Primary Beamline Radio-Activated Water (RAW) Peliminary Design Review

Introduction & Scope

Karlton E. Williams, II

February 19 & 20, 2020

RAW Systems - Preliminary Design Review
Agenda

Links:

Review Event Indico Page:
(Agenda and Presentations)
https://indico.fnal.gov/event/23229/

Dune DocDB Preliminary Design Files:
(Preliminary Design Files)
https://docs.dunescience.org/cgi-bin/private/DocumentDatabase
Document # 17870, 17873, 17876, 17879

RAW Systems - Preliminary Design Review
Agenda

Wednesday, January 19, 2020
8 AM to 5 PM, WH1E

- Introduction (Karl Williams)
- Raw Systems General (Karl Williams)
- Target Hall General (Karl Williams)
- Target Hall RAW Systems
  - Target RAW (Raina Wang)
  - Horns A, B, C RAW (Karl Williams)
  - Shielding Panel RAW (Raina Wang)
  - TH RAW Exchange (Raina Wang)
  - TH Intermediate (Dave Hixson)
  - H+OH System (Dez Deshpande, Karl Williams)

RAW Systems - Preliminary Design Review
Agenda (cont.)

Thursday, January 20, 2020
8 AM to 1 PM, WH2NE

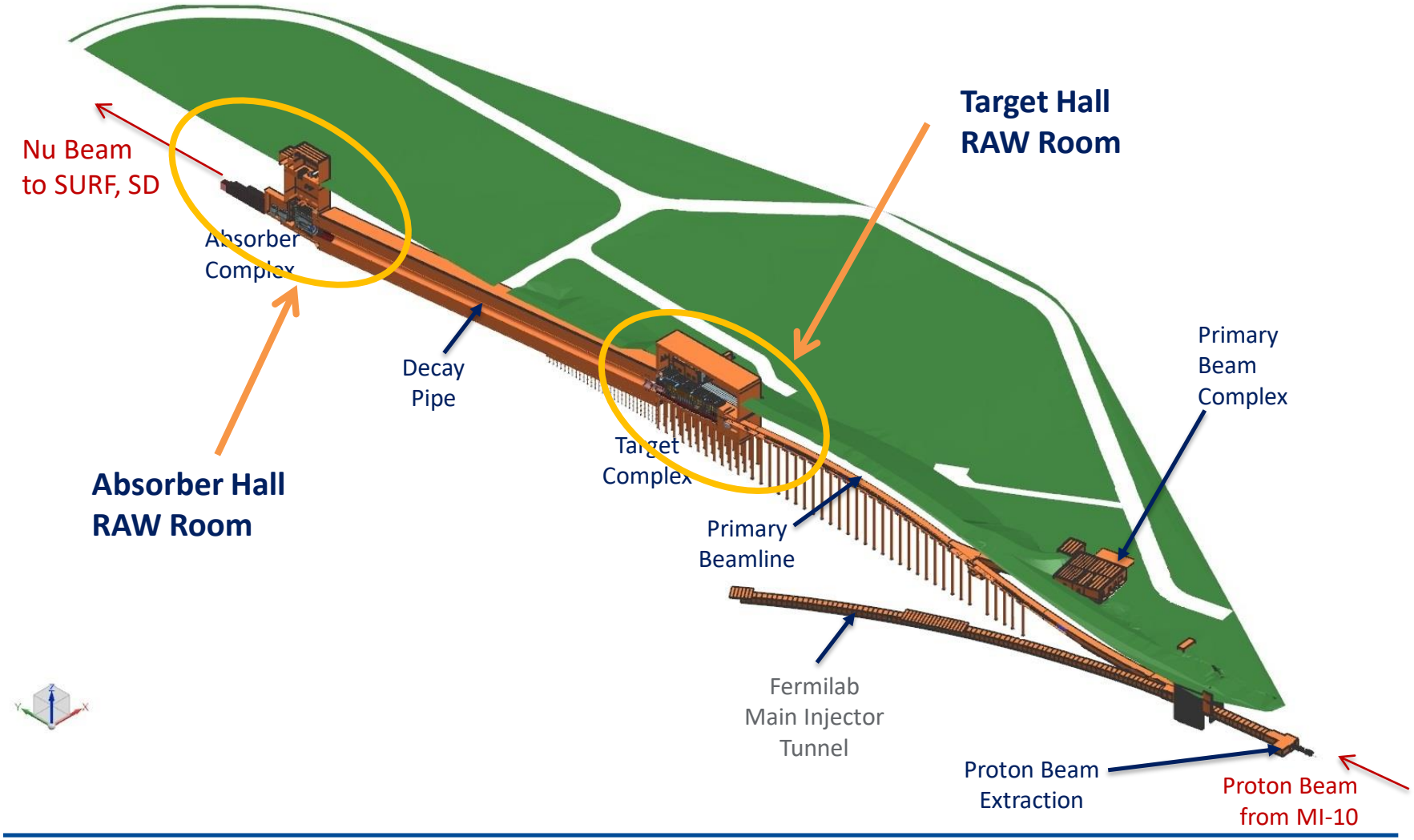
- Absorber Hall General (Karl Williams)
- Absorber Hall RAW Systems
  - Absorber RAW (Dez Deshpande)
  - AH RAW Exchange (Dave Hixson)
  - AH Intermediate (Dave Hixson)
- TH & AH Controls (Paul Kasley)
- Q&A / Closing Remarks (Karl Williams)

