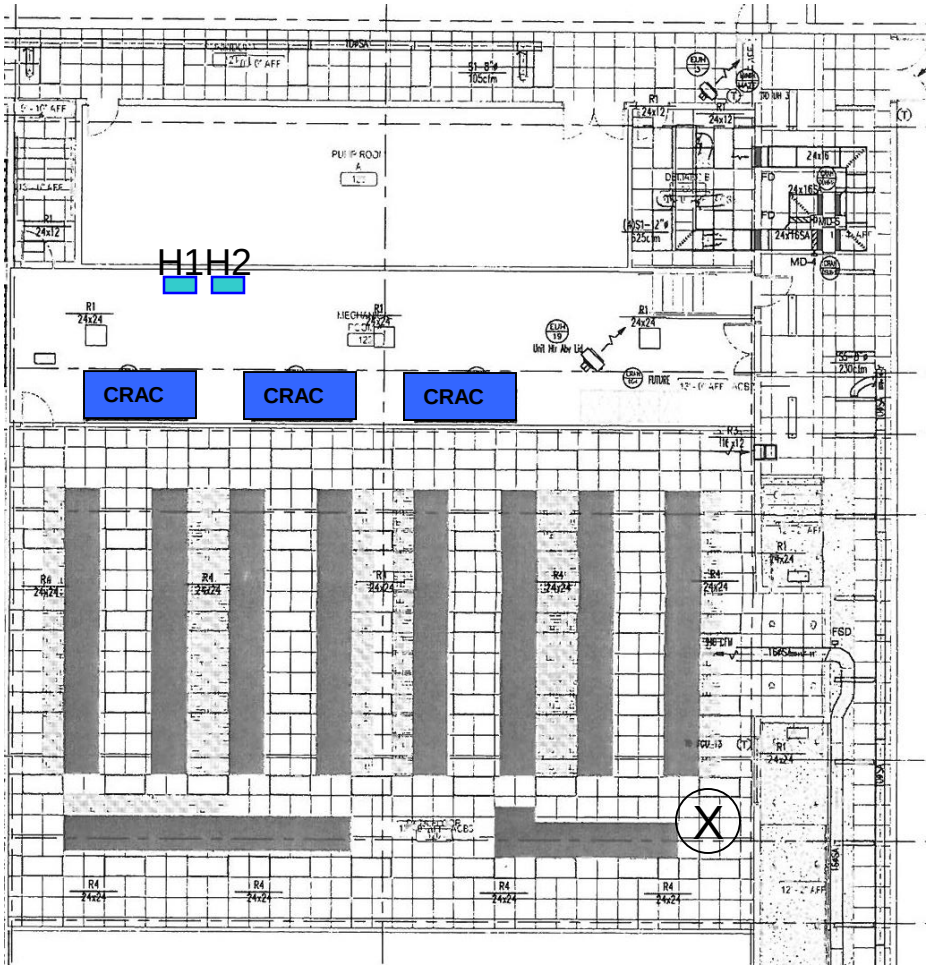
Question: What kind of humidity gradient can you expect at (X) with ultrasonic humidifiers (H1, H2) producing fog 70+ feet away?
Answer: It depends…

First some background

- Two 25 lb/hr ultrasonic humidifiers (H1, H2) are wall mounted in equipment corridor
- Three 50 ton downflow CRAC units draw fog from humidifiers and return plenum above drop ceiling
- 94^{o}F EAT and 59^{o} F LAT with 50F EGT ensure cooling coil is dry and cooling is sensible only
- Mechanical humidity sensors located above CRAC units get an enable signal from the BAS allowing humidifiers to run at full 50 lb/hr capacity until desired humidity level is reached and BAS removes enable signal
- Micron size fog particles are absorbed by the warm dry return air before being discharged into the raised floor plenum to be supplied in the cold aisle; drawn thru the server racks; discharged into the hot aisle at 94F



