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ENGINEERING AND COMPLIANCE DIVISION ***Energy & Waste Management Permitting***	A/N 577163	Date 2-12-16
EXXON MOBIL OIL CORP	Processed by GS03	Checked by TGL/COT

EVALUATION FOR A
PERMIT TO CONSTRUCT A SOIL VAPOR
EXTRACTION SYSTEM WITH A COMPRESSIVE THERMAL
OXIDIZER

COMPANY NAME
ExxonMobil Oil Corp

Facility ID# 800091

MAILING ADDRESS
12851 E. 166th Street
Cerritos, CA 90703

EQUIPMENT ADDRESS
1477 North Jefferson Street
Anaheim, CA 92807

EQUIPMENT DESCRIPTION
Application Number 577163

SOIL VAPOR EXTRACTION AND TREATMENT SYSTEM, RSI MODEL NO. V3, FOR NON-HALOGENATED HYDROCARBON IN SITU SOIL REMEDIATION ONLY, CONSISTING OF:

1. VAPOR EXTRACTION WELL(S).
2. VACUUM EXTRACTION FLEXIBLE HOSE WITH AIR FILTER, INDUCED SUCTION BY ENGINE INTAKE, MAXIMUM FLOW RATE 120 SCFM.
3. VAPOR LIQUID SEPERATOR.
4. INTERNAL COMBUSTION ENGINE, RSI (MODIFIED) MODEL NO. LSG-875, SPARK IGNITION, FOUR STROKE, RICH BURN, WITH 8 CYLINDERS, NATURALLY ASPIRATED, 49 BHP, COMBINED WITH CAR SOUND 3-WAY CATALYTIC CONVERTOR MODEL NO.95000, AND A COMPUTERIZED RSI OXYGEN (AIR) TO FUEL RATIO SENSING AND CONTROL UNIT, MODEL PHOENIX 1000.
5. EXHAUST STACK, 3" I.D. X 11.5' H., WITHOUT RAIN CAP.

BACKGROUND
Application No. 577163 was filed on July 28, 2016 for new construction of a soil vapor extraction (SVE) system consisting of an internal combustion engine (ICE) serving as a compressive thermal oxidizer. This equipment will be used for the treatment of non-halogenated compounds. The equipment location is 1477 North Jefferson Street, Anaheim, CA (Facility ID 800091). This is a Title V facility. Currently the loading racks and most of the facility are not operating. The purpose of the equipment is to extract and treat petroleum hydrocarbon vapors from the soil around one of the above ground gasoline storage tanks. ExxonMobil operated the equipment at the site between December 2013 and November 2014 under Remediation Services Int'l various locations Permit F59322. ExxonMobil is now applying for a fixed location permit as the site remediation was not able to be completed within the allowable 12 month period under a various locations permit. The use of the equipment is temporary and it is anticipated to be used for up to one year from the date of the permit issuance.

The equipment will be operated 24 hours per day, 7 days per week, and 52 weeks per year. The applicant has indicated that there is a school located at 857 feet from the equipment, therefore a Rule 212 public notice will be required.

PROCESS DESCRIPTION

Soil vapor extraction (SVE) technology is used to remove the residual hydrocarbons in soil. The process involves applying a vacuum to the subsurface soil so that the vapors are drawn to the extraction wells. The vapors are then pulled via hoses to the internal combustion engine (ICE) for treatment. Rather than using an extraction blower the vacuum in this process is created by the engines intake. The internal combustion engine does not supply mechanical or electrical power at the site, therefore it is viewed as a compressive thermal oxidizer.

