



*Serving Island, Skagit & Whatcom Counties*

**NORTHWEST PIPELINE GP**  
**MOUNT VERNON COMPRESSOR STATION**  
**MOUNT VERNON, WASHINGTON**

**STATEMENT OF BASIS**  
**for**  
**AIR OPERATING PERMIT**

**Final**

**April 30, 2009**

## AIR OPERATING PERMIT GENERAL INFORMATION

**Northwest Pipeline GP, Mount Vernon Compressor Station  
15498 Lange Road  
Mount Vernon, Washington 98273**

**SIC: 4922**

**EPA AFS: 53 057 0044**

**NWCAA ID: 440-V-S**

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## **SECTION 1 INTRODUCTION**

Northwest Pipeline GP operates a natural gas pipeline system from the Washington-Canadian border near Sumas, Washington, to the San Juan gas fields in New Mexico. The gas pipeline system serves commercial, industrial, utility, cogeneration, and other customers in Washington, Oregon, Nevada, and California. The Northwest Pipeline GP - Mount Vernon Compressor Station, located about 5 miles east of Mount Vernon, Washington, assists in the transport of natural gas from the Sumas to the Snohomish compressor stations. The Mount Vernon station is one of many natural gas compressor stations located approximately every 50 miles along the pipeline.

The Northwest Pipeline GP - Mount Vernon Compressor Station (also identified herein as the permittee, NWP-MVCS or the facility) is required to have an Air Operating Permit because the facility has the potential to emit greater than 100 tons of carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>), and greater than 10 tons per year of formaldehyde. These air pollutants are defined as regulated air pollutants in the Washington Administrative Code (WAC) 173-401. These and other emissions are produced by the combustion of natural gas in the fuel-burning units at the facility.

The Northwest Clean Air Agency (NWCAA) issued the original Air Operating Permit for NWP-MVCS on December 3, 1998. The permit was modified in May 2000 to change a monitoring parameter in Section 5 and again in August 2001 for a minor administrative change. The permit expired on December 3, 2003.

The purpose of this Statement of Basis is to set forth the legal and factual basis for the conditions in the NWP-MVCS Air Operating Permit and to provide background information for permit review by interested parties. In accordance with WAC 173-401-700(8), this Statement of Basis is not a legally enforceable document.

The following changes in the Northwest Pipeline GP AOP for the April 2009 Modification were made in accordance with WAC 173-401-720:

The name Northwest Pipeline Corporation has been replaced with Northwest Pipeline GP throughout, including, but not limited, the title page, headers, table headers, and elsewhere in the text using search-and-replace.

The Responsible Corporate Official has been changed from Larry Hjalmarson to Barry Orgill.

“Prepared by Mark Buford” has been replaced with “Prepared by Christos Christoforou.”

The signature page has been edited, and signees now are Christos Christoforou, Mark Buford, and Lynn Billington.

The AOP Permit number has been changed, “Permit Modifications” field has been filled, the “Modification Date” field has been filled, the “Application Date” field has been changed, and the “Supersedes Permit Number” field has been updated.

The AOP has been formatted to reflect current NWCAA standards. As a result, section numbers, table numbers, and page numbers have changed.

## SECTION 2 FACILITY DESCRIPTION

### 2.1 Facility History

The Northwest Pipeline GP - Mount Vernon Compressor Station was constructed in 1966, and initially consisted primarily of one Clark TCV-12 four thousand horsepower reciprocating engine driving a reciprocating compressor. A second, identical engine/compressor set was added to the station in 1968. A 5.25 MMBtu/hour natural gas boiler to provide building heat and pre-heated water for compressor engines was permitted in 1991. A 270-kilowatt standby emergency generator and a 2.5 MMBtu/hr natural gas boiler were permitted in 1992. In 1993, the facility added one Solar Centaur T-4500 gas turbine and compressor set. Installation was completed June 22, 1993. A Solar SoLoNO<sub>x</sub> dry low-NO<sub>x</sub> combustor was installed on the Solar Centaur T-4500 gas turbine and placed in operation on October 21, 1994. A second mobile Solar Centaur gas turbine, model 40-T4700S, was permitted to be located at the site in May 1998.

In early 2003 the facility underwent significant modifications to increase capacity. A larger Solar Mars 90 gas turbine/compressor set was added and the existing Solar Centaur T-4500 turbine was replaced with a larger Solar Centaur 50 turbine. The existing 270-kilowatt standby emergency generator and 2.5 MMBtu/hr natural gas boiler were replaced with larger units.

### 2.2 Emission Units and Control

Primary emission sources at the facility include the two Clark TCV -12 natural gas fired reciprocating engines (Unit 1 and 2), the Solar Centaur 50 turbine (Unit 3) and the Solar Mars 90 turbine (Unit 4). Though the mobile Solar Centaur 40-T4700S turbine is permitted to operate at the site on an as-needed basis, it is very rarely on site and is typically not a significant source of emissions from the facility. Minor emission sources include auxiliary equipment - the Sellers C80 heater/boiler, the C125-W heater/boiler and the 450kW standby generator. In addition, fugitive emissions originate from the gas pipeline and the fuel system servicing the turbines and reciprocating engines. All combustion sources at the facility are fueled with natural gas from the pipeline.

The reciprocating compressors are not equipped with air pollution control equipment. NO<sub>x</sub> emissions from the gas turbines are reduced by incorporation of SoLoNO<sub>x</sub> technology into the units. SoLoNO<sub>x</sub> equipped turbines use proprietary lean-premixed combustion technology to ensure a uniform air/fuel mixture and to reduce the formation of pollutants, including NO<sub>x</sub>. The gas turbine systems do not have water injection or other pollution control equipment. Table 1 includes the 2005 annual emissions from primary emission units at the NWP-MVCS.

