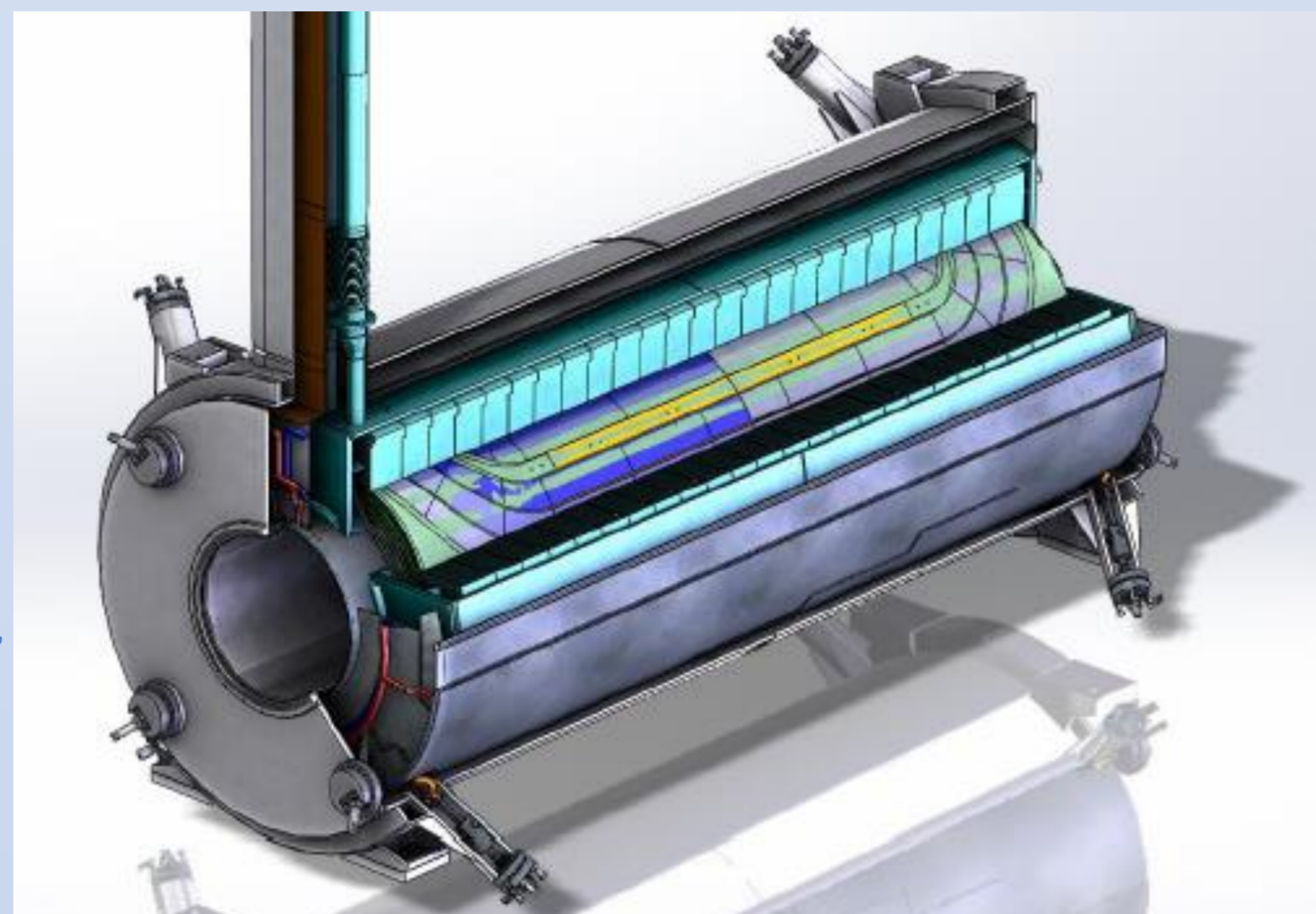


## INTRODUCTION

Jefferson Lab is engaged in a major upgrade project to double the CEBAF Accelerator's energy to 12 GeV/c and add major new experimental facilities. JLAB's Hall C is building an 11 GeV/C Superconducting Spectrometer to enable Nuclear Physics experiments at the highest available beam energy. The SHMS is a Superconducting focusing spectrometer with a magnetic arrangement of DQQD. The first magnet, a small dipole, is called the Horizontal Bend (HB) and it permits the SHMS to reach 5.5 degree scattering angles. The three focusing quads are a cold iron quad (Q1) and a pair of SC cosine quads (Q2Q3). A 60 cm warm bore Dipole is required for momentum analysis. Q2Q3 quadrupoles and Dipole are under construction at Sigmaphi in France.

