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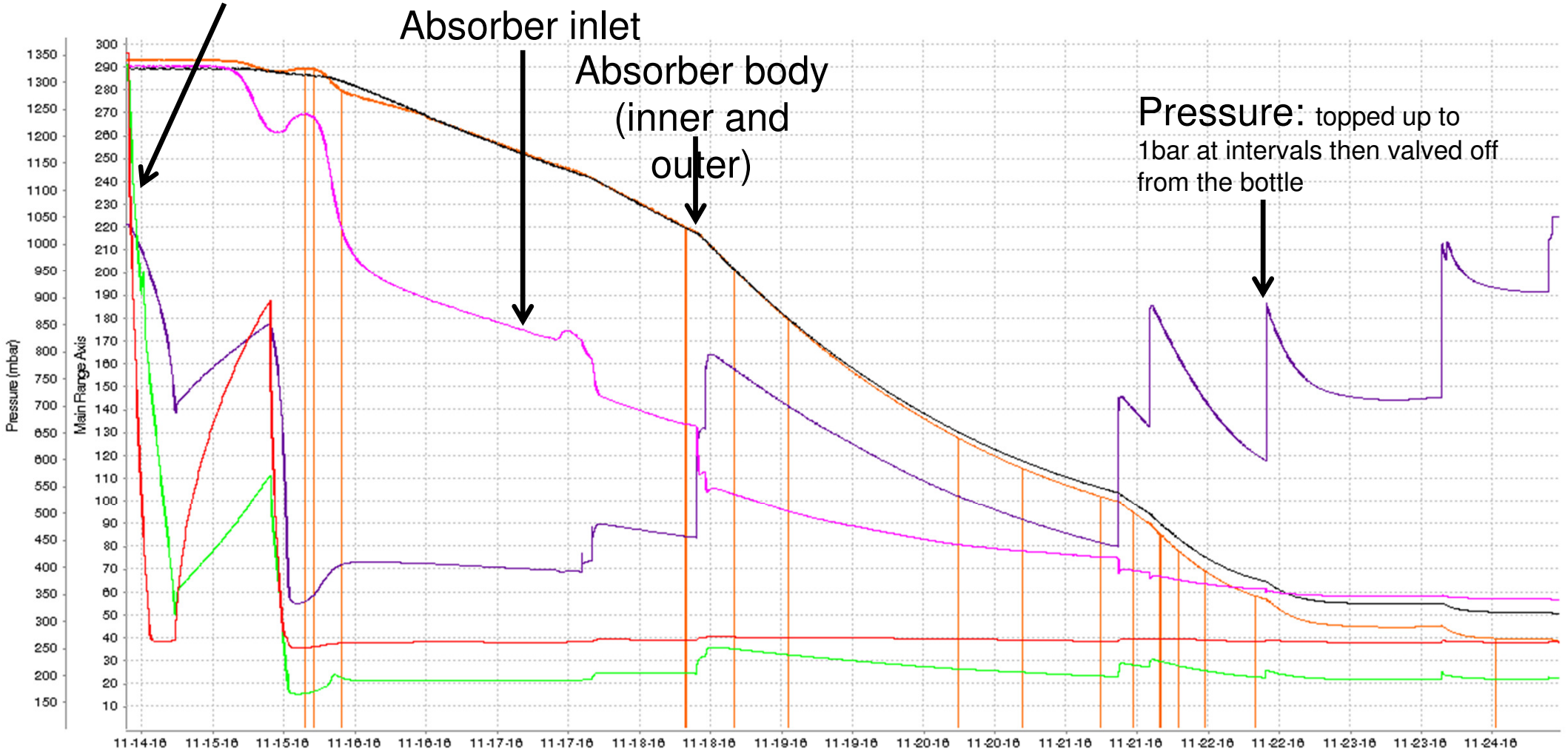
CM47
Hydrogen System

