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**REPORT OF VOC CAPTURE/DESTRUCTION EFFICIENCY TESTING ON THE  
FASCIA LINE AT THE VENTRA EVART, LLC FACILITY LOCATED IN EVART, MI**

**Prepared for:**

VENTRA EVART, LLC  
601 W. SEVENTH STREET  
EVART, MI 49631

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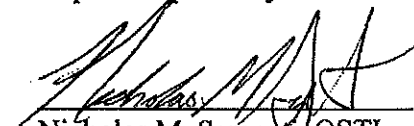
**AIR QUALITY DIV.**

**Prepared by:**

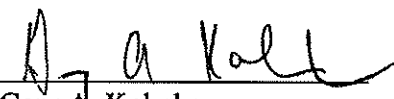
STACK TEST GROUP, INC.  
1500 BOYCE MEMORIAL DRIVE  
OTTAWA, IL 61350

OCTOBER 13 & 14, 2015  
STACK TEST GROUP, INC. PROJECT NO. 15-2705

**Report Prepared By:**

  
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Gary A. Kohnke  
Project Manager



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
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**RENEWABLE OPERATING PERMIT  
REPORT CERTIFICATION**

AIR QUALITY DIVISION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name Ventra Evert, LLC County Osceola

Source Address 601 West Seventh Street City Evert

AQD Source ID (SRN) A5764 ROP No. MI-ROP-A5764-2015a ROP Section No. N/A

Please check the appropriate box(es):

**Annual Compliance Certification (Pursuant to Rule 213(4)(c))**

Reporting period (provide inclusive dates): From \_\_\_\_\_ To \_\_\_\_\_

- 1. During the entire reporting period, this source was in compliance with ALL terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.
- 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, EXCEPT for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

**Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))**

Reporting period (provide inclusive dates): From \_\_\_\_\_ To \_\_\_\_\_

- 1. During the entire reporting period, ALL monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.
- 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, EXCEPT for the deviations identified on the enclosed deviation report(s).

**Other Report Certification**

Reporting period (provide inclusive dates): From 10/13/2015 To 10/14/2015

Additional monitoring reports or other applicable documents required by the ROP are attached as described:

Performance test report for October 13-14, 2015 capture and destruction testing of

EUFASCIA-LINE and RTO, which was conducted in accordance with the approved test plan and

the facility operating conditions were in compliance with permit requirements or were at

the maximum routine operating conditions for the facility.

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

<u>Pete Valler</u>	<u>General Manager</u>	<u>231-734-9000</u>
Name of Responsible Official (print or type)	Title	Phone Number
		<u>12/08/2015</u>
Signature of Responsible Official		Date

\* Photocopy this form as needed.

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1.0 EXECUTIVE SUMMARY

On October 13 & 14, 2015, The Stack Test Group, Inc. performed volatile organic compound (VOC) capture and destruction efficiency testing on the Fascia coating line at the Ventra Evert, LLC facility located in Evert, MI. The testing was conducted to comply with the Title V/ROP (No. 199600464a) serving this facility, as well as the the NESHAP for Plastic Parts and Products Painting found in 40 CFR Part 63, Supart PPPP. Four three-hour tests were conducted for the VOC capture and destruction efficiency testing however only tests two, three, and four are used in calculating the results. Presented below are the average results of these tests.

**Fascia Coating Line Results:**

VOC Destruction Efficiency:	97.90 percent
VOC Capture Efficiency:	94.85 percent
Total Overall Efficiency:	92.86 percent

2.0 INTRODUCTION

On October 13 & 14, 2015, The Stack Test Group, Inc. performed VOC capture and destruction efficiency testing on the the Fascia coating line at the Ventra Evert, LLC facility located in Evert, MI. The testing was conducted to comply with the Title V/ROP (No. 199600464a) serving this facility, as well as the the NESHAP for Plastic Parts and Products Painting found in 40 CFR Part 63, Supart PPPP. Three three-hour tests were conducted for the VOC capture and destruction efficiency testing.

VOC testing was conducted on the Fascia coating line RTO inlet and outlet for the destruction efficiency testing. Capture efficiency testing followed the guidelines of U.S. EPA Method 204 and 204B. There are three powered exhaust in the Fascia line that are not directed to the RTO. This prevents the Fascia line from being classified as a permanent total enclosure (PTE). Thus, the Fascia line was evaluated based on the criteria outlined in Method 204 as a temporary total enclosure (TTE).

