TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Breitburn Operating LP
5 Houston Center, 1401 McKinney Street, Suite 2400
Houston, Texas 77010

St. Regis Gas Treatment Facility and Jay Gas Plant
Facility ID No. 1130005

PROJECT

Project No. 1130005-021-AC
Application for Title V Source Air Construction Permit
South Waterflood Gas Turbine

COUNTY

Santa Rosa County, Florida

PERMITTING AUTHORITY

Department of Environmental Protection
Northwest District Permitting Program
160 W. Government Street, Suite 308
Pensacola, Florida 32502-5740

January 14, 2015

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

The Breitburn Operating LP, St. Regis Gas Treatment Facility and Jay Gas Plant (formerly owned and operated by Quantum Resources Management, LLC) is an existing oil and gas production and natural gas processing facility, which is categorized under Standard Industrial Classification Codes No. 1311, Crude Petroleum and Natural Gas, and 1321, Natural Gas Liquids. The facility is located in Santa Rosa County at 5415 Oil Plant Road in Jay, Florida. The UTM coordinates of the existing facility are Zone 17, 482.8 km East and 3425.6 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Breitburn Operating LP acquired Quantum Resources Management, LLC in December 2014.

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no units subject to the acid rain provisions of the Clean Air Act.
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

The proposed project authorizes the facility to increase the hourly nitrogen oxides (NOx) emissions limit for the South Waterflood Gas Turbine (EU 050) from 18.2 pounds per hour (36.7 tons per year) to 30.0 pounds per hour (60.4 tons per year). This change is being requested to allow the facility to operate the turbine at the permitted capacity. There are no physical changes associated with this project. The turbine is fueled with natural gas and is equipped with a lean head end combustion liner to reduce NOx emissions. This project increases the NOx limits

found in Title V air operation permit No. 1130005-012-AV, effective January 17, 2011. Annual NOx and CO emissions limits for the South Waterflood Gas Turbine are based on 4025 annual operating hours per applicant's request.

History and Purpose of the Project

The only emissions unit affected by this project is the South Waterflood Turbine (EU 050). The purpose of this project is to modify the NOx emissions limit for the South Waterflood Turbine based on the stack test results, which were submitted with the application. This project involves no physical activity either in the form of new construction or as a modification to an existing facility.

Prior to the submittal of an air construction permit application in August 2006 to install a General Electric Lean Head End (LHE) Combustion Liner, both the South and North Waterflood Turbines were classified as unregulated emissions units.

During the course of preparing the air construction permit application, General Electric provided information indicating that the LHE combustion liner would be very effective at reducing NOx emissions, which was the primary intent of the project. Also, the information indicated that the project would have minimal impact on the emissions of CO from the turbine.

When the South Waterflood Turbine was tested on March 20, 2007 to quantify the emissions of NOx and CO, it was expected that the CO emissions would be about the same, while operating the South Waterflood Turbine with the LHE Combustion Liner installed, as they were prior to the installation of the LHE combustion liner. During testing, however, the emissions of CO were observed to be greater than expected, and this increase in CO emissions could potentially subject the project to retroactive PSD review.

To address this issue of CO emissions being higher than expected, and to keep the project from being potentially subject to retroactive PSD review, Quantum worked with FDEP to establish a limit on the hours of operation for the South Waterflood Turbine. By keeping the hours of operation for the turbine to no more than 4,025 hours per year, the CO emissions rate of 95 tons per year would be below the PSD significant level of 100 tons per year; and the project, to install the LHE combustion liner on the South Waterflood Turbine, would not subject to PSD review.

NOx emissions from the South Waterflood Turbine are controlled by a LHE combustion liner. Lab test data presented in the graphs below demonstrate that the operation of the turbine with a LHE combustion liner installed decreases NOx emissions by approximately 45 % compared to operation without the liner. The Lab data also indicates that, while operating the turbine at near base load conditions, the LHE combustion liner has negligible affect on CO emissions. However, when the turbine is operated below 90 % of base load, CO emissions are significantly larger with the LHE combustion liner installed than they would be without the liner.

Stack test data for the South Waterflood Turbine, submitted with the application, are presented in the table below. Data from the stack test conducted on September 11, 2007 were used to establish the current permit NOx emissions limit of 18.2 pounds per hour. However, subsequent stack tests conducted in 2013 indicate that when the load to the turbine increases the hourly rate of NOx emissions also increases.

Table 1. South Waterflood Turbine Emissions Stack Test Results

Test Date	Heat Input (MMBtu/hr)	Percent of Full Load	Nitrogen Oxides (Pounds per Hour)
9/11/2007	120.7	76.9	18.2
1/24/2013	130.0	83.2	25.7
12/12/2013	135.1	86.5	26.7

Note: The percent of full load is based on maximum heat input to the turbine of 156.1 MMBtu/hr.

The South Waterflood Turbine has been tested at increasingly higher loads but has not been able to attain a load of between 90 and 100 percent, as is the general objective for stack testing. By this application, Breitburn is requesting that the NOx emissions limit be increased to 30 pounds per hour to allow the turbine to be tested at permitted capacity (90 to 100 percent of the maximum capacity allowed by the permit) as specified by Rule 62-297.310(2)(b), F.A.C.

Breitburn's plans include the need to run the South Waterflood Turbine at its permitted capacity. Based on the stack testing to date, it has been determined that to operate the turbine at the 90 to 100 percent of maximum load, the NOx emissions limit would need to be increased to 30 pounds per hour.