13/02/17

Nov 16 Cooldown

Cryocooler temperatures:
Red –First stage
Green – Second stage



Cooldown starts

Pause cooling overnight

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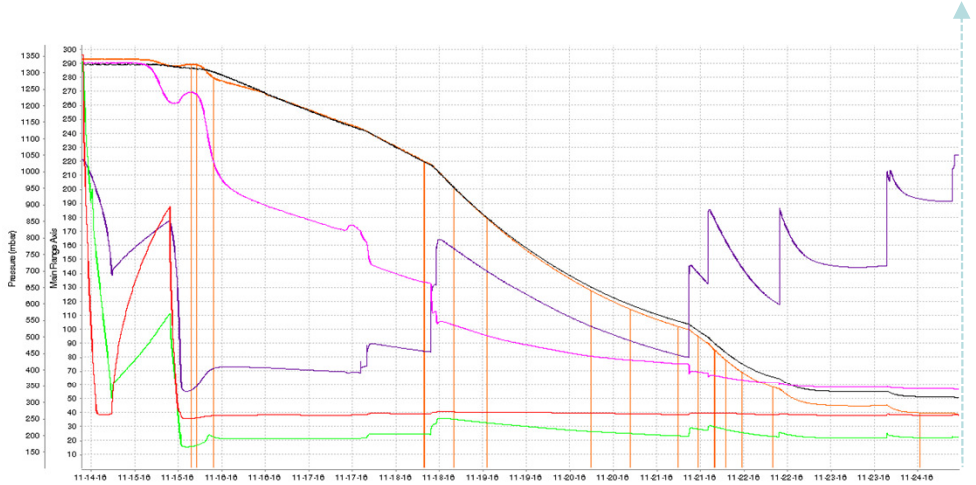
Nov 16 Cooldown

Sensor	Location	Final reading at equilibrium
MICE-HA-TS-04	Cryocooler 1st stage	39K
MICE-HA-TS-06	Cryocooler 2nd stage	21.8K
MICE-HA-TS-07A	Absorber gas inlet pipe	56K
MICE-HA-TS-09	Absorber body (outside)	50K
MICE-HA-TS-03A	(Absorber body (inside)	39K
MICE-HA-VG-03		1049mbar



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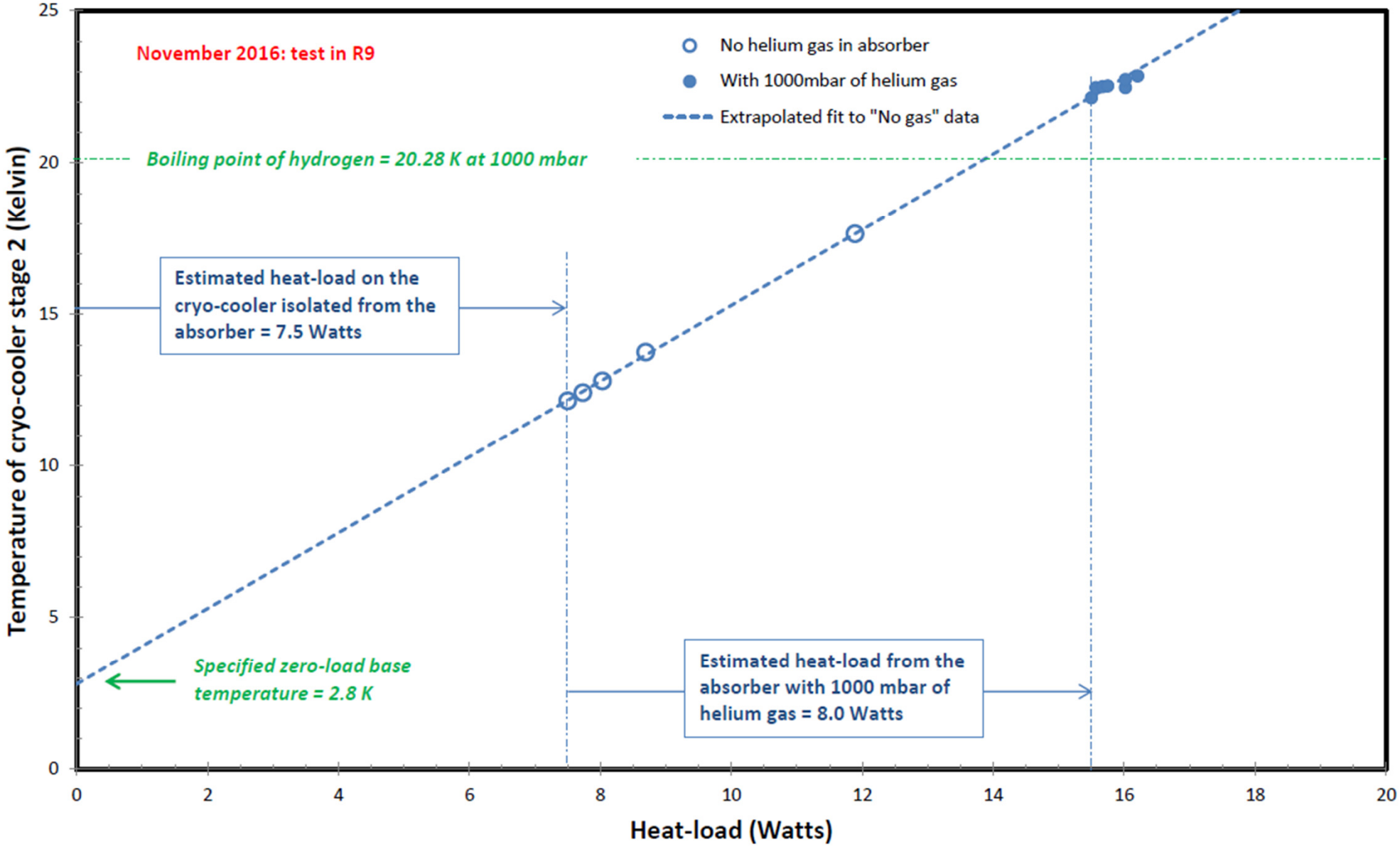

