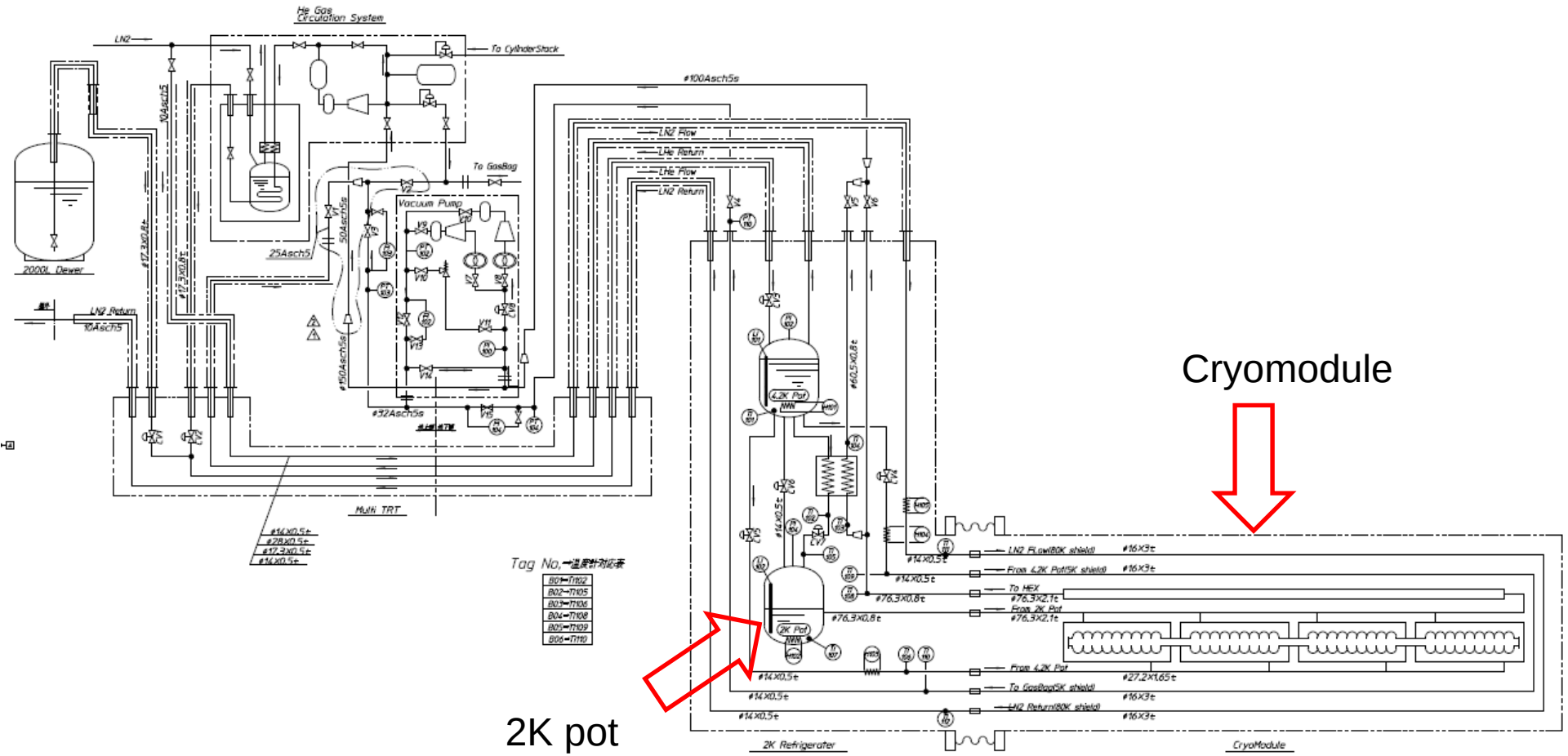
S1-G Cryomodule Thermal Tests Schedule

KEK, Norihito Ohuchi

Thermal measurement of S1-G cryomodule

- 4K heat loss measurement
  - Heat loss at 2K pot in the 2K cold box (standard measurement)
  - Heat loss at the 8 cavities, the 2K pot, the connection pipe and LHe supply pipe
  - Calibration by heater in the 2K pot
- 2K heat loss measurement
  - Heat loss at 2.5K at the 8 cavities, the 2K pot, the connection pipe and LHe supply pipe
  - Heat loss at 2.0K at the 8 cavities, the 2K pot, the connection pipe and LHe supply pipe
  - Heat loss in the helium gas return pipe (measured by the evaporated gas)
  - Heat loss at 2.0K at the 8 cavities
  - Calibration by heater in the 2K pot
- Dynamic heat loss measurement
  - At three or four gradients and the detuned condition for one cavity
  - At max. gradient for four cavities in Module-A and –C, and for 8 cavities together.

