



**BALANCING
PROFESSIONALS,
INC.**

**HVAC SYSTEMS
TESTING & BALANCING REPORTS**

BPI PROJECT NUMBER
2867

PROJECT
**MINNESOTA VETERAN'S HOME
AHU-1 REBALANCE**

LOCATION
LUVERNE, MN

DATE
7.10.2014

balanceprosinc.com



Certified Testing & Balancing

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System Summary

PROJECT: MN Veteran's Home Ahu-1 Rebalance
LOCATION: Luverne, MN
PROJECT #: 2867

DATE: 7/10/2014
CONTACT: Topher Cisar

Air Flow Measuring Station

- The AFMS was found to be out of calibration.
 - Initial airflow displayed on the AFMS: 305 CFM
 - Initial airflow measured by duct traverse: 860 CFM
- The AFMS was removed from the duct and found to be very dirty. One of the two airflow sensing holes was completely plugged with dust & debris. This was removed and blown out as best as possible.
- The AFMS was then reinstalled in the OA duct. It was noticed to lay in the duct and kind of sag across the duct. It did not stick straight across the center of the duct.
- The AFMS was calibrated and the OFF GAIN1 (K-Factor) was changed to 1.265.

Questions to Verify during the TAB work

1. Is the DDC correct for OA or is the original balancer, 300 cfm vs 400 cfm
 - a. 400 CFM is shown on page R-1 M-5 of Addendum #2, dated 4/19/07. We could not find anywhere that indicated 300 CFM as design minimum OA.
2. Verify that 400 cfm of outside air is being brought into the unit.
 - a. AFMS was found to be very dirty and out of calibration. Actual OA that was being brought into the unit was almost triple of what was being displayed on the graphics. AFMS was cleaned and calibrated.
3. Verify output of the diffusers in the system
 - a. Diffusers were measured with a flow hood and found to be right around where the last TAB reports documented them to be.
4. Total amp draw of fan motor compared to original balancing report.
 - a. The motor and VFD have been changed out since the last TAB report. Actual amp draw is a little less now, than with the original motor.
5. Pressure drop over the cooling and heating coils
 - a. This was measured and is documented in the TAB report. Both APD's are below design.
- ~~6. Can we verify that the hot gas bypass is installed and operating~~
7. Verify that any fire and smoke dampers are full open
 - a. There are no F/SD's per Larry Gielen.



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8. Verify that the doors on the air handler are properly sealed
 - a. No leakage could be heard or felt at the doors.
9. Discharge Air Temperature at full cooling
 - a. DAT shown on AHU graphics: 54.8
 - b. Actual DAT measured at AHU: 55.0



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Air Handling Unit

PROJECT: MN Veteran's Home Ahu-1 Rebalance
LOCATION: Luverne, MN
PROJECT #: 2867

DATE: 7/10/2014
CONTACT: Topher Cisar

SYSTEM/UNIT: AHU-01
AREA: 100

Tested By: Topher Cisar
Test Date: July 09, 2014

| Unit Data | |
|--------------------|--------------|
| Unit Manufacturer | McQuay |
| Unit Model Number | CAH003GHAC |
| Unit Serial Number | FBOU07100971 |

