



Crab Cavity Cryostat, jacket, etc.

KEKB Crab Cavity Group
- presented by NAKAI Hirotaka

Overview

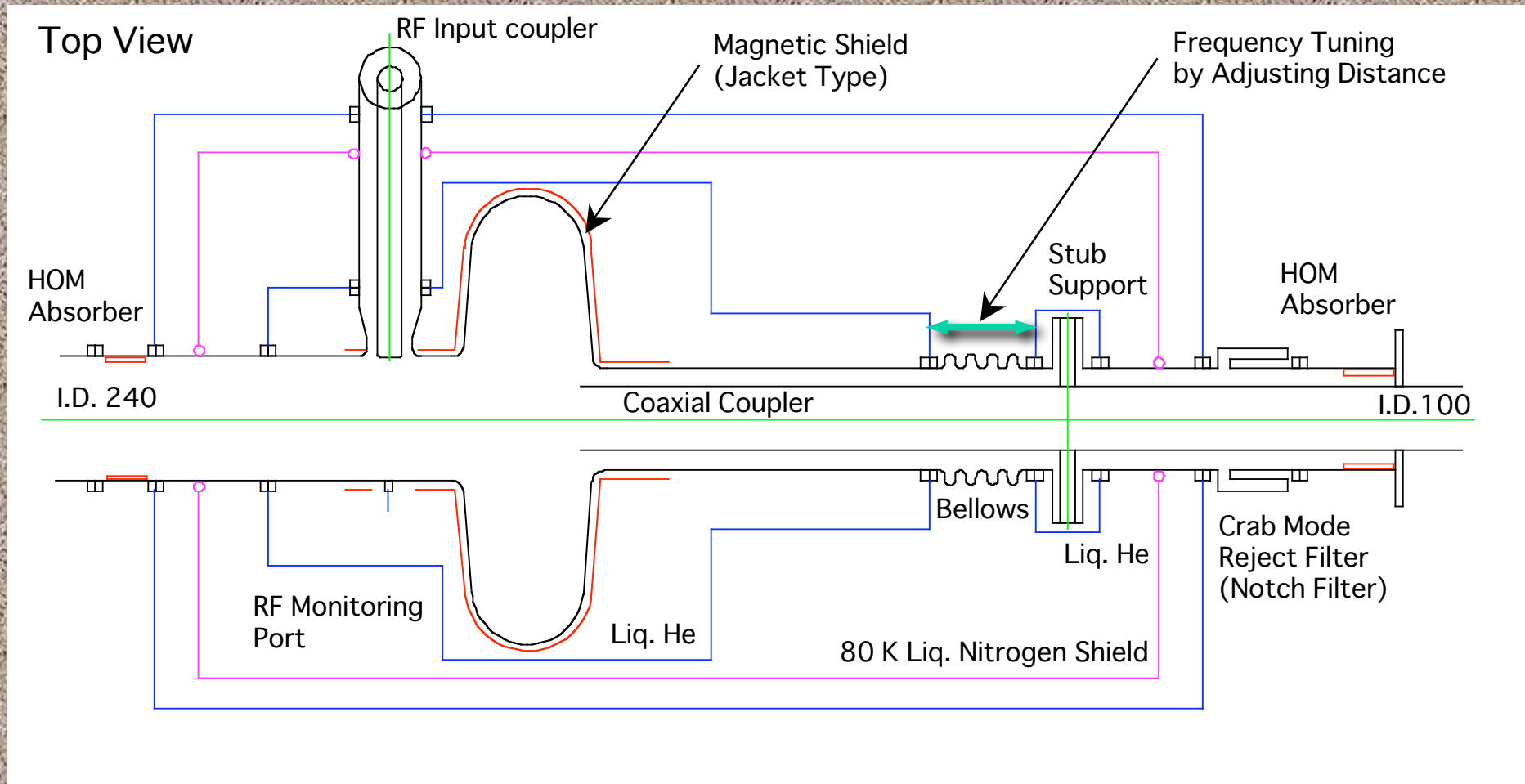
- Cryostat design
- Status of cryostat manufacturing
 - Helium jackets
 - 80 K thermal shield

● Cryostat Design

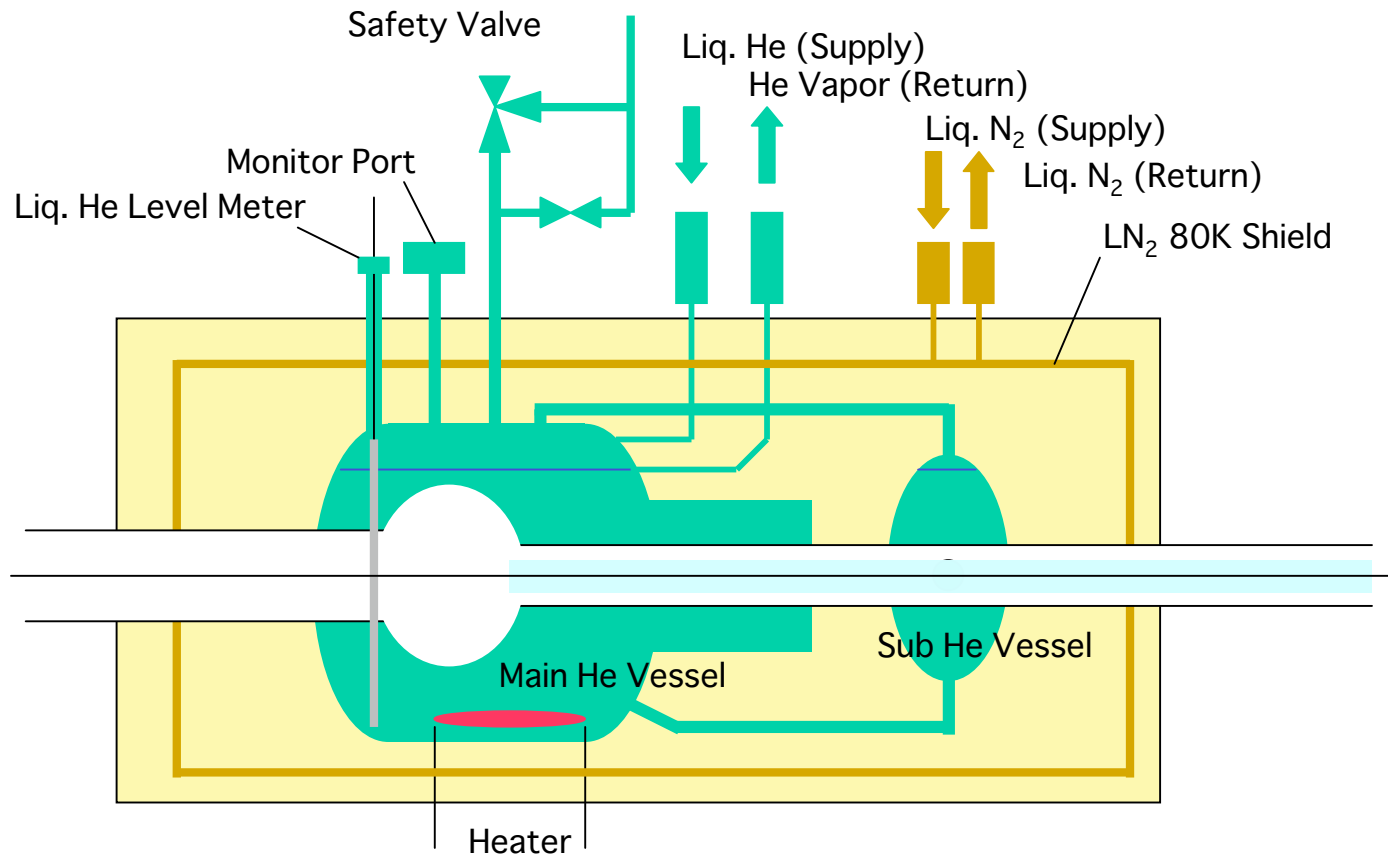
Cryostat Design Concept

- Jacket-type liquid helium vessel
- Coaxial coupler with bellows for frequency tuning: 28.3 kHz/mm
- Stub support for long coaxial coupler for mechanical support and cooling of coaxial coupler tip

