



State of Idaho
Department of Environmental Quality
Air Quality Division

**AIR QUALITY PERMIT
STATEMENT OF BASIS**

Permit to Construct No. P-2008.0163

Final

**Northwest Pipeline GP
Lava Hot Springs Compressor Station
Topaz, Idaho
Facility ID No. 005-00028**

February 6, 2009

Darrin Pampaian

A handwritten signature in black ink, appearing to be "D. P.", located to the right of the name "Darrin Pampaian".

Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAP	Hazardous Air Pollutant
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
ISO	International Organization for Standardization
lb/hr	pounds per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PC	permit condition
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAP	Toxic Air Pollutant
T/yr	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

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Permittee:	Northwest Pipeline GP – Lava Hot Springs	Permit No.	P-2208.0163
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1. FACILITY INFORMATION

1.1 Facility Description

Northwest Pipeline, GP, operates an existing natural gas pipeline compressor station which is located seven miles west of Lava Hot Springs near Topaz, ID. At this facility three natural gas-fired turbines are used to power natural gas compressors for a Federal Energy Regulatory Commission (FERC) regulated natural gas pipeline. The three gas turbines are a Solar Centaur model T-4002, a Solar Centaur model T-4700S, and a Solar Saturn model T-1300. The Solar Centaur model T-4002 and the Solar Centaur model T-4700S gas turbines are stationary. The Solar Saturn model T-1300 is mounted on skids making it portable. The purpose of the portable gas turbine is to deliver additional compressor power at the compressor station in times of high natural gas demand.

1.2 Permitting Action and Facility Permitting History

This PTC is a modification of existing PTC 005-00028 at an existing facility. Permit status is noted as active and in effect (A) or superseded (S).

June 28, 2002	005-00028, Re-permitting the new Solar Centaur T-4700S gas turbine installed at the facility, in addition to permitting the existing Solar Centaur T-4002 and Solar Saturn T-1300 (A, but will become S upon issuance of this permit).
March 19, 2002	005-00028, Permitting the new Solar Centaur T-4700S gas turbine, in addition to permitting the existing Solar Saturn T-1300 and Solar Centaur T-4002 gas turbines (S).
August 23, 2001	005-00028, Permitting the new Solar Saturn T-1300 gas turbine, in addition to permitting the existing Solar Centaur T-4002 (S).
August 16, 1995	005-00028, Permitting the Solar Centaur T-4002 gas turbine, (S).

2. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

2.1 Application Scope

This application modifies PTC 005-00028 by allowing hourly and annual increases in PM₁₀, SO₂, NO_x, and CO emissions and hourly and annual decreases in VOC emissions from the three gas turbines. This modification has been requested based on the results of the most recent source test performed on one of the gas turbines at the facility.

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2.2 Application Chronology

October 17, 2008	PTC project P-2008.0163 was received by DEQ. No fees were included with the application.
October 31, 2008	The \$1,000 application fee was received and the regulatory clock was started at this time.
November 20, 2008	Project P-2008.0163 was deemed complete.
December 31, 2008	DEQ sent a draft PTC to the facility for review.
January 26, 2009	The \$7,500 PTC processing fee was received.
February 6, 2009	The final permit and statement of basis were issued.

3. TECHNICAL ANALYSIS

3.1 Emission Unit and Control Device

Table 3.1 EMISSION UNIT AND CONTROL DEVICE INFORMATION

Emission Unit/ID No.	Emissions Unit Description	Control Device Description	Emissions Discharge Point ID No. and/or Description
Gas Turbine/T4002	Manufacturer: Solar Model: Centaur 40-4002 Manufacture date: 1978 Modification date: 2003 Maximum rating: 4,107 hp @ ISO Fuel: natural gas only	N/A	T4002 Exit height: 31.69 ft Exit diameter: 3.51 ft Exit flow rate: 72,880 acfm Exit velocity: 126.2 ft/s Exit temperature: 771.0 °F
Gas Turbine/T4700S	Manufacturer: Solar Model: Centaur 40-4700S Manufacture date: 2003 Modification date: N/A Maximum rating: 4,700 hp @ ISO Fuel: natural gas only	SoLo NO _x Combustor Manufacturer: Solar	T4700S Exit height: 41.60ft Exit diameter: 3.41 ft Exit flow rate: 83,070 acfm Exit velocity: 152.49 ft/s Exit temperature: 819.0 °F
Gas Turbine/T1300	Manufacturer: Solar Model: Saturn 10-1300 Manufacture date: 2001 Modification date: N/A Maximum rating: 1,300 hp @ ISO Fuel: natural gas only	N/A	T1300 Exit height: 25.98 ft Exit diameter: 2.43 ft Exit flow rate: 29,615 acfm Exit velocity: 107.3 ft/s Exit temperature: 873.0 °F

3.2 Emissions Inventory

An emission inventory was developed for the three gas turbines (see Appendix B) associated with this proposed project. Emissions estimates of criteria pollutant PTE were based on emission factors and process information specific to the facility for this proposed project.

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Table 3.2 POST PROJECT UNCONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM ₁₀	SO ₂	NO _x	CO	VOC	Lead
	T/yr	T/yr	T/yr	T/yr	T/yr	lb/quarter
Point Sources Affected by this Permitting Action						
Gas Turbine T4002	0.96	0.48	94.85	87.53	2.01	0
Gas Turbine T4700S ¹	1.14	0.57	187.03	20.77	1.19	0
Gas Turbine T1300	0.39	0.22	34.51	56.04	1.61	0
Total, Point Sources	2.49	1.27	316.39	164.34	4.81	0.0

¹ The NO_x control efficiency for Solar SoLo NO_x combustors was determined to be 90.9% (calculated as uncontrolled NO_x emissions of 165 ppmv @ 15% O₂ and controlled NO_x emissions of 15 ppmv @ 15% O₂, therefore CE = (15 ÷ 165) + 1 = .909). Therefore, uncontrolled NO_x emissions are calculated using controlled NO_x emissions of 17.02 T/yr, thus uncontrolled NO_x emissions = 17.02 T/y ÷ (1 - 0.909) = 187.03 T/yr). See the following link for the permit that details how the control efficiency was determined http://ct.gov/dep/lib/dep/public_notice_attachments/draft_permits/2007jan13iroquoispipelineoperatingcodraftpermit028-0027.pdf.

