22 October 2019

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To: LBNF PB LCW Preliminary Design Review Panel

From: K. Williams, L4 Technical Lead for PB LCW Systems

CC: T. Kobilarcik, P. Schlabach, S. Tariq, J. Lewis

Re: Charge to Review Panel

With the Primary Beam Enclosure, and the lattice for the beamline, both considered well understood and mature in design, a design for the LCW Systems, including both the LCW system and magnet Buswork, has gone through a Preliminary Design phase. In order to ensure that the level of preliminary design is sufficient to move to final design, this panel is asked to perform a Preliminary Design Review. The review is currently scheduled for October 31, 2019.

The specific charge questions are:

1. Does the preliminary design meet the requirements of the beamline components?
2. Is the design maturity presented for the LCW and Buswork systems at a level appropriate for the Preliminary Design Phase, as guided by Dune DocDB # 1069 LBNF Review Plan?
    a. Based on acceptable progress for Preliminary Design as 50 to 70%, with 100% equal to "ready for procurement"
    b. Final Design will be drawing-intensive in comparison to the first two phases of design
3. Have all potential design, manufacturing, and installation risks and challenges been identified within the Primary Beamline components, and has it been adequately planned to address these during the final design?
4. Are difficult design features and possible prototyping issues identified?
5. Is the level of integration with other LBNF beamline entities appropriate for this stage of the work? I.E. Are interfaces and collaborative design inputs being managed appropriately?
6. A cursory check of the Cost and Schedule are desired:
    a. To reflect & verify known changes, such as where only 2 main pumps and VFD's are required where 3 were originally listed
    b. To question sufficiency of design resources in the light of known complexity of certain situations, such as hard bus to magnet connections, buswork shielding in the service building proper, or congested areas of the enclosure
    c. To review estimated design effort, as preliminary design effort to date has suggested that engineering and drafting resources may be under-estimated

In addition to answering the charge questions, the panel is welcome to comment and offer recommendations on other aspects of the LCW and Buswork Preliminary Design.

It is requested that the panel chairperson collect the findings, comments, and recommendations of the panel, and summarize them along with the answers to the charge questions in a brief written report. This report is hopefully available approximately 1 week after the review.

Review Panel Members:

1. Chris Ader, Chair, Senior Engineer, AD/ENG/MSD
2. Dave Capista, Engineering Physicist Mgr, AD/ACCEL_SYS/MID
3. Jim Kilmer, Engineering Physicist Mgr, PPD/MED,PPD/DDOD/EAI