Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/28/2025

Completed By: National TAB

PROJECT

10-06-25 QT #1437 GLENDALE, AZ

5850 W. GREENWAY RD

GLENDALE, AZ

Client

QUIKTRIP

4705 SOUTH 129TH EAST AVENUE

TULSA, OK 74134

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

Table Of Contents

Project Summary

Project Summary
The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report are further details about your building performance including recommendations, asset data, and pictures. 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 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.

RTU's (Roof Top Units)
Each of the RTU's was measured with a flow hood to establish total flow. The total flow was then adjusted via the VFD so that airflow fell within design tolerances. All diffusers on the kitchen RTU were balanced to the engineer's design flow. The diffusers on the sales floor were only adjusted when there were noticeable issues present like drafting or dampers that were found completely closed. The Hoods On outside air rate was set by first establishing the typical QT set point at the Emerson controller and then making manually adjustments on the roof. The hoods off airflow setpoint was found by adjusting the damper position at the Emerson controller until the design airflow was achieved. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. After completion of TAB all overrides were released.

Kitchen Exhaust Hood & Associated Fans
The kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow.

Restroom Exhaust Fans
The restroom exhaust fans were measured with a flow hood. The total flow was balanced for the fan with the exception of the new grille over the combi-oven which was balanced to the design.

Final Building Tests
After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report. The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

Issue List

- EF1 Exhaust above Design

10-06-25 QT #1437 GLENDALE, AZ

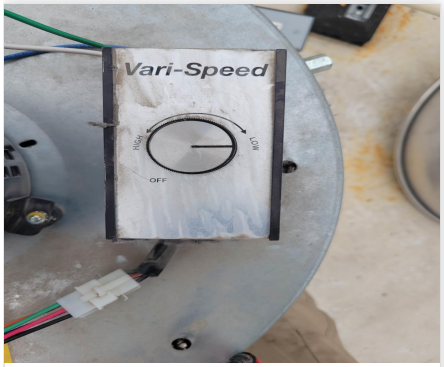
Project Issue Information

Issue Name : EF1 Exhaust above Design

Description : EF1 is almost 9% out of tolerance too high (887/750). Speed control has been turned to lowest setting (set w/ potentiometer, then knob replaced). Unit is running at FLA 8.4A.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Open		
Priority :	High	**Asset Tag :**	EF1
Originated Date :	10/09/2025 - Christine Weale - National TAB		

Project Issue File Details



10/14/2025

10/14/2025

NATIONAL TAB

AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HOOD ON OA		HOOD OFF OA		HOOD ON EXHAUST		HOOD OFF EXHAUST	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU 1	SALES	800	784	350	309				
RTU-2	SALES	800	853	350	323				
RTU-3	BOH/KITCHEN	800	811	350	392				
EF-1	RR/JANITOR					750	887	750	887
EF-3	HOOD					1350	1404	0	262
TOTALS		2400	2448	1050	1024	2100	2291	750	1149

HOODS ON

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2448
TOTAL EXHAUST	2100	2291
NET AIRFLOW	300	157

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.002
SIDE	0.004
REAR	0.003
AVERAGE	**0.003**

HOODS OFF

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1050	1024
TOTAL EXHAUST	750	1149
NET AIRFLOW	300	-125

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	0.005
SIDE	0.002
REAR	0.005
AVERAGE	**0.004**

NOTES:

CheckList List

- 01: RTU’s/AHU’s
- 02: Exhaust Fans
- 03: Hoods
- 04: Final Tests

10-06-25 QT #1437 GLENDALE, AZ

CheckList Information

Name :	01: RTU’s/AHU’s	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/16/2025 - Trinity Dodds - National TAB		
Completed Date :	10/14/2025 - Christine Weale - National TAB		

CheckList Item Details

RTU's/AHU's

Evaporator coils are clean?	Pass
Comment:	
Condenser coils are clean?	Pass
Comment:	
Gas piping is installed and valves are turned on?	Pass
Comment:	
Unit free of noticeable noise and vibration	Pass
Comment:	

10-06-25 QT #1437 GLENDALE, AZ

CheckList Information

Name :	02: Exhaust Fans	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/16/2025 - Trinity Dodds - National TAB		
Completed Date :	10/14/2025 - Christine Weale - National TAB		

CheckList Item Details

EF's

Hinge kit installed installed on hood fan?	Pass
Comment: No hingekit installed on EF1.	
Flex conduit is long enough so that fan can be completely tilted back?	Pass
Comment:	
No major leakage around the fan base	Pass
Comment:	
Unit is free of noise and vibration	Pass
Comment:	

10-06-25 QT #1437 GLENDALE, AZ

CheckList Information

Name :	03: Hoods	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/16/2025 - Trinity Dodds - National TAB		
Completed Date :	10/14/2025 - Christine Weale - National TAB		

CheckList Item Details

HOODS

Hood is free of alarms?	Pass
Comment:	
Hood is free of damage?	Pass
Comment:	
End panels are installed per prototype?	Pass
Comment:	

10-06-25 QT #1437 GLENDALE, AZ

CheckList Information

Name :	04: Final Tests	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	09/16/2025 - Trinity Dodds - National TAB		
Completed Date :	10/15/2025 - Christine Weale - National TAB		

CheckList Item Details

FINAL CHECKS

HOOD CAPTURE TEST

List kitchen equipment turned on for testing

Comment:

Other techs tested fryers and combioven.

