NORTHWEST AIR POLLUTION AUTHORITY
NWAPA

207 Pioneer Building Mount Vernon, Washington 98273

Area Code 206: Mount Vernon 336-5705 Bellingham 676-2223 Scan 738-2223

September 18, 1989

H. Lee Bauerle
Northwest Pipeline Corporation
P.O. Box 8900
Salt Lake City, Utah 84108-0899

Dear Mr. Bauerle:

On August 10, 1988, you submitted a "Notice of Construction and Application for Approval" to install and operate a natural gas boiler at the Sumas Compressor Station, 4738 Jones Road, Sumas, Washington. The required $50.00 filing fee was received along with your application.

The information provided with your application was reviewed to determine that all known, available and reasonable methods of air pollution control will be utilized. A Determination of Non-Significance was issued Northwest Air Pollution Authority.

After considering my recommendation and the comments provided at a public hearing on this matter, the Board of Directors of the NWAPA granted approval at their September 13, 1989, Board meeting for you to install this boiler. This approval is contingent upon your payment of the required $100.00 plan examination and inspection fee, the Determination of Non-Significance fee of $50.00 and adherence to the following conditions:

1. The facility shall be constructed and operated in accordance with the information submitted in the Notice of Construction.

2. Natural gas shall be the only fuel allowed.

Final approval to operate will be conditioned upon the facility meeting the requirements described above and the conditions set forth in the application and the applicable air pollution control regulations, when in actual operation.

Please notify me, in writing, when the construction is complete and provide the expected date that you propose to begin operating the facility. An on-site inspection may be required before startup and again after the process has operated for a period of time. A "Certificate of Approval to Operate" will be issued after we determine that the process was installed in accordance with the plans and specifications submitted with the application and can operate in compliance with the Regulations of this Authority and the conditions of approval.

Please call me if you have questions about the Board's approval of this project. A statement is enclosed for the plan examination and inspection fee, the legal publication costs and Declaration of Non-Significance in the amount of $205.30.

Sincerely,

Terryl L. Nyman
Air Pollution Control Officer

TLN:sd

Enclosure

NORTHWEST
AIR POLLUTION AUTHORITY

302 Pine Street, #207
Mount Vernon, WA 98273-3852
Tel: 206-428-1617 / Fax: 206-428-1620

Representing Island, Skagit and Whatcom Counties

October 21, 1992 Revision: January 2, 1996

James Smith
Manager, Safety and Environmental Health
Northwest Pipeline Corporation
PO Box 58900
Salt Lake City, UT 84158-0900

ORDER OF APPROVAL TO CONSTRUCT #403

Dear Mr. Smith:

On September 18, 1992 Northwest Pipeline Corporation submitted a "Notice of Construction and Application for Approval" to construct and operate a 390 kilowatt standby emergency generator and a 2.5 MMbtu/hr gas-fired boiler at the existing Sumas compressor station.

The information was reviewed to determine that all known, available, and reasonable air pollution control measures would be employed. The project was reviewed subject to NWAPA regulation Section 302 and WAC 173-400-110. The NWAPA adopted the NEPA Northwest Pipeline Expansion Project Environmental Impact Statement on June 5, 1992.

Subsequently, the Northwest Pipeline Corporation submitted a request, dated December 19, 1995, to increase the permitted number of hours of standby emergency generator operation from 200 to 400 hours per year. The request states that the increase will allow better maintenance of the generator, as per manufacturer's recommendations.

You are hereby authorized to construct and operate the boiler and standby generator subject to the following conditions:

1. The project shall be constructed and operated in accordance with the information submitted with your application dated September 9, 1992, and the Request for Permit Modification dated December 19, 1995.

2. Visible opacity from the gas-fired boiler or the standby generator exhaust shall not exceed 5 percent for more than 6 minutes in any one hour period as measured by EPA method 9.

3. An operation and maintenance plan shall be made available to operators.

4. The boiler and emergency generator shall burn only natural gas.

5. The standby emergency generator is limited to no more than 400 hours of operation per year.

6. An annual inventory of fuel usage and hours of operation must be maintained for both the boiler and the standby generator.

7. You are required to notify the NWAPA when the installation is complete and the unit begins operation.

8. A plan examination and review fee of $100.00 is due and payable prior to start up.

Please notify me, in writing, when the installation is complete. An on-site inspection may be required before initial start-up. A "Certificate of Approval to Operate" will be issued after we determine that the process was installed in accordance with the plans and specifications submitted with the application and can operate in compliance with the Regulations of this Authority and the conditions of approval.

Please contact Anne Naismith if you have any questions. A statement is enclosed for the Order of Approval revision fee in the amount of $25.00.

Sincerely,

James Randles for
Terryl L. Nyman
Air Pollution Control Officer

cc: Sandy Fishler
Northwest Pipeline Corporation, Safety and Environmental Health Representative

Reviewed by Anne Naismith, P.E. A. N.

Revision: Increased the standby generator's permitted operation from 200 to 400 hours/year. Addressed the Order of Approval to James Smith, the Manager of the Safety and Environmental Health Department.

