC signature approvals.

An engineering kick-off meeting was conducted with the 4.5k cold box vendor, Air Liquide, on October 8-9, 2015.

The warm helium compressors were awarded to PHPK, Columbus, OH. An engineering kickoff meeting is scheduled for Oct 15th.

A design coordination meeting was held with the 4.5K cold box vendor (Air Liquide). Topics included the design of the turbine variable brake design, evaluation report of 50% load effect on the 4.5K cold box, and tasks leading to the PDR. The performance of the 4.5K cold box at 50% load was found satisfactory when combined with the turbine variable brake control system.

Developed the backup material for the warm helium compressor BCR.

The procurement specification for the cryogenic plant warm helium gas storage vessels was completed and is being circulated for approval.

Design work continued for the compressor room warm helium gas piping installation design. Design completion set for December 2015.

John Pucci and Viswanath Ravindranath are actively working within JLab cryogenic group for the LCLS-II Project. John is actively engaged in operations of large JLab 2K refrigeration systems and has seen 2K cold compressor pump downs. Vishy has completed comparing his systemic modeling with the JLab CHL-2 with excellent results. His work now centers on modeling of the vendor 4.5K cold box and is attending the vendor engineering kick off meeting.

Weekly meetings with SLAC Infrastructure continued for planning the new larger cryoplant for the first and second cryogenic plant. A 90% design completion review was held at SLAC, 28 Sept 2015. Any possible remaining issues are to be discussed during the meeting of Oct 9th.

Cryo-distribution:

No effort at Jefferson Lab.

LLRF:

Prepared and presented the LLRF presentations for the FAC Review on October 13-15, 2015 and Director’s CD 2/3 Review/Cost and Schedule October 20-22, 2015 at SLAC.

Attended the LLRF team meeting at FNAL. Participated in the Resonance control workshop. Drafted a microphonics test document for the LCLS-II CM.

Hardware Prototyping: Stepper board arrived and is being assembled. Interlock boards are still in CAD. ARC/IR boards are being manufactured. Electrometer and Vac are in CAD.

CMTF: The CPC amplifier was sent back to the manufacture for repair. Working on a plan for the coax and waveguide installation.

Common Power Supply: Break-out backplane arrived and is being assembled.