

ExxonMobil Production Comp.
P.O. Box 4358
Houston, Texas 77210-4358

June 9, 2004

ExxonMobil
Production

Standard Exemption Registration
Kelsey Compressor Station
TNRCC Account ID BP-0005-O
Brooks County

Texas Commission of Environmental Quality
Permits Administrative Review Section
Registration Review and Reporting Division, MC 161
12100 Park 35 Circle
Building F, First Floor Room 1206
Austin, Texas 78753

RECEIVED

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Air & Waste Applications Team


Dear Sir:

Exxon Mobil Corporation respectfully registers three grandfathered compressor engines located at the Kelsey Compressor Station in Brooks County, Texas. Enclosed for your review is the PI-7 form, the Core Data form, along with supporting documentation that all requirements of Standard Exemption 6 effective December 1, 1972 are being met.

In a TCEQ letter dated November 16, 2000, (copy of letter attached) the TCEQ stated that for grandfathered engine trains less than 5000 hp, an operator could seek authorization under the 1972 SE 6. A recent follow-up telephone conversation with TCEQ staff advises this guidance still valid. The remaining equipment is authorized by Permit by Rule 106.352 and a Standard Permit.

Please contact Irene Garcia at (281) 654-1129, if you require additional information or if you have any questions concerning this matter.

Yours truly,



Neil J. Ryan
Regulatory Compliance Supervisor

ITG
Attachment

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Kelsey Compressor Station Site

The Kelsey Compressor Station receives raw field gas from producing wells. The gas goes through inlet separators to remove any condensate in the gas. The liquids are collected in condensate tanks and pumped to the Central Tank Battery for sales. The produced gas goes through compression and dehydration and is then sent by pipeline to sales. A portion of the gas is used as gas lift and fuel. Truck loading/unloading of crude/condensate may occur at some time. Emission units at the Compressor Station consist of compressors (FINs: COMP1 thru COMP5, COMP7 and COMP9), generators (FINs: GEN3, and GEN5), fugitives (FIN: FUGITIVES), condensate tanks (FINs: TANKOIL1, TANKOIL2, TANKSLP1 and TANKSLPOF), gunbarrel (FIN: TANKGBL), glycol reboilers (FIN: DEHY-1 and FIN: DEHY-2), reboiler fireboxes (FIN: DH1FIREBOX and FIN: DH2FIREBOX), emergency vent (FIN: EV-1), and methanol tank (METHANOL). This revision includes an installation of a BTEX condenser to the dehydration system to control emissions. Some of these units have no applicable regulations and/or de minimus emissions, but are included in the process description and plot plan for clarity and are consistent with the TCEQ PSDB nomenclature. FINs: GEN3 and GEN5 are permanently shutdown.

MATERIAL BALANCE

This material balance table is used to quantify possible emissions of air contaminants and special emphasis should be placed on potential air contaminants, for example: If feed contains sulfur, show distribution to all products. Please relate each material (or group of materials) listed to its respective location in the process flow diagram by assigning point numbers (taken from the flow diagram) to each material.

LIST EVERY MATERIAL INVOLVED IN EACH OF THE FOLLOWING GROUPS	Point No. from Flow Diagram	Process Rate (lbs/hr orSCFM) standard conditions: 70°F 14.7 PSIA. Check appropriate column at right for each process.	Measurement	Estimation	Calculation
1. Raw Materials - Input Natural Gas Crude Oil Produced Water		12,222 SCFM 789 lbs/hr 11815 lbs/hr	X X X		
2. Fuels - Input Engines		558 Scfm	X	X	
3. Products & By-Products - Output Natural Gas Crude Oil		11664 SCFM 789 lbs/hr	X X		
4. Solid Wastes - Output N/A					
5. Liquid Wastes - Output Produced Waste		11815 lbs/hr	X		
6. Airborne Waste (Solid) - Output Particulate Matter (PM10)		1.8 lbs/hr			X
7. Airborne Wastes (Gaseous) - Output Volatile Organic Compounds Nitrogen Oxides Carbon Monoxide		18.6 lbs/hr 71.9 lbs/hr 13.2 lbs/hr			X X X

Kelsey Compressor Station Natural Gas Engine Emissions

The methodology to calculate natural gas engine emissions uses engine fuel consumption.

Fuel Usage

The baseline emissions are based on fuel usage for each specific unit.

Calculated Fuel Usage

$$Q_{ai} = \frac{BHP}{HV} * SFC * \frac{LD}{100} * \frac{RT}{100} * \frac{8760 \text{ hr}}{\text{year}} * \frac{kscf}{1000 \text{ scf}}$$

Where:

Q_{ai} = Calculated fuel usage, Kscf/yr

BHP = Brake Horsepower

SFC = Specific Fuel Consumption, BTU/BHP-Hr

HV = Gross Heating Value, BTU/scf

LD = Engine Loading, %

RT = Annual Run Time, %

A number of engines and other combustion units typically share a common fuel meter. Often the sum of the calculated values for each unit is less (or more) than the metered fuel volume due to factors such as how the units are loaded and their mechanical condition. To account for such differences, the metered fuel is allocated back to each unit as shown:

Pollutants calculated using the following equation for Air Emissions Inventory:

$$\text{Ton/year} = Q_{ai} * HV * EF * 1000\text{scf/kscf}$$

$$* \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000\text{lbs}$$

Kelsey Compressor #3

Calculated Fuel Usage

$$Q_{ai} = \frac{\text{BHP}}{\text{HV}} * \text{SFC} * \frac{\text{LD}}{100} * \frac{\text{RT}}{100} * \frac{8760}{\text{year}} * \frac{\text{kscf}}{1000 \text{ scf}}$$

$$Q_{ai} = \frac{1100 \text{ HP}}{1142 \text{ Btu/scf}} * 9000 \text{ BTU/hp-hr} * \frac{100}{100} * \frac{100}{100} * \frac{8760 \text{ hrs}}{\text{year}} * \frac{\text{kscf}}{1000 \text{ scf}}$$

$$Q_{ai} = 75,940 \text{ kscf/year}$$

$$\text{NO}_x, \text{ tons/year} = 75,940 \text{ kscf/year} * 1142 \text{ BTU/scf} * 3.17 \text{ lb/MMBTU}$$

$$* 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{NO}_x, \text{ tons/year} = 137.5$$

$$\text{CO tons/year} = 75,940 \text{ kscf/year} * 1142 \text{ BTU/scf} * .386 \text{ lb/MMBTU}$$

$$* 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{CO, tons/year} = 16.7$$

$$\text{VOC tons/year} = 75,940 \text{ kscf/year} * 1142 \text{ BTU/scf} * .12 \text{ lb/MMBTU}$$

$$* 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{VOC, tons/year} = 5.2$$

Kelsey Compressor #7

$$Q_{ai} = \frac{2500 \text{ HP}}{1142 \text{ Btu/scf}} * 9000 \text{ BTU/hp-hr} * \frac{100}{100} * \frac{100}{100} * \frac{8760 \text{ hrs}}{\text{year}} * \frac{\text{kscf}}{1000 \text{ scf}}$$

$$Q_{ai} = 172,592 \text{ kscf/year}$$

$$\text{NO}_x, \text{ tons/year} = 172,592 \text{ kscf/year} * 1142 \text{ BTU/scf} * 3.17 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{NO}_x, \text{ tons/year} = 312.4$$

$$\text{CO tons/year} = 172,592 \text{ kscf/year} * 1142 \text{ BTU/scf} * .386 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{CO, tons/year} = 38.0$$

$$\text{VOC tons/year} = 172,592 \text{ kscf/year} * 1142 \text{ BTU/scf} * .12 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{VOC, tons/year} = 11.8$$

Kelsey Compressor #9

$$Q_{ai} = \frac{1350 \text{ HP}}{1142 \text{ Btu/scf}} * 8000 \text{ BTU/hp-hr} * \frac{100}{100} * \frac{100}{100} \frac{8760 \text{ hrs}}{\text{year}} * \frac{\text{kscf}}{1000 \text{ scf}}$$

$$Q_{ai} = 82,844 \text{ kscf/year}$$

$$\text{NO}_x, \text{ tons/year} = 82,844 \text{ kscf/year} * 1142 \text{ BTU/scf} * 3.17 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{NO}_x, \text{ tons/year} = 150$$

$$\text{CO tons/year} = 82,844 \text{ kscf/year} * 1142 \text{ BTU/scf} * .386 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{CO, tons/year} = 18.3$$

$$\text{VOC tons/year} = 82,844 \text{ kscf/year} * 1142 \text{ BTU/scf} * .12 \text{ lb/MMBTU} \\ * 1000 \text{ scf/kscf} * \text{MMBTU}/10^6 \text{ BTU} * \text{Ton}/2000 \text{ lbs}$$

$$\text{VOC, tons/year} = 5.7$$

Note: Emission factors are based on AP-42 factors (7/2000 – Copy attached).

Kelsey Compressor Station Site

TCEQ ACCOUNT # BP00050

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Demonstration OF NOX and VOC Reductions

Pipeline Facilities Permit: Grandfathered reciprocating internal combustion engines that are part of the processing, treating, compression, or pumping facilities connected to, or part of, a gathering or transmission pipeline may apply for a pipeline facilities permit. Applicants may apply for a single permit for a group of engines connected to a pipeline or a separate permit for all discrete and separate engines. House Bill 2912 states that for facilities located in West Texas, the TCEQ may require up to a 20% reduction in NO_x and VOC emissions. For facilities located in West Texas, the TCEQ will focus on reductions that can be achieved at little or no capital cost.

An evaluation of the ExxonMobil South Texas area indicates several compressor engines that will be combined into a single Pipeline Facility Permit. The reciprocating internal combustion engines included in this application are part of a compression facility that is connected to a gathering or transmission pipeline. The attachments within this section indicate a greater than 20 % reduction in NO_x and VOC emissions for the subject facilities. Per guidance provided by Mr. Randy Hamilton with the TCEQ, NO_x and VOC emissions were compared using 1997 base line potential to emit (PTE) levels to 2002 PTE levels. In addition, these reciprocating internal combustion engines are lean burn engines in excess of 34 years old. It is not feasible to control nitrogen oxide (NO_x) emissions from such engines because of design limitations. Given the required reduction being met with engine shutdowns and the technical difficulties with reducing emissions from lean burn engines there are no controls proposed in this application.

KELSEY COMPRESSOR STATION SIMPLIFIED PROCESS FLOW DIAGRAM TCEQ ACCOUNT # BP00050

