

AIR QUALITY DIVISION
CHAPTER 6, SECTION 3
OPERATING PERMIT

**WYOMING DEPARTMENT OF
ENVIRONMENTAL QUALITY**
AIR QUALITY DIVISION
122 West 25th Street
Cheyenne, Wyoming 82002



PERMIT NO. 3-2-005

Issue Date: **July 27, 2012**
Expiration Date: **July 27, 2017**
Effective Date: **July 27, 2012**
Replaces Permit No.: **3-1-005**

In accordance with the provisions of W.S. §35-11-203 through W.S. §35-11-212 and Chapter 6, Section 3 of the Wyoming Air Quality Standards and Regulations,

Northwest Pipeline LLC
(Amended July 8, 2014)
Green River Compressor Station
Section 10, Township 15 North, Range 109 West
Sweetwater County, Wyoming

is authorized to operate a stationary source of air contaminants consisting of emission units described in this permit. The units described are subject to the terms and conditions specified in this permit. All terms and conditions of the permit are enforceable by the State of Wyoming. All terms and conditions of the permit, except those designated as not federally enforceable, are enforceable by EPA and citizens under the Act. A copy of this permit shall be kept on-site at the above named facility or at an acceptable alternate location.

Steven A. Dietrich, Administrator
Air Quality Division

Date

John V. Corra, Director
Department of Environmental Quality

Date

WAQSR CHAPTER 6, SECTION 3 OPERATING PERMIT

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY AIR QUALITY DIVISION

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GENERAL INFORMATION

Company Name: **Northwest Pipeline LLC (Amended July 8, 2014)**

Mailing Address: **P.O. Box 58900**

City: **Salt Lake City** State: **UT** Zip: **84158-0900**

Plant Name: **Green River Compressor Station**

Plant Location: **Section 10, Township 15 North, Range 109 West, Sweetwater County Wyoming (approximately 17 miles Southwest of Green River)**

Latitude/Longitude (WGS84): **41.297197/-109.683974**

Plant Mailing Address: **P.O. Box 58900**

City: **Salt Lake City** State: **UT** Zip: **84158-0900**

Name of Owner: **Northwest Pipeline LLC** Phone: **(801) 584-6354**
(Amended July 8, 2014)

Responsible Official: **Ed Brewer** Phone: **(801) 584-7288**

Alternate Responsible Official: **Rob Harmon** Phone: **(801) 584-6856**
(Amended February 11, 2013)

Plant Manager/Contact: **Kendall Hill** Phone: **(307) 828-4021**

DEQ Air Quality Contact: **District 5 Engineer** Phone: **(307) 332-6755**
510 Meadowview Drive
Lander, WY 82520

SIC Code: **4922 – Natural gas Transmission**

Description of Process: **The Green River Compressor Station functions as a mainline pressure booster station for Northwest Pipeline natural gas transmission system. The station is designed to compress Natural gas for transmission down a bi-directional pipeline.**

SOURCE EMISSION POINTS

This table may not include any or all insignificant activities at this facility.

SOURCE ID#	SOURCE DESCRIPTION	SIZE	CH. 6, SEC. 2 PERMITS
1	Cooper Bessemer GMWC-6 compressor engine*	1500 hp	MD-427A, MD-1008A2
2	Cooper Bessemer GMWC-6 compressor engine*	1500 hp	MD-427A, MD-1008A2
3	Cooper Bessemer GMWC-6 compressor engine*	1500 hp	MD-427A, MD-1008A2
4	Cooper Bessemer GMWC-6 compressor engine*	1500 hp	MD-427A, MD-1008A2
5	Solar Centaur 50 T-6100S Turbine	6130 hp	MD-863
6	Caterpillar 3408SI Generator Engine**	400 hp	MD-1008A2
7	Caterpillar 3512SITA Generator Engine**	499 hp	MD-1008A2
8	Sellers C-80-W Boiler	3.35 MMBtu/hr	MD-1008A2
9	Fugitives from Valves, Flanges, Open-Ended Lines	N/A	N/A
SM1	Miscellaneous Catalytic Heaters	< 0.1 MMBtu/hr each	N/A
SM2	Sivalls Fuel Gas Line Heater	0.25 MMBtu/hr	N/A

* Engine is 2-stroke lean burn

** Engine is 4-stroke rich burn controlled with air-fuel ratio controls (AFRC) and non-selective catalytic reduction (NSCR)

TOTAL FACILITY ESTIMATED EMISSIONS

For informational purposes only. These emissions are not to be assumed as permit limits.

POLLUTANT	EMISSIONS (TPY)
CRITERIA POLLUTANT EMISSIONS	
Particulate Matter	3.6
PM ₁₀ Particulate Matter	3.6
Sulfur Dioxide (SO ₂)	3.7
Nitrogen Oxides (NO _x)	1631.4
Carbon Monoxide (CO)	81.7
Volatile Organic Compounds (VOCs)	31.3
HAZARDOUS AIR POLLUTANT (HAP) EMISSIONS	29.4*

*The largest single HAP emitted is reported to be formaldehyde at 12.0 TPY. Emission estimates are from the operating permit application.

FACILITY-SPECIFIC PERMIT CONDITIONS

Facility-Wide Permit Conditions

- (F1) PERMIT SHIELD [WAQSR Ch 6, Sec 3(k)]
Compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance.
- (F2) FACILITY COMPRESSOR REQUIREMENTS [WAQSR Ch 6, Sec 2 Permit MD-1008A2]
(a) The turbine and engine configuration shall be limited to one Solar Centaur 50 T-6100S turbine, four 1500 hp Cooper Bessemer GMWC-6 reciprocating compressor engines, one 400 hp Caterpillar 3408SI generator engine and one 499 hp Caterpillar 3512SITA generator engine.
(b) The permittee may expand the engine configuration beyond that described in paragraph (a) upon receipt of a construction or modification permit issued under Chapter 6, Section 2 of WAQSR that authorizes such change. The permittee must, however, submit an application to modify this operating permit within 12 months of commencement of operation for any engine not already included in this permit.

Source-Specific Permit Conditions

- (F3) VISIBLE EMISSIONS [WAQSR Ch 3, Sec 2]
(a) Visible emissions from the Cooper Bessemer GMWC-6 compressor engines and the miscellaneous catalytic heaters (units 1, 2, 3, 4, and SM1), shall not exceed 40 percent opacity.
(b) Visible emissions of any contaminant discharged into the atmosphere from any other single emission source shall not exhibit greater than 20 percent opacity except for one period or periods aggregating not more than six minutes in any one hour of not more than 40 percent opacity.
- (F4) ENGINE EMISSIONS [WAQSR Ch 6, Sec 2 Permits MD-863 and MD-1008A2]
(a) NO_x and CO emissions shall not exceed the limits specified in Table I.
(b) Compliance with the g/hp-hr limits is considered compliance with the lb/hr and TPY limits as long as each engine is operated at or below its site-rated capacity and the operating limits in paragraphs (d) and (e) of this condition.
(c) In addition to the limits in Table I and at ambient temperatures greater than zero degrees Fahrenheit, NO_x emissions from the Solar Centaur 50 T-6100S turbine engine (unit 5) shall not exceed 25 ppmv at 15 percent oxygen and CO emissions shall not exceed 50 ppmv at 15 percent oxygen.
(d) The Caterpillar 3512SITA generator engine (unit 7) shall be limited to 499 hp.
(e) The Caterpillar 3408SI generator engine (unit 6) shall be limited to 500 hours of operation per year. The permittee shall install and maintain a non-resettable hour meter on the engine to demonstrate compliance with the hours limit in this condition.