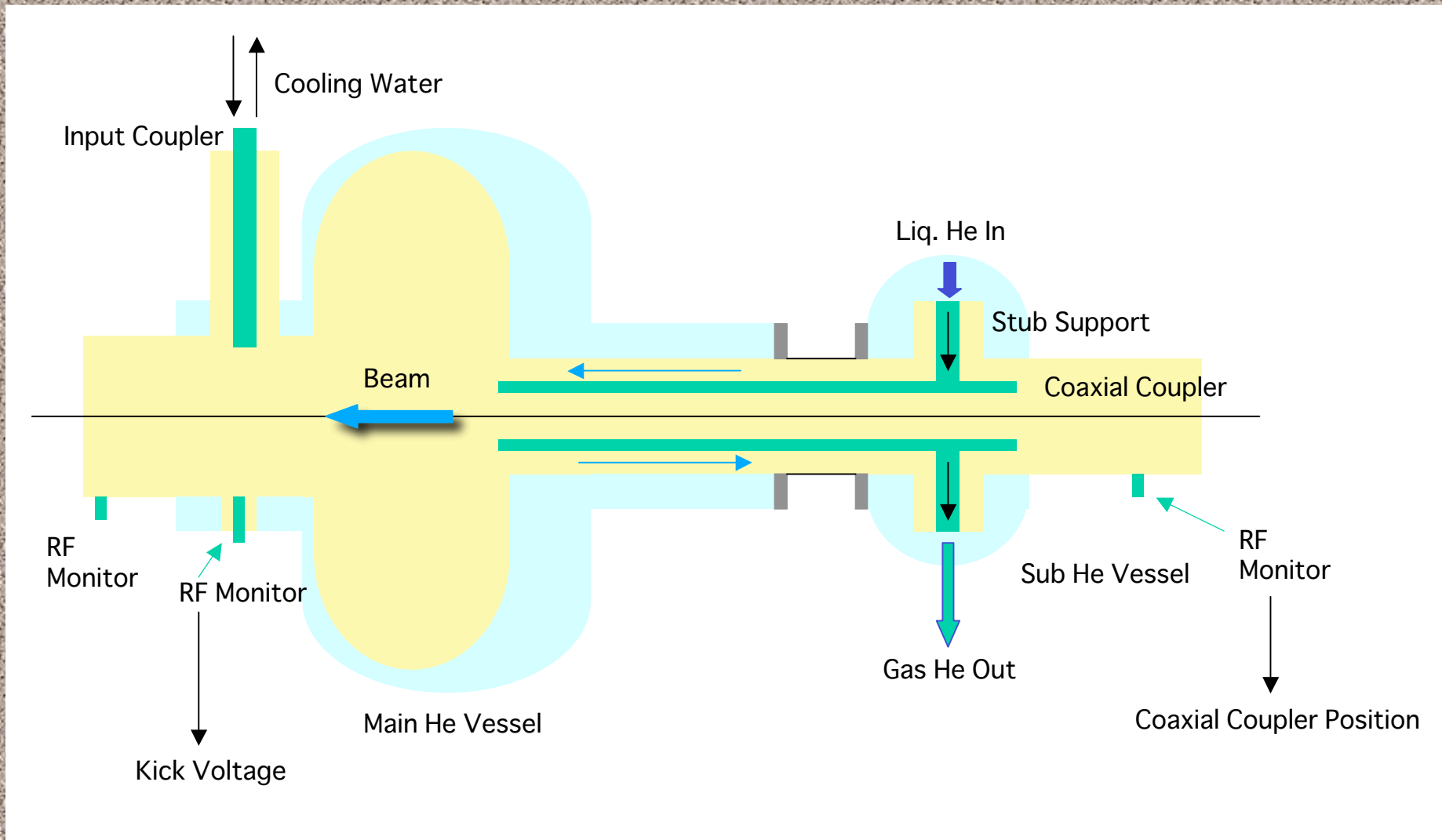
Cryostat Conceptual Design



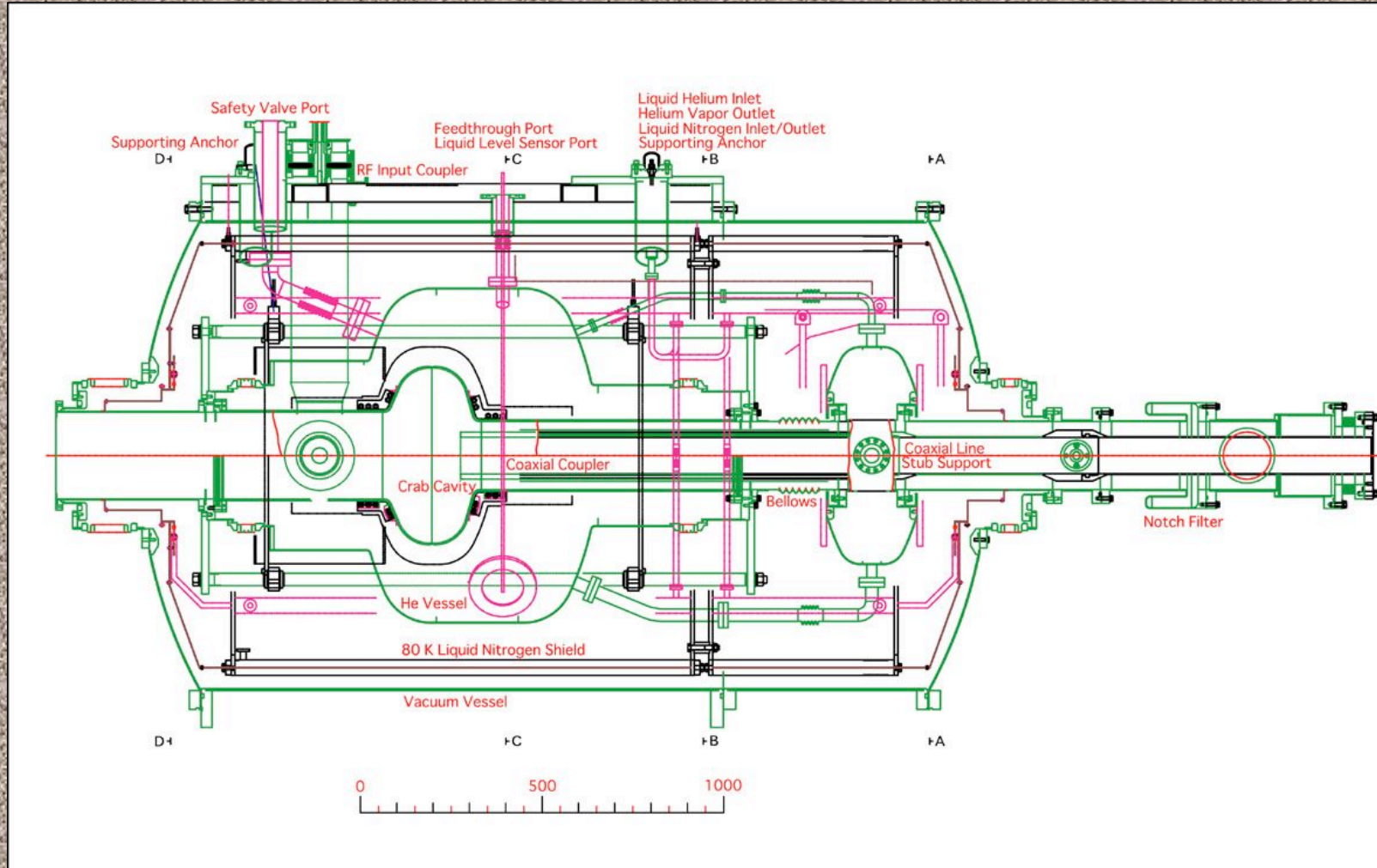
Cooling Scheme (1)



