

The LBNF/DUNE far detector
INTERFACE working group for civil
facilities and Cryogenics
(FDCCI)

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Charge

Charge: The far detector civil and cryogenics interface (FDCCI) working group will coordinate the development of scientific and engineering requirements and specifications for the far site civil facilities (FSCF) and cryogenic facilities at Sanford Underground Research Center. The changes and additions to the FSCF and CRYO requirements and specifications will be developed in close coordination with (1) the LBNF FSCF project, (2) the far detector installation working group and (3) all other far detector working groups.

Reports to: This working group reports to the DUNE far detector coordinator and manager.

Convener: Milind Diwan and co-conveners TBD.

Membership: Russell Rucinsky, Terry Shaw, Marvin Marshak, Jack Fowler, Roxanne Guenette, (cryogenics experts are needed here).

Other members and meetings

- All other working group conveners and managers are members of this WG. And will be asked to attend specific meetings when needed.
- Meetings: Meetings are open to the entire collaboration.
- Meetings will take place when needed.

- a. Single Phase TPC**
- b. Installation**
- c. Photon Detection**
- d. Data acquisition**
- e. Electronics**
- f. Dual Phase TPC**
- g. Purity/Cleanliness**
- h. Calibration**
- i. HV system**
- j. Physics/performance.**

For efficiency, concerns over specific civil/cryo requirements will be forwarded to individual working groups with a suggested deadline for resolution.

Work plan

- **The work plan for this interface group must follow the schedule for the far site civil and cryogenic facilities design and ultimately construction. The overall goal is to make sure the scope of far site civil facilities and cryogenics follows the requirements needed for the science and the design of the DUNE far detector.**
- **Here are some considerations for the work of this group:**
 - **High level requirements dcdb-112**
 - **Derived engineering requirements, drawings, specifications dcdb-136**
 - **High level schedule**
 - **Interface Control Documents and their references.**
 - **Communicate with LBNF and Cryogenics project teams to**
 - **Find requirements that are not met or not considered.**
 - **Requirements that are unclear or not evaluated**
 - **List of questions from LBNF and deadlines for answering.**

Workplan to CD3a

- CD3a will focus on far site civil facilities only. However, cryogenics requirements are crucial for FSCF.
- Sep. 18-Oct. 9 comments on 100% preliminary design.
 - Initial discussion of outstanding issues.
 - Oct. 9 to Oct. 13 freeze documents. Complete initial review of drawings and text from preliminary design
 - Oct. 13 to Oct. 27 preparation for director's review
 - Oct. 27 to Dec. 2 CD3a review.

Outstanding questions

- Grounding and shielding
- Electronics power
- UG control room
- Cryostat pumps and manifolds/ requirement on liquid argon uniformity ?
- cavern angular tolerance
- cryostat bridges
- clean room ?
- utilities and cryo piping requirements and grounding.
- mezzanine requirements
- cryostat structure components
- drift cross section
- monorail uses
- ventilation around cryostat annulus
- ventilation barrier wall.

Some progress was made by the group yesterday.

WGs should expect emailed questions to clarify some of these items. Emails will be followed by phone calls to specific people.

WGs are requested to send their requests on additional requirements to the FDCCI wg. We will respond immediately and discuss the priority for the topic at hand.

Model for communicating requirements to LBNF and CRYO

LBNF and CRYO <—> FDCCI WG <—> All wgs

We are going to be very proactive to get these requirements clarified before CD3a review, but some items may be of such detail that they need to be postponed into detailed design. We will use the collective wisdom of the group to make these determinations.

In all cases we will try to provide an envelope of specifications to LBNF if necessary.