**Table 2-1 NWP-MVCS 2005 Annual Emissions**

Emission Source	Unit ID Number	Pollutant Emission Rates, tons/year				
		NO <sub>x</sub>	CO	VOC	PM <sub>10</sub>	SO <sub>2</sub>
Clark TCV-12	1	16	6	1	<1	<1
Clark TCV-12	2	27	10	2	1	<1
Solar Centaur 50	3	3	6	<1	<1	<1
Solar Mars 90	4	14	10	<1	1	1
TOTAL		60	32	3	2	1

## 2.3 Monitoring History

In 1994 the facility applied for and received permission from the Washington State Department of Ecology (WDOE) and the Northwest Clean Air Agency (NWCAA) to develop and install a predictive emissions monitoring system (PEMS) for the Solar Centaur 40 gas turbine. The PEMS was completed and tested with Relative Accuracy Test Audits (RATAs) to meet the requirements of Title 40 Code of Federal Regulations Appendices B and F.

Beginning in July 1996 the permittee requested approval to replace the PEMS at the Mount Vernon Compressor Station with periodic testing and calculated emissions, based on the stack test data, hours of operation, and fuel usage. This decision was based on the RATA results and additional testing done by NWP. Approval was given by the Washington Department of Ecology and the NWCAA, with the condition that the gas turbine would be tested once every twelve months for two years. Furthermore, the parties agreed that NWP-MVCS would conduct stack tests on one of the two identical reciprocating engines every five years.

As part of the original AOP development process, it became evident that the periodic stack testing agreement between NWP-MVCS, NWCAA, and WDOE was not acceptable to EPA Region 10 as periodic monitoring requirements under WAC 173-401-605(1) and 173-401-615(1) and (2). In response, the permittee developed and submitted a monitoring plan describing surrogate parameter monitoring and operation and maintenance procedures. The plan was designed to comply with both PSD permit conditions and the periodic monitoring requirements of the operating permit program. Surrogate parametric emissions monitoring (PEMS<sup>1</sup>) proposed in the Monitoring Plan replaced the proposed predictive system, and was incorporated into the AOP.

In March 1999, an engine malfunction at Unit #8 at the Sumas Compressor Station was detected during a compliance source test. Because of a failed clamp ring within the turbine, NOx emissions were abnormally high. While the malfunction would have eventually caused an engine shutdown, it was evident to both the NWCAA and the facility managers that the surrogate monitoring parameters were not adequate to detect this type of mechanical failure. Because WAC 173-401-600 requires that each permit contain terms and conditions that assure compliance with all applicable requirements at the time of permit issuance, and as the surrogate monitoring parameters were insufficient to assure compliance, the NWCAA requested a submittal of additional monitoring parameters for both compressor stations. The facility managers submitted a letter on October 25, 1999 suggesting additional monitoring parameters. A letter to the NWCAA, dated December 11, 1999, further clarified the parameters.

With the shutdown of the Solar Centaur 40 turbine and the contemplated addition of two new turbines (Solar Centaur 50 and Solar Mars 90) at the Mount Vernon Station in 2003, NWP-MVCS again proposed a PEMS system to continuously monitor NOx emissions from the two turbines. Required operating conditions for the PEMS were written into PSP Permit 01-09 and OAC 794.

In November, 2003, Unit #8 at the Sumas Compressor Station again failed to demonstrate compliance during a compliance test due to a malfunction. As in 1999, the PEMS system did not indicate a compliance problem and failed to serve its primary purpose. WDOE, NWCAA, and NWP-MVCS subsequently agreed that the PEMS was ineffective and would be replaced by a monitoring procedure using a portable emission analyzer measuring emissions on a prescribed schedule as detailed in PSD-01-09 Second Amendment and NWCAA OAC 793b.

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<sup>1</sup> Note that the acronym “PEMS” was used for both the predictive emissions monitoring system and later parametric emissions monitoring system. The resulting confusion may be lessened now that neither system is used.

For the three Solar Mars turbines, this schedule requires monitoring not less frequently than once every 336 hours of operation.

In 2006, NWP-MVCS requested that the testing frequency for the portable analyzers be reduced from once every 336 hours of operation (approximately every 2 weeks) to every 672 hours of operation (approximately every month). Three years of testing with the portable analyzers has shown them to be effective. Accordingly, the NWCAA issued OAC 794d and WDOE issued PSD-01-09 Amendment 5 which both include an option for reduced testing.

Data on the initial source tests for the Solar turbines are shown in Appendix A and indicate initial compliance with permit limits.

**Table 2-2 – NWP-MVCS Turbine Stack Test Frequency\***

POLLUTANT	TEST METHOD	FREQUENCY
Opacity of emissions	Method 9	Annual
Carbon monoxide (CO)	Method 10	Annual
Nitrogen oxides (NO <sub>x</sub> )	Method 20	Annual

\* Note that this does not apply to the mobile turbine

## 2.4 Compliance History

The Northwest Pipeline GP, Mount Vernon Compressor Station was initially registered by the NWCAA on May 31, 1990. There have been no notices of violations issued. Two odor complaints were received by the NWCAA against the Station on November 11, 1993. The complaints were investigated by NWCAA inspectors. The inspector's report states that the facility vented a quantity of natural gas, in what the report says is a "rare procedure". No complaints regarding the compressor station have been received by the NWCAA since that time.

