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**Report: Legent Hospital (Tomball, TX) TAB REPORT**

**Function: Test, Adjust, & Balance**

**Date: 03/20/2023**

# **PROJECT**

## **Legent Hospital (Tomball, TX)**

24429 Tomball Parkway, Suite 100

Tomball, TX 77375

### **Client**

Boatman Construction LLC  
27905 Commercial Park Rd, Suite 100

Tomball, TX 77375

# National TAB

Project: Legent Hospital (Tomball, TX)

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# CERTIFICATION

**PROJECT:** Legent Hospital (Tomball, TX)

The data presented in this report is a record of system measurements and final adjustments that have been obtained in accordance with the current edition of the NEBB *Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems*. Any variances from design quantities, which exceed NEBB tolerances, are noted in the Test-Adjust-Balance Report Project Summary.

The air distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

**NEBB TAB FIRM:** National TAB-Southeast

**REGISTRATION NO:** 3755

**CERTIFIED BY:** J. Scott Springer 23312

**DATE:** 3/20/2023

The hydronic distribution system has been tested and balanced and final adjustments have been made in accordance with NEBB standards and the project specifications.

**NEBB TAB FIRM:** National TAB-Southeast

**REGISTRATION NO:** 3086

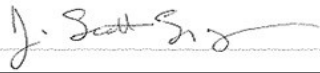
**CERTIFIED BY:** J. Scott Springer 23312

**DATE:** 3/20/2023

## Submitted and Certified by:

**NEBB TAB FIRM:** National TAB-Southeast

**TAB PROFESSIONAL:** J. Scott Springer

**SIGNATURE:** 

**REGISTRATION NO:** 3755 (NTAB) / 23312

**CERTIFICATION EXP:** 12/31/2023





# National TAB

## Testing, Adjusting, and Balancing Equipment



Function		Range	Minimum Accuracy	Instrument Information	Calibration Date	Date Due
AIR	AIR PRESSURE	0 in wg to 10 in wg	2% +/- 0.001 in wg	Shortridge ADM 880C - S/N M05066	9/28/2022	9/28/2023
	AIR VELOCITY INSTRUMENT	50 fpm to 3900 fpm	+/- 5 % +/- 7 fpm	Shortridge ADM 880C - S/N M05066	9/28/2022	9/28/2023
	DIRECT HOOD READING	100 cfm to 2000 cfm	+/- 3 % +/- 7 cfm	Shortridge ADM 880C - S/N M05066	9/28/2022	9/28/2023
TEMPERATURE	AIR METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/12/2022	10/12/2023
	AIR PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 5028	10/12/2022	10/12/2023
	IMMERSION METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/12/2022	10/12/2023
	IMMERSION PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 1075	10/12/2022	10/12/2023
	CONTACT METER	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - SRH77A S/N 081820093	10/12/2022	10/12/2023
	CONTACT PROBE	-20 F to 240 F	+/- .5 % 2 F	Cooper ATKINS - PD1388 7-6 S/N 4011	10/12/2022	10/12/2023
HUMIDITY	HUMIDITY PROBE	10 % RH to 90 % RH	3% of reading	Cooper ATKINS - SRH77A S/N 090315046	10/12/2022	10/12/2023
ELECTRICAL	VOLTAGE MEASUREMENT	0 VAC to 600 VAC	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	10/12/2022	10/12/2023
	AMPERAGE MEASUREMENT	0 Amperes to 100 Amperes	2 % reading +/- 5 digits	Dwyer CM-1 - S/N 190800099	10/12/2022	10/12/2023
ROTATION	ROTATION MEASUREMENT	60 rpm to 5000 rpm	2 % reading 2 rpm	Dwyer TAC-L - S/N S1100123	10/12/2022	10/12/2023
HYDRONIC	PRESSURE MEASUREMENT	-30 in Hg to 200 psi	±2% of reading +/- 1 psi	Dwyer 490W-6 - S/N 01L6NK	6/29/2022	6/29/2023
	DIFFERENTIAL PRESSURE MEASUREMENT	0 psi - 80 psi	±2% of reading +/- 1 psi	Dwyer 490W-6 - S/N 01L6NK	6/29/2022	6/29/2023