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WASHINGTON DEPARTMENT OF ECOLOGY
P.O. Box 47600
OLYMPIA, WASHINGTON 98504-7600

IN THE MATTER OF:	]	**NO. PSD-92-4 AMENDMENT #1**
	]	**FINAL APPROVAL**
Northwest Pipeline Company	]	**OF PSD APPLICATION**
Sumas Compressor Station	]	
Sumas, Washington	]	

Pursuant to the U.S. Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40, Code of the Federal Regulations, Part 52 and based upon the complete Prevention of Significant Deterioration application submitted by the Northwest Pipeline Company dated December 1991, the technical analysis performed by the Department of Ecology (the department) dated June 5, 1992, and a request for amendment on July 9, 1996, the department now finds the following:

FINDINGS

1. PSD 92-4 granted the Northwest Pipeline Company (NWP) approval to modify its compressor station located at Sumas, Washington. NWP operates a natural gas pipeline system that reaches from the Canadian border near Sumas, Washington, to the San Juan Gas Fields in New Mexico. The modification consisted of the addition of two Solar Mars T12000 gas-fired turbines (Units 7-8), each having an ISO rating of 12,100 horsepower (HP). NWP predicted a large increase in the demand for natural gas from the system according to its future planning. To meet these demands, NWP added these turbines to augment the existing reciprocating engines, and to expand its pipeline system. Existing compressors consisted of four 2,000 HP gas-fired reciprocating engines (Units 1-4) and two 4,000 HP reciprocating engines (Units 5-6). NWP submitted a Prevention of Significant Deterioration application in March, 1991. In December 1991, NWP proposed a slight reduction in turbine horsepower due to refinement of the project design. Therefore, NWP withdrew its March, 1991 PSD application for Sumas compressor station and submitted a replacement in December 1991. NWP submitted additional information on April 3, and May 12, 1992. Ecology determined application to be complete on May 19, 1992. On July 9, 1996, NWP requested the department modify the monitoring requirements for NOx. Northwest Air Pollution Authority (NWAPA) also requested several changes to make the permit fit better into Title V.

2. NWP's Sumas compressor station qualifies as a major source of air pollutants because it has the potential to emit more than 250 tons per year of nitrogen oxides (NOx). The expansion project was

a major modification of Sumas compressor station because it had the potential of increasing emissions of NOx by more than the significant emission rate of 40 tons per year. It is located in an area designated as Class II for the purposes of PSD evaluation, under 40 CFR 51.24.

3. The site of the proposed modification is within an area that is in attainment with regard to all pollutants regulated by the national ambient air quality standards.

4. The emissions of NOx from the modification of the Sumas compressor station were subject to PSD review.

5. The emissions of all other air pollutants from the modification were subject to new source review required by Chapter 173-400 WAC, Section 110, "General Regulation for Air Pollution Sources - New Source Review". Northwest Air Pollution Authority (NWAPA) conducted the new source review on all air pollutants except NOx.

6. NWP used Best Available Control Technology (BACT) for all PSD reviewable air pollutants.

7. The manufacturer of the Mars T12000 turbine, Solar Turbines Incorporated, was developing a dry low NOx combustor for the turbine in 1992. NWP committed to having the dry low NOx combustor in service by January 1, 1995.

8. The initial modification of the Sumas compressor station (Units 7-8) generated up to 602 tons per year of nitrogen oxides (NOx). After installation of the dry low NOx combustor, the units generated up to 143.3 tons per year of NOx. The actual emissions from the existing sources (Units 1-6) were 387.2 tons for 1990, and 882 tons for 1991.

9. The modification resulted in less than significant increase as defined by PSD of all other pollutants.

10. The project has no significant adverse impact on air quality as defined by PSD.

11. Odors from the facility will be kept to a reasonable minimum.

12. No noticeable effect on industrial, commercial, or residential growth in the Sumas area is anticipated due to the project.

13. The project will not impair visibility in any Class I area. Screening analyses showed no significant visibility degradation resulting from the modification.

14. The department finds that all requirements for PSD are satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

1. NOx emissions from the exhaust stack of the proposed Units 7-8 of the Sumas compressor station shall not exceed 196 ppm corrected to 15 percent oxygen and ISO (ISO standard day conditions denote 288 degrees Kelvin, 60 percent relative humidity and 101.3 kilo Pascals pressure) conditions on a 30 day rolling average. Compliance shall be determined by EPA Reference Method 20. NOx emissions from the Units 7-8 shall not exceed 602 tons per year.

2. NWP shall install dry low NOx combustors on Units 7-8 by January 1, 1995. After July 1, 1995, NOx emissions from the exhaust stack of Units 7-8 of Sumas compressor station shall not exceed 42 ppm corrected to 15 percent oxygen and ISO conditions on a 1 hour average except during the turbine idling condition. The idling period shall not exceed thirty (30) hours per month. NWP may propose to Ecology for approval an alternate NOx concentration standard for loads outside the range of 70 to 100 percent base load. NOx emissions from Units 7-8 shall not exceed 143.3 tons per year.

   Compliance shall be determined by EPA Reference Method 20 or by a Continuous Emission Monitoring System (CEMS) meeting the requirements of Condition 7 below. NWP may propose alternative means for continuous assessment and reporting of NOx emissions. An alternative method may use valid source testing results, emission factors or relationships, operating parameters, and hours of operation to calculate NOx emissions. The alternative method shall be submitted to Ecology for review and approval before implementation. One unit shall be source tested annually, and annual testing shall alternate between units. After each unit has been source tested twice beginning in 1997, NWP may propose a reduced testing schedule for Ecology's approval.

3. Starting July 1, 1995, the twelve-month total NOx emissions from NWP Sumas facility shall not exceed 1200 tons for any twelve consecutive months. The emission from Units 7-8 shall be determined by the monitoring system in Condition 7. The emissions from Units 1-6 shall be

determine based on load and emission factors in AP42, or other data approved by Ecology. Ecology approves the use of an EPA Method 7 (Method 7 through 7E) stack test on one of identical Units 1-4 and on one of identical Units 5-6 reciprocating engines once every five years to establish both engine type's NOx load and emission factors.

4. Sixty days after achieving maximum production, but not later than 180 days after start-up of the temporary combustor, NWP shall conduct performance tests for NOx at the modified facility. The test must be performed by an independent testing firm and reported to the department within 60 days after the test completion. NWP shall submit a test plan for the department's approval at least 30 days before the testing.