RAW Systems - Preliminary Design Review
Introductions

- Many thanks to the Review Committee:
  - Chris Ader, chair
    - Senior Engineer, AD/ENG/MSD
  - Marty Murphy
    - Operations Specialist, AD/ENG/ENG_SUP
  - Lee Hammond
    - Senior Engineer, FE/ENGR/EngGrp
  - Adam Taylor
    - Staff Engineer, FE/ENGR/EngGrp
- 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

RAW Systems - Preliminary Design Review

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



RAW Systems - Preliminary Design Review
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

RAW Systems - Preliminary Design Review
Review Committee Charge

- Are the interfaces with the other beamline systems and with the conventional facilities adequately identified and defined?
  - RAW System Interfaces
(RAW_system_interfaces_valid_until_20FEB2020.xlsx, 99.6 kB)

- Does the design work meet the requirements as outlined in the requirements document?
  - RAW System Requirements
(NB_RAW_Water_Systems_Reqmts_L4_valid_until_20FEB2020.xlsx, 16.2 kB)

- The documents can be found on DocDB #17870
https://docs.dunescience.org/cgi-bin/private/ShowDocument?docid=17870

RAW Systems - Preliminary Design Review
Review Committee Charge

- Is the design maturity presented for the TH and AH RAW 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% is completion of preliminary design
  - Understanding that Final Design will be drawing and effort intensive

- Have potential design, manufacturing, and installation risks and challenges with the Neutrino Beamline components been identified, and has it been adequately planned to address these during the final design?

- Are difficult design features and possible prototyping issues identified?

RAW Systems - Preliminary Design Review
Review Committee Charge (cont.)

- Have suitable engineering analyses been performed and documented, and reviewed/peer reviewed and approved, where applicable?
- Are the appropriate codes and standards adequately applied to the design?
- Have the ES&H issues been identified and analyzed appropriately?
- Have the Fermilab Engineering Manual standards been applied to the design?
- 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?

RAW Systems - Preliminary Design Review
Review Committee Charge (cont.)

- All LBNF RAW systems are currently undergoing estimation review through the Project Estimator. This includes the submission of sample packages to outside vendors for spot-checking of current values. With this in mind, a cursory check of the Cost and Schedule are desired:
  - To reflect & verify known changes, such as where flows to the shielding panels were greatly reduced
  - To question sufficiency of design resources in the light of known complexity of certain situations, such as selection and prototyping of horn ejector pumps
  - To review estimated design effort, as preliminary design effort to date has suggested that engineering and drafting resources may be under-estimated

RAW Systems - Preliminary Design Review
Review Committee Charge (cont.)

- 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.

WELCOME!

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