## Abbreviation List

A = Area (ft <sup>2</sup> )	S.F. = Service Factor
AHU = Air Handling Unit	SF = Supply Fan
A <sub>k</sub> = Effective Area	SP = Static Pressure
BHP = Brake Horsepower (IP) HP	SR = Supply Register
Btu = British Thermal Unit	T = Temperature
Btu/h = Btuh = BTUH = BTU/Hour	T <sub>ma</sub> = Mixed Air Temperature
CL = Center Distance (used in belt formula)	T <sub>oa</sub> = Outside Air Temperature
CD = Ceiling Diffuser	T <sub>ra</sub> = Return Air Temperature
CF = Correction Factor	H = Head (in wc, ft wc, psi)
CFM = Volumetric Flow: Cubic Feet Per Minute	h = Enthalpy
CO <sub>2</sub> = Carbon Dioxide	HP = Horsepower
CO = Carbon Monoxide	hr = Hour
C <sub>v</sub> = Flow Constant	K <sub>v</sub> = Flow constant (SI)
d = Diameter (in.) IP	kW = Kilowatt = 1000 Watts
Δ = Difference or Change (Final - Initial)	LAT = Leaving Air Temperature
DB = Dry Bulb	lb = Pounds
EA = Exhaust Air	LWT = Leaving Water Temperature
EAT = Entering Air Temperature	ma = Mixed Air
EF = Exhaust Fan	MIN = Minimum
Eff = Efficiency	MAX = Maximum
EG = Exhaust Grille	N/A = Not Applicable
ESP = External Static Pressure	NA = No Access
EWT = Entering Water Temperature	NL = Not Listed
°F = Degrees Fahrenheit, °F	NPSHA = Net Positive Suction Head Available
FPB = Fan Powered Box	NS = Not Specified
FLA = Full Load Amps	OA = Outside Air
fpm = Feet per Minute (fpm)	OAT = Outside Air Temperature
ft = Foot	PD = Sheave Pitch Diameter
gal = Gallons	P.D. = Pressure Drop
GPM = Gallons Per Minute (GPM)	PF = Power Factor
h = Enthalpy (BTU/lb dry air)	SG = Supply Grille
P = Pressure	SR = Supply Register
ppm = parts per million	TP = Total Pressure
psi = Pounds Per Square Inch	T <sub>ra</sub> = Return Air Temperature
psid = PSI Differential	TS = Tip Speed (fpm) IP, (m/s) SI
r = Radius (in)	TSP = Total Static Pressure
% <sub>ra</sub> = % of Return Air	V = Velocity
RA = Return Air	VAV = Variable Air Volume
RAT = Return Air Temperature	VD = Volume Damper
RF = Return Fan	VFD = Variable Frequency Drive
RG = Return Grille	W = Watt
RH = Relative Humidity	WB = Wet Bulb
RPM = Revolutions Per Minute	wg = wc = water gauge = water column
RTU = Roof Top Unit	WHP = Water Horsepower (IP)
SA = Supply Air	ω = Humidity Ratio

## Project Summary

### Preface

The summary below provides a quick understanding of how well your HVAC systems are balanced for the design criteria. The summary concludes with a quick understanding of your building environment and possible suggestions for each of your systems after testing has been performed. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred. Our focus is to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

### Facility Identification and TAB Requirements

The mechanical equipment to be tested, adjusted, and balanced includes All Roof Top Units (RTU), All Exhaust Fans (EF), All Variable Air Volume boxes (VAV) all Fan Coil Units (FCU), and all associated air devices.

### RTUs

Each of the RTUs was measured at their terminal devices utilizing a flow hood. The VAVs were calibrated by creating a factor. The sum of the flow through each VAV is the total flow for the corresponding RTU. Each terminal diffuser was balanced to within +/-10% of the engineer's design volume utilizing the provided hand damper located at the takeoff of the main & branch trunk line(s). Any equipment that fell outside of this tolerance is noted throughout the report.

### General Exhaust Fans

The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within +/-10% of the design. Each terminal device was balanced to within +/-10% of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

### Final Building Tests

After completing the test and balance, the ORs were all noted as being positively pressurized. All areas of the building are comfortable and performing as intended.

### Return Trip

A return trip was completed on 12/20/2023 with special attention given to air changes per hour (ACH) to rooms on the second floor.

Housekeeping next to Decon was bumped up to 92 CFM of exhaust. This makes the ACH 11.7 in that room. The requirement is 10.

Biohazard back hallway behind recovery was increased to 165 CFM exhaust which makes 10.8 ACH. The requirement in this room is 10 ACH.

Sterile storage next to OR4 was increased to 177 CFM of supply. This increases the ACH in that room to 4.1. The requirement is 4.0 ACH.