5. By July 1, 1995, NWP shall conduct performance tests for NOx on Units 7-8 at the modified facility. The test must be performed by an independent testing firm and, reported to the department within 60 days after the test completion. NWP shall submit a test plan for the department's approval at least 30 days prior the testing.

6. Sampling ports and platforms must be provided for each affected source after the final pollution control device. The ports must meet requirements of 40 CFR, Part 60, Appendix A Method 20. An adequate and safe access to the test ports must be provided. Other arrangements may be acceptable if approved by the department before installation.

7. By January 1, 1995, NWP shall install a continuous emission monitoring system (CEMS) to determine compliance with NOx requirements, unless they opt to use an approved alternative continuous emissions monitoring method described in Condition 2 above. A quality control plan for the monitoring method shall be submitted to the department for approval before the method is implemented. For CEMS, the plan shall conform with 40 CFR 60 Appendix F. For an equivalent continuous monitoring system, the plan shall be equivalent in scope and effect to that appendix. The department may require NWP to periodically update the plan.

9. NWP shall report CEMS (or approved NWP alternative emissions monitoring methodology) data required in Condition 1, 2 and 3 to Ecology at least quarterly (unless a different testing and reporting schedule has been approved by the department) within forty five days of the end of each quarter and in

a format approved by the department that shall include but not be limited to the following:

a. Process or control equipment operating parameters.

b. Operating hours and emissions for each pollutant monitored.

c. The duration and nature of any monitor down time.

d. Results of any monitor or stack tests.

For each occurrence of monitored (by CEMS or approved NWP alternative methodology) emissions in excess of the standard the report shall include the following:

a. The time of the occurrence.

b. Magnitude of the emission or process parameters excess.

c. The duration of the excess.

d. The probable cause.

e. Any corrective actions taken or planned.

f. Any other agency contacted.

9. Operation and maintenance manuals for all equipment that has the potential to affect emissions to the atmosphere shall be developed and followed. Emissions that result from a failure to follow the requirements of the manuals may be considered proof that the equipment was not properly operated and maintained.

10. Operation and maintenance of the equipment must be conducted in compliance with all performance data and specifications submitted as part of the PSD application unless otherwise approved by the department.

11. This approval shall become void if construction of the project is not commenced within eighteen (18) months after receipt of final approval, or if construction or operation of the facility is discontinued for eighteen (18) months.

12. Any activity undertaken by NWP or others, in a manner that is inconsistent with the application and this determination, shall be subject to department or NWAPA enforcement under applicable

regulations. Nothing in this determination shall be construed to relieve NWP of its obligations under any state, local, or federal laws or regulations.

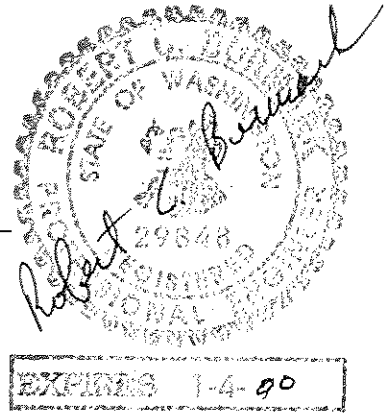
13. NWP shall notify the department in writing at least thirty days before the start-up of Units 7-8.

14. Access to the source by the EPA, department or NWAPA shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow access is grounds for enforcement action.

REVIEWED BY:

May 5, 1998
Date

Robert C. Burmark
Robert C. Burmark, PE
Air Quality Program
Washington Department of Ecology



APPROVED BY:

May 6, 1998
Date

for Joseph R. Williams, Manager
Air Quality Program
Washington Department of Ecology

May 11, 1998
Date

Anita J. Frankel, Director
Office of Air
U.S. EPA Region X

WASHINGTON STATE DEPARTMENT OF ECOLOGY
POST OFFICE BOX 47600
OLYMPIA, WASHINGTON 98504-7600

IN THE MATTER OF:	**]**	
	]	
Northwest Pipeline Corporation	**]**	**NO. PSD-01-08 Amendment 4**
Sumas Compressor Station	**]**	
Williams Gas Pipeline–West	**]**	**FINAL APPROVAL**
295 Chipeta Way	**]**	**OF PSD APPLICATION**
Salt Lake City, UT 84158-0900	**]**	

This approval is issued pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40 Code of Federal Regulations Part 52, and regulations set forth in the Washington Administrative Code 173-400-700. The original approval was based upon the complete application submitted by Williams Gas Pipeline–West for the Northwest Pipeline Corporation Sumas Compressor Station dated November 27, 2001, along with additional information dated February 6, February 22, April 4, May 23, August 6, and August 16, 2002. The first amendment was based on a letter of request dated April 23, 2004. The second amendment was based on a July 21, 2004 e-mail request. The third amendment was requested by letter dated February 8, 2006. The fourth amendment was requested by letter dated May 18, 2011. The technical analysis performed by the Department of Ecology (Ecology) finds the following:

FINDINGS

1. The reason for the fourth administrative amendment is to clarify and simplify CO monitoring procedures used by portable CO monitors in preparation for renewal of the facility's Title V permit. Testing using a portable analyzer to monitor the volume percent of CO every 336 hours has proven adequate to indicate compliance, so the additional calculation of CO mass flow during these periodic tests is no longer required (Approval Condition 5.5.1). If noncompliance is indicated by a portable monitor test, the turbine will now be shut down as soon as reasonably possible and repaired rather than have further emissions testing (Approval Condition 5.5.1.3). No compliance testing conditions for CO (Reference Method 10) are affected by these changes, but the CO limit's averaging time is reduced from a three to one hour time period, which is more stringent. No physical changes are requested.