The SVE system consists of an RSI Model V3 soil remediation system with an RSI Model # LSG-875, 8 cylinder 460 cubic inch engine. The engine is a modified Ford engine that has had the valve system components, camshaft, pistons, and induction system modified to meet the needs of the remediation process. The engine changes have resulted in a horsepower drop from the Ford factory continuous gross power rating of 128 hp at 2800 rpm to the RSI nameplate of 49 bhp. The engine exhaust is coupled with a Car Sound 3-way catalytic convertor. Additionally the engine is equipped with an oxygen sensor in the exhaust stream which feeds back to a computerized air to fuel sensing/control unit. Exhaust temperature is measured upstream and downstream of the catalytic convertor. The unit is fired fully on supplemental propane fuel until the vapor concentration being pulled from the extraction wells is high enough to support engine combustion. At this point the propane fuel is automatically decreased by the control unit and only used as necessary to ensure a proper stoichiometric air to fuel ratio required for complete combustion.

RSI has operated these units within the SCAQMD for a number of years. Records show Permits to Operate as far back as 1992. After this period they were issued certified equipment permits over the next 10 plus years. The equipment manufacturer then began filing for PC/PO various locations permits at that point and still has numerous active permits in this format. The manufacturer states that a VOC control efficiency of 99.9% may be expected from this equipment. The ICE controls VOC by 99%, with the catalytic convertor providing additional VOC control of 94%. A source test from 2009 has been included with the application package where an overall 99.9% VOC control efficiency was achieved.

The predominant rules applicable to this project are Rules 1147, 1166, 1303, 1401, and Regulation XXX.

NOV/NC HISTORY

A review of compliance records did not show any Notices to Comply (NC), or complaints for this facility (ID 800091) in the past two years. NOV P37238 was issued on 10-10-14 for violating Rule 3002(c)(1) and 463(d)(2). A gasoline water mixture was being routed to Tank 150X14 following a pipeline hydrotest. The tank overflowed resulting in an estimated 133 barrels of gasoline being spilled in to a containment area. Root cause was a improper use of the gauging system, as the gauging procedure was written solely for the use of gasoline, and did not account for the density differences in the gasoline/water mixture. NOV P59384 was issued on 9-29-15 under Rule 462(d)(1)(b), Rule 221(b), and Rule 3002(c)(1). This related to a contractor leaving the CMS unit on manual calibration mode following a CGA test on 2-5-14. This resulted in no 15 minute averages being available for 10 hours and 13 minutes. Additionally on 11-17-15 a contractor was again onsite to perform a CGA test. The CMS was left on span mode; and no continuous readings were recorded for approximately 15 hours. These issues were self-reported by the facility and properly addressed when discovered. The compliance database shows the follow up status as in compliance for these NOV's.

PROCESS PARAMETERS & ASSOCIATED EMISSIONS

Calculations are based on equipment specifications and data provided in the application package and are summarized below.

Combustion Calculations:

$$\text{Combustion Fuel Usage (gal/hr)} = \frac{\text{Max Burner Rating (BTU/hr)}}{\text{Fuel Heating Value (BTU/gal)}}$$

$$\text{Actual Flow Rate (acfm)} = \text{Total Flow Rate(scfm)} \times \frac{\text{(Exhaust Temp (°F) + 460) (°R)}}{\text{(Standard Temp (°F) + 460) (°R)}}$$

Data:	
Oxidizer Inlet Flow Rate	120 scfm
Maximum Oxidizer Rating	800,000 BTU/hr
Propane Gas Heating Value	91,500 BTU/gallon
Maximum Combustion Fuel Usage (0% process gas)	8.74 gallons/hr
Average Combustion Fuel Usage	5.50 gallons/hr
VOC Control Efficiency of Engine	99.0 %
VOC Outlet Concentration from Process Gas @ max airflow	13.9 ppmv
VOC Inlet Concentration from Process Gas @ max airflow	1390 ppmv
VOC Molecular Weight (as hexane)	86.2 lb/lb-mole
Minimum Stack Temperature	625 °F
Maximum Stack Temperature	1300 °F
Standard Conditions:	
Temperature, T	60 °F
Ideal Gas Constant, R	0.73 (ft3 atm)/(°R lb-mol)
Pressure, P	1 atm
Operating Schedule	24 hr/day
	365 days/yr
Minimum Stack Outlet Flow Rate	250.4 acfm
Maximum Stack Outlet Flow Rate	406.2 acfm

