

Lane Regional Air Protection Agency
Standard Air Contaminant Discharge Permit

REVIEW REPORT

**Northwest Pipeline GP
Eugene Compressor Station**

85166 Hideaway Hill Road
Eugene, OR 97402
Facility Contact: Caleb Vickery
Phone: (801) 584-6933

Permit No. 205811

1. General Background Information

Northwest Pipeline Corporation operates a natural gas compressor station at 85116 Hideaway Hill Road in Eugene, Oregon that is owned by the Williams Corporation. The facility is used primarily to compress natural gas and exert pressure in the 16-inch natural gas pipeline that terminates in Grants Pass, Oregon. By the time the gas reaches the Eugene facility, there is typically sufficient pressure in the pipeline system provided by the compressor stations upstream to propel the gas. The facility only runs during certain times of the day and/or year when demand is high and/or temperatures are cold enough such that additional pressure is needed. Equipment operated at this site includes:

Emission Unit	Description
EU-1	Stationary combustion turbine including 1 Solar Saturn T-1302, 1340 horsepower, stationary, natural gas-fired turbine, Subject to NSPS Subpart KKKK
EU-2	Stationary* combustion turbine including 1 Solar Saturn T-1310, 1300 horsepower, portable* natural gas-fired turbine, Subject to NSPS Subpart GG (*not self propelled)
EU-3	Gas-fired blow down vent, with burner
EU-4	Categorically insignificant activities including: one gas-fired emergency and/or backup generator (237 Hp) subject to NSPS Subpart JJJJ, and one gas-fired process heater (0.125 MMBtu/hr)

The fuel gas heater is rated at less than 2.0 million Btu/hr and is a Categorically Insignificant Activity as per LRAPA Title 34 and is not included in the PSEL. The natural gas-fired back-up generator is only in the event of loss of line power and is therefore a Categorically Insignificant Activity as per LRAPA Title 34 and is not included in the PSEL.

2. Reasons for Permit Action

This source is listed in LRAPA Regulations Title 37, Table 2 and, therefore, is required to have an Air Contaminant Discharge Permit (ACDP). The permit expired October 1, 2010. The reason for this permit action is to renew the expired permit and include the applicable requirements for the new Solar Saturn T-1302 replacing the Solar Saturn T-1001 (removed with this renewal action) by way of the permit modification issued May 28, 2010.

3. Enforcement History

LRAPA has no outstanding enforcement actions against this facility.

4. Performance Test Results

NOx compliance testing is required by way of the NSPS Subpart KKKK. The facility will provide dates of the performance tests and copies once available.

5. Plant Site Emission Limits (PSELs)

The PSELs are set in accordance with Section 42-0040 and 42-0041. The facility has a capacity less than the Significant Emission Rate for all pollutants except NOx and, hence, the PSELs for those pollutants are set at the Generic PSEL level. The PSEL for NOx is set at a source-specific level to reflect the netting basis. Maximum actual emissions are based on the estimated maximum firing of the combustion turbines and blow down stack.

Annual (12-month rolling) PSEL
 (tons/year)

Source	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Plant Site Total	24	14	39	43	99	39

The attachment to this report contains the emission detail sheets that show maximum potential emissions. The emission estimates are based upon emission factors provided by the facility and include manufacturer specifications, test results, and AP-42 factors. The fuel gas heater is rated at 0.125 MM Btu/hour and is less than the 2.0 MM Btu/hr Categorically Insignificant Activity threshold in LRAPA Title 34-060.

Baseline Emission Rates (BERs) and Significant Emission Rate (SER) Comparison

Baseline emission rates from the table below represent estimated actual emissions from 1978. The BERs (tons per year) for the facility are:

Pollutant	Baseline Emissions (tons/yr)	Requested PSEL (tons/yr)	Increase from Netting Basis (tons/yr)	SER (tons/yr)
PM	0.4	24	24	25
PM ₁₀	0.4	14	14	15
CO	1.1	99	98	100
NO _x	4.3	43	39	40
VOC	0.2	39	39	40
SO ₂	0.1	39	39	40

The potential to emit for the facility, including controls as part of the design, was less than the major source thresholds. Therefore synthetic minor limitations were not required to limit the potential to emit. No limits on hours of operation were required to prevent an SER exceedance. *For this permit renewal, the baseline emission rate for PM_{2.5} is assumed to be zero (0) tons/year

of actual emissions. Actual emissions for the applicable baseline period will be included at the next modification or renewal, whichever comes first. During the public comment period, the PM_{2.5} temporary rules expired (February 19, 2011). The PM_{2.5} PSEL and baseline emission rate were removed prior to issuance.

