Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246

NATIONAL TAB

Comfort. Under control.

Report: UCM Skyhaven (Warrensburg, MO)
Function: Test, Adjust, & Balance
Date: 04/18/2023

PROJECT

UCM Skyhaven (Warrensburg, MO)

NW 251 Road

Warrensburg, MO 64019

Client

Metro Air Conditioning

8151 McCoy

Shawnee, KS 66227

National TAB

Project: UCM Skyhaven (Warrensburg, MO)

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National TAB

Project: UCM Skyhaven (Warrensburg, MO)

System/Unit: AHU/RTU

Comfort. Under control.

Asset: RTU-1 AREA:105

Unit Data		
	Design	**Actual**
MFG	NA	TRANE
Serial Num	-	C22E04153
Model Num	NA	TEH330BEA11B2DC400C0E00HHB
Configuration	-	HORIZONTAL
Num OA Filters 2	-	3 METAL MESH
OA Filter Size 2	-	22.5X36.5
Num PreFilter 1	-	16
PreFilter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	BALDOR ELECTRIC
Frame	-	215T
Horsepower	-	10.0
Motor Rpm	-	1770
Phase	-	3
Rated Voltage	-	230/460
Rated Amperage	-	25/12.5
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	BK67H
Motor Bore Size	-	1-3/8"
Motor Sheave SetPt	-	VFD
Fan Sheave Size	-	BK140
Fan Sheave Bore	-	1-7/16"
Belt CL Distance	-	35.5"
Num of Belts	-	1
Belt Size	-	BX103

Test Data		
	Design	**Actual**
SF CFM	10000	10280
SF RPM	677	709
RA CFM	9000	9268
OA CFM	1000	1012
RL Voltage	460	211/213/214
RL Amperage	12.60	18.2
SF Motor Freq(HZ)	60	59.1
SF System SetPt	-	1.20" SP
Min OA Damper Position	-	5%
Brake Horse Power	6.64	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.15"
Fan Suction SP	-	-0.46"
Fan Discharge SP	-	1.44"
Total ESP	1.500	1.59"
Fan Total SP	2.050	1.90"
Pre-Filter P.D.	-	0.31"
Cooling Coil P.D.	-	0.31"

Completed By: Jacob Davidson

Notes:

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Project:UCM Skyhaven (Warrensburg, MO)

AHU/RTU

Comfort. Under control.

VAV - Single Duct

RTU-1/105

Asset											
Asset Name	**MFG**	**Model Num**	**Type**	**Inlet Size**	**Design Max CFM**	**Max CFM**	**Design Min CFM**	**Min CFM**	**Design Heat CFM**	**Heat CFM**	**Ak (max)**
VAV-1	TRANE	VCEF10000 M0DD74A	ELECTRIC HEAT	10"	1000	982	200	182	500	517	1.11 GAIN -1.36% OFFSET
VAV-2	TRANE	VCEF08000 M0DD74A	ELECTRIC HEAT	8"	700	716	140	134	350	351	1.01 GAIN 0% OFFSET
VAV-3	TRANE	VCEF06000 N0DD74A	ELECTRIC HEAT	6"	550	504	80	78	190	195	0.88 GAIN 0.08% OFFSET
VAV-4	TRANE	VCEF10000 M0DD74A	ELECTRIC HEAT	10"	1030	1040	210	193	520	516	1.01 GAIN 0% OFFSET
VAV-5	TRANE	VCEF14000 M0DD74A	ELECTRIC HEAT	14"	1860	1797	380	386	930	954	1.1 GAIN -1.75% OFFSET
VAV-6	TRANE	VCEF06000 M0DD74A	ELECTRIC HEAT	6"	300	306	60	59	150	156	0.89 GAIN 1.82% OFFSET
VAV-7	TRANE	VCEF12000 M0DD74A	ELECTRIC HEAT	12"	1700	1646	330	327	830	835	0.91 GAIN 0% OFFSET
VAV-8	TRANE	VCEF12000 M0DD74A	ELECTRIC HEAT	12"	1260	1237	260	246	630	638	0.97 GAIN 0% OFFSET
VAV-9	TRANE	VCEF14000 M0DD74A	ELECTRIC HEAT	14"	2100	2087	420	427	1050	1077	1.18 GAIN 0%OFFSET
VAV-10	TRANE	VCEF12000 M0DD74A	ELECTRIC HEAT	12"	1310	1264	270	261	660	670	1.18 GAIN 0% OFFSET
VAV-11	TRANE	VCEF08000 M0DD74A	ELECTRIC HEAT	8"	800	774	140	153	340	348	1.06 GAIN -0.82% OFFSET