On September 12, 2003 the facility was issued a "Notice of Violation-Warning" as a result of a facility inspection by NWCAA. The inspection found that the facility was not performing continuous monitoring as required by PSD 01-09 and OAC 794a. Specifically, the PEMS was not set up to display the ongoing emissions of NO<sub>x</sub> in the same units as required by relevant sections of the PSD and NWCAA permits. In addition, carbon monoxide was not being monitored as required by OAC 794a. MWP-MVCS agreed to correct these issues and include this information in their data acquisition system. Since that time, the PEMS system has been abandoned and replaced with periodic monitoring.

## 2.5 New Source Performance Standards (NSPS)

The Solar Centaur 90 gas turbine (started up on June 2, 2003), and the Solar Centaur 50 gas turbine (started up on June 25, 2003), are subject to New Source Performance Standard Subpart GG - Standards of Performance for Stationary Gas Turbines, codified in Title 40 Code of Federal Regulations (CFR). Subpart GG provides standards for nitrogen oxides in Section 60.332 and sulfur dioxide in Section 60.333, requirements for monitoring in Section 60.334, and test methods and procedures in Section 60.335. Compliance assurance with the continuously applicable parts of each of these subparts is described in Section 5 – Specifically Applicable Requirements of the permit.

## 2.6 Prevention of Significant Deterioration

PSD permit 93-01 from the WDOE was issued July 14, 1993. This permit allowed the installation of one Solar Centaur T-4500 gas-fired turbine (Unit 3).

PSD permit 93-01 Amendment 1 was issued on May 11, 1998. This amendment incorporated several minor changes into the permit. These included a clarification of source test frequency requirements, a reduction of the NO<sub>x</sub> averaging period from a rolling 24-hour average to an hourly average, and stack tests of the existing reciprocating compressor engines.

The turbine permitted under PSD permit 93-01 Amendment 1 was removed from the facility and replaced with turbines that are permitted under PSD permit 01-09. It is the policy of WDOE, however, that old PSD permits are not superseded by newer PSD permits and that all of the requirements of PSD Permit 93-01 Amendment 1 are still applicable and in effect. In anticipation of the difficulties associated with enforcing requirements on nonexistent equipment, those requirements of PSD Permit 93-01 Amendment 1 that apply to nonexistent equipment are not included in this Air Operating Permit. Those requirements of Permit 93-01 that applied to the whole facility or equipment still in place will be referenced.

PSD Permit 01-09 was approved on July 31, 2002. This permit was initiated by the following project:

Adding one Mars 90-TI3002S (Mars 90S) gas turbine site-rated at 12,787 horsepower (59° F.),

Adding one Centaur 40-T4700S (Centaur 40S) gas turbine site-rated at 4,554 horsepower (59° F.),

Replacing an existing standby generator with one of larger capacity (450 kW), and

Replacing an existing 2.5 million British thermal units per hour (MMBtu/hr.) heater/boiler with one of larger capacity (4.186 MMBtu/hr. Sellers C100).

The conditions contained in PSD 01-09 are detailed and extensive and identify fuel usage (natural gas from the pipeline), emission limitations for NO<sub>x</sub> (in terms of ppm, lbs/day and tons/year), monitoring and reporting requirements, PEMS operating criteria, hours of operation for the standby emergency generator, and other operating and monitoring criteria.

PSD-01-09 Amendment 1 was issued on May 9, 2003 and was necessary because NWP-MVCS changed the project scope. The new scope (shown below) was changed in that NWP-MVCS chose to remove the existing Solar Centaur 40-T4500 permitted under PSD 93-01 and replace it with a larger Solar Centaur 50S rather than keeping the existing turbine and adding another Centaur 40S as was originally permitted in PSD 01-09. The revised scope included:

Adding one Mars 90-TI3002S (Mars 90S) gas turbine site-rated at 12,787 horsepower (59° F.) as originally permitted.

Substituting an existing Centaur 40-T4500 upgraded to a Centaur 50-T6100S (Centaur 50S) at 5,950 hp (59° F.) for the originally permitted Centaur 40-T4700S (Centaur 40S) gas turbine site-rated at 4,554 horsepower.

Replacing an existing standby generator with one of larger capacity (450 kW) as originally permitted.

Replacing an existing 2.5 million British thermal units per hour (MMBtu/hr.) heater/boiler with one of larger capacity (4.186 MMBtu/hr. Sellers C100) as originally permitted.

After completion of one year of operation, it was determined that the parametric monitoring system (PEMS) could not provide accurate real time monitoring of emissions from the turbines. WDOE, the NWCAA, and NWP-MVCS subsequently agreed that the PEMS would be replaced

by a monitoring procedure using a portable emission analyzer measuring emissions on a prescribed schedule.

PSD-01-09 Second Amendment was issued on July 15, 2004 and replaced the PEMS monitoring with periodic monitoring using portable analyzers. There were no changes to emission limits. For the Solar turbines, the schedule requires monitoring not less frequently than once every 336 hours of operation.

PSD-01-09 Amendment 3 was issued on August 23, 2004 and clarified some monitoring requirements. WDOE made the annual NOx tests for the turbines easier to find in the permit and at NWP-MVCS's request changed the portable NOx analyzer to a portable "emissions" analyzer.

PSD-01-09 Amendment 4 was issued on January 4, 2005 and was issued to reflect the fact that NWP-MVCS installed a Sellers C-80 boiler rather than the originally permitted Sellers C-100 boiler. The C-80 is smaller and emits less, so there was no related enforcement. As the permit was to be opened anyway, NWP-MVCS requested that the NOx monitoring frequency for the Sellers C-80 be reduced from annually to every 5 years. This request was granted by WDOE and is reflected in this permit amendment.

