

# MICE Absorber and Focus Coil Magnet

**MICE Collaboration  
Meeting  
16 – 19<sup>th</sup> October 2012**

Oxford University and RAL Cryogenics Group

Tom Bradshaw

Elwyn Baynham

John Cobb

Mike Courthold

Wing Lau

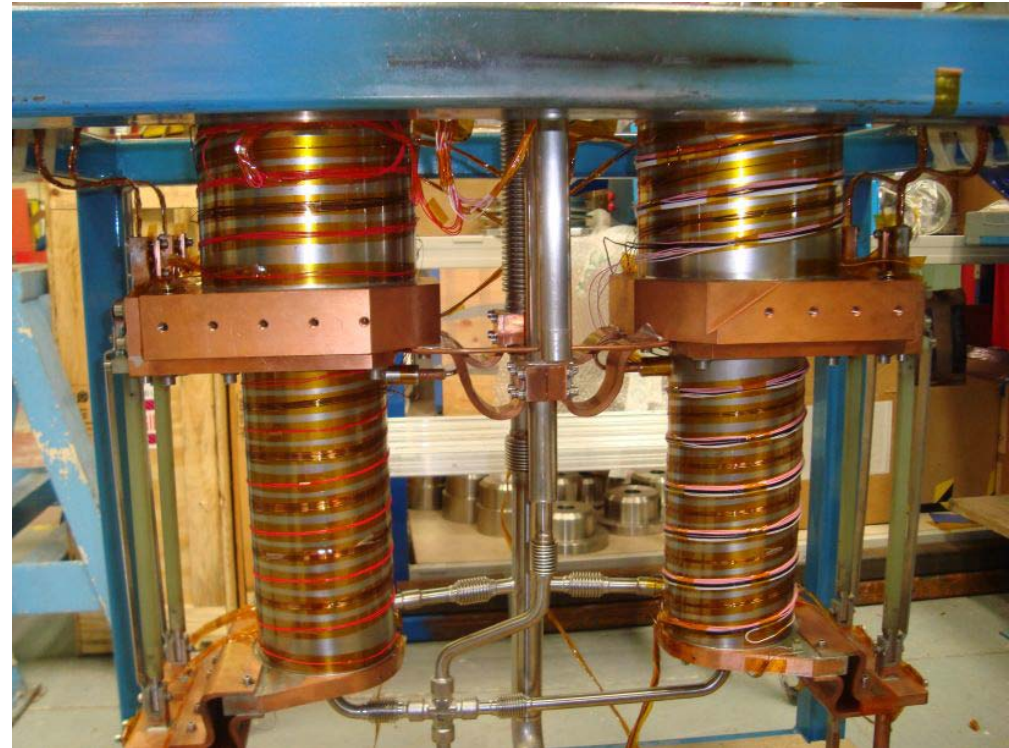
Victoria Bayliss

Matt Hills

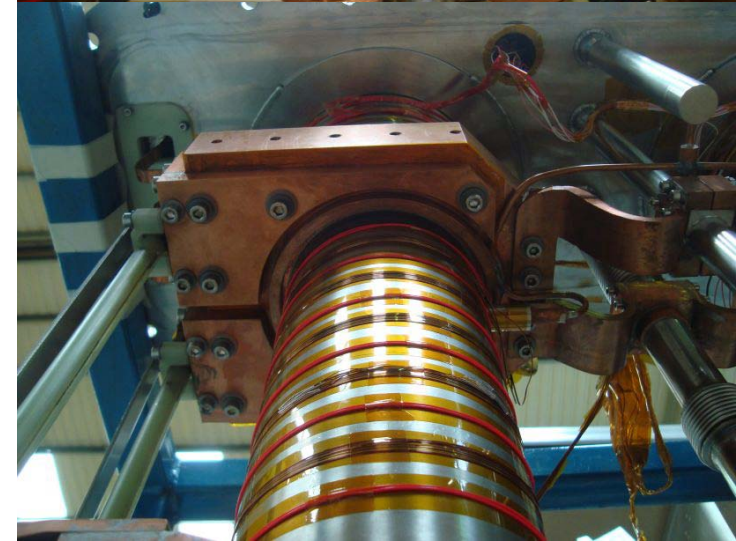
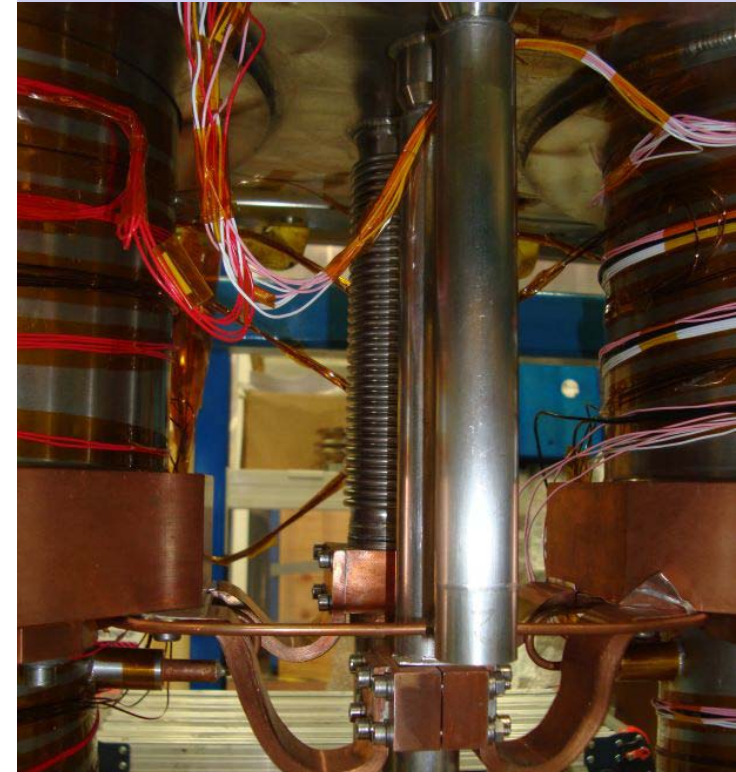
Victoria Blackmore

Roy Preece

Jason Tarrant etc...



The Helium turret was finished  
some time ago and installed in the  
AFC



The Absorber and Focus Coil magnet is in its final stages of assembly prior to delivery to RAL. All of the major sub-systems are assembled with the cold mass in the Outer Vacuum Can. The last major work is the installation and welding of the warm bore (completed) followed by extensive leak testing.

Welding of the inner bore



Monitoring of the work at Tesla continues with weekly visits from either T Bradshaw and/or Wing Lau and/or Roy Preece. The schedule and any outstanding technical issues are discussed at this meeting. In addition visits are made by Roy Preece to understand and check on thermometer calibrations, sensor locations and general interfaces with the control system.

