Southern Environmental Sciences, Inc.

1204 North Wheeler Street □ Plant City, Florida 33563 □ (813) 752-5014 Fax (813) 752-2475

July 18, 2012

Mr. Art Pennetta
Environmental Protection and Growth Management Department
Pollution Prevention, Remediation and Air Quality Division
One North University Drive, Suite 203
Ft. Lauderdale, FL 33324
VIA Email at apennetta@broward.org

Re: Test Notification
Vecenergy – Vapor Combustion Unit
Facility ID No: 0112688

Dear Mr. Pennetta:

This is to notify your office that Southern Environmental Sciences, Inc. (SES) is scheduled to perform an emissions test of the above facility on September 13, 2012 beginning at approximately 8:00 A.M. I will be the contact person for this testing.

Testing will be conducted in accordance with procedures described in 40 CFR 60.503 as described in the attached protocol. As per our conversation yesterday, due to safety considerations, the truck leak checks will be conducted from the ground using an extended probe system similar to that represented in the attached image.

If any changes in scheduling become necessary, I will notify your office prior to the testing. If you have questions regarding the testing methods please contact our office at your convenience.

Thank you.

Very truly yours,

SOUTHERN ENVIRONMENTAL
SCIENCES, INC.

Kenneth Roberts

Kenneth M. Roberts, QEP
Vice President

KMR/mr

cc: Richard Vogel, richard.vogel@vecenergy.com
Jim Estler, estlerj@aol.com
Clifton Bittle, Env.Prot.and Growth Management Department cbittle@broward.org
Paul Sheldon, Env.Prot.and Growth Management Department psheldon@broward.org
Director - Air, Pesticides and Toxics Management Division, EPA Region IV


INTERSTATE
1203

EMISSIONS TESTING
PROTOCOL
VECENERGY
VAPOR COMBUSTION UNIT

Port Everglades, FL

Test Date
September 13, 2012

Facility Permit No. 0112688-006-AO
SES Project No. 12S204

Testing to be Conducted by:

SOUTHERN ENVIRONMENTAL SCIENCES, INC.
1204 North Wheeler Street
Plant City, Florida 33563
Phone (813) 752-5014 Fax (813) 752-2475

1.0 INTRODUCTION

Southern Environmental Sciences, Inc. will be conducting an emissions test of the Vecenergy vapor combustion unit (VCU) on September 13, 2012. This facility is located at 1200 SE 32nd Street, Dania Beach, Florida. Testing is being performed to determine if the plant is operating in compliance with requirements of the Florida Department of Environmental Protection (FDEP) and the Broward County Environmental Protection and Growth Management Department (BCEPGMD) .

2.0 PROCESS DESCRIPTION

The Vecenergy terminal receives gasoline, ethanol, jet aviation fuel and distillate fuel products for storage and distribution by truck or pipeline. Emissions unit 3 is a four (4) lane truck loading rack equipped with a vapor combustion unit (VCU) to control emissions from the truck loading of all products from the terminal.

3.0 TESTING PROCEDURES

3.1 Methods

VCU testing and analyses will be conducted in accordance with procedures described in 40 CFR 60.503. Volumetric flowrate at the inlet and outlet will be determined in accordance with EPA Method 2B - Determination of Exhaust Gas Volume Flow Rate from Gasoline Vapor Incinerators, 40 CFR 60, Appendix A-1. Hydrocarbon concentrations will be measured at the inlet and outlet in accordance with EPA Method 25A - Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer, 40 CFR 60, Appendix A-7. Carbon monoxide concentration will be measured at the outlet in accordance with EPA Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources, 40 CFR 60, Appendix A-4. Carbon dioxide will also be measured at the outlet in accordance with EPA Method 3A—Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Instrumental Analyzer Procedure), 40 CFR 60, Appendix A-1. The inlet total hydrocarbon and carbon dioxide analyzers will be calibrated with an Environics Model 2020 gas dilution system and calibration gases using procedures described in EPA Method 205 - Verification of Gas Dilution Systems for Field Instrument Calibrations, 40 CFR 51, Appendix M. All trucks will be checked for leaks using procedures described in EPA Method 21 - Determination of Volatile Organic Compound Emission Leaks, 40 CFR 60, Appendix A-7.