PSD-01-09 Amendment 5 was issued on June 14, 2006 and was issued to allow for reduced NOx monitoring of the turbines using the portable monitors. Amendment 5 allows the monitoring frequency to be reduced from every 336 operating hours (in practice about every 2 weeks) to every 672 operating hours (in practice about every month). The monitoring frequency reverts to the 336-hour schedule should a unit fail a test.

Since these conditions apply specifically to equipment at the facility, they are contained in Section 5 – Specifically Applicable Requirements.

## **2.7 Northwest Clean Air Agency Orders of Approval to Construct**

The Northwest Pipeline GP has received Orders of Approval to Construct (OAC) from the NWCAA for specific equipment. Applicable requirements, reference test methods, and monitoring for continuing OAC requirements are addressed in Sections 3 and 4 of the permit.

### NWAPA Order of Approval to Construct No. 311

Issue Date: February 6, 1991; revised March 28, 1991

Permitted Equipment: Sellers C-125-W water heater/boiler

### NWAPA Order of Approval to Construct No. 320

Issue Date: July 15, 1992; revised April 2, 1993, May 8, 1995, and July 22, 1997

Permitted Equipment: Solar Centaur T4500 gas-fired turbine

\*\* Superseded by OAC 794 \*\*

### NWAPA Order of Approval to Construct No. 402

Issue Date: October 21, 1992

Permitted Equipment: Sellers C-60 2.5 MMBtu/hr water heater/boiler  
250 kW standby emergency generator

\*\* Superseded by OAC 794 \*\*

### NWAPA Order of Approval to Construct No. 657

Issue Date: May 12, 1998

Permitted Equipment: Solar Centaur 40-T4700S gas-fired turbine (occasional use in case of reciprocating engine failure. This unit is typically not stored on-site, but is brought in when needed).

NWAPA Order of Approval to Construct No. 794

Issue Date: August 12, 2002; revised March 4, 2003, August 9, 2004, January 11, 2005, and August 30, 2006

Permitted Equipment: Solar Mars 90-TI3002S (Mars 90S) gas turbine  
Solar Centaur 50-T6100S (Centaur 50S) gas turbine  
450 kW standby emergency generator  
Sellers C-80 water heater/boiler

Order of Approval to Construct (OAC) 794a was issued by the Northwest Clean Air Agency on March 4, 2003. OAC 794a superseded previously issued Orders (OACs 320 and 402), and imposed additional conditions beyond those contained in PSD 01-09 on the facility. These include limits for CO and VOC emission (in lbs/day and tons/year), reporting requirements, and requirements for initial source tests and subsequent ongoing testing for the turbines according to the schedule shown on the following page. In addition, OAC 794a included a requirement that NWP-MVCS perform boroscope analysis on the two turbines on a regularly scheduled basis and also visually inspect the fuel injectors at prescribed intervals. A revised OAC 794b was issued on August 9, 2004 as a result of the change of the monitoring program from the PEMS methodology to a portable emissions analyzer using EPA Conditional Test Method 34. OAC 794c was issued on January 11, 2005 to identify a source change (Sellers C-80 boiler/heater) and to change the monitoring requirements for this source. OAC 794d was issued on August 30, 2006, and allowed an option for reduced monitoring of the gas turbines.

Data on the initial source tests for the Solar Centaur 50 and the Solar Mars 90 turbines are shown in Appendix A and indicate initial compliance with permit limits.

## **SECTION 3 GENERAL PERMIT ASSUMPTIONS**

### **3.1 Permit Content**

The permit contains (1) standard terms; (2) generally applicable conditions for the type of facility permitted; and (3) specifically applicable conditions originating from PSD permits, approvals to construct and any orders referencing the facility. Applicable requirements that were satisfied by a single past action on the part of the source are not included in the permit but are discussed in the Statement of Basis. An example would include performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

### **3.2 One Time Requirements**

One time requirements related to the original turbines are not included because they were removed and replaced with new turbines in 2003.

NWCAA OAC 311a Condition 4 requires payment of plan and examination fees prior to startup of the 2.5 MMBtu/hr boiler/water heater. The plan and examination fees were paid on April 15, 1991.

NWCAA OAC 657 Condition 7 and 40 CFR 60.8 require an initial performance test of the Solar Centaur 40 turbine. This test was conducted on September 22, 1998 and the test report is on file.

NWCAA OAC 657 Condition 14 and 40 CFR 60.7a(1) and (3) require notification before initial construction, startup, and operation of the Solar Centaur 40 turbine. Letter submitted to NWCAA and EPA Region 10 on August 17, 1998.

PSD 01-09 Condition 2.4 requires an initial stack test of the 450kW emergency standby generator to document NO<sub>x</sub> emissions from the unit. The test was conducted on December 29, 2003 and indicated compliance with the emission limit in Condition 2.3 of PSD 01-09.

PSD 01-09 Condition 3.2 requires an initial stack test of the Sellers C-80 heater/boiler to document NO<sub>x</sub> emissions from the unit. The test was conducted on October 29, 2003 and indicated compliance with the emission limit in Condition 3.1 of PSD 01-09.

PSD 01-09 Condition 8.1.1 and 40 CFR 60.7a(1) require notification before initial construction of the Solar Centaur 50 and Mars 90 turbines. Such notice was submitted to NWCAA and WDOE on October 23, 2002.

PSD 01-09 Condition 8.1.2 and 40 CFR 60.7a(3) require notification before initial startup of the Solar Centaur 50 turbine. Such notice was submitted to NWCAA and WDOE on June 26, 2003.