Testing was conducted while Ventra Evert personnel operated the Fascia coating line at maximum rate and normal conditions. A copy of the operating data is included in Appendix G.

Testing was supervised by:  
Mr. Bill Byczynski  
Principal  
Stack Test Group, Inc.  
1500 Boyce Memorial Drive  
Ottawa, IL 61350  
(815) 433-0545

The facility contact for the testing was:  
Mr. Nick Spivey  
Ventra Plastics  
601 W. Seventh Street  
Ewart, MI 49631  
(231) 734-9000 ext. 9317

Testing was witnessed by representatives of the Michigan Department of Environmental Quality (MDEQ).

All testing followed the guidelines of U.S. EPA Reference Methods 1 through 4, 25A, 204 and 204B. This report contains a summary of results for the above mentioned tests and all the supporting field, process, and computer generated data.

### **3.0 SAMPLING AND ANALYTICAL PROCEDURES**

#### **3.1 Exhaust Gas Parameters**

##### ***3.1.1 Traverse and Sampling Points***

Testing was conducted on the inlet duct and exhaust stack of the RTO as well as the exhaust stacks of the Adpro Manual Booth, Base Coat Manual Booth and Clear Coat Manual Booth. The number of velocity traverse and sample measurement points for the inlet duct and each exhaust stack was determined using EPA Method 1. Each sampling location was located greater than 2.0 equivalent diameters downstream and 0.5 equivalent diameters upstream of the nearest flow disturbance. Velocity measurements were taken at 16 points, 8 points in each of the two diameters set at 90° to each other.

##### ***3.1.2 Velocity Traverse***

Velocity measurements were performed during each VOC destruction and capture efficiency test in accordance with EPA Method 2. An "S" type Pitot Tube with an attached type "K" thermocouple was used to conduct the velocity traverse. Per the requirements of Method 204B, a velocity traverse was performed hourly throughout each three hour test. The average of the four velocities for each test was used in the calculations.

##### ***3.1.3 Gas Composition***

Gas composition for oxygen, carbon dioxide, and nitrogen was determined employing EPA Method 3. An integrated gas sample was collected during each VOC efficiency test. Gas analysis was conducted using a calibrated Servomex Model 1440C O<sub>2</sub>/CO<sub>2</sub> analyzer.

##### ***3.1.4 Moisture Content***

The exhaust gas moisture content was determined using EPA Method 4 for all tests. The exhaust stack moisture content was determined by drawing the gas sample through four impingers in the sample train. Volumetric analysis was used to measure the condensed moisture in the first three impingers while gravimetric analysis of silica gel was used to

measure moisture collected in the fourth impinger. Moisture for the inlet duct, clear coat, base coat, and Adpro was determined by using a wet bulb dry bulb method.

### **3.2 DESTRUCTION EFFICIENCY TESTING**

#### **3.2.1 Sample Collection**

Testing on the RTO inlet and outlet ducts as well as the clear coat, base coat and Adpro booths was performed using U.S. EPA Reference Method 25A. A J.U.M. Model 3-300 Flame Ionization Detector (FID) was used to determine the emission concentrations at each location. A sample was transported through a heated Teflon line from the exhaust stack and inlet duct to the FIDs which analyzed the samples continuously. The output signal from the FIDs were then recorded at one minute averages throughout the test. Copies of this data may be found in Appendix F.

At the beginning of the test series, the analyzers were calibrated and then checked for calibration error by introducing zero, mid-range and high-range calibration gases to the back of the analyzers. Before and after each individual test run, a system bias was performed by introducing a zero and mid-range propane calibration gas to the outlet of the probes. Calibration gases used were U.S. EPA Protocol 1 certified. Additionally, per the requirements of Method 204B, the calibration gas closest to the measured concentration as well as the high range calibration gas was checked after each test run.

#### **3.2.2 Sample Duration and Frequency**

The Method 25A train samples were collected in triplicate with each test lasting 180 minutes in duration.

#### **3.2.3 Calibrations**

All sampling equipment was calibrated according to the procedures outlined in EPA Reference Method 25A. Copies of the FID calibrations are included in Appendix E.

