

Review of the 11 T Dipoles at Collimator Section for the HL-LHC

Objective and Mandate

Objective of the Review:

HL-LHC is in the final stage of design and prototyping: all technologies for the hardware upgrade must be fully proven by beginning of 2017. This review covers the 11T dipole, planned to substitute the LHC dipole cryo-magnets in the Dispersion Suppressor, with a new unit producing the same integrated field, requiring a bore field in the range of 11 T, and an integrated by-pass for a collimator. Previous technical reviews addressed the engineering concepts, and cost and schedule (within the overall scope of HL-LHC).

The scope of this review is to examine:

- Magnet design status, with special attention to the cold mass, its cryostat and electrical, hydraulic, mechanical, vacuum interfaces and integration in the LHC continuous cryostat and LHC arc circuit;
- By-pass and collimator design;
- Results of model magnets;
- Status of prototype magnets;
- Conductor performance, procurement status and plans;
- Status of production tooling, finalization of design and procurement;
- Components procurement, status and plans;
- Test plan, QA/QC, and safety aspects;
- Production schedule and global plan to installation (including constraints given by LS2).

Mandate:

The review committee is invited to assess the progress from the last review, the readiness of the various components, the status of the system integration and the readiness for test, installation and operation. A detailed resources analysis is beyond the scope of the review, however comments of the credibility of the plan, also with respect to the available resource, are welcome.

Following the close-out by the review chair, the committee is required to compile a short report with findings, comments and recommendations within one month. The report will be delivered to Luca Bottura, TE-MSG Group leader, and to Lucio Rossi, HL-LHC Project leader.



Proposed Members of the Review Panel:

Akira Yamamoto (KEK-CERN, Chair)
Giorgio Apollinari (Fermilab)
Arnaud Devred (ITER)
Pasquale Fabbricatore (INFN)
Joe Minervini (MIT)
Pierre Vedrine (CEA)

Dates: 6th-8th April 2016

Place: CERN

Preliminary Programme:

The review is scheduled on three days, organized as follows (general lines):

Wednesday 6th April:

- Introduction and new 11 T plan in HL-LHC
- Outline of the 11T program
- Magnet design, cold mass, cryostat and interfaces/integration
- By-pass and collimator
- Tooling status
- Model magnet production and plan
- Model magnet test results and analysis

Thursday 7th April:

- SC performance and production status and plan, QA/QC
- Components procurement, status and plan, QA/QC
- Test plan
- Safety and codes
- Magnet production and global schedule, within the constraints given by LS2.

Friday 8th April:

- Committee closed session (Q&A)
- Close-out