PSD 01-09 Condition 8.1.2 and 40 CFR 60.7a(3) require notification before initial startup of the Solar Mars 90 turbine. Such notice was submitted to NWCAA on May 29, 2003.

NWCAA OAC 794d Condition 8, PSD 01-09 Condition 5.1.5.1 and 40 CFR 60.8 require an initial performance test of the Solar Mars 90 turbine. The initial performance test was October 27-30, 2003 and the test report is on file.

NWCAA OAC 794d Condition 8, PSD 01-09 Condition 5.2.5.1 and 40 CFR 60.8 require an initial performance test of the Solar Centaur 50 turbine. The initial performance test was August 16-21, 2003 and the test report is on file.

PSD 01-09 Conditions 8.1.3 and 8.1.4 include initial O&M requirements. NWP-MVCS has complied with both as evidenced by their quarterly reports and inspection of the O&M manual.

### **3.3 Federal Enforceability**

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act or under any of its applicable requirements. Local and state regulations may become federally enforceable by formal approval into the State Implementation Plan or through other delegation mechanisms. Federally enforceable requirements are enforceable by the EPA and United States citizens. All applicable requirements in the permit, including standard terms and conditions, generally applicable requirements, and specifically applicable requirements are federally enforceable unless they are identified in the permit as enforceable only by the state. If two different versions of the same regulatory citation apply to the source and one version is federally enforceable and the other version is enforceable only by the state, both are listed as separate applicable requirements. If a regulation has both federally enforceable and state-only enforceable versions and the text is the same, the citation is the most current version and is considered federally enforceable. The citation for each applicable requirement includes a date. This date may be the filing date (in the case of WACs) or it may be the approval date or the publication date for the NWCAA Regulation sections and federal regulations, respectively.

### **3.4 Future Requirements**

There are no pending applicable requirements that apply to the Northwest Pipeline GP, Mount Vernon Compressor Station. Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within Section 3 of the permit. There is presently no pending application to construct a new source at the compressor station. Northwest Pipeline GP officials have certified in their permit application that the facility will meet any future applicable requirements on a timely basis.

### **3.5 Compliance Options**

The Northwest Pipeline GP did not request emissions trading provisions or specify more than one operating scenario in the operating permit application, so the permit does not address these options. This operating permit does not condense overlapping applicable requirements (streamlining) nor does it provide any alternative emission limitations.

### **3.6 CAM Plan**

NWP-MVCS is not subject to the Compliance Assurance Monitoring (CAM) Rule – 40 CFR Part 64. This facility is subject to a NO<sub>x</sub> and CO emission limitation for their turbines; but because the turbines do not employ add-on control devices to achieve compliance, they are exempt from this rule.

## **SECTION 4 PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS**

### **4.1 Permit Elements**

The Northwest Pipeline GP - Mount Vernon Compressor Station permit is divided into the following sections:

General Information Page

Attest

Table of Contents

Section 1- Emissions Unit Identification

Section 2 - Standard Terms and Conditions

Section 3 – Standard Terms and Conditions for New Source Performance Standards

Section 4 - Generally Applicable Requirements

Section 5 – Specifically Applicable Requirements

Section 6 - Inapplicable Requirements

### **4.2 General Information and Attest**

The Information Page of the permit identifies the source and provides general information about the permit, the responsible corporate official, and the agency personnel responsible for permit preparation, review and issuance. The Attest Page provides the NWCAA Control Officer and NWCAA Engineers authorization for the source to operate under the terms and conditions contained in the permit. The Emission Unit section lists emission units, emission points and air pollution control methods present at Northwest Pipeline GP – MVCS. Additional information about the facility may be found in the operating permit application and in associated files found under at [www.nwcleanair.org](http://www.nwcleanair.org) under Regulated Sources/Air Operating Permits/NWP Mount Vernon.

### **4.3 Standard Terms and Conditions**

The Standard Terms and Conditions sections of the permit specify administrative requirements or prohibitions without ongoing compliance monitoring requirements. The legal authority for the Standard Terms and Conditions is provided in Section 2 and Section 3 (for New Sources) citations. Where there is a difference between the paraphrased term and the language of the cited regulation, the language of the cited regulation takes precedence. In an effort to make the sections more readable, the terms and conditions have been grouped by function. In some cases, similar requirements at the state and local authority level have been grouped together.

A number of requirements that would not be applicable until triggered have also been included in Section 3. An example of one such requirement is the requirement for a source to submit an application for new source review.

### **4.4 Generally Applicable Requirements**

The Generally Applicable Requirements section of the permit identifies requirements that apply broadly to the facility. With some exceptions, each of these requirements applies non-specifically to sources. For example, NWCAA Regulation Section 455.1 broadly prohibits

particulate emissions that exceed 0.1 gr/dscf from any emissions unit. However, some requirements apply to only certain types of emissions units. For example, NWCAA Regulation Section 455.11 applies only to combustion equipment and WAC 173-400-060 applies only to general process units. Despite these differences in applicability, these requirements have been listed together in the Generally Applicable Requirements section of the permit.

The Generally Applicable Requirements are organized in Table 4 in the permit. The first column of Table 4 provides permit term numbers used to identify listed elements. The requirements specified in the second column are applicable plant-wide to all emission units at the source including insignificant emission units. The third column describes the applicable requirements for informational purposes only, and is not enforceable. The fourth column identifies monitoring the permittee must perform to assure compliance with the applicable requirement as required by WAC 173-401-605(1) and 615(1) and (2). The fourth column is enforceable except that insignificant emission units are exempt from all monitoring, recordkeeping and reporting requirements.

