

**Report By:**

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



**Report: TAB REPORT**  
**Function: Test, Adjust, & Balance**  
**Date: 06/20/2024**

**PROJECT**  
**06-17-24 CULVERS - STURTEVANT, WI**  
**(REIMAGE)**

722 S SYLVANIA AVE

STURTEVANT, WI 53177

**Client**

Accurex  
PO Box 410  
Schofield, WI 54476

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

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## **TECHNICAL SUMMARY**

The purpose of this visit was to balance two new exhaust hoods installed at the store, as well as perform a total flow air balance and evaluation to seek out any opportunity to improve the comfort and performance of the HVAC system.

### **HOOD EXHAUST & ASSOCIATED FANS**

Both the Griddle exhaust hood (HD-1) and the Fryer exhaust Hood (HD-2) are exhausting their design airflow of 1500 cfm. Their respective fans, PRV-2 (griddle) and PRV-3 (fryer), are misaligned on their curbs. It appears this misalignment is due to the original installation of the grease duct; the duct is not centered. As result, the hood exhaust fans had to be set at much higher than typical setpoints to achieve design airflow. This is causing unnecessary energy usage and strain on the exhaust fans. Recommend the fans are properly aligned with the duct. Once corrected, we anticipate the exhaust rates of both hoods to significantly increase. The PRV setpoints will need to be lowered and hoods rebalanced.

### **ROOF TOP UNITS (RTUs)**

Two Lennox RTUs serve this Culvers location. A 12.5-ton unit serves the Dining space (RTU-1), and a 15-ton unit serves the Kitchen space (RTU-2). Both units have humidity control. Their sensors are wired, and dehumidification appears to be operating. RTU-1 was operating dehumidification during TAB. Both units are controlled via thermostat and are wired for occupancy, operating on a schedule. The occupancy scheduling is important to maintain building pressurization. When the hoods are powered on, both units need to be operating in occupied mode. This means their fans are running and outside air dampers are opening to their setpoints. In this system, the RTUs replace the air exhausted by the PRVs to “make-up” the difference and maintain building pressurization. A positively pressurized restaurant is important to keep out contaminants, force out smoke and odors, and prevent untreated, unwanted, or humid air from entering the space.

Upon arrival to this location, initial building pressure was measured around -0.029” W.C. which is outside of the standard tolerance of -0.02” to +0.02” W.C.. We measured the airflow of both RTUs to see what changes could be made to improve the building pressurization. For performance and efficiency, RTUs should operate at or around 350 Cubic Feet per Minute (CFM) of supply airflow.

#### **RTU-1:**

The dining room unit was measured to be supplying 4,427 cfm, or 354 cfm/ton. This is within design and no adjustments were made to the unit’s fan speed. The outside air was initially measured at 957 cfm. Because the unit has humidity control, we increased the outside air to an acceptable ratio to help bring the building closer to a positive state. The unit needs some maintenance as outlined in the Report below. According to staff, this unit maintains temperature in the dining room during hot weather. It

appears the unit also has Fresh Air Tempering as an installed option. Recommend this is enabled to prevent cold air from being driven into the space when unit operates in fan only during winter season.

#### RTU-2:

The Kitchen unit is supplying 3,503 cfm or 234 cfm/ton. 589 cfm of that 3,503cfm, is routed to the serving line diffusers, out of the kitchen. These diffusers are typically served by the dining room unit. Staff notes that it becomes hot in the kitchen, especially on the cookline, and during the current heatwave the kitchen is only able to maintain 80 degrees.

The unit is significantly low on airflow, operating at 66% of the airflow it should be providing. The unit could not be sped up during our visit because the motor sheave is locked and frozen in place, unable to be adjusted. There does not appear to be much adjustment left on the pulley, maybe 1 turn, and a pulley change is recommended to bring RTU-2 closer to an efficient airflow. The unit is mounted on a curb adapter, this could be inhibiting airflow, we often find these to be restrictive. The blower wheel was found to be very dirty, and cleaning this effectively will increase airflow.

If airflow on RTU-2 is substantially increased, we recommend some changes to the cookline area to help improve the distribution of air, improve comfort, and prevent any hood capture issues. Currently, there are three 4-way diffusers installed on the cookline. If airflow is increased to these diffusers, they will likely cause hood capture issues. We recommend these 4-ways are switched to perforated style, and three additional perforated diffusers, if possible, are installed on the cookline. This will allow more air to be distributed, and not be disruptive to hood capture. Note that the diffuser serving the office was found disconnected from the system with its flex laying in the ceiling.

Outside air on this unit was initially measured at 989 cfm. We increased this slightly to 1217 cfm, an acceptable ratio for a humiditrol RTU. If the airflow on this unit is increased, we will be able to slightly lower the ratio of outside air to supply air, while still increasing the total make-up air and bringing the building positive.