This project is unique in the sense that based on the equipment there are numerous parameters that can and are automatically adjusted based upon the concentrations of VOC being extracted from the vapor wells. These

parameters include the supplemental propane fuel usage, the air flow being pulled from the extraction wells, the engine RPM, and even the Btu/hr rating of the equipment based upon the hydraulic load placed on the crankshaft. Due to the fact that this is a Title V facility the "Periodic Monitoring Guidelines for Title V Facilities" as well as 40 CFR 64 could be applicable if pre-control device emissions from all sources venting to a single stack are greater than or equal to the following thresholds: VOC 10 tons/yr, NOx (as NO2) 10 tons/yr, SOx (as SO2) 100 tons/yr, CO 50 tons/yr, PM 70 tons/yr. Based on the unit's ability to handle very high VOC inlet concentrations it appeared if allowed to operate at maximum ratings and maximum VOC inlet concentrations that the unit would have a pre control potential to emit of greater than 10 tons/year of VOCs. After discussing with the applicant they opted to take limiting conditions to stay below the 10 ton/yr threshold and avoid the need for submission of a CAM plan according to 40 CFR 64. The company would prefer to take an R1 cap as the limiting condition, therefore a condition outlining how this needs to be calculated will be placed on the permit. The process gas R1 emissions of 10 tons per year will be divided evenly over 12 months and this will be used for both the R1 emissions. The PTE for other pollutants is outlined for maximum supplemental fuel (0% process gas), and maximum process gas (0% supplemental fuel).

R_1 Propane Combustion Emissions @ Max Combustion Fuel Usage:					
	VOC	NOx	SOx	CO	PM/PM_{10}
Emission Factor* (lb/1000 gal)	83.0	139.0	0.35	129.0	5.0
Fuel Usage (gallons/hr)	8.74	8.74	8.74	8.74	8.74
Fuel Usage (gallons/day)	209.8	209.8	209.8	209.8	209.8
(lb/hr)	0.73	1.22	0.00	1.13	0.04
(lb/day)	17.42	29.17	0.07	27.07	1.05
(lb/yr)	6357.0	10646.0	26.8	9880.1	383.0
(tons/yr)	3.2	5.3	0.0	4.9	0.2

*Emission Factors from form B2/B2U

R_2 Propane Combustion Emissions @ Max Combustion Fuel Usage:					
	VOC	NOx	SOx	CO	PM/PM_{10}
Catalytic Convertor Control Efficiency	94.0%	81.5%	0.0%	94.3%	0.0%
(lb/hr)	0.04	0.22	0.00	0.06	0.04
(lb/day)	1.04	5.40	0.07	1.54	1.05
(lb/yr)	381.4	1969.5	26.8	563.2	383.0

*Emission Factors from form B2/B2U

VOC Calculations (fired on process gas @ max airflow):

Uncontrolled (Inlet) Emissions, R_1 (lb/hr):

$$R_1 = \frac{\text{concentration (ppmv)}}{1{,}000{,}000} \times \text{airflow (scf/min)} \times \frac{\text{molecular weight (lb/lb-mol)}}{\text{molar volume (scf/lb-mol)}} \times \frac{60\ \text{min}}{\text{hr}}$$

$$= \frac{1390\ \text{ppmv}}{1{,}000{,}000} \times 120.0\ \text{scfm} \times \frac{86.2\ \text{(lb/lb-mol)}}{379.6\ \frac{\text{scf}}{\text{lb-mol}}} \times \frac{60\ \text{min}}{\text{hr}}$$

$$= 2.27\ \frac{\text{lb}}{\text{hr}} = 54.54\ \frac{\text{lb}}{\text{day}} = 9.95\ \frac{\text{tons}}{\text{yr}}$$