3.2 Pretest Preparation

Prior to testing, an eight inch American Meter Company turbine meter will connected in line to measure the total volume of vapor reaching the VCU. The VCU, terminal vapor recovery lines and testing ductwork will be checked for leaks prior to the test. Any leaks above the allowable rate will be repaired prior to testing. The portable FID organic vapor analyzers will be calibrated prior to the test with zero air and a methane calibration gas in the range of the allowable leak rate. Magnehelic gauges will be connected at each loading station to measure the vapor collection system pressure.

3.3 Sampling Trains

The inlet Method 25A sampling train will consist of a dilution probe (100:1), a teflon sample line, heated as necessary to prevent condensation, a California Analytical Instruments Model 300HFID(M) heated total hydrocarbon analyzer and a strip chart recorder. The outlet Method 25A sampling train consisted of a heated stainless steel probe, heated teflon sample line, a California Analytical Instruments Model 300HFID(M) heated total hydrocarbon analyzer and a strip chart recorder. A schematic of the hydrocarbon sampling trains is shown in Figure 1. The carbon monoxide sampling train will consist of a heated stainless steel probe, condenser, teflon sample line, and a Teledyne 300EM Gas Filter Correlation CO analyzer. A schematic of the carbon monoxide sampling train is shown in Figure 2. The carbon dioxide sampling train will consist of a heated stainless steel sampling probe, condenser, teflon sample line and a California Analytical Instruments Model ZRH carbon dioxide analyzer. Both the carbon monoxide and carbon dioxide trains will use a common probe, condenser and sample line, and sampling manifold.

3.3 Data Collection

Inlet volume, temperature and static pressure measurements will be recorded at the inlet to the turbine meter at five minute intervals for the duration of the test to determine volume at standard conditions. Inlet and outlet hydrocarbon concentrations and outlet carbon monoxide and carbon dioxide concentrations will be measured continuously throughout the six hour test period. During the testing each applicable tank truck will be tested for leaks at all domes, boots and vapor recovery connections. If an increase in concentration is noted at a possible leak, the probe will be moved to locate the point of highest meter response. Leaks greater than or equal to 500 parts per million (as methane) will be documented on field data sheets.

4.0 ANALYTICAL PROCEDURE

4.1 Analysis

Within 2 hours of the start of the test zero and high-level propane calibration gases will be introduced into the hydrocarbon analyzers at the calibration valve assembly and the outputs will be adjusted to the appropriate levels if necessary. A linear regression will then conducted to calculate the predicted response for the low-level and mid-level gases. The low-level and mid-level gases will then be introduced into the measurement system and the difference between the predicted and actual responses will be calculated. A difference of less than 5 percent will be considered acceptable. To assess the response time of the measurement system, zero gas will be introduced into the system. After the output is stabilized, the high-level gas will be quickly introduced. The time from the concentration change to the measurement system response equivalent to 95 percent of the step change will be determined. The test will be repeated three times. Instrument calibrations will be checked periodically during the test by introducing mid-range and zero gases into the instruments through the sampling train. The carbon monoxide and carbon dioxide analyzers will be calibrated immediately before the beginning of the test and checked periodically by introducing mid-range and zero gases into the instruments through the sampling trains.

4.2 Data Reduction

The outlet volume will be determined in accordance with equations in EPA Method 2B. Hydrocarbon emissions will be determined from the outlet hydrocarbon concentrations and the calculated outlet flowrate. The total countable gasoline loaded during the test will be calculated by summing the total gasoline loaded then subtracting the total loaded into trucks on which leaks were encountered.