6. Other Emission Limitations

LRAPA's process weight rule specifies limits on the emissions of particulate matter for specific processes as a function of the amount of material processed [LRAPA 32-045(A)]. In accordance with DEQ guidance, the process weight rule does not apply to industrial process equipment for which specific emission standards for particulate have been adopted. Also, the process weight rule does not apply to fuel-burning equipment and fugitive emission sources. The industrial process equipment located at the facility is not subject to the process weight rule.

The permit contains limits on grain loading (gr/dscf) and visible emissions (opacity).

7. Hazardous Air Pollutants (HAPs)

Total HAPs from the turbines are estimated to be less than 10 tons per year. There are no National Emission Standards for HAPs that are applicable to the facility. The emergency generator is required to meet the requirements of the RICE NESHAP (Subpart ZZZZ) by meeting the requirements of 40 CFR Part 60 Subpart JJJJ. No other requirements apply under Subpart ZZZZ and LRAPA's permitting rules exempt emergency generators from permitting requirements (LRAPA Title 37, Table 1).

8. Typically Achievable Control Technology (TACT)

LRAPA Title 32-008 requires a new or modified emission unit at a facility to meet TACT if:

- the emissions unit would have an increase in emissions from the permitted level for the emission unit of any criteria pollutants equal to or greater than one (1) ton per year, or
- PM₁₀ is equal to or greater than 500 pounds per year in a PM₁₀ nonattainment area,

and the emissions unit is not subject to New Source Review requirements in Title 38, an applicable Standard of Performance for New Stationary Sources (NSPS) in Title 46, or any other standard applicable only to new or modified sources in Title 32, Title 33, or Title 39 at the time TACT is required.

The turbines are both subject to the Title 46 for NO_x and SO₂ and are therefore not required to meet TACT for this type of equipment for these pollutants. The turbines emit more than 10 tons/year of CO and are required to meet TACT; good combustion practices employed by this facility are considered TACT.

9. New Source Review and Prevention of Significant Deterioration

Because the proposed PSEs for all regulated pollutants do not exceed the Baseline Emission Rate (BER) more than the Significant Emission Rates (SERs) in LRAPA Title 12, the facility is not subject to LRAPA's New Source Review (NSR) requirements for PM₁₀ nor the Prevention of Significant Deterioration (PSD) requirements for PM, SO_x, NO_x, CO, and VOC.

10. New Source Performance Standards (NSPS)

NSPS Subpart GG

40 CFR 60, Subpart GG, Stationary Gas Turbines, applies to 10.7 gigajoules per hour (10 MMBtu per hour) stationary gas turbines which commenced construction, modification or, reconstruction after October 3, 1977. The T-1310 turbine is rated at 13.7 MMBtu/hr. Even though the T-1310 turbine is portable it is subject to the subpart because the definition of a "stationary gas turbine" includes units that may be "mounted on a vehicle for portability" and therefore the T-1310 is subject to Subpart GG.

The sole requirement in the NSPS Subpart GG for the T-1310 turbine is for the unit not to combust any fuel with a sulfur content of more than 0.8 percent by weight. The facility satisfies the monitoring related to the requirement by way of the tariff included as an attachment to this report. For natural gas-fired turbines built between 1977 and 2004 that do not use steam or water injection to control NOx emissions do not have NOx monitoring requirements under 60.334(c); the rule states the "...owner or operator may, but is not required to..." and hence there are essentially no NOx monitoring requirements that are applicable to the turbine.

NSPS Subpart KKKK

40 CFR 60, Subpart KKKK, Stationary Combustion Turbines, applies to 10.7 gigajoules per hour (10 MMBtu per hour) stationary gas turbines which commenced construction, modification or, reconstruction after February 18, 2005. The T-1302 turbine is rated at 15.9 MMBtu/hr. The gas producer and power turbine (i.e. engine core) portion of the "stationary combustion turbine" (as defined in the NSPS) was removed and replaced as part of the May 2010 modification. The replacement of the T1001 engine core with the T1302 resulted in a potential increase, on an hourly basis, of NOx and therefore the unit became subject to the Subpart KKKK requirements for "modified or reconstructed" turbines less than or equal to 50 MMBtu/hr. The facility is required to conduct NOx performance testing to determine compliance with the NOx standard. The facility satisfies the monitoring related to the natural gas sulfur monitoring requirement by way of the tariff included as an attachment to this report.

11. Testing

The permit does not include any requirement to conduct testing for emission factor verification purposes. However, the NSPS Subpart KKKK applicable provisions require compliance testing to determine ongoing compliance with the NOx emission standard contained in the NSPS Subpart KKKK.

