

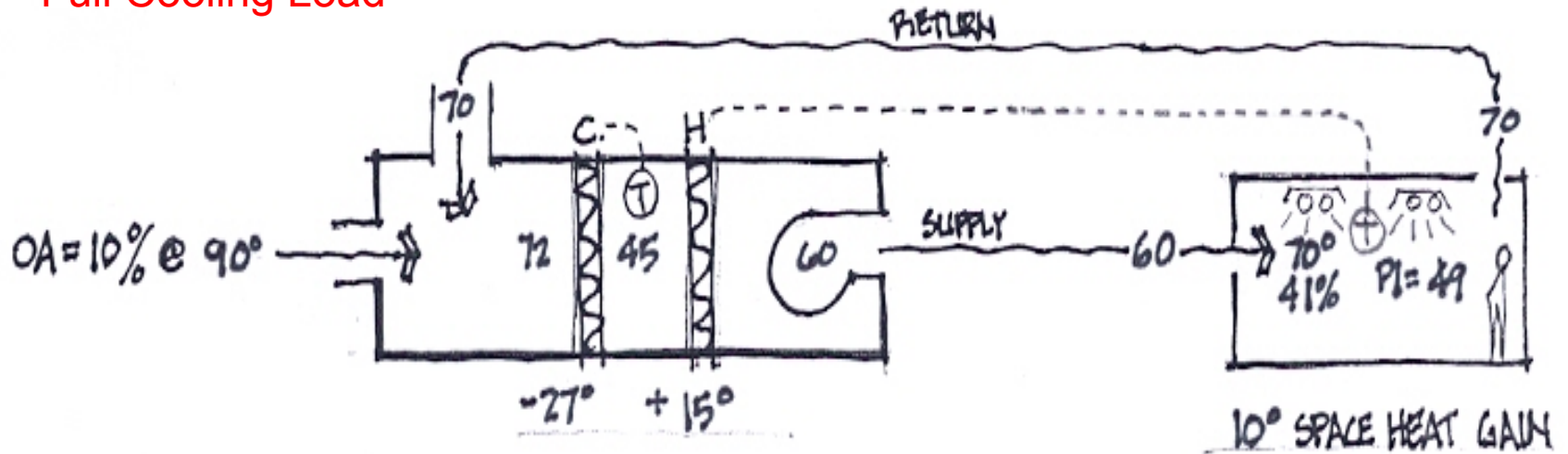
Operating Options

Charles E. Young Research Library, UCLA – Los Angeles, CA
April 26-27, 2011



Sub-cool/Reheat Peak Load Operation

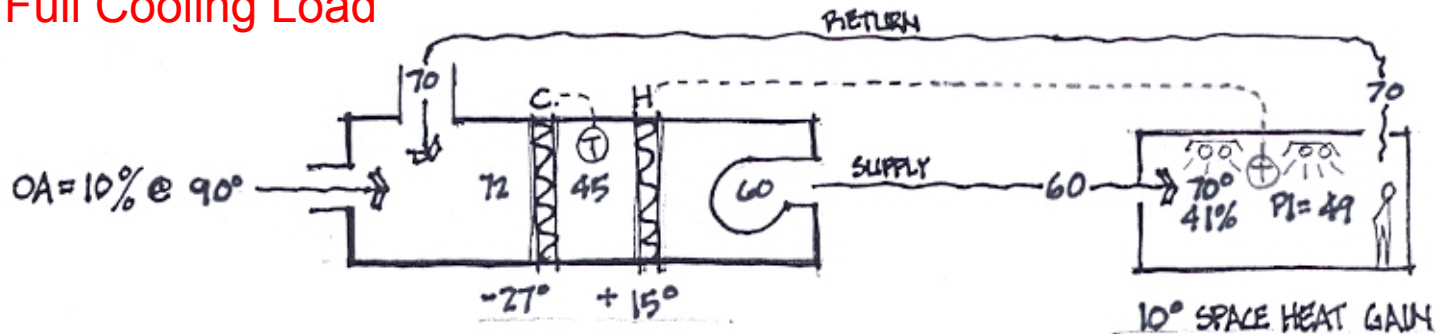