   The reason for the third amendment was to allow a reduction in the required frequency of carbon monoxide (CO) routine monitoring testing. A portable emissions analyzer is used for these routine monitoring tests. More than three years of testing every 14 days showed that routine testing every 28 days was sufficient to monitor compliance. There were no changes to emission limits in the third amendment.

   The reason for the second administrative amendment was to implement changes requested by Northwest Pipeline Corporation (NWP) that were intended to clarify and streamline the

permit. Condition 2.4 was removed. This condition required an initial performance demonstration for a CO concentration limit for the standby generator that did not exist in the original permit. There were no changes to the emission limits in the second amendment.

The reason for the first administrative amendment was that NWP and Ecology discovered the inability of the Predictive Emissions Monitoring System (PEMS) to accurately predict real-time emissions. This finding was based upon completion of one year of PEMS data gathering and analysis, and Ecology agreed with NWP. There were no changes to emission limits in the first amendment.

2. Pursuant to the original permit, NWP expanded their existing Sumas Compressor Station (Sumas Station). The Sumas Station is located at 49ºN 00'05" latitude, 122ºW 13'19" longitude, which is approximately 3 kilometers east of Sumas, Washington, in Whatcom County, and immediately south of the U.S. Canadian border. It has UTM coordinates of 557.0 kilometers east and 5,427.5 kilometers north.

3. The Sumas Station is located within a Class II area that is currently designated in attainment for all national and state air quality standards. The nearest Class I area, the North Cascades National Park, is approximately 50 kilometers east. PSD permit 01-08 allowed an expansion to this facility described in Findings 4 through 15 below.

4. Pursuant to the original permit, NWP replaced the engines from two existing compressor turbines as well as add new equipment to the Sumas Station. The project consisted of:

   4.1. Add one new Solar Mars 90S turbine driven centrifugal compressor (site rated at 12,841 horsepower @ 59ºF).

   4.2. Replace the engines of the two existing Solar Mars turbines with new, lower-emitting Mars 90S engines (each site rated at 12,841 horsepower @ 59ºF). This replacement generates pollution netting credits.

   4.3. Add one natural gas-fired Caterpillar 270 kilowatt (kW) generator unit for backup power. This unit is proposed to run a maximum of 500 hours per year.

   4.4. Add one natural gas-fired Sellers C60 boiler/heater rated at 2.5 million British Thermal Units per hour.

5. Because the Sumas Station is an existing major stationary source, any modification resulting in a net emissions increase of a regulated pollutant greater than its Significant Emission Rate qualifies the proposed project as a major modification. As a result, the project would be subject to PSD review under WAC 173-400-700 for that pollutant. Additionally, the project is subject to federal PSD review because it qualifies as a major modification under federal rules [40 CFR 52.21(b)(2)(i), 40 CFR 52.21(b)(3)(i), and 40 CFR 52.21(b)(23)(i)].

6. Potential regulated pollutants for the proposed project are shown in Table 1. They are nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), volatile organic carbon compounds (VOC), particulates less than 10 microns in diameter (PM_{10}), and particulates of any diameter (PM). For this project, all PM is considered to be PM_{10}.

Table 1. Total Criteria Pollutant Potential to Emit (PTE) For New Equipment

Pollutant	Total of 3 Mars 90 Turbines (tpy)	Generator (tpy)	Boiler (tpy)	Total PTE From Proposed New Equipment (tpy)	PSD Significant Emission Rate (SER) (tpy)
NO_X	126.0[a]	0.03	1.08	127.1	40
CO	139.5[b]	0.13	0.91	140.5	100
SO_2	4.47	0.00042	0.01	4.48	40
VOC	9.12	0.02	0.06	9.20	40
PM_{10}	8.68	0.01	0.08	8.77	15
PM	8.68	0.01	0.08	8.77	25

a. Annual Potential to Emit of NO_X of each turbine limited to 42 tons per year.
b. Annual Potential to Emit of CO of each turbine limited to 46.5 tons per year.

7. A netting analysis for CO and NO_X compared the potential emissions from the proposed project against the actual emissions of the removed equipment. No other contemporaneous increases or decreases were found. The netting analysis determined that CO is the only pollutant that has a significant net emissions increase. Emissions of CO will be subject to PSD Review. Table 2 shows these figures.

Table 2. Significant Net Emission Increases as the Result of the Proposed Project

Pollutant	Past Actual Emissions 1/99 to 12/00 (Removed Unit #7 & #8) (tpy)	Total Potential to Emit (New Equipment) (tpy)	Net Emissions Increase (tpy)	PSD Significant Emission Rate (tpy)	PSD Significant?
NO_X	89.9	127.1	37.2	40	No
CO	8.5	140.5	132.0	100	Yes

8. The emissions of all air pollutants from the proposed modification are subject to review under Chapter 173-400 WAC, Chapter 173-460 WAC, and the regulations of the Northwest Clean Air Agency (NWCAA). Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD-applicable pollutants. All other air quality related notice of construction approval issues are subject to permitting by NWCAA. The NWCAA approval will contain federally enforceable NO_X provisions including annual limits totaling 127.1 tons per year that ensure compliance with the project's NO_X netting analysis.
9. The conditions of the existing PSD-92-4 Amendment 1 are not altered by this PSD approval.
10. There are no NSPS requirements for CO emissions from the proposed project equipment.
11. Only natural gas will fuel the proposed equipment.