SAMPLING TRAIN DIAGRAMS

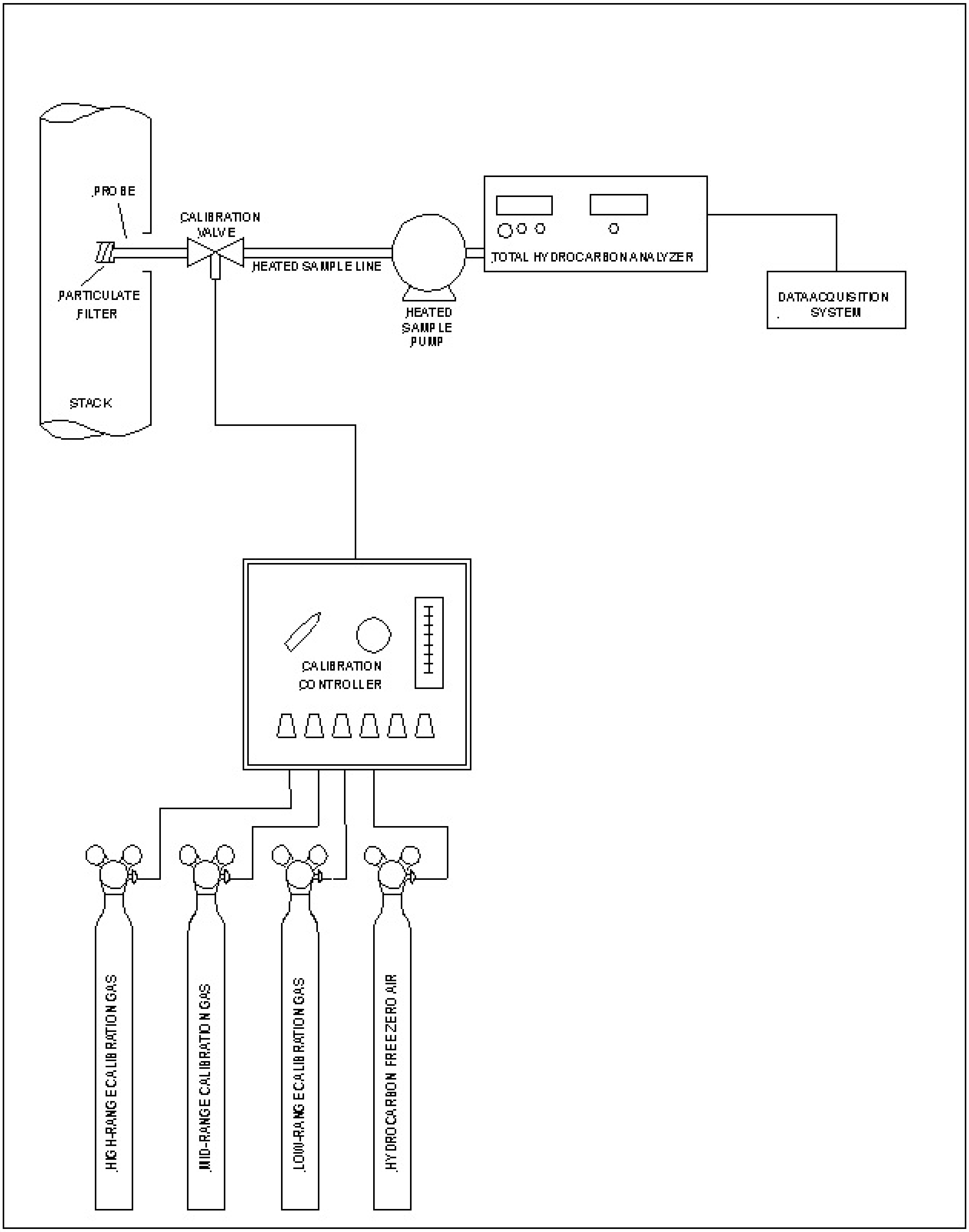


Figure 1. EPA Method 25A Sampling Train.

