

**Northwest Pipeline GP**  
**Chehalis Compressor Station**  
**Title V Basis Statement**

Southwest Clean Air Agency  
11815 NE 99<sup>th</sup> Street, Suite 1294  
Vancouver, WA 98682  
Telephone: (360) 574-3058

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PERMIT #: SW98-6-R2

ISSUED: September 19, 2011

ISSUED TO:

Northwest Pipeline GP  
295 Chipeta Way  
P. O. Box 58900  
Salt Lake City, UT 84158-0900

PLANT SITE:

Northwest Pipeline GP  
Chehalis Compressor Station  
156 Meier Road West  
Winlock, WA 98596

PERMIT ENGINEER: Natalia Kreitzer, Air Quality Engineer

REVIEWED BY: Paul T. Mairose, Chief Engineer

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**I. GENERAL INFORMATION AND CERTIFICATION**

1. Company Name: Northwest Pipeline GP
2. Facility Name: Chehalis Compressor Station
3. Parent Company: The Williams Companies
4. Responsible Official: Barry Orgill, Director of Operations
5. Facility Contact Person: Derek Forsberg, Environmental Scientist
6. Unified Business Identification Number: 600121240
7. Standard Industrial Classification Code: 4922 [NAICS - 486210]
8. Basis for Title V Applicability:  
The Chehalis Compressor Station has the potential to emit more than 100 tpy of nitrogen oxides (NO<sub>x</sub>), more than 100 tpy of carbon monoxide (CO) and greater than 10 tpy of formaldehyde.
9. Purpose of Current Permitting Action:  
The purpose of the current permitting action is to renew the Title V permit for this facility. SWCAA has not issued any New Source Review permits for this facility and no significant physical changes have been made to facility equipment since the last Title V Permit was issued.
10. Attainment Area:  
Northwest Pipeline GP Chehalis Compressor Station is located in an area which is in attainment for all pollutants.
11. Facility Description:  
Northwest Pipeline GP operates a natural gas pipeline system that spans from the Canadian border near Sumas, Washington to the San Juan Gas Fields in New Mexico. Natural gas compressor stations are located about every 50 miles along the pipeline. Each station is designed for remote, unattended operation from Salt Lake City, Utah.  
  
The Chehalis Compressor Station is located near Winlock in Lewis County, Washington. The facility consists of one reciprocating engine in the compressor building, one Taurus turbine located inside the turbine building, two mobile skid-mounted Centaur turbines located outside, an auxiliary building, and the piping associated with the station.  
  
Northwest Pipeline GP's Chehalis Compressor Station has seven emission units designated as EU1 through EU7.
12. Facility History:  
The Chehalis Compressor Station was constructed in 1971. At that time the station included a Cooper-Bessemer Model 12/14 V-250 4,000 horsepower engine, an International Model V401, 120 hp natural gas fired emergency generator engine and a Sellers model 15 Commodore natural gas boiler rated at 1.67 MMBtu/hr. In 1995 the Cooper-Bessemer engine was modified to increase the horsepower capacity to 6,350 hp. At this time CleanBurn™ technology was also

installed and the unit was considered a new unit and a BACT review performed. In 1997 SWCAA approved installation and operation of a portable Saturn T-1300 1,164 hp turbine to be used while the reciprocating engine underwent repairs. In 1998 SWCAA increased the benzene and formaldehyde emission limits from the reciprocating engine and allowed operation of the Saturn T-1300 turbine during normal operation of the reciprocating engine. In 1998 SWCAA approved installation and operation of two mobile Centaur turbines when the reciprocating engine was not operating. In 1999 SWCAA approved operation of one of the two mobile Centaur turbines in conjunction with the reciprocating engine. In 2006 a Taurus 70-10302S turbine rated at 11,907 hp was installed, the portable Saturn T-1300 turbine was removed from the approved equipment and the Cooper-Bessemer reciprocating engine was derated back to its original 4,000 hp by slowing the engine speed from 330 rpm to 250 rpm.

## II. EMISSION UNIT DESCRIPTIONS

### **EU1 Reciprocating Engine**

Emission Unit #1 is a Cooper-Bessemer model 14V-250C2 turbocharged 14 cylinder, two cycle reciprocating engine-driven compressor rated at 4,000 horsepower, equipped with clean burn technology. The engine burns natural gas and has been permitted to operate 8,760 hours per year. Criteria pollutants emitted from the operation of the engine include nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM), and volatile organic compounds (VOCs). Hazardous air pollutants (HAPs) emitted from the operation of the engine include benzene and formaldehyde.

