I. INTRODUCTION

Network Environmental, Inc. was retained by Lacks Enterprises, Inc. of Grand Rapids, Michigan to conduct a volatile organic compound (VOC) destruction efficiency study (DE) on the Regenerative Thermal Oxidizer (RTO) at their Paint Central facility located in Kentwood, Michigan at 4375 52nd Street. The purpose of the study was to determine the destruction efficiency of the Regenerative Thermal Oxidizer (RTO) in accordance with their Permit to Install 110-18.

The sampling was conducted on July 1, 2021 by Stephan K. Byrd and Richard D. Eerdmans of Network Environmental, Inc. Ms. Karen Baweja, of Lacks Enterprises and the staff of Paint Central coordinated production and source operation during the testing. Ms. Lindsey Wells and Ms. April Lazzaro of the EGLE-Air Quality Division were present to observe the testing and source operation.

II. PRESENTATION OF RESULTS

II.1 TABLE 1
VOC DESTRUCTION EFFICIENCY RESULTS (as Propane)
LACKS PAINT CENTRAL
RTO
KENTWOOD, MICHIGAN
July 1, 2021

Sample	Time	Concentration PPM(1)		Mass Emission Rate Lbs./Hr		Destruction Efficiency %(2)
		Inlet	Exhaust	Inlet	Exhaust	
1	10:15-11:15	866.6	14.5	189.68	3.48	98.17
2	11:41-12:41	673.5	12.1	147.14	2.75	98.13
3	13:11-14:11	841.9	13.5	186.21	3.24	98.26
Average		**785.0**	**13.4**	**174.34**	**3.16**	**98.19**

(1) PPM = Parts Per Million (v/v) on an actual (wet) basis
(2) Destruction Efficiencies were calculated using the mass emission rates

III. DISCUSSION OF RESULTS

The results of the destruction efficiency sampling are presented in Section II., Table 1. The destruction efficiency was calculated using the mass loading rates at the inlet and outlet of the RTO, as propane. Flow rate measurements were taken after each test run and were used to calculate each mass loading rate at the inlet and outlet for those runs respectively.

The destruction efficiencies for the test runs were 98.17% for run one, 98.13% for run two and 98.26% for run three. The average of the three runs was 98.19%.

IV. SOURCE DESCRIPTION

The source sampled was the inlet and exhaust of the RTO that controls emissions from the totally enclosed paint line FGCENTRALPAINT located at the Kentwood, Michigan facility. The process coats plastic interior and exterior automotive parts. The process consists of prime, base and clear coat booths and an oven. The complete line is totally enclosed, see Appendix B, and vents to the RTO.

The RTO controls VOC emissions from the booths and oven. The coating lines were operated at normal production rates in terms of the parts coated and the coatings used during the testing. Process information can be found in Appendix B.

V. SAMPLING AND ANALYTICAL PROTOCOL

The RTO exhaust sampling was conducted on the 62-inch I.D. exhaust stack, at a location that is greater than eight duct diameters downstream and greater than two-duct diameter upstream from the nearest disturbances. The RTO inlet sampling was conducted on the 54-inch I.D. inlet duct at a location approximately four duct-diameters downstream and two duct diameter upstream from the nearest disturbance.

The following reference test methods were employed to conduct the sampling:

* Destruction Efficiency - U.S. EPA Method 25A
* Exhaust Gas Parameters (flowrate, temperature, moisture and density) - U.S. EPA Methods 1 - 4

V.1 Destruction Efficiency - The total hydrocarbon (VOC) sampling was conducted in accordance with U.S. EPA Reference Method 25A. The sample gas was extracted from the sources through heated teflon sample lines which led to a Thermo Environmental Model 51 (on the inlet) and a J.U.M Model 3-300 A (on the exhaust) portable flame ionization detectors (FIDs). These analyzers produce instantaneous readouts of the total hydrocarbon concentrations (PPM). Three (3) samples were collected from each of the sources. Each sample was sixty (60) minutes in duration. The sampling on the inlet and exhaust was conducted simultaneously.