Controlled (Outlet) Emissions, R_2 (lb/hr):

$$R_2 = \frac{\text{concentration (ppmv)}}{1{,}000{,}000} \times \text{airflow (scf/min)} \times \frac{\text{molecular weight (lb/lb-mol)}}{\text{molar volume (scf/lb-mol)}} \times \frac{60\ \text{min}}{\text{hr}}$$

$$= \frac{13.9\ \text{ppmv}}{1{,}000{,}000} \times 120.0\ \text{scfm} \times \frac{86.2\ \text{(lb/lb-mol)}}{379.6\ \frac{\text{scf}}{\text{lb-mol}}} \times \frac{60\ \text{min}}{\text{hr}}$$

$$= 0.02\ \frac{lb}{hr} = 0.55\ \frac{lb}{day} = 0.10\ \frac{tons}{yr}$$

Actual calculated emissions will be a combination of values between these maximums. Manufacturer has stated that when well concentrations are in the 1500 ppm range an average of 4 gal/hr of supplemental fuel will be required based upon the reduced hydraulic load and reduced airflow. See below for reference.

Total VOC Emissions = Propane Emissions + Process Gas Emissions

R_1 Propane Combustion Emissions @ Average Combustion Fuel Usage:					
	VOC	NOx	SOx	CO	PM/PM_{10}
Emission Factor* (lb/1000 gal)	83.0	139.0	0.35	129.0	5.0
Fuel Usage (gallons/hr)	4.00	4.00	4.00	4.00	4.00
Fuel Usage (gallons/day)	96.0	96.0	96.0	96.0	96.0
(lb/hr)	0.33	0.56	0.00	0.52	0.02
(lb/day)	7.97	13.34	0.03	12.38	0.48
(lb/yr)	2908.3	4870.6	12.3	4520.2	175.2

*Emission Factors from form B2/B2U

R_2 Propane Combustion Emissions @ Average Combustion Fuel Usage:					
	VOC	NOx	SOx	CO	PM/PM_{10}
Catalytic Convertor Control Efficiency	94.0%	81.5%	0.0%	94.3%	0.0%
(lb/hr)	0.02	0.10	0.00	0.03	0.02
(lb/day)	0.48	2.47	0.03	0.71	0.48
(lb/yr)	174.5	901.1	12.3	257.6	175.2

*Emission Factors from form B2/B2U

VOC Emissions Summary @ max airflow and average combustion fuel usage:			
	lb/hr	lb/day	tons/yr
Uncontrolled Propane, R_1	0.33	7.97	1.45
Controlled Propane, R_2	0.02	0.48	0.09
Uncontrolled Process Gas, R_1	2.27	54.54	9.95
Controlled Process Gas, R_2	0.02	0.55	0.10
Total VOC Emissions, R_1	**2.60**	**62.51**	**11.41**
Total VOC Emissions, R_2	**0.04**	**1.02**	**0.19**

VOC, NOx, CO, and PM/PM10 emissions exceed 1 lb/day in at least one of the emissions scenarios calculated above, therefore BACT/LAER is required. BACT/LAER for a Stationary, Non-Emergency, I.C. Engine < 2064 bhp is outlined and calculated for each applicable pollutant below. It was discussed and determined that demonstration of BACT/LAER limits from the required source test will be while the unit is run on supplemental propane fuel only.

BACT for VOC = 0.15 grams/bhp-hr
R2 = (0.15 grams/bhp-hr) x (49 bhp) x (1lb/453.6 grams) = 0.02 lbs/hr
Source Test (8/12/2009) maximum emission (of LSG-875 ICE A/N 482586):
(0.012 grams/bhp-hr) x (49 bhp) x (1 lb/453.6 grams) = 0.0013 lbs/hr (BACT compliance expected)