### **EU2 Taurus Turbine**

Emission Unit #2 is a Solar Turbines, Inc. Taurus 70-10302S (SOLONOX), gas turbine rated at 11,907 horsepower output. The turbine burns natural gas fuel and is permitted to operate 8,760 hours per year. Criteria pollutants emitted from the operation of the turbine include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs. HAPs emitted from the operation of the turbine include benzene and formaldehyde. 40 CFR 60.4300 et seq. (Subpart KKKK) "Standards of Performance for Stationary Combustion Turbines for Which Construction is Commenced After February 18, 2005" applies to the turbine. Pursuant to 40 CFR 60.8, an initial source test was conducted on December 14, 2006 at four loads ranging from 90% to 100% of maximum load.

### **EU3 Centaur Turbine**

Emission Unit #3 is a Solar Turbines, Inc. Centaur 40-T4700S (SOLONOX), serial number 4918C, gas turbine rated at 4,846 horsepower output. The turbine burns natural gas fuel and is permitted to operate 8,760 hours per year. Criteria pollutants emitted from the operation of the turbine include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs. HAPs emitted from the operation of the turbine include benzene and formaldehyde. 40 CFR 60 Subpart GG "Standards of Performance for Stationary Gas Turbines" applies to the turbine. Pursuant to 40 CFR 60.8, a source test was conducted on June 8, 2001 at four loads ranging from 90% to 100% of maximum load while the unit was located at the Kemmerer Compressor Station in Wyoming.

### **EU4 Centaur Turbine**

Emission Unit #4 is a Solar Turbines, Inc. Centaur 40-T4700S (SOLONOX), serial number 3000153, gas turbine rated at 4,846 horsepower output. The turbine burns natural gas fuel and is permitted to operate 8,760 hours per year. Criteria pollutants emitted from the operation of the turbine include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs. HAPs emitted from the operation of the turbine include benzene and formaldehyde. 40 CFR 60 Subpart GG "Standards of Performance for

Stationary Gas Turbines" applies to the turbine. Pursuant to 40 CFR 60.8 a source test was conducted on September 14, 1999 at four loads ranging from 90% to 100% of maximum load while the unit was located at the Snohomish Compressor Station.

#### **EU5 Boiler**

Emission Unit #5 is a Sellers model C40W natural gas fired process heater (boiler) with a heat input rate of 1.7 MMBtu per hour. The boiler provides hot water for process heating. Criteria pollutants emitted from the operation of the boiler include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs.

#### **EU6 Emergency Generator Engine**

Emission Unit #6 is a Caterpillar 422 KW, 566 hp, model 3412STD emergency electrical generator which is natural gas fired. Criteria pollutants emitted from the operation of the generator engine include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs.

#### **EU7 Line Heater**

Emission Unit #7 is a Sivalis natural gas fired line heater rated at 0.5 MMBtu per hour. Criteria pollutants emitted from the operation of the generator include NO<sub>x</sub>, CO, SO<sub>2</sub>, PM, and VOCs.

### **III. INSIGNIFICANT EMISSION UNIT IDENTIFICATION**

Each emission unit listed as insignificant in the permit has been reviewed by SWCAA to confirm its status. Emission units were determined to be insignificant as follows:

#### **IEU1 Glycol Storage and Handling**

Glycol storage and handling is categorically insignificant in accordance with WAC 173-401-532(4).

#### **IEU2 Emissions from Natural Gas Pipeline and Fuel System**

Fugitive emissions from the natural gas pipeline and fuel system are insignificant in accordance with WAC 173-401-530(1)(d).

#### **IEU3 Utility Building Heater**

The utility building heater is a natural gas fired Modine heater rated at 75,000 Btu/hour. This unit is not regulated under any specific SWCAA Permit and is insignificant based on size per WAC 173-401-533(2)(r).

#### **IEU4 Water Heater**

The water heater is a Bosch 1000P tankless water heater with a natural gas natural gas heat input of 58,400 Btu/hr. This unit provides hot water to the onsite bathroom sink. This unit is not regulated under any specific SWCAA Permit and is insignificant based on size per WAC 173-401-533(2)(r).

### **IV. EXPLANATION OF SELECTED PERMIT PROVISIONS AND GENERAL TERMS AND CONDITIONS**

#### **P12. Excess Emissions**

#### **SWCAA 400-107**

SWCAA 400-107 establishes criteria and procedures for determining when excess emissions are considered unavoidable. Emissions that meet the requirements to be classified as unavoidable are still considered excess emissions and are reportable but are excused and not subject to penalty. Notification of excess emissions is required as soon as possible and shall occur by the next business day following the excess emissions event. Excess emissions due to startup or

shutdown conditions are considered unavoidable if the permittee adequately demonstrates the excess emissions could not have been prevented through careful planning and design. Upset excess emissions are considered unavoidable if the permittee adequately demonstrates the upset event was not caused by poor or inadequate design, operation, maintenance, or other reasonably preventable condition, and the permittee takes appropriate corrective action that minimizes emissions during the event, taking into account the total emissions impact of that corrective action.