List smoke candle type used

Comment:

45s S102

Smoke test capture % - Perimeter of hood

Comment:

90% - Panel (left) side and left front of hood allowed a little bit of smoke to escape.

Smoke test capture % - Top of cooking surface

Comment:

100%

WITNESS

Date test was completed	10/08/2025

Comment:

TAB tech name / Firm

Comment:

Christine Weale, NTI

Site super name / Firm

Comment:

T-Built

Owner representative name / Firm (if Applicable)

Comment:

BUILDING PRESSURE

Do actual net building airflow, design net building airflow, and pressure coincide? If not why? (All three should either be positive or negative)	Pass

Comment:

Avg w/ hoods on: .003", avg w/ hoods off: 0.004"

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: AHU/RTU

Asset: RT-1 AREA:SALES FLOOR

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	202205-ANEK24524
Model Num	NA	RN-013-8-0-EA0A-152
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	2
Final Filter Size 1	-	46X19.5X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	DD
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

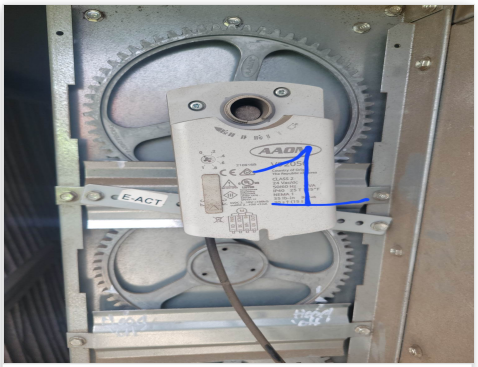
Test Data		
	Design	**Actual**
SF CFM	4200	
SF RPM	-	
RA CFM	3400	
OA CFM	800	784
RL Voltage	-	152
RL Amperage	-	7.7
SF Rotation	-	NA
SF System SetPt	-	45 HZ
RA Damper Position	-	54%
Min OA Damper Position	-	46%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.61"
Fan Suction SP	-	-0.96"
Fan Discharge SP	-	0.34"
Total ESP	-	0.95"
Fan Total SP	-	1.3"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Completed By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG



10/14/2025

10/14/2025

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: AHU/RTU

Asset: RT-2 AREA:SALES FLOOR

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	202205-ANEK24522
Model Num	NA	RN-013-8-0-EA0A-152
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	2
Final Filter Size 1	-	46X19.5X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	DD
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	**Actual**
SF CFM	4200	4461
SF RPM	-	45 HZ
RA CFM	3400	3608
OA CFM	800	853
RL Voltage	-	156
RL Amperage	-	7.3
SF Rotation	-	NA
SF System SetPt	-	45 HZ
RA Damper Position	-	54%
Min OA Damper Position	-	46%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.66"
Fan Suction SP	-	-0.97"
Fan Discharge SP	-	0.20"
Total ESP	-	0.86"
Fan Total SP	-	1.17"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Completed By: Christine Weale on 10/14/2025

Notes:
Pictures attached to show inaccessible diffuser #4, all air was diverted to measure, then the damper was opened for it at the end of balance.

Written By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG

10/14/2025

10/14/2025

10/14/2025

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: AHU/RTU

Asset: RT-3 AREA:BOH/KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	AAON
Serial Num	-	202205-ANEK24523
Model Num	NA	RN-013-8-0-EA0A-152
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	45X22
Num Final Filter 1	-	2
Final Filter Size 1	-	46X19.5X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NL
Horsepower	-	3.0
Motor Rpm	-	1760
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	10.6

Drive Data	
	Actual
Motor Sheave Size	DD
Motor Bore Size	DD
Motor Sheave SetPt	DD
Fan Sheave Size	DD
Fan Sheave Bore	DD
Belt CL Distance	DD
Num of Belts	DD
Belt Size	DD
Belt Alignment	DD

Test Data		
	Design	**Actual**
SF CFM	4200	4145
SF RPM	-	49 HZ
RA CFM	3400	3334
OA CFM	800	811
RL Voltage	-	177.8
RL Amperage	-	8.9
SF Rotation	-	NA
SF System SetPt	-	49 HZ
RA Damper Position	-	54%
Min OA Damper Position	-	46%
Min OA Damper Type	-	ECONOMIZER
OA Enthalpy Setpt	-	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.49"
Fan Suction SP	-	-0.76"
Fan Discharge SP	-	0.14"
Total ESP	-	0.63"
Fan Total SP	-	0.90"

General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Completed By: Christine Weale on 10/14/2025

Notes:
Pictures attached of inaccessible dampers, which caused slight imbalances. RTU3 -1 damper was opened, the only damper accessible. The oven could not be moved due to connections behind it.

