

# Focus Coil

(+ hydrogen absorber)

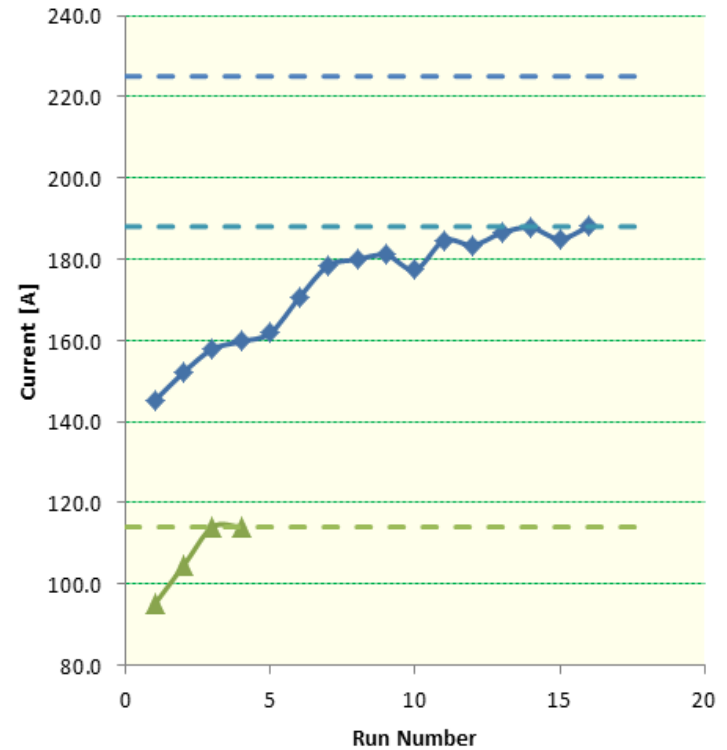
(+ proton absorber)

## Video Conference – 20/03/14



# Recap (up to CM38)

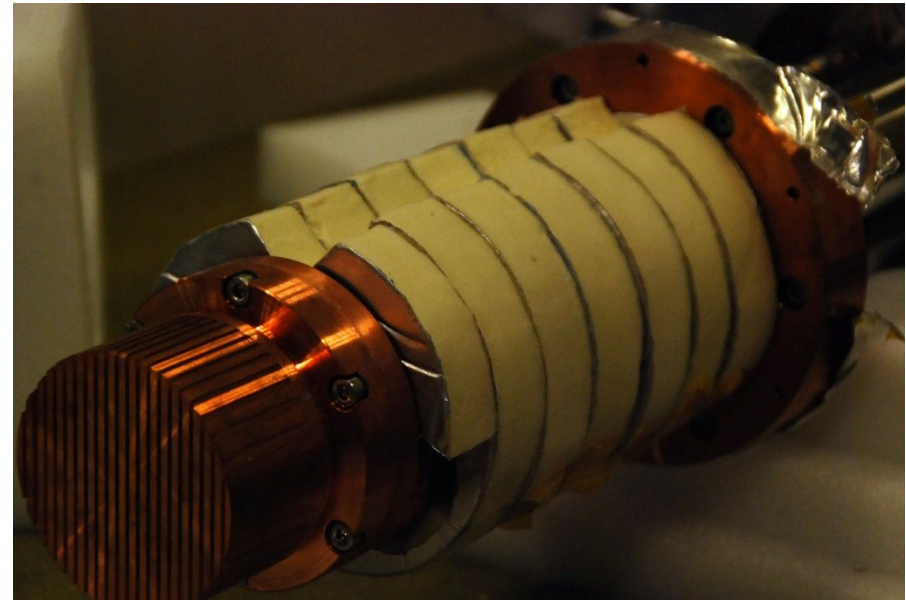
- FC#1 trained to 188A
- Halted due to arrival of FC#2
- FC#2 did not complete commissioning due to a thermal short (and leak) – now back at manufacturer
- FC#1 back in hot seat
- Work started by JC to determine STEP IV operating current based on FC#1