**G5. Permit Renewal** **WAC 173-401-710(1)**

An Air Operating Permit has an effective term of 5 years from the date of final issuance. Pursuant to WAC 173-401-710(1), the permit specifies a date by which a renewal application is required to be submitted to SWCAA. A complete renewal application must be received no later than 6 months prior to permit expiration.

**WAC 173-400-700**

**WAC 173-460 (effective 8/21/98)**

**SWCAA 400-109, SWCAA 400-110**

**G8. New Source Review** **SWCAA 400-141**

Construction or modification of an air pollution source is subject to review to ensure that applicable emission standards are met and appropriate control technology is employed. The program under which a new source or modification is reviewed depends on the type and quantity of potential air emissions associated with the project. New sources or modifications that meet the definition of a 'major stationary source' are subject to review under the Prevention of Significant Deterioration (PSD) program, which is administered by the Department of Ecology. Sources that are too small to be a major source (minor sources) are subject to review under SWCAA's new source review program. New sources or modifications that increase the emission of toxic air pollutants are subject to review under SWCAA's toxic air pollutant program, which implements the 8/21/98 version of WAC 173-460.

**G9. Portable Sources** **SWCAA 400-110(5)**

SWCAA 400-110(6) (*SWCAA 400-110(5) in SIP version of rule*) establishes procedures for approving the operation of portable sources of air emissions that locate temporarily at project sites. These requirements are general statewide standards, and apply to all portable sources of air contaminants. Common equipment subject to these conditions include emergency generators, engine-powered pumps, rock crushers, concrete batch plants, and hot mix asphalt plants that operate for a short time period at a site to fulfill the needs of a specific contract. Portable sources exempt from registration under SWCAA 400-101 are exempt from SWCAA 400-110 and not subject to the portable sources requirements. Operations with potential to emit less than 1 tpy combined of all criteria pollutants plus volatile organic compounds are among those categories listed in SWCAA 400-101 as exempt.

**G14. Chemical Accident Prevention Provisions** **40 CFR 68**

40 CFR 68 "Chemical Accident Prevention Provision" does not apply to Northwest Pipeline's compressor stations because the compressor stations do not meet the definition of "stationary source". Under 40 CFR 68 Subpart A, definitions, the regulations state under the term "Stationary Source" the following: "...The term stationary source does not apply to transportation, including storage incident to transportation, of any regulated substance or any other extremely hazardous substance under the provisions of this part. ...Transportation includes, but is not limited to, transportation subject to oversight or regulation under 49 CFR

parts 192, 194, 195, or a state natural gas or hazardous liquid program for which the state has in effect a certification to DOT under 49 U.S.C. section 60105...” Northwest Pipeline is a natural gas transmission company, is currently regulated under 49 CFR part 192 and thus is not required to submit a risk management plan. However, the regulation has been included in the general terms of the permit in order to address future operations that may store or handle substances that are subject to the regulation.

**G15. Reporting of Emissions of Greenhouse Gases** **WAC 173-441**

WAC 173-441 requires owners and operators to quantify and report emissions of greenhouse gases from applicable source categories if actual emissions from their facility are ten thousand metric tons CO<sub>2</sub>e or more per year. Annual greenhouse gas emissions from this facility have the potential to be greater than ten thousand tons so the facility may be subject to the reporting program if actual emissions are ten thousand metric tons CO<sub>2</sub>e or more per year. All required reports are to be submitted directly to Ecology. Likewise, report review and approval of calculation methodology is performed by Ecology with little or no involvement by SWCAA.

**V. EXPLANATION OF OPERATING TERMS AND CONDITIONS**

**40 CFR 60.330**

**Req. 1-2 New Source Performance Standards for Stationary Turbines, Subpart GG**

Title 40 CFR 60.330 (Subpart GG) establishes NO<sub>x</sub> and SO<sub>2</sub> emission standards for affected facilities. This is an affected facility because the Centaur turbines (EU3 and EU4) have a heat input at peak load greater than 10.7 gigajoules per hour and were installed after October 3, 1977 and before February 18, 2005.