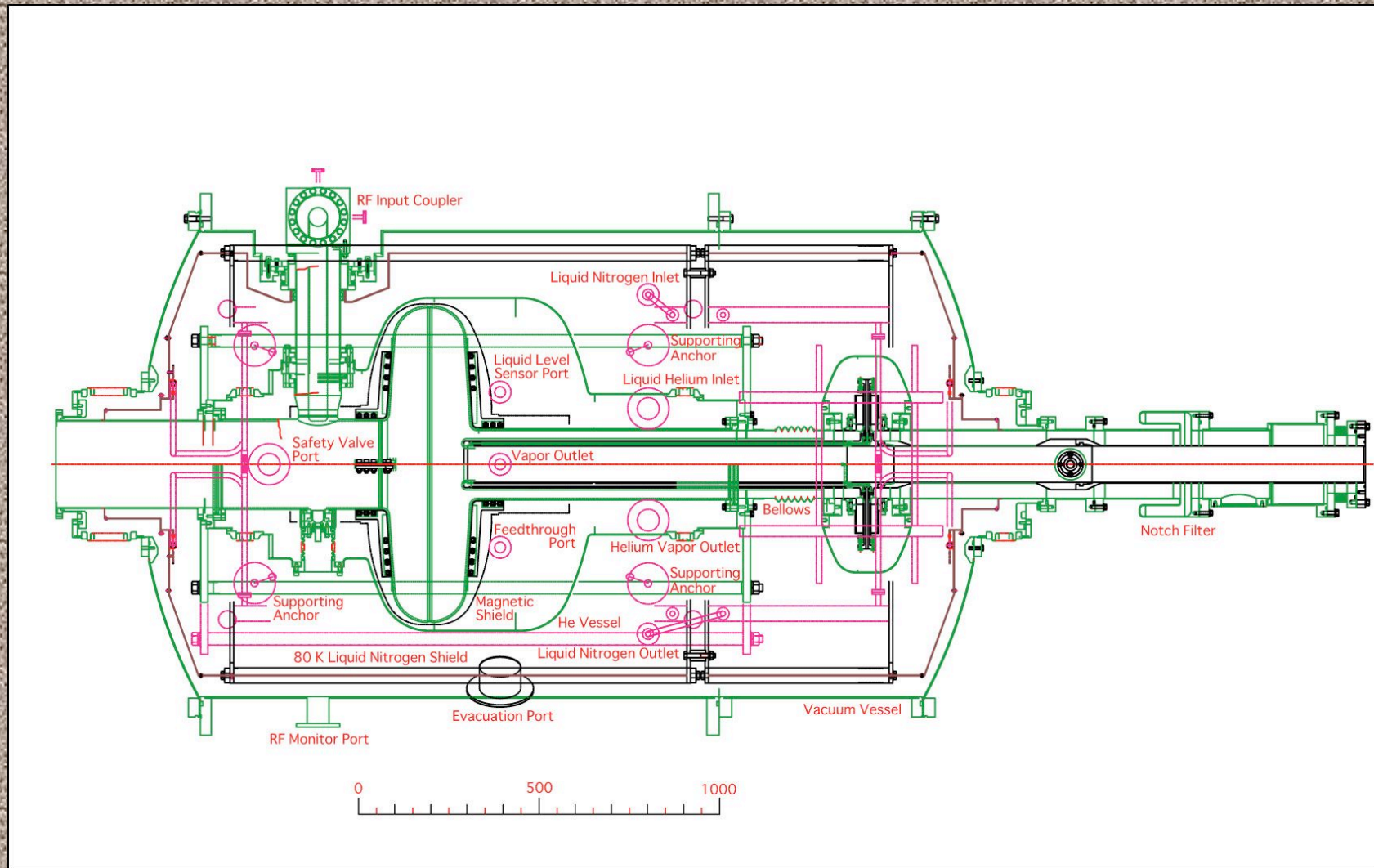
Cooling Scheme (2)



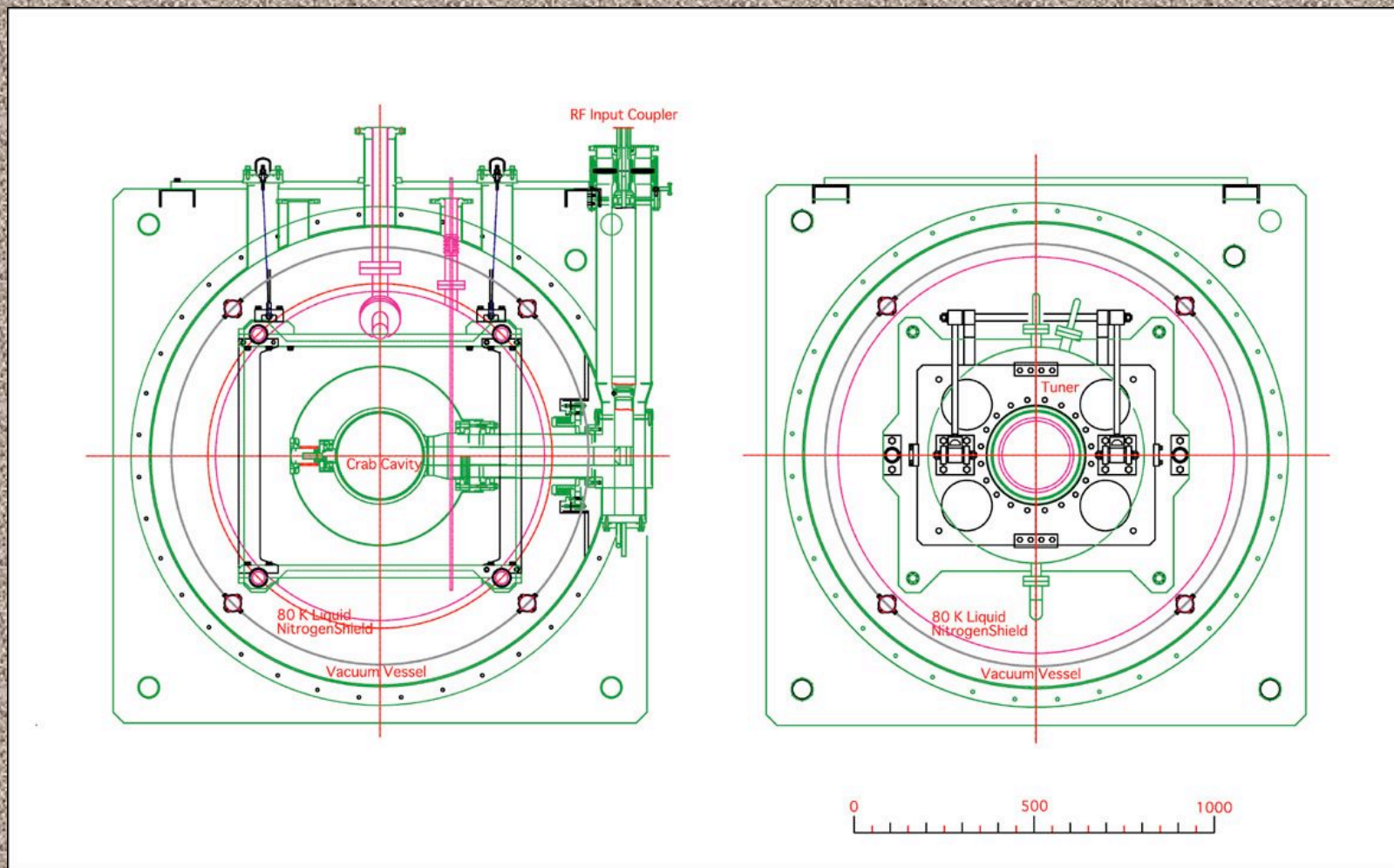
Cryostat Design (Side View)