# NATIONAL TAB

Legent North Houston Surgical Hospital (Tomball, TX)

## Air Change Per Hour

Type Room	Room #	Test Date	Volume	Actual CFH	Design ACH	Actual ACH	Relationship
OR1	222	12/20/2023	6360	131640	20	20.70	to Sterile Corridor
OR2	223	12/20/2023	6338	133680	20	21.09	to Sterile Corridor
OR3	224	12/20/2023	6334	123780	20	19.54	to Sterile Corridor
OR4	235	12/20/2023	5375	108300	20	20.15	to Sterile Corridor
OR5	245	12/20/2023	6161	125460	20	20.36	to Sterile Corridor
Recovery Isolation	212	12/20/2023	1424	22500	12	15.80	to Corridor
Clean Storage	228	12/20/2023	1474	3480	2	2.36	to Sterile Corridor
Clean Holding	208	12/20/2023	732	3480	4	4.75	to Corridor
Housekeeping (behind Decon)	261	12/20/2023	322	3900	10	12.11	to Back Corridor
Housekeeping (next to Decon)	no room number	12/20/2023	472	5520	10	11.69	to Sterile Corridor
Housekeeping (in Decon)	244	12/20/2023	491	6660	10	13.56	to Decon
Soiled Workroom	207	12/20/2023	1170	12900	10	11.03	to Corridor
Decontamination	240	12/20/2023	3602	56280	10	15.62	to Sterile/Back Corridor
Biohazard	217	12/20/2023	914	9900	10	10.83	to Back Corridor
Clean Side	238	12/20/2023	6644	90840	4	13.67	to Sterile Corridor
Sterile Storage	236	12/20/2023	2585	10620	4	4.11	to Sterile Corridor
Medication	211	12/20/2023	622	4440	4	7.14	to Corridor





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Project: Legent Hospital (Tomball, TX)

## System/Unit: AHU-DUAL FAN



Asset: RTU-2-1

AREA:222

UNIT DATA - SUPPLY		
	Design	Actual
Manufacturer	NA	AAON
Model Number	NA	RNA-070-D-0-3-EAB0B-00000
Serial Number	-	202301-BNCY22125
No. Pre-Filters / Size (1)	-	24 / 12x24x2

MOTOR DATA - SUPPLY		
	Design	Actual
Motor MFG / Frame	-	BALDOR / 254T
Horsepower / RPM	-	15 (x2) / 1765
Rated Volts / Phase	-	460 / 3
Rated Amperage / SF	-	18.0

TEST DATA - SUPPLY		
	Design	Actual
Total CFM	14705	13892
OA CFM	2500	2459
Fan RPM	1733	1883
VFD Speed	-	64.0 Hz
RL Voltage	460	492/491/491
RL Amperage	18.0	13.2 // 14.0
Motor B.H.P.	9.61	11.0 // 11.7

PERFORMANCE DATA - SUPPLY		
	Design	Actual
Static Pressure Stpt	-	1.25"
Suction S.P.	-	-1.44"
Discharge S.P.	-	1.20"
Total S.P.	-	2.64"
DX Coil P.D.	-	0.46"
Final Filters P.D.	-	0.46"
Total ESP	3.50	2.18"

UNIT DATA - EXHAUST/RETURN		
	Design	Actual
Manufacturer	AAON	AAON
Model Number	-	RNA-070-D-0-3-EAB0B-00000
Serial Number	-	202301-BNCY22125

MOTOR DATA - EXHAUST/RETURN		
	Design	Actual
Motor MFG / FRAME	-	BALDOR / 213T
Horsepower / RPM	-	3 (x2) / 1165
Rated Volts / Phase	-	460 / 3
Rated Amperage / SF	-	4.5

TEST DATA - EXHAUST/RETURN		
	Design	Actual
Total CFM	12205	11433
Fan RPM	1166	1165
VFD Speed	-	60.0 Hz
RL Voltage	460	491/491/493
RL Amperage	4.5	3.9 // 3.9
Motor B.H.P.	1.71	2.6 // 2.6

PERFORMANCE DATA - EXHAUST/RETURN		
	Design	Actual
Suction S.P.	-	1.03"
Discharge S.P.	-	0.98"
Total S.P.	1.05	2.01"

Completed By: Wesley John on 03/19/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## AHU-DUAL FAN