Table 3.3 PRE-PROJECT CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
	lb/hr ¹	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources Affected by the Permitting Action												
Gas Turbine T4002	0.21	0.90	0.11	0.46	12.7	55.8	4.67	20.5	0.86	3.78	0	0
Gas Turbine T4700S	0.23	1.02	0.12	0.53	3.51	15.4	4.28	18.7	1.23	5.37	0	0
Gas Turbine T1300	0.08	0.36	0.04	0.18	3.32	14.5	1.43	6.28	0.84	3.69	0	0
Pre-Project Totals	0.52	2.28	0.27	1.17	19.53	85.70	10.38	45.48	2.93	12.84	0	0

Table 3.4 POST PROJECT CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

Emissions Unit	PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources Affected by the Permitting Action												
Gas Turbine T4002	0.22	0.95	0.11	0.49	21.65	94.85	19.98	87.53	0.46	2.01	0	0
Gas Turbine T4700S	0.26	1.12	0.13	0.58	3.89	17.02	4.74	20.77	0.27	1.19	0	0
Gas Turbine T1300	0.09	0.38	0.04	0.20	7.88	34.51	12.80	56.04	0.37	1.61	0	0
Post Project Totals	0.57	2.45	0.28	1.27	33.42	146.38	37.52	164.34	1.10	4.81	0	0

Table 3.5 CHANGES IN CONTROLLED EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS

	PM ₁₀		SO ₂		NO _x		CO		VOC		Lead	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources Affected by the Permitting Action												
Pre-Project Totals	0.52	2.28	0.27	1.17	19.53	85.70	10.38	45.48	2.93	12.84	0.0	0.0
Post Project Totals	0.57	2.45	0.28	1.27	33.42	146.38	37.52	164.34	1.10	4.81	0.0	0.0
Facility Total Change in Emissions	0.05	0.17	0.01	0.10	13.89	60.68	27.14	118.86	-1.83	-8.03	0.0	0.0

Modeling of TAPs emissions was not performed for this project as there was no increase in TAPs emissions proposed by the applicant. This is because there was no increase in the amount of natural gas combusted by the three gas turbines. The increase in PM₁₀, SO₂, NO_x, and CO emissions proposed by the applicant is due to a correction in the PM₁₀, SO₂, NO_x, and CO emissions factors for the three gas turbines.

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3.3 Ambient Air Quality Impact Analysis

Table 3.7 FULL IMPACT ANALYSIS RESULTS FOR CRITERIA POLLUTANT(S)

Pollutant	Averaging Period	Facility Ambient Impact (µg/m ³)	Background Concentration (µg/m ³)	Total Ambient Concentration (µg/m ³)	NAAQS (µg/m ³)	Percent of NAAQS
PM ₁₀	24-hour	N/A	N/A	73.00	150	N/A
	Annual	N/A	N/A	26.00	50	N/A
NO ₂	Annual	9.59	17	26.59	100	26.6%
SO ₂	3-hr	N/A	N/A	34.00	1,300	N/A
	24-hr	N/A	N/A	26.00	365	N/A
	Annual	N/A	N/A	8.00	80	N/A
CO	1-hour	N/A	N/A	3,600.00	40,000	N/A
	8-hour	N/A	N/A	2,300.00	10,000	N/A
Pb	Quarterly	N/A	N/A	0.000000	1.5	N/A

N/A: The emissions rate is below the modeling threshold; modeling is not required in accordance with State of Idaho Air Quality Modeling Guidance DEQ Publication, December 2002, or alternative threshold approved by DEQ Modeling Coordinator.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The Northwest Pipeline, GP facility is located in Bannock County (AQCR 61), which is designated as unclassifiable/attainment for PM_{2.5}, PM₁₀, SO₂, NO_x, CO, and Ozone for federal and state criteria air pollutants. Reference 40 CFR 81.313.

4.2 Certification of Documents (IDAPA 58.01.01.123)

IDAPA 58.01.01.123 Certification of Documents

This Rule requires that all documents, including but not limited to, application forms for permits to construct, application forms for operating permits, progress reports, records, monitoring data, supporting information, requests for confidential treatment, testing reports or compliance certifications submitted to the Department shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. It was previously determined that this requirement would be placed on the permit for this facility. This requirement is assured by new Permit Condition 2.17 (old Permit Condition 2.15).

4.3 Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The facility’s proposed project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

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4.4 Conditions for Permits to Construct (IDAPA 58.01.01.211)

IDAPA 58.01.01.211 Conditions for Permits to Construct

The Department may impose any reasonable conditions upon an approval, including conditions requiring the stationary source or facility to be provided with:

- a. Sampling ports of a size, number, and location as the Department may require;
- b. Safe access to each port;
- c. Instrumentation to monitor and record emissions data;
- d. Instrumentation for ambient monitoring to determine the effect emissions from the stationary source or facility may have, or are having, on the air quality in any area affected by the stationary source or facility; and
- e. Any other sampling and testing facilities as may be deemed reasonably necessary.

It was previously determined that the following requirements fall under this Rule.

New Permit Condition 2.8 (old Permit Condition 2.6) which requires that only natural gas fuel is combusted by the gas turbines.

New Permit Condition 2.14 (old Permit Condition 2.8) which requires that the if any of the gas turbines are modified then a source test(s) shall be conducted within 180 days after the initial (or subsequent) start up.

New Permit Condition 2.10 (old Permit Condition 2.9) which requires that the permittee monitor and record fuel usage by the three gas turbines.

New Permit Condition 2.11 (old Permit Condition 2.10) which requires that the permittee calculate NO_x and CO emissions on an hourly and monthly basis as well as over the previous 12 consecutive-month period.

