

The only official copy of this file is the one on-line on the Superconducting Magnet Division website. Before using a printed copy, verify that it is the most current version by checking the document issue date on the website.

RHIC-MAG-R-8853-A
Page 1 of 3

1. Scope:

This procedure describes the methods used to Hipot test the insulated inner and outer coil support tubes channels (slots) for RHIC Helical Magnets.

2. Applicable Documents:

RHIC-MAG-R-7242	RHIC Hipot Testing
RHIC-MAG-Q-1004	Discrepancy Reporting Procedure
RHIC-MAG-Q-1000	Magnet Division Procedure for Control of Measurement and Test Equipment
BNL Dwg. 12011004	RH & LH Inner & Outer Coil Insulation

3. Requirements:

3.1 Material & Equipment

3.1.1 Material

Non-Conductive Marking Pen BNL Stock No. S-23757
Conductive (Carbon) Foam

3.1.2 Equipment:

A/R Research Model 5220A Hipot Test Cart (designated as “Hipot”).

3.1.3 Safety Precautions:

3.1.4 The technicians shall be qualified by their cognizant technical supervisor in the operation of the required test equipment and these electrical testing procedures. They shall be familiar with the latest revision of the applicable documents referenced in section 2. In addition, some of these tests require the technician to have special training. A list of qualified personnel shall be maintained with the RHIC Training coordinator.

3.1.5 Some of these electrical test procedures have specific safety requirements. The technicians performing these specific tests shall rigorously follow all the safety requirements listed as well as those prescribed by the BNL ES&H standard.

The only official copy of this file is the one on-line on the Superconducting Magnet Division website. Before using a printed copy, verify that it is the most current version by checking the document issue date on the website.

RHIC-MAG-R-8853-A
Page 2 of 3

3.1.6 This testing poses a Class “C” electrocution hazard. At least two properly trained technicians must be present to perform this testing. When testing, a trained technician shall be stationed at any point the item under test is accessible to unauthorized people, and barriers shall be set up. Signs shall be posted reading “DANGER HIGH VOLTAGE” and warning lights shall be turned on.

3.2 Procedure:

3.2.1 Perform Hipot insulation test of coil support tube channels per RHIC-MAG-R-7242.

3.2.1.1 Verify that the High Voltage Probe (wand) unit is unplugged from power supply with power ON-OFF switch set to ‘OFF’.

3.2.1.2 Verify that the voltage control is turned fully counterclockwise to the Zero voltage position.

3.2.1.3 Connect a grounding cable from the safety ground stud of the “Hipot” to a good electrical ground & to the carriage supporting the assembly to be tested. Connect the remaining ground lead to the Coil Support tube to be tested. Make sure all connections are secure at both ends.

Caution: Be sure the “Hipot” is grounded at all times. Failure to observe this caution may result in electrocution.

3.2.1.4 With the High Voltage Wand still unplugged and the power ON-OFF switch set to ‘OFF’, install the conductive foam end-piece into the wand end.

3.2.1.5 Set the current control knob to 20 μ A. Ground Switch should be in the “METERED” position.

3.2.1.6 With the wand being held away from any object, check that the voltage knob is turned fully counterclockwise to the zero voltage position. Plug the High Voltage Cable from the Wand into the power supply, turn power ON-OFF switch to ‘ON’, and raise voltage control to 4KV.

3.2.1.7 Run wand along insulated areas of first coil channel (slot) on the tube. A sudden increase in the current and/or arcing indicates a void in the insulation. Mark location with non-conductive pen. Procedure is then repeated for remainder of that coil channel & all remaining channels on the tube.

The only official copy of this file is the one on-line on the Superconducting Magnet Division website. Before using a printed copy, verify that it is the most current version by checking the document issue date on the website.

RHIC-MAG-R-8853-A
Page 3 of 3

- 3.2.1.8 Upon completing testing of all slots, set the power ON-OFF switch to the 'OFF' position. Turn the voltage control knob fully counterclockwise to the zero voltage position.
- 3.2.1.9 Re-insulate marked areas using KAPTON film as specified on the drawing.
- 3.2.1.10 Repeat steps 3.2.1.7-3.2.1.9 until all voids have been eliminated.

4. Quality Assurance Provisions:

- 4.1. The Quality Assurance provisions of this procedure require that the technician shall be responsible for performing all assembly operations in compliance with the procedural instructions contained herein and the recording of the results on the production traveler.
- 4.2 The technician is responsible for notifying the technical supervisor and/or the cognizant engineer of any discrepancies occurring during the performance of this procedure. All discrepancies shall be identified and reported in accordance with RHIC- MAG-Q-1004.

5. Preparation for Delivery:

N/A