#### CONCLUSION

As a result of these changes, the building is now operating at around -0.006" W.C., which is within standard tolerance and a much-improved state. Further recommendations and issues are listed through the Report below. By increasing the total airflow on RTU-2 with the recommended changes, as well as addressing the other noted issues in the report, the building should become a much more comfortable, controlled, and positively pressurized environment. Recommend consulting National Tab if changes are made.

### **Issue List**

- 01. HOOD EXHAUST FANS (PRV-2 AND PRV-3): Misaligned on Curb
- 02. RTU-2 (Kitchen): Low on Supply Airflow
- 03. COOKLINE DIFFUSERS
- 04. RTUs: In need of Cleaning / Maintenance
- 05. PRV-1 (RESTROOM EXHAUST): Not Functional
- 06. RTU-2: Office Diffuser NOT Attached
- 07. RTU-1: Condensate Drain Routing
- RTUs: Belt Tensioners Installed



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### Project Issue Information

**Issue Name :** 01. HOOD EXHAUST FANS (PRV-2 AND PRV-3): Misaligned on Curb

**Description :** Exhaust fans are not centered over the grease exhaust duct / the duct is not centered in the curb. Appears this is from the original installation of the duct. Both exhaust fans are performing at design airflow, but require much higher than typical setpoints due to misalignment. Recommend curb is reconfigured so fan and grease duct properly align.

**Created By :** National TAB      **Assigned To :** National TAB - Will Turnbough

**Status :** Open

**Priority :** High      **Asset Tag :**

**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

#### Project Issue File Details



PRV\_2\_MISALIGNED  
06/20/2024



PRV\_3\_MISALIGNED  
06/20/2024

#### Project Issue Response Details

- **06/20/2024 National TAB - Michael McDonnell**
  - Both exhaust fans are set to much higher than typical setpoints. Once alignment is corrected, exhaust airflow will likely increase significantly. Recommend NTAB is consulted to readjust setpoints.



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### Project Issue Information

**Issue Name :** 02. RTU-2 (Kitchen): Low on Supply Airflow  
**Description :** RTU-2 is a 15 ton unit and is supplying 3503 cfm to the kitchen space. For performance and efficiency, blower should operate at around 350 cfm/ton, or 5250 cfm. Per Staff, kitchen is not achieving or maintaining set temp. The RTU is installed with a curb adapter, which may be restricting airflow. Recommend airflow is increased on this unit.

**Created By :** National TAB      **Assigned To :** National TAB - Will Turnbough

**Status :** Open  
**Priority :** High      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

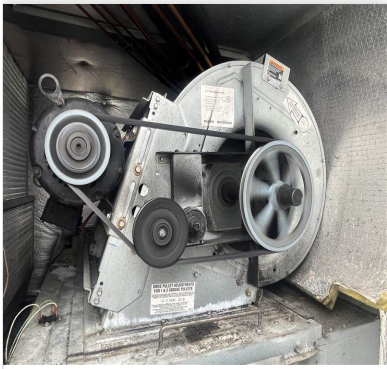
#### Project Issue File Details



RTU\_2\_kitchen\_  
06/20/2024

#### Project Issue Response Details

- **06/20/2024    National TAB - Michael McDonnell**
  - The motor sheave is frozen at 1-2 turns open and could not be adjusted to increase the speed of the fan. Recommend sheave is broken free and set to 1 turn open. Regardless, a pulley change will be required to bring the RTU closer to an efficient airflow. The motor is operating at 7.8 amps with an FLA rating of 14.6, so there is room to increase fan speed. Recommend pulley change is performed to increase airflow, consult NTAB.



**RTU\_2\_DRIVE**  
**06/20/2024**



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### Project Issue Information

**Issue Name :** 03. COOKLINE DIFFUSERS  
**Description :** There are three 4-way diffusers installed on the cookline. Recommend these are replaced with perforated diffusers (especially if RTU-1 airflow is increased). Store reports high temps during operation. Recommend 3 additional perforated diffusers are installed on the cookline to increase airflow to cookline, while avoiding hood capture issues.  
**Created By :** National TAB **Assigned To :** National TAB - Brianna Biggs  
**Status :** Open  
**Priority :** High **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

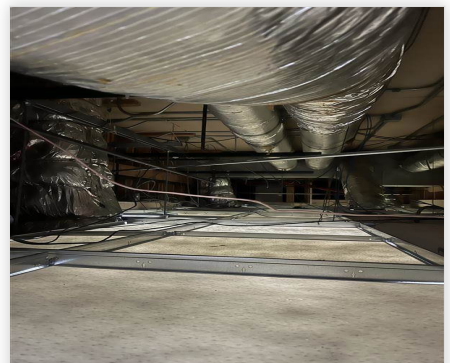
#### Project Issue File Details



4\_way\_diffuser  
06/21/2024



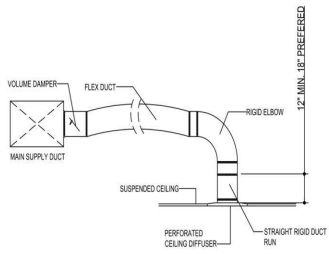
Recommended\_Perforate..  
06/21/2024



Cookline\_Above\_Ceilin..  
06/20/2024

#### Project Issue Response Details

- **06/20/2024 National TAB - Michael McDonnell**
  - Anticipate increasing RTU-2 airflow will cause hood capture issues with 4-ways. Recommend replacing 4-ways with perforated and installing according to Culvers Cookline Diffuser Specification. This entails a rigid elbow and 12-18" of straight rigid duct between the elbow and diffuser. See detail attached.