New Permit Condition 2.12 (old Permit Condition 2.11) which requires that the permittee monitor fuel sulfur content.

New Permit Condition 2.15 (old Permit Condition 2.12) which requires that the permittee submit a source test protocol 30 days prior to conducting any source tests.

New Permit Condition 2.16 (old Permit Condition 2.13) which requires that the permittee submit the results of any source tests within 30 of conducting the source tests.

New Permit Condition 2.18 (old Permit Condition 2.16) which requires that the permittee notify DEQ and EPA region 10 in writing of any modifications performed to the three gas turbines located at the facility.

4.5 Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permits

The facility is not subject to IDAPA 58.01.01.300 through 399 and is not requesting an optional Tier II operating permit. Therefore, the requirements of IDAPA 58.01.01.401 do not apply.

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4.6 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Tier I Operating Permit

The facility is not currently a Tier I source in accordance with IDAPA 58.01.01.006.113. However, as a result of this project the facility will become a Tier I source. Therefore, the requirements of IDAPA 58.01.01.301 apply, and the facility will have 12 months to apply for a Tier I permit (see following IDAPA 58.01.01.313 discussion).

4.7 Timely Application (IDAPA 58.01.01.313)

IDAPA 58.01.01.313 Timely Application

Section b. of this Rule states that for sources that become Tier I sources after May 1, 1994, that are located at a facility not previously authorized by a Tier I operating permit, the owner or operator of the Tier I source shall submit to the Department a complete application for an original Tier I operating permit within twelve (12) months after becoming a Tier I source or commencing operation, unless:

- i. The Department provides written notification of an earlier date to the owner or operator.
- ii. The Tier I source is identified in Subsections 301.02.b. or 301.02.c.

This facility does not meet the exemption criteria set form in Section 301.02.b and 301.02.c. Therefore, the facility is required to obtain a Tier I operating permit within 12 months of the date from when this permit is issued. This requirement is assured by new Permit Condition 2.19.

4.8 Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.312..... Visible Emissions

All of the permitted emissions units at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by new Permit Condition 2.4 (old Permit Condition 2.4).

4.9 Fuel Burning Equipment – Particulate Matter (IDAPA 58.01.01.675)

IDAPA 58.01.01.676..... Fuel Burning Equipment – Particulate Matter

The purpose of Sections 675 through 681 of this Rule is to establish particulate matter emission standards for fuel burning equipment. IDAPA 58.01.01.006.45 defines fuel-burning equipment as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This project involves gas turbines that produce power. However, this is accomplished by using the products of combustion to power the shaft of the gas turbine which is then used to drive the natural gas compressor shaft. Therefore, this is not “indirect heat transfer” and IDAPA 58.01.01.676 does not apply.

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4.10 PSD Classification (40 CFR 52.21)

40 CFR 52.21..... Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source, not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore, in accordance with 40 CFR 52.21(a)(2), PSD requirements do not apply.

4.11 NSPS Applicability (40 CFR 60)

40 CFR 60-Subpart GG.....Standards of Performance for Stationary Gas Turbines

§ CFR 60.330 Applicability and Designation of Affected Facility

(a) The provisions of this subpart are applicable to the following affected facilities: All stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 million Btu) per hour, based on the lower heating value of the fuel fired.

(b) Any facility under paragraph (a) of this section which commences construction, modification, or reconstruction after October 3, 1977, is subject to the requirements of this part except as provided in paragraphs (e) and (j) of §60.332.

Per the applicant, all three of the gas turbines involved with this project are subject to this subpart, as all three gas turbines were installed after October 3, 1977 and have heat input ratings greater than 10 MMBtu/hr.

§ 60.331 Definitions

The definitions of this section apply to the facility.

§ 60.332 Standard for Nitrogen Oxide

(a) On and after the date on which the performance test required by §60.8 is completed, every owner or operator subject to the provisions of this subpart as specified in paragraphs (b), (c), and (d) of this section shall comply with one of the following, except as provided in paragraphs (e), (f), (g), (h), (i), (j), (k), and (l) of this section.

(c) Stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules per hour (10 million Btu/hour) but less than or equal to 107.2 gigajoules per hour (100 million Btu/hour) based on the lower heating value of the fuel fired, shall comply with the provisions of paragraph (a)(2) of this section. Per the applicant the approximate heat input of the three gas turbines at this facility are 32.76 MMBtu/hr (calculated as Heat Input = 94.84 T-NO_x/yr x 2,000 lb/T ÷ 0.661 lb/MMBtu ÷ 8,760 hr/yr) for the Solar Centaur T4002, 38.86 MMBtu/hr (calculated as Heat Input = 17.02 T-NO_x/yr x 2,000 lb/T ÷ 0.100 lb/MMBtu ÷ 8,760 hr/yr) for the Solar Centaur T4700S, and 13.11 MMBtu/hr (calculated as Heat Input = 34.50 T-NO_x/yr x 2,000 lb/T ÷ 0.601 lb/MMBtu ÷ 8,760 hr/yr) for the Solar Saturn T1300. Note: These values are taken from the Solar Turbines Predicted Emissions Performance data supplied with this application.

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(a)(2) No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases which contain nitrogen oxides in excess of:

$$STD = 0.0150 \times (14.4 \div Y) + F$$

Where:

STD = allowable ISO corrected (if required as given in §60.335(b)(1)) NO_x emission concentration (percent by volume at 15 percent oxygen and on a dry basis),

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour, and

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(4) of this section. For this project per the Applicant F was assumed to 0% for all three gas turbines.