### **3.3 CAPTURE EFFICIENCY TESTING**

#### **3.3.1 Sample Collection**

Capture efficiency testing on the Fascia line was determined by Method 204, based on the criteria outlined for a temporary total enclosure (TTE). The Fascia line is equipped with three powered exhaust fans. The three exhaust fans are attached to the Ad Pro manual booth, the base coat manual booth and the clear coat manual booth. The VOC emissions from these three booths were measured using U.S. EPA Method 25A. A J.U.M. Model VE-7 Flame Ionization Detector (FID) was used to determine the emission concentrations. A sample was transported through a heated Teflon line from each coating booth as well as the RTO inlet to the FID's which analyzed the sample continuously. The output signal from the FID was then recorded at on a datalogger at one minute averages throughout the test. Copies of this data is included in Appendix F.

At the beginning of the test series, the analyzers were calibrated and then checked for calibration error by introducing zero, low-range, mid-range and high-range calibration

gases to the back of the analyzer. Before and after each individual test run, a system bias was performed by introducing a zero and mid-range propane calibration gas to the outlet of the probe. Calibration gases used were U.S. EPA Protocol 1 certified. Additionally, per the requirements of Method 204B, the calibration gas closest to the measured concentration as well as the high range calibration gas was checked after each test run.

### ***3.3.2 Sample Duration and Frequency***

The Method 25A samples were collected in quadruplicate with each test lasting 180 minutes in duration. Run one was discarded because of complications with flow rates at various locations. Run one data is included in the report but not used in final averages. Velocity measurements were made at each location at least once every hour during these tests.

### ***3.3.3 EPA Method 204 Criteria***

Any opening in the Fascia line not controlled by a powered fan or blower is considered a natural draft opening (NDO). There are two NDO in the Fascia line. NDO #1 is the entrance to the Tack-Off booth. NDO #2 is the oven cool-down chamber exit. The open area of NDO #1 is 33.00 square feet and the open area of NDO #2 is 40.54 square feet, for a total open area of 73.54 square feet.

The criteria to ensure that a TTE has been established is:

1. Each NDO shall be at least 4 equivalent diameters from each VOC emitting point.
2. Any exhaust point shall be at least 4 equivalent duct or hood diameters from each NDO
3. The total area of all NDO's shall not exceed 5% of the surface area of the enclosure's walls, floor and ceiling.
4. The average face velocity of the NDO's shall be at least 200 feet per minute into the TTE during the testing.
5. All access doors and windows whose areas are not included as NDOs and are not included in the calculation of facial velocity shall be closed during routine operation of the process.

All of these criteria were met and documented during this test series to ensure the Fascia coating line can be classified as a TTE. Additionally, no physical changes were made to the Fascia coating line.

The capture efficiency was calculated by comparing the mass of VOC's captured (RTO inlet) to the total mass of VOC's measured at all locations for each test run. All VOC's are expressed in terms of pounds per hour as propane.

## **5.0 TEST RESULTS**

Presented in this section are the results of this test series. Test results are reported in Tables 4.1 through 4.5. Table 4.1 reports the clear coat booth exhaust stack results for the VOC capture efficiency testing, including stack gas temperature, percent carbon dioxide

and oxygen, percent moisture, molecular weight of the stack gas dry and wet, velocity in feet per second (fps), and flow rate in actual cubic feet per minute (acfm), standard cubic feet per minute (scfm), and dry standard cubic feet per minute (dscfm).

Table 4.1 also presents the VOC results in parts per million as propane and pounds per hour (lb/hr) as propane.

Tables 4.2 through 4.5 present the results for the base coat booth, Adpro booth, RTO inlet duct, and RTO exhaust stack, respectively and in the same manner and format as Table 4.1. Table 4.5 also present the capture results in term of percent and the DE results in terms of percent.

Copies of the calculations used to determine these emission rates may be found in Appendix A. Copies of the field data sheets are presented in Appendix B. Copies of the analytical results are presented in Appendix D. Copies of equipment calibrations are presented in Appendix E.