Final welding

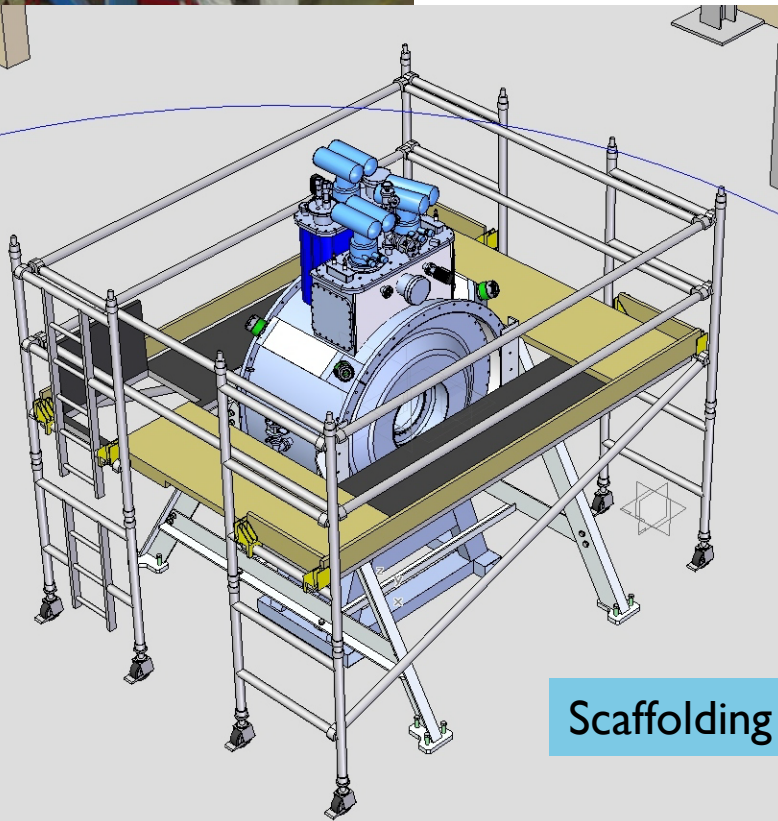


# Preparation for receipt

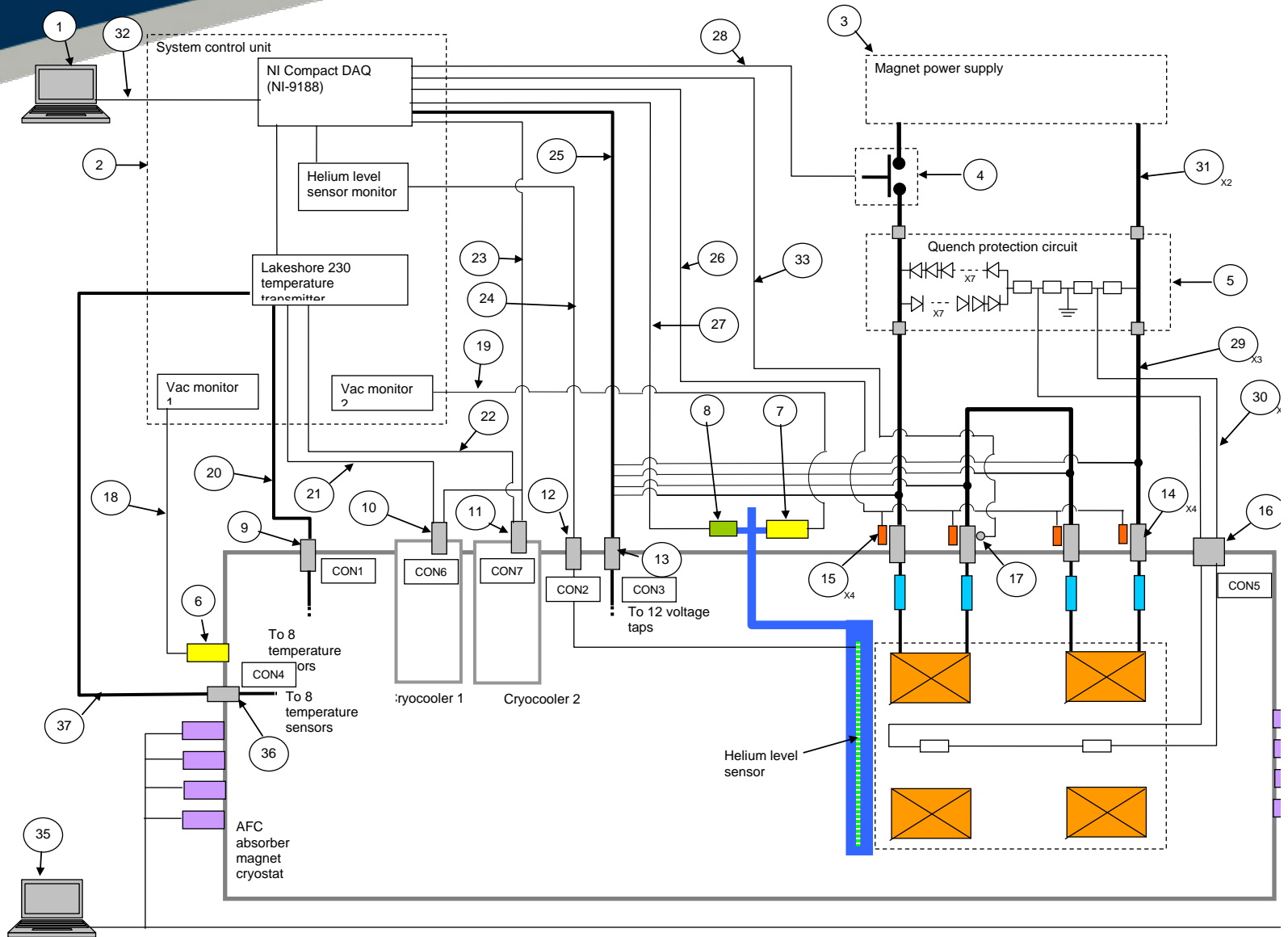
Installation of the He  
turret pipework