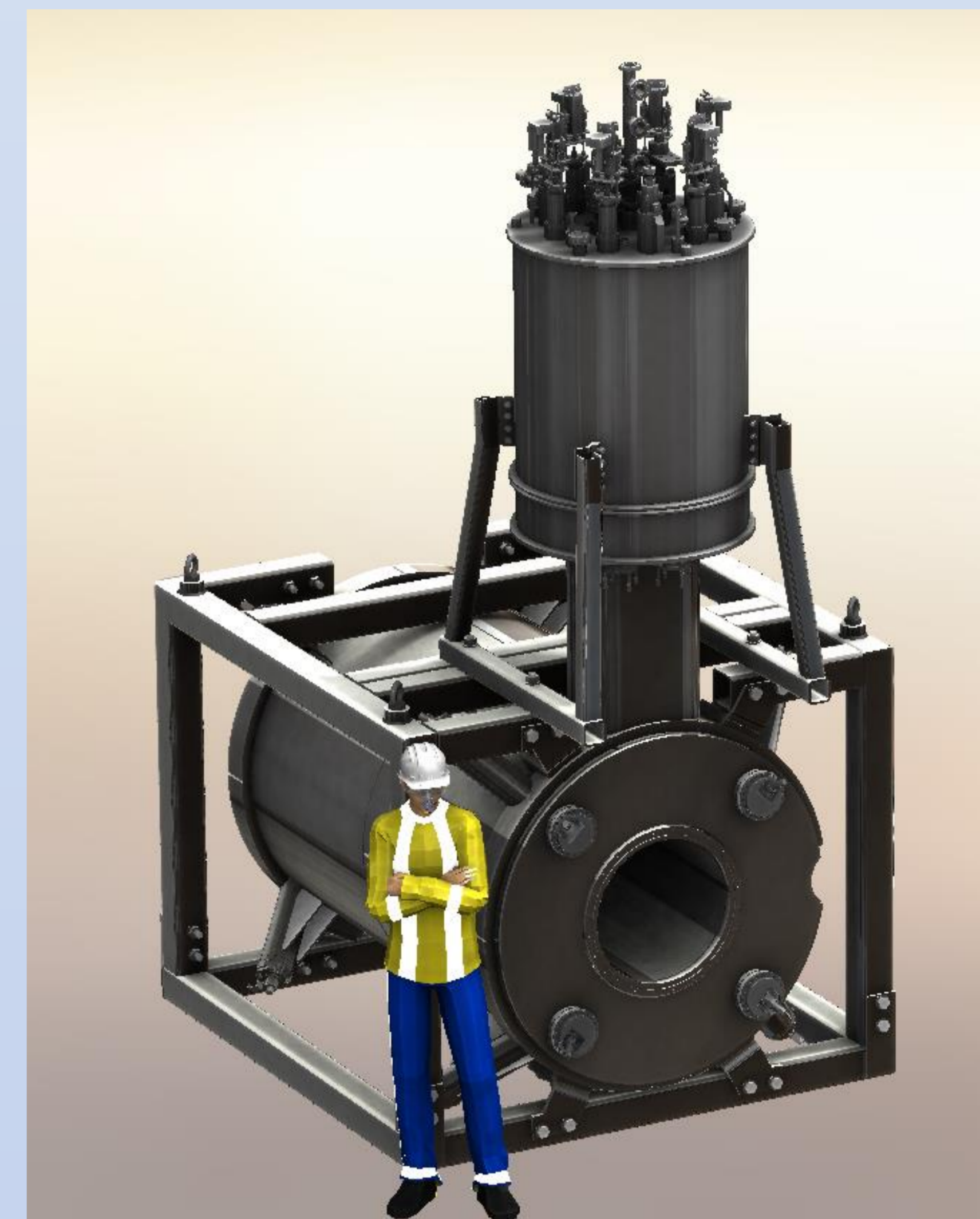
### DIPOLE SHMS PARAMETERS

Quantity 1  
24 tons  
Warm bore 600mm  
4.25 Tesla  
3500 A  
Superconducting NbTi  
Liquid helium bath