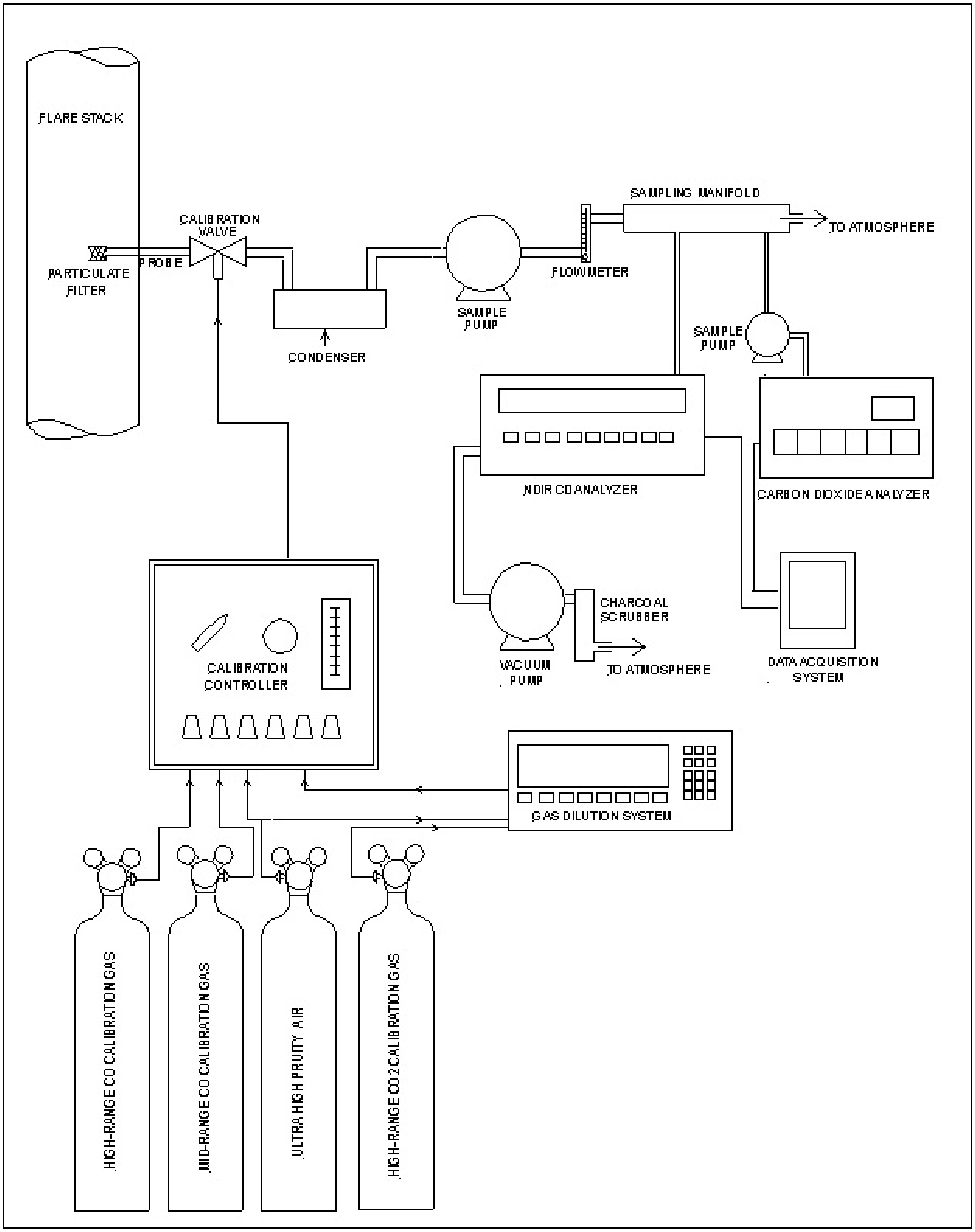


Figure 2. EPA Method 10 and 3A sampling Trains.

EXAMPLE FIELD DATA SHEETS

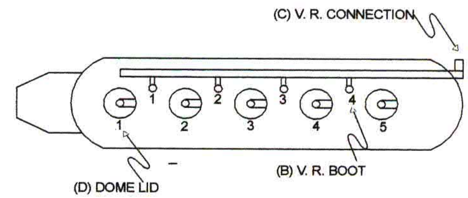
SOUTHERN ENVIRONMENTAL SCIENCES, INC.

1204 North Wheeler Street, Plant City, Florida 33563

(813) 752-5014 FAX (813) 752-2475

TRUCK LEAK CHECKS

COMPANY		DATE	
LOCATION		OPERATOR(S)	
FACILITY		INSTRUMENT(S)	



LEAK LOCATION DIAGRAM

OWNER	TRUCK NO.	TIME	RACK NO.	LANE NO.	V.R.BACK PRESSURE (IN. H2O)		GALLONS LOADED	PRODUCT LOAD	PRODUCT LOAD	NO LEAK	LEAK	LEAK LOCATION
						1						
						2						
						3						
						4						
					TOTAL							
						1						
						2						
						3						
						4						
					TOTAL							
						1						
						2						
						3						
						4						
					TOTAL							
						1						
						2						
						3						
						4						
					TOTAL							
						1						
						2						
						3						
						4						
					TOTAL							
						1						
						2						
						3						
						4						
					TOTAL							

