

AC in PHENIX

Stefan Bathe

Introduction

- After many years of off-hour emergency calls to fix PHENIX Air Conditioner in Electronics Rack Room, finally new AC unit was installed in the 2009 shutdown
 - Installation took six weeks
 - Installation completed on November 24, 2009
- New unit consists of two compressors and three fans
- However
 - 2nd compressor and fans 2, 3 never came on!
 - 25-year-old air handling system was NOT replaced!

Recent Events

- On the past weekend it was discovered that AC was off and temperature in Rack Room was rising (already at 79 F)
- **Coincidentally?**, one of the six PHENIX buffer boxes for data taking failed
- Called MCR on Sunday, somebody came out, but said there was nothing he could do
- Opened outside door and turned mobile emergency fans on for relief
- Called MCR again on Monday, two guys came out
 - They were not able to switch the compressor back on
 - They manually opened the Economizer (outside air damper), which hadn't been opened in years
- **This means for years the AC was cooling even in the winter when the air was cold and a simple fan would have been sufficient**

43.0

SUPPLY AIR TEMP.

°F

50.2

SUPPLY AIR TEMP.

°F

171

AIR VELOCITY

FT. PER MIN.
(MULTIPLY X10)

227

AIR VELOCITY

FT. PER MIN.
(MULTIPLY X10)

T-STAT
CALL



COMPRESSOR
#1



COMPRESSOR
#2



FAN
#1



FAN
#2



FAN
#3



AIR FLOW
OK



DE-FROST
CYCLE



PHASE LOSS
UNDERVOLTAGE



RACK ROOM AIR CONDITIONER AC-3 STATUS



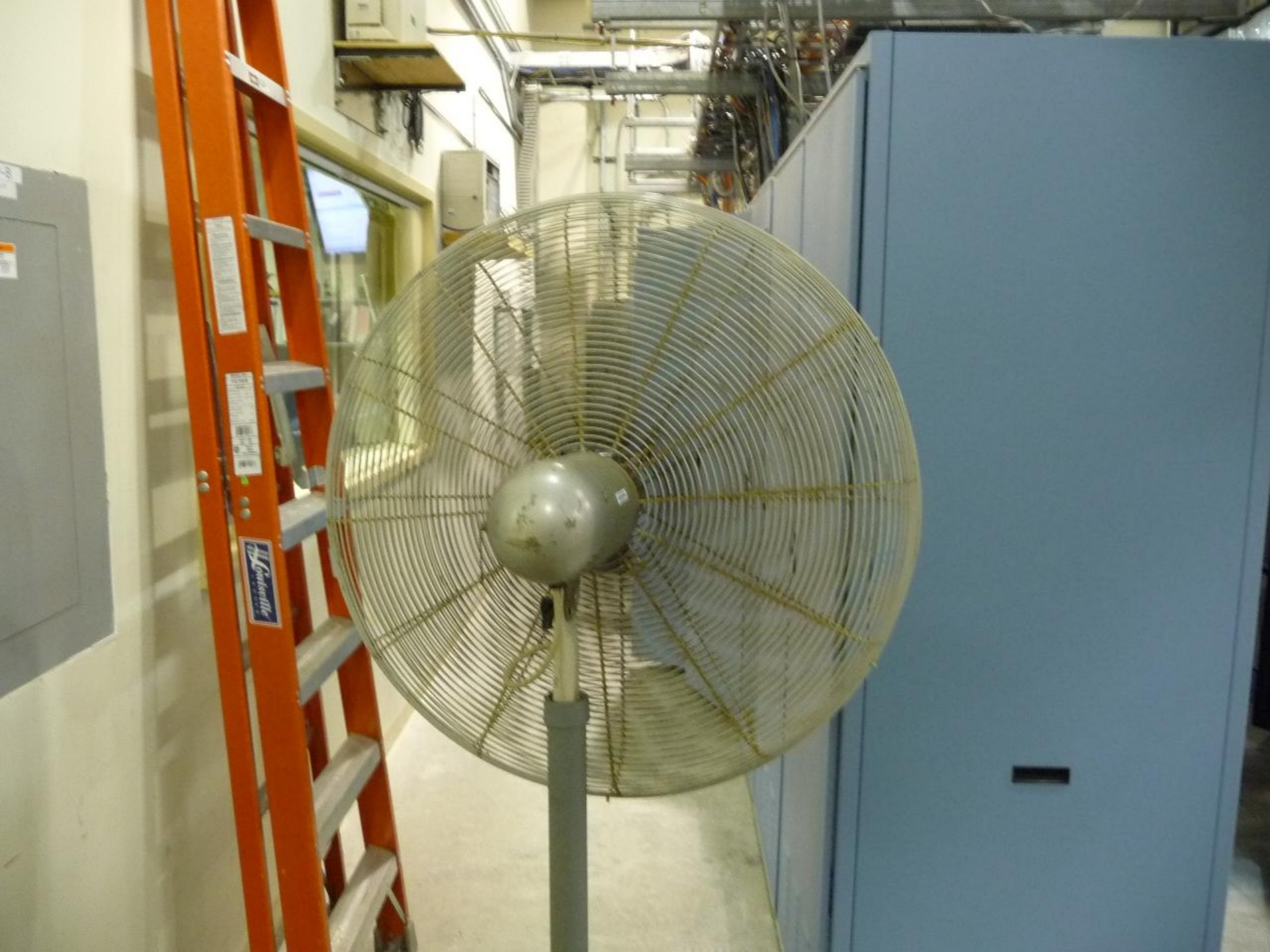


EMERGENCY
EXIT

10 TON

B









PEH VISITORS GALLERY INSIDE



73.0

SA DIGICATOR™ °F

Prediction

- If
 - One out of two compressors and two out of three fans weren't activated at installation
 - The single operating compressor and the single operating fan fail only four weeks after installation
 - The 25-year-old air handler remains in place
 - The system is nothing but patched
- Then my prediction is we'll have many more emergencies to come this spring and summer

Side Bar on Energy Waste

- AC compressor also runs on cold winter days wasting energy (as mentioned above)
- In addition, the (to be cold) Rack Room and the (to be warm) Control Room are served by the same AC
- “Solution”: 30 kW heater to heat up the previously cooled down air
- This has been in place for the past 10 years and was not changed when the new AC unit was installed in the 2009 shut down



12/22/2009

RHIC M





12/22/2009

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