

DRAFT
LMQXF Cold Mass Requirements and Conceptual Design Review

Objectives of the Review

HL-LHC is in the final stage of design and prototyping. One of the major in-kind deliverables from the US for HL-LHC under consideration are 5 LMQXFA Cold Mass assemblies for Q1 Inner Triplet and 5 LMQXFB Cold Mass assemblies for Q3 Inner Triplet. Each Cold Mass assembly produced and tested in the US will consist of a Helium Vessel housing two long, 150 mm aperture Nb₃Sn Magnets.

This review covers the requirements and conceptual design to produce and test Cold Masses at Fermilab.

The presenters should demonstrate that requirements are well understood, including the impacts of requirements that are unresolved, as well as that the conceptual design meets these requirements. Clear understanding of interfaces is a must. The Review should consider major design alternatives and justification for the adopted down-selection.

In particular the Review should assess the following items:

- Requirements for the Cold Mass assembly and tests.
 - What do we need to build ?
 - Are Test requirements adequate to verify design requirements ?
 - How are we going to test it ?
- Conceptual Designs meeting the requirements.
 - Is the conceptual design reasonable and likely to achieve a performing product ?
 - Is there a good plan for facilities supporting the CM Assembly ?
 - How are we going to test the CM ?
 - Is there a good plan for facilities supporting the CM Test ?
 - Is there any need for major upgrades of the above-mentioned facilities to achieve the Cold Mass Assembly and Test Requirements ?
- Engineering Analysis supporting the Conceptual Design and Developmental Plans.
- Alternative design considered for this stage of the activities.
- Major Risks involved and analyzed for this Conceptual Design

Proposed Members of the Review Panel:

Sandor Feher (Chair, FNAL)
Tom Peterson (FNAL)
Tom Nicol (FNAL)
Tom Page (FNAL)
Michael Anerella (BNL)

Dates

25th April, June 2016

Place

FNAL

Program (draft)

The program is for 1 day, organized as follows:

Day 1:

- Introduction and Summary of Requirements
- Conceptual Design for CM Assembly: Tooling and Processes
- Conceptual Design for CM Testing: Reusable Cryostat
- Test Stand 4 Facility: refurbishment needs and plans for readiness
- CM Testing equipment: SSW measurements, rotating coils, splice resistance measurement equipment.

Giorgio Ambrosio, Tony Vouris, Cosmore Sylvester, Don Mitchell and Joe DiMarco will be the link-persons to propose and finalize the detailed program.