BACT for NOx = 0.15 grams/bhp-hr
R2 = (0.15 grams/bhp-hr) x (49 bhp) x (1lb/453.6 grams) = 0.02 lbs/hr **(NSR R2 entry)**
Source Test (8/12/2009) maximum emission (of LSG-875 ICE A/N 482586):
(0.454 grams/bhp-hr) x (49 bhp) x (1 lb/453.6 grams) = 0.049 lbs/hr (BACT compliance expected)

BACT for CO = 0.60 grams/bhp-hr
R2 = (0.60 grams/bhp-hr) x (49 bhp) x (1lb/453.6 grams) = 0.06 lbs/hr **(NSR R2 entry)**
Source Test (8/12/2009) maximum emission (of LSG-875 ICE A/N 482586):
(0.466 grams/bhp-hr) x (49 bhp) x (1 lb/453.6 grams) = 0.050 lbs/hr (BACT compliance expected)

BACT for PM10 is Compliance with Clean Fuel Policy.
LPG is a clean fuel and the burning of landfill, digester, refinery and other by-product gases is not subject to the clean fuels requirement as they are considered industry.

NSR VOC R1 entries will be based upon the combination of the emissions from the supplemental fuel at 4gal/hr plus the maximum allowable vapor well emissions of less than 10 tons per year, all other criteria pollutants will be based upon emission factor calculations. R2 emissions for NOx and CO will be based on the BACT/LAER emission rates as they are lower than the calculated emissions. PM/PM10 and SOx emissions will be based on the worst case calculated emissions. VOC emissions are subject to offsets, the company has expressed that they do not want to provide any offsets. Based upon this the R2 limit will be calculated as follows:

VOC: (0.49 lbs/day) / 1.2 = 0.41 lbs/day x (1 day/24 hours) = 0.017 lbs/hr **(NSR R2 entry)**

This equipment is exempt from modeling and offset requirements for NOX, CO, and PM/PM10, per Rule 1304(a)(5) because they are a result of an air pollution control strategy. Modeling is not required for SOx or VOC per 1303 Appendix A.

Emissions Summary					
	VOC	CO	NOx	SOx	PM/PM10
Un-Controlled, R1 (lbs/hr)	2.60	1.13	1.22	0.003	0.04
R2 Emission Limit Basis	Offsets	BACT	BACT	Calculated	Calculated
Controlled, R2 (lbs/hr)	0.017	0.06	0.02	0.003	0.04

TOXICS EMISSIONS

A 1401 Risk Assessment was performed for toxic compounds. Outlet emissions are based upon the emission factors found in the AER guidance document. Factors used are those found in Table B-3: Default EF for LPG, Butane, or Propane Combustion for Stationary and Portable Internal Combustion Engines (4 Stroke Rich Burn), and Table B-4: Default EF for Gasoline Combustion for Stationary and Portable Internal Combustion Engines (Catalyst Portable to be conservative). The larger emission factor was used for either propane or gasoline to be conservative. The maximum fuel flow rate for propane was selected to be conservative in both cases and decreased slightly as required to keep the MICR below 1 in one million. Input parameters to the 1401 spreadsheet are as follows:

Nearest Residential Receptor Distance:	670 ft. (204.2 m)
Nearest Commercial Receptor Distance:	120 ft. (36.57 m)
Notable Receptors: School	857 ft. (261.21 m well represented by residential receptor)
Stack Height:	11.5 ft.
Stack ID:	3 in.
Rain Cap Present:	NO
Propane HHV:	2590 BTU/ft^3
Maximum Oxidizer Rating:	800,000 BTU/hr
Maximum Fuel Flow Rate (calculated):	308.9 ft^3/hr

$$ppmv = \frac{R_2\ (lbs/hr) \times molar\ volume\ (scf/lb\text{-}mol) \times 1{,}000{,}000}{Total\ Flow\ Rate\ (scfm) \times molecular\ weight\ (lb/lb\text{-}mol) \times (60\ min/hr)}$$