12. Best Available Control Technology (BACT) determinations for CO emissions are:
    12.1. Good Combustion Practices for the Mars 90S turbines.
    12.2. Three-way nonselective catalyst for the Caterpillar 270 kW backup generator.
    12.3. Good Combustion Practices for the Sellers C60 boiler/heater.
13. Allowable emissions from the new emissions units will not cause or contribute to air pollution in violation of:
    13.1. Any National Ambient Air Quality Standard (NAAQS) or any Washington State or local air authority ambient air quality standard.
    13.2. Any PSD increment. There is no PSD increment standard for CO, so no increment analysis was required.
    13.3. Any visibility impacts. Visibility impact analysis is not required for CO.
14. Deposition of PSD pollutants on soils and vegetation in Class I or Class II areas is not affected by CO.
15. No significant effect on industrial, commercial, or residential growth in the Sumas, Washington area is anticipated as a result of this project.
16. Ecology finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

1. The Mars 90S turbines, the standby generator, and the boiler/heater shall only burn natural gas.
2. The Caterpillar 270 kW standby generator:
    2.1. The standby generator shall be operated no more than 500 hours in any consecutive 12-month period.
    2.2. Compliance with Condition 2.1 shall be determined by installing and operating a nonresettable hour meter with monthly recording of the operating hour meter reading to determine the operating hours, or by automated data collection.
    2.3. A three-way catalytic converter shall be installed on the standby generator. It shall be Model EQ-601-08-C2 or another model that is approved by Ecology in writing prior to installation.
3. The Sellers C60 boiler/heater: The CO emissions shall be reported as per Condition 9.2, and calculated using AP 42 emission factors or other methods agreed to in writing by Ecology.
4. NWP shall keep a record of the number of turbine start-up and shutdown events.
5. Emissions of CO from each combustion turbine are limited as follows:
    5.1. Volume percent CO of not greater than 50 parts per million dry volume (ppmdv) over a 1-hour average corrected to 15 percent O_2.

5.2. Mass emission of CO not greater than 14 pounds per hour (lb/hr) per turbine on a 1-hour average.

5.3. Mass emission of CO not greater than 46.5 tons per turbine for any consecutive 12-month period.

5.4. NWP shall demonstrate compliance with Condition 5.1 and Condition 5.2 initially and annually thereafter:

5.4.1. Initial compliance shall be demonstrated within 180 days after initial start-up, performed by an independent testing firm. Annual compliance shall be demonstrated no sooner than 10 months after the previous test and no later than 13 months after the previous test.

5.4.2. Compliance shall be demonstrated in accordance with 40 CFR 60 Subpart GG and 40 CFR 60 Appendix A, Method 10 except that the instrument's span shall be reduced as appropriate.

5.4.3. NWP shall submit a test plan to Ecology and NWCAA for approval at least 30 days prior to testing. NWP shall submit a complete test report to the NWCAA no later than 60 days after completion of the tests.

5.5. Compliance monitoring:

5.5.1. NWP shall monitor compliance with Condition 5.1 by measuring the CO concentration of the turbine exhaust stack not less frequently than every 336 hours of turbine operation.

5.5.1.1. NWP may conduct these measurements by use of a portable emissions analyzer capable of adjustment to the 15 percent oxygen concentration basis, and verify as accurate in accordance with the process outlined in Condition 6.

5.5.1.2. Testing shall be in accordance with USEPA Designated Conditional Test Method 034. An alternate or modified test method may be used if approved in writing by Ecology prior to the test.

5.5.1.3. NWP shall perform three consecutive tests using the portable emissions analyzer. If the average of the three test results indicates noncompliance with Condition 5.1, NWP shall shut down the unit as soon as is practical and contact the NWCAA as promptly as possible and in no event more than 12 hours later. Exceedance of the limit imposed by Condition 5.1 as indicated by the average of the three consecutive tests shall be prima facie evidence of a violation of Condition 5.1.

5.5.1.4. Upon submission of six consecutive months monitoring results during which every test using the portable emissions analyzer indicates compliance with Condition 5.1 for a given turbine, NWP may submit a request that the testing frequency for that turbine be reduced to not less frequently than every 672 hours of operation.

The requests must include an analysis of the accuracy of the portable emissions analyzer using recent accuracy verification data and an analysis of the portable emissions data collected during the monitoring period and an explanation as to why these data support the request. Upon Ecology's approval of the request, NWP may test at the reduced frequency until such time as the results indicate potential noncompliance with Condition 5.1. If this occurs, NWP must revert to the 336 hour testing frequency for the turbine in potential noncompliance with Condition 5.1 for at least six consecutive months at which time NWP may again request the reduced testing frequency using the same process as above.

5.5.2. Within twenty days of the end of each month, pursuant to Condition 5.3, NWP shall determine the tons of CO emissions from each of the turbines for the most recent consecutive twelve months. For this calculation, NWP shall utilize a time-weighted average of the relevant stack test results wherein the results of each source test shall be the presumed emission rate until the next source test.

6. NWP shall verify the accuracy of any portable emissions analyzers used to satisfy the monitoring requirements of this permit no less than once every calendar year.

6.1. NWP shall submit a protocol to Ecology and NWCAA for written approval by Ecology for verifying the accuracy of any portable emissions analyzer.

6.2. NWP shall use the procedure specified in the protocol required by Condition 6.1 to verify the accuracy of any portable emissions analyzer prior to its use in satisfaction of the monitoring requirements of this permit.

6.3. NWP shall keep records of the portable emissions analyzer accuracy verifications on site for not less than five years for Ecology or NWCAA review.

7. NWP shall provide safe access and sampling ports for source testing or compliance determination for the standby generator, the heater/boiler, and each turbine being installed for this project:

7.1. Safe access for the standby generator and the heater/boiler shall consist of scaffolding, a man lift, or other access arrangements acceptable to Ecology.