Full Cooling Load



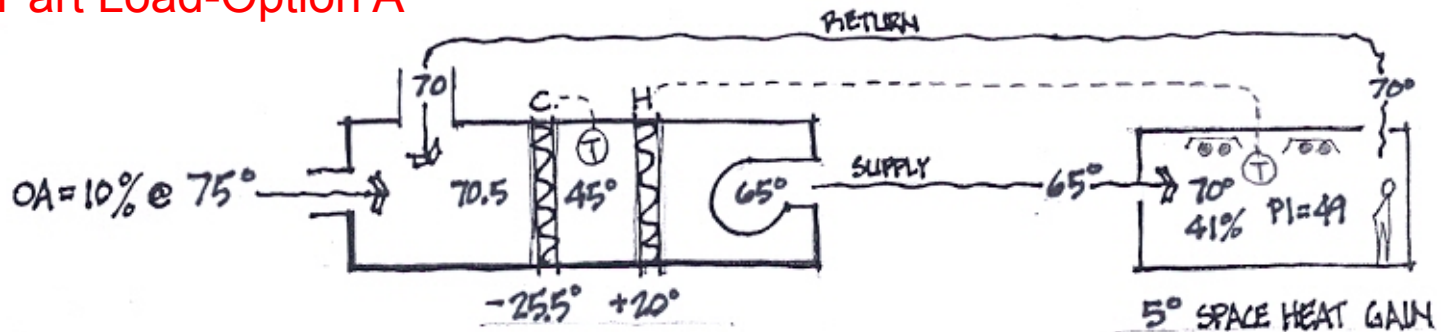
Sub-cool/Reheat - Part Load Operation

Option A – “Flat Line” Temp./RH

Full Cooling Load

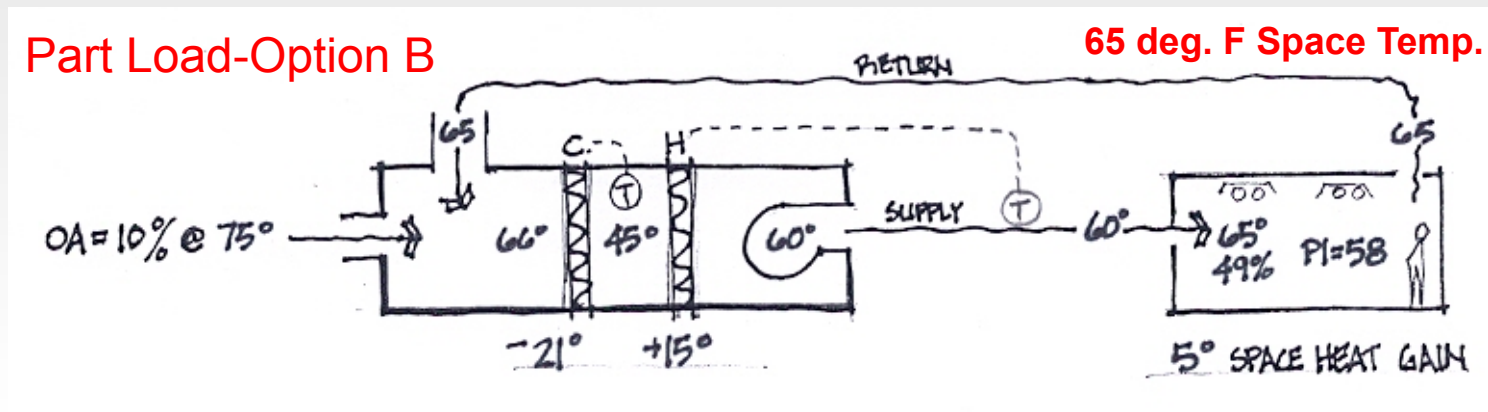
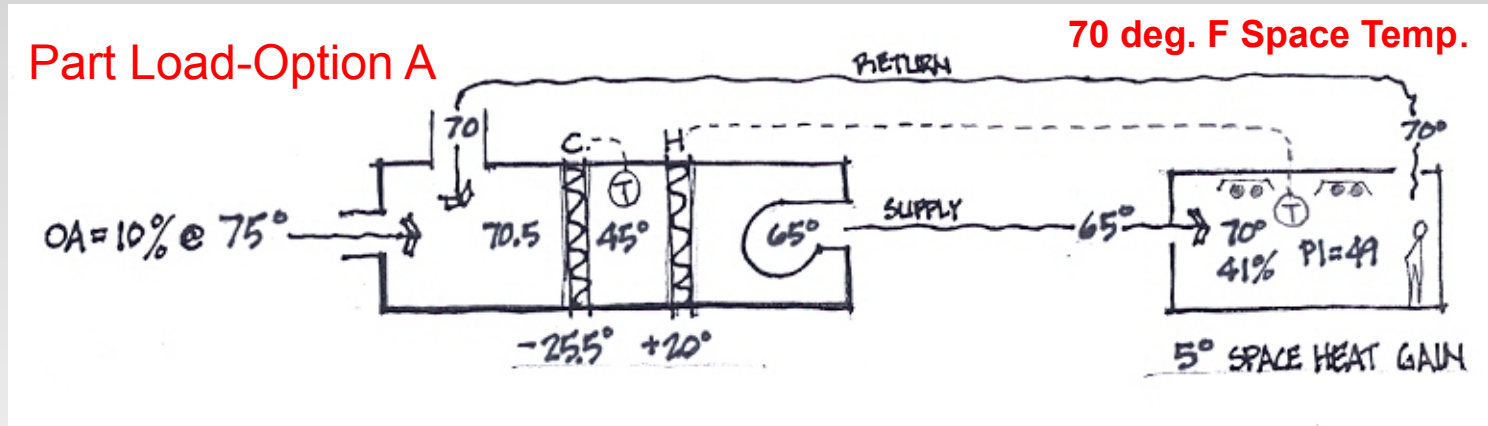