To cool the system to liquefy hydrogen, we need to reduce both the heat load through the turret and the heat load from the absorber.

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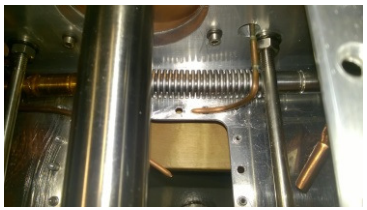
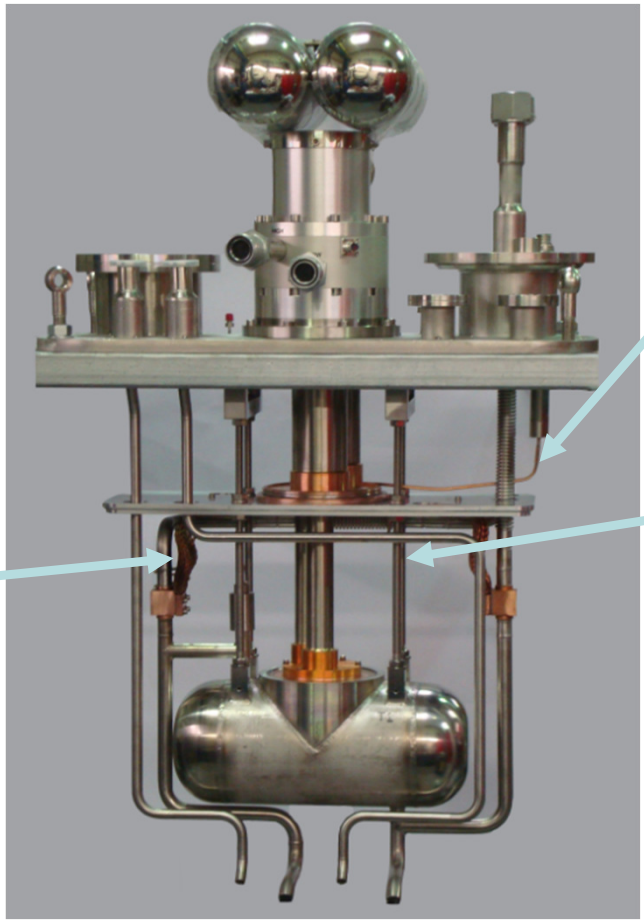
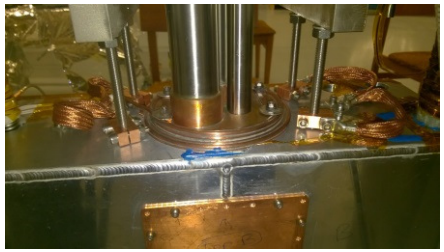
Modifications - Turret

Removed one of two capillary tubes for pressure sensors





Heat sunk M10 supports to the rad. shield



Removed thermal braid heat sinking cold pipework to rad shield

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Modifications - Turret

Improved MLI

- Added extra 10 layers of MLI
- MLI over all surfaces supports and pipework

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Modifications - Absorber

- Removed pre-cool pipework
- Pulled pipework off warm bore
- Added more MLI on windows (now 40 layers)