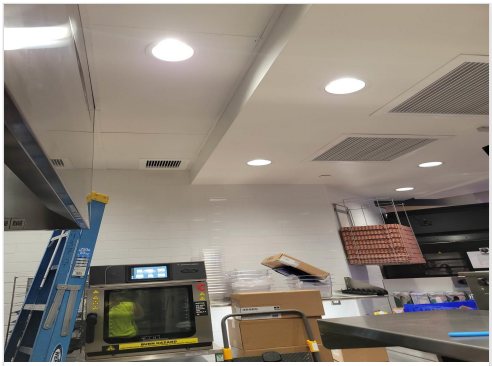
Written By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG

10/14/2025

10/14/2025

Test Data - PHOTO LOG



10/14/2025

10/14/2025

National TAB

Project:10-06-25 QT #1437 GLENDALE, AZ

AHU/RTU

Diffuser Supply (GRD)

RT-3/BOH/KITCHEN

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
SGRD1	SUPPORT SERVICE	SI	12"	800	1	808	808	808	101.0
SGRD2	SUPPORT SERVICE	SI	12"	800	1	808	808	808	101.0
SGRD3	SUPPORT SERVICE	SI	12"	800	1	862	862	862	107.8
SGRD4	SUPPORT SERVICE	SI	12"	800	1	864	864	864	108.0
SGRD5	WORKROOM	ES	10"	500	1	511	511	511	102.2
SGRD6	WORKROOM	ES	10"	500	1	292	292	292	58.4
Total				4200		4145	4145	4145	98.69%

Completed By: Christine Weale on 10/14/2025

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: FAN - Exhaust

Asset: EF1 AREA:RR/JANITOR

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DR50HFA
Serial Num	-	5547376
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	NL
Horsepower	-	0.5,0.75
Motor Rpm	-	1625
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	5.6,8.4
Service Factor	-	1.0

Test Data		
	Design	**Actual**
CFM	750	887
Fan RPM	-	NA
Fan Rotation	-	CCW
Motor RPM	-	NA
System SetPt	-	LOW @SPD CTRLR
RL Voltage	-	NA
RL Amperage	-	8.4
Total ESP	-	0.42
Fan Inlet SP	-	-0.42
Fan Discharge SP	-	ATMS

Completed By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG

10/14/2025

National TAB

Project:10-06-25 QT #1437 GLENDALE, AZ

Diffuser Ret/Exh (GRD)

EF1/RR/JANITOR

Asset									
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
EGRD4	SUPPORT SERVICE	RI	8"	150	1	217	179	179	119.3
Total				150		217	179	179	119.33%

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: FAN - Exhaust

Asset: EF3 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DU50HFA
Serial Num	-	7644882
Type	UPBLAST	UPBLAST
Configuration	VERTICAL	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	NEMA
Frame	-	NL
Horsepower	1/2	0.5
Motor Rpm	-	1800
Phase	-	1
Voltage (rated)	-	208
Amperage (rated)	-	3.8
Service Factor	-	NL

Test Data		
	Design	**Actual**
CFM	1350	1404
Fan RPM	-	1295
Fan Rotation	-	CCW
Motor RPM	-	1295
System SetPt	-	53.8 HZ, 68%
RL Voltage	-	206.1
RL Amperage	-	2.45
Total ESP	-	0.60"
Fan Inlet SP	-	-0.60"
Fan Discharge SP	-	ATMS

Completed By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG

10/14/2025

Test Data - PHOTO LOG

10/14/2025

National TAB

Project: 10-06-25 QT #1437 GLENDALE, AZ

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:GRIDDLE

Unit Data		
	Design	**Actual**
MFG	CAPTIVEAIRE	CAPTIVEAIRE
Model Num	6030ND-2-F	6030ND-2-F
Job / Serial Num	-	7644879
Type	-	TYPE I CANOPY
Hood length	-	108"
Hood Width	-	60"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	CAPTRATE SOLO
Filter Size 1	-	16X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.08
Filter Total AK Area	-	12.48
Filter1 FPM	-	120
Filter2 FPM	-	133
Filter3 FPM	-	96
Filter4 FPM	-	106
Filter5 FPM	-	117
Filter6 FPM	-	103
Filter Ave FPM(corr)	-	112.5
CFM	1350	1404

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	COMBIOVEN

Completed By: Christine Weale on 10/14/2025

Notes:
Hood allowed some smoke to escape during testing, even at 20% over, turned down fan spd to stay w/i 10% design CFM tolerance.

Written By: Christine Weale on 10/14/2025

Unit Data - PHOTO LOG

10/14/2025