With the following conversions:

$$1 \text{ Btu} = 1.055 \text{ kJ}$$

$$1 \text{ hp} = 745.699 \text{ W}$$

Calculated NO_x emissions limit for the T4002 Gas Turbine:

$$STD = 0.0150 \times (14.4 \div Y)$$

$$STD = 0.0150 \times [14.4 \div (9,134 \text{ Btu/hp-hr} \times 1.055 \text{ kJ/Btu} \div 745.699 \text{ W/hp})]$$

$$STD = 0.0167\% \text{ @ } 15\% \text{ O}_2$$

This requirement is assured by new Permit Condition 2.5 (old Permit Condition 2.5)

Calculated NO_x emissions limit for the T4700 Gas Turbine:

$$STD = 0.0150 \times (14.4 \div Y)$$

$$STD = 0.0150 \times [14.4 \div (9,222 \text{ Btu/hp-hr} \times 1.055 \text{ kJ/Btu} \div 745.699 \text{ W/hp})]$$

$$STD = 0.0166\% \text{ @ } 15\% \text{ O}_2$$

This requirement is assured by new Permit Condition 2.6 (old Permit Condition 2.5)

Calculated NO_x emissions limit for the T1300 Gas Turbine:

$$STD = 0.0150 \times (14.4 \div Y)$$

$$STD = 0.0150 \times [14.4 \div (10,722 \text{ Btu/hp-hr} \times 1.055 \text{ kJ/Btu} \div 745.699 \text{ W/hp})]$$

$$STD = 0.0150 \times [14.4 \div (15.169 \text{ kJ/W-hr})], Y \text{ cannot exceed } 14.4$$

$$STD = 0.0150\% \text{ @ } 15\% \text{ O}_2$$

This requirement is assured by new Permit Condition 2.7 (old Permit Condition 2.5)

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§ 60.333 Standard for Sulfur Dioxide

On and after the date on which the performance test required to be conducted by §60.8 is completed, every owner or operator subject to the provision of this subpart shall comply with one or the other of the following conditions:

(a) No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine any gases which contain sulfur dioxide in excess of 0.015 percent by volume at 15 percent oxygen and on a dry basis.

(b) No owner or operator subject to the provisions of this subpart shall burn in any stationary gas turbine any fuel which contains total sulfur in excess of 0.8 percent by weight (8,000 ppmw).

This facility has previously chosen to comply with the second requirement of combusting fuel with a total sulfur in of less than 0.8 percent by weight. This requirement is assured by new Permit Condition 2.9 (old Permit Condition 2.7).

§ 60.334 Monitoring of Operations

NO_x Emissions Monitoring:

Section (a) states that except as provided in paragraph (b) of this section, the owner or operator of any stationary gas turbine subject to the provisions of this subpart and using water or steam injection to control NO_x emissions shall install, calibrate, maintain and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water or steam to fuel being fired in the turbine.

Section (c) goes on to state that for any turbine that commenced construction, reconstruction or modification after October 3, 1977, but before July 8, 2004, and which does not use steam or water injection to control NO_x emissions, the owner or operator may, but is not required to, for purposes of determining excess emissions, use a CEMS that meets the requirements of paragraph (b) of this section. Also, if the owner or operator has previously submitted and received EPA, State, or local permitting authority approval of a procedure for monitoring compliance with the applicable NO_x emission limit under §60.332, that approved procedure may continue to be used.

The three gas turbines located at this facility do not use water or steam injection to control NO_x emissions. Therefore, this facility does not have to monitor NO_x emissions from the three gas turbines involved with this project (incorrectly required by old Permit Condition 2.14).

SO_x Emissions Monitoring:

Section (h) states that the owner or operator of any stationary gas turbine subject to the provisions of this subpart: (1) Shall monitor the total sulfur content of the fuel being fired in the turbine, except as provided in paragraph (h)(3) of this section. The sulfur content of the fuel must be determined using total sulfur methods described in §60.335(b)(10). Alternatively, if the total sulfur content of the gaseous fuel during the most recent performance test was less than 0.4 weight percent (4000 ppmw), ASTM D4084–82, 94, D5504–01, D6228–98, or Gas Processors Association Standard 2377–86 (all of which are incorporated by reference-see §60.17), which measure the major sulfur compounds may be used

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The facility currently has a “Custom Fuel Compliance Monitoring Schedule” that was approved by EPA Region 10 in 1999. This requirement was assured by old Permit Condition 2.11.

However, during the facility review of the draft permit a request was made to remove this requirement and replace it with language found at 60.334 (h)(3)(i) which is in line with the Northwest tariff for fuel sulfur content.

Section (h)(3)(i) reads as follows. The owner or operator of any stationary gas turbine subject to the provisions of this subpart:

(3) Notwithstanding the provisions of paragraph (h)(1) of this section, the owner or operator may elect not to monitor the total sulfur content of the gaseous fuel combusted in the turbine, if the gaseous fuel is demonstrated to meet the definition of natural gas in §60.331(u), regardless of whether an existing custom schedule approved by the administrator for subpart GG requires such monitoring. The owner or operator shall use one of the following sources of information to make the required demonstration:

(i) The gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less; or

This requirement is assured by new Permit Condition 2.12 (which replaced old Permit Condition 2.11).

§ 60.335 Test Methods and Procedures

Section (a) states that the owner or operator shall conduct the performance tests required in §60.8, using either:

- (1) EPA Method 20,
- (2) ASTM D6522–00 (incorporated by reference, see §60.17), or
- (3) EPA Method 7E and either EPA Method 3 or 3A in appendix A to this part, to determine NO_x and diluent concentration.

This requirement is assured by new Permit Condition 2.14 (old Permit Condition 2.8).

4.12 NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements pursuant to 40 CFR 61.

4.13 MACT Applicability (40 CFR 63)

The only MACT that appears to apply is 40 CFR Part 63, Subpart HHH - Natural Gas Transmission and Storage Facilities. However, this MACT is not applicable because the only affected facilities under Subpart HHH are glycol dehydrators, which are not present at the Northwest Pipeline, GP - Lava Hot Springs facility.

STATEMENT OF BASIS

Permittee:	Northwest Pipeline GP -- Lava Hot Springs	Permit No.	P-2208.0163
Location:	Topaz, Idaho	Facility ID No.	005-00028

4.14 CAM Applicability (40 CFR 64)

40 CFR 64 does not currently apply to this facility; however, the facility will submit a Tier I application within 12 months time, and CAM will be addressed at that time.