Although not specifically addressed in this air permit application, Breitburn believes that the current permit limit for carbon monoxide (CO) for the South Waterflood Turbine of 47.2 pounds per hour does not need to be revised.

While conducting tests for NOx emissions during production ramp up, it was determined that CO emissions decreases as the load to the turbine increases. Given that emissions of CO decreases as the load to the turbine increases, Breitburn is considering the preparation of a permit application that would either completely remove or decrease the restriction on operating hours for this turbine, which is currently set at 4,025 hours per year.

The approach for reducing or eliminating the operating hours restriction on the South Waterflood Turbine would either focus on establishing a lower CO limit in the permit or preparing a PSD permit application. For example, using a conservative mass emissions rate increase of 95 tons per year would allow the turbine to operate 8,760 hours per year, provided the CO emissions limit was lowered to 21.7 pound per hour (i.e., 21.7 pounds per hour at 8,760 hours per year is equivalent to 95.0 tons per year). The PSD approach for eliminating the hours of operation restriction would be accomplished by maintaining the current limit of 47.2 pounds per hour for CO and conducting a Best Available Control Technology (BACT) determination as well as air dispersion modeling. This is because, at the currently permitted rate of 47.2 pounds per hour and an unlimited operating rate of 8,760 hours per year, the resulting emissions rate would be 206.7 tons per year, which greatly exceeds the PSD significance rate of 100 tons per year. Breitburn will be evaluating both approaches, and has a third option of lowering the permit limit to something between 21.7 and 47.2 pounds per hour and going through PSD review, which would increase the cost of control when evaluating BACT alternatives. It is expected that an application addressing the hourly limitation will be submitted sometime in 2015.

Processing Schedule

December 22, 2014 Received the application for a Title V source air pollution construction permit.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a

mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability for Project

As provided in the application, the following table summarizes potential emissions and PSD applicability for the Project.

Table A. Project Potential Emissions (Tons/Year) and PSD Applicability

Pollutant (TPY)	Pre-Project Potential Emissions (South Waterflood Turbine)	Contemporaneous Emissions: Projects 015-AC & 020-AC Fractionation Units	Post Project Potential Emissions (South Waterflood Turbine)	Total Emissions Change	Significant Emissions Rate	Subject to PSD
CO	*95.1	0.1	*95.1	0.1	100	NO
NO_X	*36.7	0	*60.4	23.7	40	NO
PM_{10}	2.1	0	2.1	0	15	NO
SO_2	1.1	-15.6	1.1	-14.5	40	NO
VOC	0.7	30.4	0.7	31.1	40	NO

*Note: Emissions estimates in the table above for CO and NOx represent permit limits which are based on 4,025 annual operating hours. The hours limitation was requested by the applicant to prevent CO emissions from exceeding the significant emissions rate of 100 tons per year and subjecting the project (installation of the LHE combustion liner on the South Waterflood Turbine) to PSD review. (See Application No. 1130005-012-AV).

The facility is considered a major stationary source with respect to PSD, because it has the potential to emit 250 tons per year or more of one or more regulated air pollutant. However, as shown in the table above, this project is not a major modification under PSD regulations, since the differences between the baseline potential emissions and projected potential emissions do not reach or exceed the significant emissions rates. Emissions increases are not above PSD significance thresholds for any pollutant; therefore, PSD review is not required.

3. APPLICATION REVIEW

Application Fee

Title V Facility - no application fee required.

Discussion of Emissions

When establishing the NOx emissions limit at 30 pounds per hour, it should be noted that, even at this higher permitted emissions limit, emissions of NOx would still be well below what they were before the LHE Combustion Liner was installed. This is illustrated by stack testing results that were observed in September 2007 for the North Waterflood Turbine. The North Waterflood Turbine is identical to the South Waterflood Turbine with the exception that it does not have a LHE Combustion Liner. As tested in September 2007, the North Waterflood Turbine exhibited NOx emissions that were equivalent to 37.4 pounds per hour. Thus, raising the NOx limit to 30.0 pounds per hour for the South Waterflood Turbine will still result in a decrease in emissions as compared to how it would have operated before the LHE Combustion Liner was installed.

Breitburn has demonstrated the need to increase the NOx emissions limit to 30.0 pounds per hour to allow the South Waterflood Turbine to operate at permitted capacity. This change is needed to accommodate the continued increases in production that are expected to occur at the facility as a result of a well drilling campaign in the fields that provide production to the facility.

Facility-wide Potential Emissions (Tons/Year)

Pollutant	Pre-Project Facility-Wide Potential Emissions	Potential Emissions Increase (Project plus Contemporaneous)	Post-Project Facility-Wide Potential Emissions
CO	288.1	0.1	288.2
NO_X	813.7	23.7	837.4
PM	32.1	0	32.1
SO_2	3229.6	-14.5	3215.1
VOC	276.5	31.1	307.6

State Requirements

Rule 62-296.320, F.A.C.

Federal NSPS Provisions

40 CFR 60 Subpart GG - Stationary Gas Turbines

Federal NESHAP Provisions

N/A

Other Draft Permit Requirements

Emissions testing within 90% of permitted operating rate to verify emissions estimates of CO and NOx.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Howard Ard is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at 850.595.0622 or howard.ard@dep.state.fl.us .