Table I: NO_x and CO Emission Limits						
Compressor / Generator / Turbine Engine Description	NO _x			CO		
	g/hp-hr	lb/hr	TPY	g/hp-hr	lb/hr	TPY
Cooper Bessemer GMWC-6 engines (units 1-4)	27.7	91.6	401.2	0.9	3.0	13.1
Caterpillar 3408SI (unit 6)	1.8	1.6	0.4	1.0	0.9	0.2
Caterpillar 3512SITA (unit 7)	1.0	1.1	4.8	1.0	1.1	4.8
Solar Centaur 50 T-6100S (unit 5)		4.4*			5.3*	

*Applies at ambient temperatures greater than zero degrees Fahrenheit

- (F5) FUEL BURNING EQUIPMENT [WAQSR Ch 3, Sec 3]
(a) NO_x emissions from the Sellers C-80-W boiler (unit 8) and the Sivalls fuel gas line heater (unit SM2) shall not exceed 0.20 lb/MMBtu heat input.
(b) NO_x emissions from the miscellaneous catalytic heaters (unit SM1) shall not exceed 0.23 lb/MMBtu heat input.

- (F6) MAINTENANCE REQUIREMENTS [WAQSR Ch 6, Sec 3(h)(i)(C)(I); Ch 6, Sec 2 Permits MD-427A & MD-863]
- (a) The non-selective catalytic reduction (NSCR) and air-fuel ratio controllers (AFRC) on the Caterpillar 3408SI generator engine (unit 6) shall be maintained in accordance with the manufacturer's or supplier's recommended maintenance.
 - (b) The Solar Centaur 50 T-6100S turbine (unit 5) shall be maintained in accordance with the manufacturer's specifications and recommendations.
 - (c) For the compressor and generator engines, the permittee shall follow the preventative maintenance plan, included as Appendix A of this permit.
- (F7) TEMPORARY ENGINE REPLACEMENT [WAQSR Ch 6, Sec 3(h)(i)(C)(I)]
- (a) Should an engine break down or require an overhaul, the permittee may bring on site and operate a temporary replacement engine until repairs are made. Permanent replacement of an engine **must** be evaluated by the Division under Ch 6, Sec 2 of WAQSR to determine appropriate permitting action and evaluate the need for additional requirements resulting from the permanent replacement.
 - (b) The temporary replacement unit shall be identical or similar to the unit replaced with emission levels at or below those of the unit replaced.
 - (c) The permittee shall notify the Division in writing of such replacement within five working days, provide the date of startup of the replacement, and provide a statement regarding the applicability of any New Source Performance Standards (NSPS) in 40 CFR Part 60; any National Emission Standards for Hazardous Air Pollutants (NESHAPs) in 40 CFR Part 63; and Compliance Assurance Monitoring (CAM) in WAQSR Ch 7, Sec 3.

Testing Requirements

- (F8) ADDITIONAL EMISSIONS TESTING [W.S. 35-11-110 and 40 CFR 60 Subpart GG]
- (a) The Division reserves the right to require additional testing as provided under condition G1 of this permit. Should testing be required, test methods found at 40 CFR 60, Appendix A, shall be used as follows:
 - (i) For visible emissions, Method 9 shall be used.
 - (ii) For particulate emissions, Methods 1-4 and 5 shall be used.
 - (iii) For turbines subject to the requirements of 40 CFR 60 Subpart GG, testing for NO_x and SO₂ on a ppm basis shall follow the requirements of Subpart GG, and testing on a lb/hr basis shall follow Methods 1-4, 6C and 7E.
 - (iv) For any engines subject to the requirements of 40 CFR 60 Subpart JJJJ, testing for NO_x, CO and VOC emissions shall follow the requirements of §60.4244.
 - (v) For other NO_x emission sources, Methods 1-4 and 7 or 7E shall be used.
 - (vi) For other CO emission sources, Methods 1-4 and 10 shall be used.
 - (vii) For alternative test methods, or methods used for other pollutants, the approval of the Administrator must be obtained prior to using the test method to measure emissions
 - (b) Unless otherwise specified, testing shall be conducted in accordance with WAQSR Ch 5, Sec 2(h).

Monitoring Requirements

- (F9) VISIBLE EMISSIONS MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I)]
- For periodic monitoring for visible emissions from the Cooper Bessemer compressor engines, the Solar Centaur turbine, the Caterpillar generator engines, the Sellers boiler, the miscellaneous catalytic heaters and the Sivalls fuel gas line heater (units 1, 2, 3, 4, 5, 6, 7, 8, SM1 and SM2), the permittee shall monitor the type of fuel used to ensure natural gas is the sole fuel source for these units.
- (F10) COMPRESSOR, GENERATOR, AND TURBINE ENGINE EMISSIONS MONITORING [WAQSR Ch 6, Sec 3(h)(i)(C)(I); Ch 6, Sec 2 Permits MD-863 and MD-1008A2]
- (a) The permittee shall measure NO_x emissions from the Cooper Bessemer GMWC-6 compressor engines (units 1, 2, 3 and 4) at least once every calendar quarter for comparison with the limits in condition F4.
 - (i) The permittee may reduce the frequency of subsequent tests to semiannually if the NO_x emission results from the quarterly performance test are less than or equal to 75 percent of the emission limits for each engine, as indicated in condition F4.
 - (ii) If the results of any subsequent performance test exceed 75 percent of the NO_x limit indicated above, the permittee must resume quarterly testing.

- (b) The permittee shall measure NO_x emissions from the Solar Centaur 50 T-6100S turbine (unit 5) and the Caterpillar 3512SITA generator engine (unit 7) at least annually for comparison with the limits in condition F4.
- (c) The permittee shall measure CO emissions from the Cooper Bessemer GMWC-6 compressor engines (units 1, 2, 3 and 4), the Solar Centaur 50 T-6100S turbine (unit 5), and the Caterpillar 3512ITA generator engine (unit 7) at least annually for comparison with the limits in condition F4.
- (d) The permittee shall measure NO_x and CO emissions from the Caterpillar 3408SI generator engine (unit 6) at least once every two years for comparison with the limits in condition F4.
- (e) The permittee shall measure NO_x and CO emissions using the Division's portable analyzer monitoring protocol or the EPA reference methods described in condition F8 of this permit. The Division's monitoring protocol is available upon request or at <http://deq.state.wy.us/aqd/operating.asp>.
- (f) The permittee shall monitor the operating hours of the Caterpillar 3408SI generator engine (unit 6) for comparison with the limit specified in condition F4(e) of this permit.
- (g) The permittee shall monitor the ambient temperature at the facility to determine which days during the calendar year the ambient temperature is equal to or below zero degrees Fahrenheit when the Solar Centaur 50 T-6100S turbine (unit 5) is in operation.

Recordkeeping Requirements

(F11) TESTING AND MONITORING RECORDS

[WAQSR Ch 6, Sec 3(h)(i)(C)(II); Ch 6, Sec 2 Permits MD-863 and MD-1008A2]

- (a) For any testing or monitoring required under conditions F8 and F10, other than Method 9 observations, the permittee shall record, as applicable, the following:
 - (i) The date, place, and time of sampling, measurements or observations;
 - (ii) The date(s) any analyses were performed;
 - (iii) The company, entity or person that performed the analyses or observations;
 - (iv) The analytical or observational techniques or methods used;
 - (v) The results of such analyses or observations;
 - (vi) The operating conditions and parameters as they existed at the time of sampling or measurement; and
 - (vii) Any corrective actions taken.
- (b) For any Method 9 observations required by the Division under condition F8, the permittee shall keep field records in accordance with Section 2.2 of Method 9.
- (c) For the monitoring required under condition F10(f), the permittee shall keep records of the operating hours of the Caterpillar 3408SI generator engine (unit 6).
- (d) For the monitoring required under condition F10(g), the permittee shall keep records of the dates during the calendar year that the Solar Centaur 50 T-6100S turbine (unit 5) operates when the ambient temperature is equal to or below zero degrees Fahrenheit.
- (e) The permittee shall retain on-site at the facility, or at an acceptable alternative location, the records of each test, measurement, observation, and support information for a period of at least five years from the date of the test, measurement, or observation.