Part Load-Option A



Sub-cool/Reheat - Part Load Operation

Option B – Variable Temp./RH

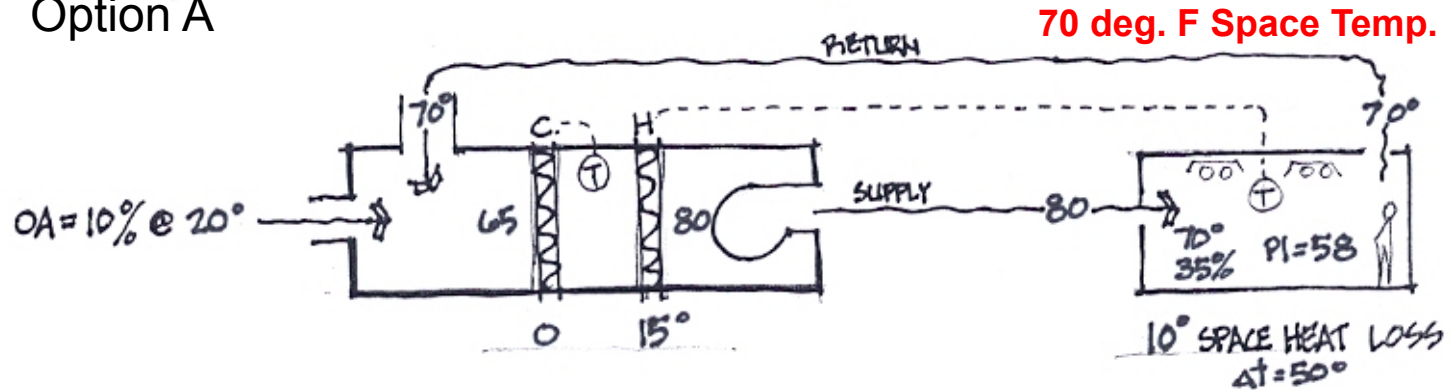


A versus B: 17% Less Cooling, 25% Less Reheating, 18% Better PI

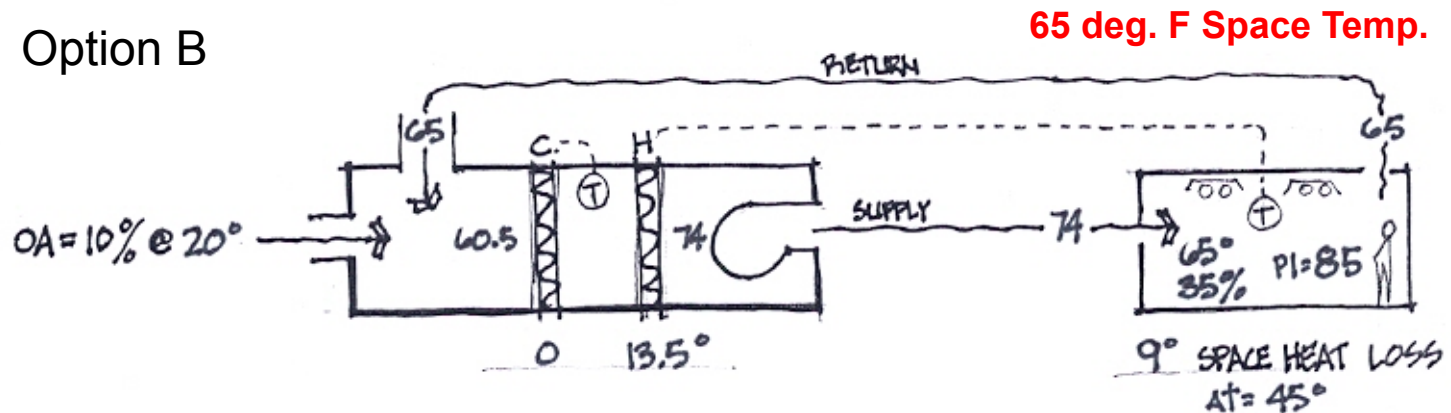
Cold Weather Operating Options

Benefits of 5 Deg. F Lower Space Temp.

Option A



Option B



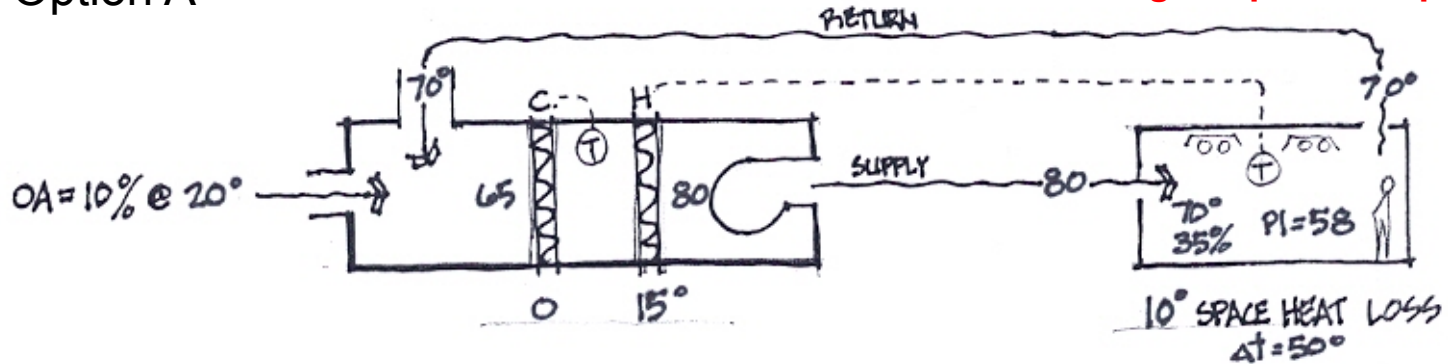
A versus B: 12% Less Heating, 46% Better PI