# *FC#1 training – take 2*

*Pre-cool down work*

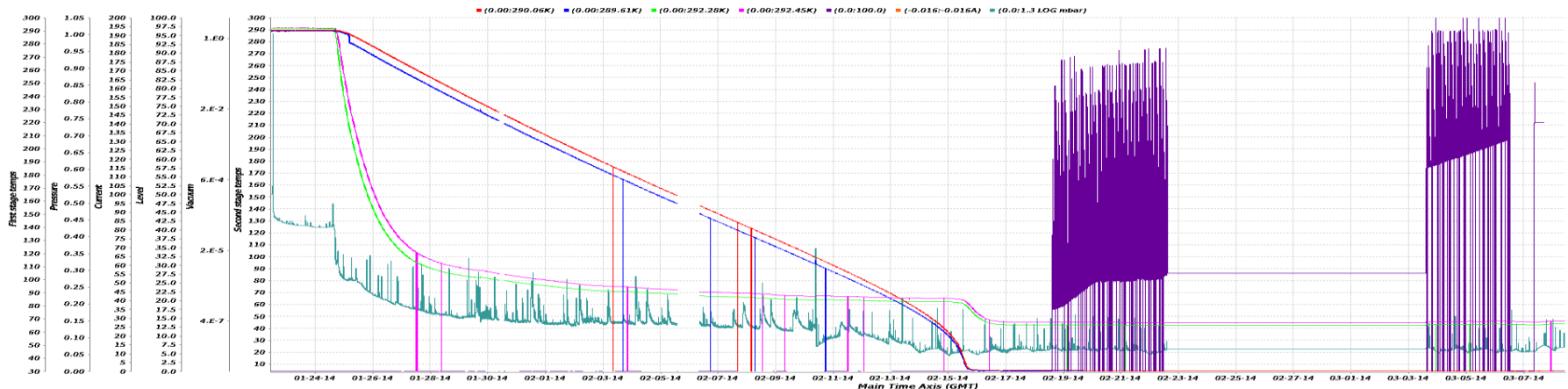
- Insulation added between first and second stages on cryocoolers to reduce parasitic losses
- Support strap tension increased to intended level -  $\sim 100\text{kN}$  @ room temperature



# FC#1 training - take 2

## Cooldown

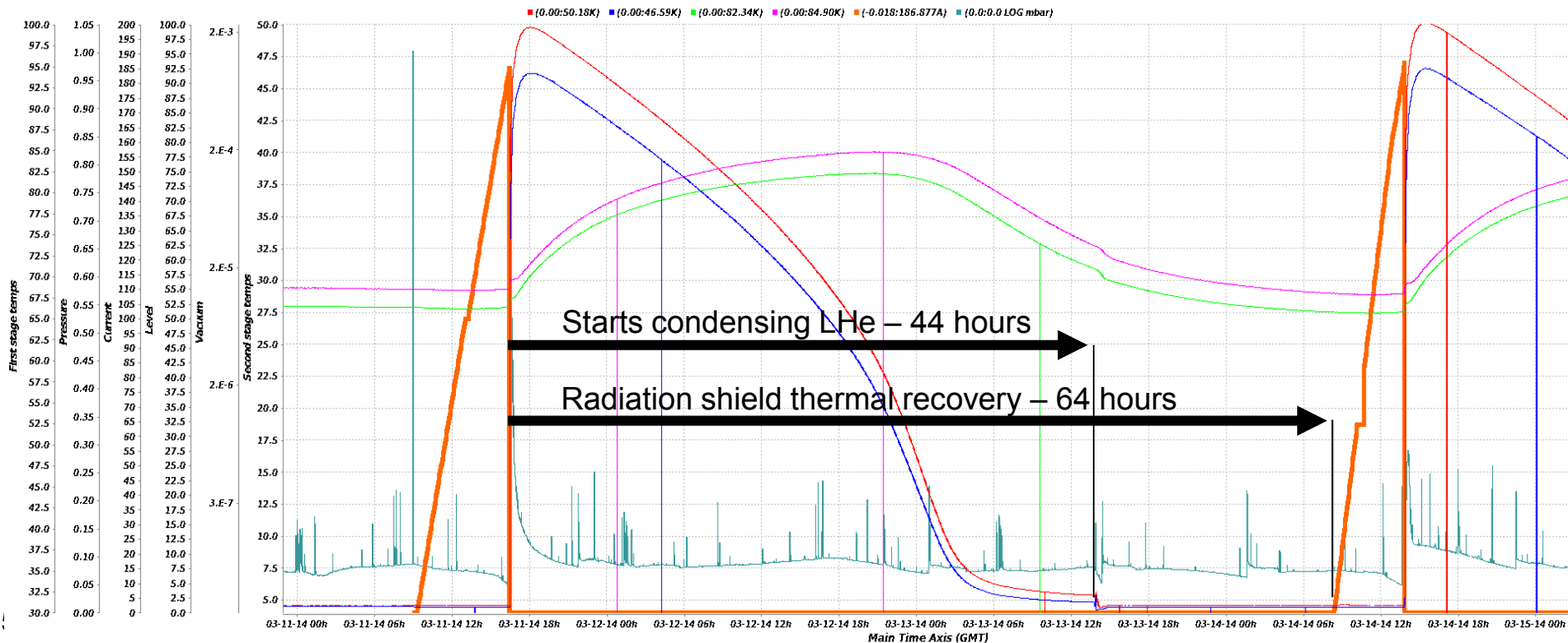
- After experience with FC#2, similarly thorough leak checking discovered a 'previously unknown' leak rate of  $\sim 6.5 \times 10^{-7}$  mbar.l/s
- Doesn't change with cold mass temperature, so likely in a 'warm' location (first stage cryosock?)
- Otherwise, cooldown proceeded normally and completed in  $\sim 3$  weeks