(F12) MAINTENANCE RECORDS

[WAQSR Ch 6, Sec 3(h)(i)(C)(II); Ch 6, Sec 2 Permits MD-427A and MD-1008A2]

- (a) The record of maintenance activities required by condition F6 shall include:
 - (i) The maintenance activity performed;
 - (ii) The date and place the activity was performed;
 - (iii) The company and individual(s) that performed the activity;
 - (iv) The purpose of the activity; and
 - (v) An explanation for any deviation from the manufacturer's or supplier's recommendations for units 5 and 6, or from the preventative maintenance plan included in Appendix A.
- (b) The permittee shall retain on-site at the facility, or at an acceptable alternative location, the records of each maintenance activity for a period of at least five years from the date of the activity.

Reporting Requirements

(F13) NOTIFICATION OF TESTING AND TEST REPORTS

[WAQSR Ch 6, Sec 3(h)(i)(C)(III); W.S. 35-11-110 and Division Letter, April 19, 2012]

- (a) For the testing required by conditions F10 (a) – (d), the permittee shall notify the Division as follows:
 - (i) For any engines subject to the requirements of 40 CFR 60 Subpart JJJJ, the permittee shall provide test notification as specified in §60.8 of 40 CFR 60.
 - (ii) For other engines, notification of the test date shall be provided at least 15 days prior to testing.
- (b) The permittee shall report the results of the emissions tests required under condition F10(a) – (d), and any additional testing required by the Division under condition F8, within 45 days of completing each test. The reports shall include the information indicated in condition F11(a).

(F14) MONITORING REPORTS [WAQSR Ch 6, Sec 3(h)(i)(C)(III)]

- (a) The permittee shall report to the Division by January 31 and July 31 each year, documentation that all emissions units are firing natural gas as specified in condition F9.
- (b) The permittee shall report to the Division by January 31 each year, the operating hours for the Caterpillar 3408SI generator engine (unit 6) for the previous calendar year.
- (c) All instances of deviations from the conditions of this permit must be clearly identified in each report.
- (d) The reports shall reference this permit condition (F14) and shall be submitted in accordance with condition G4 of this permit.

(F15) GREENHOUSE GAS REPORTS [W.S. 35-11-110]

The permittee shall submit to the Division a summary of any report(s) required to be submitted to the EPA under 40 CFR Part 98.

- (a) The reports shall be submitted to the Division within 60 days of submission to EPA, in a format as specified by the Division.
- (b) The reports shall be submitted in accordance with condition G4(a)(i) of this permit, to the attention of the Division's Emission Inventory Program. A copy need not be sent to the DEQ Air Quality contact

(F16) REPORTING EXCESS EMISSIONS & DEVIATIONS FROM PERMIT REQUIREMENTS

[WAQSR Ch 6, Sec 3(h)(i)(C)(III)]

- (a) General reporting requirements are described under the General Conditions of this permit. The Division reserves the right to require reports as provided under condition G1 of this permit.
- (b) Emissions which exceed the limits specified in this permit and which are not reported under a different condition of this permit shall be reported annually with the emission inventory unless specifically superseded by condition G17, condition G19, or other condition(s) of this permit. The probable cause of such exceedance, the duration of the exceedance, the magnitude of the exceedance, and any corrective actions or preventative measures taken shall be included in this annual report. For sources and pollutants which are not continuously monitored, if at any time emissions exceed the limits specified in this permit by 100 percent, or if a single episode of emission limit exceedance spans a period of 24 hours or more, such exceedance shall be reported to the Division within one working day of the exceedance. (Excess emissions due to an emergency shall be reported as specified in condition G17. Excess emissions due to unavoidable equipment malfunction shall be reported as specified in condition G19.)
- (c) Any other deviation from the conditions of this permit shall be reported to the Division in writing within 30 days of the deviation or discovery of the deviation.

**WAQSR CHAPTER 5, SECTION 2 NEW SOURCE PERFORMANCE STANDARDS (NSPS) AND
40 CFR 60 SUBPART GG REQUIREMENTS FOR STATIONARY GAS TURBINES**

SUBPART GG REQUIREMENTS [40 CFR 60, Subparts A and GG; WAQSR Ch 5, Sec 2]

The permittee shall meet all applicable requirements of 40 CFR 60, Subparts A and GG and WAQSR Ch 5, Sec 2, as they apply to affected stationary gas turbines as specified under §60.330, including the Solar Centaur 50 T-6100S turbine (unit 5).

**WAQSR CHAPTER 5, SECTION 2 NEW SOURCE PERFORMANCE STANDARDS (NSPS)
AND 40 CFR 60 SUBPART JJJJ REQUIREMENTS
FOR STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES**

SUBPART JJJJ [40 CFR Part 60, Subparts A and JJJJ; WAQSR Ch 5, Sec 2]

As applicable, the permittee shall meet all requirements of 40 CFR 60, Subparts A and JJJJ, and WAQSR Ch 5, Sec 2, as they apply to affected stationary spark ignition (SI) internal combustion engines (ICE), including the Cooper Bessemer GMWC-6 compressor engines (units 1, 2, 3 and 4), Caterpillar 3408SI, and Caterpillar 3512SITA generator engines (units 6 and 7). As of the date of issuance of this permit there are no applicable requirements under this subpart for the Cooper Bessemer (units 1, 2, 3 and 4) and Caterpillar engines (units 6 and 7) based on the dates they were manufactured. (As required by condition F7(c), if an engine is replaced or reconstructed, subpart applicability will need to be reevaluated and a statement regarding applicability submitted to the Division.) For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator. An affected source is defined at §60.4230.

The subparts are available at <http://www.gpoaccess.gov/cfr/retrieve.html>, or from the Division upon request.

**SUBPART DDDDD REQUIREMENTS FOR
INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AND PROCESS HEATERS**

SUBPART DDDDD REQUIREMENTS [WAQSR Ch 5, Sec 3, Subpart DDDDD]

WAQSR Chapter 5, Section 3, 40 CFR Part 63 Subpart DDDDD, as published in the Federal Register September 13, 2004 remains a state regulation. The permittee shall meet all requirements of WAQSR Chapter 5, Section 3, Subpart DDDDD as they apply to each collection of industrial, commercial and institutional boilers and process heaters as defined in §§63.7490 and 63.7575, including Sivalls fuel gas line heater (unit SM2) and Sellers C-80-W boiler (unit 8).

- (a) As stated in §63.7506, new or reconstructed small gaseous fired units (including units SM2 and 8) do not have to meet the requirements of WAQSR Chapter 5, Section 3; no initial notification is necessary:

The Division is in the process of removing Subpart DDDDD as published in the Federal Register September 13, 2004 from the state regulations. Upon completion of this process the state rule shall no longer apply to this facility.

SUBPART DDDDD REQUIREMENTS [40 CFR 63 Subparts A and DDDDD; WAQSR Ch 5, Sec 3]

The permittee shall meet all applicable requirements of 40 CFR 63 Subparts A and DDDDD and WAQSR Ch 5, Sec 3, as they apply to owners or operators of industrial, commercial, or institutional boilers or process heaters as defined in §63.7575 that are located at, or are part of, a major source of HAP as defined in §63.2 or §63.761 (40 CFR part 63, subpart HH, National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities), except as specified in §63.7491. This subpart applies to:

- (a) Existing industrial, commercial, and institutional boilers and process heaters within a subcategory located at a major source, including the Sivalls fuel gas line heater (unit SM2).
(b) New or reconstructed industrial, commercial, or institutional boilers or process heaters located at a major source, including the Sellers C-80-W boiler (unit 8).

**WAQSR CHAPTER 5, SECTION 3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR
POLLUTANTS (NESHAPS) 40 CFR PART 63 SUBPART YYYY REQUIREMENTS
FOR STATIONARY COMBUSTION TURBINES**

SUBPART YYYY [40 CFR 63 Subparts A and YYYY; WAQSR Ch 5, Sec 3]

The permittee shall meet all requirements of WAQSR Ch 5, Sec 3 and 40 CFR Part 63 Subpart YYYY as they apply to the affected source(s) described in §63.6090(a). As stated in §63.6090(b)(4), existing stationary combustion turbines (the Solar Centaur 50 T-6100S turbine, unit 5) do not have to meet the requirements of Subpart YYYY and of 40 CFR Part 63, Subpart A.