**Cookline\_Diffuser\_Spec**  
**06/20/2024**

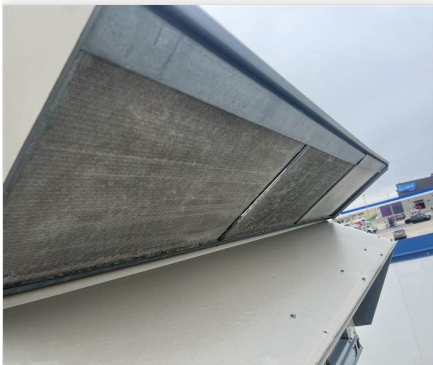


## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

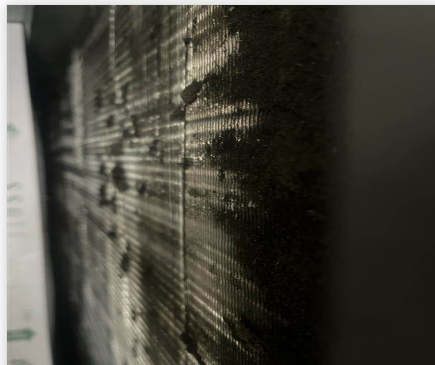
### Project Issue Information

**Issue Name :** 04. RTUs: In need of Cleaning / Maintenance  
**Description :** Both RTUs are in need of maintenance/cleaning. Evaporator coils, specifically on RTU-1, are in need of cleaning. Additionally, outside air filters need to be cleaned. See other items in need of attention below:  
**Created By :** National TAB      **Assigned To :** National TAB - Will Turnbough  
**Status :** Open  
**Priority :** High      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

#### Project Issue File Details



RTU\_2\_OA\_FILTERS  
06/20/2024



RTU\_1\_EVAP\_COIL  
06/20/2024



RTU\_1\_OA\_FILTERS  
06/20/2024

#### Project Issue Response Details

- **06/20/2024    National TAB - Michael McDonnell**
  - Insulation loose in RTU-2 blower compartment. Recommend it is affixed to prevent it from causing future issue.



**RTU\_2\_Insulation\_Loose**  
**06/20/2024**

---

• **06/20/2024    National TAB - Michael McDonnell**

- RTU blower wheels dirty. Recommend blower wheels, especially on RTU-2 are cleaned. This will likely increase airflow.



**RTU\_2\_BLOWER\_WHEEL**  
**06/20/2024**



**RTU\_1\_BLOWER\_WHEEL**  
**06/20/2024**



06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

Project Issue Information

**Issue Name :** 05. PRV-1 (RESTROOM EXHAUST): Not Functional  
**Description :** PRV-1, the restroom exhaust fan, is not operational. Recommend the fan is serviced or replaced so that odor can be effectively removed from restrooms.  
**Created By :** National TAB      **Assigned To :** National TAB - Will Turnbough  
**Status :** Open  
**Priority :** High      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

Project Issue File Details



PRV\_1\_RR\_  
06/20/2024



PRV\_1\_MOTOR  
06/20/2024



06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

Project Issue Information

**Issue Name :** 06. RTU-2: Office Diffuser NOT Attached  
**Description :** Diffuser tapped off of RTU-2 and serving the office, is not connected, flex was found laying in the ceiling. Recommend flex duct is properly attached to diffuser.  
**Created By :** National TAB                      **Assigned To :** National TAB - Brianna Biggs  
**Status :** Open  
**Priority :** Medium                      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

Project Issue File Details



Office\_Diffuser\_Not\_A..  
06/20/2024



06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

Project Issue Information

**Issue Name :** 07. RTU-1: Condensate Drain Routing  
**Description :** Condensate drain on RTU-1 is directed toward roof drain. However, drain is easily clogged and water is pooling on the roof. Recommend drain is routed directly into roof drain as with RTU-2 so water does not pool and potentially leak into store space. See photos below.  
**Created By :** National TAB                      **Assigned To :** National TAB - Brianna Biggs  
**Status :** Open  
**Priority :** Low                                      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

