MICE Liquid Hydrogen System

Video Conference – 12/01/17

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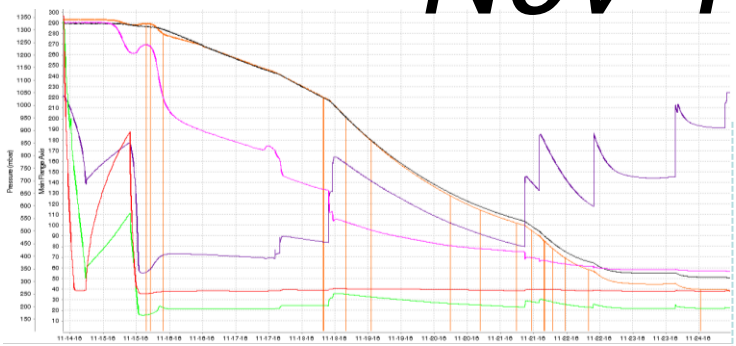
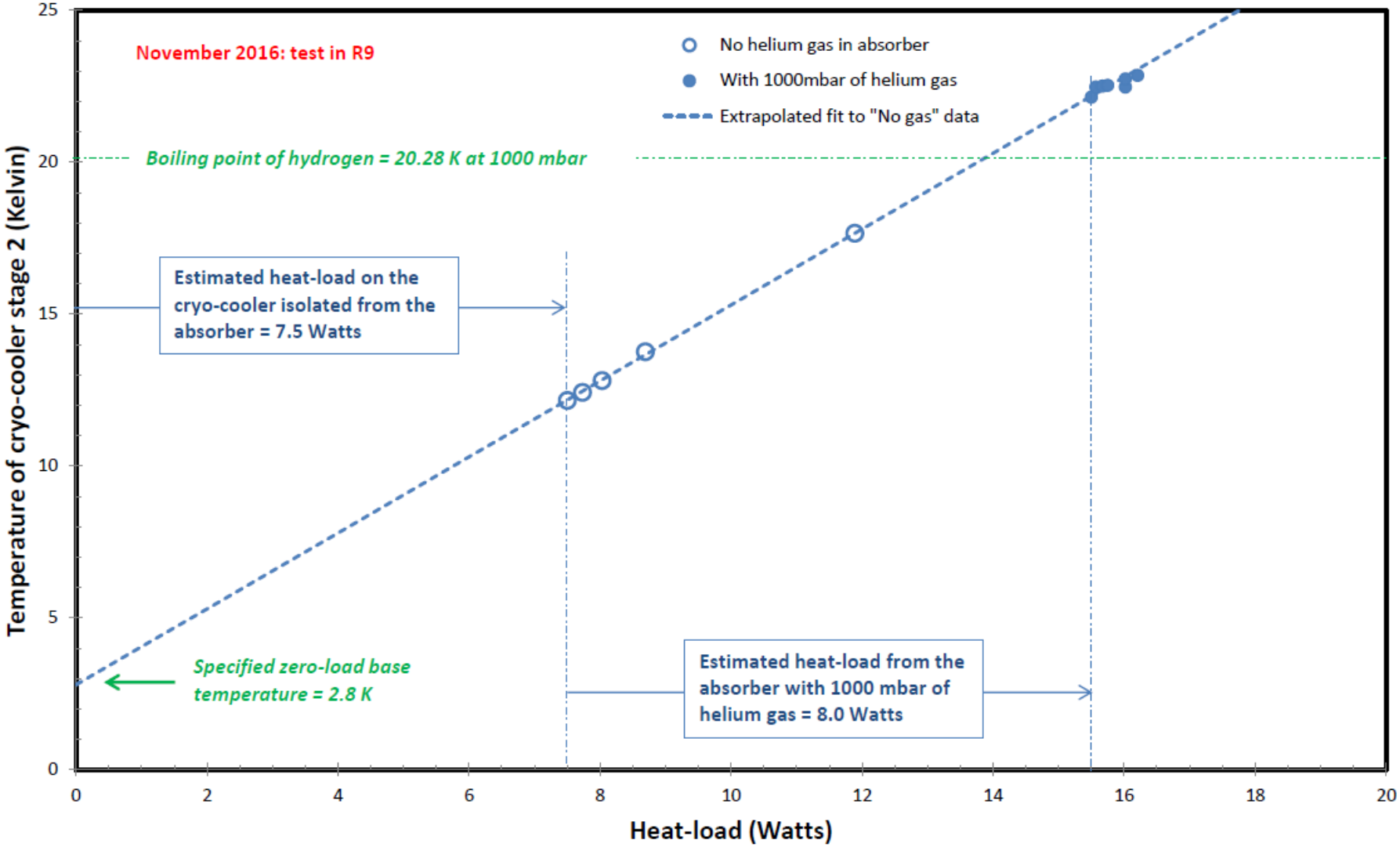
Nov 16 Cooldown