**WAQSR CHAPTER 5, SECTION 3 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR
POLLUTANTS (NESHAPS) AND 40 CFR 63 SUBPART ZZZZ REQUIREMENTS FOR
STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES**

SUBPART ZZZZ REQUIREMENTS [40 CFR 63 Subparts A and ZZZZ; WAQSR Ch 5, Sec 3]

The permittee shall meet all applicable requirements of 40 CFR 63 Subparts A and ZZZZ and WAQSR Ch 5, Sec 3, as they apply to each affected source as indicated in §63.6590(a). An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand. (As required by condition F7(c), if an engine is replaced or reconstructed, subpart applicability will need to be re-evaluated and a statement regarding applicability submitted to the Division.) This facility is currently identified as a major source of HAP emissions. Affected sources at this facility include the Cooper Bessemer GMWC-6 compressor engines (units 1, 2, 3 and 4), and the Caterpillar 3408SI and Caterpillar 3512SITA generator engines (units 6 and 7).

The subparts are available at <http://www.gpoaccess.gov/cfr/retrieve.html>, or from the Division upon request.

COMPLIANCE CERTIFICATION AND SCHEDULE

Compliance Certification [WAQSR Ch 6, Sec 3(h)(iii)(E)]

- (C1) (a) The permittee shall submit by January 31 each year a certification addressing compliance with the requirements of this permit. The certification shall be submitted as a stand-alone document separate from any monitoring reports required under this permit.
- (b) (i) For visible emissions, the permittee shall assess compliance with condition F3 of this permit by verifying natural gas was the sole fuel source used for the units listed in condition F9.
- (ii) For NO_x and CO emissions from the compressor and generator engines, (units 1, 2, 3, 4, 6, and 7), the permittee shall assess compliance with the emission limits in condition F4 of this permit by conducting the monitoring required by condition F10.
- (iii) For NO_x and CO emissions from turbine engine (unit 5), the permittee shall assess compliance with the emission limits in conditions F4(a) and (c) by conducting monitoring required by condition F10 and reviewing records kept in accordance with condition F11(d).
- (iv) The permittee shall verify that the Caterpillar 3512SITA generator engine (unit 7) does not operate above 499 hp, as specified in condition F4(d).
- (v) For the Caterpillar 3408SI generator engine (units 6), the permittee shall assess compliance with the operating hour limit in condition F4(e) by conducting the monitoring required under F10(f) and reviewing records kept in accordance with condition F11(c).
- (vi) For preventative maintenance, the permittee shall assess compliance with condition F6 by reviewing the records kept in accordance with condition F12.
- (vii) For greenhouse gas reporting, the permittee shall assess compliance with condition F15 by verifying that reports were submitted in accordance with conditions F15(a) and (b).
- (viii) For any turbine subject to 40 CFR 60 Subpart GG, the permittee shall assess compliance with Subpart GG by conducting any applicable testing and monitoring required by §§60.334 and 60.335, and by reviewing any records required by §60.7 and Subpart GG.
- (ix) For any engines subject to the requirements of 40 CFR 60 Subpart JJJJ, the permittee shall assess compliance with Subpart JJJJ by conducting any testing and monitoring required by §§60.4237, 60.4243, and 60.4244, and by reviewing the records required by §§60.4245 and 60.4246.
- (x) For any boilers and process heaters subject to the requirements of 40 CFR 63 Subpart DDDDD, the permittee shall assess compliance with Subpart DDDDD by conducting any applicable testing and monitoring required by §§63.7510 through 63.7541 and by reviewing any records required by §§63.7555 and 63.7560.
- (xi) For the compressor and generator engines, the permittee shall assess compliance with 40 CFR 63 Subpart ZZZZ by conducting any applicable testing and monitoring required by §§63.6610 through 63.6640 and by reviewing the records required by §§63.6655 and 63.6665.
- (c) The compliance certification shall include:
- (i) The permit condition or applicable requirement that is the basis of the certification;
- (ii) The current compliance status;
- (iii) Whether compliance was continuous or intermittent; and
- (iv) The methods used for determining compliance.
- (d) For any permit conditions or applicable requirements for which the source is not in compliance, the permittee shall submit with the compliance certification a proposed compliance plan and schedule for Division approval.
- (e) The compliance certification shall be submitted to the Division in accordance with condition G4 of this permit and to the Assistant Regional Administrator, Office of Enforcement, Compliance, and Environmental Justice (8ENF-T), U.S. EPA - Region VIII, 1595 Wynkoop Street, Denver, CO 80202-1129.
- (f) Determinations of compliance or violations of this permit are not restricted to the monitoring requirements listed in paragraph (b) of this condition; other credible evidence may be used.

Compliance Schedule [WAQSR Ch 6, Sec 3(h)(iii)(C) and (D)]

- (C2) The permittee shall continue to comply with the applicable requirements with which the permittee has certified that it is already in compliance.
- (C3) The permittee shall comply in a timely manner with applicable requirements that become effective during the term of this permit.

GENERAL PERMIT CONDITIONS

Powers of the Administrator: [W.S. 35-11-110]

- (G1) (a) The Administrator may require the owner or operator of any point source to complete plans and specifications for any application for a permit required by the Wyoming Environmental Quality Act or regulations made pursuant thereto and require the submission of such reports regarding actual or potential violations of the Wyoming Environmental Quality Act or regulations thereunder.
- (b) The Administrator may require the owner or operator of any point source to establish and maintain records; make reports; install, use and maintain monitoring equipment or methods; sample emissions, or provide such other information as may be reasonably required and specified.

Permit Renewal and Expiration: [WAQSR Ch 6, Sec 3(c)(i)(C), (d)(ii), (d)(iv)(B), and (h)(i)(B)] [W.S. 35-11-206(f)]

- (G2) This permit is issued for a fixed term of five years. Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted at least six months prior to the date of permit expiration. If the permittee submits a timely and complete application for renewal, the permittee's failure to have an operating permit is not a violation of WAQSR Chapter 6, Section 3 until the Division takes final action on the renewal application. This protection shall cease to apply after a completeness determination if the applicant fails to submit by the deadline specified in writing by the Division any additional information identified as being needed to process the application.

Duty to Supplement: [WAQSR Ch 6, Sec 3(c)(iii)]

- (G3) The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information. The permittee shall also provide additional information as necessary to address any requirements that become applicable to the facility after this permit is issued.

Submissions: [WAQSR Ch 6, Sec 3(c)(iv)] [W.S. 35-11-206(c)]

- (G4) Any document submitted shall be certified as being true, accurate, and completely by a responsible official.
 - (a) Submissions to the Division.
 - (i) Any submissions to the Division including reports, certifications, and emission inventories required under this permit shall be submitted as separate, stand-alone documents and shall be sent to:
Administrator, Air Quality Division
122 West 25th Street
Cheyenne, Wyoming 82002
 - (ii) Unless otherwise noted elsewhere in this permit, a copy of each submission to the Administrator under paragraph (a)(i) of this condition shall be sent to the DEQ Air Quality Contact listed on page 3 of this permit.
 - (b) Submissions to EPA.
 - (i) Each certification required under condition C1 of this permit shall also be sent to:
Assistant Regional Administrator
Office of Enforcement, Compliance, and Environmental Justice (8ENF-T)
U.S. EPA - Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129.
 - (ii) All other required submissions to EPA shall be sent to:
Office of Partnerships and Regulatory Assistance
Air and Radiation Program (8P-AR)
U.S. EPA - Region VIII
1595 Wynkoop Street
Denver, CO 80202-1129

Changes for Which No Permit Revision Is Required: [WAQSR Ch 6, Sec 3(d)(iii)]

- (G5) The permittee may change operations without a permit revision provided that:
- (a) The change is not a modification under any provision of title I of the Clean Air Act;
 - (b) The change has met the requirements of Chapter 6, Section 2 of the WAQSR and is not a modification under Chapter 5, Section 2 or Chapter 6, Section 4 of the WAQSR and the changes do not exceed the emissions allowed under the permit (whether expressed therein as a rate of emissions or in terms of total emissions); and
 - (c) The permittee provides EPA and the Division with written notification at least 14 days in advance of the proposed change. The permittee, EPA, and the Division shall attach such notice to their copy of the relevant permit. For each such change, the written notification required shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield, if one exists for this permit, shall not apply to any such change made.

