Report By:

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

Report: TAB Report

Function: Test, Adjust, & Balance

Date: 10/22/2025

Completed By: National TAB

PROJECT

10-20-25 QT #1427 MESA, AZ

3547 E SOUTHERN AVE

MESA, AZ 85204

Client

QUIKTRIP

4705 SOUTH 129TH EAST AVENUE

TULSA, OK 74134

National TAB

Project: 10-20-25 QT #1427 MESA, 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 listed 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 RUNNING TOO HIGH
- RTU3 NOT RUNNING

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Project Issue Information

Issue Name :	EF1 RUNNING TOO HIGH		
Description :	EF1 (small exhaust) is running too high. Even on lowest setting, running about twice as high as it should. Current draw measured at 8.02A, which is almost FLA. Should not be that high on low. Recommend checking speed controller wiring.		
Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Closed		
Priority :	Low	**Asset Tag :**	EF1
Originated Date :	10/25/2025 - Christine Weale - National TAB		

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Project Issue Information

Issue Name : RTU3 NOT RUNNING

Description : After store balancing was completed, I noticed RTU3 stopped running. Picture shows odd behavior on the VFD: shows 18.99 Hz though unit is set at 47.4 Hz. It's blinking oddly in the same manner when D2-01/H3 and D1 settings don't correlate, but they are correct and it was running fine the day before.

Created By :	National TAB	**Assigned To :**	National TAB - Dan Hertenstein
Status :	Closed		
Priority :	InfoOnly	**Asset Tag :**	RT-3
Originated Date :	10/24/2025 - Christine Weale - National TAB		

Project Issue File Details

10/24/2025

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	825	350	358				
RTU-2	SALES	800	839	350	330				
RTU-3	BOH/KITCHEN	800	818	350	358				
EF-1	RR/JANITOR					750	1613	750	1613
EF-3	HOOD					1350	1448	0	0
TOTALS		2400	2482	1050	1046	2100	3061	750	1613

HOODS ON

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2482
TOTAL EXHAUST	2100	3061
NET AIRFLOW	300	-579

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	
SIDE	
REAR	
AVERAGE	**[1]**

HOODS OFF

NET AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	1050	1046
TOTAL EXHAUST	750	1613
NET AIRFLOW	300	-567

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS
FRONT	
SIDE	
REAR	
AVERAGE	**[1]**

NOTES:

[1] Unable to take accurate pressure reading as the doors are not sealed.

CheckList List

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

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CheckList Information

Name :	01: RTU’s/AHU’s	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2025 - Trinity Dodds - National TAB		
Completed Date :	10/23/2025 - 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:	

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CheckList Information

Name :	02: Exhaust Fans	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2025 - Trinity Dodds - National TAB		
Completed Date :	10/23/2025 - Christine Weale - National TAB		

CheckList Item Details

EF's

Hinge kit installed installed on hood fan?	Pass
Comment:	
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:	

10-20-25 QT #1427 MESA, AZ

CheckList Information

Name :	03: Hoods	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2025 - Trinity Dodds - National TAB		
Completed Date :	10/23/2025 - 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:	

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CheckList Information

Name :	04: Final Tests	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	10/09/2025 - Trinity Dodds - National TAB		
Completed Date :	10/24/2025 - Christine Weale - National TAB		

CheckList Item Details

FINAL CHECKS

HOOD CAPTURE TEST

List kitchen equipment turned on for testing

Comment:

N/A (other teams did this test)

List smoke candle type used

Comment:

45s S102

Smoke test capture % - Perimeter of hood

Comment:

100

Smoke test capture % - Top of cooking surface

Comment:

100

WITNESS

Date test was completed	10/24/2025

Comment:

Jacob

TAB tech name / Firm

Comment:

Christine Weale, NTI

Site super name / Firm

Comment:

TBuilt

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:

Front range: 0.003 to 0.005, Side Doors range: 0.004 to 0.006, Rear range: 0.006 to 0.009

National TAB

Project: 10-20-25 QT #1427 MESA, AZ

System/Unit: AHU/RTU

Asset: RT-1 AREA:SALES FLOOR

Unit Data	
	Actual
MFG	AAON
Serial Num	202105-ANEK22146
Model Num	RN-013-8-0-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	45X22
Num Final Filter 1	2
Final Filter Size 1	46X19.5X2