4.15 Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified, or deleted as a result of this permitting action.

Old Table 1.1 from PTC No. 005-00028 has been updated to reflect the current names and ratings of the equipment at the facility.

Old Permit Condition 2.1 from PTC No. 005-00028 has been updated to reflect the current process description for the equipment at this facility.

Old Permit Condition 2.2 from PTC No. 005-00028 has been updated with new Table 2.1 to reflect the current names of the emissions units, the emissions control devices, and the emissions point data for these emissions units.

Old Permit Condition 2.3 from PTC No. 005-00028 has been updated to reflect the new emissions limits for the three gas turbines as proposed by the Applicant.

Old Permit Condition 2.5 from PTC No. 005-00028 has been rewritten as new Permit Conditions 2.5, 2.6, and 2.7 to reflect the correct NSPS NO_x limits as proposed by the Applicant.

Old Permit Condition 2.6 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.8.

Old Permit Condition 2.7 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.9.

Old Permit Condition 2.8 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.14. This condition was moved to a newly created section of the permit for performance testing requirements (it was previously listed under monitoring and recordkeeping requirements).

Old Permit Condition 2.9 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.10.

Old Permit Condition 2.10 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.11.

Old Permit Condition 2.11 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.12.

New Permit Condition 2.13 has been added to the permit to require that all records required to be maintained by the permit shall be in accordance with General Provision 7.

As mentioned previously, old Permit Condition 2.8 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.14. This condition was moved to a newly created section of the permit for performance testing requirements (it was previously listed under monitoring and recordkeeping requirements).

STATEMENT OF BASIS

Permittee:	Northwest Pipeline GP – Lava Hot Springs	Permit No.	P-2208.0163
Location:	Topaz, Idaho	Facility ID No.	005-00028

Old Permit Condition 2.12 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.15.

Old Permit Condition 2.13 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.16.

Old Permit Condition 2.14 from PTC No. 005-00028 has been removed from the new permit. During processing of this application it was determined that the three gas turbines located at this facility do not use water or steam injection to control NO_x emissions. Therefore, this facility does not have to monitor NO_x emissions from the three gas turbines involved with this project.

Old Permit Condition 2.15 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.17.

Old Permit Condition 2.16 from PTC No. 005-00028 has been renumbered to new Permit Condition 2.18. In addition this condition has been modified to reflect current the DEQ practice of listing all 40 CFR 60, Subpart A requirements in one table.

New Permit Condition 2.19 has been added to require that the facility submit a complete application for an original Tier I operating permit within 12 months of the date from when this permit is issued. As discussed previously as a result of this project the facility will exceed the major threshold for NO_x and CO emissions. Therefore, this facility will subject to Title V of the CAA and is required to obtain a Tier I operating permit.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of \$7,500.00 because its permitted annual change in emissions is 171.78 T/yr. Refer to the chronology for fee receipt dates.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
PM ₁₀	0.17	0	0.17
SO ₂	0.10	0	0.10
NO _x	60.68	0	60.68
CO	118.86	0	118.86
VOC	0.00	8.03	-8.03
HAPS	0.00	0	0.0
Totals:	179.81	8.03	171.78
Fee Due	\$7,500.00 Based upon an annual increase in emissions of > 100 T/yr for a modification to an existing source		

STATEMENT OF BASIS

Permittee:	Northwest Pipeline GP – Lava Hot Springs	Permit No.	P-2208.0163
Location:	Topaz, Idaho	Facility ID No.	005-00028

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from November 12, 2008 to November 28, 2008 in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action.

Appendix A – AIRS Information

AIRS/AFS Facility-wide Classification Form

Facility Name: Northwest Pipeline GP - Lava Hot Springs
Facility Location: 6680 E. Old Oregon Trail Rd., Topaz, ID
Facility ID: 005-00028 **Date:** January 30, 2009
Project/Permit No.: P-2008.0163 **Completed By:** Darrin Pampaian

- Check if there are no changes to the facilitywide classification resulting from this action. (compare to form with last permit)
- Yes, this facility is an SM80 source.

Identify the facility's area classification as A (attainment), N (nonattainment), or U (unclassified) for the following pollutants:

	SO2	PM10	VOC	
Area Classification:	U	U	U	DO NOT LEAVE ANY BLANK

Check one of the following:

- SIP [0]** - Yes, this facility is subject to SIP requirements. (do not use if facility is Title V)
- OR
- Title V [V]** - Yes, this facility is subject to Title V requirements. (If yes, do not also use SIP listed above.)

For SIP or TV, identify the classification (A, SM, B, C, or ND) for the pollutants listed below. Leave box blank if pollutant is not applicable to facility.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	B	A	A	B	B	B	B

- PSD [6]** - Yes, this facility has a PSD permit.

If yes, identify the pollutant(s) listed below that apply to PSD. Leave box blank if pollutant does not apply to PSD.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input type="checkbox"/>						

- NSR - NAA [7]** - Yes, this facility is subject to NSR nonattainment area (IDAPA 58.01.01.204) requirements.

Note: As of 9/12/08, Idaho has no facility in this category.

If yes, identify the pollutant(s) listed below that apply to NSR-NAA. Leave box blank if pollutant does not apply to NSR - NAA.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input type="checkbox"/>						

- NESHAP [8]** - Yes, this facility is subject to NESHAP (Part 61) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

- NSPS [9]** - Yes, this facility is subject to NSPS (Part 60) requirements.

If yes, what CFR Subpart(s) is applicable?

If yes, identify the pollutant(s) regulated by the subpart(s) listed above. Leave box blank if pollutant does not apply to the NSPS.

	SO2	NOx	CO	PM10	PT (PM)	VOC	THAP
Classification:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

- MACT [M]** - Yes, this facility is subject to MACT (Part 63) requirements. (THAP only)

If yes, what CFR Subpart(s) is applicable?

