

Primary Beamline Low Conductivity Water (LCW) Preliminary Design Review

Introduction

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LCW System - Preliminary Design Review

Introductions

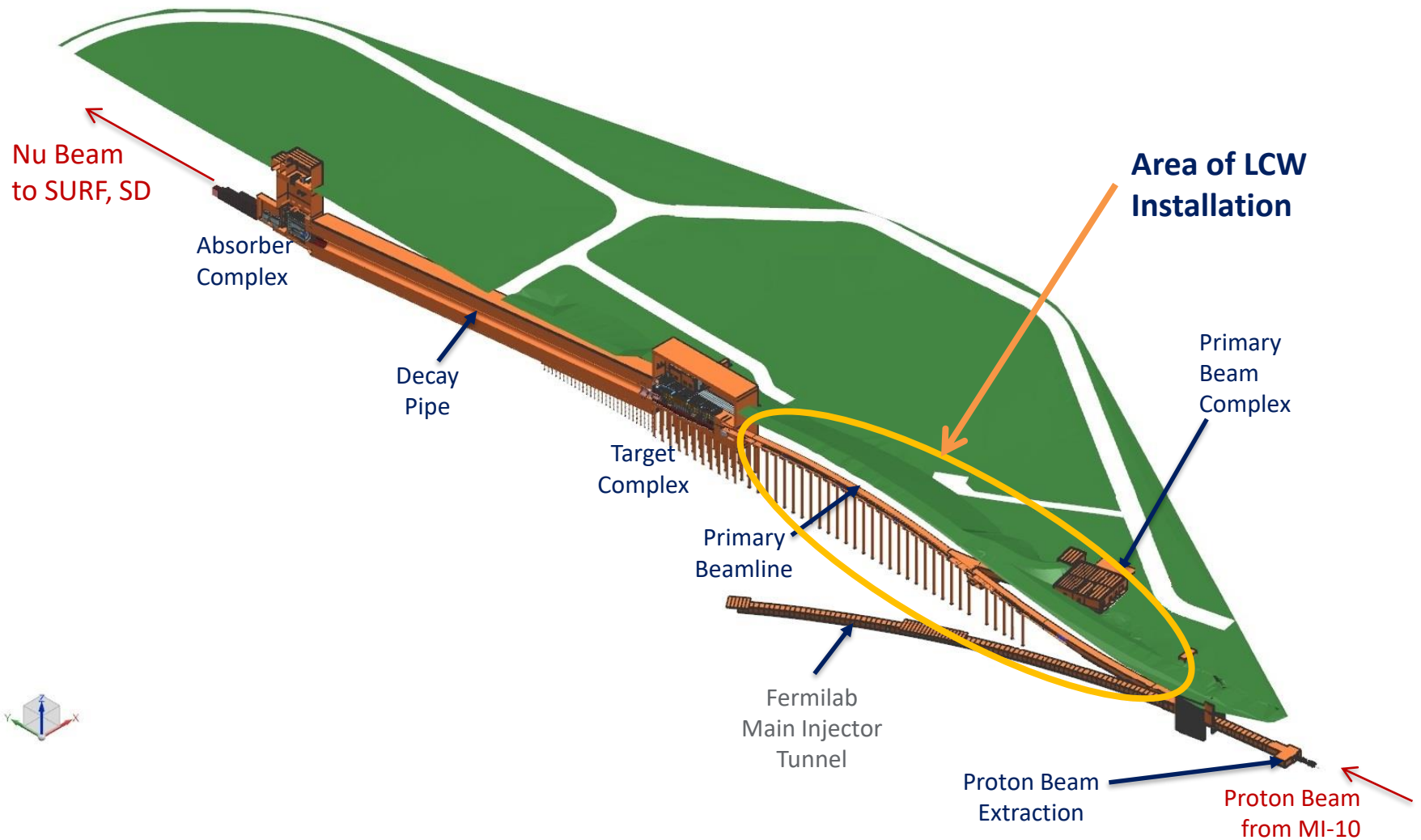
- Many thanks to the Review Committee:
 - Chris Ader, chair
 - Senior Engineer, AD/ENG/MSD
 - Dave Capista
 - Engineering Physicist Mgr, AD/ACCEL_SYS/MID
 - Jim Kilmer
 - Engineering Physicist Mgr, PPD/MED,PPD/DDOD/EAI
- Thanks also to numerous contributors for drawings, technical info, guidance, etc. (many unnamed)
- I'd also like to welcome all those involved with the LBNF project who took their time to participate today