Project Issue File Details



RTU\_1\_Condensate  
06/20/2024



RTU\_2\_Condensate  
06/20/2024

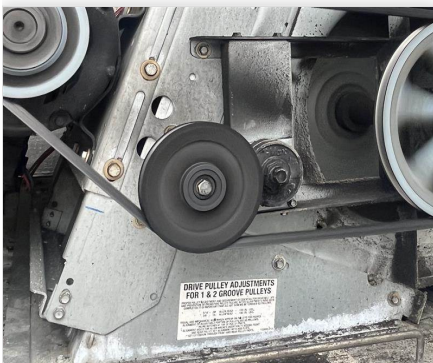


06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

Project Issue Information

**Issue Name :** RTUs: Belt Tensioners Installed  
**Description :** Both RTUs have belt tensioners installed on their drives. While useful in maintaining belt tension, we find these tensioners break easily and cause belts to wear out faster. The tensioner is making considerable noise on RTU-2, and there is significant belt dust in both units. Recommend tensioners are realigned properly with pulleys, or removed.  
**Created By :** National TAB      **Assigned To :** National TAB - Brianna Biggs  
**Status :** Open  
**Priority :** InfoOnly      **Asset Tag :**  
**Originated Date :** 06/20/2024 - Michael McDonnell - National TAB

Project Issue File Details



RTU\_2\_BELT\_TENSIONER...  
06/20/2024

### AIR BALANCE SCHEDULE

| UNIT   | AREA SERVED      | HVAC SUPPLY |        | HVAC RETURN |        | HVAC OUTDOOR |        | OA %    |        | HOOD MAKE-UP |        | HOOD EXHAUST |        | GENERAL EXH. |        |
|--------|------------------|-------------|--------|-------------|--------|--------------|--------|---------|--------|--------------|--------|--------------|--------|--------------|--------|
|        |                  | DESIGN      | ACTUAL | DESIGN      | ACTUAL | DESIGN       | ACTUAL | DESIGN  | ACTUAL | DESIGN       | ACTUAL | DESIGN       | ACTUAL | DESIGN       | ACTUAL |
| RTU-1  | 12.5 TONS DINING |             | 4427   | 0           | 2941   |              | 1486   | #DIV/0! | 33.6%  |              |        |              |        |              |        |
| RTU-2  | 15 TONS KITCHEN  |             | 3503   | 0           | 2286   |              | 1217   | #DIV/0! | 34.7%  |              |        |              |        |              |        |
| PRV-1  | RESTROOM         |             |        |             |        |              |        |         |        |              |        |              |        |              | 0      |
| PRV 2  | GRIDDLE          |             |        |             |        |              |        |         |        |              |        |              | 1506   |              |        |
| PRV 3  | FRYER            |             |        |             |        |              |        |         |        |              |        |              | 1591   |              |        |
| TOTALS |                  | 0           | 7930   | 0           | 5227   | 0            | 2703   |         |        | 0            | 0      | 0            | 3097   | 0            | 0      |

#### NET BUILDING AIRFLOW CALCULATION

| TOTALS        | DESIGN | ACTUAL |
|---------------|--------|--------|
| TOTAL OA      | 0      | 2703   |
| TOTAL EXHAUST | 0      | 3097   |
| NET AIRFLOW   | 0      | -394   |

| DOOR TESTED | BUILDING PRESSURE MEASUREMENTS (IN. H2O) |
|-------------|------------------------------------------|
| FRONT       | -0.004                                   |
| SIDE        | -0.0058                                  |
| REAR        | -0.006                                   |
| AVERAGE     | -0.0053                                  |

#### FINAL CHECKS

|                                                       |   |
|-------------------------------------------------------|---|
| ACTUAL NET AIRFLOW COINCIDES WITH DESIGN:             | ✗ |
| MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: | ✓ |
| PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C.  | ✓ |

#### NOTES:

[1] PRV-1 (RR) Not operational at the time of balance. Typically this fan is scheduled for 300 cfm or -150 cfm per restroom.

## CheckList List

- 00. SITE PICTURES
- 01. EF's
- 02. HOOD 1
- 03. HOOD 2
- 04. RTU's
- 05. FINAL TEST



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 00. SITE PICTURES **Status :** Not Completed

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 06/14/2024 - Wale Odofin - National TAB

### CheckList Item Details

CULVERS

**Comment:**



Culvers\_Sturtevant\_WI..  
06/21/2024

RTU-1

**Comment:**



RTU\_1\_Dining\_  
06/21/2024

RTU-2

Comment:



RTU\_2\_kitchen\_  
06/21/2024

PRV-1

Comment:



**PRV\_1\_RR\_  
06/21/2024**

---

PRV-2

**Comment:**



**PRV\_2\_GRIDDLE  
06/21/2024**

---

PRV-3

**Comment:**



**PRV\_3\_FRYER**  
**06/21/2024**

---

HOOD 1

**Comment:**

---



**HD\_1\_right\_**  
**06/21/2024**



**HD\_1**  
**06/21/2024**

---

HOOD 2

**Comment:**

---



**HD\_2\_Right\_  
06/21/2024**



**HD\_2  
06/21/2024**



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 01. EF's **Status :** Not Completed

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 06/17/2024 - Wale Odofin - National TAB

### CheckList Item Details

#### EF's

Rotation is correct? Pass

#### Comment:

Belts are tight? N/A

#### Comment:

Direct Drive

Hinge kit installed installed on hood fan? Pass

#### Comment:

Lean fan back. Is grease duct installation adequate and is duct ran all the way to the base of the fan? Fail

#### Comment:

PRV-1 and 2 are misaligned on their curbs. It appears this is due to the grease duct installation; the duct is not centered.