Chapter 173-401 WAC requires the permit to include both a reference test method and a monitoring method. The Monitoring Recordkeeping and Reporting (MR&R) requirements in the fourth column indicate official methods that the NWCAA, the EPA, or the WDOE may use to determine compliance with applicable requirements. Where the applicable requirement fails to specifically state a test method, a method is added to the permit, as required by WAC 173-401-615(1)(a). The facility has no immediate obligation to perform these tests. If the NWCAA determines via the stated reference test method or other methods that the facility is not complying with the associated applicable requirement, then a violation of the applicable requirement has occurred.

#### **4.5 Specifically Applicable Requirements**

This section lists applicable requirements that apply uniquely to a process unit or to a specific category of process unit. Typically, these requirements originate from an Order of Approval to Construct issued by NWCAA or from a State issued PSD permit. Gap filling was necessary in some cases to fulfill the requirements of Chapter 173-401-615 WAC. In these cases, an equipment-specific monitoring method was developed based on the characteristics of the permitted facility, the emissions unit, the nature of the underlying requirement, the requirements of Chapter 173-401-615 WAC, and EPA guidance.

#### **4.6 Gap Filling**

Some regulations or statutes do not specify compliance determination or monitoring methods. Chapter 173-401-615 WAC requires the permit to feature monitoring, recordkeeping and reporting adequate to demonstrate compliance with applicable requirements. In these cases, a site specific compliance monitoring method was developed based on the characteristics of the permitted facility, the nature of the underlying requirement, the requirements of Chapter 173-401-615 WAC, and EPA guidance. The process of developing and implementing these requirements is called "gap filling". The following describes the derivation of site specific compliance monitoring in the Northwest Pipeline GP, Mount Vernon Compressor Station operating permit.

Compliance with generally applicable opacity and particulate emission requirements is assured via periodic certification that only pipeline-quality natural gas is combusted and the units are properly operated and maintained, as evidenced by monitoring surrogate parameters. The permittee is also required to investigate and log actions taken in response to opacity complaints. This approach is taken because proper operation of the facility, including combustion of

pipeline-quality natural gas, presently results in zero opacity from combustion units under full load conditions.

## SECTION 5      **INSIGNIFICANT EMISSION UNITS AND INAPPLICABLE REQUIREMENTS**

### 5.1      **Insignificant Emission Units**

Washington Administrative Code 173-401-640 allows a determination regarding the applicability of requirements with which the source must comply. Section 6 of the permit lists requirements deemed inapplicable based on the applicability of the cited regulation.

Categorically exempt insignificant emissions units listed in WAC 173-401-532 are present at the Northwest Pipeline GP, Mount Vernon Compressor Station. These categorically exempt emissions units normally have extremely low emissions and are considered insignificant by regulation and not of sufficient importance to list in the permit. Other emission units or activities generate only fugitive emissions for which there are no specifically applicable requirements. These activities are categorized as insignificant by Chapter 173-401-530(1)(d) WAC. Categorically insignificant and fugitive emission units and activities are listed in the following table.

**Table 5-1 Insignificant Activities/Emission Units**

<b>Unit/Activity</b>	<b>WAC Citation Category</b>
Lubricating Oil Storage & Handling	WAC 173-401-532(3)(4)(69)
Glycol Storage and Handling	WAC 173-401-532(4)
Natural Gas Pipeline and Fuel System Emissions	WAC 173-401-530(1)(d)
Trucks, Fork Lifts, Autos	WAC 173-401-532(10)
Plant Upkeep/Painting	WAC 173-401-532(33)
Landscaping Activities	WAC 173-401-532(43)
Comfort Air Conditioning	WAC 173-401-532(46)
Natural Draft Hoods/Safety Valves	WAC 173-401-532(47)
Vents/Bathroom Facilities	WAC 173-401-532(48)
Office Activities	WAC 173-401-532(49)
Personal Care Activities	WAC 173-401-532(50)
Battery Banks	WAC 173-401-532(77)
Air Compressors	WAC 173-401-532(88)
Waste Oil Storage and Handling	WAC 173-401-532(4)
Roadway Emissions	WAC 173-401-530(1)(d)
Repair and Maintenance Activities	WAC 173-401-532(74)

### 5.2      **Inapplicable Requirements**

Chapter 173-401-640 WAC requires the permitting authority to issue a determination regarding the applicability of requirements with which the source must comply. Table 6 in the permit lists requirements deemed inapplicable to the emission units identified in Table 1 in the permit and provides the basis for each determination.

## SECTION 6 PUBLIC DOCKET AND DEFINITIONS

### 6.1 Public Docket

Copies of this permit as well as the permit application and any technical support documents are available online at [www.nwcleanair.org](http://www.nwcleanair.org) and at the following location:

Northwest Clean Air Agency  
1600 South Second Street  
Mount Vernon, WA 98273-5202

### 6.2 Definitions and Acronyms

Definitions are assumed to be those found in the underlying regulation. A short list of definitions has been included for convenience.

An "applicable requirement" is a provision, standard, or requirement in any of the listed regulations or statutes as it applies to an emission unit at a stationary source.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit pollutants.

A "permit" means for the purposes of the air operating permit program an Air Operating Permit issued pursuant to Title 5 of the 1990 Federal Clean Air Act.

"Technology-Based Emission Standard" means a standard, the stringency of which is based on determinations of what is technologically feasible considering relevant factors.

"State" means for the purposes of the air operating permit program the NWCAA or the Washington State Department of Ecology.