7.2. Safe access for the Mars 90S turbine shall consist of permanently constructed platforms on the respective stacks with sampling ports that meet the requirements of 40 CFR 60, Appendix A, Method 20.

7.3. Other arrangements may be acceptable if approved by Ecology prior to installation.

8. NWP shall notify Ecology and NWCAA when construction commences on each of the turbines, the generator unit, and the boiler/heater, and when each is placed into service.

9. NWP shall report the monitoring and process data from the Sumas Station to Ecology and NWCAA not less than once each calendar quarter or on another reporting schedule approved by Ecology, and in the format approved by Ecology. The reports shall include, but not necessarily be limited to the following:

9.1. For the standby generator: Total hours of operation for the 12 immediately preceding months.

9.2. For the Sellers C60 boiler: Total monthly CO emissions.

9.3. For each combustion turbine stack:

9.3.1. All exhaust stack CO concentrations since the last report pursuant to measurement under Condition 5.5.1.

9.3.2. The total CO mass emissions for the 12 immediately preceding months.

9.3.3. Report any scheduled portable analyzer tests that were not completed. Include:

9.3.3.1. Reason for not completing the test.

9.3.3.2. Description of corrective actions taken.

9.3.4. Results of any compliance monitoring source tests conducted in accordance with Condition 5.5.1 since the last quarterly report including annual verification of the accuracy of CO concentration portable analyzers (Condition 5.5.1). If reported separately, these results need not be duplicated in the quarterly reporting.

9.3.5. For each occurrence of CO monitored emissions in excess of the concentration limits or mass limits, report the:

9.3.5.1. Time of the occurrence.

9.3.5.2. Magnitude of the emission or process parameters excess.

9.3.5.3. The duration of the excess.

9.3.5.4. The probable cause.

9.3.5.5. Corrective actions taken or planned.

9.3.5.6. Any other agency contacted.

9.4. NWP shall maintain Sumas Station monitoring and process records for at least five years.

9.4.1. NWP shall inform Ecology and NWCAA on the location of the monitoring and process records.

9.4.2. NWP shall provide Ecology and NWCAA with the monitoring and process records for any period within the 5-year archive within 10 working days of the request.

9.4.3. The monitoring and process records maintained in the 5-year archive shall include, but not necessarily be limited to the following:

9.4.3.1. Fuel monitoring records.

9.4.3.2. Operating hours records.

10. An Operation and Maintenance (O&M) Equipment Manual for the facility must be developed and maintained.

10.1. Within 90 days of start-up, NWP shall identify operational procedures for the standby generator, Sellers C60 boiler, and combustion turbines that constitute proper operation relative to compliance with the emission limitation conditions of this permit.

10.2. NWP shall include these operational procedures in the Sumas Station O&M Equipment Manual. As a minimum, these shall include:

10.2.1. Manufacturers' operating instructions and design specifications.

10.2.2. Normal operating parameters and design specifications.

10.2.3. Updates to reflect any modifications of the equipment or its operating procedures.

10.3. NWP shall keep the Sumas Station O&M Equipment Manual up to date.

10.4. NWP shall assure that the Sumas Station O&M Equipment Manual is readily available at the facility for review by state, federal, and local agencies.

11. Nothing in this determination shall be construed so as to relieve NWP of its obligations under any state, local, or federal laws or regulations.

12. NWP shall permit the Environmental Protection Agency, state, and local regulatory personnel access to the source upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action.

13. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless NWP extends the 18-month period upon satisfactorily showing that an extension is justified pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

Reviewed by:

Robert C. Burmark

Robert C. Burmark, P.E.
Science and Engineering Section
Air Quality Program
Washington State Department of Ecology

10/6/2011
Date

Approved by:

Stuart A. Clark
Air Quality Program Manager
Washington State Department of Ecology

10/6/11
Date

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Original Issuance: October 18, 2002
Revision a: August 9, 2004
Revision b: July 22, 2005
Revision c: May 2, 2006
Revision d: November 21, 2011

Northwest Clean Air Agency (NWCAA) hereby issues Order of Approval to Construct (OAC) #793d

Project Summary: As part of the larger Evergreen Expansion Project, Northwest Pipeline (NWP) plans the following changes to the Sumas Compressor Station:

- Replace the engines of the two existing Solar Mars T-12000 turbines with Solar Mars 90S engines (Units 7 and 8),
- Add one complete Solar Mars 90S turbine-driven centrifugal compressor (Unit 9),
- Add one Caterpillar generating unit (270 kW) for backup power ("D" Auxiliary Generator),
- Add one Sellers C60 boiler/heater (2.5 MMBtu/hr)

Approved Emission Units:

- Three (3) 12,841 hp Solar Mars 90S Turbines
- One (1) 270 kW Caterpillar generator
- One (1) 2.5 MMBtu/hr Sellers C60 boiler

APPLICANT

Williams – Northwest Pipeline GP
Sumas Compressor Station
295 Chipeta Way
Salt lake City, UT 84158 - 0900

NOC Contact: Matt Armstrong

OWNER

Williams – Northwest Pipeline GP
Sumas Compressor Station
295 Chipeta Way
Salt lake City, UT 84158 - 0900

FACILITY LOCATION:

4738 Jones Road, Sumas, WA 98295

Permit History

- As of the date of issuance, this Order supersedes NWCAA OAC #793c dated May 2, 2006, OAC #793b dated July 22, 2005, OAC # 793a dated August 9, 2004, and OAC # 793 dated October 18, 2002.