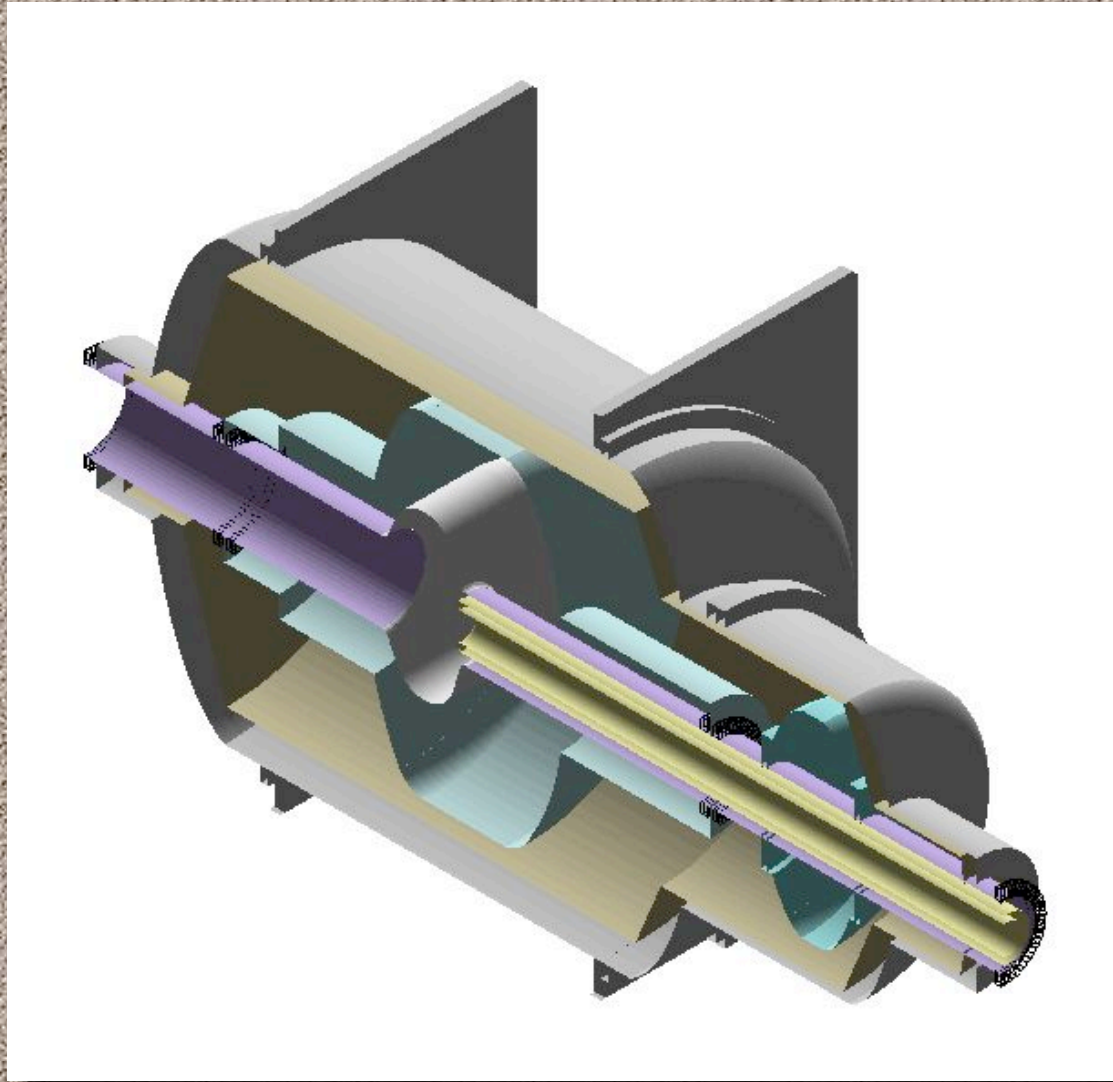
Cryostat Design (Top View)



Cryostat Design (Front View)