| Test Data | |
|-------------------------|-----------------------|
| ---SF Test Data--- | |
| SF Unit Design CFM | 1,200 CFM |
| Vav/Diffuser Design CFM | 1,200 CFM |
| SF Actual CFM | 1,195 CFM |
| Duct Pressure Set Point | - in wc |
| Test Duct Pressure | - in wc |
| | |
| SF Test Fan Speed - VFD | 60 Hz |
| SF Design Fan RPM | 2092 RPM |
| SF Actual Fan RPM | 2025 RPM |
| Design Min O/A | 400 CFM |
| Actual Min O/A | 360 CFM |
| O/A Damper Pos | 35 % |
| | |
| SF Design ESP | 1.50 in. w.c. |
| SF Actual ESP In | -0.15 in. w.c. |
| SF Actual ESP Out | +0.45 in. w.c. |
| | |
| Design Filter Air PD | 0.28 / 0.71* in. w.c. |
| Actual Filter Air PD | 0.10 / 0.55 in. w.c. |
| | |
| Design HC Air PD | 0.15 in. w.c. |
| Actual HC Air PD | 0.10 in. w.c. |
| | |
| Design CC Air PD | 0.43 in. w.c. |
| Actual CC Air PD | 0.25 in. w.c. |
| | |
| SF Design TSP | 3.25 in. w.c. |
| SF Actual TSP In | -0.62 in. w.c. |
| SF Actual TSP Out | +1.00 in. w.c. |
| | |
| SF Design Motor Amps | 2.8 Amps |
| SF Actual Motor Amps | 1.5/1.6/1.7 Amps |
| SF Design Motor Volts | 460 Volts |
| SF Actual Motor Volts | 482/483/480 Volts |

| Motor Data | |
|--------------------------|------------------------|
| ---SF Motor Data--- | |
| SF Motor Manufacturer | US Motors |
| SF Type | ODP Premium Efficiency |
| SF Frame | 145T |
| SF HP | 2 H.P. |
| SF Motor RPM | 1745 RPM |
| SF Full Load Amps | 5.9-5.6/2.8 Amps |
| SF Rated Volts | 208-230/460 Volts |
| SF Phase | 3 |
| SF Hertz | 60 Hz |
| SF Service Factor | 1.15 |
| SF Over Load Heater Size | VFD |

| Sheave Data | |
|------------------------|----------|
| ---SF Sheave Data--- | |
| SF Motor Sheave Make | Browning |
| SF Motor Sheave Number | AK 41H |
| SF Motor Sheave Bore | 7/8 in. |
| | |
| SF Fan Sheave Make | Browning |
| SF Fan Sheave Number | AK 34H |
| SF Fan Sheave Bore | 1 in. |
| | |
| SF Number Of Belts | 1 |
| SF Belt Size | A 26 |



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Air Handling Unit

PROJECT: MN Veteran's Home Ahu-1 Rebalance
LOCATION: Luverne, MN
PROJECT #: 2867

DATE: 7/10/2014
CONTACT: Topher Cisar

SYSTEM/UNIT: AHU-01 (Cont.)
AREA: 100

Tested By: Topher Cisar
Test Date: July 09, 2014

AHU-01 Supply Outlet Summary

| System / Unit | Area Served | Type | Size | Design CFM | Prelim. CFM | Final CFM |
|---------------|-------------|------|------|------------|-------------|-----------|
| Outlet-01 | 201 | S-2 | 18x6 | 100 | 105 | 95 |
| Outlet-02 | 201 | S-1 | 6 | 100 | 95 | 95 |
| Outlet-03 | 201 | S-2 | 18x6 | 100 | 105 | 110 |
| Outlet-04 | 201 | S-2 | 18x6 | 100 | 110 | 105 |
| Outlet-05 | 201 | S-1 | 6 | 100 | 90 | 90 |
| Outlet-06 | 201 | S-2 | 18x6 | 100 | 100 | 90 |
| Outlet-07 | 201 | S-2 | 18x6 | 100 | 95 | 100 |
| Outlet-08 | 201 | S-1 | 6 | 100 | 110 | 100 |
| Outlet-09 | 201 | S-2 | 18x6 | 100 | 110 | 105 |
| Outlet-10 | 201 | S-2 | 18x6 | 100 | 105 | 100 |
| Outlet-11 | 201 | S-1 | 6 | 100 | 105 | 105 |
| Outlet-12 | 201 | S-2 | 18x6 | 100 | 110 | 100 |
| Totals : | | - | - | 1,200 | 1,240 | 1,195 |

* Notes AHU-01 6-May-14 Topher Cisar * - Pre / Final Filter APD.