**LCLS-II SEPTEMBER PROJECT STATUS REPORT**

**DATE:** October 2, 2015

**LOCATION OF PROJECT:** Jefferson Lab

**SENIOR TEAM LEAD:** Joe Preble

**MONTHLY PROGRESS**

Summary

JLab continues to support the project with documentation, design reviews, new baseline, and all associated project controls work. JLab is making good progress with the Cryo Plant (CP), Cryomodule (CM), and Low Level RF (LLRF) efforts. The two largest contracts for the CP have been awarded, SLAC staff has been integrated into the JLab design and operations teams, and progress is ongoing with the remainder of the contracts. The CM pCM effort is progressing with all required cavities being qualified and facility modifications progressing in advance of when required for use. CM production procurements are progressing well. The cavity fabrication schedule has been shortened and negotiations with the project and vendors were completed. Request for the release of several other production procurements have been made. No cost increases is required to keep the CM schedule IAW project objectives. The LLRF team continues to contribute to the collaboration with project documentation and hardware designs.

Management

Two SLAC engineers are onsite and working at JLab Cryogenics department.

Mike Skonicki visited JLab on September 15 to follow-up on some of the items from the Cross Walk Exercise.

Participated in the Cryogenics System Final Design Review (FDR) at SLAC on September 28-30, 2015.

Reviewed and verified the split activities in P6 for the new baseline effort are IAW project guidance. Updated the new baseline with August progress.

The processing cabinet final specification is planned for next week and a RFP the following week.

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. Vendor kick off meeting has been scheduled for 15 October, 2015
3. Submitted request to the project to release the production Gate Valves and HOM and field probe feedthrough procurements.
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.

JLAB staff attended SRF2015 (13 people; some associated with LCLS-II).

Commented and participated in the closeout of Cryogenic systems report.

ESH - QA

Mike Skonicki visited JLab on Sep 15th to follow up on items from the previous “Cross-walk” exercise. Mike explained the various recent changes to the administrative staff at SLAC for LCLSII, particularly those for QA and document control processes.

ACS documents for the HOMFTs, Gate Valves, and Cavity String Bellows & Spool were sent to FNAL for comments.

Reviewed the QA requirements on the draft technical specifications for the various CryoPlant subsystem assemblies (i.e. ambient air heat exchanger, 10K liter He dewar, purifier compressor, etc.)

Cryomodules

The first VQ cavity (AES023) arrived at RI, along with one set of testing hardware.

The second VQ cavity (AES025) is in transit to Zanon, along with one set of testing hardware. The first VQ cavity was held in Italian customs for more than three weeks. Issues with customs documents have been resolved.

The third VQ cavity (AES014) has completed baseline measurements and is being prepared for shipment to Zanon. The fourth VQ cavity (RI023) will be baseline tested this coming week.

JLab has eight cavities on-site - AES029, 030, 031, 032, 033, 034, 035 and 036. Considering corrections for testing hardware, eight cavities are qualified for string assembly.

Two cold couplers received from Cornell show signs of oxidation on the inner conductor and are under evaluation for use in the prototype string. This issue is being resolved with SLAC. Cold couplers are being re-rinsed at JLab in order to reduce internal particulates. Final two cold couplers were received from SLAC, and are undergoing receipt inspection.

Completed HTB testing of AES033; limited to ~13 MV/m due to available rf power. PSS system check-out was completed. Testing of SSA showed limitation in maximum power of only 2.4 kW compared with 3.9 kW advertised. Gradient of 12.5 MV/m has been achieved with Q\_loaded of 2 x 10^7. No field emission observed. Q0 measured ~2x10^10 at 12 MV/m.

SSA connections are completed. Hook up of electrical service and integrating PSS connections is complete.

Completed rough installation of cantilever fixture and installation of the cold mass assembly fixture (four-poster) to be used for prototype CM assembly.

Prepared BCR material for proposed change to cavity parts in circulation.

Completed receipt inspection on cu-plated bellows assemblies needed for cavity string assembly. Bellows have passed leak checks but did not pass blister tests. Copper blisters in convulsions cause for sending parts back to vendor. NCRs are in place and coordinated activities with FNAL who have received similar parts. Discrepant bellows were returned to plating vendor for rework. The modified plating process was reviewed and found generally acceptable by the SLAC expert (A. Farvid) during a telecom with the vendor. A back-up plan was developed to use SLAC plating facilities in case the vendor continues to have quality issues.

Continuing assembly activities for CM Bayonet Box needed for CM testing. Received thermal shields sub-assemblies, top plates and bayonet parts. Completed welding female bayonet sub-assemblies, include leak checking. Spreader bar and CM lifting fixture were sent out for load testing.

Shipped 8 bpm feedthroughs to FNAL.

Participated in CM FDR close-out meetings with FNAL and SLAC.

Cryoplant

Diane Fairley and Kevin Morrison from SLAC visited JLab Tuesday/Wednesday, Sept 1-2nd to coordinate controls for the cryoplant. Discussions included a tour of the JLab cryogenic plants, interface signals, control display screens, and actively monitoring the control of the plants.

Participated in the Integrated Cryogenics System Final Design Review held at SLAC Sept 28-30th.

A draft version of the 2K cold compressors (JLab 79222-S001) and helium gas storage vessels (JLab 79729-S001) procurement specifications were released for comment. Comments were received, documented, and are in the process of being incorporated into the procurement specification for final release.

A warm helium compressor procurement presentation was made to SLAC and DOE. DOE approved the award recommendation on September 22nd and were awarded to PHPK in Columbus, Ohio.

John Pucci and Viswanath Ravindranath (engineers from SLAC), have relocated to Virginia and have joined the JLab cryogenic group for the LCLS-II Project. John is actively engaged in operations of large JLab 2K refrigeration systems. 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 mode modeling.

Weekly meetings with SLAC Infrastructure continued for planning the new larger cryoplant building for the first and second cryogenic plant. Topics included electrical power and cooling water, equipment layout, work clearances, and the layout sizing of the SLAC LN2 dewars.

Cryo-distribution

No effort at Jefferson Lab.

LLRF

Reviewing cryomodule cabling. The LLRF FRS is complete.

Stepper Motor Board: Stepper motor controller board was sent for the review and was sent for manufacture.

Interlock Board: Work continues on interlocks schematic and pcb.

CMTF: SSA was powered up to 2.4 kW with no issues.

Common Power Supply: Working on rear connector and filter panel design for the chassis.

Power supply chassis: Break out backplane is out for manufacture.