MINUTES –ACCEPTANCE MEETING FOR LHC MAGNETS BUILT AT BNL
Magnet: D1L101
Date of meeting: 2 May 2003
Date of these minutes: 6 May 2003
Attending: M. Anerella, J. Cozzolino, J. Escallier, M. Gaffney, G. Ganetis, H. Hocker, A. Jain, S. Plate, C. Porretto, P. Wanderer, E. Willen

Summary.
The meeting was called to review the results of the electrical tests and options for use for this magnet. This information will be transmitted to LHC staff. The magnet has a failed temperature sensor that must be replaced if the magnet is to be the spare. (Other acceptance issues for this magnet were considered at a previous meeting of the acceptance committee.)

Electrical test results.
J. Escallier summarized the electrical tests of the quench protection heaters. The results are formally documented in deviation waiver M0303.

The magnet is equipped with two redundant quench protection heaters. One of them is in electrical contact with the magnet coil. The measured resistance between the two is 6 kΩ with the magnet open to air, about 15 kΩ with dry nitrogen in the magnet. This heater cannot be used to protect the magnet.

The damaged heater and coil were hipot tested with respect to the rest of the magnet. The remaining heater was hipot tested in as usual (i.e., by itself with respect to the rest of the magnet). The results are:

Hipot voltage	2.5 kV	5kV
	Leakage current	Leakage current
Damaged htr + coil	21-24 μA	110 μA
Remaining heater	21-24 μA	110 μA

It was noted that the leakage currents were the same for both heaters. The BNL limit on leakage current, at 5 kV, is 50 μA. The CERN limit on leakage current, at 2.5 kV, is also 50 μA. Typical leakage currents for RHIC magnets were a few μA. The tests noted above were made with the magnet open to air. Leakage currents were also measured with the magnet evacuated and filled with dry nitrogen. The leakage currents were the same for these tests.

A special test was conducted to establish whether the remaining heater was well-isolated from the coil. This heater and the coil were hipot tested with respect to one another, with the remainder of the magnet floating. At 5 kV, the leakage current between this heater and the coil was 4 μA.

Discussion: G. Ganetis stated that the magnet should be rebuilt to correct the problem.

Options for use.

There are three options for the use of the magnet:

1. Rely on the remaining heater for quench protection. The damaged heater would be electrically isolated.
2. Operate the magnet with an energy extraction system. This is possible because the magnet has a separate power supply.
3. Operate without quench protection. The RHIC magnets are self-protecting at 4.5K. This magnet may be self-protecting at 1.9K. Reliable quench propagation calculations would be needed to provide guidance on this issue.

These options are discussed in more detail in a note by E. Willen dated April 7, 2003, and distributed with the deviation waiver.

Safety.

S. Plate reviewed the travelers for compliance with the safety specifications. There were two operations that were not carried out in the standard sequence that could have affected safety. However, it was possible to complete these operations at a later time, and the magnet was properly pressure tested after that, insuring that this magnet met the safety standards.

Failed temperature sensor.

S. Plate noted that, if the magnet is to be the spare for this group, a failed temperature sensor must be replaced. The sensor is on order and due the end of the month.