Transfer of Ownership or Operation: [WAQSR Ch 6, Sec 3(d)(v)(A)(IV)]

- (G6) A change in ownership or operational control of this facility is treated as an administrative permit amendment if no other change in this permit is necessary and provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the Division.

Reopening for Cause: [WAQSR Ch 6, Sec 3(d)(vii)] [W.S. 35-11-206(f)(ii) and (iv)]

- (G7) The Division will reopen and revise this permit as necessary to remedy deficiencies in the following circumstances:
- (a) Additional applicable requirements under the Clean Air Act or the WAQSR that become applicable to this source if the remaining permit term is three or more years. Such reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended.
 - (b) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by EPA, excess emissions offset plans shall be deemed to be incorporated into the permit.
 - (c) The Division or EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
 - (d) The Division or EPA determines that the permit must be revised or revoked to assure compliance with applicable requirements.

Annual Fee Payment: [WAQSR Ch 6, Sec 3(f)(i), (ii), and (vi)] [W.S. 35-11-211]

- (G8) The permittee shall, as a condition of continued operations, submit an annual fee to the Division as established in Chapter 6, Section 3 (f) of the WAQSR. The Division shall give written notice of the amount of fee to be assessed and the basis for such fee assessment annually. The assessed fee is due on receipt of the notice unless the fee assessment is appealed pursuant to W.S. 35-11-211(d). If any part of the fee assessment is not appealed it shall be paid to the Division on receipt of the written notice. Any remaining fee which may be due after completion of the appeal is immediately due and payable upon issuance of the Council's decision. Failure to pay fees owed the Division is a violation of Chapter 6, Section 3 (f) and W.S. 35-11-203 and may be cause for the revocation of this permit.

Annual Emissions Inventories: [WAQSR Ch 6, Sec 3(f)(v)(G)]

- (G9) The permittee shall submit an annual emission inventory for this facility to the Division for fee assessment and compliance determinations within 60 days following the end of the calendar year. The emissions inventory shall be in a format specified by the Division.

Severability Clause: [WAQSR Ch 6, Sec 3(h)(i)(E)]

- (G10) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

Compliance: [WAQSR Ch 6, Sec 3(h)(i)(F)(I) and (II)] [W.S. 35-11-203(b)]

- (G11) The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Air Act, Article 2 of the Wyoming Environmental Quality Act, and the WAQSR and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Permit Actions: [WAQSR Ch 6, Sec 3(h)(i)(F)(III)] [W.S. 35-11-206(f)]

- (G12) This permit may be modified, revoked, reopened, and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Property Rights: [WAQSR Ch 6, Sec 3(h)(i)(F)(IV)]

- (G13) This permit does not convey any property rights of any sort, or any exclusive privilege.

Duty to Provide Information: [WAQSR Ch 6, Sec 3(h)(i)(F)(V)]

- (G14) The permittee shall furnish to the Division, within a reasonable time, any information that the Division may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Division copies of records required to be kept by the permit, including information claimed and shown to be confidential under W.S. 35-11-1101 (a) of the Wyoming Environmental Quality Act. Upon request by the Division, the permittee shall also furnish confidential information directly to EPA along with a claim of confidentiality.

Emissions Trading: [WAQSR Ch 6, Sec 3(h)(i)(H)]

- (G15) No permit revision is required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

Inspection and Entry: [WAQSR Ch 6, Sec 3(h)(iii)(B)] [W.S. 35-11-206(c)]

- (G16) Authorized representatives of the Division, upon presentation of credentials and other documents as may be required by law, shall be given permission to:
- (a) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
 - (b) have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
 - (c) inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
 - (d) sample or monitor any substances or parameters at any location, during operating hours, for the purpose of assuring compliance with this permit or applicable requirements.

Excess Emissions Due to an Emergency: [WAQSR Ch 6, Sec 3(l)]

- (G17) The permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency, as defined in Ch 6, Sec 3(l)(i) of the WAQSR. To do so, the permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:
- (a) an emergency occurred and that the permittee can identify the cause(s) of the emergency;
 - (b) the permitted facility was, at the time, being properly operated;
 - (c) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit;

- (d) The permittee submitted notice of the emergency to the Division within one working day of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

Diluting and Concealing Emissions: [WAQSR Ch 1, Sec 4]

- (G18) No person shall cause or permit the installation or use of any device, contrivance, or operational schedule which, without resulting in reduction of the total amount of air contaminant released to the atmosphere, shall dilute or conceal an emission from a source. This condition shall not apply to the control of odors.

Unavoidable Equipment Malfunction: [WAQSR Ch 1, Sec 5]

- (G19) (a) Any source believing that any emissions in excess of established regulation limits or standards resulted from an unavoidable equipment malfunction, shall notify the Division within 24 hours of the incident via telephone, electronic mail, fax, or other similar method. A detailed description of the circumstances of the incident as described in paragraph 5(a)(i)(A) Chapter 1, including a corrective program directed at preventing future such incidents, must be submitted within 14 days of the onset of the incident. The Administrator may extend this 14-day time period for cause.
- (b) The burden of proof is on the owner or operator of the source to provide sufficient information to demonstrate that an unavoidable equipment malfunction occurred.

Fugitive Dust: [WAQSR Ch 3, Sec 2(f)]

- (G20) The permittee shall minimize fugitive dust in compliance with standards in Ch 3, Sec 2(f) of WAQSR for construction/demolition activities, handling and transportation of materials, and agricultural practices.

Carbon Monoxide: [WAQSR Ch 3, Sec 5]

- (G21) The emission of carbon monoxide in stack gases from any stationary source shall be limited as may be necessary to prevent ambient standards from being exceeded.

Asbestos: [WAQSR Ch 3, Sec 8]

- (G22) The permittee shall comply with emission standards for asbestos during abatement, demolition, renovation, manufacturing, spraying and fabricating activities.
- (a) No owner or operator shall build, erect, install, or use any article, machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size.
- (b) All owners and operators conducting an asbestos abatement project, including an abatement project on a residential building, shall be responsible for complying with Federal requirements and State standards for packaging, transportation, and delivery to an approved waste disposal facility as provided in paragraph (m) of Ch 3, Sec 8.
- (c) The permittee shall follow State and Federal standards for any demolition and renovation activities conducted at this facility, including:
- (i) A thorough inspection of the affected facility or part of the facility where the demolition or renovation activity will occur shall be conducted to determine the presence of asbestos, including Category I and Category II non-friable asbestos containing material. The results of the inspection will determine which notification and asbestos abatement procedures are applicable to the activity.
- (ii) The owner or operator shall follow the appropriate notification requirements of Ch 3, Sec 8(i)(ii).
- (iii) The owner or operator shall follow the appropriate procedures for asbestos emissions control, as specified in Chapter 3, Section 8(i)(iii).
- (d) No owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under paragraph (j) of Ch 3, Sec 8.
- (e) The permittee shall comply with all other requirements of WAQSR Ch 3, Sec 8.

Open Burning Restrictions: [WAQSR Ch 10, Sec 2]

- (G23) The permittee conducting an open burn shall comply with all rules and regulations of the Wyoming Department of Environmental Quality, Division of Air Quality, and with the Wyoming Environmental Quality Act.
- (a) No person shall burn prohibited materials using an open burning method, except as may be authorized by permit. ***“Prohibited materials”*** means substances including, but not limited to; natural or synthetic rubber products, including tires; waste petroleum products, such as oil or used oil filters; insulated wire; plastic products, including polyvinyl chloride (“PVC”) pipe, tubing and connectors; tar, asphalt, asphalt shingles, or tar paper; railroad ties; wood, wood waste, or lumber that is painted or chemically treated; explosives or ammunition; batteries; hazardous waste products; asbestos or asbestos containing materials; or materials which cause dense smoke discharges, excluding refuse and flaring associated with oil and gas well testing, completions and well workovers.
- (b) No person or organization shall conduct or cause or permit open burning for the disposal of trade wastes, for a salvage operation, for the destruction of fire hazards if so designated by a jurisdictional fire authority, or for fire fighting training, except when it can be shown by a person or organization that such open burning is absolutely necessary and in the public interest. Any person or organization intending to engage in such open burning shall file a request to do so with the Division.