**Table 4.1**

**VOC Test Results**

Ventra Evert, LLC  
 Evert, MI  
 10/13 & 14/ 2015  
 Clear Coat Booth Exhaust Stack

Test No:	<u>*T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>Avg.</u>
Start Time:	09:50 AM	08:00 AM	11:45 AM	03:30 PM	
Finish Time:	12:50 PM	11:00 AM	02:45 PM	06:30 PM	
Stack Gas Temperature, degrees F:	75.0	74.7	77.3	77.3	76.4
% Carbon Dioxide:	0.0	0.0	0.0	0.0	0.0
% Oxygen:	21.0	21.0	21.0	21.0	21.0
% Moisture:	2.32	2.41	2.13	2.06	2.20
Molecular Weight dry, lb/lb-Mole:	28.84	28.84	28.84	28.84	28.84
Molecular Weight wet, lb/lb-Mole:	28.59	28.58	28.61	28.62	28.60
<b>Velocity and Flow Results:</b>					
Average Stack Gas Velocity FPS:	25.39	24.65	25.18	25.18	25.00
Stack Gas Flow Rate, ACFM:	19,149	18,591	18,991	18,991	18,858
Stack Gas Flow Rate, SCFM:	17,957	17,659	17,951	17,951	17,854
Stack Gas Flow Rate, DSCF/HR:	1,052,450	1,033,982	1,054,118	1,054,872	1,047,658
Stack Gas Flow Rate, DSCFM:	17,541	17,233	17,569	17,581	17,461
<b>VOC Results:</b>					
PPM as Propane:	11.5	11.7	14.8	10.2	12.2
LBS/DSCF	1.31E-06	1.34E-06	1.69E-06	1.16E-06	1.40E-06
LBS/HR as Propane:	1.41	1.42	1.82	1.25	1.50

\* This Run Was Not Used in Averages



**Table 4.2**

## VOC Test Results

Ventra Evert, LLC  
 Evert, MI  
 10/13 & 14/ 2015  
 Base Coat Exhaust Stack

Test No:	<u>*T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>Avg.</u>
Start Time:	09:50 AM	08:00 AM	11:45 AM	03:30 PM	
Finish Time:	12:50 PM	11:00 AM	02:45 PM	06:30 PM	
Stack Gas Temperature, degrees F:	72.3	74.4	75.6	76.0	75.3
% Carbon Dioxide:	0.0	0.0	0.0	0.0	0.0
% Oxygen:	21.0	21.0	21.0	21.0	21.0
% Moisture:	2.50	1.60	2.21	1.97	1.93
Molecular Weight dry, lb/lb-Mole:	28.84	28.84	28.84	28.84	28.84
Molecular Weight wet, lb/lb-Mole:	28.57	28.67	28.60	28.63	28.63
<b>Velocity and Flow Results:</b>					
Average Stack Gas Velocity FPS:	33.82	33.92	32.57	32.69	33.06
Stack Gas Flow Rate, ACFM:	34,699	34,802	33,417	33,540	33,920
Stack Gas Flow Rate, SCFM:	32,704	33,075	31,676	31,770	32,174
Stack Gas Flow Rate, DSCF/HR:	1,913,169	1,952,748	1,858,585	1,868,650	1,893,328
Stack Gas Flow Rate, DSCFM:	31,886	32,546	30,976	31,144	31,555
<b>VOC Results:</b>					
PPM as Propane:	33.4	15.9	28.5	15.2	19.9
LBS/DSCF	3.81E-06	1.82E-06	3.25E-06	1.74E-06	2.27E-06
LBS/HR as Propane:	7.48	3.60	6.19	3.31	4.37

\* This Run Was Not Used in Averages

**Table 4.3**

## VOC Test Results

Ventra Evert, LLC  
 Evert, MI  
 10/13 & 14/ 2015  
 Adpro Exhaust Stack

Test No:	<u>*T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>Avg.</u>
Start Time:	09:50 AM	08:00 AM	11:45 AM	03:30 PM	
Finish Time:	12:50 PM	11:00 AM	02:45 PM	06:30 PM	
Stack Gas Temperature, degrees F:	75.7	75.7	75.95	75.4	75.7
% Carbon Dioxide:	0.0	0.0	0.0	0.0	0.0
% Oxygen:	21.0	21.0	21.0	21.0	21.0
% Moisture:	2.48	2.51	2.26	2.40	2.39
Molecular Weight dry, lb/lb-Mole:	28.84	28.84	28.84	28.84	28.84
Molecular Weight wet, lb/lb-Mole:	28.57	28.57	28.60	28.58	28.58
<b>Velocity and Flow Results:</b>					
Average Stack Gas Velocity FPS:	30.59	27.36	26.80	26.42	26.86
Stack Gas Flow Rate, ACFM:	23,071	20,635	20,213	19,926	20,258
Stack Gas Flow Rate, SCFM:	21,607	19,563	19,154	18,904	19,207
Stack Gas Flow Rate, DSCF/HR:	1,264,290	1,144,341	1,123,269	1,106,995	1,124,868
Stack Gas Flow Rate, DSCFM:	21,072	19,072	18,721	18,450	18,748
<b>VOC Results:</b>					
PPM as Propane:	81.3	20.5	21.4	10.8	17.6
LBS/DSCF	9.28E-06	2.34E-06	2.44E-06	1.23E-06	2.01E-06
LBS/HR as Propane:	12.04	2.75	2.81	1.40	2.32