Cold Weather Operating Options

Benefits of 10 Deg. F Lower Space Temp.

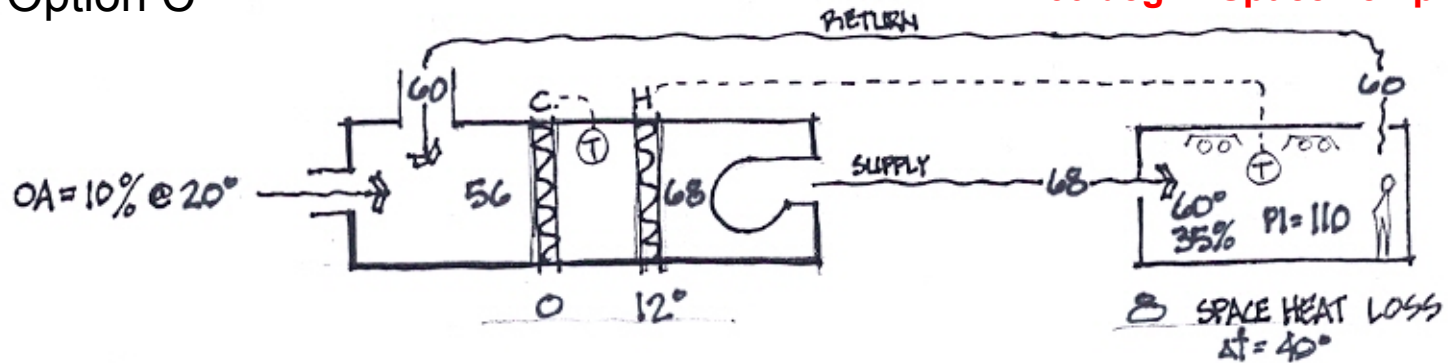
Option A

70 deg. F Space Temp.



Option C

60 deg. F Space Temp.



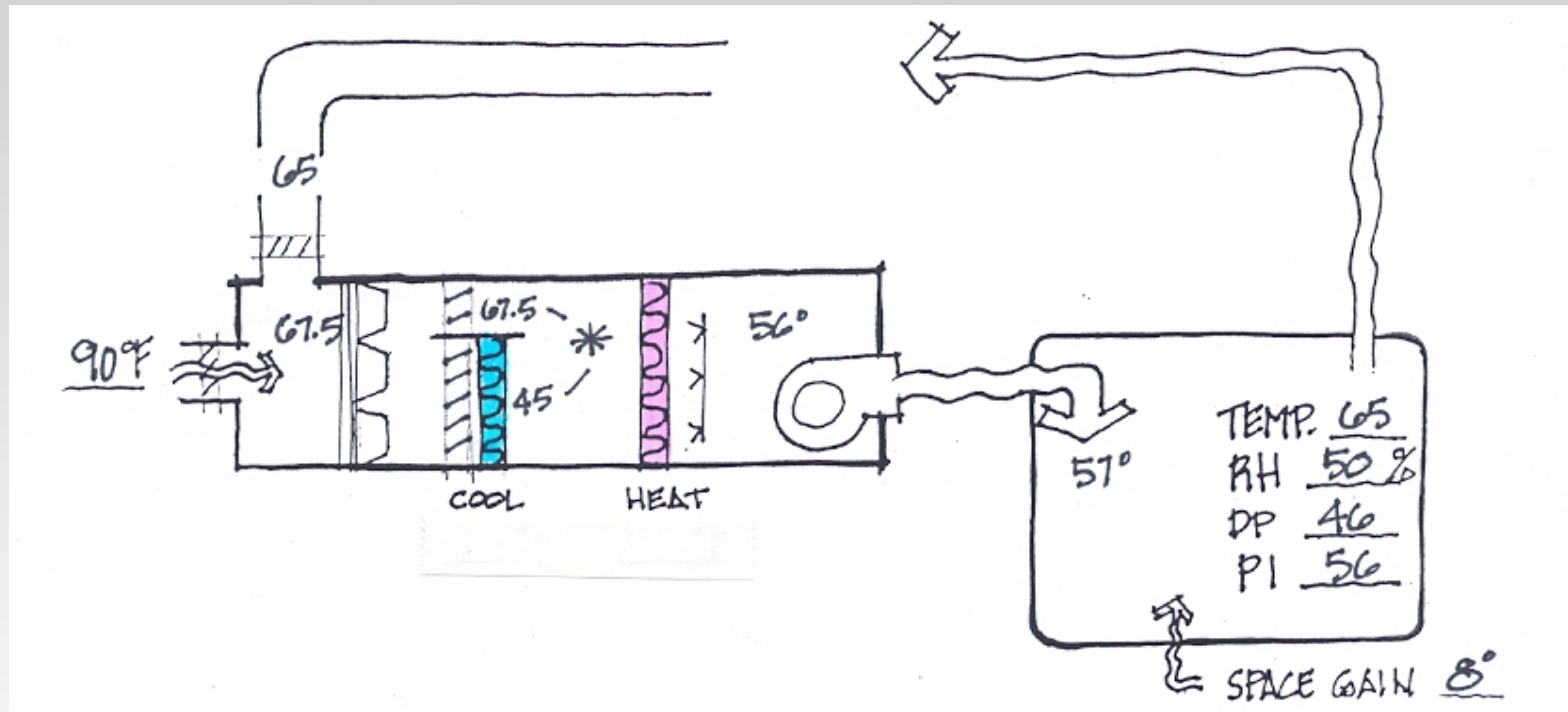
A versus C: 20% Less Heating, 90% Better PI