Appendix B – Emissions Inventory

Gas Turbine T4002 Emissions Calculations:

Table B.1 GAS TURBINE POST PROJECT HOURLY AND ANNUAL PTE FOR CRITERIA POLLUTANTS WHEN COMBUSTING NATURAL GAS

Emissions Unit	Rated Heat Input (MMBtu/hr) ¹	Annual Hours of Operation (hrs/yr)	Criteria Pollutant	Emissions Factors (lb/MMBtu) ²	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Gas Turbine T4002	32.76	8,760	PM ₁₀ ²	0.0066	0.22	0.95
			SO ₂ ³	0.0034	0.11	0.49
			NO _x	0.661	21.65	94.85
			CO	0.610	19.98	87.53
			VOC ⁴	0.070	0.46	2.01

- ¹ – Rated heat input is based upon 100% load, an elevation of 4,910 ft, and ambient conditions of 0 °F and 60.0% relative humidity.
- ² PM₁₀ emissions are based upon AP-42, Table 3.1-2a (4/00), includes filterable and condensable.
- ³ SO₂ emissions are based upon AP-42, Table 3.1-2a (4/00), with unknown sulfur content 0.0034 lb-S/MMBtu is to be used.
- ⁴ – VOC emissions are based upon the manufacturer’s recommendation that VOC emissions are 20% of unburned hydrocarbon emissions (UHC) as presented in the Solar Turbines Predicted Emissions Performance data supplied with this application.

Gas Turbine T4700S Emissions Calculations:

Table B.2 GAS TURBINE POST PROJECT HOURLY AND ANNUAL PTE FOR CRITERIA POLLUTANTS WHEN COMBUSTING NATURAL GAS

Emissions Unit	Rated Heat Input (MMBtu/hr) ¹	Annual Hours of Operation (hrs/yr)	Criteria Pollutant	Emissions Factors (lb/MMBtu) ²	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Gas Turbine T4700S	38.86	8,760	PM ₁₀ ²	0.0066	0.26	1.12
			SO ₂ ³	0.0034	0.13	0.58
			NO _x	0.100	3.89	17.02
			CO	0.122	4.74	20.77
			VOC ⁴	0.035	0.27	1.19

- ¹ – Rated heat input is based upon 100% load, an elevation of 4,910 ft, and ambient conditions of 0 °F and 60.0% relative humidity.
- ² PM₁₀ emissions are based upon AP-42, Table 3.1-2a (4/00), includes filterable and condensable.
- ³ SO₂ emissions are based upon AP-42, Table 3.1-2a (4/00), with unknown sulfur content 0.0034 lb-S/MMBtu is to be used.
- ⁴ – VOC emissions are based upon the manufacturer’s recommendation that VOC emissions are 20% of unburned hydrocarbon emissions (UHC) as presented in the Solar Turbines Predicted Emissions Performance data supplied with this application.

Gas Turbine T1300 Emissions Calculations:

Table B.3 GAS TURBINE POST PROJECT HOURLY AND ANNUAL PTE FOR CRITERIA POLLUTANTS WHEN COMBUSTING NATURAL GAS

Emissions Unit	Rated Heat Input (MMBtu/hr) ¹	Annual Hours of Operation (hrs/yr)	Criteria Pollutant	Emissions Factors (lb/MMBtu) ²	Hourly Emissions (lb/hr)	Annual Emissions (ton/yr)
Gas Turbine T1300	13.11	8,760	PM ₁₀ ²	0.0066	0.09	0.38
			SO ₂ ³	0.0034	0.04	0.20
			NO _x	0.601	7.88	34.51
			CO	0.976	12.80	56.04
			VOC ⁴	0.140	0.37	1.61

- ¹ – Rated heat input is based upon 100% load, an elevation of 4,910 ft, and ambient conditions of 0 °F and 60.0% relative humidity.
- ² PM₁₀ emissions are based upon AP-42, Table 3.1-2a (4/00), includes filterable and condensable.
- ³ SO₂ emissions are based upon AP-42, Table 3.1-2a (4/00), with unknown sulfur content 0.0034 lb-S/MMBtu is to be used.
- ⁴ – VOC emissions are based upon the manufacturer’s recommendation that VOC emissions are 20% of unburned hydrocarbon emissions (UHC) as presented in the Solar Turbines Predicted Emissions Performance data supplied with this application.

Appendix C – Ambient Air Quality Impact Analysis

MEMORANDUM

DATE: January 7, 2009

TO: Darrin Pampaian, Air Quality Analyst, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT NUMBER: P-2008.0163

SUBJECT: Modeling Review for the Northwest Pipeline GP Permit to Construct Application for Increased Emissions at the Lava Hot Springs Compressor Station Located near Lava Hot Springs, Idaho

1.0 SUMMARY

Northwest Pipeline GP (NW Pipeline) submitted a Permit to Construct (PTC) application for an increase in allowable emissions at the Lava Hot Springs Compressor Station, located near Lava Hot Springs, Idaho. Air quality analyses involving atmospheric dispersion modeling of increased emissions were performed to demonstrate the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]). Cirrus Consulting, LLC (Cirrus), NW pipeline's consultant, performed the site-specific ambient air quality impact analyses.

A technical review of the submitted analyses was conducted by DEQ. The submitted analyses and information: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility were below significant contribution levels (SCLs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the facility and any potentially co-contributing sources, when appropriately combined with background concentrations, were below applicable air quality standards at all locations outside of the facility's property boundary. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Criteria/Assumption/Result	Explanation/Consideration
Ambient impacts of NO ₂ were well below the NAAQS.	Emissions increases of other criteria pollutants were below established thresholds that trigger the need to perform project-specific modeling. No specific restrictions are needed in the issued permit to assure compliance with NAAQS.
TAPs modeling analyses were not performed as part of the application.	TAPs analyses are not required if the proposed project does not result in an increase in TAP emissions. It was assumed that TAP emissions did not increase from what was assessed for the initial PTC application submitted in October 2001.

2.0 BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The NW Pipeline Lava Hot Springs Compressor Station is located near Lava Hot Springs, Idaho. The area is designated as attainment or unclassifiable for all criteria pollutants.