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

Test Data		
	Design	**Actual**
SF CFM	4200	4380
SF RPM	-	45 HZ
OA CFM (Hoods On)	800	825
OA CFM (Hoods Off)	350	358
RL Voltage	-	151.3
RL Amperage	-	7.58
VFD Max SetPt	-	75
VFD Min SetPt	-	24
OA Damper Position (Hoods On)	-	46.0
OA Damper Position (Hoods Off)	-	0.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.60"
Fan Suction SP	-	-0.84"
Fan Discharge SP	-	0.42"
Total ESP	-	1.02"
Fan Total SP	-	1.26"

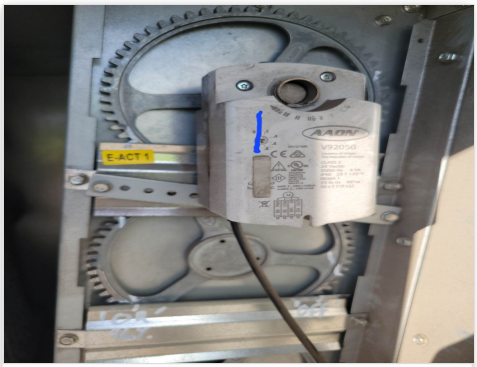
General	
	Actual
Fan Rotation Correct	YES
Unit Filters Clean	YES
Condensate Drain Installed	YES

Completed By: Christine Weale on 10/24/2025

Unit Data - PHOTO LOG

10/22/2025

Test Data - PHOTO LOG



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National TAB

Project: 10-20-25 QT #1427 MESA, AZ

System/Unit: AHU/RTU

Asset: RT-2 AREA:SALES FLOOR

Unit Data	
	Actual
MFG	AAON
Serial Num	202105-ANEK22147
Model Num	RN-013-8-2-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	45X22
Num Final Filter 1	2
Final Filter Size 1	46X19.5X2

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

Test Data		
	Design	**Actual**
SF CFM	4200	4171
SF RPM	-	45 HZ
OA CFM (Hoods On)	800	839
OA CFM (Hoods Off)	350	330
RL Voltage	-	151.0
RL Amperage	-	7.4
VFD Max SetPt	-	75
VFD Min SetPt	-	24
OA Damper Position (Hoods On)	-	46.0
OA Damper Position (Hoods Off)	-	0.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.60"
Fan Suction SP	-	-0.88"
Fan Discharge SP	-	0.41"
Total ESP	-	1.01"
Fan Total SP	-	1.29"

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

Completed By: Christine Weale on 10/24/2025

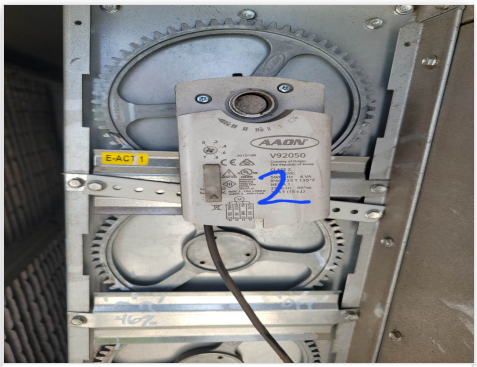
Notes:
GRD5 diffuser installed in the incorrect spot, inaccessible for measurement. Damper closed to measure, then reopened.

Written By: Christine Weale on 10/24/2025

Unit Data - PHOTO LOG

10/22/2025

Test Data - PHOTO LOG



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National TAB

Project: 10-20-25 QT #1427 MESA, AZ

System/Unit: AHU/RTU

Asset: RT-3 AREA:BOH/KITCHEN

Unit Data	
	Actual
MFG	AAON
Serial Num	202105-ANEK22148
Model Num	RN-013-8-0-EA0A-152
Num OA Filters 1	1
OA Filter Size 1	45X22
Num Final Filter 1	2
Final Filter Size 1	46X19.5X2

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

Test Data		
	Design	**Actual**
SF CFM	4200	4139
SF RPM	-	47.4 HZ
OA CFM (Hoods On)	800	818
OA CFM (Hoods Off)	350	358
RL Voltage	-	166.4
RL Amperage	-	8.05
VFD Max SetPt	-	79
VFD Min SetPt	-	24
OA Damper Position (Hoods On)	-	46.0
OA Damper Position (Hoods Off)	-	0.0