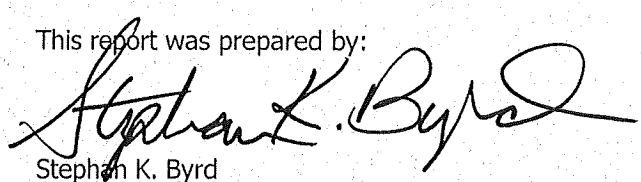
A systems (from the back of the stack probe to the analyzer) calibration was conducted for the analyzers prior to the testing. Span gases of 94.9 PPM and 2019 PPM propane were used to establish the initial instrument calibration for the analyzers. Propane calibration gases of 30.2 PPM, 50.6 PPM, 491 PPM and 991 PPM were used to determine the calibration error of the analyzers. After each sample (60 minute sample period), a system zero and system injections of 991 PPM and 30.2 PPM propane were performed to establish system drift of both analyzers during the test period. All calibration gases used were EPA Protocol 1 Certified. All the results were calibration corrected using Equation 7E-1 from U.S. EPA Method 7E.

The analyzers were calibrated to the output of the data acquisition system (DAS) used to collect the data from the incinerator. All quality assurance and quality control requirements specified in the method were incorporated in the performance of this determination. A diagram of the sampling train is shown in Figure 1.

V.2 Exhaust Gas Parameters - The exhaust gas parameters (airflow rate, temperature, moisture and density) were determined in conjunction with the other sampling by employing U.S. EPA Reference Methods 1 through 4. Velocity traverses were performed after each DE test run. Moisture was determined by employing the wet bulb/dry bulb measurement technique. Oxygen and carbon dioxide concentrations (%) were determined by collecting a bag sample (grab sample) and Orsat analysis. All the quality assurance and quality control procedures listed in the methods were

incorporated in the sampling and analysis.

This report was prepared by:



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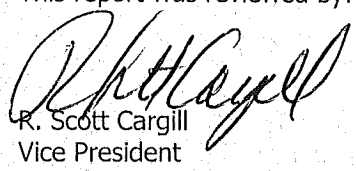

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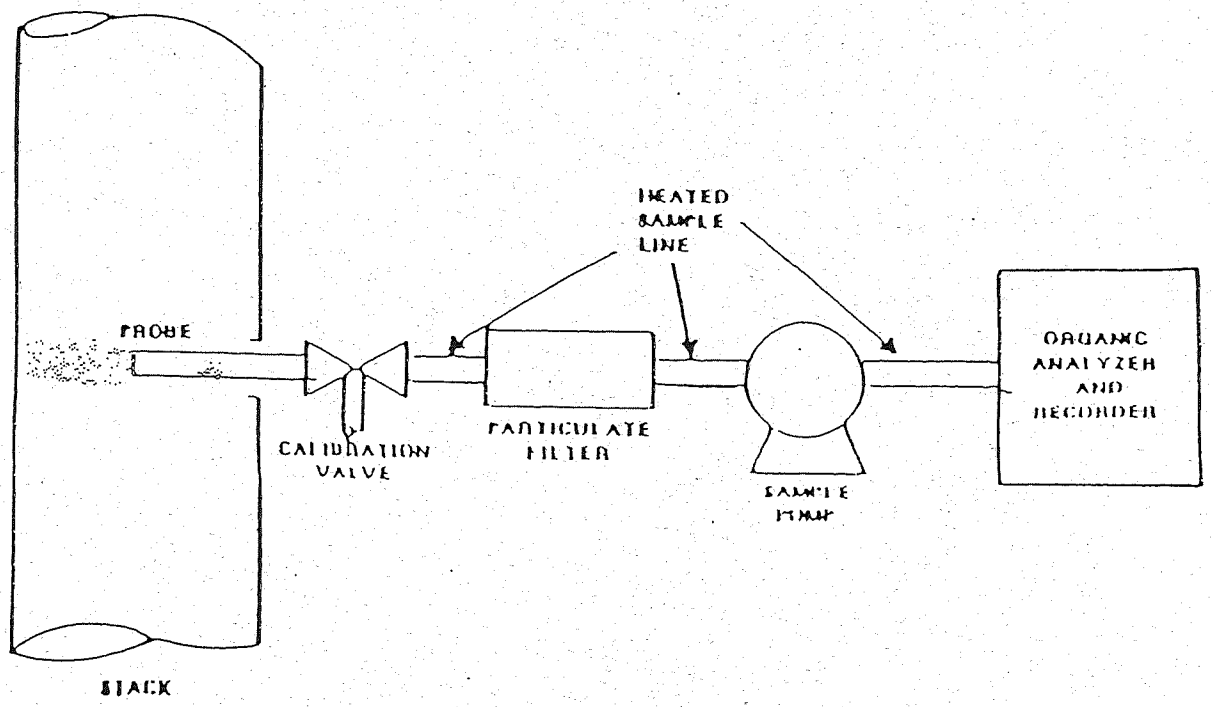

Figure 1

Total Hydrocarbon Sampling Train