40 CFR 60.332 contains equations for calculating a NO<sub>x</sub> emission limit based on gas turbine size and type. The Centaur turbines (with rated base load less than 30 megawatts) are required by 40 CFR 60.332(d) to comply with an emission limit calculated using an equation in 40 CFR 60.332(a)(2). The applicable NO<sub>x</sub> standard for Emission Units #3 and #4 were calculated as 166 ppm NO<sub>x</sub> at 15%, ISO conditions as follows:

$$\text{STD} = \frac{0.15(14.4)}{Y} + F = \frac{0.15(14.4)}{13.0} + 0 = 0.0166\%$$

$$\text{STD} = \text{allowable NO}_x \text{ emissions (percent by volume)} = 166 \text{ ppm}$$

$$Y = \text{manufacturers rated heat rate at peak load (kj/w-hr)} = 13.0 \text{ (based on 44.57 MMBtu/hr and 4846 hp)}$$

$$F = \text{NO}_x \text{ emission allowance for fuel bound nitrogen} = 0$$

**Req. 3-5 New Source Performance Standards for Stationary Turbines Constructed After February 18, 2005, Subpart KKKK** **40 CFR 60.4300, SWCAA 400-115**

40 CFR 60.4300 (Subpart KKKK) established NO<sub>x</sub> emission standards and sulfur fuel content limits for affected facilities. This is an affected facility because the Taurus turbine (EU2) has a heat input at peak load greater than 10.7 gigajoules per hour and was installed after February 18, 2005.

**Req. 6-7 MACT for RICE** **40 CFR 63, Subpart ZZZZ**

40 CFR 63, Subpart ZZZZ establishes standards for stationary reciprocating internal combustion engines (RICE). Under the provisions of Subpart ZZZZ, the emergency generator engine at this

facility is classified as existing stationary RICEs, and is subject to the regulation. The Emergency Generator is >500 hp existing emergency RICE at a major HAP source.

**Req. 8-15 General Standards for Maximum Emissions** **SWCAA 400-040**

SWCAA 400-040 establishes maximum emission standards for various air contaminants. These standards apply to all emission units at the source, both EU and IEU. Pursuant to WAC 401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for affected IEUs except those specifically identified by the underlying requirements. General monitoring provisions have been created under 'gap-filling' to provide reasonable compliance assurance for general standards that do not specify a monitoring regime.

Req. 14 prohibits any concealment or masking. At present, the permittee does not operate any equipment capable of masking emissions, therefore monitoring is limited to the semi-annual compliance certification.

**Req. 16 Emission Standards for Combustion and Incineration Units** **SWCAA 400-050**

SWCAA 400-050 establishes maximum emission standards for selected emissions from combustion and incineration units. These requirements apply to all combustion and incineration units at the source, both EUs and IEUs. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

**Req. 17 Emission Standards for General Process Units** **SWCAA 400-060**

SWCAA 400-060 establishes maximum particulate matter emission standards for general process units. These requirements apply to all general process units at the source, both EUs and IEUs. Pursuant to WAC 173-401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for IEUs except those specifically identified by the underlying requirements.

**Req. 18-27 SWCAA Air Discharge Permits** **ADP 05-2650**

There is currently one active Air Discharge Permit (ADP), 05-2650, which applies to operations at this source. ADP 05-2650 approved installation of the Taurus turbine and deration of the engine and superseded the previously active permit. The emission limits contained in ADP 05-2650 are as follows:

Pollutant	ADP 05-2650 Emission Limits (ton/yr)					
	Reciprocating Engine (EU1)	Taurus Turbine (EU2)	Centaur Turbines (EU3, EU4)	Boiler (EU5)	Generator Engine (EU6)	Facilitywide
CO	92.6	42.6	23.7	0.73	1.8	189.1
NO <sub>x</sub>	138.9	38.3	19.7	0.61	1.1	218.6
SO <sub>2</sub>	0.5	1.3	0.7	0.03	0.002	3.2
VOC	23.2	13.3	6.6	0.04	0.01	49.7
PM	13.2	2.5	1.3	0.06	0.009	18.4
Benzene	0.28	0.0025	0.0015	---	---	0.29
Formaldehyde	15.3	1.5	0.75	---	---	18.3

These limits along with monitoring and operating limits were included in the Title V Permit.



## VI. EXPLANATION OF OBSOLETE AND FUTURE REQUIREMENTS

### 1. 40 CFR 60.7 "Notification and Record Keeping" and ADP 05-2650 Conditions 30 and 31

Construction of the Taurus turbine commenced April 3, 2006 and was reported to SWCAA in a letter received April 11, 2006. Initial firing of the turbine occurred on October 18, 2006 and SWCAA received documentation of initial firing on October 23, 2006. Actual start-up with a load for working purposes occurred on July 20, 2007 and documentation was received by SWCAA on July 30, 2007.