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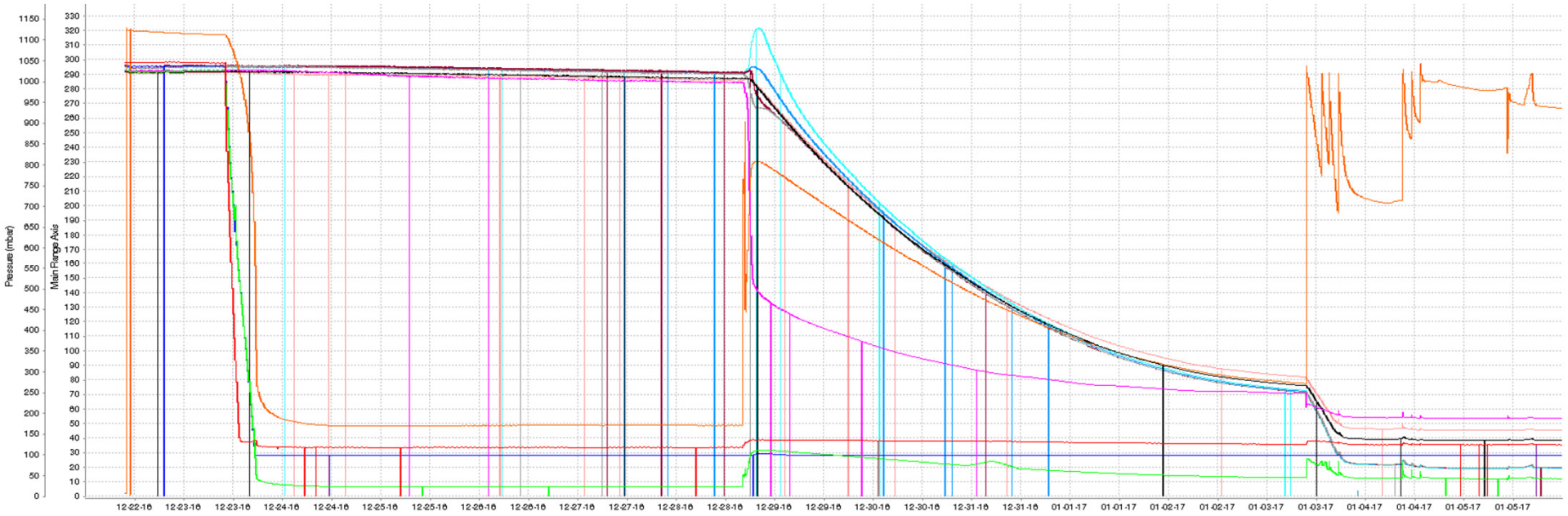
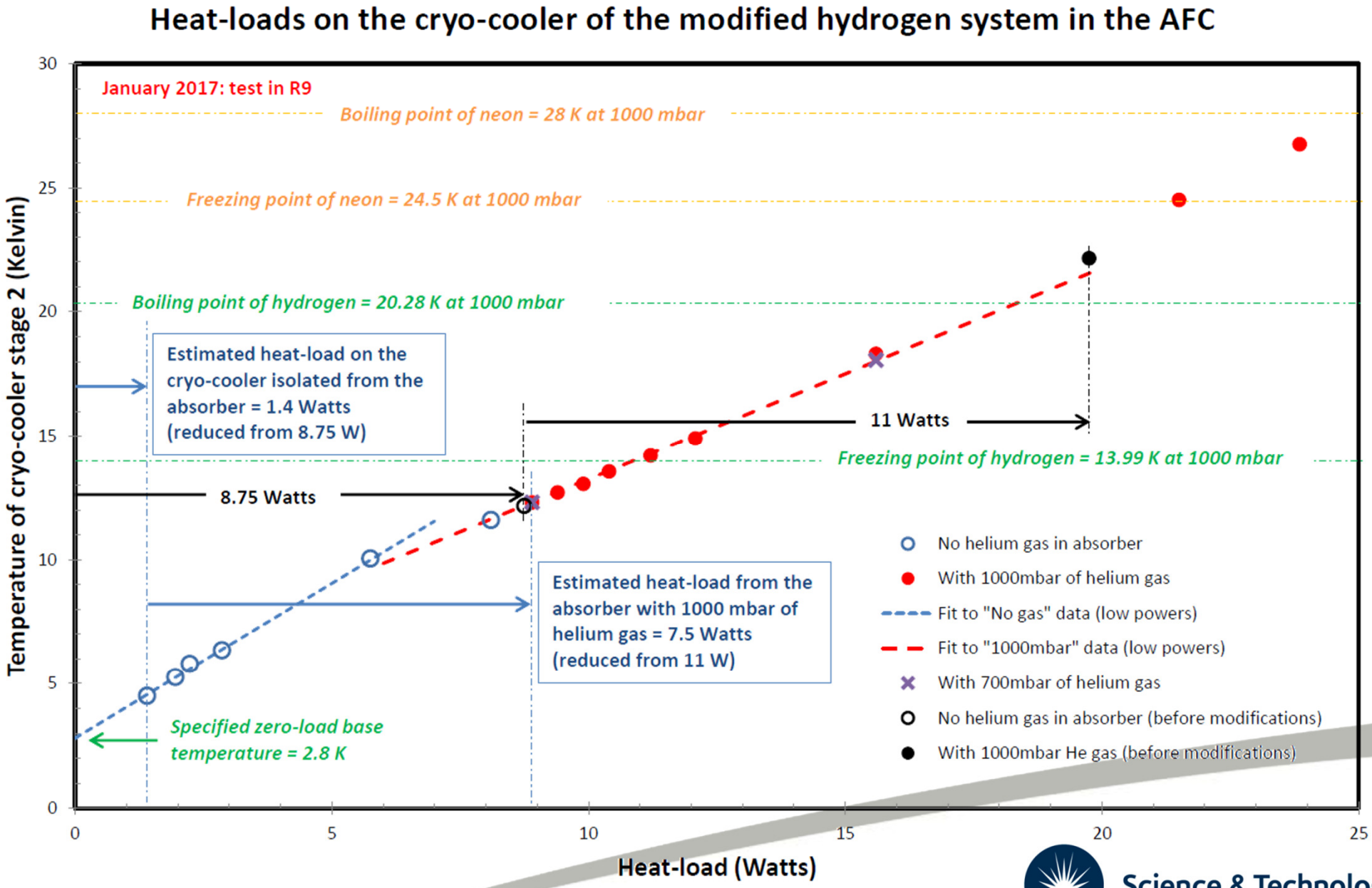
Cooldown Dec 16/Jan 17



