

## Arrival inspection and Test JLAB SC magnets

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**Summary:** Each magnet shall receive visual inspection, hipot test of SC circuit, complete check out of electrical instrumentation, pressure test and Helium Mass Spec. leak test of the LN2 system, Helium system and vacuum system. Data to be compared with final JLAB approved factory test results and any discrepancies noted.

### **Visual Exam upon arrival**

All magnets, packaging, shipping frames, covers and packages shall be inspected for any external visual signs of damage upon entering JLAB property and before any unpacking or unloading occurs. Shock recording devices shall be interrogated and any evidence of mis-handling or loads exceeding the nominal 3G plus weigh noted.

### **Visual Exam after unpacking or unloading in Hall C**

All magnets, packaging, shipping frames, covers and packages shall be inspected for any external visual signs of damage after entering JLAB Hall C and after unpacking or unloading. Shock recording devices shall be interrogated and any evidence of mis-handling or loads exceeding the nominal 3G plus weigh noted.

### **Arrival Tests**

The SC magnet shall be subject to Pressure test, Leak tests, Hi pot test and electrical instrument checkout.

Hi pot testing of the SC circuit shall be performed using a current limiting Hi pot tester.

The nominal test voltage is 1500Volts

Results shall be compared to final approved factory test results

Electrical checkout of instrumentation

Voltage taps – check for continuity with SC circuit

Four wire thermometers- AB- sensor-CD

AB and CD continuity

A or B to C or D sensor RT resistance

Leak and Pressure Test

- A) Evacuate SC magnet insulating vacuum
- B) Sensitivity of Test  $1 \times 10^{-9}$  Torr-L/sec
- C) No leaks at  $1 \times 10^{-9}$  T-L/S in N2, He and Vacuum
- D) No leaks with max pressure 110 PSI applied to LN2 or LHE circuits

Process for LN2 or LHE

LD sensitivity  $1 \times 10^{-9}$  T-L/S

Pump out Helium or N2 system

Back fill with He to 1 Atm

Pressurize with N2 gas to 110 PSI internal pressure

Process for Insulating Vacuum

LD sensitivity  $1 \times 10^{-9}$  T-L/S

Bag Vacuum vessel

Fill bag with Helium , verify concentration, test for one hour