STF Cryogenic System



Cryomodule

2K pot

Heater for calibration (30W)

Time schedule for the thermal test of S1-G modules

In the first test term

Cool-down and thermal test at 4K

Mon	Tue	Wed	Thu	Fri	Sat	Sun
June 7	Cool-down by 90K helium gas				Cooling 80K shields down to LN2 temp.	Non-cooling cryomodule
	Cooling 80K shields with LN2 until 22:00					
June 14 Cool-down by LHe		Heat load meas. at 4K				
			Repeatability			
1. Supplying LHe to 2K pot in the 2K Cold Box. 2.Heat loss measurement at the 2K CB . 3. After the measurement, continuing cooling Modules with LHe.	1. Cooling Modules with LHe to 4K.	1. Heat lord meas. of S1-G modules at 4K. 1-A.Heat lord meas. @ 4K steady condition. 1-B. HL meas. @ 4K with heater (Calibration) Heater power: •half of HL of S1G module •HL of S1G module	1. Heat lord meas. of S1-G modules at 4K. 1-A.Heat lord meas. @ 4K steady condition. 1-B. HL meas. @ 4K with heater (Calibration) Heater power: •half of HL of S1G module •HL of S1G module	Pumping to 2K	Cooling 80K shields down to LN2 temp.	Non-cooling cryomodule
	Cooling 80K shields with LN2 until 22:00					

Time schedule for the thermal test of S1-G modules

In the first test term : Thermal test at 2K

Mon	Tue	Wed	Thu	Fri	Sat	Sun
July 12 Re-cooling to 2K 1. Supplying LHe and cooling down to 2K. 2.Heat loss meas. of S1G module at 2.5 K while cooling down to 2K . 3. After the HL meas., cooling S1G module to 2K	Heat load meas. at 2K 1. Cooling S1G module to 2.5K. 2.Heat loss meas. of S1G module at 2.5 K while cooling down to 2K . 3. After 2.5K HL meas., cooling S1G module to 2K. 4. HL meas. @ 2K. 5. Evaporating LHe in 2K dewer of 2K CB. Measuring HL of GRP. 6. HL meas. of S1G module. 7. Supplying LHe and cooling to 2K.	Repeatability 1. Cooling S1G module to 2.5K. 2.Heat loss meas. of S1G module at 2.5 K while cooling down to 2K . 3. After 2.5K HL meas., cooling S1G module to 2K. 4. HL meas. @ 2K. 5. Evaporating LHe in 2K dewer of 2K CB. Measuring HL of GRP. 6. HL meas. of S1G module. 7. Supplying LHe and cooling to 2K.	Calibration meas. at 2K by heater 1. Cooling S1G module to 2.5K. 2.Heat loss meas. of S1G module at 2.5 K. 3. After 2.5K HL meas., cooling S1G module to 2K. Calibration meas. 3-A.Heat lord meas. @ 2K steady condition. 3-B. HL meas. @ 2K with heater (Calibration) Heater power: •half of HL of S1G module •HL of S1G module 4. Supplying LHe and cooling to 2K.	Repeatability 1. Cooling S1G module to 2.5K. 2.Heat loss meas. of S1G module at 2.5 K. 3. After 2.5K HL meas., cooling S1G module to 2K. Calibration meas. 3-A.Heat lord meas. @ 2K steady condition. 3-B. HL meas. @ 2K with heater (Calibration) Heater power: •half of HL of S1G module •HL of S1G module 4. Supplying LHe and cooling to 2K.	Pumping to 2K Cooling 80K shields down to LN2 temp.	Non-cooling cryomodule
Cooling 80K shields with LN2 until 22:00						

In the second test term

Cool-down and thermal test at 4K are same as in the first term

Thermal test at 2K