US HL-LHC Accelerator Upgrade Project

MQXFAP1b Shims & Loading Readiness Review

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1. Goal & scope

MQXFAP1b is the re-assembly of the first prototype of the MQXFA magnets to be used in Q1 and Q3 for the High Luminosity LHC. MQXFAP1 reached 17.4 kA during training at 1.9 K before a short coil-ground caused test to be stopped.

MQXFAP1b is planned to have three coils previously used in MQXFAP1, and a new coil (P06) replacing the coil that caused the short to ground in MQXFAP1.

The main goal of MQXFAP1b is to reach ultimate gradient (143.2 T/m) at 17.9 kA. A secondary goal is to aim at 19 kA to demonstrate margin. MQXFAP1b is the last prototype to be tested by AUP, therefore it is the last chance for AUP to demonstrate margin above 17.9 kA (acceptance current).

Test of the second prototype (MQXFAP2) was affected by the mechanical failure of the bottom half-shell. Therefore, the reviewers are requested to assess the proposed shim plan, pre-load targets and plans to avoid MQXFAP2 issue.

2. Charges

The committee is requested to answer the following questions:

1. Is the shim plan adequate to assure that MQXFAP1b is going to achieve its goals?
2. Are the pre-load targets adequate to assure that MQXFAP1b is going to achieve its goals?
3. Was the MQXFAP2 issue adequately taken into account in the proposed shim and pre-load plans?
4. Is there any other comment or recommendation to assure MQXFAP1b is going to achieve its goals?

3. Technical information

Committee
H. Felice (CEA)
P. Ferracin (CERN), chair
G. Vallone (LBNL)

Date and Time
December 20, 2018; starting at 7:30 am Pacific Time

Connection
Video-link by Zoom, info will be provided by email

Link to talks
https://indico.fnal.gov/event/19361/