Note that in addition to other applicable rules and regulations, this project is subject to applicable portions of the following federal regulations:

New Source Performance Standards

- 40 CFR 60 Subpart A - General Provisions
- 40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines

National Emission Standards for Hazardous Air Pollutants / Maximum Achievable Control Technology Standards

- 40 CFR 63 Subpart A – General Provisions
- 40 CFR 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants: Reciprocating Internal Combustion Engines

As authorized by Northwest Clean Air Agency Regulation Section 300, this order is issued subject to the following restrictions and conditions[1]:

1. The facility shall comply with all of the requirements of the most recent version (including amendments) of PSD-01-08 issued by the Washington Department of Ecology (WDOE) for this project.

2. The total nitrogen oxide emissions from the compressor engines on site (including new and existing turbines and reciprocating internal combustion engines) shall not exceed 1200 tons during any twelve consecutive months. On a monthly basis, NWP shall utilize source test data, operating data, and emission factors to determine compliance status.

3. The total nitrogen oxide emissions from the Mars 90S turbines (Units 7, 8, and 9), the Caterpillar 270 kW standby generator ("D" Auxiliary Generator), and the Sellers C60 boiler/heater shall not exceed 127.11 tons during any twelve consecutive months. On a monthly basis, NWP shall utilize source test data, operating data, and emission factors to determine compliance status.

4. The Mars 90S turbines, the Caterpillar 270 kW standby generator, and the Sellers C60 boiler/heater being installed for this project are allowed to burn only natural gas from the pipeline.

5. Except during periods of startup or shutdown, visible emissions from the Mars 90S turbines, the Caterpillar 270 kW standby generator, and the Sellers C60 boiler/heater shall not exceed five percent as measured by 40 CFR 60 Appendix A Method 9.

6. Northwest Pipeline shall monitor total sulfur in the natural gas combusted at the Sumas facility using a Galvanic Model 842 Sulfur Chromatograph or a functionally equivalent unit approved by NWCAA. Using this monitor, NWP shall monitor and record the total sulfur content of the natural gas combusted at the facility on an hourly schedule. NWP will use this data to calculate the daily average sulfur content of the natural gas in units of grains of total sulfur per 100 standard cubic foot of natural gas.

7. **Requirements specifically applicable to the Caterpillar 270 kW standby generator:**

    a. The standby generator shall be operated no more than 500 hours in any consecutive 12-month period.

    b. Compliance with Condition 7(a) shall be determined by installing and operating a nonresettable hour meter with monthly recording of the operating hours. Alternatively, NWP may utilize automated data collection.

8. **Requirements specifically applicable to the Solar Mars 90S combustion turbines (units 7, 8, and 9):**

    a. Startup is defined as any operating period that is ramping up from less than 90% of full load, and less than 15 minutes has elapsed since fuel was introduced to the turbine after the immediately preceding shut down.

    b. Shutdown is defined as any operating period below 90% of full load, and fuel feed has continued for not more than 15 minutes after going below 90% of full load operation.

    c. NWP shall keep a record of each startup and shutdown event.

    d. Emissions of nitrogen oxides (NO_X) for the combustion turbines are limited as follows:

        i. Not greater than 25 parts per million NO_X emission concentration on a dry volumetric basis (ppmvd) over a three hour average when corrected to 15.0 percent oxygen, ISO.

        ii. Total combined NO_X emissions from the three turbines shall not exceed 126 tons during any consecutive 12-month period.

        iii. Condition 8(d)(i) is relieved during startup and shutdown.

    e. NWP shall count NO_X emissions during startup and shutdown towards monitoring compliance with the twelve month mass emission limit in Condition 8(d)(ii) at a rate of 4 lb NO_X per startup or shutdown.

    f. NWP shall monitor compliance with Condition 8(d)(i) by measuring the NO_x concentration of each turbine exhaust stack not less frequently than every 336 hours of turbine operation.

        i. NWP may conduct these measurements by use of a portable emissions analyzer capable of adjustment to the 15% oxygen concentration basis, and verified as accurate in accordance with the process outlined in Condition 8(g).

        ii. Testing shall be in accordance with USEPA Designated Conditional Test Method 34. An alternate test method may be used if approved in writing by NWCAA prior to the test.

        iii. NWP shall perform 3 consecutive tests using the portable emissions analyzer. If the average of the 3 results indicate noncompliance with Condition 8(d)(i), NWP shall shut down the unit as soon as is practical

and contact the NWCAA as promptly as possible and in no event more than 12 hours later. Exceedance of the limit imposed by Condition 8(d)(i) as indicated by the average of the three consecutive tests shall be prima facie evidence of a violation of Condition 8(d)(i).

iv. After 6 consecutive months during which every test using the portable emissions analyzer indicates compliance with Condition 8(d)(i) for a given turbine, NWP may submit a request that the testing frequency for that turbine be reduced to at least once every 672 hours of operation. The request must include an analysis of the accuracy of the portable emissions analyzer using recent accuracy verification data and an analysis of the portable emissions data collected during the 6 months and an explanation as to why these data support the request. Upon NWCAA approval of the request, NWP may test at the reduced frequency until such time as the results indicate potential noncompliance with Condition 8(d)(i). If this occurs, NWP must revert to the 336-hour testing frequency for at least 6 consecutive months at which time NWP may again request the reduced testing frequency using the same process as above.

g. NWP shall verify the accuracy of any portable emissions analyzers used to satisfy the monitoring requirements of this Order no less than once every calendar year in conjunction with a NO_x test required by Condition 8(h).

i. NWP shall submit a protocol to NWCAA for approval for verifying the accuracy of any portable emissions analyzer prior to the analyzer's use to satisfy the monitoring requirements of this Order. After receiving approval for the protocol, NWP shall comply with the requirements of the protocol.

ii. NWP shall keep records of the portable emissions analyzer accuracy verifications for not less than five years and make them available within 5 days for NWCAA review.

h. Testing as scheduled below shall be conducted with annual source tests occuring no later than 13 months after the previous tests. Testing for NO_x shall be conducted at four points in the normal operating range of the turbines, including the minimum point in the normal operating range and peak load. Testing for other pollutants shall be at peak load. Instrument spans may be reduced as appropriate.