### VAV - Single Duct

#### RTU-2-1/222

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)
RVAV-2-1	NAILOR	D3001	RVAV	14	1870	1865	1870	1865	-	-	1.364
RVAV-2-2	NAILOR	D3001	RVAV	14	1820	1826	1820	1826	-	-	1.104
RVAV-2-3	NAILOR	D3001	RVAV	14	1815	1810	1815	1810	-	-	1.451
RVAV-2-4	NAILOR	D3001	RVAV	14	1590	1584	1590	1584	-	-	1.303
RVAV-2-5	NAILOR	D3001	RVAV	10	785	728	785	728	-	-	1.230
RVAV-2-6	NAILOR	D3001	RVAV	10	750	754	750	754	-	-	1.726
RVAV-2-7	NAILOR	D3001	RVAV	10	790	783	790	783	-	-	1.426
RVAV-2-8	NAILOR	D3001	RVAV	10	500	497	500	497	-	-	0.720
RVAV-2-9	NAILOR	D3001	RVAV	14	1980	1996	440	448	-	-	1.350
VAV-2-1	NAILOR	D30RE	VAV	14	2070	2087	2070	2087	2070	2112	1.089
VAV-2-2	NAILOR	D30RE	VAV	14	2020	2023	2020	2023	2020	2022	0.900
VAV-2-3	NAILOR	D30RE	VAV	14	2015	2018	2015	2018	2015	1985	1.143
VAV-2-4	NAILOR	D30RE	VAV	14	1790	1805	1790	1805	1790	1760	1.223
VAV-2-5	NAILOR	D30RE	VAV	8	410	409	325	329	325	329	1.236
VAV-2-6	NAILOR	D30RE	VAV	8	570	569	525	528	525	526	0.976
VAV-2-7	NAILOR	D30RE	VAV	14	1530	1514	1530	1514	1170	1172	1.296
VAV-2-8	NAILOR	D30RE	VAV	10	890	892	890	892	710	714	1.030
VAV-2-9	NAILOR	D30RE	VAV	6	370	375	195	192	195	197	0.943
VAV-2-10	NAILOR	D30RE	VAV	10	705	693	140	148	400	385	1.217
VAV-2-11	NAILOR	D30RE	VAV	6	210	211	210	211	210	214	1.023
VAV-2-19	NAILOR	D30RE	VAV	14	2180	2136	440	452	800	782	0.908

### Diffuser Supply (GRD)

#### VAV-2-1/222

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
V2-1-1	222	A	10	260	222	258	99.2
V2-1-2	222	A	10	260	234	264	101.5
V2-1-2	222	A	10	260	230	268	103.1
V2-1-4	222	A	10	255	217	263	103.1
V2-1-5	222	A	10	260	219	253	97.3
V2-1-6	222	A	10	260	248	268	103.1
V2-1-7	222	A	10	260	240	259	99.6
V2-1-8	222	A	10	255	237	254	99.6
Total				2070	1847	2087	100.82%

#### VAV-2-10/250

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
V2-10-1	250	C	10	235	258	234	99.6
V2-10-2	250	C	10	235	255	225	95.7
V2-10-2	250	C	10	235	300	234	99.6
Total				705	813	693	98.3%

**VAV-2-11/HALL**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-11-1	HALL	C	6	105	109	106	101.0
V2-11-2	HALL	C	6	105	109	105	100.0
Total				210	218	211	100.48%

**VAV-2-19/245**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-19-1	245	A	10	275	212	281	102.2
V2-19-2	245	A	10	275	224	289	105.1
V2-19-3	245	A	10	275	253	261	94.9
V2-19-4	245	A	10	275	240	274	99.6
V2-19-5	245	A	10	270	257	250	92.6
V2-19-6	245	A	10	270	264	258	95.6
V2-19-7	245	A	10	270	267	254	94.1
V2-19-8	245	A	10	270	248	269	99.6
Total				2180	1965	2136	97.98%

**VAV-2-3/224**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-2-1	223	A	10	250	215	239	95.6
V2-2-2	223	A	10	250	232	256	102.4
V2-2-2	223	A	10	250	198	244	97.6
V2-2-4	223	A	10	250	267	238	95.2
V2-2-5	223	A	10	255	241	267	104.7
V2-2-6	223	A	10	255	240	271	106.3
V2-2-7	223	A	10	255	231	253	99.2
V2-2-8	223	A	10	255	247	250	98.0
Total				2020	1871	2018	99.9%

**VAV-2-2/224**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-3-1	224	A	10	250	228	264	105.6
V2-3-2	224	A	10	250	234	260	104.0
V2-3-2	224	A	10	250	240	257	102.8
V2-3-4	224	A	10	250	231	258	103.2
V2-3-5	224	A	10	250	252	248	99.2
V2-3-6	224	A	10	255	230	242	94.9
V2-3-7	224	A	10	255	216	253	99.2
V2-3-8	224	A	10	255	220	241	94.5
Total				2015	1851	2023	100.4%

**VAV-2-4/235**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-4-1	235	A	10	225	259	219	97.3
V2-4-2	235	A	10	225	249	218	96.9
V2-4-2	235	A	10	225	242	211	93.8
V2-4-4	235	A	10	220	238	217	98.6
V2-4-5	235	A	10	225	219	227	100.9
V2-4-6	235	A	10	225	237	242	107.6
V2-4-7	235	A	10	225	240	243	108.0
V2-4-8	235	A	10	220	251	228	103.6
Total				1790	1935	1805	100.84%