Analyze “System” Performance

- How much work is necessary?

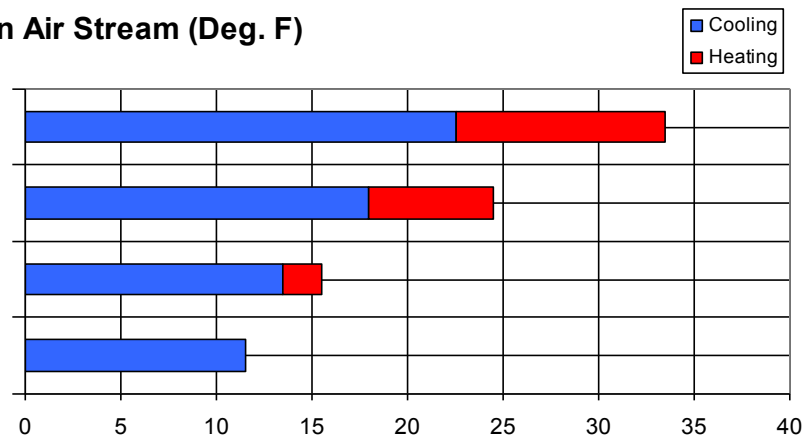
Face & By-Pass:

Summer Operation



Work Done on Air Stream (Deg. F)