# FC#1 training – take 2

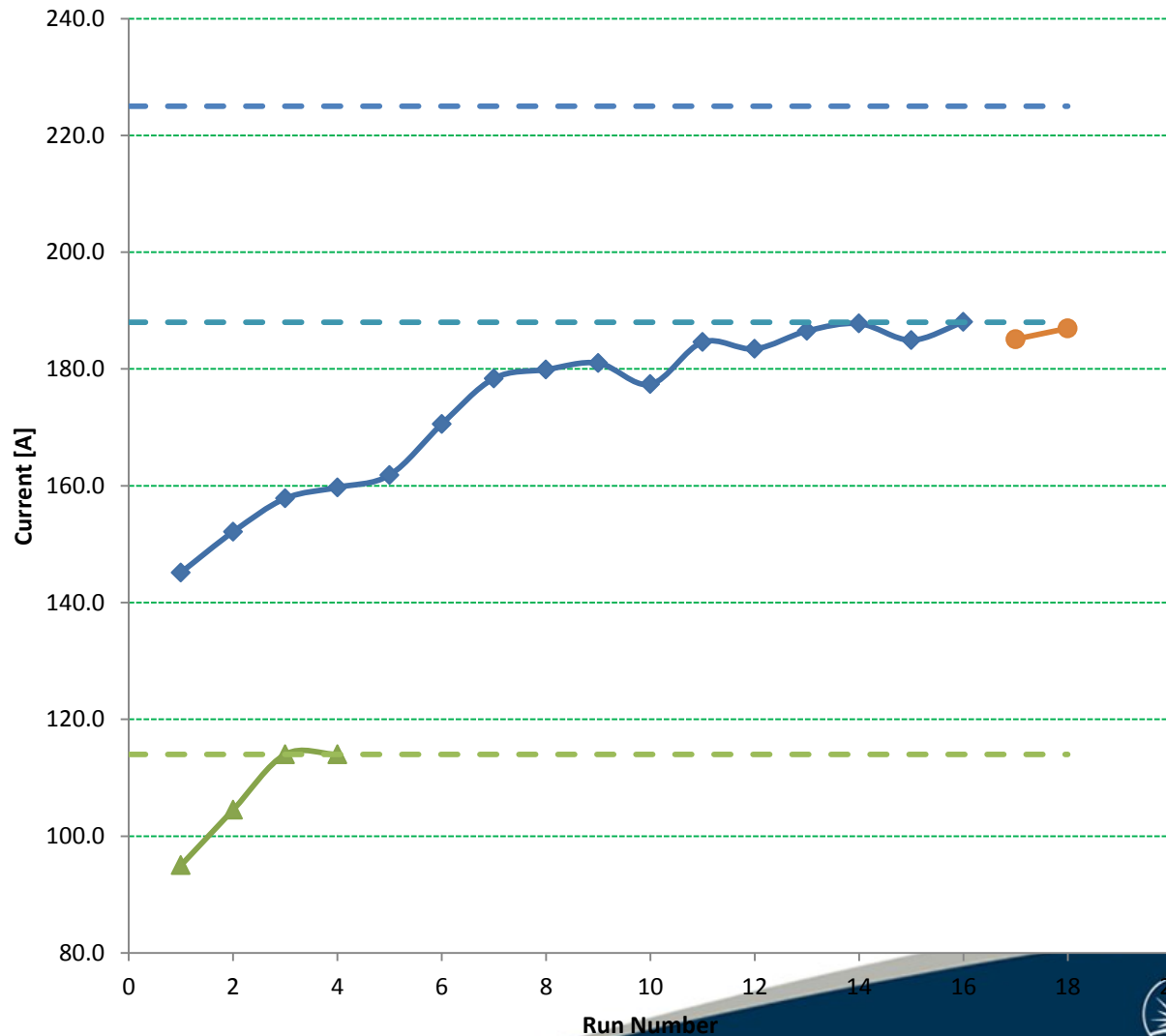
## Training

- First run reached 185.1A (Tuesday 11<sup>th</sup>)
- Module recovered in less than 48 hours
- Second run reached 187A (Friday 14<sup>th</sup>)



# FC#1 training - take 2

## Training



# *FC#1 training – take 2*

*Up to STEP IV*

- Issues with varying levels of openness...
  - *How long to train for*
  - *How much to de-rate the current for operation in STEP IV*
  - *What constitutes ‘stability’ and how to test for it*
  - *How/whether to field map in R9*
  - *How to address the contractual situation*
  - *Where does FC#2 fit*