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.64"
Fan Suction SP	-	-0.92"
Fan Discharge SP	-	0.33"
Total ESP	-	0.97"
Fan Total SP	-	1.25"

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

Completed By: Christine Weale on 10/24/2025

Unit Data - PHOTO LOG

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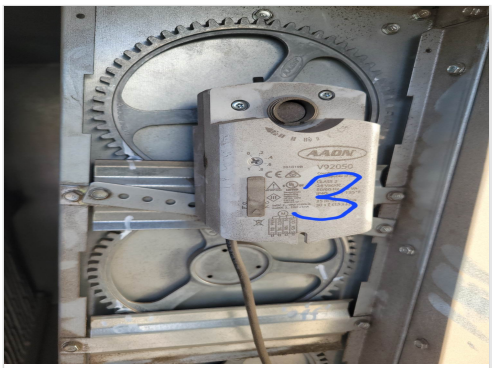
Test Data - PHOTO LOG



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National TAB

Project:10-20-25 QT #1427 MESA, 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	736	808	808	101.0
SGRD2	SUPPORT SERVICE	SI	12"	800	1	950	821	821	102.6
SGRD3	SUPPORT SERVICE	SI	12"	800	1	868	847	847	105.9
SGRD4	SUPPORT SERVICE	SI	12"	800	1	726	817	817	102.1
SGRD5	WORKROOM	ES	10"	500	1	530	530	530	106.0
SGRD6	WORKROOM	ES	10"	500	1	316	316	316	63.2
Total				4200		4126	4139	4139	98.55%

Completed By: Christine Weale on 10/24/2025

National TAB

Project: 10-20-25 QT #1427 MESA, AZ

System/Unit: FAN - Exhaust

Asset: EF1 AREA:RR/JANITOR

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DR50HFA
Serial Num	-	4924522
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	48Y
Horsepower	-	0.5
Motor Rpm	-	1625
Phase	-	1
Voltage (rated)	-	115
Amperage (rated)	-	5.6
Service Factor	-	1.0

Test Data		
	Design	**Actual**
CFM	750	1613 [1]
Fan RPM	-	DD
Fan Rotation	-	CCW
Motor RPM	-	DD
System SetPt	-	LOW
RL Voltage	-	N/A
RL Amperage	-	8.02
Total ESP	-	0.44"
Fan Inlet SP	-	-0.44"
Fan Discharge SP	-	ATMS

Notes:
[1] SPEED CONTROLLER MINIMIZED, SEE ISSUE; UNABLE TO RESUCE AIRFLOW.

Written By: Michael McDonnell on 12/17/2025

Unit Data - PHOTO LOG

10/22/2025

National TAB

Project:10-20-25 QT #1427 MESA, 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	273	273	273	182.0
Total				150		273	273	273	182%

Completed By: Christine Weale on 10/24/2025

Asset	Notes	Date	Written By
EGRD4	[1] ABOVE DESIGN DUE TO SPEED CONTROLLER ISSUE. NOT ANTICIPATED TO CAUSE ISSUE.	12/17/2025	Michael McDonnell

National TAB

Project: 10-20-25 QT #1427 MESA, AZ

System/Unit: FAN - Exhaust

Asset: EF3 AREA:KITCHEN HD

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	DU50HFA
Serial Num	-	7632211
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	1448
Fan RPM	-	1298
Fan Rotation	-	CCW
Motor RPM	-	1298
System SetPt	-	54.8 HZ
RL Voltage	-	214.5
RL Amperage	-	1.37
Total ESP	-	0.42"
Fan Inlet SP	-	-0.42"
Fan Discharge SP	-	ATMS

Completed By: Christine Weale on 10/24/2025

Unit Data - PHOTO LOG

10/22/2025

National TAB

Project: 10-20-25 QT #1427 MESA, 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	-	7632211
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	-	126
Filter3 FPM	-	110
Filter4 FPM	-	116
Filter5 FPM	-	112
Filter6 FPM	-	113
Filter Ave FPM(corr)	-	116
CFM	1350	1448

Cooking Equipment	
	Actual
Item 1	FRYER
Item 2	COMBIOVEN

Completed By: Christine Weale on 10/24/2025