SVE Toxics Calculations Summary:							
Max Fuel Usage (gal/hr)	8.74	Emission Factor	Molecular Weight	R_1 Emissions	R_2 Emissions	R_2 Concentration	Carcinogenic
Compound		(lb/1000 gal)	(lb/lb-mol)	(lb/hr)	(lb/hr)	(ppmv)	√
Benzene**		1.5726	78.11	0.013750	1.37E-03	0.93	√
1,3-Butadiene**		0.324	54.09	0.002833	2.83E-04	0.28	√
Carbon Tetrachloride (Tetrachloromethane)*		0.0016	153.24	0.000014	1.40E-06	0.0005	√
Ethylene Dibromide (1,2-Dibromoethane)*		0.00193	187.88	0.000017	1.69E-06	0.0005	√
Ethylene Dichloride (1,2-Dichloroethane)*		0.00102	98.96	0.000009	8.92E-07	0.0005	√
Formaldehyde*		1.86	30.03	0.016262	1.63E-03	2.86	√
Methylene Chloride (Dichloromethane)*		0.00373	84.94	0.000033	3.26E-06	0.002	√
Naphthalene**		0.0295	128.1732	0.000258	2.58E-05	0.011	√
Vinyl Chloride (Chloroethylene)*		0.00065	62.5	0.000006	5.68E-07	0.0005	√
1,1,2,2-Tetrachloroethane*		0.00229	167.86	0.000020	2.00E-06	0.0006	√
1,1,2-Trichloroethane (Vinyl Trichloride)*		0.00138	133.42	0.000012	1.21E-06	0.0005	√
Acetaldehyde*		0.252	44.06	0.002203	2.20E-04	0.26	√
Acrolein*		0.238	56.06	0.002081	2.08E-04	0.20	
Ammonia*		0.3	17.03	0.002623	2.62E-04	0.81	
Chloroform*		0.00124	119.38	0.000011	1.08E-06	0.0005	√
Ethyl Benzene**		0.642	106.16	0.005613	5.61E-04	0.2788	√
n-Hexane**		0.9424	86.18	0.008240	8.24E-04	0.5041	
Methanol*		0.277	32.04	0.002422	2.42E-04	0.40	
Styrene**		0.0707	104.16	0.000618	6.18E-05	0.0313	
Toluene**		3.5046	92.13	0.030641	3.06E-03	1.75	
Xylenes (Mixed Isomers)**		2.1734	106.2	0.019002	1.90E-03	0.943	
Nickel**		0.0033	58.71	0.000029	2.89E-05	0.026	√
Chlorine**		0.455	70.906	0.003978	3.98E-04	0.296	
Copper**		0.0033	63.55	0.000029	2.89E-05	0.024	
Manganese**		0.0033	54.938	0.000029	2.89E-05	0.028	
Methyl Ethyl Ketone (MEK)**		0.0118	72.12	0.000103	1.03E-05	0.008	
Methyl Tertiary-Butyl Ether (MTBE)**		1.1544	88.15	0.010093	1.01E-03	0.604	√

** Emission Factors from AER Table B- Default EF for LPG, Butane, or Propane Combustion, Source: Stationary and Portable Internal Combustion Engines (4 stroke rich burn)

* Emission Factors from AER Table B-4 Default EF for Gasoline Combustion, Source: Stationary and Portable Internal Combustion Engines (catalyst portable)

A Tier III risk analysis was used since the exhaust stack height is below 14 feet. Tier III risk analysis was based on the outlet concentrations in the above table. An AERSCREEN model was used to determine the concentrations for the residential and commercial receptors. Because there is a wide range of temperatures which impact outlet flow rates, a model was run at the minimum outlet temperature as well as the maximum outlet temperature. Concentrations from the low temperature model were higher and therefore will be used in the 1401 risk assessment to be conservative. The MICR is 4.17×10^{-7} for a residential receptor, and 1.22×10^{-7} for a commercial receptor. HIA and HIC are both less than 1.