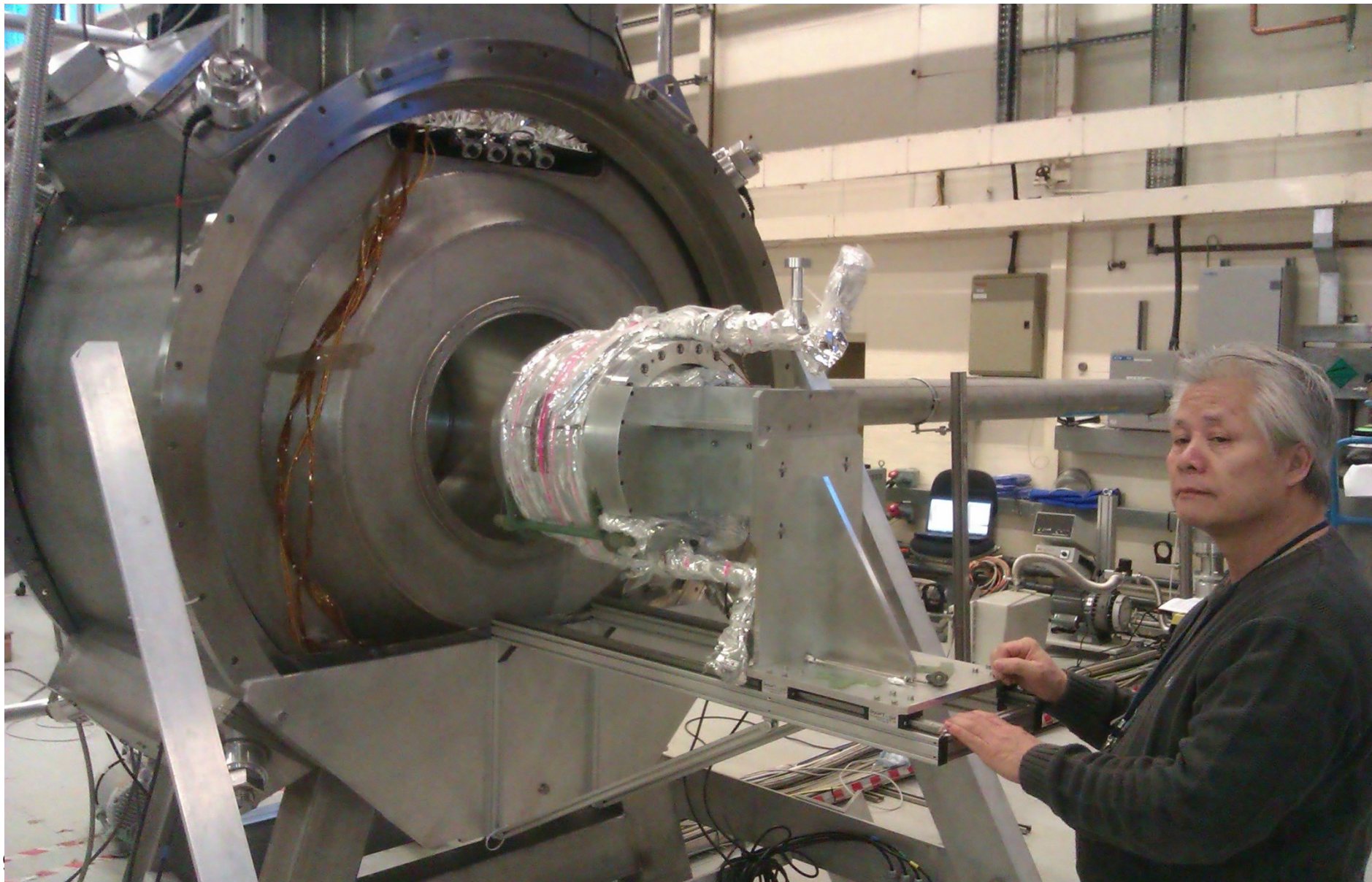
# *FC#2 reparations*

- Thermal short cause finally found – debris of an old pop-rivet on the radiation shield pressing into the cold mass
- Some evidence of bore misalignment
- Location of leak still unknown
- Sensor failure cause ambiguous





# *Absorber integration*



# *Proton Absorber*

Pneumatic proton absorber project taken on by Ted Brooke, a graduate placement student

- Pneumatic system designed and mounted on an aluminium plate
- Mechanism tested in R9 using N2 bottle supply
- Piping route from MICE Hall trench to DSA determined
- Operational procedure and risk assessments written
- Currently being measured in metrology (location of bore axis to 4 fiducial markers)



# Proton Absorber

- To be installed and surveyed during Easter shutdown
- Will run off building air
- A 'soak' test will be carried out to identify any break-in failures
- A systematic test of the mechanism will implemented

