**LCLS-II JULY PROJECT STATUS REPORT**

**DATE:** August 3, 2015

**LOCATION OF PROJECT:** Jefferson Lab

**SENIOR TEAM LEAD:** Joe Preble for George Neil

**MONTHLY PROGRESS**

Summary

JLab has finalized all required planning updates to support the required July deadline for the update of the project plan. This included BCRs for cost reduction, new scope, change of scope, and schedule.

Long Lead Procurement activities are ongoing. A very positive start of the SRF cavity contact and submittal of the 4K cold box PAR are the highlights. The warm compressor technical evaluation has been completed and the best value determination is advancing.

The required cryomodule production infrastructure work has progressed well and is on track to be ready for use when needed.

The prototype cryomodule work is progressing with a focus on the SRF cavities. All eight required cavities have been qualified as “bare” cavities and have had helium vessels installed and are being qualified as “dressed” cavities.

JLab has participated in various cryomodule technical reviews, document updates including the FDR, and development joint QA documentation with FNAL.

Management

Submitted and received BCR approval for both CP#1 and CP#2.

Jefferson Lab personnel (including Procurement), FNAL, and SLAC visited the cavity vendors, Zannon and RI.

Developing the FY16 JLab internal work plan based on the P6 plan.

Reviewed scheduled progress with the SLAC project office.

Completed variance reports for Cryomodule WBS elements as required.

Prepared and distributed a “cavity status report.”

Participated in the SLAC Earned Value/Basis of Estimate workshop on July 23.

Procurements status:

1. Cavity procurement went through the DOE review process and was awarded.
2. Presented the recommendation of 4.5K Cold Box to DOE and developing the PAR to be sent to DOE on Monday, 6 July.
3. Warm Helium Compressor Bid Package best value evaluation was completed.
4. Gate Valves for Prototype with options for Production – approved.
5. Plating contract placed for the cavity string beamline components.

Making preparations for hosting the Cryogenic systems modeling meeting on 11-13 August 2015.

ESH - QA

Continued to review the draft LCLS-II Production Multi-lab NCR Communication flow chart. Received good feedback from JLab procurement staff and SRF leadership in the review of the flow chart. Received preliminary feedback from FNAL on the flow chart. Awaiting FNAL additional information on depiction and description of their NCR process flow.

We are continuing with the cross-checks and status update with FNAL on the ACS tracker and associated documents. FNAL will provide JLab with any final comments from their side regarding the ACS forms for the dressed cavity and the all metal gate valve. Awaiting final feedback from FNAL on the dressed cavity ACS documents.

Provided support to the 100% inspection of all of the Ni55Ti raw materials (rings & rods) that JLab had received. These are the pieces that FNAL had procured, JLab to inspect and then to be shipped to the cavity vendor for fabrication into the cavity to helium vessel transitional parts.

Cryomodules

JLab needs to have four vendor qualifications and two dummy load cavities made available for shipment to cavity vendors. Four vendor qualification cavities have been made available as well as two dummy cavities.

Work continued on baseline qualification of two of four cavities for VQ cavities required. The third VQ cavity (RI023) was identified and is being prepared for baseline testing. The fourth VQ cavity (AES014) was received from FNAL this week, and is being prepared for baseline testing. AES023 has been baselined. AES025 was vertically tested, did not pass and will be reprocessed.

Completed inspection of NbTi material.

AES030, AES032, AES033, AES034, AES035, and AES036 were received from FNAL. The final cavity for string, AES029, was HV welded and jacketed at FNAL and is in transit to JLab from FNAL.

Continued with preparations for HTB testing of AES033 in mid-August. Cold FPC was installed July 23 and the assembly was under vacuum and leak tight July 24. Inner magnetic shielding is being installed. Received warm couple parts and heat station clamps from FNAL.

ESH&Q and production staff visited vendor that is reworking CM assembly tooling due to welding and quality issues. Hardware is planned for shipment to JLab mid-August.

Zanon (EZ) visited JLab to witness doping and EP processes.

HOM and Field Probe (FP), and BPM cold feedthroughs have completed receiving inspection, and are undergoing leak checking and thermal cycling, initial batch complete and sent to FNAL.

The fixed end of the cantilever fixture was received and inspected at JLab. It is currently being installed. The moveable end of the cantilever was returned to the vendor for re-work. It is expected to return to JLab in mid-August.

JLab SRF and Procurement staff (F. Marhauser, E. Daly, J. Fitzpatrick) participated in kick-off meetings at both cavity vendors along with colleagues from FNAL (A. Grasselino, M. Merio) and SLAC (B. Miller, M. Ross). Main topics were vendor qualification plans and schedule, XFEL vs FNAL cavity design features and discussion of first article and production schedule acceleration.

Zannon and RI, the cavity vendors, each have dummy cavities to be used for furnace evaluation.

Plans for installation of CM tooling continued including procurement and layout of anchors.

Cavity string bellows and spool pieces are being inspected and NCRs are being resolved. Order was placed for copper plating of these parts. SOTR visited vendor that will copper plate cavity string bellows and spool pieces. Remaining parts were inspected and NCRs were resolved.

Hardware for CM end caps (bayonets, piping, etc.) required for testing was received.

H. Park, N. Huque and E. Daly participated in the Interconnect FDR conducted by FNAL.

Cryoplant

The technical evaluation documentation, best value determination and source selection recommendation for the 4.5K cold box was completed. The recommendation documentation was forwarded to DOE on Monday, July 6th. The warm helium compressors technical evaluation and recommendation was delivered to the source selection officer.

Additional JLab coordination meetings were held to plan manpower and equipment costing to support planned BCRs for the first and second cryogenic plant. The BCR part 2 for the first cryogenic plant was developed to update the scope for the transfer lines consistent with two cryo plant operations. This was presented in the 9 July CCB and was approved. The addition of a second cryogenic plant to the baseline BCR presentation was presented in the Monday, July 20 CCB and was approved.

With the approval of the 2nd cryogenic plant addition BCR, engineering and design work began to modify the system P&IDs for two plants.

3-D modeling of the warm helium compressor room piping was initiated.

Final reviews for the oil removal vessel, He dewar, 4160V MCC, gaseous helium storage tanks, charcoal vessel, and helium recovery specification underway.

Weekly meetings with SLAC Infrastructure continued for planning the new larger cryoplant building for the first and second cryogenic plant. JLab hosted a visit by SLAC infrastructure and HDR, Inc. to cover key cryogenic plant building items. Discussion included ventilation, equipment layout, service monitoring room layout, mechanical/electrical, cooling water and project scheduled requirements. Topics also included final equipment clearances and requirements for the LN2 transfer line and gaseous helium storage tank process lines across the north road of the Cryoplant building.

Cryo-distribution

No effort at Jefferson Lab.

LLRF

The LLRF team assembled documentation and presentations for the High Performance Electronics CDR which was held on July 8. Sent our responses for the CDR close out report to Hamid.

LLRF FRS is out for signatures.

Tuner (JLAB): Stepper motor board schematic is done. Working on the layout which should be finished early August. Interlocks board is being worked. Hoping to send schematic to board house mid-August.

Common Power Supply (JLAB): The first iteration of the common power supply was completed. Individual power supplies and chassis have been chosen and costed by JLab.

SSA (JLAB): Visited CPC and reviewed the 3.8 kW amplifier.