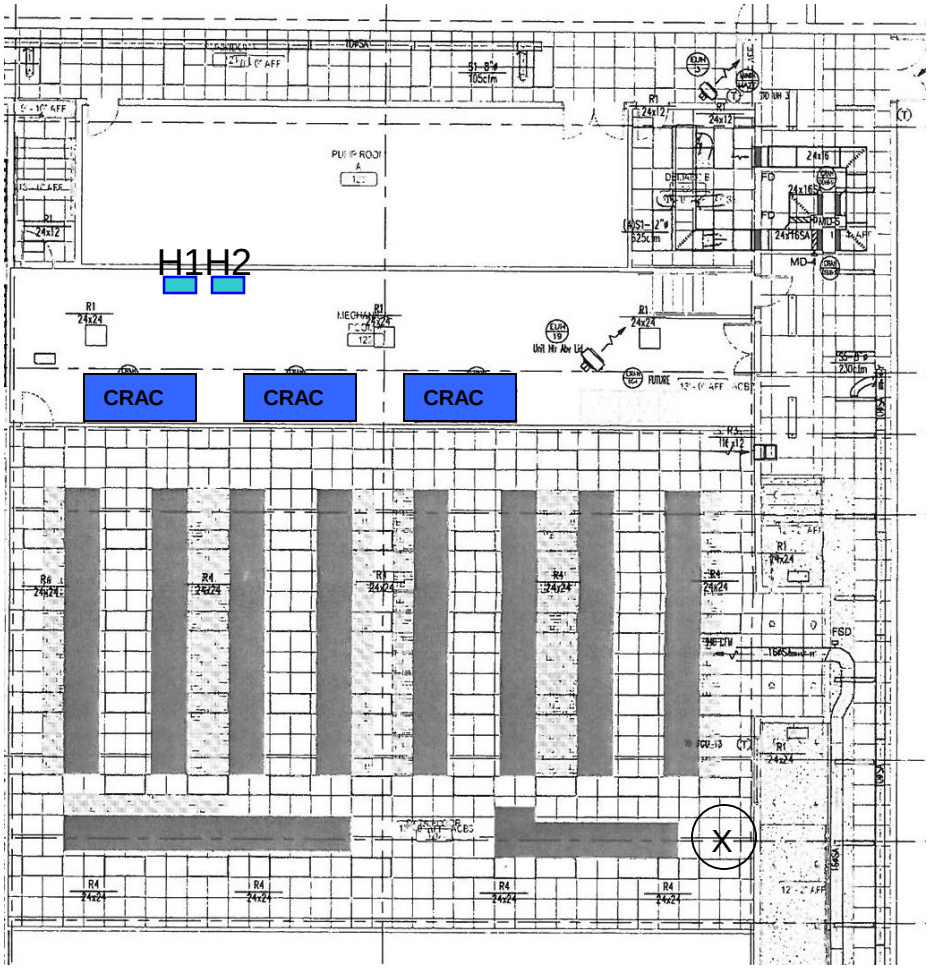
HUMIDIFIRST® ULTRASONIC HUMIDIFIERS

makin' waves since 1986

Psychometrics
AKA Adiabatic Acrobatics

Based on 46 gr/lb & design specifications

- 94º F return air from data hall (20% RH)
- 59º F supply air under raised floor (62% RH)
- SHR is 1.0 / no latent removal
- 50 lb/hr humidifier output is mixed (absorbed) into 3 x 24,000 = 72,000 CFM of 94ºF/20% RH return air (Actually 99% of the fog is drawn into the CRAC on the left)
- 360 CFM x 60 min/hr x 1.1 x 2.1º F TD = 49,896 BTU/hr adiabatic cooling
- 2.1º F temperature drop on 360 CFM from two humidifiers is insignificant at .005% of the total 72,000 CFM



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Sensible Design
No Capacity for Latency

- Reduces kW by 93%
- Provides tons of free cooling
- Expandable & redundant
- Minimal maintenance
- Observation confirms proper operation
- Eliminates water in data hall
- On / off control enabled by BAS
- DI water quality monitored by BAS

Other contributing factors include sensible only CRAC units; deep raised floor and hi static backward inclined fans on CRAC units