**PRV\_2\_MISALIGNED**  
**06/20/2024**



**PRV\_3\_MISALIGNED**  
**06/20/2024**

Flex conduit is long enough so that fan can be completely tilted back?

Pass

**Comment:**

There is no major leakage around base of fan?

Pass

**Comment:**

Is the motor operating below the motor FLA rating?

Pass

**Comment:**

For restroom fan(s) is the back draft damper installed and can it fully open?

N/A

**Comment:**

Restroom fan is not operational.

Unit free of noticeable noise and vibration?

Pass

**Comment:**



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 02. HOOD 1 **Status :** Not Completed

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 06/17/2024 - Wale Odofin - National TAB

### CheckList Item Details

#### HD-1

Is the hood powered and free of alarms? Pass

**Comment:**

Does hood label match submittal? Pass

**Comment:**

Do hood dimensions match submittal? Pass

**Comment:**

Is the hood hung Level? Pass

**Comment:**

Are hood lights installed and are they powered? N/A

**Comment:**

Are temperature Sensors installed? Pass

**Comment:**

Are the correct number and size of filters installed, and are they installed correctly? Pass

**Comment:**

Is the grease cup installed?

Pass

**Comment:**

Are side splashes/skirts installed and do they match the submittal?

Pass

**Comment:**

Is the backsplash installed and does it match the submittal?

Pass

**Comment:**

Are ceiling enclosures installed and do they match the submittal?

Pass

**Comment:**

Does the appliance line-up match the drawings on submittal?

Pass

**Comment:**

Document any other issues or discrepancies.

**Comment:**

#### **HOOD CAPTURE TEST**

List equipment turned on for testing:

**Comment:**

Griddle

Smoke Test Capture - Perimeter of Hood

**Comment:**

100%

Smoke Test Capture - Top of Cooking Surface

**Comment:**

100%

List smoke candle used:

**Comment:**

45 second smoke emitter



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 03. HOOD 2 **Status :** Not Completed

**Assigned Organization :** National TAB **Asset :**

**Requesting Organization :** National TAB

**Created Date :** 06/17/2024 - Wale Odofin - National TAB

### CheckList Item Details

#### HD-2

Is the hood powered and free of alarms? Pass

**Comment:**

Does hood label match submittal? Pass

**Comment:**

Do hood dimensions match submittal? Pass

**Comment:**

Is the hood hung Level? Pass

**Comment:**

Are hood lights installed and are they powered? N/A

**Comment:**

Are temperature Sensors installed? Pass

**Comment:**

Are the correct number and size of filters installed, and are they installed correctly? Pass

**Comment:**

Is the grease cup installed?

Pass

**Comment:**

Are side splashes/skirts installed and do they match the submittal?

Pass

**Comment:**

Is the backsplash installed and does it match the submittal?

Pass

**Comment:**

Are ceiling enclosures installed and do they match the submittal?

Pass

**Comment:**

Does the appliance line-up match the drawings on submittal?

Pass

**Comment:**

Document any other issues or discrepancies.

**Comment:**

#### **HOOD CAPTURE TEST**

List equipment turned on for testing:

**Comment:**

Fryer

Smoke Test Capture - Perimeter of Hood

**Comment:**

100%

Smoke Test Capture - Top of Cooking Surface

**Comment:**

100%

List smoke candle used:

**Comment:**

45 second smoke emitter



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 04. RTU's **Status :** Not Completed  
**Assigned Organization :** National TAB **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 06/17/2024 - Wale Odofin - National TAB

### CheckList Item Details

#### RTU's/AHU's

Thermostats installed and have power? Pass

#### Comment:

All diffusers and grilles are installed and match design? Fail

#### Comment:

No design. However, 4-way diffusers are installed on the cookline. It is standard for culvers cookline diffusers to be perforated. See issue.

Cookline diffusers have at 12-18" of straight duct out of the top of the diffusers and a rigid 90 degree fitting? Fail

#### Comment:

See issue.

Economizers are assembled and functional? Pass

#### Comment:

Motors are all operating below the FLA rating? Pass

#### Comment:

Are belts tight? Pass

**Comment:**

If direct drive unit is the speed controller working?