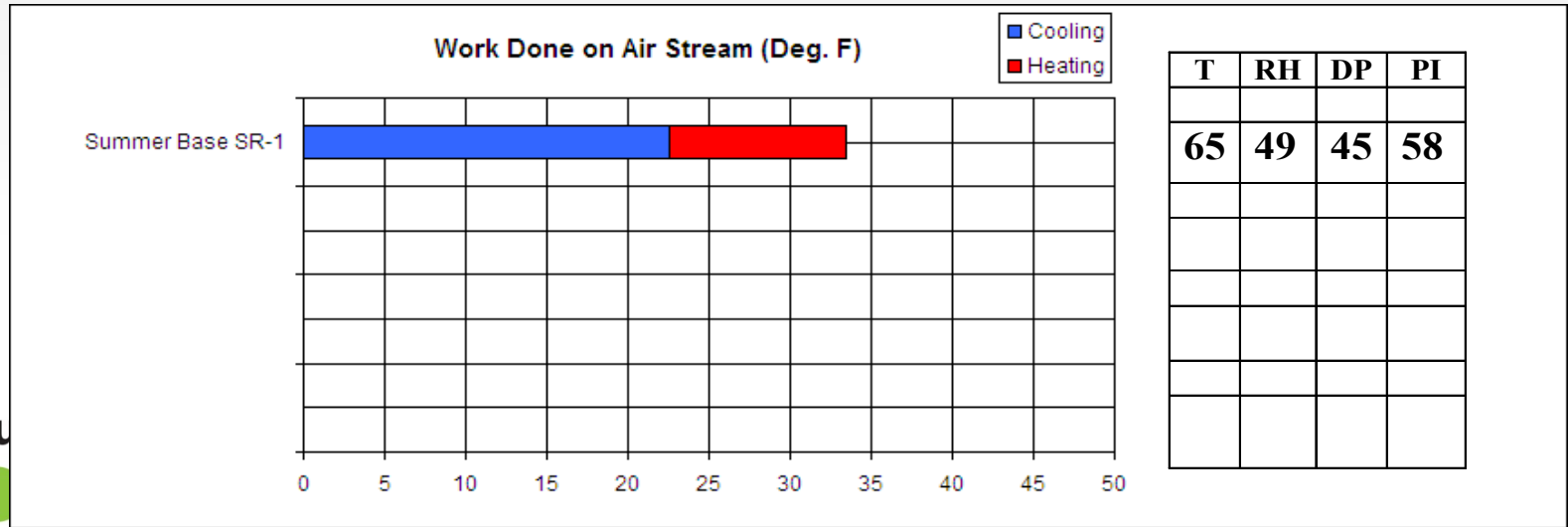
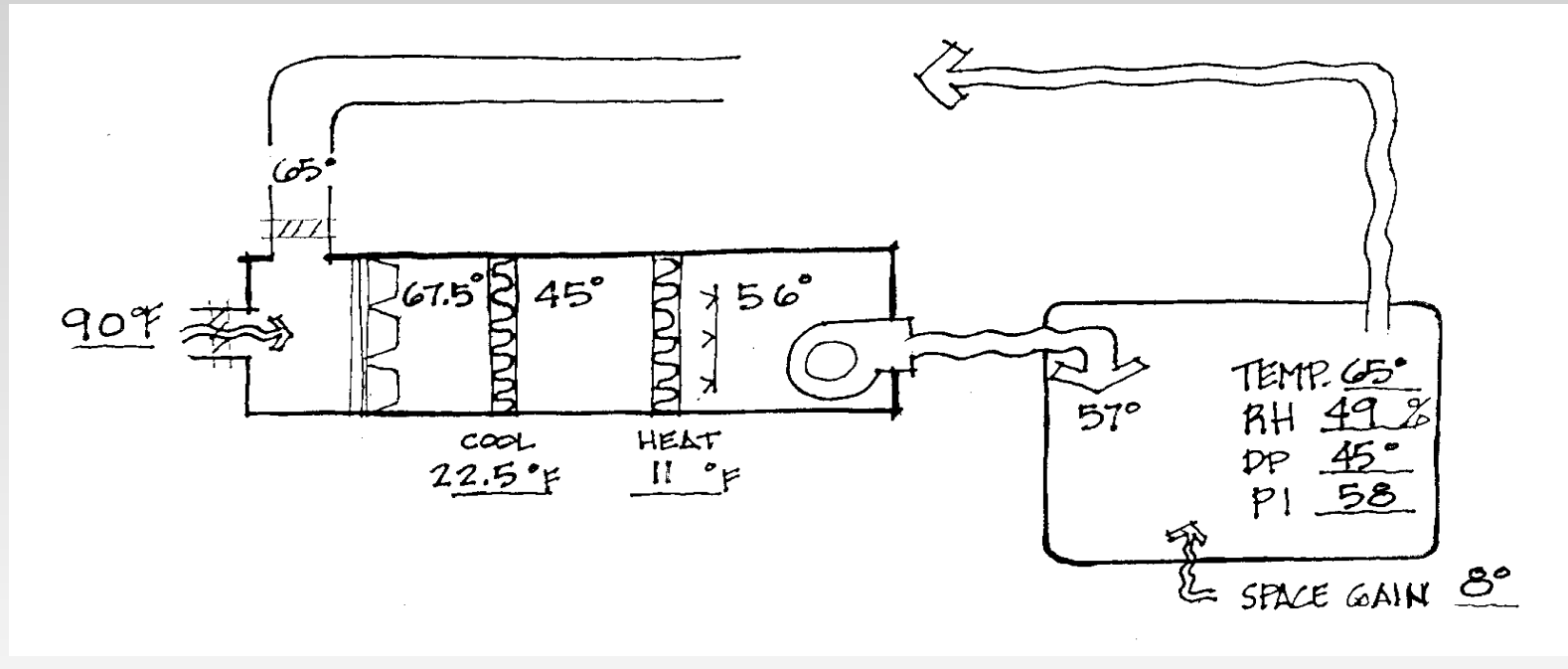
- 100% Face Air - 45 deg. Cooled Air
- 80% Face Air - 49.5 deg. Cooled Air
- 60% Face Air - 54 deg. Cooled Air
- 44% Face Air - 56 deg. Cooled Air