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



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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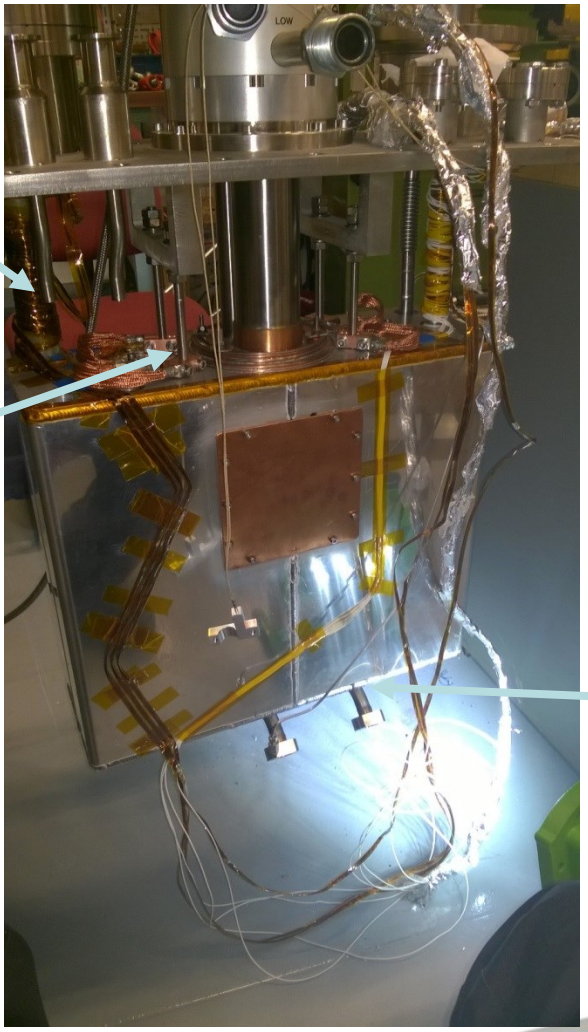
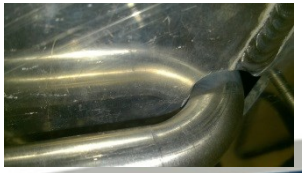
Modifications - Turret

Removed pre-cooling pipework

Heat sunk M10 supports to the rad. shield



Modified rad shield so wasn't touching cold pipework



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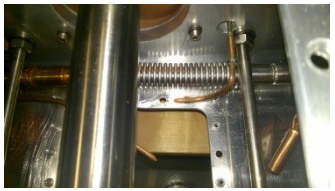
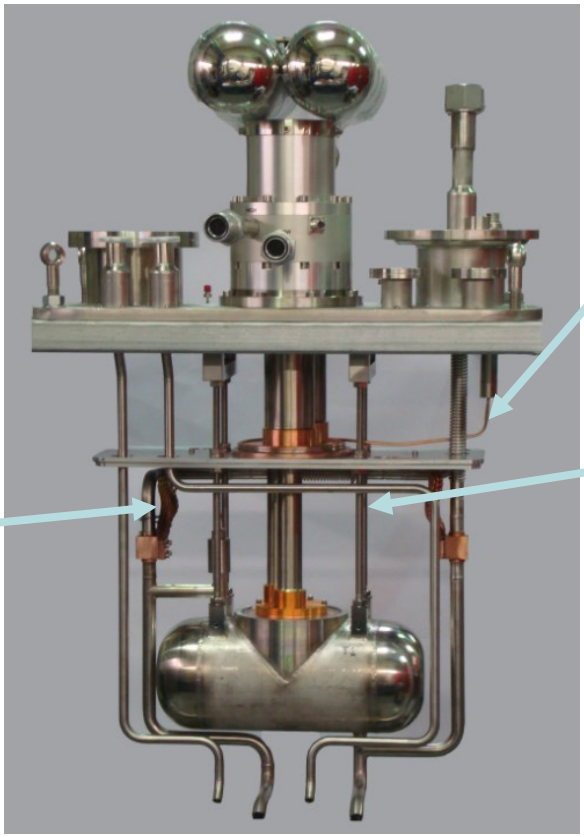
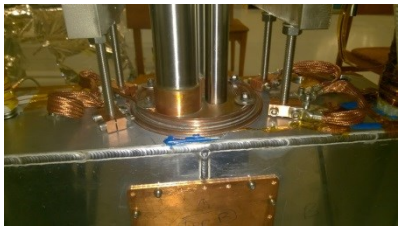
Modifications - Turret