Diffuser Supply (GRD)

VAV-1/102

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
1-1	103	LSD-2	8	200	221	204	102.0
1-2	102	LSD-2	8	200	248	205	102.5
1-3	HALL	SD-1	8	150	250	159	106.0
1-4	101	LSD-2	8	200	207	189	94.5
1-5	101	LSD-2	8	250	158	225	90.0

VAV-10/123

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
10-1	124	LSD-1	10	250	156	205	82.0
10-2	124	LSD-1	10	250	302	245	98.0
10-3	121	LSD-1	10	270	299	264	97.8
10-4	122	LSD-1	10	270	267	282	104.4
10-5	123	LSD-1	10	270	283	268	99.3

VAV-11/127

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
11-1	128	LSD-1	10	200	150	191	95.5
11-2	125	LSD-1	10	200	166	194	97.0
11-3	126	LSD-1	10	200	244	207	103.5
11-4	127	LSD-1	10	200	234	182	91.0

VAV-2/

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
2-1	105	SD-1	10	350	369	369	105.4
2-2	105	SD-1	10	350	347	347	99.1

VAV-3/110

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
3-1	109	SD-1	8	180	143	163	90.6
3-2	HALL	SD-1	8	150	122	136	90.7
3-3	107	SD-1	8	80	66	73	91.3
3-4	110	SD-1	8	140	130	132	94.3

VAV-4/111

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
4-1	111	SD-1	8	200	222	208	104.0
4-2	112B	SD-1	8	150	148	164	109.3
4-3	111B	SD-1	8	180	206	182	101.1
4-4	111	LSD-2	10	250	241	256	102.4
4-5	111	LSD-2	10	250	224	230	92.0

VAV-5/112C

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
5-1	112	SG-2	16X10	465	317	420	90.3
5-2	112D	SG-2	16X10	0	0	0	-
5-3	112	SG-2	16X10	465	506	448	96.3
5-4	112C	SG-2	16X10	465	550	485	104.3
5-5	112C	SG-2	16X10	465	461	444	95.5

VAV-6/112D

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
6-1	113	SD-1	8	150	202	148	98.7
6-2	112D	SD-1	8	150	105	158	105.3

VAV-7/HALL

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
7-1	117	SD-1	8	150	249	153	102.0
7-2	116	SD-1	6	50	214	53	106.0
7-3	115	SD-1	8	150	229	154	102.7
7-4	112A	SD-1	8	150	145	138	92.0
7-5	HALL	LSD-1	10	300	159	284	94.7
7-6	HALL	LSD-1	10	300	158	290	96.7
7-7	HALL	LSD-1	10	300	179	302	100.7
7-8	HALL	LSD-1	10	300	220	272	90.7

VAV-8/118

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
8-1	120	LSD-1	10	270	224	277	102.6
8-2	119	LSD-1	10	270	297	260	96.3
8-3	114	LSD-1	10	225	230	206	91.6
8-4	114	LSD-1	10	225	186	226	100.4
8-5	118	LSD-1	10	270	291	268	99.3