### 2. Obsolete Air Discharge Permits

ADP 94-1717 approved increased horsepower upgrades and clean burn retrofit of the existing reciprocating engine. This ADP was superseded by ADP 98-2129.

ADP 97-2013 approved installation of a portable Saturn T-1300 turbine and an increase in particulate matter emissions from the engine. This ADP was superseded by ADP 98-2129.

ADP 97-2064 approved an increase in particulate matter, formaldehyde and benzene emission limits. This ADP was superseded by ADP 98-2129.

ADP 98-2129 approved operation of two mobile Centaur turbines to be used when the reciprocating engine was not operating. This ADP was superseded by ADP 98-2129R1.

ADP 98-2129R1 modified operating stipulations to allow Northwest Pipeline to operate one mobile Centaur turbine continuously and in conjunction with the reciprocating engine. This ADP was superseded by ADP 05-2650.

### 3. New Source Review and PSD Applicability to Replacement of Turbine Engines

Washington Department of Ecology (WDOE) has written a letter dated September 9, 1999 to EPA requesting assistance in consistently applying the federal rules for planned maintenance of existing gas turbine engines. Once EPA guidance is received, the Basis Statement may be modified to incorporate this guidance.

### 4. Boiler MACT

40 CFR 63.7480 Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters. On May 16, 2011 EPA announced a delay of the effective dates of this rule. The boiler subject to this regulation is a natural gas fired boiler rated at 1.7 MMBtu/hr heat input and the process heater has a natural gas firing rate of 0.5 MMBtu/hr. Once the delay is lifted the requirements of the rule will be incorporated.

## VII. EXPLANATION OF MONITORING TERMS AND CONDITIONS

### M1. Centaur NO<sub>x</sub> Standard

### Req-1

The requirement cited in this monitoring section is taken from Subpart GG, 40 CFR 60.332(a)(2) and 40 CFR 60.334(i)(2). Since there is no fuel bound nitrogen in pipeline quality natural gas, no allowance for fuel bound nitrogen is being used and therefore no fuel nitrogen content monitoring is required.

**M2. Compliance Certification****Reqs-2, 4, 13, 14, and 25**

The requirements cited in this monitoring section are taken from Subpart KKKK, 40 CFR 60.4365(a), SWCAA 400-040(6) and SWCAA 400-040(7), and from ADP 05-2650. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615.

40 CFR 60.4330(a) requires that the Taurus turbine not burn any fuel which contains total potential sulfur emissions in excess of 26 nanograms (ng) SO<sub>2</sub>/J (0.06 lb SO<sub>2</sub>/MMBtu) heat input. This turbine burns natural gas with a valid tariff sheet specifying that the total sulfur content is 20 grains of sulfur or less per 100 standard cubic feet. As shown in the following equation, a sulfur content of 20 grains per 100 standard cubic feet is equivalent to 0.057 lb SO<sub>2</sub>/MMBtu based on an average heat content of 1000 Btu/scf. Therefore the sulfur content of the natural gas will remain below the required limit and semi-annual certification is deemed sufficient to assure compliance.

$$20 \frac{\text{gr S}}{100\text{scf}} \times \frac{\text{lb}}{7000 \text{ gr}} \times \frac{\text{scf}}{1000 \text{ Btu}} \times \frac{1,000,000 \text{ Btu}}{\text{MMBtu}} \times \frac{64 \text{ lb/lbmol SO}_2}{32 \text{ lb/lbmol S}} = 0.057 \frac{\text{lb SO}_2}{\text{MMBtu}}$$

SWCAA 400-040(6) limits the emission of gaseous SO<sub>2</sub> from any emission unit to a maximum concentration of 1,000 ppmv corrected to 7% oxygen. The combustion sources at this source combust only natural gas which has an extremely low sulfur content. Based on the composition of natural gas, it is not possible for the combustion sources in question to exceed the limit of 1000 ppmv SO<sub>2</sub> while firing on natural gas. Monitoring has therefore been limited to certification of fuel type. The following equation estimates sulfur dioxide concentrations in exhaust gas from natural gas combustion based on EPA's Method 19 fuel factor of 8710 dscf/MMBtu for natural gas and a sulfur grain loading of 1.2 per 100 cubic feet which results in a value of 0.00345 pounds of SO<sub>2</sub> per MMBtu:

$$(0.00345 \text{ lbs/MMBtu}) * (385 \text{ cf/mole}) * (\text{mole}/64.1 \text{ lbs SO}_2) * (\text{MMBtu}/8710 \text{ dscf}) * \\ (20.9 - 15.0)/(20.9) = 0.7 \text{ ppm at 15 percent oxygen}$$

Based on the inherently low concentration of sulfur in pipeline quality natural gas, fuel certification is adequate to demonstrate compliance.