N/A

**Comment:**

Is gas piping installed and valves turned on?

Pass

**Comment:**

Unit free of noticeable noise and vibration

Fail

**Comment:**

Drive on RTU-2 making noise, likely due to belt tensioner. Recommend service.



## 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

### CheckList Information

**Name :** 05. FINAL TEST **Status :** Not Completed  
**Assigned Organization :** National TAB **Asset :**  
**Requesting Organization :** National TAB  
**Created Date :** 06/17/2024 - Wale Odofin - National TAB

### CheckList Item Details

#### FINAL CHECKS

When hoods are turned off, verify the economizers shut

N/A

#### Comment:

System does not have interlocks installed. Operating on thermostat scheduled by owner. Occupancy is scheduled and OCP is wired to thermostat; functional.

When hoods are turned on, verify the economizers open to the minimum position

Pass

#### Comment:

System does not have interlocks installed. Operating on thermostat scheduled by owner. Occupancy is scheduled and OCP is wired to thermostat; functional.

Is space free of drafting?

Pass

#### Comment:

Is space comfortable in all areas?

Fail

#### Comment:

Location is experiencing heat wave. Staff reports hot temps (80 F) during operational hours. RTU-2 low on airflow is significantly contributing to this issue. On day of TAB, weather was milder and store was maintaining temp and humidity.

Is the space free of ventilation noise?

Pass

#### Comment:

#### HOOD CAPTURE TEST

List kitchen equipment turned on for testing

**Comment:**

Fryer / Griddle

List smoke candle type used

**Comment:**

45 second smoke emitter

Smoke test capture % - Perimeter of hood

**Comment:**

100%

Smoke test capture % - Top of cooking surface

**Comment:**

100%

**WITNESS**

Date test was completed

06/20/2024

**Comment:**

TAB tech name / Firm

**Comment:**

Michael McDonnell / National TAB

Site super name / Firm

**Comment:**

NA

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:**



# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: AHU/RTU



Asset: RTU1

AREA:DINING

| Unit Data           |          |              |
|---------------------|----------|--------------|
|                     | Design   | Actual       |
| MFG                 | NA       | LENNOX       |
| Serial Num          | -        | 5618H09403   |
| Model Num           | NA       | LGH150H4BH1Y |
| Type                | RTU      | RTU          |
| Configuration       | VERTICAL | VERTICAL     |
| Num OA Filters 1    | -        | 2            |
| OA Filter Size 1    | -        | 14.5X23      |
| Num Final Filter 1  | -        | 4            |
| Final Filter Size 1 | -        | 20X25X2      |

| Motor Data     |        |                     |
|----------------|--------|---------------------|
|                | Design | Actual              |
| Motor MFG      | -      | NIDEC (U.S. MOTORS) |
| Frame          | -      | 184TZ               |
| Horsepower     | -      | 5.00                |
| Motor Rpm      | -      | 1765                |
| Phase          | -      | 3                   |
| Rated Voltage  | -      | 208-230             |
| Rated Amperage | -      | 13.80-13.00         |

| Drive Data         |        |                          |
|--------------------|--------|--------------------------|
|                    | Design | Actual                   |
| Motor Sheave Size  | -      | VP50                     |
| Motor Bore Size    | -      | 1-1/8"                   |
| Motor Sheave SetPt | -      | 1-2 TURNS<br>OPEN FROZEN |
| Fan Sheave Size    | -      | 7.75"                    |
| Fan Sheave Bore    | -      | 1"                       |
| Belt CL Distance   | -      | 25"                      |
| Num of Belts       | -      | 1                        |
| Belt Size          | -      | BX68                     |
| Belt Alignment     | -      | VERIFIED                 |

| Test Data              |        |                 |
|------------------------|--------|-----------------|
|                        | Design | Actual          |
| SF CFM                 | -      | 4427            |
| SF RPM                 | -      | 1060            |
| RA CFM                 | -      | 2941            |
| OA CFM                 | -      | 1486            |
| RL Voltage             | -      | 207/207/206     |
| RL Amperage            | -      | 9.3/9.2/9.6     |
| SF Rotation            | -      | CCW,<br>CORRECT |
| RA Damper Position     | -      | 64%             |
| Min OA Damper Position | -      | 44%             |
| Min OA Damper Type     | -      | ECONOMIZER      |
| OA Enthalpy Setpt      | -      | 10.0 MA         |

| Performance Data |        |        |
|------------------|--------|--------|
|                  | Design | Actual |
| MA Plenum SP     | -      | -0.61" |
| Fan Suction SP   | -      | -1.13" |
| Fan Discharge SP | -      | 0.72"  |
| Total ESP        | -      | 1.33"  |
| Fan Total SP     | -      | 1.85"  |

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

Completed By: Michael McDonnell on 06/20/2024

Notes:

- [1] EVAPORATOR COIL IN NEED OF CLEANING
- [2] OA FILTERS IN NEED OF CLEANING
- [3] BLOWER IN NEED OF CLEANING
- [4] RECOMMEND CONDENSATE DRAIN ROUTED TO ROOF DRAIN-WATER POOLING ON ROOF.