Analyze “System” Performance

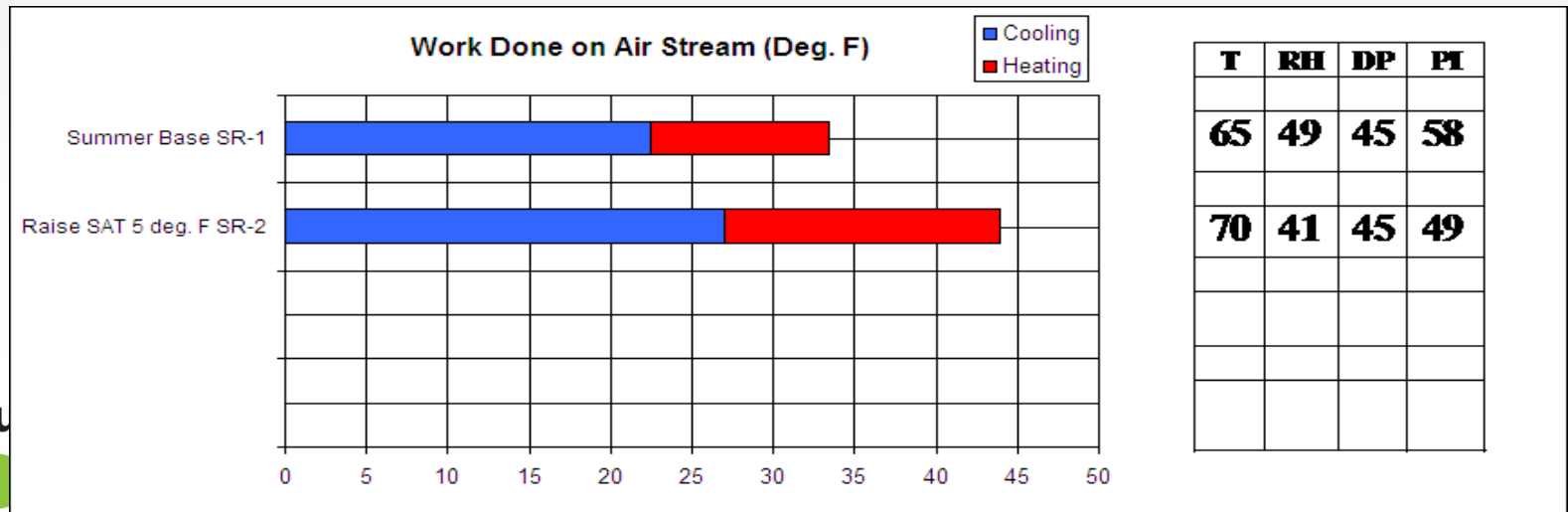
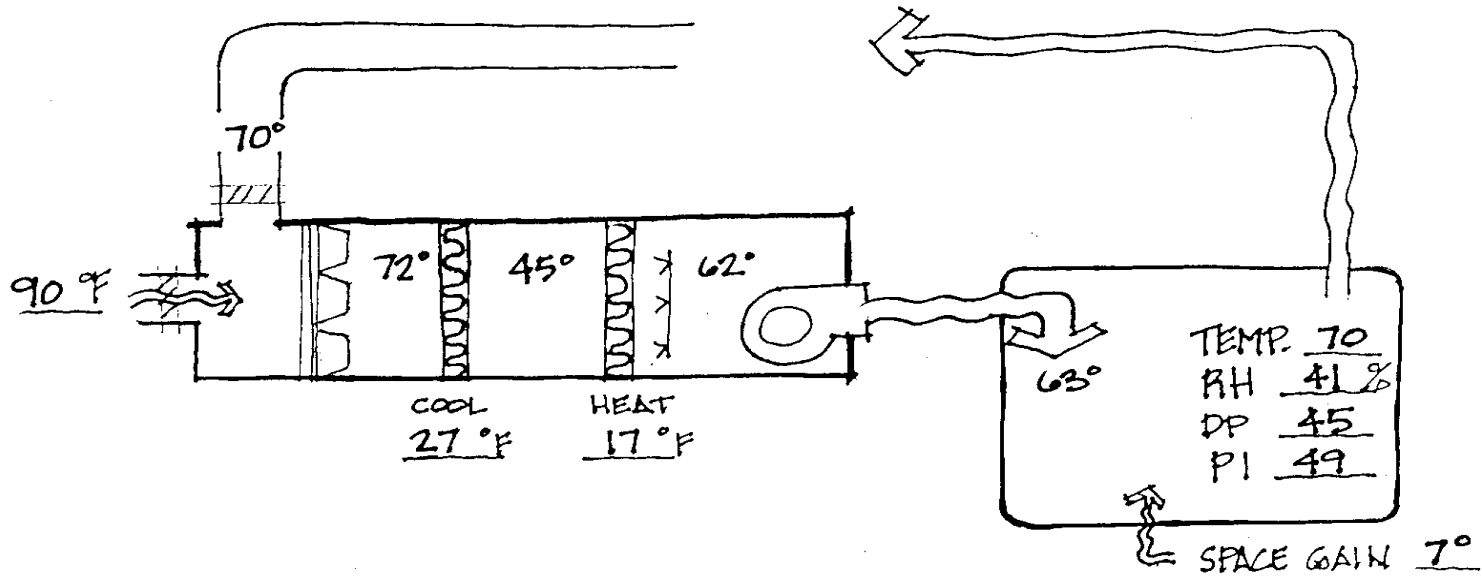
- **What is the optimal temperature?**