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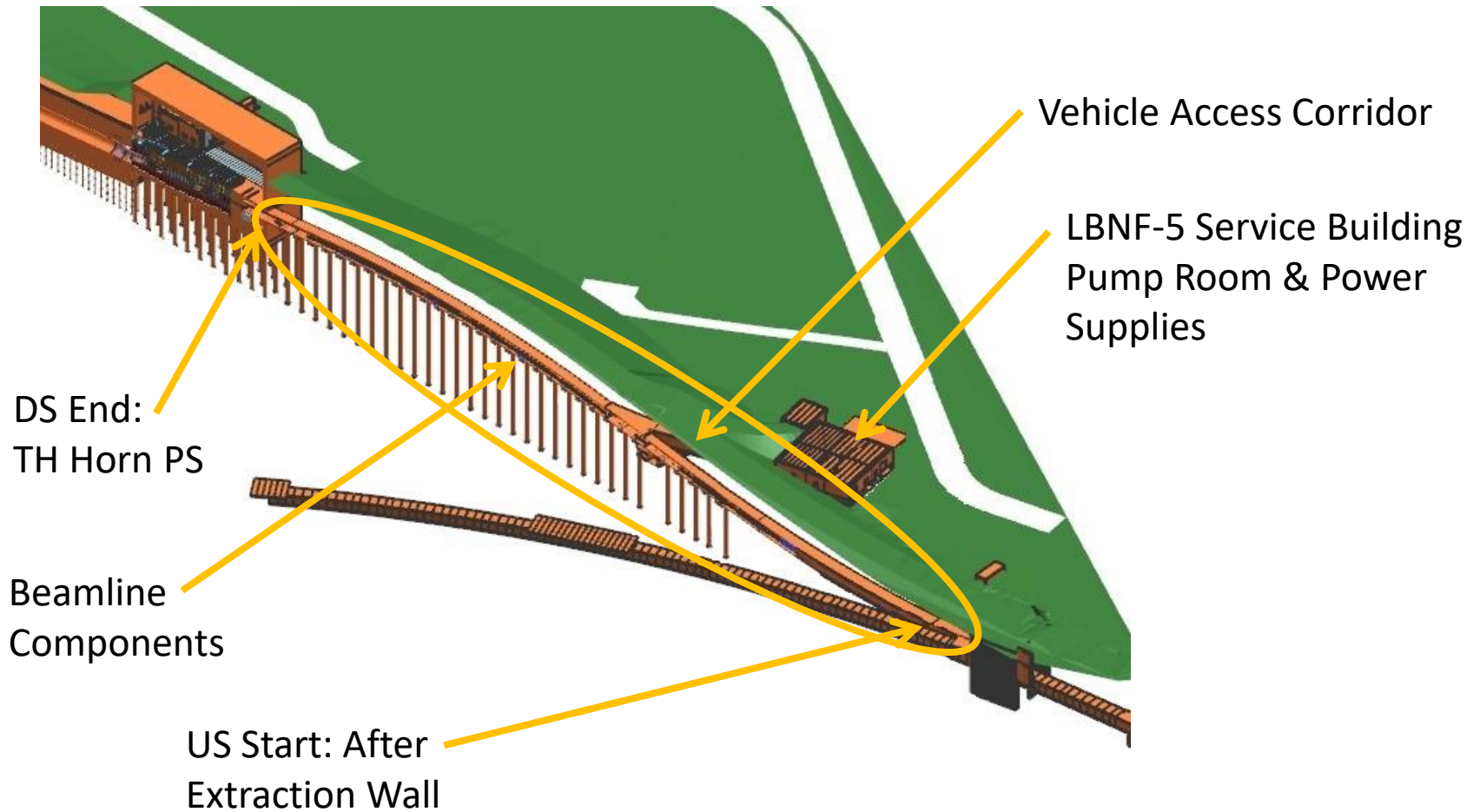
Agenda

- Introduction (Karl Williams)
- LCW Technical Design Aspects (Noah Curfman)
- Print Package Review & Major Electrical Requirements (Noah Curfman)
- (break)
- BOE Adjustments and Review Summary (Noah Curfman)
- Review Summary (Karl Williams)
- Question / Discussion Period

ISO Section View of Near Site – MI-10 to LBNF-30 Absorber Complex



Installation Area of PB LCW System and Buswork Overview – Primary Beamline Enclosure and LBNF-5



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Scope of Review

Review Emphasis:

The primary purpose of this review is technical in nature, to ensure the project is sufficiently mature to begin Final Design

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Review Committee Charge

- Is the design maturity presented for the LCW and Buswork systems at a level appropriate for the Preliminary Design Phase?
 - Based on acceptable progress as 50-60% of preliminary design, where 0% is beginning of preliminary design and 100% means ready for final design
 - Understanding that Final Design will be drawing and effort intensive
- Have all potential design, manufacturing, and installation risks and challenges been identified by the Primary Beamline components, and has it been adequately planned to address these during the final design?
- Are difficult design features and possible prototyping issues identified?

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Review Committee Charge (cont.)

- 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?
- 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

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Review Committee Charge

- 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.
- The panel chairperson is kindly asked to gather the findings, comments, and recommendations of the panel and summarize them along with the answers to the charge questions in a brief written report due approximately 1 week after the review.

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General Design Points

- Primary Beamline lattice is well established
- Components needing cooling are currently used throughout the existing beamlines
- Cooling is provided by a closed-loop Low Conductivity Water (LCW) System
- LCW system design will follow closely with proven systems already in use, I.E., MI and NuMI
- Details of the installation throughout the change in elevation grades in the PBE will be similar to those in NuMI
- Also includes the installation of solid copper buswork through the same areas

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Preliminary Design Package

- Design work at this stage is building off the Conceptual Design work as recorded over the past 10 years
- The Preliminary Design package for each system includes the following:
 - System description & specifications
 - P&ID's and AFT Fathom system models
 - Preliminary Design report &/or draft engineering note
 - BOM for major components, instrumentation, valves, controls
 - Detailed Basis of Estimate (BOE)
 - Integrated work with the Conventional Facilities (CF) and component stakeholders have tentative layouts and piping runs

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