Preparation for reception of the magnet in the R9 test facility are essentially complete with the cryocooler compressors in place, water and electrical supplies available. R9 has been cleared and tidied. The floor has been marked with the 5 gauss limit and the scaffolding and magnet supports are in place. Tesla have already secured adequate supplies of helium that should cover the commissioning (you may be aware that this is in short supply at the moment). Once the magnet has been commissioned CERN will be performing a full field map.



Scaffolding



Detailed sequence is available:

- System set-up and operation check
- Leak check magnet under vacuum and pressure
- Pre-cooling with LN<sub>2</sub> to 80-90K
- Cool-down with Helium to 4K
- Steady state thermal performance check zero boil off
- Cryocooler excess performance check
- Step by step current ramp to full current (Flip mode)
  - Thermal performance check
- Step by step current ramp to full current (Solenoid mode)
  - Thermal performance check

- Various tests conducted at Tesla to check interfaces to control system
- Control system is networked for debugging
- It is all ready to plug in.

### Operating points

	Flip mode		Solenoid mode	
	200 MeV/c	240 MeV/c	200 MeV/c	240 MeV/c
Current	187.14	224.75	94.15	113.09
Current density NbTi	584.82	702.35	294.23	353.41
Current density coil	104.75	125.80	52.70	63.30
Bz max	3.090	3.711	2.598	3.121
Bpeak conductor	6.264	7.523	3.763	4.520



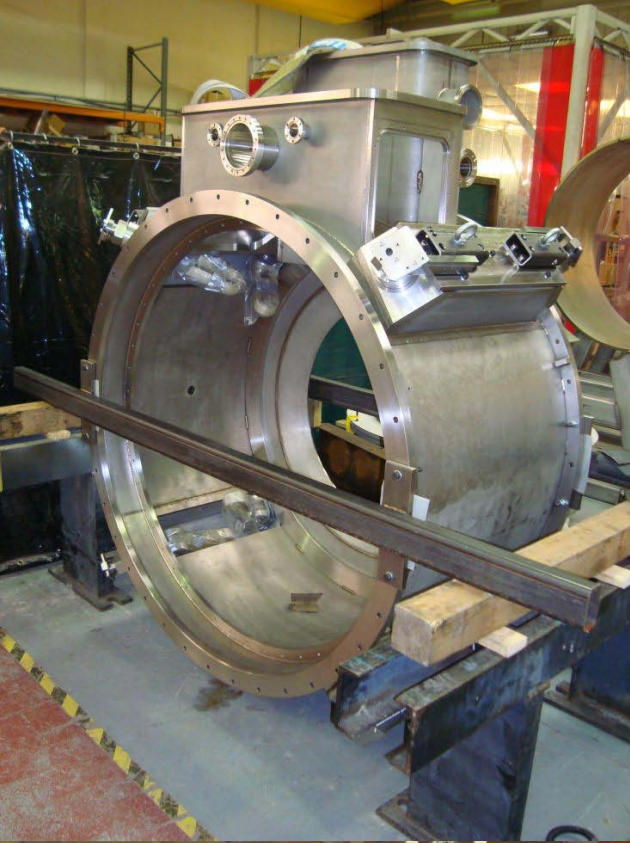
Had another look at absorber to check interfaces – there may be a problem with accommodation of Fisher connector. Some minor modifications may be required. This will be done following a fit check on the magnet at RAL.



Module/Activity	Due Date
AFC1 at RAL	Target date week 22-26th October
Absorber integration and test	+3mths elapsed
AFC2 at RAL	January 2013 (TBC)
Absorber integration and test	<3mths

AFC 2 parts are being progressed in parallel with AFC 1 manufacture so assembly should follow quite swiftly.

- The schedule is reviewed at the weekly visits and Tesla are still on target to meet delivery at the end of October 2012.
- Need to confirm planning with CERN over the field mapping



# END