The following is a list of Acronyms used in the Air Operating Permit and/or Statement of Basis:

AOP Air Operating Permit  
ASTM American Society for Testing and Materials  
BACT Best Available Control Technology  
CFR Code of Federal Regulations  
CO carbon monoxide  
dscf dry standard cubic foot  
EPA The United States Environmental Protection Agency  
FCAA Federal Clean Air Act  
ISO International Standards Organization  
MR&R monitoring, recordkeeping and reporting  
NOC Notice of Construction  
NO<sub>x</sub> nitrogen oxides  
NSPS New Source Performance Standards  
NSR New Source Review  
NWCAA Northwest Clean Air Agency  
NWP-MVCS Northwest Pipeline GP - Mount Vernon Compressor Station

OAC Order of Approval to Construct  
PEMS Parametric Emissions Monitoring System  
PM particulate matter  
PM<sub>10</sub> particulate matter less than 10 microns in diameter  
Ppmdv (or ppmdv) parts per million by volume (dry basis)  
RCW Revised Code of Washington  
SIP State Implementation Plan  
STP Standard temperature and pressure  
SO<sub>2</sub> sulfur dioxide  
WAC Washington Administration Code

## **APPENDIX A**

Figure A-1 – Location map

Figure A-2 – Site Plan

Table A-1 – Solar Centaur 50 - Initial Source Test

Table A-2 – Solar Mars 90 - Initial Source Test

Table A-3 – Solar Mars 90 - Initial Source Test

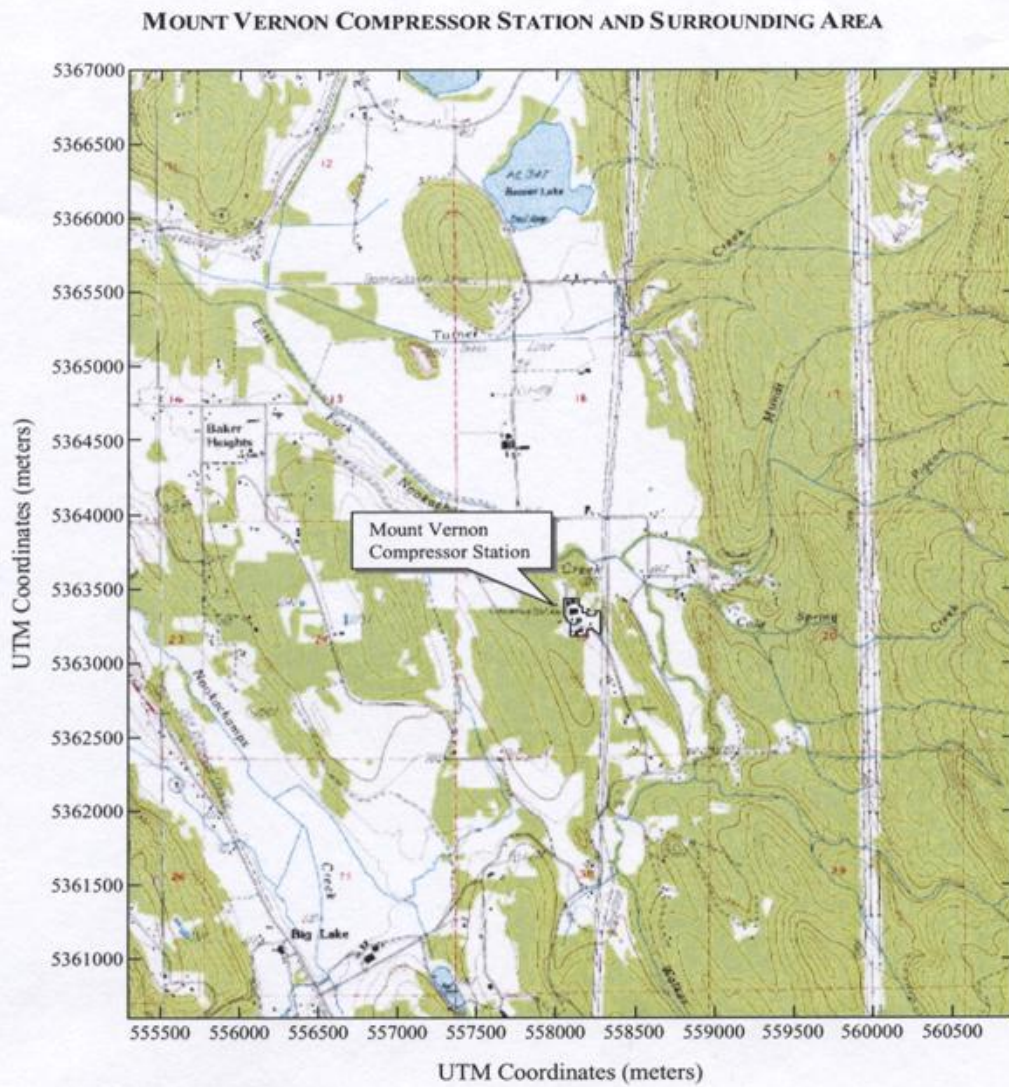


Figure A - 1 Location Map

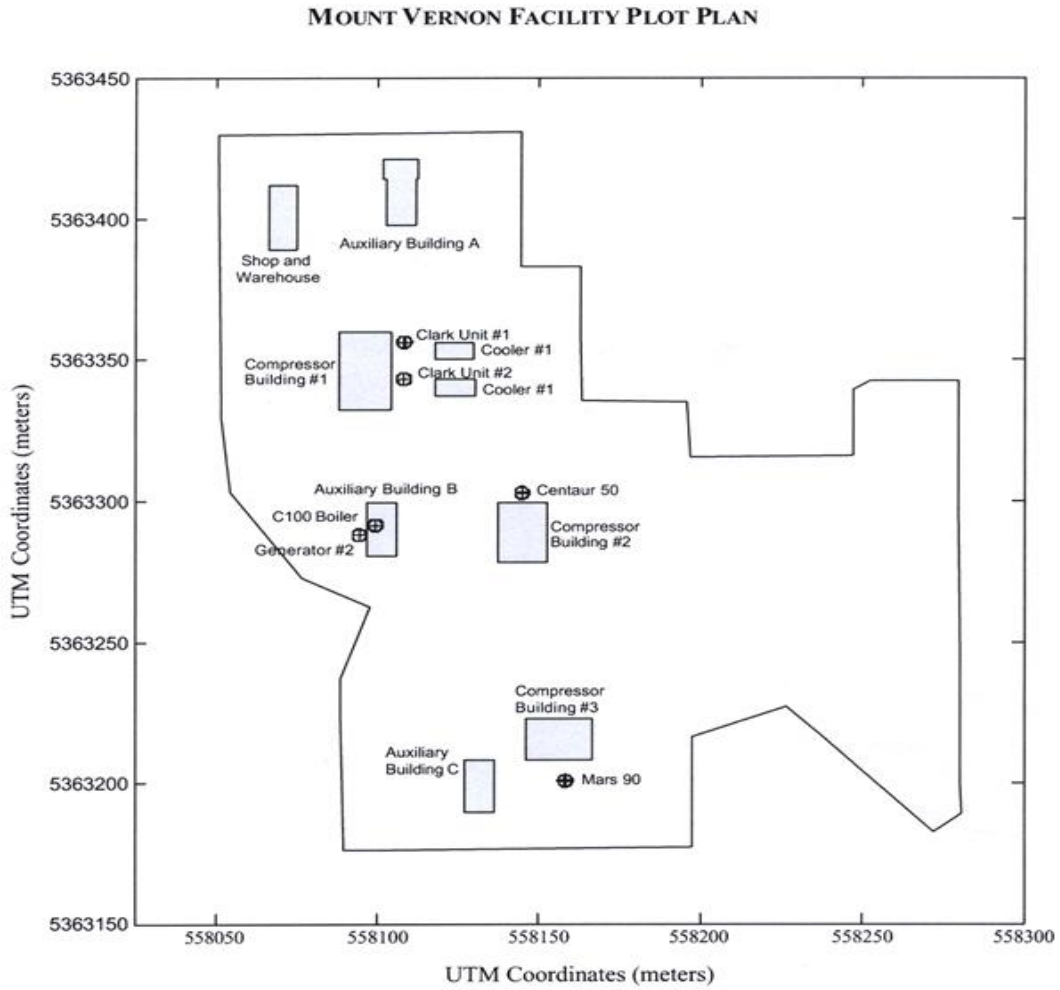


Figure A - 2 Site Plot Plan

**Table A - 1 Solar Centaur 50 Initial Source Test Results – August 16-21, 2003**

		Solar Centaur 50 Turbine			
