



**MQXFA20  
Coils Acceptance Review**

US-HiLumi-doc-5434  
Other:  
Date: Dec 12, 2024  
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**US HL-LHC Accelerator Upgrade Project**

**MQXFA20 Coils Acceptance Review**



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## 1. Goal & scope

The HL-LHC AUP project is planning to start assembly of MQXFA20. This is the 17<sup>th</sup> low-beta quadrupole magnet (MQXFA) for the Inner Triplet of the High Luminosity LHC. If MQXFA20 meets MQXFA requirements [1] it will be used in a Q1/Q3 cryo-assembly to be installed in the HL-LHC.

In MQXFA20 AUP is planning to use coils on hold or that were previously on hold. Therefore, the coils presented at this review were selected by the MQXFA coil WG team because they are the best coils on hold and are expected to have high probability of meeting requirements. The plan is to test all of them in a single magnet and not to use other coils on hold in future magnets.

The coils selected for this review are: 121, 125, 142, 146 and 254.

Conductor and series coil specifications are presented in [2-6]. Discrepancy or Non-conformity Reports are generated whenever a component does not meet specifications.

Coil 142 was assembled in MQXFA14 and had a coil-heater failure during hipot. It was sent back to FNAL for repair.

The reviewers are requested to review discrepancies and non-conformities in strands, cables, and coils for the following coils: 121 (cable P43OL1125), 125 (1121), 142 (1172), 146 (1180) and 254 (1219).

## 2. Charge questions

The committee is requested to answer the following questions:

1. Have all recommendations from previous reviews [7] been adequately addressed?
2. Have Discrepancies and Non-conformities been adequately documented and processed?
3. Have critical Discrepancy/Non-conformity been adequately documented and processed?
4. Is there any coil that you recommend not to use in MQXFA20 taking into account that the goal of this magnet is to use coils on hold?
5. Do you have any other comment or recommendation regarding these coils and their conductor for allowing MQXFA20 to meet MQXFA requirements [1]?



# MQXFA20

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### 3. Technical information

#### Committee

Arup Ghosh (chairperson), BNL retired  
Susana Izquierdo Bermudez, CERN  
GianLuca Sabbi, LBNL

#### Date and Time

December 12, 2024. Start time is 7/9/10/16 (LBNL/FNAL/BNL-FSU/CEA-CERN)

#### Location/Connection

Video-link by Zoom, info by email.

#### Link to agenda with talks and other documents

[MQXFA20 Coils Acceptance Review \(December 12, 2024\) · INDICO-FNAL \(Indico\)](#)

### 4. References

- 1) *MQXFA Functional Requirements Specification*, US-HiLumi-doc-36
- 2) *Specification for Quadrupole Magnet Conductor*, US-HiLumi-doc-40
- 3) *Cable Specification*, US-HiLumi-doc-74
- 4) *Quadrupole Magnet Cable Insulation*, US-HiLumi-doc-75
- 5) *QXFA Series Coil Production Specification*, US-HiLumi-doc-2986
- 6) *QXFA Series Coil Fabrication Electrical QC plan*, US-HiLumi-doc-521
- 7) *MQXFA19 Coils Acceptance Review*, US-HiLumi-doc-5354.