**VAV-2-5/228B**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-5-1	225	C	6	65	64	67	103.1
V2-5-2	228	C	6	55	69	58	105.5
V2-5-2	HALL	C	6	65	61	62	95.4
V2-5-4	221	C	6	50	70	52	104.0
V2-5-5	227	C	6	55	81	51	92.7
V2-5-6	HALL	C	65	65	79	64	98.5
V2-5-7	228B	C	6	55	63	55	100.0
Total				410	487	409	99.76%

**VAV-2-6/236**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-6-1	HALL	C	8	120	121	112	93.3
V2-6-2	243	C	6	30	50	32	106.7
V2-6-2	244	C	6	65	40	62	95.4
V2-6-4	237	C	6	60	57	62	103.3
V2-6-5	HALL	C	8	120	117	124	103.3
V2-6-6	236	C	8	175	115	177	101.1
Total				570	500	569	99.82%

**VAV-2-7/238**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-7-1	238	C	10	510	394	502	98.4
V2-7-2	238	C	10	510	350	518	101.6
V2-7-2	238	C	10	510	440	494	96.9
Total				1530	1184	1514	98.95%

**VAV-2-8/240**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-8-1	240	C	10	445	500	443	99.6
V2-8-2	240	C	10	445	408	449	100.9
Total				890	908	892	100.22%

**VAV-2-9/260**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-9-1	261	C	6	55	54	58	105.5
V2-9-2	242	C	6	85	42	83	97.6
V2-9-2	260	C	10	230	183	234	101.7
Total				370	279	375	101.35%

**Diffuser Ret/Exh (GRD)****RVAV-2-1/222**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-1-1	B	16X24	935	799	917	98.1
RV2-1-2	B	16X24	935	1021	948	101.4
Total			1870	1820	1865	99.73%

**RVAV-2-2/224**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-2-1	B	16X24	910	947	929	102.1
RV2-2-2	B	16X24	910	1201	897	98.6
Total			1820	2148	1826	100.33%

**RVAV-2-3/235**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-3-1	B	16X24	910	1704	919	101.0
RV2-3-2	B	16X24	905	1292	891	98.5
Total			1815	2996	1810	99.72%

**RVAV-2-4/225**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-4-1	B	16X24	795	588	803	101.0
RV2-4-2	B	16X24	795	781	781	98.2
Total			1590	1369	1584	99.62%

**RVAV-2-5/225**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-5-1	D	6	75	33	64	85.3
RV2-5-2	D	14	710	683	664	93.5
Total			785	716	728	92.74%

**RVAV-2-6/HALL**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-6-1	D	10	750	991	754	100.5
Total			750	991	754	100.53%

**RVAV-2-7/250**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-7-1	D	12	555	398	540	97.3
RV2-7-2	D	10	230	278	243	105.7
Total			785	676	783	99.75%

**RVAV-2-8/HALL**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-8-1	D	12	500	458	497	99.4
Total			500	458	497	99.4%

**RVAV-2-9/245**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
RV2-9-1	B	16X24	990	1058	972	98.2
RV2-9-2	B	16X24	990	765	1024	103.4
Total			1980	1823	1996	100.81%

Completed By: Wesley John on 03/01/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: AHU/RTU



Asset: RTU-2-2

AREA:201

Unit Data		
	Design	Actual
MFG	TEMTRON	TEMTRON
Serial Num	-	N0021998-001
Model Num	CUSTOM	ITF-RDH9
Configuration	HORIZONTAL	HORIZONTAL DISCHARGE
Num OA Filters 1	-	N/A
OA Filter Size 1	-	N/A
Num PreFilter 1	-	4
PreFilter Size 1	-	20x20x2

Test Data		
	Design	Actual
SF CFM	4085	4100
SF RPM	3862	1995
RA CFM	2605	2641
OA CFM	1480	1459
RL Voltage	460	489/490/491
RL Amperage	4.0	3.5/3.4/3.5
OA Damper Position	-	72%
Brake Horse Power	3.50	2.60

Motor Data		
	Design	Actual
Motor MFG	-	TOSHIBA
Frame	-	182T
Horsepower	-	3
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	460
Rated Amperage	-	4.0
Service Factor	-	1.15

Performance Data		
	Design	Actual
MA Plenum SP	-	0.56"
Fan Suction SP	-	1.23"
Fan Discharge SP	-	1.19"
Total ESP	3.0	1.75"
Fan Total SP	3.72	2.42"