VCU EMISSION CALCULATIONS

COMPANY: VECENEREGY
FACILITY: VAPOR COMBUSTION UNIT
DATE: 09/14/11

CLOCK TIME	TIME (min)	METER RDG. (cf) #1	STATIC PRESSURE ("H2O)	METER TEMP. (deg f)	BAROM. PRESSURE ("Hg)	INLET VOC (AS PROPANE) INSTRU. SCALE (%)	INLET VOC (AS PROPANE) CONC. (%)	OUTLET VOC (AS PROPANE) INSTRU. SCALE (PPM)	OUTLET VOC (AS PROPANE) CONC. (PPM)	CARBON MONOXIDE INSTRU. SCALE (PPM)	CARBON MONOXIDE CONC. (PPM)	CARBON DIOXIDE INSTRU. SCALE (%)	CARBON DIOXIDE CONC. (%)	INLET GAS VOLUME (M3)*	INLET MASS (mg)	OUTLET GAS VOLUME (M3)*	OUTLET MASS (mg)	FLARE CONTROL EFF. (%)
10:10	0																	
10:15	5	0	0.1	101	29.92													
10:20	10	0	0.1	102	29.92													
10:25	15	700	0.1	94	29.92	100	52.57	1,000	93.68	1,000	318.19	20	2.14	18.90	18,211,884	1373.63	235,873	98.70
10:30	20	1000	1.5	95	29.92	100	47.20	1,000	67.47	1,000	166.94	20	0.98	8.11	7,018,996	1163.98	143,952	97.95
10:35	25	1100	0.1	95	29.92	100	38.08	1,000	54.79	1,000	114.29	20	0.65	2.69	1,881,077	475.20	47,725	97.46
10:40	30	1100	0.1	105	29.92													
10:45	35	1100	0.1	105	29.92													
10:50	40	1100	0.1	105	29.92													
10:55	45	1100	0.1	103	29.92													
11:00	50	1700	1.4	93	29.92	100	48.10	1,000	48.65	1,000	116.35	20	1.75	16.28	14,352,383	1345.18	119,957	99.16
11:05	55	2900	0.8	93	29.92	100	46.06	1,000	0.70	1,000	243.36	20	1.69	32.51	27,449,869	2666.96	3,422	99.99
11:10	60	3500	0.1	95	29.92	100	49.94	1,000	27.54	1,000	383.38	20	0.19	16.17	14,800,680	11724.93	591,884	96.00
11:15	65	3500	0.1	103	29.92													
11:20	70	4000	1.8	97	29.92	100	28.04	1,000	62.78	1,000	350.5	20	1.99	13.48	6,929,097	563.12	64,801	99.06
11:25	75	6000	2	95	29.92	100	21.75	1,000	17.69	1,000	169.47	20	4.03	54.15	21,588,634	878.44	28,484	99.87
11:30	80	7000	1.2	97	29.92	100	41.47	1,000	0.03	1,000	148.53	20	4.59	26.92	20,464,708	732.13	40	100.00
11:35	85	7400	2.1	97	29.92	100	34.33	1,000	30.43	1,000	267.38	20	2.72	10.79	6,792,902	407.86	22,750	99.67
11:40	90	8200	2.5	98	29.92	100	19.00	1,000	44.04	1,000	166.82	20	2.32	21.57	7,512,267	529.98	42,783	99.43
11:45	95	9500	1.5	98	29.92	100	41.27	1,000	0.55	1,000	233.18	20	4.26	34.96	26,451,437	1017.80	1,026	100.00
11:50	100	10200	1	100	29.92	100	37.41	1,000	19.86	1,000	212.75	20	3.27	18.74	12,848,543	643.62	23,430	99.82
11:55	105	10500	1	101	29.92	100	18.58	1,000	66.47	1,000	235.64	20	1.45	8.02	2,729,721	305.27	37,194	98.64
12:00	110	10900	1.5	104	29.92	100	15.46	1,000	52.26	1,000	195.91	20	1.21	10.64	3,016,218	406.21	38,912	98.71
12:05	115	11400	1.5	106	29.92	100	48.86	1,000	44.78	1,000	395.26	20	1.86	13.26	11,874,163	1032.10	84,716	99.29
12:10	120	11700	1.8	107	29.92	100	31.64	1,000	56.74	1,000	246.78	20	1.34	7.95	4,608,307	557.98	58,033	98.74
12:15	125	11900	1	105	29.94	100	27.36	1,000	58.09	1,000	105.41	20	0.7	5.31	2,663,034	624.45	66,491	97.50
12:20	130	12700	2	102	29.94	100	48.70	1,000	67.66	1,000	478.99	20	2.28	21.40	19,108,611	1349.08	167,314	99.12
12:25	135	13800	1.5	100	29.94	100	47.67	1,000	65.50	1,000	377.29	20	2.48	29.50	25,775,224	1682.45	201,997	99.22
12:30	140	14700	1.5	105	29.94	100	43.86	1,000	5.53	1,000	278.9	20	4.43	23.92	19,232,221	710.61	7,203	99.96
12:35	145	14900	1.5	105	29.94	100	36.24	1,000	90.60	1,000	262.44	20	1.53	5.32	3,531,792	372.10	61,795	98.25
12:40	150	14900	0.5	108	29.94													
12:45	155	14900	0.1	108	29.94													
12:50	160	14900	0.1	108	29.94													
12:55	165	14900	0.1	108	29.94													
13:00	170	14900	0.1	108	29.94													
13:05	175	14900	0.1	115	29.94													
13:10	180	14900	0.1	117	29.94													
13:15	185	15600	1	103	29.94	100	42.67	1,000	40.72	1,000	328.05	20	2.3	18.65	14,587,224	1031.28	76,974	99.47
13:20	190	16000	1	104	29.94	100	51.90	1,000	36.38	1,000	278.66	20	2.12	10.64	10,119,678	778.03	51,882	99.49