Cryostat

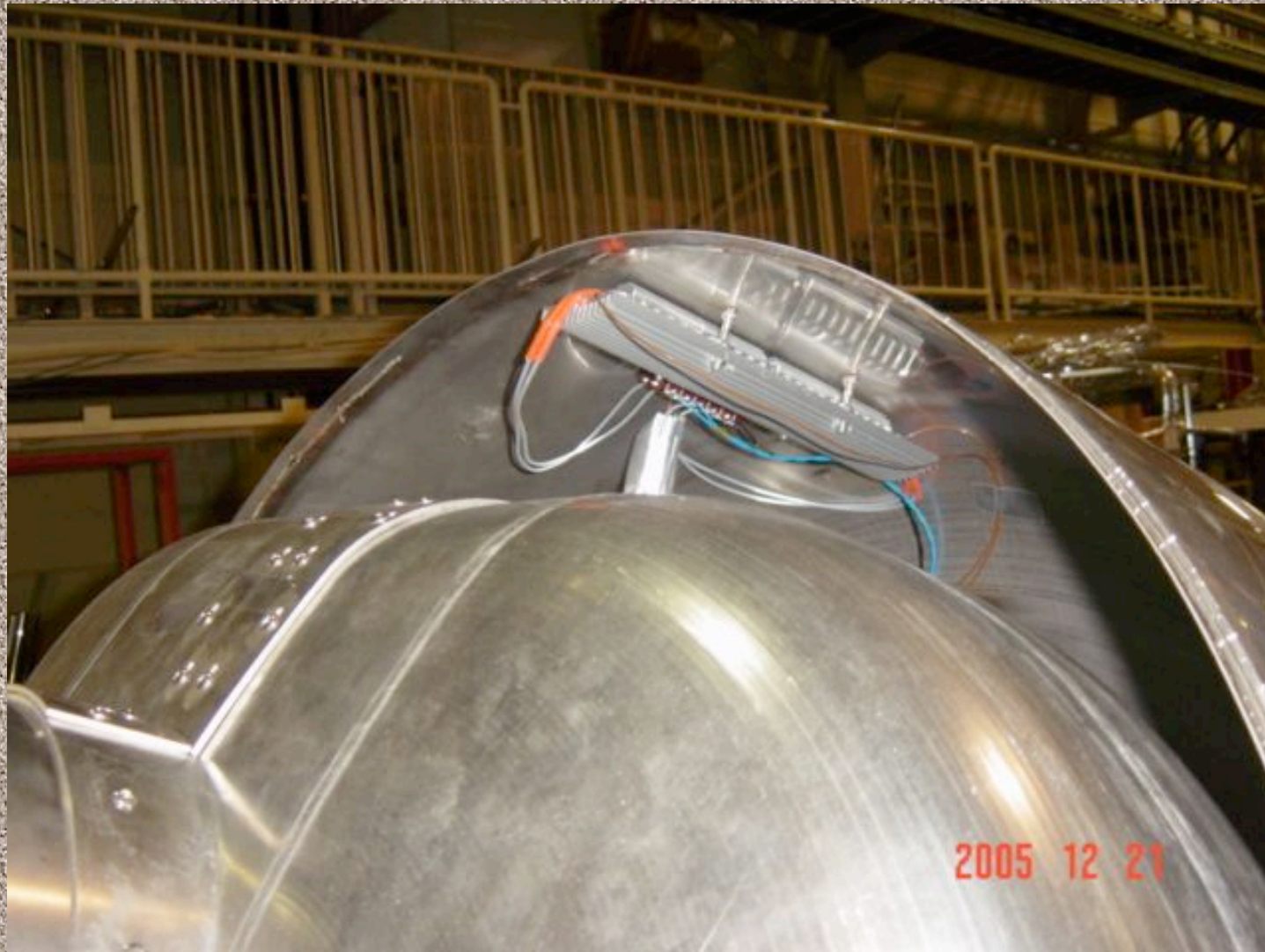


 Helium Jacket

Assembly of Helium Jacket



Heater & Temp. Sensors



Helium Jacket for Cavity



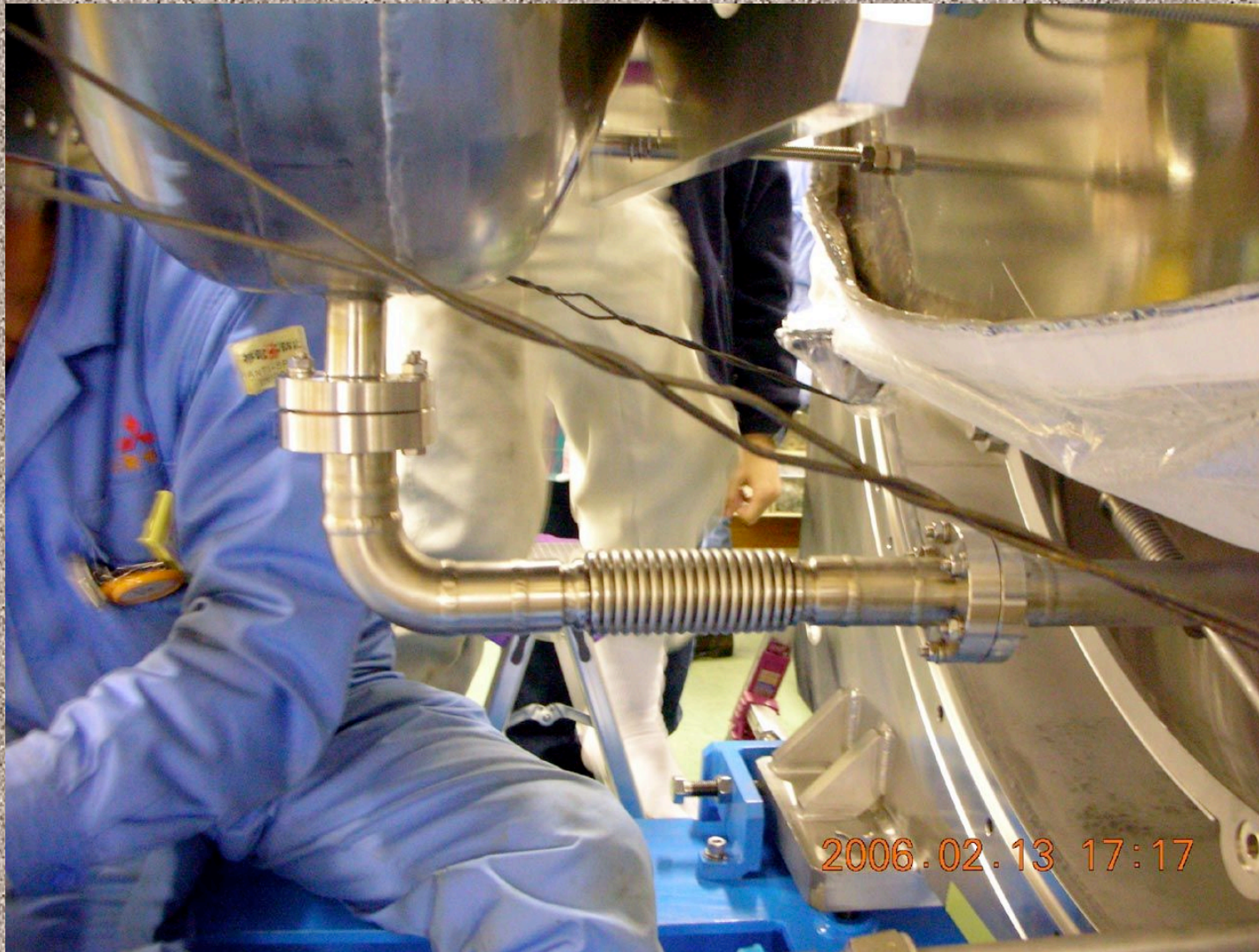
Stub Support in Helium Jacket



Copper Bellows