12. Continuous Compliance

The facility is required to keep a record of the following information for a period of two years and to estimate actual emissions to determine compliance with the PSELs.

Parameter	Units	Recording Frequency
Gas fired in each turbine	MMscf	Monthly
Hours of operation for each turbine	Hours	Monthly
Blowdown stack	MMscf	Monthly

13. Reporting Requirements

The facility is required to submit an annual report to summarize continuous compliance with the PSEs and for the information required by General Condition No. G15.

14. Fuel Usage

All equipment at the facility is permitted to be fired only on natural gas.

15. Public Notice

The draft was on public notice from January 31, 2011 to March 7, 2011. No written comments were submitted during the 35-day comment period.

MAX/cmw
3/23/11

Northwest Pipeline
 Eugene Compressor Station
 Estimated Annual Air Emissions

Source Info	Pollutant	Emission Factor	Reference	Emission Rates
Solar Saturn T-1001 Turbine (Stationary)				
Size: 1,048 hp	NOX	4.30 lbs/hr	Emissions Test, see Note 1	4.30 lbs/hr 18.83 tons/yr
Hours: 8,760 hrs	CO	7.40 lbs/hr	Emissions Test, see Note 1	7.40 lbs/hr 32.41 tons/yr
Fuel Use: 14.7 Mscf/yr	VOC	2.14 lbs/MMscf	AP-42 Table 3.1-2a	0.03 lbs/hr 0.14 tons/yr
	SO2	6.00 lbs/MMscf	AP-42 Table 3.1-2a, see Note 3	0.09 lbs/hr 0.39 tons/yr
	PM ₁₀ & PM _{2.5}	6.73 lbs/MMscf	AP-42 Table 3.1-2a, see Note 4	0.10 lbs/hr 0.43 tons/yr
Solar Saturn T-1310 Turbine (portable)				
Size: 1,300 hp	NOX	4.82 lbs/hr	Emissions Test, see Note 2	4.82 lbs/hr 21.11 tons/yr
Hours: 8,760 hrs	CO	7.08 lbs/hr	Emissions Test, see Note 2	7.08 lbs/hr 31.01 tons/yr
Fuel Use: 144540 Mscf/yr	VOC	2.14 lbs/MMscf	AP-42 Table 3.1-2a	0.04 lbs/hr 0.15 tons/yr
	SO2	6.00 lbs/MMscf	AP-42 Table 3.1-2a, see Note 3	0.10 lbs/hr 0.43 tons/yr
	PM ₁₀ & PM _{2.5}	6.73 lbs/MMscf	AP-42 Table 3.1-2a, see Note 4	0.11 lbs/hr 0.49 tons/yr
Emergency Generator				
Size: 115 hp	NOX	2315 lbs/MMscf	AP-42 Table 3.2-3	2.22 lbs/hr 0.55 tons/yr
Hours: 500 hrs	CO	3794 lbs/MMscf	AP-42 Table 3.2-3	3.64 lbs/hr 0.91 tons/yr
Fuel Use: 479,167 Mscf/yr	VOC	30.19 lbs/MMscf	AP-42 Table 3.2-3	0.03 lbs/hr 0.01 tons/yr
	SO2	6 lbs/MMscf	AP-42 Table 3.2-3, see Note 3	0.01 lbs/hr 0.00 tons/yr
	PM ₁₀ & PM _{2.5}	19.8 lbs/MMscf	AP-42 Table 3.2-3	0.02 lbs/hr 0.00 tons/yr
Heater				
Size: 0.125 MMBtu/hr	NOX	100 lbs/MMscf	AP-42 Table 1.4-1	0.01 lbs/hr 0.05 tons/yr
Hours: 8,760 hrs	CO	84 lbs/MMscf	AP-42 Table 1.4-1	0.01 lbs/hr 0.05 tons/yr
Fuel Use: 1073.53 Mscf/yr	VOC	5.5 lbs/MMscf	AP-42 Table 1.4-2	0.00 lbs/hr 0.00 tons/yr
	SO2	6 lbs/MMscf	AP-42 Table 1.4-2, see Note 3	0.00 lbs/hr 0.00 tons/yr
	PM ₁₀ & PM _{2.5}	7.6 lbs/MMscf	AP-42 Table 1.4-2	0.00 lbs/hr 0.00 tons/yr
Blow Down Stack				
Size: 15 Mscf/hr	NOX	100 lbs/MMscf	AP-42 Table 1.4-1	1.50 lbs/hr 0.15 tons/yr
Hours: NA hrs	CO	84 lbs/MMscf	AP-42 Table 1.4-1	1.26 lbs/hr 0.13 tons/yr
Fuel Use: 3,000 Mscf/yr	VOC	5.5 lbs/MMscf	AP-42 Table 1.4-2	0.08 lbs/hr 0.01 tons/yr
	SO2	6 lbs/MMscf	AP-42 Table 1.4-2, see Note 3	0.09 lbs/hr 0.01 tons/yr
	PM ₁₀ & PM _{2.5}	7.6 lbs/MMscf	AP-42 Table 1.4-2	0.11 lbs/hr 0.01 tons/yr
FACILITY TOTALS				
	NOX			12.85 lbs/hr 40.70 tons/yr
	CO			19.39 lbs/hr 64.50 tons/yr
	VOC			0.18 lbs/hr 0.31 tons/yr
	SO2			0.28 lbs/hr 0.83 tons/yr
	PM ₁₀ & PM _{2.5}			0.34 lbs/hr 0.94 tons/yr