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	

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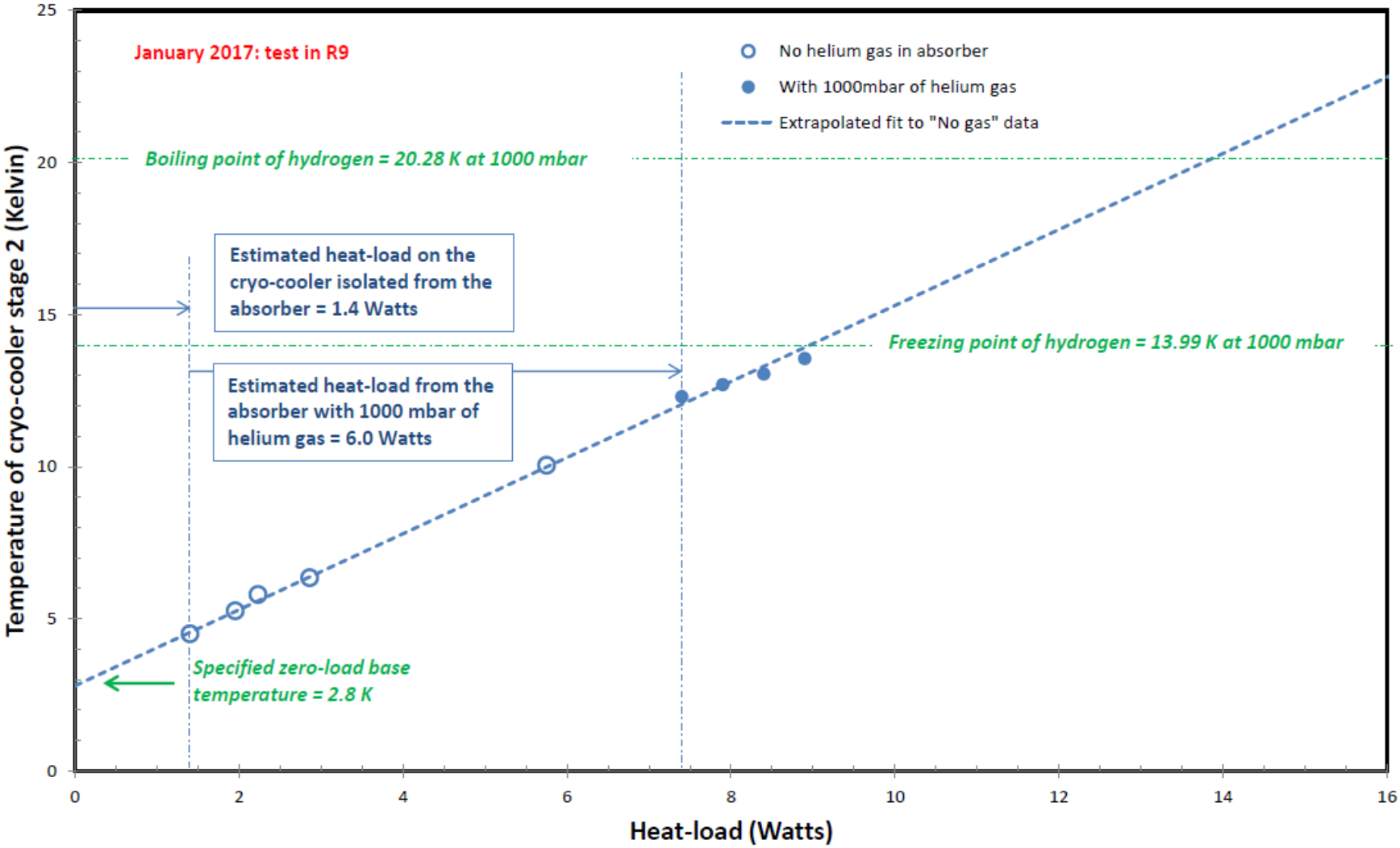
Cooldown Dec 16/Jan 17



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Issues

1. dT between the absorber (19.4K) and the condensor (12.2K)
   - test with Neon

2. Temperature sensor readings
   - thermally sink sensors better

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