VCU EMISSION CALCULATIONS

COMPANY: VECENEREGY
FACILITY: VAPOR COMBUSTION UNIT
DATE: 09/14/11

CLOCK TIME	TIME (min)	METER RDG. (cf) #1	STATIC PRESSURE ("H2O)	METER TEMP. (deg f)	BAROM. PRESSURE ("Hg)	INLET VOC (AS PROPANE) INSTRU. SCALE (%)	INLET VOC (AS PROPANE) CONC. (%)	OUTLET VOC (AS PROPANE) INSTRU. SCALE (PPM)	OUTLET VOC (AS PROPANE) CONC. (PPM)	CARBON MONOXIDE INSTRU. SCALE (PPM)	CARBON MONOXIDE CONC. (PPM)	CARBON DIOXIDE INSTRU. SCALE (%)	CARBON DIOXIDE CONC. (%)	INLET GAS VOLUME (M3)*	INLET MASS (mg)	OUTLET GAS VOLUME (M3)*	OUTLET MASS (mg)	FLARE CONTROL EFF. (%)
13:25	195	16300	1.2	106	29.94	100	43.21	1,000	87.95	1,000	229.4	20	1.45	7.95	6,299,392	701.68	113,120	98.20
13:30	200	16700	2.5	102	29.94	100	13.78	1,000	88.47	1,000	226.46	20	1.54	10.72	2,706,533	284.10	46,071	98.30
13:35	205	16700	2	111	29.94													
13:40	210	17000	1	109	29.94	100	7.52	1,000	84.69	1,000	240.79	20	1.59	7.91	1,090,452	110.89	17,214	98.42
13:45	215	17500	2	103	29.94	100	25.45	1,000	52.06	1,000	349.05	20	2.18	13.35	6,228,911	463.28	44,209	99.29
13:50	220	18000	0.5	104	29.94	100	48.84	1,000	92.43	1,000	248.93	20	1.6	13.28	11,890,453	1199.33	203,196	98.29
13:55	225	18000	0.1	112	29.94													
14:00	230	18000	1	119	29.94													
14:05	235	18700	0	102	29.94	100	45.62	1,000	30.27	1,000	246.38	20	2.93	18.64	15,585,692	869.49	48,244	99.69
14:10	240	19200	0.1	107	29.94	100	49.03	1,000	62.60	1,000	312.8	20	1.83	13.20	11,860,086	1049.21	120,392	98.98
14:15	245	19600	2	103	29.91	100	47.65	1,000	54.60	1,000	221.47	20	1.63	10.67	9,321,423	931.08	93,184	99.00
14:20	250	20000	1	103	29.91	100	35.14	1,000	70.46	1,000	295.49	20	1.96	10.65	6,856,668	566.57	73,175	98.93
14:25	255	20100	0.1	109	29.91	100	41.64	1,000	53.49	1,000	115.77	20	0.81	2.63	2,005,543	406.43	39,849	98.01
14:30	260	20600	1.5	102	29.91	100	47.47	1,000	77.94	1,000	288.55	20	1.94	13.35	11,613,998	968.70	138,392	98.81
14:35	265	21100	2.6	102	29.91	100	53.52	1,000	68.97	1,000	383.63	20	2.3	13.38	13,129,626	922.64	116,642	99.11
14:40	270	21700	1	101	29.91	100	54.42	1,000	51.44	1,000	348.66	20	2.39	16.03	15,987,038	1085.57	102,357	99.36
14:45	275	22400	0.8	101	29.91	100	50.60	1,000	48.91	1,000	429.33	20	2.48	18.69	17,332,539	1131.26	101,420	99.41
14:50	280	22500	0.1	107	29.91	100	49.25	1,000	42.80	1,000	235.34	20	1.42	2.64	2,380,381	273.13	21,428	99.10
14:55	285	22500	0.1	112	29.91													
15:00	290	22500	0.1	114	29.91													
15:05	295	22500	0.1	114	29.91													
15:10	300	22500	0.1	114	29.91													
15:15	305	22500	0.1	113	29.91													
15:20	310	22500	0.1	113	29.91													
15:25	315	22500	0.1	113	29.91													
15:30	320	22500	0.1	113	29.91													
15:35	325	22500	0.1	113	29.91													
15:40	330	23000	2.1	93	29.91	100	41.80	1,000	23.24	1,000	22.27	20	0.24	13.58	10,409,429	7772.26	331,090	96.82
15:45	335	23800	1.8	93	29.91	100	23.73	1,000	47.99	1,000	295.54	20	3.68	21.72	9,445,747	418.51	36,814	99.61
15:50	340	24700	1	93	29.91	100	37.78	1,000	1.99	1,000	252.74	20	4.17	24.39	16,890,092	663.57	2,420	99.99
15:55	345	25000	0.1	93	29.91	100	52.76	1,000	67.06	1,000	315.45	20	1.79	8.11	7,843,609	708.59	87,101	98.89
16:00	350	25300	1.5	92	29.91	100	39.78	1,000	50.54	1,000	107.58	20	0.96	8.15	5,945,690	1017.98	94,306	98.41
16:05	355	26200	2.8	93	29.91	100	54.88	1,000	11.77	1,000	381.07	20	3.6	24.49	24,641,394	1116.66	24,091	99.90
16:10	360	27100	0.5	92	29.91	100	54.37	1,000	5.81	1,000	315.94	20	3.81	24.40	24,318,134	1043.72	11,115	99.95
TOTAL		27100												727.818	537,331,497	56,077	4,044,470	
AVERAGE			0.9	104	29.92		39.92		48.44		259.50		2.14					98.96