A large number of trace carcinogenic contaminants in the table above are due to the combustion of propane. The well inlet report showed that soil contains primarily BTEX. Based upon this the contaminants which impact the MICR will be placed on the permit with a concentration limit, and the others will be grouped in a "Trace Contaminants" group with a corresponding concentration based upon their summation. A second 1401 analysis was run for this case with the trace contaminants being modeled as Vinyl Chloride, this was selected as the surrogate because it has the highest cancer potential out of all of the remaining toxics. For PPM concentration limit the largest molecular weight of the unlisted compounds was selected as this will result in the lowest concentration limit to be conservative. Also the R1 input was bumped up slightly to give some flexibility while remaining below the required MICR requirement. Based upon R1 = 0.01 lbs/hr, and a molecular weight of 187.88 lb/lb-mole (results in the most conservative outlet concentration) this results in an allowable outlet concentration of 0.28 ppm, see calculation below for reference. A condition limiting the cancer potential of trace contaminants to 0.27 $(mg/kg\text{-}day)^{-1}$ will also be added. With these inputs the MICR is 7.58×10^{-7} for a residential receptor, and 2.23×10^{-7} for a commercial receptor. HIA and HIC are both less than 1.

R1 (lbs/hr) = 0.01 lbs/hr
R2 (lbs/hr) = 0.01 lbs/hr x (1-0.9) = 0.001 lbs/hr – Based on 90% combustion control efficiency of the engine.
R2 (ppmv) = [(0.001 lbs/hr) x (379.6 scf/lb-mol) x (1,000,000)] / [(120 scfm) x (187.88lb/lb-mol) x (60 min/hr)]
= [379,600] /[1,352,736] = 0.28 ppmv

RULES EVALUATION

Rule 212
There is a school within 1000 feet of the remediation unit, therefore a public notice is required.

Rule 401
Visible emissions are not expected from the proper operation of this equipment.

Rule 402
This facility is in a mixed use commercial/residential area with remote neighboring businesses and residences. With proper operation no nuisance complaints are expected.

Rule 404
No violations of particulate matter limits as outlined in Rule 404 are expected, see calculation below.
(0.04 lbs/hr PM) x (1 hr/60 min) x (1 min/120 dscf) x (7000 grains/lb) = 0.039 grains/ft^3 < 0.196 grains/ft^3 allowed per Table 404(a) for a flow rate less than 883 cfm.

Rule 407
CO emissions from this equipment are required to be 2000 ppm or less. Calculated emissions based on BACT limit are within allowable range and will be enforced by permit limit. Compliance is expected.

Rule 1110.2
The ICE is exempt from this Rule based on the engine rating of 49 bhp per 1110.2(b).

Rule 1147
The ICE SVE is exempt from per 1147(g)(3)(E), since the fuel is mixed with air toxics and VOC's prior to incineration.

Rule 1166
The treatment of VOC contaminated soil by this equipment is expected to comply with this rule. The Compressive Thermal Oxidizer SVE system to treat VOC contaminated soil will result in Best Available Control Technology (BACT) per section (c)(4)(B).

Reg. XIII

BACT – Rule 1303(a)
Calculated VOC, CO, NOx, and PM/PM10 emissions are greater than 1 lb/day. BACT limits will be placed on permit. Compliance is expected.

Modeling – 1303(b)(1)
Modeling for VOCs and SOx is not required per Rule 1303 Appendix A. Modeling for NOx, CO, and PM is exempt per Rule 1304(a)(5).

Offsets – 1304(d)(1)(a)
Facility VOC emissions are greater than 4 tons/year; facility has requested a cap to stay below the requirement for VOC offsets. Offsets will not be required for other pollutants as they are a result of an air pollution control strategy per Rule 1304(a)(5).

General – Rule 1303(b)(4)
The facility is in compliance with all applicable Rules and Regulations of the District.

Statewide Compliance – Rule 1303(b)(5)(B)
A statewide compliance letter is not required since the company has agreed to take a cap on R2 VOC emissions, thereby not requiring any emissions offsets.