Sub-Cool & Reheat: Summer "Design" Operation

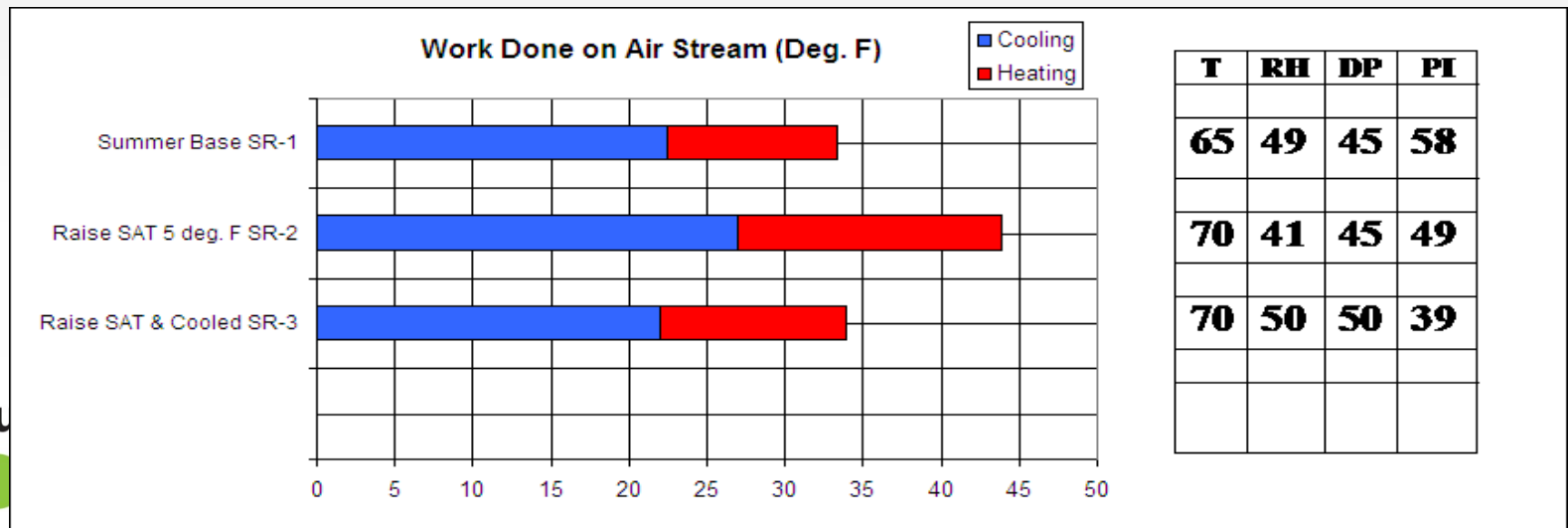
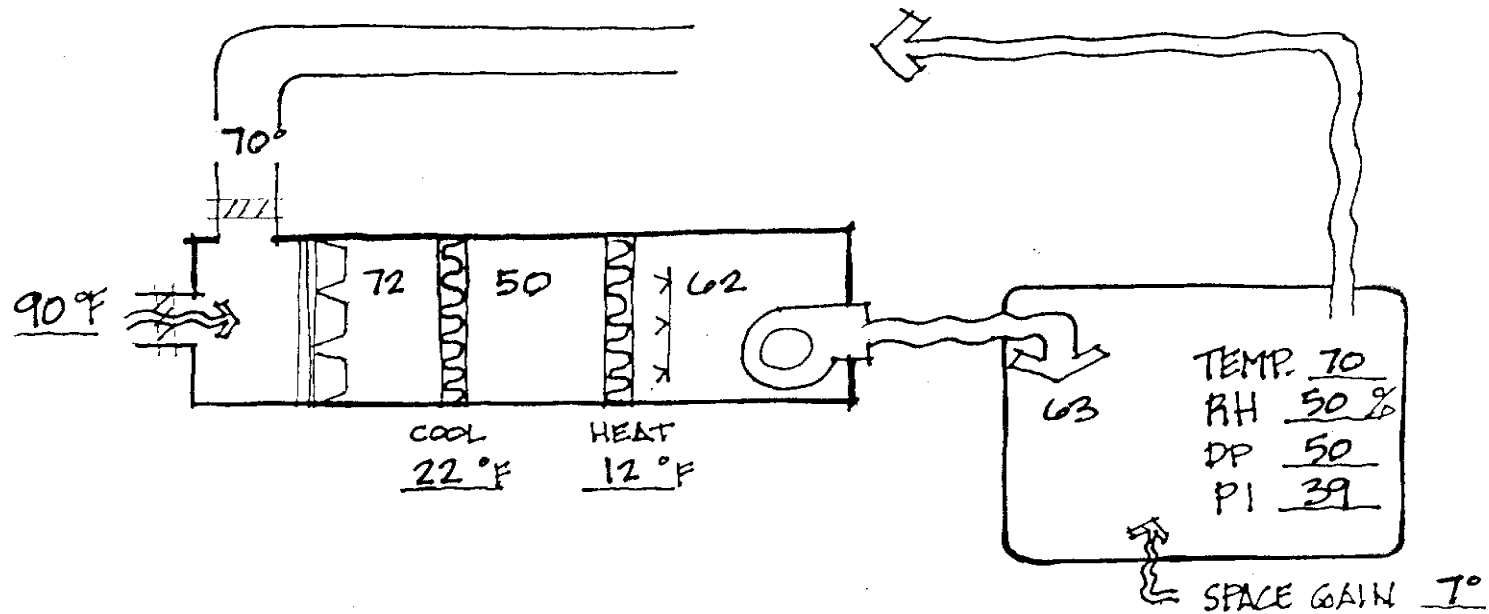


Sub-Cool & Reheat:

Summer Raised Space Temp.



Sub-Cool & Reheat: Raised SAT & Raised Cooled Air Temp.



Sub-Cool & Reheat: Summer Lowered Space Temps.