VAV-9/OPEN OFFICE

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
9-1	OPEN OFFICE	SD-1	6	70			-
9-2	OPEN OFFICE	SD-1	6	70			-
9-3	OPEN OFFICE	SD-1	6	70			-
9-4	OPEN OFFICE	SD-1	6	70			-
9-5	OPEN OFFICE	SD-1	6	70			-
9-6	OPEN OFFICE	SD-1	6	70			-
9-7	OPEN OFFICE	SD-1	6	70			-
9-8	OPEN OFFICE	SD-1	6	70			-
9-9	OPEN OFFICE	SD-1	6	70			-
9-10	OPEN OFFICE	SD-1	6	70			-
9-11	OPEN OFFICE	SD-1	6	70			-
9-12	OPEN OFFICE	SD-1	6	70			-
9-13	OPEN OFFICE	SD-1	6	70			-
9-14	OPEN OFFICE	SD-1	6	70			-
9-15	OPEN OFFICE	SD-1	6	70			-
9-16	OPEN OFFICE	SD-1	6	70			-
9-17	OPEN OFFICE	SD-1	6	70			-
9-18	OPEN OFFICE	SD-1	6	70			-
9-19	OPEN OFFICE	SD-1	6	70			-
9-20	OPEN OFFICE	SD-1	6	70			-
9-21	OPEN OFFICE	SD-1	6	70			-
9-22	OPEN OFFICE	SD-1	6	70			-
9-23	OPEN OFFICE	SD-1	6	70			-
9-24	OPEN OFFICE	SD-1	6	70			-
9-25	OPEN OFFICE	SD-1	6	70			-
9-26	OPEN OFFICE	SD-1	6	70			-
9-27	OPEN OFFICE	SD-1	6	70			-
9-28	OPEN OFFICE	SD-1	6	70			-
9-29	OPEN OFFICE	SD-1	6	70			-
9-30	OPEN OFFICE	SD-1	6	70			-

Diffuser Supply (GRD)

VAV-1/102

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
1-1	103	LSD-2	8	200	221	204	102.0
1-2	102	LSD-2	8	200	248	205	102.5
1-3	HALL	SD-1	8	150	250	159	106.0
1-4	101	LSD-2	8	200	207	189	94.5
1-5	101	LSD-2	8	250	158	225	90.0

VAV-10/123

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
10-1	124	LSD-1	10	250	156	205	82.0
10-2	124	LSD-1	10	250	302	245	98.0
10-3	121	LSD-1	10	270	299	264	97.8
10-4	122	LSD-1	10	270	267	282	104.4
10-5	123	LSD-1	10	270	283	268	99.3

VAV-11/127

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
11-1	128	LSD-1	10	200	150	191	95.5
11-2	125	LSD-1	10	200	166	194	97.0
11-3	126	LSD-1	10	200	244	207	103.5
11-4	127	LSD-1	10	200	234	182	91.0

VAV-2/

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
2-1	105	SD-1	10	350	369	369	105.4
2-2	105	SD-1	10	350	347	347	99.1

VAV-3/110

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
3-1	109	SD-1	8	180	143	163	90.6
3-2	HALL	SD-1	8	150	122	136	90.7
3-3	107	SD-1	8	80	66	73	91.3
3-4	110	SD-1	8	140	130	132	94.3

VAV-4/111

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
4-1	111	SD-1	8	200	222	208	104.0
4-2	112B	SD-1	8	150	148	164	109.3
4-3	111B	SD-1	8	180	206	182	101.1
4-4	111	LSD-2	10	250	241	256	102.4
4-5	111	LSD-2	10	250	224	230	92.0

VAV-5/112C

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
5-1	112	SG-2	16X10	465	317	420	90.3
5-2	112D	SG-2	16X10	0	0	0	-
5-3	112	SG-2	16X10	465	506	448	96.3
5-4	112C	SG-2	16X10	465	550	485	104.3
5-5	112C	SG-2	16X10	465	461	444	95.5

VAV-6/112D

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
6-1	113	SD-1	8	150	202	148	98.7
6-2	112D	SD-1	8	150	105	158	105.3

VAV-7/HALL

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
7-1	117	SD-1	8	150	249	153	102.0
7-2	116	SD-1	6	50	214	53	106.0
7-3	115	SD-1	8	150	229	154	102.7
7-4	112A	SD-1	8	150	145	138	92.0
7-5	HALL	LSD-1	10	300	159	284	94.7
7-6	HALL	LSD-1	10	300	158	290	96.7
7-7	HALL	LSD-1	10	300	179	302	100.7
7-8	HALL	LSD-1	10	300	220	272	90.7

VAV-8/118

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
8-1	120	LSD-1	10	270	224	277	102.6
8-2	119	LSD-1	10	270	297	260	96.3
8-3	114	LSD-1	10	225	230	206	91.6
8-4	114	LSD-1	10	225	186	226	100.4
8-5	118	LSD-1	10	270	291	268	99.3