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## AHU/RTU



### VAV - Single Duct

#### RTU-2-2/201

Asset									
Asset Name	MFG	Model Num	Type	Inlet Size	Design Max CFM	Max CFM	Design Min CFM	Min CFM	Ak (max)
VAV-2-12	NAILOR	D30RE	VAV	10	685	689	500	504	0.938
VAV-2-13	NAILOR	D30RE	VAV	10	910	904	220	227	0.820
VAV-2-14	NAILOR	D30RE	VAV	10	835	831	735	730	1.167
VAV-2-15	NAILOR	D30RE	VAV	6	320	317	250	256	0.538
VAV-2-16	NAILOR	D30RE	VAV	6	210	212	210	212	1.066
VAV-2-17	NAILOR	D30RE	VAV	8	405	409	250	254	1.023
VAV-2-18	NAILOR	D30RE	VAV	10	730	738	420	417	1.017

### Diffuser Ret/Exh (GRD)

#### RTU-2-2/201

Asset						
Asset Name	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
R22-1	D		310	411	302	97.4
R22-2	D		65	144	69	106.2
R22-3	D		105	200	114	108.6
R22-4	D		100	93	107	107.0
R22-5	D		65	106	67	103.1
R22-6	D		315	187	342	108.6
R22-7	D		65	104	68	104.6
R22-8	D		65	124	67	103.1
R22-9	D		260	296	281	108.1
R22-10	D		65	90	70	107.7
R22-11	D		65	113	66	101.5
R22-12	D		65	84	61	93.8
R22-13	D		65	92	71	109.2
R22-14	D		490	222	491	100.2
R22-15	D		485	261	509	104.9
R22-16	D		245	403	261	106.5
R22-17	D		240	301	250	104.2
Total			3070	3231	3196	104.1%

### Diffuser Supply (GRD)

#### VAV-2-12/217

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
V2-12-1	239	C	6	35	34	36	102.9
V2-12-2	234	C	6	65	70	71	109.2
V2-12-3	233	C	8	125	129	119	95.2
V2-12-4	232	C	6	130	73	124	95.4
V2-12-7	229	C	10	260	214	269	103.5
V2-12-8	231	C	6	35	73	33	94.3
V2-12-9	217	C	6	35	59	37	105.7
Total				685	652	689	100.58%

**VAV-2-13/218**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-13-1	218	C	10	225	198	220	97.8
V2-13-2	218	C	10	225	196	217	96.4
V2-13-2	218	C	10	230	162	237	103.0
V2-13-4	218	C	10	230	168	230	100.0
Total				910	724	904	99.34%

**VAV-2-14/214**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-14-1	215	C	6	95	97	90	94.7
V2-14-2	215	C	6	95	105	99	104.2
V2-14-3	215	C	6	95	115	92	96.8
V2-14-4	215	C	6	95	101	96	101.1
V2-14-5	214	C	6	95	127	90	94.7
V2-14-6	215	C	6	95	127	89	93.7
V2-14-7	215	C	6	95	115	97	102.1
V2-14-8	215	C	6	95	108	98	103.2
V2-14-9	215	C	6	75	96	80	106.7
Total				835	991	831	99.52%

**VAV-2-15/213**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-15-1	213	C	6	50	32	53	106.0
V2-15-2	213	C	8	135	61	130	96.3
V2-15-3	213	C	8	135	57	134	99.3
Total				320	150	317	99.06%

**VAV-2-16/212**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-16-1	212	C	10	210	225	212	101.0
Total				210	225	212	100.95%

**VAV-2-17/210**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-17-1	208	C	6	55	34	58	105.5
V2-17-2	HALL	C	8	125	153	132	105.6
V2-17-2	210	C	10	225	217	219	97.3
Total				405	404	409	100.99%

**VAV-2-18/201**

<b>Asset</b>							
<b>Asset Name</b>	<b>Location</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
V2-18-1	207	C	8	170	138	173	101.8
V2-18-2	201	C	10	245	278	242	98.8
V2-18-2	200	C	10	240	263	249	103.8
V2-18-4	211	C	6	75	56	74	98.7
Total				730	735	738	101.1%

Completed By: Wesley John on 03/01/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: Fan Coil



Asset: FCU-2-3

AREA:ELEV MACH RM

Unit Data		
	Design	Actual
MFG	NA	LG
Model Num	NA	LD097HV4
Serial Num	-	NL
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	0.40

Test Data		
	Design	Actual
SFAN CFM	200	187
Motor Speed SetPt	-	HIGH
RL Voltage	-	212
RL Amperage	-	0.13
RA CFM	200	187
OA CFM	0	0

Performance Data		
	Design	Actual
Suction ESP	-	0.01
Discharge ESP	-	0.07
Total ESP	0.1	0.08

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## Fan Coil



Diffuser Supply (GRD)

**FCU-2-3/ELEV MACH RM**

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
F2-3-1	ELEV MACH RM	G	8X6	200	187	187	93.5
Total				200	187	187	93.5%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: Fan Coil



Asset: FCU-2-4

AREA:STAIR ST1

Unit Data		
	Design	Actual
MFG	NA	LG
Model Num	NA	LHN488HHV
Serial Num	-	NL
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	1.3