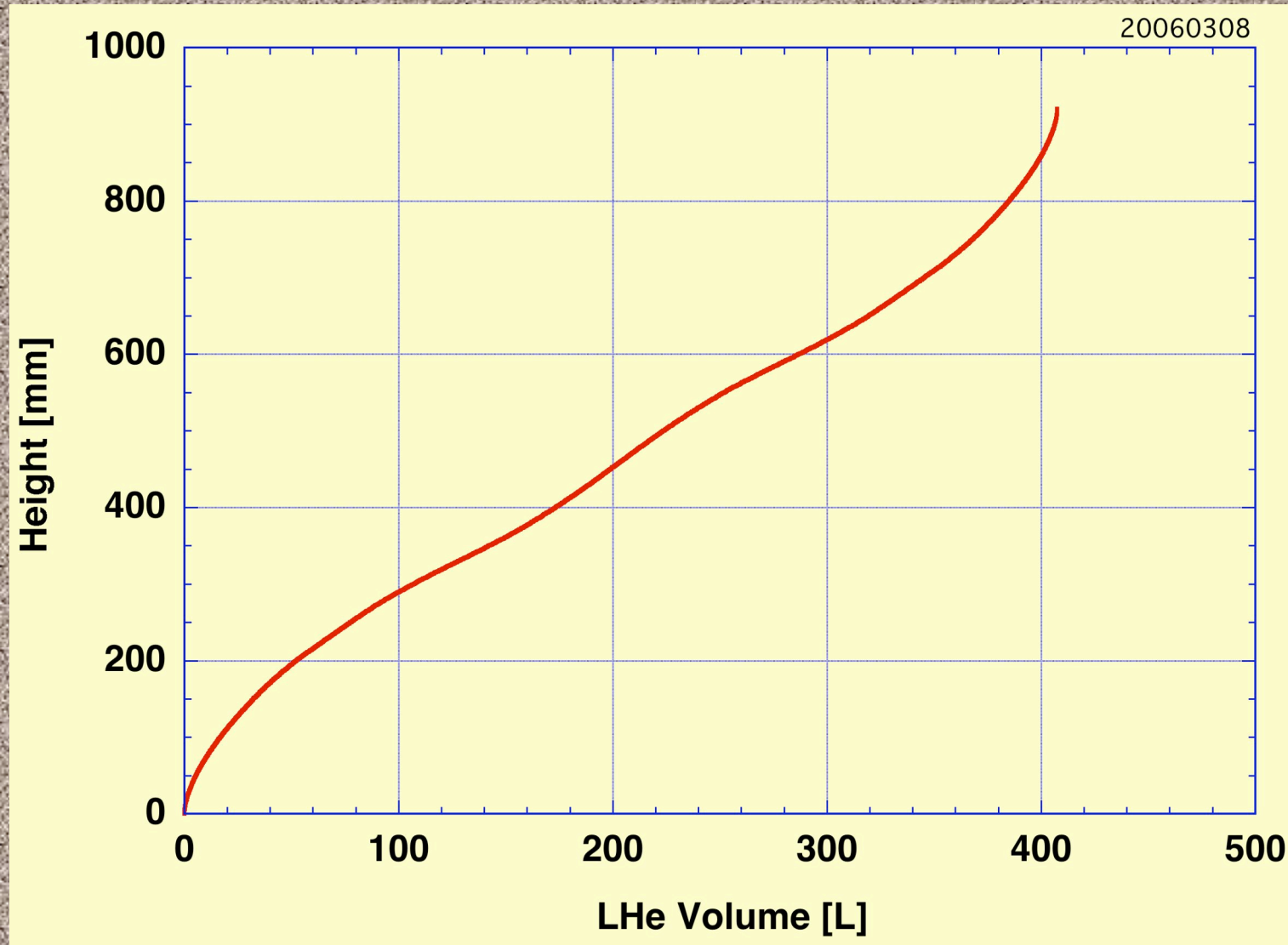
Liquid Helium Connection Tube



Helium Gas Connection Tube

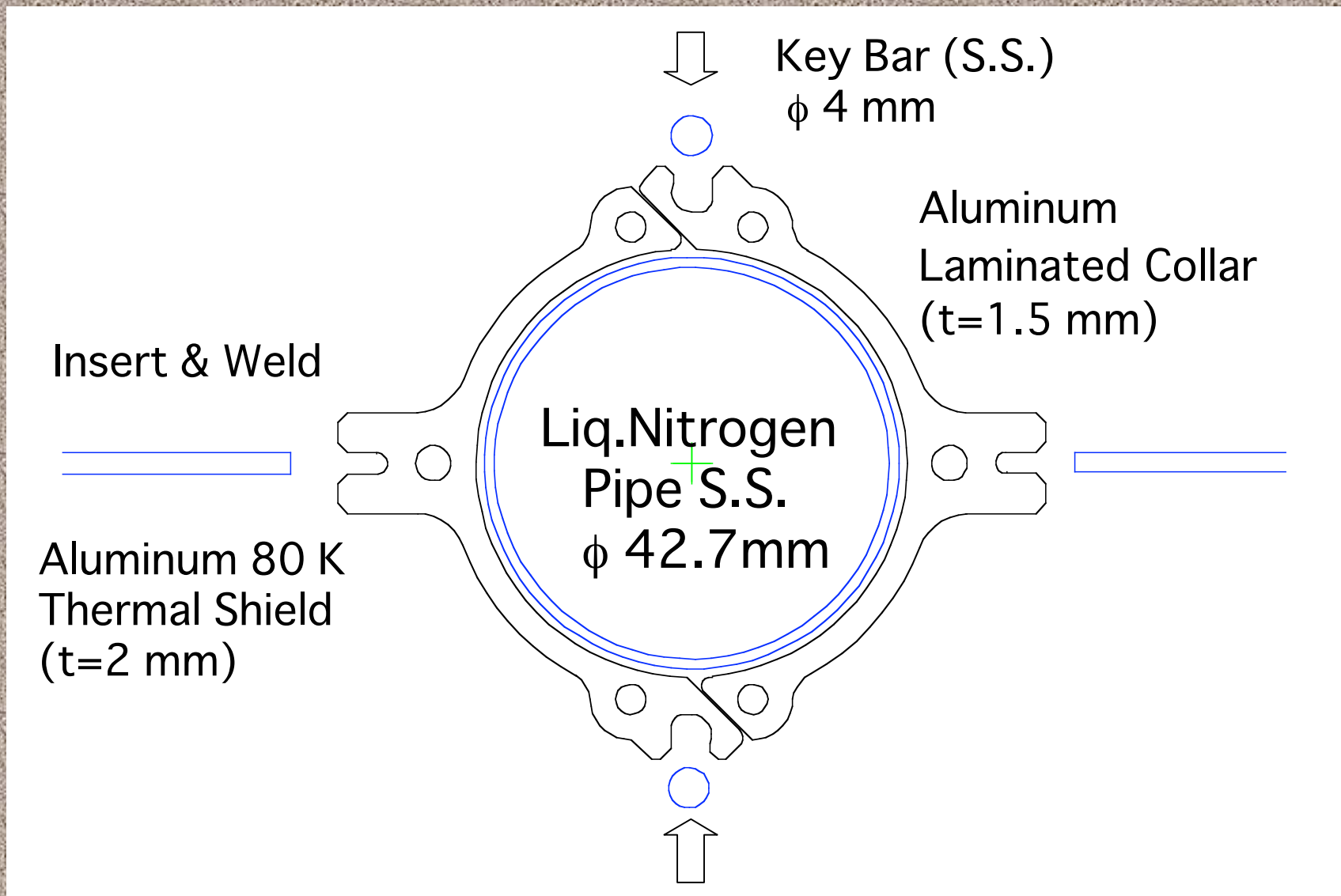


Liquid Helium in Jacket



- 80 K Liquid Nitrogen Thermal Shield

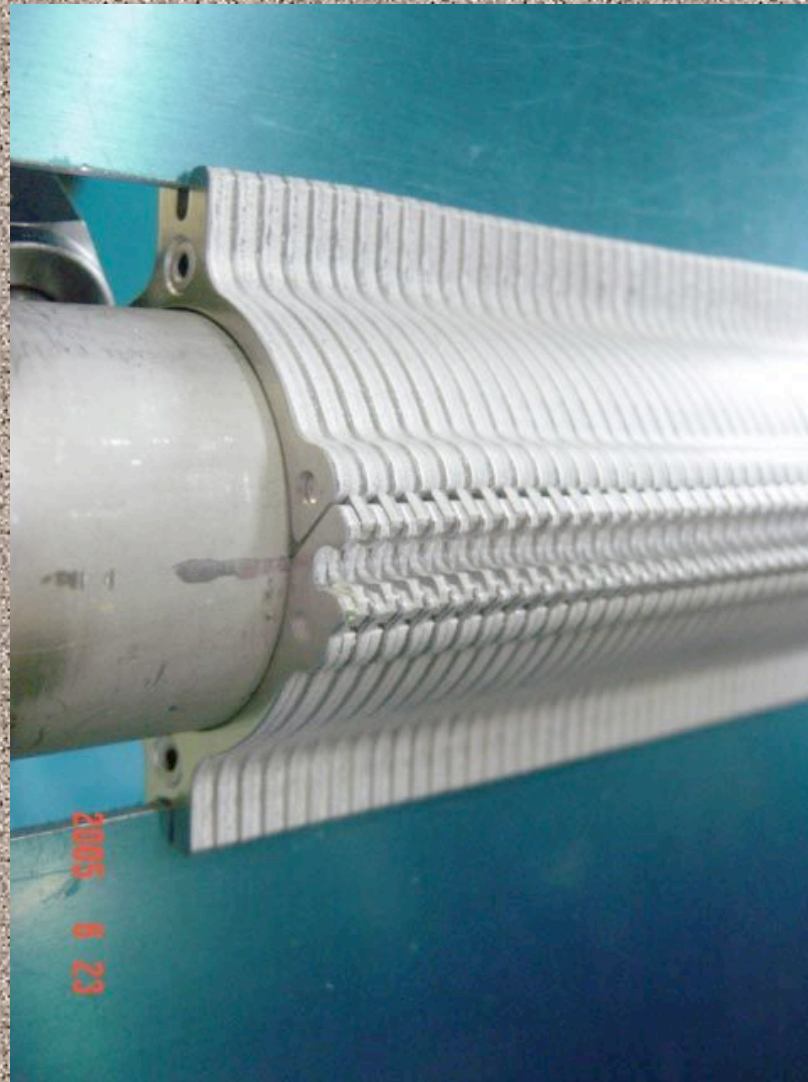
80 K Thermal Shield Structure