		Compressor Load Condition % of Peak Loading			
Test Parameter	Permit Limit	100	98	94	90
NOx @ 15% O <sub>2</sub> ISO Day, ppmdv	25 <sup>1</sup>	20.5	16.9	16.6	17.6
CO @ 15% O <sub>2</sub> ISO Day, ppmdv	50	0.84	3.20	3.86	7.39
VOC @ 15% O <sub>2</sub> ISO Day, ppmdv	25 <sup>2</sup>	0.00	0.04	0.00	0.04
		Additional Test Results			
SO <sub>2</sub> , lbs/hr	-	0.0815	Average of three runs		
PM, lbs/hr	-	0.26	Average of three runs		
Opacity, %	5	0	One 6-minute observation		

Notes: 1. Based on 3-hour avg  
 2. Limit removed in later version of NWCAA OAC 794

**Table A - 2 Solar Mars 90 Initial Source Test Results – October 27-30, 2003**

		Solar Mars 90 Turbine			
		Compressor Load Condition % of Peak Loading			
Test Parameter	Permit Limit	103	100	98	95
NOx @ 15% O <sub>2</sub> ISO Day, ppmdv	25 <sup>1</sup>	15.1	10.6	11.4	13.7
CO @ 15% O <sub>2</sub> ISO Day, ppmdv	50	5.88	18.27	20.49	16.18
VOC @ 15% O <sub>2</sub> ISO Day, ppmdv	25 <sup>2</sup>	0.03	0.21	0.04	0.02
		Additional Test Results			
SO <sub>2</sub> , lbs/hr	-	0.176	Average of three runs		
PM, lbs/hr	-	0.30	Average of three runs		
Opacity, %	5	0	One 6-minute observation		

Notes: 1. Based on 3-hour avg  
 2. Limit removed in later version of NWCAA OAC 794

**Table A - 3 Solar Centaur 40 Initial Source Test Results – September 22, 2003**

		Solar Centaur 40 Turbine			
		Compressor Load Condition % of Peak Loading			
Test Parameter	Permit Limit	99	96	92	90
NO <sub>x</sub> @ 15% O <sub>2</sub> ISO Day, ppm <sub>dv</sub>	42 <sup>1</sup>	10.2	19.2	15.8	15.8
CO @ 15% O <sub>2</sub> , ppm <sub>dv</sub>	50	11.82	7.80	14.14	15.97

Notes: 1. Based on 1-hour avg