2.1.2 Significant and Cumulative NAAQS Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources associated with the facility exceed the significant contribution levels (SCLs) of Idaho Air Rules Section 006.102, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Pollutant	Averaging Period	Significant Contribution Levels^a ($\mu\text{g}/\text{m}^3$)^b	Regulatory Limit^c ($\mu\text{g}/\text{m}^3$)	Modeled Value Used^d
PM ₁₀ ^e	Annual ^f	1.0	50 ^g	Maximum 1 st highest ^h
	24-hour	5.0	150 ⁱ	Maximum 6 th highest ^j
PM _{2.5} ^k	Annual	Not established	15	Use PM ₁₀ as surrogate
	24-hour	Not established	35	Use PM ₁₀ as surrogate
Carbon monoxide (CO)	8-hour	500	10,000 ^l	Maximum 2 nd highest ^h
	1-hour	2,000	40,000 ^l	Maximum 2 nd highest ^h
Sulfur Dioxide (SO ₂)	Annual	1.0	80 ^g	Maximum 1 st highest ^h
	24-hour	5	365 ⁱ	Maximum 2 nd highest ^h
	3-hour	25	1,300 ⁱ	Maximum 2 nd highest ^h
Nitrogen Dioxide (NO ₂)	Annual	1.0	100 ^g	Maximum 1 st highest ^h
Lead (Pb)	Quarterly	NA	1.5 ⁱ	Maximum 1 st highest ^h

^aIdaho Air Rules Section 006.102

^bMicrograms per cubic meter

^cIdaho Air Rules Section 577 for criteria pollutants

^dThe maximum 1st highest modeled value is always used for the significant impact analysis

^eParticulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^fThe annual PM₁₀ standard was revoked in 2006. The standard is still listed because compliance with the annual PM_{2.5} standard is demonstrated by a PM₁₀ analysis that demonstrates compliance with the revoked PM₁₀ standard.

^gNever expected to be exceeded in any calendar year

^hConcentration at any modeled receptor

ⁱNever expected to be exceeded more than once in any calendar year

^jConcentration at any modeled receptor when using five years of meteorological data

^kParticulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers

^lNot to be exceeded more than once per year

New source review requirements for assuring compliance with PM_{2.5} standards have not yet been completed and promulgated into regulation. EPA has asserted through a policy memorandum that compliance with PM_{2.5} standards will be assured through an air quality analysis for the corresponding PM₁₀ standard. Although the PM₁₀ annual standard was revoked in 2006, compliance with the revoked PM₁₀ annual standard must be demonstrated as a surrogate to the annual PM_{2.5} standard.

2.1.3 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.

Permit requirements for toxic air pollutants from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary

source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Section 210, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated. If DEQ determines T-RACT is used to control emissions of carcinogenic TAPs, then modeled concentrations of 10 times the AACC are considered acceptable, as per Idaho Air Rules Section 210.12.

2.2 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Table 3 lists appropriate background concentrations for the Lava Hot Springs area. Only nitrogen dioxide is listed in Table 3, since emissions rates of other criteria pollutants were below thresholds requiring a project-specific modeling analysis.

Background concentrations were revised for all areas of Idaho by DEQ in March 2003¹. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations in these analyses were based on DEQ default values for rural/agricultural areas.

Table 3. BACKGROUND CONCENTRATIONS		
Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$)^a
Nitrogen dioxide (NO ₂)	Annual	17

^a Micrograms per cubic meter

3.0 MODELING IMPACT ASSESSMENT

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate compliance with applicable air quality standards.

¹ Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

3.1.1 Overview of Analyses

Table 4 provides a brief description of parameters used in the submitted modeling analyses.

Parameter	Description/Values	Documentation/Addition Description^a
General facility location	Lava Hot Springs, Idaho	
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 07026
Meteorological data	Pocatello	Data provided by DEQ
Terrain	Considered	Receptor, building, and emissions source elevations were determined using Digital Elevation Model (DEM) files
Building downwash	Considered	Buildings present on the site that could reasonably cause plume downwash were included in the analyses through the use of the BPIP-PRIME program
Receptor Grid	Grid 1	50-meter spacing along the property boundary
	Grid 2	100-meter spacing out to 1,000 meters
	Grid 3	250-meter spacing out to 3,000 meters
	Grid 4	500-meter spacing out to 6,000 meters

3.1.2 Modeling protocol and Methodology

Refined air impact analyses were performed by Cirrus. A modeling protocol was submitted to DEQ prior to the application and DEQ provided conditional approval of the protocol to Cirrus. Modeling was generally conducted using data and methods described in the protocol and/or in the *State of Idaho Air Quality Modeling Guideline*.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 require that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a 1-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer
- Improved plume rise and buoyancy calculations
- Improved treatment of terrain affects on dispersion
- New vertical profiles of wind, turbulence, and temperature

AERMOD was used in the submitted analyses.

3.1.4 Meteorological Data

Five years of hourly meteorological data collected from a National Weather Service tower at the Pocatello Airport were used in the modeling analyses. These data were preprocessed by DEQ and were provided to Cirrus from DEQ in model-ready format. DEQ has determined these data are reasonably representative meteorological data for use in this dispersion modeling analyses in the Lava Hot Springs area.

3.1.5 Terrain Effects

Terrain effects on dispersion were considered in the analyses. Receptor elevations and hill heights were obtained by Cirrus using AERMAP and Digital Elevation Model (DEM) 7.5-minute files.

3.1.6 Building Downwash

Downwash effects potentially caused by structures at the facility were accounted for in the dispersion modeling analyses. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for AERMOD.

3.1.7 Ambient Air Boundary

Cirrus stated the facility's fence line was used as the ambient air boundary for the site. DEQ assumed reasonable measures will be taken by the facility to preclude public access to the property.

3.1.8 Receptor Network

Table 4 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined this grid assured maximum impacts were reasonably resolved by the model.