* At standard conditions of 68 deg F and 29.92in. Hg)

COPY

CALCULATIONS AND EQUATIONS

Inlet Gas Volume

$$V_{is} = (V_f - V_i) \times (Y_m) \times [P_{bar} + (P_g/13.6)]/P_{std} \times (T_{std}/T_m)]$$

Where:

V_{is} =	Inlet Flow, ft3 at standard conditions
Y_m =	Turbine meter correction factor
V_f =	Final meter reading (ft3)
V_i =	Initial Meter Volume (ft3)
P_{bar} =	Barometric pressure (in, Hg)
P_g =	Static pressure in duct (in. Hg)
P_{std} =	Standard Pressure, 29.92 in. Hg
T_{std} =	Absolute standard temperature, 528 Deg Rankin
T_m =	Absolute meter pressure (Deg Rankin)

Outlet Gas Volume

$$V_{es} = V_{is} \times \{(K_i \times (HC_i)/[(K_e \times (HC_e) + [(CO_2)_e - (CO_2)_a] + CO_a)]\}$$

Where:

CO_e =	Mean carbon monoxide concentration in system exhaust, ppm.
$(CO_2)_a$ =	Ambient carbon dioxide concentration, ppm (if not measured during the test period, may be assumed to equal 300 ppm).
$(CO_2)_e$ =	Mean carbon dioxide concentration in system exhaust, ppm.
HC_e =	Mean organic concentration in system exhaust as defined by the calibration gas, ppm.
HC_i =	Mean organic concentration in system inlet as defined by the calibration gas, ppm.
K_e =	Hydrocarbon calibration gas factor for the exhaust hydrocarbon analyzer, unitless [equal to the number of carbon atoms per molecule of the gas used to calibrate the analyzer (2 for ethane, 3 for propane, etc.)].
K_i =	Hydrocarbon calibration gas factor for the inlet hydrocarbon analyzer, unitless.
V_{es} =	Exhaust gas volume, m3.
V_{is} =	Inlet gas volume, m3.
Q_{es} =	Exhaust gas volume flow rate, m3/min.
Q_{is} =	Inlet gas volume flow rate, m3/min.
θ =	Sample run time, min.