

REPORT ON THE DISCUSSIONS OF THE FNAL MAGNET ACCEPTANCE COMMITTEE W/RESPECT TO LQXC05

The Fermilab magnet acceptance committee reviewed the data with respect to LQXC05. A summary of the comparison between the results and the criteria are presented in the summary table.

The magnet acceptance committee concludes the magnet is ready to ship.

LQXC05 (MQXA15) ACCEPTANCE CRITERIA SUMMARY

criteria	description	status	resp. party	reported by
2.1.3	THERMOMETER AND WARM UP HEATER INSTALLATION	ok	rb	rb
2.1.4	BUS WORK CHECKOUT	ok (see comments)	rb	rb
2.1.5	ROOM TEMPERATURE HIPOT	ok	ml/ah	ah
2.1.6	ROOM TEMPERATURE ELECTRICAL CHECKOUT	ok	ml/ah	ah
2.1.7	PRESSURE TEST DOCUMENTATION	done	tn/tp	tp
2.1.8	LEAK CHECK DOCUMENTATION	done	tn/tp	tp
2.1.9	CRYOSTAT SAFETY DOCUMENTATION	done	tn/tp	tp
2.1.10	PIPE ASSEMBLY DOCUMENTATION	done	tn/tp	tn
2.1.11	WARM CRYOSTAT TO MAGNETIC AXIS REFERENCE	done	ps	ps

COMMENTS:

LQXC05 includes quadrupole MQXA15 with correctors

- HCMCBX_001-ST000023 (insert HCMCSTX001-CE000007)
- HCMCSOX001-AN000003
- HCMQSX_001-AN000004

The ID card for LQXC05 has been completed and is being transmitted separately.

2.1.4: After installation of the hypertronics connector, electrical measurements revealed that the 8U lead was switched with the 5U lead, and that the 8L lead was switched with the 5L lead (documented in discrepancy report #4294, module assembly traveler TR-333729). This occurred in the "crossover block" that is attached to the top of the MCBXA corrector on the non-IP (DFBX) end of the Q3. Thus from the top of the corrector, to their entry into the spider, the 8U is correctly bundled over the 8L and the 5U is correctly bundled over the 5L, but the lateral positions of the bundles were switched with respect to the beam tube. The repair consisted of re-crossing the leads back into the proper configuration within the pipe after they exit the spider. Each lead is tinned in the

crossing region to maintain shape and separated by G-11 forms before being wrapped individually with kapton, then together with glass tape. The leads subsequently passed all electrical tests.

REPORTERS:

ps	Phil Schlabach
ah	Andy Hocker
rb	Rodger Bossert
ml	Mike Lamm
tn	Tom Nicol
tp	Tom Page

CRITERIA:

2.1.1 THERMOMETER AND WARM UP HEATER INSTALLATION

Requirement: Thermometers and heaters installed properly
([Module assembly traveler](#))

2.1.2 BUS WORK CHECKOUT

Requirements: Bus work properly insulated, strain relieved
([Module assembly traveler](#))

2.1.3 ROOM TEMPERATURE HIPOT

Requirements: For completed LQXA: (1) with coil shorted to ground, hipot heater to ground 3kV, (2) with heater shorted to ground, hipot coil to ground 3 kV. Leakage current less than $3\mu\text{A}$ and no breakover.
([Cold mass traveler/module assembly traveler](#))

2.1.4 ROOM TEMPERATURE ELECTRICAL CHECKOUT

Requirements: Instrumentation wires are properly labelled, correct wire gauge, correctly wired to instrumentation connector, proper continuity
([Module assembly traveler](#))

2.1.5 PRESSURE TEST DOCUMENTATION

Requirement: Test pressure of 1.25 times the design pressure. The design pressure is 20 bar so the test pressure is 25 bar or approximately (2.5 Mpa).
([Section 5034 of the Fermilab ES&H Manual \[6\] and UG-100 of the ASME Code](#))

2.1.6 LEAK CHECK DOCUMENTATION

Requirement: Follow requirements in Fermilab Specification ES-107240 [9]. Leak rate $\leq 2 \cdot 10^{-9}$ atm cc/s.
([Cryostat assembly traveler](#))

2.1.7 CRYOSTAT SAFETY DOCUMENTATION

Requirement: Design according to ASME BPV Section VIII, Division I and must meet all applicable safety codes in the FNAL ES&H Manual and CERN/LHC – US/LHC MoU on Accelerator Mechanical Safety
([ASME BPV Section VIII and Section 5034 FNAL ES&H Manual](#))

2.1.8 PIPE ASSEMBLY DOCUMENTATION

Requirement: See LHC-LQX-ES-0007 and reference drawings
([Cryostat assembly traveler](#))

2.1.9 WARM CRYOSTAT TO MAGNETIC AXIS REFERENCE

Requirements: See LHC-LQX-ES-0007
([LQXA_C Test Run Plan](#))