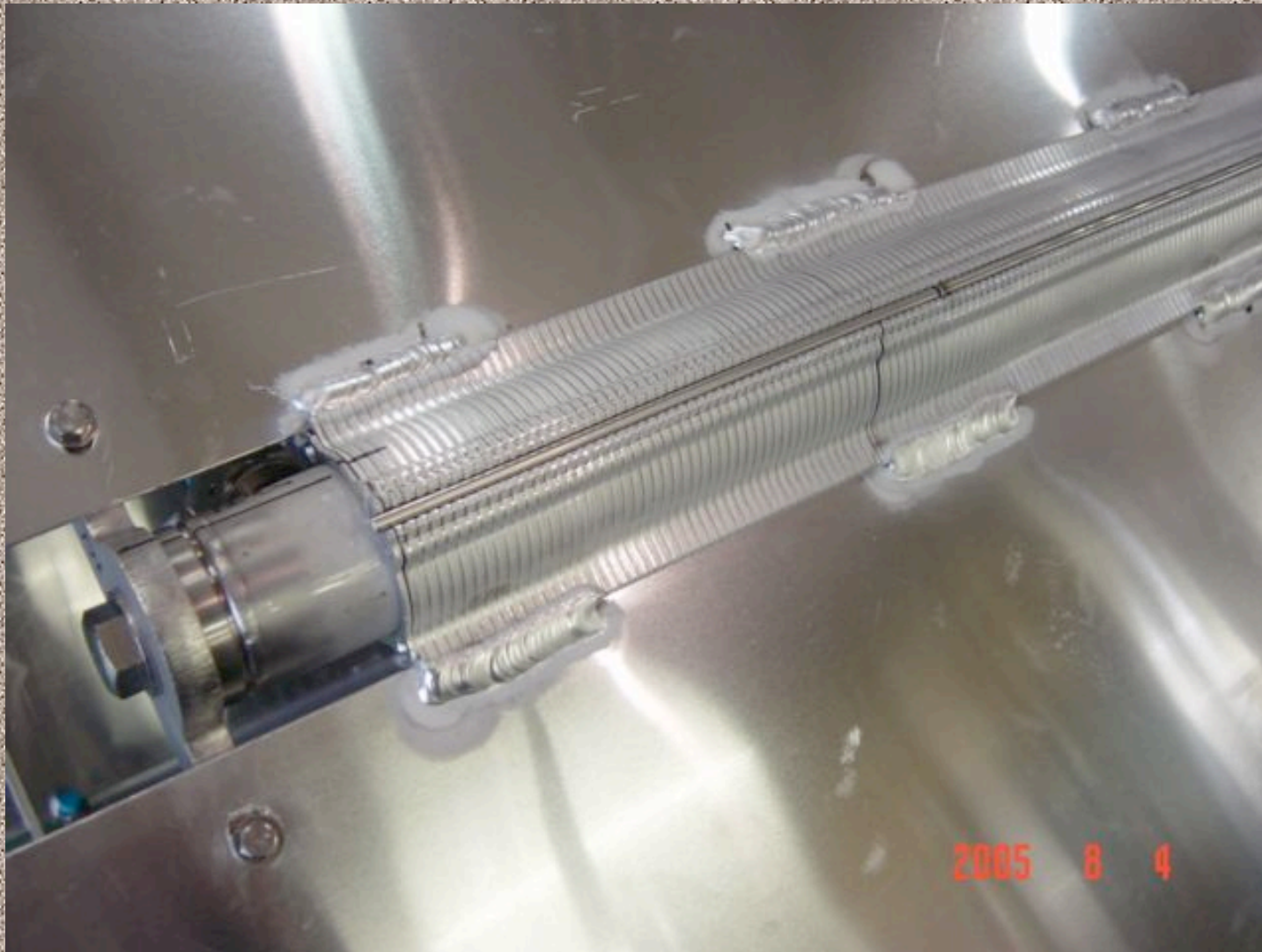
Laminated Collars



Assembly of 80 K Thermal Shield



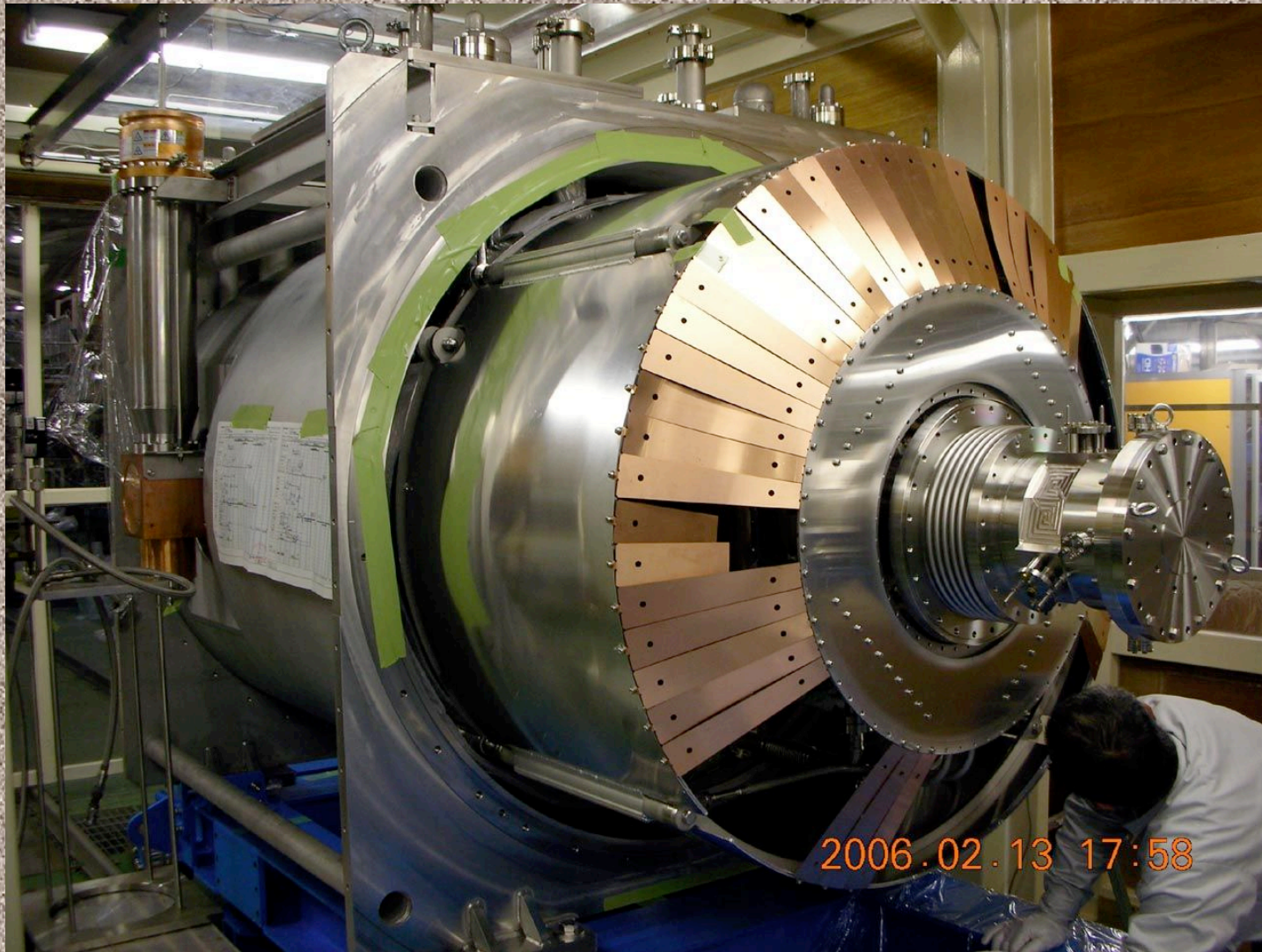
Welded 80 K Thermal Shield



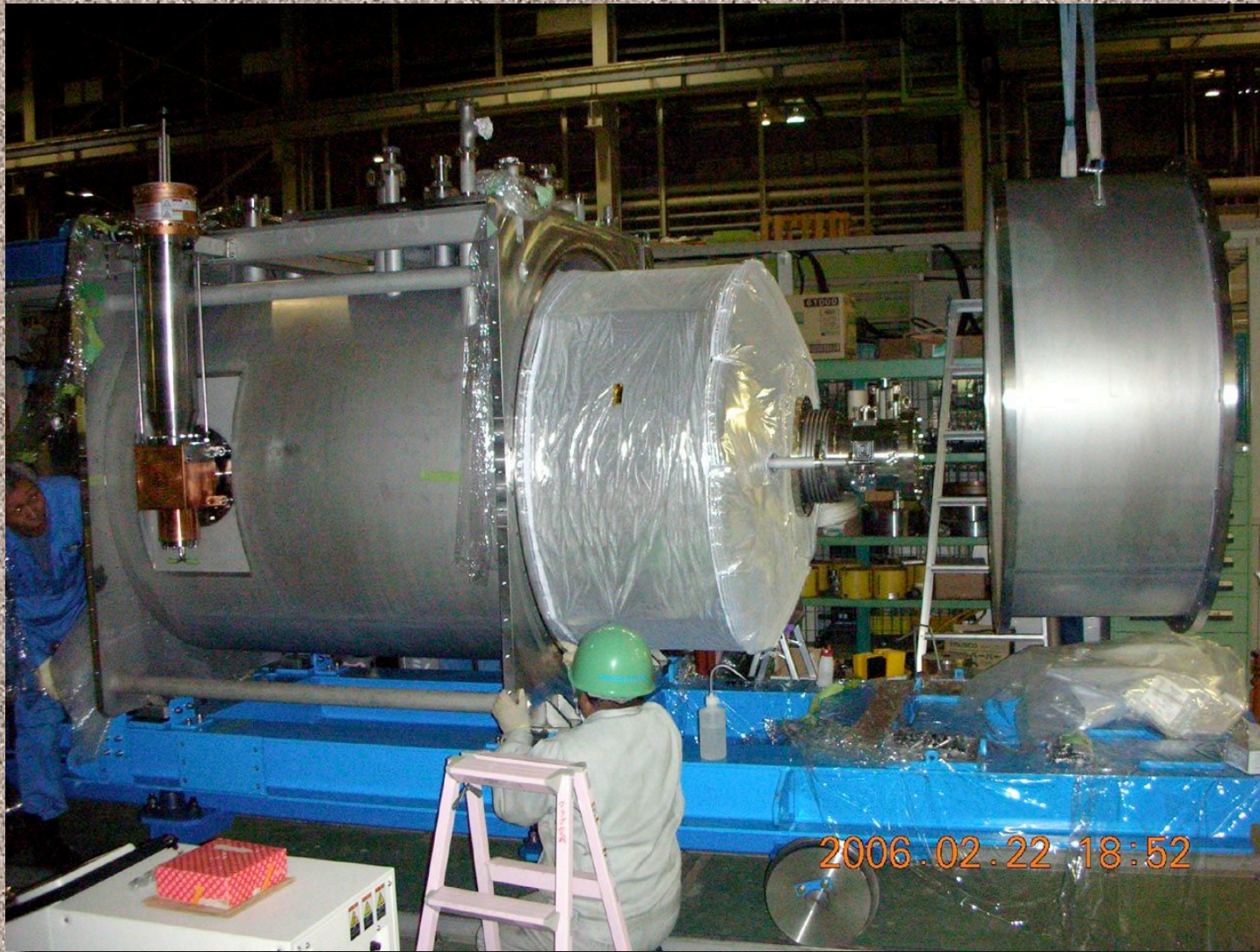
80 K Thermal Shield



80 K Thermal Conduction Strips



Assembly of Cryostat



Current Status

- Cryostat design completed and numerically analyzed
- Prototype cryostat for assembly check and cooling test completed
 - No leakage
 - Storage of liquid helium
- Two fully-equipped cryostats under construction