Sulfur Dioxide Emission Trading and Inventory Program [WAQSR Ch 14]

- (G24) Any BART (Best Available Retrofit Technology) eligible facility, or facility which has actual emissions of SO₂ greater than 100 tpy in calendar year 2000 or any subsequent year, shall comply with the applicable requirements of WAQSR Ch 14, Sections 1 through 3, with the exceptions described in sections 2(c) and 3(a).

Stratospheric Ozone Protection Requirements: [40 CFR Part 82]

- (G25) The permittee shall comply with all applicable Stratospheric Ozone Protection Requirements, including but not limited to:
- (a) *Standards for Appliances* [40 CFR Part 82, Subpart F]
The permittee shall comply with the standards for recycling and emission reduction pursuant to 40 CFR Part 82, Subpart F - Recycling and Emissions Reduction, except as provided for motor vehicle air conditioners (MVACs) in Subpart B:
- (i) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to §82.156.
 - (ii) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to §82.158.
 - (iii) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to §82.161.
 - (iv) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to §82.166. (“MVAC-like appliance” is defined at §82.152).
 - (v) Persons owning commercial or industrial process refrigeration equipment must comply with the leak repair requirements pursuant to §82.166.
 - (vi) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to §82.166.
 - (vii) The permittee shall comply with all other requirements of Subpart F.
- (b) *Standards for Motor Vehicle Air Conditioners* [40 CFR Part 82, Subpart B]
If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term “motor vehicle” as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term “MVAC” as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

STATE ONLY PERMIT CONDITIONS

The conditions listed in this section are State only requirements and are not federally enforceable.

Ambient Standards

(S1) The permittee shall operate the emission units described in this permit such that the following ambient standards are not exceeded:

POLLUTANT	STANDARD	CONDITION	WAQSR CH. 2, SEC.
PM ₁₀ particulate matter	50 micrograms per cubic meter	annual arithmetic mean	2 (a)
	150 micrograms per cubic meter	24-hr average concentration with not more than one exceedance per year	
PM _{2.5} particulate matter	15 micrograms per cubic meter	annual arithmetic mean	2 (b)
	35 micrograms per cubic meter	98 th percentile 24-hour average concentration	
Nitrogen dioxide	100 micrograms per cubic meter	annual arithmetic mean	3
Sulfur oxides	60 micrograms per cubic meter	annual arithmetic mean	4
	260 micrograms per cubic meter	max 24-hr concentration with not more than one exceedance per year	
	1300 micrograms per cubic meter	max 3-hr concentration with not more than one exceedance per year	
Carbon monoxide	10 milligrams per cubic meter	max 8-hr concentration with not more than one exceedance per year	5
	40 milligrams per cubic meter	max 1-hr concentration with not more than one exceedance per year	
Ozone	0.08 parts per million	daily maximum 8-hour average	6
Hydrogen sulfide	70 micrograms per cubic meter	½ hour average not to be exceeded more than two times per year	7
	40 micrograms per cubic meter	½ hour average not to be exceeded more than two times in any five consecutive days	
Suspended sulfate	0.25 milligrams SO ₃ per 100 square centimeters per day	maximum annual average	8
	0.50 milligrams SO ₃ per 100 square centimeters per day	maximum 30-day value	
Lead and its compounds	0.15 micrograms per cubic meter	maximum arithmetic 3-month mean concentration for a 3-year period	10

Hydrogen Sulfide: [WAQSR Ch 3, Sec 7]

- (S2) Any exit process gas stream containing hydrogen sulfide which is discharged to the atmosphere from any source shall be vented, incinerated, flared or otherwise disposed of in such a manner that ambient sulfur dioxide and hydrogen sulfide standards are not exceeded.

Odors: [WAQSR Ch 2, Sec 11]

- (S3) (a) The ambient air standard for odors from any source shall be limited to an odor emission at the property line which is undetectable at seven dilutions with odor free air as determined by a scentometer as manufactured by the Barnebey-Cheney Company or any other instrument, device, or technique designated by the Division as producing equivalent results. The occurrence of odors shall be measured so that at least two measurements can be made within a period of one hour, these determinations being separated by at least 15 minutes.
- (b) Odor producing materials shall be stored, transported, and handled in a manner that odors produced from such materials are confined and that accumulation of such materials resulting from spillage or other escape is prevented.

SUMMARY OF SOURCE EMISSION LIMITS AND REQUIREMENTS

Source ID#: 1, 2, 3 and 4

Source Description: four (4) Cooper Bessemer GMWC-6 compressor engines

Pollutant	Emissions Limit/Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	40 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	27.7 g/hp-hr, 91.6 lb/hr, 401.2 TPY [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	Quarterly/semiannual NO _x emissions monitoring [F10]	Record monitoring results and any additional testing [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
CO	0.9 g/hp-hr, 3.0 lb/hr, 13.1 TPY [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	Annual CO emissions monitoring [F10]	Record monitoring results and any additional testing [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
HAPs	Comply with all applicable requirements of 40 CFR Part 63 Subparts A & ZZZZ and WAQSR Ch 5 Sec 3					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: 5

Source Description: Solar Centaur 50 T-6100S turbine

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	25 ppmv @ 15% O ₂ , and 4.4 lb/hr at ambient temperatures greater than 0°F [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permit MD-863	Testing if required [F8]	Annual NO _x monitoring [F10] Ambient temperature monitoring [F10]	Record monitoring results and any additional testing [F11] Record temperature monitoring [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
CO	50 ppmv @ 15% O ₂ , and 5.3 lb/hr at ambient temperatures greater than 0°F [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permit MD-863	Testing if required [F8]	Annual CO monitoring [F10] Ambient temperature monitoring [F10]	Record monitoring results and any additional testing [F11] Record temperature monitoring [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
SO ₂	Comply with all applicable requirements of 40 CFR Part 60 Subparts A & GG and WAQSR Ch 5 Sec 2					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: 6

Source Description: Caterpillar 3408SI generator engine

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	1.8 g/hp-hr, 1.6 lb/hr & 0.4 TPY [F4] Limit operation hours to 500 per year [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	NO _x monitoring once every two years [F10] Monitor engine operating hours [F10]	Record monitoring results and any additional testing [F11] Record operating hours [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Annually report operating hours [F14] Report excess emissions and permit deviations [F16]
CO	1.0 g/hp-hr, 0.9 lb/hr & 0.2 TPY [F4] Limit operation hours to 500 per year [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	CO monitoring once every two years [F10] Monitor engine operating hours [F10]	Record monitoring results and any additional testing [F11] Record operating hours [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Annually report operating hours [F14] Report excess emissions and permit deviations [F16]
HAPs	Comply with all applicable requirements of 40 CFR Part 63 Subparts A & ZZZZ and WAQSR Ch 5 Sec 3					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: 7

Source Description: Caterpillar 3512SITA generator engine

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	1.0 g/hp-hr, 1.1 lb/hr & 4.8 TPY [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	Annual NO _x monitoring [F10]	Record monitoring results and any additional testing [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
CO	1.0 g/hp-hr, 1.1 lb/hr & 4.8 TPY [F4] Conduct maintenance [F6]	WAQSR Ch 6, Sec 2 Permits MD-427A, MD-1008A2	Testing if required [F8]	Annual CO monitoring [F10]	Record monitoring results and any additional testing [F11] Record maintenance [F12]	Prior test notification and report test results 45 days after test [F13] Report excess emissions and permit deviations [F16]
HAPs	Comply with all applicable requirements of 40 CFR Part 63 Subparts A & ZZZZ and WAQSR Ch 5 Sec 3					

