



Current Status of S1-G Cooldown

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Cooldown Restriction

- To pass through the temperature range of sc cavities from 150K to 100K as soon as possible to avoid “Q-disease” or “hydrogen disease” of sc cavities

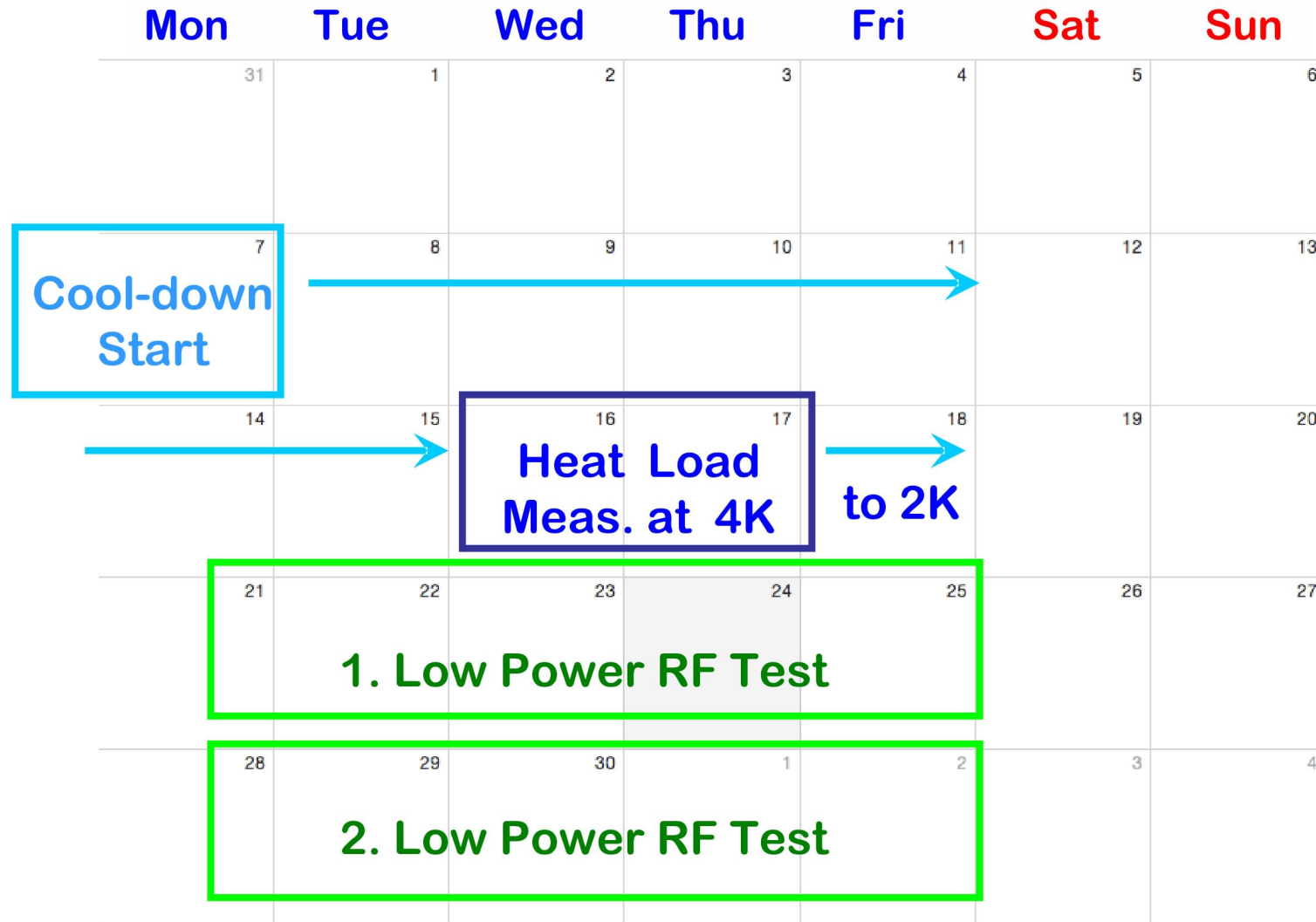


Cooldown Procedures

1. Precooling by 80K helium gas cooled by liquid nitrogen
 - **Down to 200K**
 - **Helium circulation unit to produce 80K helium gas**
 - **Mainly through precooling line; also through 5K shield line and 2K supply line**
2. Liquid helium supply for further precooling
 - **Below 200K**
 - **Mainly through 2K supply line and 5K thermal shield line**
 - **No flow through precooling line**



June, 2010





Cooldown History (1)

- 1st day (June 8, Tuesday)
 - **Commencement of cooldown**
 - Liquid nitrogen to 80K thermal shield
 - 80K helium gas through 2K supply line and precooling line
- 2nd (June 9, Wednesday)
 - **Cooldown continued**
 - Helium jacket temp.: 260 ~ 280 K
 - GRP temp: ~280 K
 - Liquid nitrogen to 80K thermal shield
 - 80K helium gas through 2K supply line and precooling line



Cooldown History (2)

- 3rd (June 10, Thursday)
 - **Cooldown continued**
 - Helium jacket temp.: 213 ~ 240 K
 - GRP temp: ~223 K
 - Liquid nitrogen to 80K thermal shield
 - 80K helium gas through 2K supply line and precooling line
- 4th (June 11, Friday)
 - **4K liquid helium supply**
 - Helium jacket temp.: 176 ~ 198 K
 - GRP temp: ~198 K
 - Liquid nitrogen to 80K thermal shield
 - Liquid helium through 2K supply line and 5K thermal shield



Cooldown History (3)

- 5th (June 12, Saturday)
 - **4K liquid helium supply continued**
 - Helium jacket temp.: 48 ~ 60 K
 - GRP temp: 62~73 K
 - Liquid nitrogen to 80K thermal shield
 - Liquid helium through 2K supply line and 5K thermal shield
 - Liquid helium appeared in 6th cavity jacket
- 6th (June 13, Sunday)
 - **Cooldown suspended**
 - Liquid nitrogen to 80K thermal shield only



Cooldown History (4)

- 7th (June 14, Monday)
 - **4K liquid helium supply restarted**
 - Helium jacket temp.: 63 ~ 78 K
 - GRP temp: ~95 K
 - Liquid helium through 2K supply line and 5K thermal shield
 - Liquid helium appeared in 6th cavity jacket
- 8th (June 15, Tuesday) **Today**
 - **Measurement at 4K on heat load to 2K coldbox**
 - Helium jacket temp.: 30 ~ 38 K
 - GRP temp: ~30 K
 - Liquid helium supply only to 2K coldbox



Cooldown Plan

- 9th (June 16, Wednesday)
 - **Measurement at 4K on heat load to whole system, including 8 sc cavities**
- 10th (June 17, Thursday)
 - **Repeatability check of heat load measurement**
- 11th (June 18, Friday)
 - **Cooldown to 2K by evacuating 4K liquid helium**



Summary

- No problem for cooling S1-G sc cavities and cryomodules so far
- Because of continuous operation of another cryogenic system, liquid nitrogen supply to 80K shield can be continued (cannot be expected in future cooling)
- Liquid helium supply happened to be executed last Saturday because of above reason (cannot be expected in future cooling, too!)