- Notes:**
1. NOX and CO emission factors for stationary turbine estimated using the highest values from 2 emissions tests on a similar unit at Albany Compressor Station in 2004 and 2005, multiplied by a safety factor of 2.0.
 2. NOX and CO emission factors for portable turbine estimated using the highest values from emissions test on the unit while it was located at Oregon City Compressor Station in 2004, multiplied by a safety factor of 2.0.
 3. SO2 emissions based on referenced AP-42 emission factors and an average total sulfur content in natural gas of 2 grains/100 scf.
 4. For worst-case emissions estimates, all particulate matter is assumed to be less than 2.5 microns in diameter, thus PM₁₀ emissions equal PM_{2.5} emissions.
 5. Fuel use on generator estimated assuming an average fuel use of 8,500 Btu/hr and fuel HHV of 1,020 Btu/scf.

Portable Saturn Turbine - 5/10/04 at Oregon City CS, Oregon

	97	95	93	91	AVE
		Gas Producer Speed - % NGP			
NOx	2.41	2.00	1.71	1.33	1.86
CO	2.92	2.61	3.19	3.54	3.07
VOC	1.15	1.13	1.49	1.96	1.43

Note, conservatively high as all hydrocarbon species measured were assumed to be VOC.

Stationary Saturn T1001 - 5/11/04 at Albany CS, Oregon

	100	97	92	91	AVE
		Gas Producer Speed - % NGP			
NOx	2.15	2.07	1.96	1.79	1.99
CO	1.09	1.31	1.51	1.71	1.41
VOC		Not Tested			

Stationary Saturn T1001 - 3/21/05 at Albany CS, Oregon

	98	94	92	91	AVE
		Gas Producer Speed - % NGP			
NOx	2.05	1.78	1.60	1.53	1.74
CO	2.05	2.87	3.59	3.70	3.05
VOC		Not Tested			

TF03204 0010005P126First Revised Sheet No. 204

TF04 Original Sheet No. 204

TF05Laren M. Gertsch, Director

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GENERAL TERMS AND CONDITIONS

(Continued)

3.

QUALITY

3.1

Gas Quality at Receipt Points. All Gas delivered by Shipper to Transporter shall conform to the applicable specifications in either Section 3.1(a) or Section 3.1(b). As used in this section, the La Plata Facilities are defined as those facilities commencing at a measurement facility downstream of the discharge side of Northwest's La Plata B compressor station southward to the Blanco Hub, including the La Plata A compressor station and certain plant interconnects, all located in southern Colorado and northern New Mexico.

(a) All Gas delivered by Shipper to Transporter at Receipt Points not connected to the La Plata Facilities shall conform to the following specifications:

(1)

Hydrocarbon Liquids and Liquefiabiles: The hydrocarbon dew point of the gas delivered shall not exceed fifteen degrees Fahrenheit at any pressure between 100 psia and 1,000 psia as calculated from the gas composition and shall be free from hydrocarbons in the liquid state. At all times, any and all liquid or liquefiable hydrocarbons, or any other constituent or by-product, recovered from the gas by Transporter, after delivery of gas to Transporter shall be and remain the exclusive property of Transporter, except as specified in Section 20 of the General Terms and Conditions.

(2)

Hydrogen Sulfide and Total Sulfur: The gas shall contain not more than one quarter grain of hydrogen sulfide per one hundred cubic feet and not more than five grains total sulfur per one hundred cubic feet.

(3)

Carbon Dioxide and Total Nonhydrocarbons: The gas shall contain not more than two percent by volume of carbon dioxide and shall contain not more than three percent by volume of combined nonhydrocarbon gases including, but not limited to, carbon dioxide, nitrogen and oxygen, except as otherwise provided in Section 3.5.