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

Source ID#: 8; SM2

Source Description: Sellers C-80-W boiler; Sivalls Fuel Gas Line Heater

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	20 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	0.20 lb/MMBtu [F5]	WAQSR Ch 3, Sec 3	Testing if required [F8]	None	Record the results of any additional testing [F11]	Report excess emissions and permit deviations [F16]

Source ID#: SM1

Source Description: Miscellaneous Catalytic Heaters

Pollutant	Emissions Limit / Work Practice Standard	Corresponding Regulation(s)	Testing Requirements	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Particulate	40 percent opacity [F3]	WAQSR Ch 3, Sec 2	Testing if required [F8]	Verification of natural gas firing [F9]	Record the results of any additional testing [F11]	Semiannual report type of fuel fired [F14] Report excess emissions and permit deviations [F16]
NO _x	0.23 lb/MMBtu [F5]	WAQSR Ch 3, Sec 3	Testing if required [F8]	None	Record the results of any additional testing [F11]	Report excess emissions and permit deviations [F16]

These tables are intended only to highlight and summarize applicable requirements for each source. The corresponding permit conditions, listed in brackets, contain detailed descriptions of the compliance requirements. Compliance with the summary conditions in these tables may not be sufficient to meet permit requirements. These tables may not reflect all emission sources at this facility.

ABBREVIATIONS

ACFM	Actual cubic feet per minute
AFRC	Air-fuel ratio controls
AQD	Air Quality Division
BACT	Best available control technology (see Definitions)
Btu	British Thermal Unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
C.F.R.	Code of Federal Regulations
CI	Compression Ignition
CO	Carbon Monoxide
DEQ	Wyoming Department of Environmental Quality
EPA	United States Environmental Protection Agency (see Definitions)
ESP	Electrostatic Precipitator
g/hp-hr	Gram(s) per horsepower hour
gal	Gallon(s)
gr	Grain(s)
H ₂ S	Hydrogen sulfide
HAP(s)	Hazardous air pollutant(s)
hp	Horsepower
hr	Hour(s)
lb	Pound(s)
M	Thousand
MACT	Maximum available control technology (see Definitions)
mfr	Manufacturer
mg	Milligram(s)
MM	Million
MVACs	Motor vehicle air conditioners
NMHC(s)	Non-methane hydrocarbon(s)
NO _x	Oxides of nitrogen
NSCR	Non-selective catalytic reduction
O ₂	Oxygen
PM	Particulate matter
PM ₁₀	Particulate matter less than or equal to a nominal diameter of 10 micrometers
ppmv	Parts per million (by volume)
ppmw	Parts per million (by weight)
QIP	Quality Improvement Plan
RICE	Reciprocating Internal Combustion Engine
SCF	Standard cubic foot (feet)
SCFD	Standard cubic foot (feet) per day
SCM	Standard cubic meter(s)
SI	Spark Ignition
SIC	Standard Industrial Classification
SO ₂	Sulfur dioxide
SO _x	Oxides of sulfur
TPH	Ton(s) per hour
TPY	Tons per year
U.S.C.	United States Code
µg	Microgram(s)
VOC(s)	Volatile organic compound(s)
W.S.	Wyoming Statute
WAQSR	Wyoming Air Quality Standards & Regulations (see Definitions)
2SLB	2-stroke lean burn
4SLB, 4SRB	4-stroke lean burn, 4-stroke rich burn

DEFINITIONS

"Act" means the Clean Air Act, as amended, 42 U.S.C. 7401, *et seq.*

"Administrator" means Administrator of the Air Quality Division, Wyoming Department of Environmental Quality.

"Applicable requirement" means all of the following as they apply to emissions units at a source subject to Chapter 6, Section 3 of the WAQSR (including requirements with future effective compliance dates that have been promulgated or approved by the EPA or the State through rulemaking at the time of issuance of the operating permit):

- (a) Any standard or other requirement provided for in the Wyoming implementation plan approved or promulgated by EPA under title I of the Act that implements the relevant requirements of the Act, including any revisions to the plan promulgated in 40 C.F.R. Part 52;
- (b) Any standards or requirements in the WAQSR which are not a part of the approved Wyoming implementation plan and are not federally enforceable;
- (c) Any term or condition of any preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under title I, including parts C or D of the Act and including Chapter 5, Section 2 and Chapter 6, Sections 2 and 4 of the WAQSR;
- (d) Any standard or other requirement promulgated under Section 111 of the Act, including Section 111(d) and Chapter 5, Section 2 of the WAQSR;
- (e) Any standard or other requirement under Section 112 of the Act, including any requirement concerning accident prevention under Section 112(r)(7) of the Act and including any regulations promulgated by EPA and the State pursuant to Section 112 of the Act;
- (f) Any standard or other requirement of the acid rain program under title IV of the Act or the regulations promulgated thereunder;
- (g) Any requirements established pursuant to Section 504(b) or Section 114(a)(3) of the Act concerning enhanced monitoring and compliance certifications;
- (h) Any standard or other requirement governing solid waste incineration, under Section 129 of the Act;
- (i) Any standard or other requirement for consumer and commercial products, under Section 183(e) of the Act (having to do with the release of volatile organic compounds under ozone control requirements);
- (j) Any standard or other requirement of the regulations promulgated to protect stratospheric ozone under title VI of the Act, unless the EPA has determined that such requirements need not be contained in a title V permit;
- (k) Any national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to Section 504(e) of the Act; and
- (l) Any state ambient air quality standard or increment or visibility requirement of the WAQSR.
- (m) Nothing under paragraphs (A) through (L) above shall be construed as affecting the allowance program and Phase II compliance schedule under the acid rain provision of Title IV of the Act.

"BACT" or "Best available control technology" means an emission limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the WAQSR or regulation under the Federal Clean Air Act, which would be emitted from or which results for any proposed major emitting facility or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application or production processes and available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular class of sources would make the imposition of an emission standard infeasible, he may instead prescribe a design, equipment, work practice or operational standard or combination thereof to satisfy the requirement of Best Available Control Technology. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice, or operation and shall provide for compliance by means which achieve equivalent results. Application of BACT shall not

result in emissions in excess of those allowed under Chapter 5, Section 2 of the WAQSR and any other new source performance standard or national emission standards for hazardous air pollutants promulgated by EPA but not yet adopted by the state.

"Department" means the Wyoming Department of Environmental Quality or its Director.

"Director" means the Director of the Wyoming Department of Environmental Quality.

"Division" means the Air Quality Division of the Wyoming Department of Environmental Quality or its Administrator.

"Emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

"EPA" means the Administrator of the U.S. Environmental Protection Agency or the Administrator's designee.

"Fuel-burning equipment" means any furnace, boiler apparatus, stack, or appurtenances thereto used in the process of burning fuel or other combustible material for the purpose of producing heat or power by indirect heat transfer.

"Fugitive emissions" means those emissions which could not reasonably pass through a stack chimney, vent, or other functionally equivalent opening.

"Insignificant activities" means those activities which are incidental to the facility's primary business activity and which result in emissions of less than one ton per year of a regulated pollutant not included in the Section 112 (b) list of hazardous air pollutants or emissions less than 1000 pounds per year of a pollutant regulated pursuant to listing under Section 112 (b) of the Act provided, however, such emission levels of hazardous air pollutants do not exceed exemptions based on insignificant emission levels established by EPA through rulemaking for modification under Section 112 (g) of the Act.

"MACT" or "Maximum achievable control technology" means the maximum degree of reduction in emissions that is deemed achievable for new sources in a category or subcategory that shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator. Emission standards promulgated for existing sources in a category or subcategory may be less stringent than standards for new sources in the same category or subcategory but shall not be less stringent, and may be more stringent than:

- (a) the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emission information), excluding those sources that have, within 18 months before the emission standard is proposed or within 30 months before such standard is promulgated, whichever is later, first achieved a level of emission rate or emission reduction which complies, or would comply if the source is not subject to such standard, with the lowest achievable emission rate applicable to the source category and prevailing at the time, in the category or subcategory for categories and subcategories with 30 or more sources, or
- (b) the average emission limitation achieved by the best performing five sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources.