VAV-9/OPEN OFFICE

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
9-1	OPEN OFFICE	SD-1	6	70			-
9-2	OPEN OFFICE	SD-1	6	70			-
9-3	OPEN OFFICE	SD-1	6	70			-
9-4	OPEN OFFICE	SD-1	6	70			-
9-5	OPEN OFFICE	SD-1	6	70			-
9-6	OPEN OFFICE	SD-1	6	70			-
9-7	OPEN OFFICE	SD-1	6	70			-
9-8	OPEN OFFICE	SD-1	6	70			-
9-9	OPEN OFFICE	SD-1	6	70			-
9-10	OPEN OFFICE	SD-1	6	70			-
9-11	OPEN OFFICE	SD-1	6	70			-
9-12	OPEN OFFICE	SD-1	6	70			-
9-13	OPEN OFFICE	SD-1	6	70			-
9-14	OPEN OFFICE	SD-1	6	70			-
9-15	OPEN OFFICE	SD-1	6	70			-
9-16	OPEN OFFICE	SD-1	6	70			-
9-17	OPEN OFFICE	SD-1	6	70			-
9-18	OPEN OFFICE	SD-1	6	70			-
9-19	OPEN OFFICE	SD-1	6	70			-
9-20	OPEN OFFICE	SD-1	6	70			-
9-21	OPEN OFFICE	SD-1	6	70			-
9-22	OPEN OFFICE	SD-1	6	70			-
9-23	OPEN OFFICE	SD-1	6	70			-
9-24	OPEN OFFICE	SD-1	6	70			-
9-25	OPEN OFFICE	SD-1	6	70			-
9-26	OPEN OFFICE	SD-1	6	70			-
9-27	OPEN OFFICE	SD-1	6	70			-
9-28	OPEN OFFICE	SD-1	6	70			-
9-29	OPEN OFFICE	SD-1	6	70			-
9-30	OPEN OFFICE	SD-1	6	70			-

Completed By: Jacob Davidson on

Asset	Notes
10-1	DAMPER FOR DIFFUSER IS 100% OPEN. TECH IS UNABLE TO PUSH MORE AIR TO DIFFUSER WITHOUT PUTTING OTHERS ON TH E SYSTEM OUT OF DESIGN. THE DIFFUSER IS IN A ROOM WITH ANOTHER DIFFUSER AND THERE SHOULD NOT BE COMFORT IS SUES.
5-1	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.
5-4	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.
5-5	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.
10-1	DAMPER FOR DIFFUSER IS 100% OPEN. TECH IS UNABLE TO PUSH MORE AIR TO DIFFUSER WITHOUT PUTTING OTHERS ON TH E SYSTEM OUT OF DESIGN. THE DIFFUSER IS IN A ROOM WITH ANOTHER DIFFUSER AND THERE SHOULD NOT BE COMFORT IS SUES.
5-1	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.
5-4	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.
5-5	CFM DESIGN CHANGED FROM 400 TO 465 DUE TO MISSING DIFFUSER.

National TAB

Project: UCM Skyhaven (Warrensburg, MO)

System/Unit: FAN - Exhaust

Comfort. Under control.

Asset: EF-1 AREA:117

Unit Data		
	Design	**Actual**
MFG	NA	GREENHECK
Model Num	NA	G-100-4-VG-1-19-Z
Serial Num	-	21253792
Type	-	DOWNBLAST

Motor Data		
	Design	**Actual**
Motor MFG	-	BROAD OCEAN
Frame	-	NL
Horsepower	-	1/4
Motor Rpm	-	300-1725
Phase	-	1
Voltage (rated)	-	115/208-230
Amperage (rated)	-	2.85/1.7
Service Factor	-	1.25

Test Data		
	Design	**Actual**
CFM	700	721
RL Voltage	-	122V
RL Amperage	-	0.7A
Total ESP	0.5	0.17"

Completed By: Jacob Davidson

Notes:

National TAB

Project:UCM Skyhaven (Warrensburg, MO)

FAN - Exhaust

Comfort. Under control.

Diffuser Ret/Exh (GRD)

EF-1/117

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E1-1	EG-1	8	100	1	315	198	102	102.0
E1-2	EG-1	8	100	1	245	181	109	109.0
E1-3	EG-1	8	200	261.5CFM/ 572FPM=0. 457	239	335	209	104.5
E1-4	EG-1	8	100	1	234	175	105	105.0
E1-5	EG-1	8	200	1	265	378	196	98.0

Completed By: Jacob Davidson on