Constituent	Test Method or Equivalent	Schedule
Opacity of emissions	40 CFR 60 Appendix A Method 9	Annual
Nitrogen oxides	40 CFR 60 Appendix A Method 20	Annual

i. Within twenty days of the end of each month, NWP shall determine the tons of NO_X emissions from each of the three turbines for the most recent consecutive twelve months. For this calculation, NWP shall utilize a time-weighted average of the relevant stack test results wherein the results of each source test shall be the presumed emission rate until the next source test.

j. NWP shall perform a scheduled boroscope analysis on the turbines. The first scheduled analysis will occur no later than 12 months after beginning initial operation. Further analyses shall occur according to the manufacturer's specified schedule as detailed in the O&M manual for the units.

k. NWP shall visually inspect the turbine fuel injectors. The first scheduled inspection will occur no later than 12 months after beginning initial operation. Further inspections shall occur according to the manufacturer's specified schedule as detailed in the O&M manual for the units. The results shall be maintained on site and available for review by NWCAA personnel.

9. NWP shall submit monitoring and process data reports to the NWCAA not less often than once every calendar quarter. The reports, which shall be submitted no later than 45 days after the end of each calendar quarter, shall include, but not necessarily be limited to the following:

   a. Certification by the responsible party for the facility that only natural gas from the pipeline has been used as fuel.

   b. Report on the fuel composition per Condition 6. The report shall include a summary of the fuel composition with hourly data submitted in electronic format and an explanation of times when the monitor was inoperable or malfunctioning. Missing data shall not be considered a deviation from the requirements of Condition 6 if:

      i. NWP has provided the NWCAA with the cause of monitor inoperability or malfunction,

      ii. NWCAA has not found such cause to be unreasonable, and

      iii. NWP substitutes all periods of missing data with the highest valid measurement recorded during the previous 30 days.

   c. Results of all calculations required to show compliance with Conditions 2 and 3 of this Order that were performed during the calendar quarter.

   d. For the Caterpillar 270 kW standby generator:

      i. Calculations or data pursuant to Condition 7(a) for each month of the reporting period.

   e. For each combustion turbine stack,

      i. The results of all calculations performed since the last report pursuant to Condition 8(i).

      ii. All exhaust stack NO_x concentrations since the last report pursuant to measurement under Condition 8(f).

      iii. For each occurrence of NO_x monitored emissions in excess of the limits in this Order, include:

         1. The time of the occurrence.

         2. Magnitude of the emission or process parameter excess.

         3. The duration of the excess.

4. The probable cause.
5. Corrective actions taken or planned.
6. Any other agency contacted.

10. One of the two identical Clark reciprocating engines and one of the four identical Ingersoll Rand reciprocating engines shall be tested for NO_x emissions (40 CFR 60 Appendix A Method 7A-7E) once every five years, on a schedule that continues the schedule established with the issuance of NWCAA Order #319.

11. NWP shall submit a test plan to the NWCAA for approval at least thirty days prior to any testing required by Conditions 8(h) and/or 10 of this Order. The written results of such testing shall be submitted to the NWCAA no later than sixty days after the test is completed.

12. Odors shall not be detected off site that may result in a nuisance as determined by NWCAA personnel.

Christos Christoforou, P.E.
Engineer

Mark Buford, P.E.
Assistant Director

Revision a: August 9, 2004
Parametric monitoring requirements eliminated and replaced with requirement to use portable emissions analyzer. See Conditions 10f and 10g.

Revision b: July 22, 2005
Eliminates the need for ongoing volatile organic compound, sulfur dioxide and particulate testing and reduces the frequency of nitrogen oxide testing to annual. The tests required by the original OAC have been completed and are satisfactory. See Condition 10(h). Changed NWAPA to NWCAA. Clarified that test plans required under Condition 13 only apply to stack tests required by Condition 10(h) and/or 12.

Revision c: January 13, 2006
Removed Reference to 40 CFR 63 Subpart YYYY. Updated OAC Format. Condition 8 modified to allow alternate, approved monitor. Condition 11b modified to allow for reasonable periods of monitor downtime. Conditions 10j and 10k modified to reflect turbine manufacturer's schedule. Condition 10f(iv) added to allow option for reduced monitoring frequency.

Revision d: October 25, 2011
Updated OAC format. Removed Condition 2 and placed superseded OACs in the preamble of the permit. Removed Condition 3 and placed applicable federal regulations in the preamble of the permit. Added 40 CFR 63 Subpart ZZZZ in the applicable federal regulations in the preamble of the permit. Modification of Condition 10(f)(iii) to allow sooner shutdown of turbines in case of high emissions. Modification of Condition 10(g)(ii) to

allow record keeping for the portable analyzer accuracy verification off site. Modification of Condition 10(h) to remove one time initial test requirements and clarify test frequencies. Removal of Condition 11(e)(iv), made necessary by modification of Condition 10(f)(iii). Modification of Condition 13 to allow submission of tests plans at least 30 days before testing. Removal of Condition 15 as redundant. Removal of Conditions 16 and 17 as one-time completed requirements.

[1] Nothing in this permit is intended to, or shall, alter or waive any applicable law [including but not limited to defenses, entitlements, challenges or clarifications related to the Credible Evidence Rule , 62. Fed. Reg. 8315 (Feb. 27, 1997)] concerning the use of data for any purpose under the Act, generated by the reference method specified herein or otherwise.