SWCAA 400-040(7) prohibit the concealment or masking of emissions which would otherwise violate a general standard. The permittee does not operate any equipment capable of masking emissions so semi-annual certification is deemed sufficient to assure compliance.

ADP 05-2650 Condition 11 requires that all equipment shall be fired on natural gas only with a total sulfur content of 20.0 grains per 100 standard cubic feet or less. This facility is a natural gas compressor station with no access to fuels other than pipeline quality natural gas. Therefore semi-annual certification is deemed sufficient to assure compliance.

**M3. Taurus NO<sub>x</sub> Standard** **Req-3**

The requirement cited in this monitoring section is taken from Subpart KKKK, 40 CFR 60.4320(a)

**M4. Taurus Turbine Monitoring** **Req-5**

The requirement cited in this monitoring section is taken from ADP 05-2650 Condition 20.

**M5. Emergency Generator Engine Hours Monitoring** **Req-6 and 7**

This monitoring section is drawn from 40 CFR 63.6655 and SWCAA 05-2596, Condition 22. Periodic testing is not required for this unit due to its status as emergency use only. Operation and maintenance requirements from 40 CFR 63, Subpart ZZZZ have been incorporated into the monitoring as appropriate. Compliance with applicable emission limits is demonstrated based on recorded hours of operation and emission factors taken from the Technical Support Document for SWCAA 05-2596.

**M6. Opacity Monitoring** **Reqs-5, 8, 16, 17 and 24**

The applicable requirements cited in this monitoring section are general requirements drawn from WAC 173-400, SWCAA 400 and ADP 05-2650. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615(1). These requirements are designed to assure compliance through periodic facility inspections and prompt corrective action. Demonstration of compliance is required in some cases via visible emissions evaluation. The emission units at this facility combust only natural gas. Visible emissions, other than heat waves, from natural gas combustion are virtually non-detectable to the human eye. The following equation shows an example calculation of particulate matter concentrations in exhaust gas from natural gas combustion based on an EPA AP-42 emission factor and EPA's Method 19 fuel factor of 8710 dscf/MMBtu corrected to 15% oxygen:

$$(0.005 \text{ lbs PM/MMBtu}) * (7000 \text{ gr/lb}) * (\text{MMBtu}/8710 \text{ dscf}) * (20.9-15.0)/(20.9) = 0.001 \text{ gr/dscf at 15\% oxygen.}$$

Emissions are generally not visible until the concentration approaches 0.01 gr/dscf. In addition, this source has a history of opacity compliance. Therefore, monthly opacity monitoring is considered adequate for demonstrating compliance with WAC 173-460 and SWCAA 400 requirements as well as ADP 05-2596 opacity requirements.

**M7. Fugitive Emissions Monitoring** **Reqs-9, 10, 11 and 15**

The applicable requirements cited in this monitoring section are all general requirements drawn from SWCAA 400. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615(1). These requirements are designed to assure compliance through a combination of prompt complaint response and monthly facility inspections.

Potential fugitive emissions from this facility include road dust and odors from fugitive natural gas. Since the facility surface consists of gravel and vehicular traffic is limited to maintenance personnel, road dust is expected to be minimal. Natural gas in the pipeline has not been odorized but does contain small quantities of naturally occurring mercaptans. During normal operation odors are not detectable off site. Monthly facility inspections are adequate to demonstrate compliance with

fugitive emissions because odors are not generated as part of routine maintenance but may be generated by upset conditions which will be reduced by preventative maintenance.

**M8. Complaint Monitoring** **Req-12**

The applicable requirements cited in this monitoring section are general requirements drawn from WAC 173-400 and SWCAA 400. These requirements do not directly establish any specific regime of monitoring or recordkeeping. Consequently, SWCAA has implemented monitoring and recordkeeping requirements under the "gap filling" provisions of WAC 173-401-615. These requirements are designed to ensure compliance through prompt complaint response and corrective action.

**M9. Reciprocating Engine Testing and Recording Requirements** **Reqs-18 and 19**

The applicable requirements cited in this monitoring section are taken from ADP 05-2650. The engine is also subject to SWCAA 400-052 which requires emission testing of sources which emit 100 tpy or more of a pollutant. SWCAA 400-052 requires testing of combustion units once every two years unless an alternative sampling schedule has been approved by SWCAA. This alternative sampling schedule is contained in ADP 05-2596.