Test Data		
	Design	Actual
SFAN CFM	1765	1315
Motor Speed SetPt	-	HIGH
RL Voltage	-	211
RL Amperage	-	1.1
RA CFM	1765	1315
OA CFM	0	0

Performance Data		
	Design	Actual
Suction ESP	-	0.02
Discharge ESP	-	0.20
Total ESP	0.24	0.22

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## Fan Coil



Diffuser Supply (GRD)

**FCU-2-4/STAIR ST1**

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
F2-4-1	STAIR ST1	EX		885	1315	1315	148.6
F2-4-2	STAIR ST1	EX		880	0	0	0.0
Total				1765	1315	1315	74.5%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: Fan Coil



Asset: FCU-2-5

AREA:ELEV MACH RM

Unit Data		
	Design	Actual
MFG	NA	LG
Model Num	NA	LD097HV4
Serial Num	-	NL
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	0.4

Test Data		
	Design	Actual
SFAN CFM	200	191
Motor Speed SetPt	-	HIGH
RL Voltage	-	210
RL Amperage	-	0.16
RA CFM	200	191
OA CFM	0	0

Performance Data		
	Design	Actual
Suction ESP	-	0.13
Discharge ESP	-	0.06
Total ESP	0.1	0.19

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## Fan Coil



**Diffuser Supply (GRD)**

**FCU-2-5/ELEV MACH RM**

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
F2-5-1	ELEV MACH RM	G	8X6	200	142	191	95.5
Total				200	142	191	95.5%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: Fan Coil



Asset: FCU-2-8

AREA:ELEVATOR 3

Unit Data		
	Design	Actual
MFG	NA	LG
Model Num	NA	LD127HV4
Serial Num	-	NL
Configuration	HORIZONTAL	HORIZONTAL

Motor Data		
	Design	Actual
Horsepower	-	NL
Phase	1	1
Voltage (rated)	208	208
Amperage (rated)	-	0.8

Test Data		
	Design	Actual
SFAN CFM	300	315
Motor Speed SetPt	-	HIGH
RL Voltage	-	212
RL Amperage	-	0.20
RA CFM	300	315
OA CFM	0	0

Performance Data		
	Design	Actual
Suction ESP	-	0.14
Discharge ESP	-	0.02
Total ESP	0.1	0.16

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## Fan Coil



Diffuser Supply (GRD)

### FCU-2-8/ELEVATOR 3

Asset							
Asset Name	Location	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
F2-8-1	ELEVATOR 3	G	8X6	300	315	315	105.0
Total				300	315	315	105%

# National TAB

Project: Legent Hospital (Tomball, TX)  
System/Unit: FAN - Exhaust



Asset: EF-2-1

AREA:238

Unit Data		
	Design	Actual
<b>MFG</b>	NA	PENN BARRY
<b>Model Num</b>	NA	FX16Q2GP
<b>Serial Num</b>	-	H22YZ41206
<b>Type</b>	CRE UPBLAST	UPBLAST

Test Data		
	Design	Actual
<b>CFM</b>	2090	2035
<b>RL Voltage</b>	-	121
<b>RL Amperage</b>	-	9.4
<b>Total ESP</b>	1.0	0.78

Motor Data		
	Design	Actual
<b>Motor MFG</b>	-	MCMILLAN
<b>Frame</b>	-	NL
<b>Horsepower</b>	0.75	649 W
<b>Motor Rpm</b>	1725	1725
<b>Phase</b>	1	1
<b>Voltage (rated)</b>	230	120
<b>Amperage (rated)</b>	-	11.2
<b>Service Factor</b>	-	NL

Completed By: Wesley John on 12/21/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## FAN - Exhaust



**Diffuser Ret/Exh (GRD)**

**EF-2-1/238**

<b>Asset</b>						
<b>Asset Name</b>	<b>Type</b>	<b>Size</b>	<b>DESIGN CFM</b>	<b>CFM(1)</b>	<b>FINAL CFM</b>	<b>% to design</b>
E2-1-1	E	6	85	74	80	94.1
E2-1-2	E	6	90	91	92	102.2
E2-1-2	E	6	55	83	53	96.4
E2-1-4	E	12	520	319	511	98.3
E2-1-5	E	6	90	82	86	95.6
E2-1-6	E	6	100	56	96	96.0
E2-1-7	E	12	520	389	534	102.7
E2-1-8	E	10	315	333	290	92.1
E2-1-9	E	10	315	479	293	93.0
<b>Total</b>			<b>2090</b>	<b>1906</b>	<b>2035</b>	<b>97.37%</b>

