**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

## 10-27-25 QT #1416 PHOENIX, AZ

2255 N 44TH STREET

PHOENIX, AZ

Client

QUIKTRIP

4705 SOUTH 129TH EAST AVENUE

TULSA, OK 74134

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## Table Of Contents

## 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
- STORE PC NOT ACTIVATING DAMPERS
- STORE PC NOT OVERRIDING UNIT TO 100%

## 10-27-25 QT #1416 PHOENIX, AZ

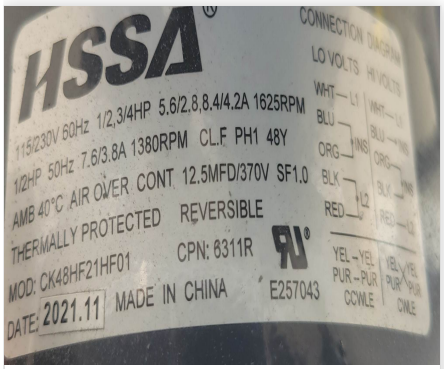
### Project Issue Information

**Issue Name :** EF1 RUNNING TOO HIGH

**Description :** EF1 is turned as low as it will go, appears to be running at 0.75HP instead of 0.5HP judging by the amperage. Amperage should be within 5.6A for 0.5A, but it is 7.62A. Combioven exhaust was deleted due to inspection, so all grilles will be above design.

| | | | |
|---|---|---|---|
| **Created By :** | National TAB | **Assigned To :** | National TAB - Dan Hertenstein |
| **Status :** | Open | | |
| **Priority :** | Medium | **Asset Tag :** | EF1 |
| **Originated Date :** | 10/31/2025 - Christine Weale - National TAB | | |

Project Issue File Details




**10/31/2025**

## 10-27-25 QT #1416 PHOENIX, AZ

**Project Issue Information**

| | | | |
|---|---|---|---|
| **Issue Name :** | STORE PC NOT ACTIVATING DAMPERS | | |
| **Description :** | Store PC did not appear to cause the dampers to move on any of the RTUs. However, I adjusted the dampers open and left them, but they were closed when I returned to the store. They are marked, so whoever fixes the issue can see that they are in the correct position or not. Recommend service to control system. | | |
| **Created By :** | National TAB | **Assigned To :** | National TAB - Dan Hertenstein |
| **Status :** | Open | | |
| **Priority :** | InfoOnly | **Asset Tag :** | |
| **Originated Date :** | 10/31/2025 - Christine Weale - National TAB | | |

**10-27-25 QT #1416 PHOENIX, AZ**

**Project Issue Information**

| | | | |
|---|---|---|---|
| **Issue Name :** | STORE PC NOT OVERRIDING UNIT TO 100% | | |
| **Description :** | RTU2 will not stay at stored frequency, I assume it is because the store PC is not communicating with it properly. Had to leave unit in "LO/RE" in order to run at sufficient speed. Seems to hold whatever percent value was in the store PC before I changed it, if left to run without VFD override, it runs at only ~14HZ (less than 40%). | | |
| **Created By :** | National TAB | **Assigned To :** | National TAB - Dan Hertenstein |
| **Status :** | Open | | |
| **Priority :** | Medium | **Asset Tag :** | |
| **Originated Date :** | 10/31/2025 - Christine Weale - National TAB | | |

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 | 846 | 350 | 358 | | | | |
| RTU-2 | SALES | 800 | 825 | 350 | 330 | | | | |
| RTU-3 | BOH/KITCHEN | 800 | 880 | 350 | 316 | | | | |
| EF-1 | RR/JANITOR | | | | | 750 | 959 | 750 | 959 |
| EF-3 | HOOD | | | | | 1350 | 1398 | 0 | 0 |
| **TOTALS** | | 2400 | 2551 | 1050 | 1004 | 2100 | 2357 | 750 | 959 |

## HOODS ON

**NET AIRFLOW CALCULATION**

| TOTALS | DESIGN | ACTUAL |
|---|---|---|
| TOTAL OA | 2400 | 2551 |
| TOTAL EXHAUST | 2100 | 2357 |
| **NET AIRFLOW** | 300 | 194 |

| DOOR TESTED | BUILDING PRESSURE MEASUREMENTS |
|---|---|
| FRONT | 0.003 |
| SIDE | 0.004 |
| REAR | 0.004 |
| **AVERAGE** | **0.0037** |

## HOODS OFF

**NET AIRFLOW CALCULATION**

| TOTALS | DESIGN | ACTUAL |
|---|---|---|
| TOTAL OA | 1050 | 1004 |
| TOTAL EXHAUST | 750 | 959 |
| **NET AIRFLOW** | 300 | 45 |

| DOOR TESTED | BUILDING PRESSURE MEASUREMENTS |
|---|---|
| FRONT | 0.002 |
| SIDE | 0.002 |
| REAR | 0.005 |
| **AVERAGE** | **0.003** |

NOTES:

# CheckList List

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

## 10-27-25 QT #1416 PHOENIX, AZ

### CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | 01: RTU’s/AHU’s | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 10/01/2025 - Trinity Dodds - National TAB | | |
| **Completed Date :** | 10/31/2025 - 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:** | |

# 10-27-25 QT #1416 PHOENIX, AZ

## CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | 02: Exhaust Fans | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 10/01/2025 - Trinity Dodds - National TAB | | |
| **Completed Date :** | 10/31/2025 - 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:** | |

# 10-27-25 QT #1416 PHOENIX, AZ

## CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | 03: Hoods | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 10/01/2025 - Trinity Dodds - National TAB | | |
| **Completed Date :** | 10/31/2025 - 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:** | |

# 10-27-25 QT #1416 PHOENIX, AZ

## CheckList Information

| | | | |
|---|---|---|---|
| **Name :** | 04: Final Tests | **Status :** | Completed |
| **Assigned Organization :** | National TAB | **Asset :** | |
| **Requesting Organization :** | National TAB | | |
| **Created Date :** | 10/01/2025 - Trinity Dodds - National TAB | | |
| **Completed Date :** | 10/31/2025 - Christine Weale - National TAB | | |

## CheckList Item Details

**FINAL CHECKS**

**HOOD CAPTURE TEST**

**List kitchen equipment turned on for testing**

**Comment:**

N/A

**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** | 10/30/2025 |

**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:**

Front range: 0.002 to 0.004 (2 front doors only) Rear: 0.004 to 0.005

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## System/Unit: AHU/RTU

**Asset: RT-1** AREA:SALES FLOOR

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | AAON |
| **Serial Num** | - | 202009-ANEK20979 |
| **Model Num** | NA | 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 | | |
|---|---|---|
| | **Design** | **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 | 4566 |
| **SF RPM** | - | 46 HZ |
| **OA CFM (Hoods On)** | 800 | 846 |
| **OA CFM (Hoods Off)** | 350 | 358 |
| **RL Voltage** | - | 158.0 |
| **RL Amperage** | - | 7.95 |
| **VFD Max SetPt** | - | 77 |
| **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** | - | -0.87" |
| **Fan Discharge SP** | - | 0.44" |
| **Total ESP** | - | 1.04" |
| **Fan Total SP** | - | 1.31" |

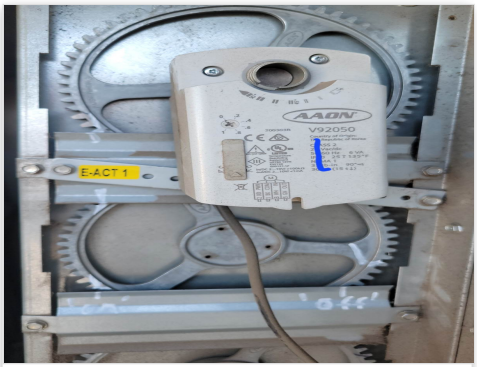
| General | |
|---|---|
| | **Actual** |
| **Fan Rotation Correct** | YES |
| **Unit Filters Clean** | YES |
| **Condensate Drain Installed** | YES |

Completed By: Christine Weale on 10/31/2025

## Unit Data - PHOTO LOG


**10/31/2025**

## Test Data - PHOTO LOG




**10/31/2025**

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## System/Unit: AHU/RTU

**Asset: RT-2** AREA:SALES FLOOR

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | AAON |
| **Serial Num** | - | 202009-ANEK20977 |
| **Model Num** | NA | 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 | | |
|---|---|---|
| | **Design** | **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 | 4408 |
| **SF RPM** | - | 46.2 HZ |
| **OA CFM (Hoods On)** | 800 | 825 |
| **OA CFM (Hoods Off)** | 350 | 330 |
| **RL Voltage** | - | 159.0 |
| **RL Amperage** | - | 7.9 |
| **VFD Max SetPt** | - | 77 |
| **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** | - | -0.86" |
| **Fan Discharge SP** | - | 0.37" |
| **Total ESP** | - | 0.97" |
| **Fan Total SP** | - | 1.23" |

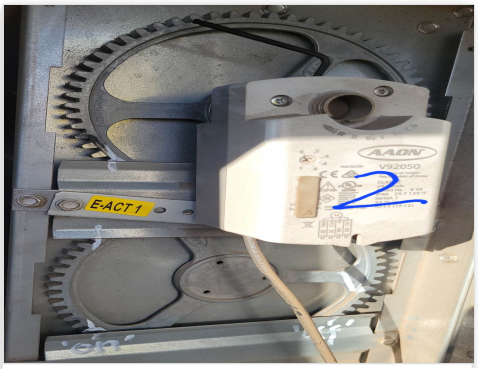
| General | |
|---|---|
| | **Actual** |
| **Fan Rotation Correct** | YES |
| **Unit Filters Clean** | YES |
| **Condensate Drain Installed** | YES |