Sensor	Location	Final reading at equilibrium	
		Nov 16	Jan 17
MICE-HA-TS-04	Cryocooler 1st stage	39K	35.5K
MICE-HA-TS-06	Cryocooler 2nd stage	21.8K	12.2K
MICE-HA-TS-07A	Absorber gas inlet pipe	56K	54K
MICE-HA-TS-09	Absorber body (outside)	50K	39K
MICE-HA-TS-03A	(Absorber body (inside)	39K	19.4K
MICE-HA-VG-03		1049mbar	

Cooldown Dec 16/Jan 17



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Neon Cooldown – Jan 17

Sensor	Location	Final reading at equilibrium		
		Nov 16 (He)	Jan 17 (He)	Jan 17 (Ne)
MICE-HA-TS-04	Cryocooler 1st stage	39K	35.5K	37.9K
MICE-HA-TS-06	Cryocooler 2nd stage	21.8K	12.2K	26.8K
MICE-HA-TS-07A	Absorber gas inlet pipe	56K	54K	
MICE-HA-TS-09	Absorber body (outside)	50K	39K	
MICE-HA-TS-03A	(Absorber body (inside)	39K	19.4K	27.95K
MICE-HA-VG-03	System pressure	1049mbar		1143mbar

Ne boiling point is 27.05K at 100mbar.

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Hydrogen System

- Sign off paperwork (Date: March 20th)
  - Maintenance records
  - Operating plans and manual
  - Safety training
- Install hardware (Starting in hall 6th March)
  - Moving the hydrogen insert into MICE hall and fitting in FC
  - Leak checking the complete system
- Commission complete system (Starting mid-April)
  - Test with Neon
- Sign off system (Review Date: ~24th April tbc)
- Fill with Hydrogen

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Questions?

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