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: FAN - Exhaust



Asset: EF-2-2

AREA:231

Unit Data		
	Design	Actual
MFG	NA	PENN BARRY
Model Num	NA	DX13RGP
Serial Num	-	L22AK38236
Type	CRE DNBLAST	DOWNBLAST

Test Data		
	Design	Actual
CFM	720	707
RL Voltage	-	121
RL Amperage	-	2.5
Total ESP	0.6	0.49

Motor Data		
	Design	Actual
Motor MFG	-	MCMILLAN
Frame	-	NL
Horsepower	0.167	283 W
Motor Rpm	1550	1725
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	5.2
Service Factor	-	NL

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## FAN - Exhaust



**Diffuser Ret/Exh (GRD)**

**EF-2-2/231**

Asset						
Asset Name	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
E2-2-1	E	8	85	97	86	101.2
E2-2-2	E	8	195	205	180	92.3
E2-2-2	E	8	135	150	138	102.2
E2-2-4	E	8	180	198	179	99.4
E2-2-5	E	8	125	160	124	99.2
Total			720	810	707	98.19%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: FAN - Exhaust



Asset: EF-2-3

AREA:217

Unit Data		
	Design	Actual
MFG	NA	PENNBARRY
Model Num	NA	F11QGP
Serial Num	-	J22AB47048
Type	CRE UPBLAST	UPBLAST

Test Data		
	Design	Actual
CFM	155	165
RL Voltage	-	121
RL Amperage	-	0.37
Total ESP	0.3	0.20"

Motor Data		
	Design	Actual
Motor MFG	-	MCMILLAN
Frame	-	NL
Horsepower	0.25	283W
Motor Rpm	1725	1725
Phase	1	1
Voltage (rated)	230	120
Amperage (rated)	-	5.2
Service Factor	-	NL

Completed By: Wesley John on 12/21/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## FAN - Exhaust



### Diffuser Ret/Exh (GRD)

EF-2-3/217

Asset						
Asset Name	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
E2-3-1	E	8	155	455	165	106.5
Total			155	455	165	106.45%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: FAN - Exhaust



Asset: EF-2-4

AREA:212

Unit Data		
	Design	Actual
MFG	NA	PENNBARRY
Model Num	NA	VCR-105 C1A4
Serial Num	-	F22845-001
Type	CENT FUME	CENT FUME

Test Data		
	Design	Actual
CFM	365	375
RL Voltage	-	490/488/491
RL Amperage	-	0.26/0.25/0.22
Total ESP	0.47	NA

Motor Data		
	Design	Actual
Motor MFG	-	US MOTORS
Frame	-	56
Horsepower	0.25	0.25
Motor Rpm	1200	1140
Phase	3	3
Voltage (rated)	460	460
Amperage (rated)	-	0.76
Service Factor	-	1.15

Completed By: Wesley John on 03/15/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## FAN - Exhaust



### Diffuser Ret/Exh (GRD)

EF-2-4/212

Asset						
Asset Name	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
E2-4-1	E	10	365	113	375	102.7
Total			365	113	375	102.74%

# National TAB

Project: Legent Hospital (Tomball, TX)

## System/Unit: FAN - Exhaust



Asset: EF-2-5

AREA:216

Unit Data		
	Design	Actual
MFG	NA	PENNBARRY
Model Num	NA	DX11QGP
Serial Num	-	H22YZ41205
Type	CRE DNBLAST	UPBLAST

Test Data		
	Design	Actual
CFM	580	578
RL Voltage	-	121
RL Amperage	-	2.7
Total ESP	0.5	0.27"

Motor Data		
	Design	Actual
Motor MFG	-	GENTEQ
Frame	-	NL
Horsepower	0.25	NL
Motor Rpm	1725	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	6.5
Service Factor	-	NL

Completed By: Wesley John on 12/21/2023

# National TAB

Project: Legent Hospital (Tomball, TX)

## FAN - Exhaust



Diffuser Ret/Exh (GRD)

EF-2-5/216

Asset						
Asset Name	Type	Size	DESIGN CFM	CFM(1)	FINAL CFM	% to design
E2-5-1	E	10	225	292	215	95.6
E2-5-2	E	8	85	71	86	101.2
E2-5-2	E	6	125	121	132	105.6
E2-5-4	E	6	85	47	79	92.9
E2-5-5	F	6	60	43	66	110.0
Total			580	574	578	99.66%

# National TAB

Project: Legent Hospital (Tomball, TX)



## Circuit Setter

### CHW CS/

Asset						
Asset Name	Size	Type	Design GPM	Delta P	Final GPM	% to Design
CS-1	2"	CIRCUIT SETTER	39.3	12.80'	39.6	100.8
Total			39.3		39.6	100.76%

Completed By: Wesley John on 03/15/2023