Completed By: Christine Weale on 10/31/2025

## Unit Data - PHOTO LOG


**10/31/2025**

## Test Data - PHOTO LOG




**10/31/2025**

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## System/Unit: AHU/RTU

**Asset: RT-3** AREA:BOH/KITCHEN

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | AAON |
| **Serial Num** | - | 202009-ANEK20978 |
| **Model Num** | NA | 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 | | |
|---|---|---|
| | **Design** | **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 | 4146 |
| **SF RPM** | - | 47 HZ |
| **OA CFM (Hoods On)** | 800 | 880 |
| **OA CFM (Hoods Off)** | 350 | 316 |
| **RL Voltage** | - | 163.9 |
| **RL Amperage** | - | 7.9 |
| **VFD Max SetPt** | - | 78.3 |
| **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** | - | -0.68" |
| **Fan Suction SP** | - | -0.94" |
| **Fan Discharge SP** | - | 0.43" |
| **Total ESP** | - | 1.11" |
| **Fan Total SP** | - | 1.37" |

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

Completed By: Christine Weale on 10/31/2025

### Unit Data - PHOTO LOG


**10/31/2025**

## Test Data - PHOTO LOG


**10/31/2025**

# National TAB

**Project:10-27-25 QT #1416 PHOENIX, 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 | 784 | | 784 | 98.0 |
| SGRD2 | SUPPORT SERVICE | SI | 12" | 800 | 1 | 756 | | 756 | 94.5 |
| SGRD3 | SUPPORT SERVICE | SI | 12" | 800 | 1 | 868 | | 868 | 108.5 |
| SGRD4 | SUPPORT SERVICE | SI | 12" | 800 | 1 | 698 | | 698 | 87.3 |
| SGRD5 | WORKROOM | ES | 10" | 500 | 1 | 620 | | 620 | 124.0 |
| SGRD6 | WORKROOM | ES | 10" | 500 | 1 | 420 | | 420 | 84.0 |
| Total | | | | 4200 | | 4146 | 0 | 4146 | 98.71% |

**Completed By: Christine Weale on 10/31/2025**

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## System/Unit: FAN - Exhaust

**Asset: EF1** AREA:RR/JANITOR

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | CAPTIVE AIRE |
| **Model Num** | NA | DR50HFA |
| **Serial Num** | - | 4546739 |
| **Type** | - | DOWNBLAST |
| **Configuration** | - | VERTICAL |

| Motor Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **Motor MFG** | - | HSSA |
| **Frame** | - | 48Y |
| **Horsepower** | - | 0.75 |
| **Motor Rpm** | - | 1625 |
| **Phase** | - | 1 |
| **Voltage (rated)** | - | 115 |
| **Amperage (rated)** | - | 8.4 |
| **Service Factor** | - | 1.0 |

| Test Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **CFM** | 750 | 959 |
| **Fan RPM** | - | N/A |
| **Fan Rotation** | - | CCW |
| **Motor RPM** | - | N/A |
| **System SetPt** | - | LOW |
| **RL Voltage** | - | N/A |
| **RL Amperage** | - | 7.62 |
| **Total ESP** | - | 0.33" |
| **Fan Inlet SP** | - | -0.33" |
| **Fan Discharge SP** | - | ATMS |

Completed By: Christine Weale on 10/31/2025

Notes:
[1] FAN SPEED IS FULLY MINIMIZED.

Written By: Michael McDonnell on 10/31/2025

## Unit Data - PHOTO LOG


**10/31/2025**

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, AZ**

## System/Unit: FAN - Exhaust

**Asset: EF3** AREA:KITCHEN HD

| Unit Data | | |
|---|---|---|
| | **Design** | **Actual** |
| **MFG** | NA | CAPTIVEAIRE |
| **Model Num** | NA | DU50HFA |
| **Serial Num** | - | 7660154 |
| **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 | 1398 |
| **Fan RPM** | - | 1307 |
| **Fan Rotation** | - | CCW |
| **Motor RPM** | - | 1307 |
| **System SetPt** | - | 54.8 HZ |
| **RL Voltage** | - | 219.4 |
| **RL Amperage** | - | 2.07 |
| **Total ESP** | - | 0.40" |
| **Fan Inlet SP** | - | -0.40" |
| **Fan Discharge SP** | - | ATMS |

Completed By: Christine Weale on 10/30/2025

## Unit Data - PHOTO LOG


**10/31/2025**

# National TAB

**Project: 10-27-25 QT #1416 PHOENIX, 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** | - | 7660154 |
| **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** | - | 116 |
| **Filter2 FPM** | - | 116 |
| **Filter3 FPM** | - | 112 |
| **Filter4 FPM** | - | 116 |
| **Filter5 FPM** | - | 103 |
| **Filter6 FPM** | - | 108 |
| **Filter Ave FPM(corr)** | - | 112 |
| **CFM** | 1350 | 1398 |

| Cooking Equipment | |
|---|---|
| | **Actual** |
| **Item 1** | FRYERS |
| **Item 2** | COMBIOVEN |

Completed By: Christine Weale on 10/30/2025

## Unit Data - PHOTO LOG


**10/31/2025**