The purpose of testing is to generate emission values with which to demonstrate compliance. ADP 05-2650 requires that the reciprocating engine be emission tested at least once every five years. If the engine has operated more than 5,000 hours since the last emission test, testing shall be performed during the next calendar year. Source testing shall be performed at two operating conditions, one of which must be representative of maximum intended operating conditions. The second load condition shall consist a load (<85% torque and <218 rpm, <85% torque and ≥218 rpm, or ≥85% torque and <218 rpm) that the engine has most frequently operated at since the last source test or another load condition agreed upon by SWCAA. In addition, M9 requires that the source record monthly hours of operation of the engine at each of the four load conditions. This information is necessary to determine emissions.

SWCAA does not believe that the performance from this unit will significantly degrade with time based on emission source tests from similar type units as well as a long history of emission testing performed on this unit. The testing frequency requires that the engine be tested once every five years if operated infrequently and every two years if the turbine operates significantly.

The method of calculating emissions is taken from the Technical Support Document to ADP 05-2650 with the exception of SO<sub>2</sub> calculation. The Technical Support Document to ADP 05-2596 states that SO<sub>2</sub> emissions shall be calculated based on the annual average sulfur content and the quantity of natural gas combusted. However all other emissions are calculated based on hours of operation, not amount of fuel consumed. Therefore the AOP Permit will specify that SO<sub>2</sub> emissions be calculated based on the annual average sulfur content of the fuel, hours of operation of the unit and the maximum heat input of the unit. This will result in a conservative emission estimate that will require the same calculation method as the other pollutants. Benzene and mercury compliance is to be determined by hours of operation and the emission factors contained in the TSD for ADP 05-2650.

**M10. Taurus Turbine Testing and Recording Requirements** **Reqs-18 and 20**

The applicable requirements cited in this monitoring section are taken from ADP 05-2650. The purpose of testing is to generate emission factors with which to demonstrate compliance. SWCAA does not believe that the performance from these units will significantly degrade with time based on emission source tests from similar type units. Therefore, SWCAA believes testing every five years is adequate. In addition, natural gas turbines do not emit significant quantities of PM, SO<sub>2</sub>, formaldehyde, or benzene. Also, emissions of SO<sub>2</sub>, and benzene are a function of the fuel content and are not generated as the result of incomplete combustion.

The method of calculating emissions is taken from the Technical Support Document to ADP 05-2650 with the exception of SO<sub>2</sub> calculation. The Technical Support Document to ADP 05-2596 states that SO<sub>2</sub> emissions shall be calculated based on the annual average sulfur content and the quantity of natural gas combusted. However all other emissions are calculated based on hours of operation, not amount of fuel consumed. Therefore the AOP Permit will specify that SO<sub>2</sub> emissions be calculated based on the annual average sulfur content of the fuel, hours of operation of the unit and the maximum heat input of the unit. This will result in a conservative emission estimate that will require the same calculation method as the other pollutants. Compliance with the emission limits for PM, formaldehyde and benzene is to be determined by hours of operation of each unit and the emission factors contained in the permit. In addition, M10 requires that the source record monthly hours of operation of the turbine. This information is necessary to determine emissions.

**M11. Centaur Turbine Testing and Recording Requirements** **Reqs-18 and 21**

The applicable requirements cited in this monitoring section are taken from ADP 05-2650. The purpose of testing is to generate emission factors with which to demonstrate compliance. SWCAA does not believe that the performance from these units will significantly degrade with time based on emission source tests from similar type units. Therefore, SWCAA believes testing every five years is adequate. In addition, natural gas turbines do not emit significant quantities of PM, SO<sub>2</sub>, formaldehyde, or benzene. Also, emissions of SO<sub>2</sub> and benzene are a function of the fuel content and are not generated as the result of incomplete combustion.

The method of calculating emissions is taken from the Technical Support Document to ADP 05-2650 with the exception of SO<sub>2</sub> calculation. The Technical Support Document to ADP 05-2596 states that SO<sub>2</sub> emissions shall be calculated based on the annual average sulfur content and the quantity of natural gas combusted. However all other emissions are calculated based on hours of operation, not amount of fuel consumed. Therefore the AOP Permit will specify that SO<sub>2</sub> emissions be calculated based on the annual average sulfur content of the fuel, hours of operation of the unit and the maximum heat input of the unit. This will result in a conservative emission estimate that will require the same calculation method as the other pollutants. Compliance with the emission limits for PM, formaldehyde and benzene is to be determined by hours of operation of each unit and the emission factors contained in the permit. In addition, M11 requires that the source record monthly hours of operation of the turbines. This information is necessary to determine emissions.