Rule 1401
MICR is less than 1 in one million and all Hazard Indices are less than 1.0. Permit unit complies.

Regulation XVII – Prevention of Significant Deterioration (PSD)

PSD Analysis – Rule 1703
1703(a)(1) - Each permit unit complies with all applicable rules and regulations of the District.
1703(a)(2) - Each permit unit is constructed with BACT for each criteria air contaminant for which there is a net emission increase.
1703(a)(3) - Criteria pollutant increases are less than the significant emission increase thresholds outlined in Rule 1702(s). Additionally the facility is exempt from the PSD Analysis requirements of Rule 1703(a)(3) for attainment air contaminants because the modification is air pollution control equipment which is to be constructed solely to reduce the issuance of air pollutants as outlined in Rule 1704(a)(2).

PSD for Greenhouse Gasses – Rule 1714
This permit unit will emit 1080.1 tons/yr of CO2 (see attached calculation), emissions from this unit are below the EPA GHG threshold PTE of 100,000 tons/year. This threshold is intended to be a plant-wide applicability limitation, this is the only combustion equipment at this facility so it complies with this limit.. Additionally it should be noted that a PSD classification solely based on GHGs is not required due to the June 23, 2014 U.S. Supreme Court Decision in *Utility Air Regulatory Group v. EPA, 134 S.Ct.2427 (2014)* and the April 10, 2015 D.C. Circuit amended judgement in *Coalition for Responsible Regulation, Inc. v. Environmental Protection Agency, Nos. 09-1322, 10-073, 10-1092, and 10-1167*, which among other things, vacated the PSD and Title V regulations under review in that case to the extent that they require a stationary source to obtain a PSD or Title V permit solely because the source emits or has the potential to emit GHGs above the applicable major source thresholds. See attached EPA documentation and Memorandum with Subject: Next steps and Preliminary Views on the Application of Clean Air Act Permitting Programs to Greenhouse Gasses Following the Supreme Court's Decision in *Utility Air Regulatory Group v. Environmental Protection Agency* for details.

Regulation XX
This facility is not a RECLAIM facility.

Regulation XXX
This is a Title V major source facility. The new ICE SVE is considered a de minimis significant permit revision because emissions increases are less than 30 lbs/day for VOC, PM-10, and HAP, and less than 40 lbs/day for NOx.

There are no new NSPS or NESHAP requirements for the project, and no significant changes to monitoring, reporting, and recordkeeping requirements. No evaluation for MACT or RACT were required.

40CFR 60 Subpart JJJJ

This ICE does not use reciprocating motion to convert heat energy in to mechanical work (this will be enforced by permit condition), therefore this is not considered a stationary engine and Subpart JJJJ does not apply to this ICE. This engine uses chemical energy to combust incoming soil gas and fuel to control soil gas emissions.

40CFR 63 Subpart GGGGG

This section does not apply since the ExxonMobil Atwood Terminal is not a major source of HAP's.

40CFR 63 Subpart ZZZZ

This ICE does not use reciprocating motion to convert heat energy in to mechanical work (this will be enforced by permit condition), therefore Subpart ZZZZ does not apply to this ICE. This engine uses chemical energy to combust incoming soil gas and fuel to control soil gas emissions.

40CFR 64

ExxonMobil, Atwood Terminal is a Major Facility. Uncontrolled VOC inlet emissions for this remediation system will be limited to less than 10 tons per year, therefore a Compliance Assurance Monitoring (CAM) plan is not required for the compressive thermal oxidizer system.

CEQA

The CEQA Applicability Form (400-CEQA) indicates that the project does not have any potential impacts that require the preparation of a CEQA document.

RECOMMENDATIONS

Operation of the Compressive Thermal Oxidizer expected to comply with all SCAQMD and federal rules and regulations. Issuance of Permit to Construct is recommended subject to the attached conditions after completion of the 30 day public notices, and EPA 45 day review period for the Title V permit.