\* This Run Was Not Used in Averages

**Table 4.4**

VOC Test Results

Ventra Evert, LLC  
Evert, MI  
10/13 & 14/ 2015  
Inlet Duct

Test No:	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>Avg.</u>
Start Time:	09:50 AM	08:00 AM	11:45 AM	03:30 PM	
Finish Time:	12:50 PM	11:00 AM	02:45 PM	06:30 PM	
Stack Gas Temperature, degrees F:	132.4	127.2	123.6	111.49	120.8
% Carbon Dioxide:	0.0	0.0	0.0	0.0	0.0
% Oxygen:	21.0	21.0	21.0	21.0	21.0
% Moisture:	7.53	10.92	7.04	6.33	8.10
Molecular Weight dry, lb/lb-Mole:	28.84	28.84	28.84	28.84	28.84
Molecular Weight wet, lb/lb-Mole:	28.02	27.66	28.06	28.15	27.96
<b>Velocity and Flow Results:</b>					
Average Stack Gas Velocity FPS:	38.56	41.70	41.44	40.34	41.16
Stack Gas Flow Rate, ACFM:	72,878	78,813	78,322	76,243	77,792
Stack Gas Flow Rate, SCFM:	61,717	68,167	68,160	67,757	68,028
Stack Gas Flow Rate, DSCF/HR:	3,424,173	3,643,396	3,801,690	3,808,062	3,751,049
Stack Gas Flow Rate, DSCFM:	57,070	60,723	63,362	63,468	62,517
<b>VOC Results:</b>					
PPM as Propane:	328.1	302.6	343.7	314.0	320.1
LBS/DSCF	3.75E-05	3.46E-05	3.92E-05	3.59E-05	3.66E-05
LBS/HR as Propane:	138.74	141.33	160.51	145.78	149.21

\* This Run Was Not Used in Averages

**Table 4.5**

VOC Test Results

Ventra Evert, LLC  
 Evert, MI  
 10/13 & 14/ 2015  
 RTO Exhaust Stack

Test No:	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>Avg.</u>
Start Time:	09:50 AM	08:00 AM	11:45 AM	03:30 PM	
Finish Time:	12:50 PM	11:00 AM	02:45 PM	06:30 PM	
Stack Gas Temperature, degrees F:	224.8	230.9	226.7	230.5	229.4
% Carbon Dioxide:	2.1	1.6	1.9	1.8	1.8
% Oxygen:	18.8	19.1	18.9	18.9	19.0
% Moisture:	7.73	7.84	7.71	7.94	7.83
Molecular Weight dry, lb/lb-Mole:	29.09	29.02	29.06	29.04	29.04
Molecular Weight wet, lb/lb-Mole:	28.23	28.16	28.21	28.16	28.18
<b>Velocity and Flow Results:</b>					
Average Stack Gas Velocity FPS:	41.21	43.94	44.11	42.72	43.59
Stack Gas Flow Rate, ACFM:	90,670	96,677	97,051	93,993	95,907
Stack Gas Flow Rate, SCFM:	66,428	71,067	71,779	69,134	70,660
Stack Gas Flow Rate, DSCF/HR:	3,677,579	3,929,740	3,974,671	3,813,696	3,907,702
Stack Gas Flow Rate, DSCFM:	61,293	65,496	66,245	63,645	65,128
<b>VOC Results:</b>					
PPM as Propane:	7.6	6.5	7.1	5.8	6.5
LBS/DSCF:	8.68E-07	7.42E-07	8.11E-07	6.62E-07	7.38E-07
LBS/HR (as Propane):	3.46	3.17	3.49	2.75	3.13
Destruction Efficiency, %:	97.51	97.76	97.82	98.12	97.90
Capture Efficiency, %:	86.89	94.79	93.68	96.07	94.85
Total Efficiency, %:	84.73	92.67	91.65	94.26	92.86

\* This Run Was Not Used in Averages