**M12. Ancillary Equipment Recording Requirements** **Reqs-18, 22, 23 and 27**

The boiler, emergency generator engine and line heater are not required to be tested. Emissions from these units are minimal therefore compliance with the emission limits is to be determined by hours of operation and the emission factors contained in the TSD for ADP 05-2650. In addition, M12 requires that the source record monthly hours of operation of the boiler and generator. This information is necessary to determine emissions. Emissions from the line heater will be calculated

based on an assumption of continuous operation of 8,760 hours per year. Based on the small size (0.5 MMBtu/hr) of this unit it is not necessary to track usage.

**M13. Reciprocating Engine RPM and Torque** **Req-26**

The requirement cited in this monitoring section is taken from ADP 05-2650. Compliance is to be demonstrated by a continuous monitor for the rpm and torque. The data is to be reported based on hourly averages.

**VIII. EXPLANATION OF RECORDKEEPING TERMS AND CONDITIONS**

This reporting section is taken directly from WAC 173-401-615(2). Recordkeeping requirements were separated into Sections (a) through (f) to organize the requirements. Sections (a) and (b) were added to clarify routine inspections and complaints.

**IX. EXPLANATION OF REPORTING TERMS AND CONDITIONS**

**R1. Deviations from Permit Conditions**

The permittee is required to report all permit deviations. This reporting section is taken directly from SWCAA 400-107. The permittee is required to report all permit deviations no later than 30 days following the end of the month during which the deviation is discovered. Permit deviations due to excess emissions shall be reported to SWCAA as soon as possible. SWCAA may request a full report of any deviation if determined necessary. These deviations are also reported in each semi-annual report.

**R2. Complaint Reports**

The permittee is required to report all complaints received by the permittee or forwarded to the permittee by SWCAA regarding the compressor station but excluding noise or right-of-way issues to SWCAA within three business days of receipt to ensure prompt complaint response. This reporting section is based on WAC 173-401-615(3), and SWCAA's definition of "prompt" for reporting of complaints.

**R3. Semi-annual Reports**

The permittee is required to report monitoring records and certification of monitoring records on a semi-annual basis. Semi-annual reporting of monitoring records and certification of monitoring records is required by WAC 173-401-615(3). Sections (e) and (f) are taken directly from Subpart KKKK, 40 CFR 60.4300. Sections (g) through (k) are taken from ADP 05-2560.

**R4. Annual Compliance Certification**

The permittee is required to report and certify compliance with all permit terms and conditions on an annual basis. Annual compliance certification is required by WAC 173-401-630(5). 40 CFR 60.11(g) requires the permittee to consider credible evidence when submitting compliance certifications for NSPS affected units EU2, EU3 and EU4.

**R5. Emission Inventory Reports**

The permittee is required to report an inventory of annual emissions as provided in SWCAA 400-105. The annual emissions inventory must be submitted to SWCAA by March 15<sup>th</sup> for the previous calendar year as provided in SWCAA 400-105. This complete emission inventory includes emissions from all EUs.

**R6. Emission Test Reports**

This reporting requirement is taken from ADP 05-2596 Section 28. The permittee is required to submit test results to SWCAA within 45 days of test completion to allow timely review by SWCAA.

**X. APPENDICES**

Appendix A contains the method by which visible emissions from the permittee's operations are to be evaluated when demonstrating compliance if any visible emissions are observed. SWCAA has traditionally determined compliance with local visible emissions standards using EPA Method 9 with modified data reduction. SWCAA has exercised its latitude under SWCAA 400-105(4) "Source Testing" to approve this alternative test method in advance for visible emission evaluation. Approval has been granted via signature of this permit by SWCAA's Executive Director. The alternative method shall be used to determine compliance only with state and local opacity standards. Determination of compliance with any federally established opacity standard requires that EPA Method 9 be performed. This Appendix is included to define the visible emission standard. It does not necessarily require that Northwest Pipeline GP personnel be certified in its use.

Appendix B contains the criteria which must be met in order to use an alternate test method for formaldehyde.

**XI. PERMIT ACTIONS****1. Current Permitting Action**


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1. Permit Renewal Application Submitted:	September 28, 2010
2. Permit Application deemed complete:	May 20, 2011
3. Permit Application sent to EPA:	May 25, 2011
4. Draft revised permit issued:	June 15, 2011
5. Proposed revised permit issued:	July 26, 2011
6. Final revised permit issued:	September 19, 2011

**2. Previous Permitting Actions****Permit Renewal – AOP SW98-7-R1-A**


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1. Permit Renewal Application Submitted:	February 27, 2004
2. Permit Application deemed complete:	April 14, 2004
3. Permit Application sent to EPA:	November 17, 2005
4. Draft administrative revised permit issued:	October 14, 2009
5. Proposed administrative revised permit issued:	November 20, 2009
6. Final administrative revised permit issued:	December 16, 2009