Written By: Michael McDonnell on 06/20/2024

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: AHU/RTU



Asset: RTU2

AREA: KITCHEN

| Unit Data           |          |              |
|---------------------|----------|--------------|
|                     | Design   | Actual       |
| MFG                 | NA       | LENNOX       |
| Serial Num          | -        | 5612E04248   |
| Model Num           | NA       | LGH180H4B2SY |
| Type                | RTU      | RTU          |
| Configuration       | VERTICAL | VERTICAL     |
| Num OA Filters 1    | -        | 3            |
| OA Filter Size 1    | -        | 23.5 X13     |
| Num Final Filter 1  | -        | 6            |
| Final Filter Size 1 | -        | 24X24X2      |

| Motor Data     |        |                    |
|----------------|--------|--------------------|
|                | Design | Actual             |
| Motor MFG      | -      | BALDOR<br>RELIANCE |
| Frame          | -      | 184T               |
| Horsepower     | -      | 5.0                |
| Motor Rpm      | -      | 1750               |
| Phase          | -      | 3                  |
| Rated Voltage  | -      | 200-230            |
| Rated Amperage | -      | 14.6-13.6          |

| Drive Data         |        |                          |
|--------------------|--------|--------------------------|
|                    | Design | Actual                   |
| Motor Sheave Size  | -      | VP50                     |
| Motor Bore Size    | -      | 1-1/8"                   |
| Motor Sheave SetPt | -      | FROZEN 1-2<br>TURNS OPEN |
| Fan Sheave Size    | -      | MB98                     |
| Fan Sheave Bore    | -      | 1-7/16"                  |
| Belt CL Distance   | -      | 20.5"                    |
| Num of Belts       | -      | 1                        |
| Belt Size          | -      | BX62                     |
| Belt Alignment     | -      | VERIFIED                 |

| Test Data              |        |                 |
|------------------------|--------|-----------------|
|                        | Design | Actual          |
| SF CFM                 | -      | 3503            |
| SF RPM                 | -      | 805             |
| RA CFM                 | -      | 2286            |
| OA CFM                 | -      | 1217            |
| RL Voltage             | -      | 206/207/207     |
| RL Amperage            | -      | 7.6/7.7/7.9     |
| SF Rotation            | -      | CCW,<br>CORRECT |
| Min OA Damper Position | -      | 3"              |
| Min OA Damper Type     | -      | ECONOMIZER      |

| Performance Data |        |        |
|------------------|--------|--------|
|                  | Design | Actual |
| MA Plenum SP     | -      | -0.52" |
| Fan Suction SP   | -      | -0.68" |
| Fan Discharge SP | -      | 0.34"  |
| Total ESP        | -      | 0.86"  |
| Fan Total SP     | -      | 1.02"  |

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

Completed By: Michael McDonnell on 06/20/2024

### Notes:

- [1] UNIT LOW ON AIRFLOW-RECOMMEND PULLEY CHANGE
- [2] MOTOR SHEAVE FROZEN
- [3] EVAP COIL / OA FILTERS / BLOWER IN NEED OF CLEANING
- [4] SERVES SERVING LINE DIFFUSERS, ATYPICAL FOR CULVERS-USUALLY ON DINING UNIT.

Written By: Michael McDonnell on 06/20/2024

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: FAN - Exhaust



Asset: PRV2

AREA:HOOD 1

| Unit Data     |             |             |
|---------------|-------------|-------------|
|               | Design      | Actual      |
| MFG           | ACCUREX     | ACCUREX     |
| Model Num     | XCUE-140-VG | XCUE-140-VG |
| Serial Num    | -           | 23179872    |
| Type          | UPBLAST     | UPBLAST     |
| Configuration | VERTICAL    | VERTICAL    |

| Motor Data       |        |            |
|------------------|--------|------------|
|                  | Design | Actual     |
| Motor MFG        | -      | VERI-GREEN |
| Horsepower       | -      | 1.0        |
| Motor Rpm        | -      | 300-1750   |
| Phase            | 1      | 1          |
| Voltage (rated)  | 115    | 115        |
| Amperage (rated) | -      | 11.5       |

| Test Data        |        |             |
|------------------|--------|-------------|
|                  | Design | Actual      |
| CFM              | 1500   | 1506        |
| Fan RPM          | 1725   | 1698        |
| Fan Rotation     | -      | CW, CORRECT |
| Motor RPM        | -      | 1698        |
| System SetPt     | -      | 9.7 V       |
| RL Voltage       | -      | 119         |
| RL Amperage      | -      | 5.1         |
| Total ESP        | 1.801  | 1.28"       |
| Fan Inlet SP     | -      | -1.28"      |
| Fan Discharge SP | -      | ATM         |