3.2 Emission Rates

Emissions rates used in the modeling analyses for the proposed project were equal to those presented in other sections of the permit application or the DEQ Statement of Basis.

3.2.1 Criteria Pollutant Emissions Rates

Emissions increases of all criteria pollutants except NO_x and CO were below modeling threshold values established in the *State of Idaho Air Quality Modeling Guideline*. DEQ has also developed secondary discretionary thresholds that may be used depending on the release parameters and the site layout. NO_x emissions increases exceeded the secondary threshold of 7.0 ton per year, but CO emissions were under the CO secondary threshold of 70 pounds per hour. Table 5 provides NO_x emissions increases and facility-wide emissions used in the modeling analyses.

Emissions Point	Stack ID	NO _x Emissions Rates (lb/hr)	
		Significant Impact Analysis ^a	Cumulative NAAQS Analysis ^b
Solar Centaur 40-4002 Turbine	T4002	8.95	21.65
Solar Centaur 40-4700S Turbine	T4700S	0.38	3.89
Solar Saturn 10-1300 Turbine	T1300	4.56	7.88
Sivalls Fuel Gas Heater		0.0	0.025

^aThese values represent the increase in emissions associated with this project

^bThese values are total emissions quantities for the source listed

3.2.2 TAP Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed before July 1, 1995. No TAPs were included in the air impact analyses submitted with the application. DEQ modeling staff assumed there were no TAP emissions increases associated with the proposed modification.

3.3 Emission Release Parameters

Table 6 provides emissions release parameters used in the modeling analyses, including stack height, stack diameter, exhaust temperature, and exhaust velocity. All parameters appear to be within reasonably expected ranges, considering the type of sources.

Table 6. EMISSIONS RELEASE PARAMETERS					
Point Sources					
<i>Release Point/Location</i>	<i>Source Type</i>	<i>Stack Height (m)^a</i>	<i>Modeled Diameter(m)</i>	<i>Stack Gas Temp. (K)^b</i>	<i>Stack Gas Flow Velocity (m/sec)^c</i>
T4002	vertical	9.66	1.07	684	38.5
T4700S	vertical	12.68	1.04	710	46.5
T1300	vertical	7.92	0.74	740	32.7

^a Meters

^b Kelvin

^c Meters per second

3.4 Results for Significant and Cumulative NAAQS Impact Analyses

Results for the significant impact analyses are shown in Table 7. Cumulative NAAQS impact analyses were required for NO₂ because impacts exceeded the significant contribution level. Results of the cumulative NAAQS impact analyses are provided in Table 8.

Table 7. SIGNIFICANT IMPACT ANALYSES				
Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m³)^a	Significant Impact Level (µg/m³)	Full Impact Analysis Required
Nitrogen Dioxide (NO ₂)	Annual	3.92 ^b	1.0	Yes

^a Micrograms per cubic meter

^b NO₂ calculated as 75% of NO_x impact

Table 8. RESULTS FOR CUMULATIVE IMPACT ANALYSES						
Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m³)^a	Background Concentration (µg/m³)	Total Ambient Impact (µg/m³)	NAAQS^b (µg/m³)	Percent of NAAQS
Nitrogen dioxide (NO ₂)	Annual ^b	71.5 ^c	17	71.5	100	88

^a Micrograms per cubic

^b National ambient air quality standards

^c NO₂ calculated as 75% of NO_x impact

4.0 CONCLUSIONS

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the proposed modification will not cause or significantly contribute to a violation of any air quality standard.

Appendix D – Facility Comments

The following comments were received from the facility on January 22, 2009:

Facility Comment: Page 5 Section 2. - "Three Natural Gas-Fired Gas Turbines" should read "Three Natural Gas-Fired Turbines". The same phrase should be changed throughout the permit.

DEQ Response: The requested change will be made to the SOB and PTC.

Facility Comment: Page 5 Section 2.1 - Northwest is not regulated by a PUC we are regulated by the Federal Energy Regulatory Commission (FERC).

DEQ Response: The requested change will be made to the SOB and condition 2.1.

Facility Comment: Page 5 Section 2.1 Last Sentence - "...pumping station" should read "...compressor station".

DEQ Response: The requested change will be made to the SOB and condition 2.1.

Facility Comment: Page 5 Table 2.1 - Is it necessary to include the stack height, diameter, rate, velocity and temperature information? Isn't this information included in the statement of basis? If it is not required Northwest requests that it be removed.

DEQ Response: Current DEQ guidance is to list the stack parameters of air pollution emitting equipment in the PTC in Section 1.0 that were used to ensure compliance with State and Federal law. Therefore, the stack parameters will be removed from proposed Permit Condition 2.2 and added to Table 1.1 in Section 1.0.

Facility Comment: Page 5 Table 2.2 - How did you come up with the numbers in the table? Half of the numbers are off by a tenth or a hundredth.

DEQ Response: The emissions in Table 2.2 were calculated using the emission factors and heat inputs for the gas turbines as presented in the application. All emissions were rounded to the nearest hundredth.

Facility Comment: Page 6 Section 2.9 - "...by volume." should read "...by weight."

DEQ Response: The requested change will be made to condition 2.9.

Facility Comment: Page 7 Section 2.12. - Northwest requests that sections 2.12.1 through 2.12.3 be removed and replaced with language found at 60.334 (h)(3)(i) which is in line with the Northwest tariff for fuel sulfur content.

DEQ Response: The requested change will be made to condition 2.12.

Facility Comment: Page 7 Section 2.17 - Please clarify the reference here to 40 CFR 60.33(c). Northwest does not continuously monitor NO_x.

DEQ Response: Proposed permit condition 2.17 will be removed from the final permit.

Facility Comment: Page 8 Table 2.3 First column "60.7(b), (c), (d) and (f) - Remove (c) and (d) and add (a)"

DEQ Response: There will be no change made to the final permit.

Facility Comment: Page 8 Table 2.3 Third column - Remove bullet number 5 and bullet number 7 having to do with continuous emissions.

DEQ Response: The requested changes will be made to condition 2.18.