"Modification" means any physical change in, or change in the method of operation of, an affected facility which increases the amount of any air pollutant (to which any state standards applies) emitted by such facility or which results in the emission of any such air pollutant not previously emitted.

"Permittee" means the person or entity to whom a Chapter 6, Section 3 permit is issued.

"Potential to emit" means the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by EPA and the Division. This term does not alter or affect the use of this term for any other purposes under the Act, or the term "capacity factor" as used in title IV of the Act or the regulations promulgated thereunder.

"Regulated air pollutant" means the following:

- (a) Nitrogen oxides (NO_x) or any volatile organic compound;
- (b) Any pollutant for which a national ambient air quality standard has been promulgated;
- (c) Any pollutant that is subject to any standard established in Chapter 5, Section 2 of the WAQSR or Section 111 of the Act;
- (d) Any Class I or II substance subject to a standard promulgated under or established by title VI of the Act; or
- (e) Any pollutant subject to a standard promulgated under Section 112 or other requirements established under Section 112 of the Act, including Sections 112(g), (j), and (r) of the Act, including the following:
 - (i) Any pollutant subject to requirements under Section 112(j) of the Act. If EPA fails to promulgate a standard by the date established pursuant to Section 112(e) of the Act, any pollutant for which a subject source would be major shall be considered to be regulated on the date 18 months after the applicable date established pursuant to Section 112(e) of the Act; and
 - (ii) Any pollutant for which the requirements of Section 112(g)(2) of the Act have been met, but only with respect to the individual source subject to Section 112(g)(2) requirement.
- (f) Pollutants regulated solely under Section 112(r) of the Act are to be regulated only with respect to the requirements of Section 112(r) for permits issued under this Chapter 6, Section 3 of the WAQSR.

"Renewal" means the process by which a permit is reissued at the end of its term.

"Responsible official" means one of the following:

- (a) For a corporation:
 - (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) A duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
 - (A) the facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
 - (B) the delegation of authority to such representative is approved in advance by the Division;
- (b) For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- (c) For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency; or
- (d) For affected sources:
 - (i) The designated representative or alternate designated representative in so far as actions, standards, requirements, or prohibitions under title IV of the Act or the regulations promulgated thereunder are concerned; and
 - (ii) The designated representative, alternate designated representative, or responsible official under Chapter 6, Section 3 (b)(xxvi) of the WAQSR for all other purposes under this section.

"WAQSR" means the Wyoming Air Quality Standards and Regulations promulgated under the Wyoming Environmental Quality Act, W.S. §35-11-101, *et seq.*

APPENDIX A
Preventative Maintenance Plan

**Preventative Maintenance Plan
Northwest Pipeline Corporation
Green River Compressor Station
Air Quality Permit MD-427A**

In order to ensure compliance with all permitted emission limits, Northwest maintains all reciprocating engines and stationary gas turbines in accordance with manufacturer's recommendations. This includes the monitoring of engine parameters, hours of operation, fuel usage and fuel sulfur content.

Northwest controls its maintenance program with current updated maintenance management software and practices throughout the company. This computerized maintenance tracking system allows each station to schedule and document all required maintenance for each engine located at each compressor station. In addition, the maintenance tracking system also allows Northwest to more closely track those maintenance procedures required once an engine has obtained a certain amount of run-time hours (i.e. major overhaul, etc). Historical information is also available on this system which allows Northwest to identify any type of trends associated with each engine. Reports generated by the computerized maintenance tracking system are available through either Northwest's district office in Evanston, Wyoming or Northwest's corporate headquarters in Salt Lake City, Utah. The electronic records are retained in the maintenance tracking system for five years.

In addition, Northwest obtains samples of all oils used in the operation of the engines at the station, The oil samples are sent to the company supplying the oil to Northwest and is subsequently analyzed for heavy metals. Results of the analysis are used to document whether deterioration or carbon buildup exists within the engine (i.e. high levels of copper could indicate bearing wear, etc.).

Please note that many maintenance procedures are setup at the station to ensure the mechanical stability of each engine, not necessarily to ensure emission limits are being met, although it can be easily deduced that a mechanically sound engine will operate at minimal emissions.

The following information describes specific operating procedures used specifically for reciprocating engines and stationary gas turbines. Please note that Northwest utilizes specific operating and maintenance procedures for each type of engine.

RECIPROCATING ENGINE

Maintenance of each engine is required. A major component of the overall maintenance schedule of a reciprocating engine is the balancing of an engine. Balancing an engine ensures that a load is evenly distributed over all power cylinders by adjusting the peak firing pressure in each power cylinder. Completing this type of analysis will show whether the engine has carbon build-up in the power cylinder ports, light or low combustion, pre-ignition prior to the piston reaching top-dead-center, detonation, or late combustion.

In addition, Northwest utilizes a state of the art monitoring devices which is also used in the engine and compressor analysis of a reciprocating engine. Monitoring in this fashion is used primarily for items such as spark trace analysis, which graphs the characteristics of what is happening in the electronic signal and gives an amplitude and duration of a spark or the ignition analysis. It also analyzes the compressor performance by way of a pressure survey of each cylinder. This enables the operator to analyze the mechanical health of each cylinder as found against the theoretical expectation of the cylinders. This will also enable the operator to store the information on which in turn allows the operator to identify any unusual trends associated with the engine.

The current monitoring system has the ability to monitor several parameters within a reciprocating engine, some of which would include the temperature of the suction/discharge cylinder and individual valves, the frame vibration taken on the cylinder, and/or the main frame of the engine. Vibration analysis is also conducted to ensure the vibration monitors are operating properly. Without this, mechanical and/or personal safety would be compromised.

All analysis that is performed by way of the current monitoring system is conducted while the unit is in operation or while the unit is fully loaded.

STATIONARY GAS TURBINE

Northwest maintains its turbines in accordance with the manufacturer's recommendations. By following established parameters, Northwest is able to ensure that the turbines are operated in compliance with existing permit limits and the manufacturer's established set points. Each parameter is documented by way of Northwest's Supervisory Control and Data Acquisition System (SCADA). The SCADA system updated and records each parameter every two seconds, which is then combined and stored as hourly averages. The instantaneous information is available on-site at the compressor stations. The recorded information is available through Northwest's corporate headquarters. All electronic records are retained in the SCADA system for five years.

Parameters currently being utilized as part of Northwest's turbine maintenance schedule include the following:

NGP, or natural gas producer speed, expressed in percent, indicates the percent of the engine's maximum rpm, or percent of full load condition. The percent speed achieved is a function of ambient temperature, suction and discharge pressures, daily gas nominations, amount of gas available, and other factors. If the maximum NGP, or manufacturer's designed full load were exceeded, it would lead to mechanical stress failure of the gas produce turbine which compresses the air for introduction into the combustion chamber. In order to prevent mechanical stress failure of the turbine, the manufacturer has determined a set point which can't be exceeded during operation. In addition, the operating system limits the fuel flow to prevent this from happening.

TS (gas turbine exhaust temperature) -T5 is the temperature of the combustion products as they reach the power turbine. It is utilized as an indicator of the temperature in the combustion chamber. The manufacturer sets an upper limit on T5 in order to prevent damage to the internal components of the engine. The turbine's operating system continuously monitors the T5 to ensure that the T5 does not exceed the manufacturers design setting. Operating at or below the T5 set point ensures proper operation of the turbine engine and prevents overfiring, carbon build up, and burning additional fuel which may result in excess emissions.

Additionally, if any one thermocouple is more than 200 degrees greater than the average, the operating system will generate an alarm which allows the on-site operator to monitor the engine. The heat produced from one injector actually influences the temperature reading of 2 or 3 thermocouples; therefore if one thermocouple is out of range, it does not conclusively mean that there is an injector problem. However, if two (2) adjacent thermocouples are outside the average range by 200 or more degrees, then Northwest investigates the situation.