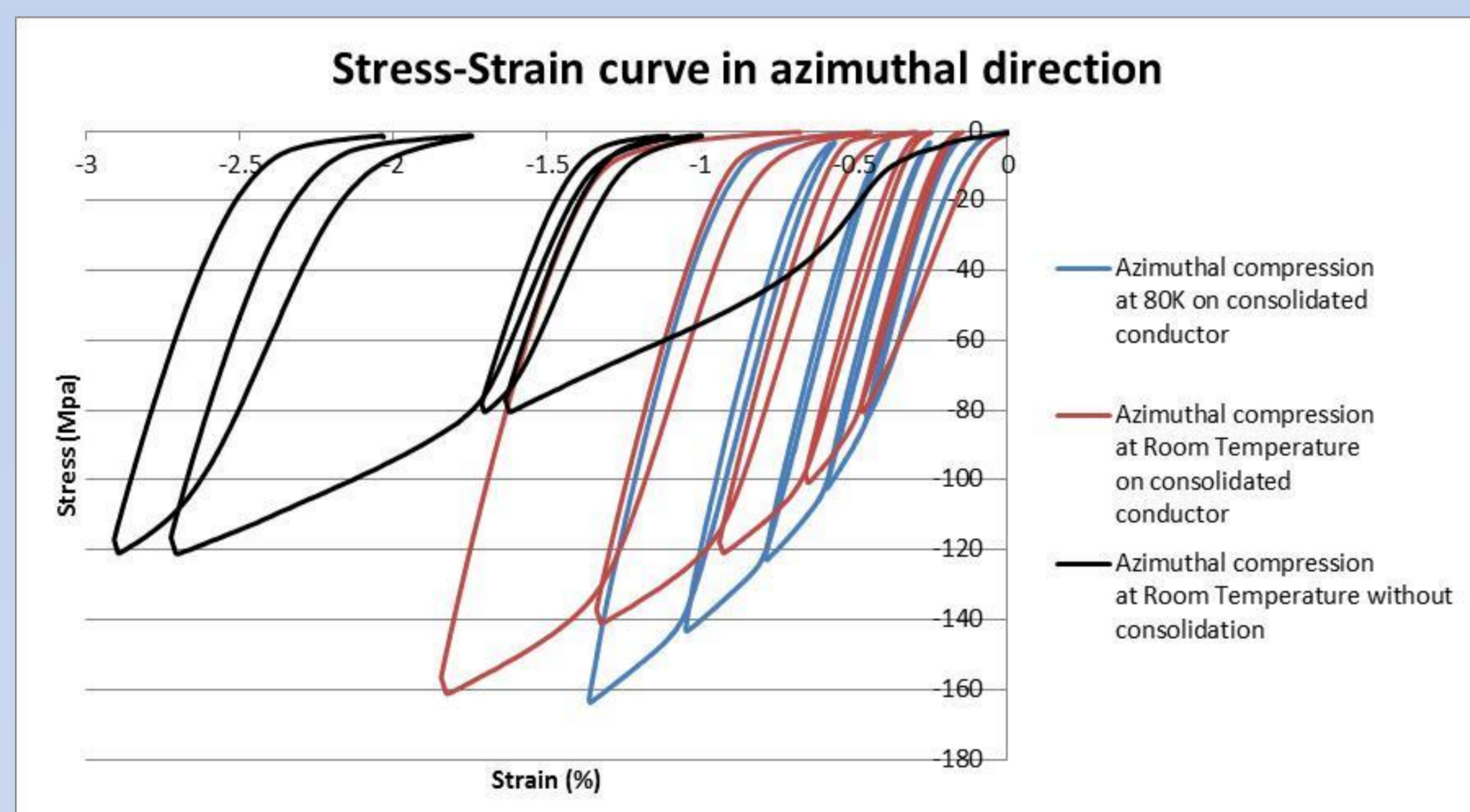
### Quadrupoles Q2&Q3 PARAMETERS

Quantity 2  
15 tons  
Warm bore 600mm  
Gradient 16 T/m - 4250 A  
Superconducting NbTi  
Liquid helium bath



## CONDUCTOR CONSOLIDATION

Conductor mechanical strength improved from 50 Mpa (20°C) to 100 Mpa (à 20°C) by mechanical hardening  
Special pressing machine designed and built to process 22 km of conductor  
On line thickness control , cleaning and photography  
Mechanical testing at room temperature, 77K and 4K to validate the process.



## COILS MANUFACTURING

Winding  
Vacuum impregnation  
Assembly and bonding  
Machining  
Collaring



## VESSELS AND CRYOSTATS MANUFACTURING

Helium vessel welding  
Nitrogen screen welding  
Vacuum outer vessel welding



## CONCLUSION

Dipole and Q2Q3 manufacturing have progressed a lot in 2014 and 2015. Coils are now completed and cryostats assembly is in progress for a shipping to JLAB expected late 2015.