Completed By: Michael McDonnell on 06/20/2024

Notes:

[1] MISALIGNED ON CURB

Written By: Michael McDonnell on 06/20/2024

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: FAN - Exhaust



Asset: PRV3

AREA:HOOD 2

| Unit Data     |             |             |
|---------------|-------------|-------------|
|               | Design      | Actual      |
| MFG           | ACCUREX     | ACCUREX     |
| Model Num     | XCUE-140-VG | XCUE-140-VG |
| Serial Num    | -           | 23179877    |
| Type          | UPBLAST     | UPBLAST     |
| Configuration | VERTICAL    | VERTICAL    |

| Motor Data       |        |            |
|------------------|--------|------------|
|                  | Design | Actual     |
| Motor MFG        | -      | VARI-GREEN |
| Horsepower       | -      | 1.0        |
| Motor Rpm        | -      | 300-1750   |
| Phase            | 1      | 1          |
| Voltage (rated)  | 115    | 115        |
| Amperage (rated) | -      | 11.5       |

| Test Data        |        |             |
|------------------|--------|-------------|
|                  | Design | Actual      |
| CFM              | 1500   | 1591        |
| Fan RPM          | 1365   | 1470        |
| Fan Rotation     | -      | CW, CORRECT |
| Motor RPM        | -      | 1470        |
| System SetPt     | -      | 8.4 V       |
| RL Voltage       | -      | 120         |
| RL Amperage      | -      | 3.5         |
| Total ESP        | 1.00   | 0.78"       |
| Fan Inlet SP     | -      | -0.78"      |
| Fan Discharge SP | -      | ATM         |

Completed By: Michael McDonnell on 06/20/2024

Notes:

[1] MISALIGNED ON CURB

Written By: Michael McDonnell on 06/20/2024

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: Kitchen Hood Type I



Asset: HD1

AREA:GRIDDLE

| Unit Data        |           |               |
|------------------|-----------|---------------|
|                  | Design    | Actual        |
| MFG              | ACCUREX   | ACCUREX       |
| Model Num        | XGEP-64-S | XGEP-64-S     |
| Job / Serial Num | -         | 23180253 1180 |
| Type             | TYPE I    | TYPE          |
| Hood length      | 64"       | 64"           |
| Hood Width       | 23"       | 23"           |

| Test Data Exhaust       |                |                |
|-------------------------|----------------|----------------|
|                         | Design         | Actual         |
| Filter Type             | GREASE GRABBER | GREASE GRABBER |
| Filter Size 1           | 16X16          | 16X16          |
| Filter Qty 1            | 4              | 4              |
| Filter AK factor size 1 | 1.53           | 1.53           |
| Filter Total AK Area    | 6.12           | 6.12           |
| Filter1 FPM             | -              | 254            |
| Filter2 FPM             | -              | 247            |
| Filter3 FPM             | -              | 240            |
| Filter4 FPM             | -              | 242            |
| Filter Ave FPM(corr)    | -              | 246            |
| CFM                     | 1500           | 1505           |

| Cooking Equipment |        |         |
|-------------------|--------|---------|
|                   | Design | Actual  |
| Item 1            | -      | GRIDDLE |

Completed By: Michael McDonnell on 06/20/2024

# National TAB

Project: 06-17-24 CULVERS - STURTEVANT, WI (REIMAGE)

## System/Unit: Kitchen Hood Type I



Asset: HD2

AREA:FRYER

| Unit Data        |           |           |
|------------------|-----------|-----------|
|                  | Design    | Actual    |
| MFG              | ACCUREX   | ACCUREX   |
| Model Num        | XXEP-83-S | XXEP-83-S |
| Job / Serial Num | -         | 23180252  |
| Type             | TYPE I    | TYPE 1    |
| Hood length      | 83"       | 83"       |
| Hood Width       | 23"       | 23"       |

| Test Data Exhaust       |          |          |
|-------------------------|----------|----------|
|                         | Design   | Actual   |
| Filter Type             | XTRACTOR | XTRACTOR |
| Filter Size 1           | 16X16    | 16X16    |
| Filter Qty 1            | 5        | 5        |
| Filter AK factor size 1 | 1.53     | 1.53     |
| Filter Total AK Area    | 7.65     | 7.65     |
| Filter1 FPM             | -        | 210      |
| Filter2 FPM             | -        | 198      |
| Filter3 FPM             | -        | 199      |
| Filter4 FPM             | -        | 204      |
| Filter5 FPM             | -        | 229      |
| Filter Ave FPM(corr)    | -        | 208      |
| CFM                     | 1500     | 1591     |

| Cooking Equipment |        |        |
|-------------------|--------|--------|
|                   | Design | Actual |
| Item 1            | -      | FRYER  |

Completed By: Michael McDonnell on 06/20/2024