

TECHNICAL REVIEW DOCUMENT OPERATING PERMIT 95OPRB018

to be issued to:

Canyon Gas Resources
Greasewood Gas Plant
Rio Blanco County
Source ID 1030004

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September 6, 2001

I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. Information in this report is taken primarily from the original application and from additional information submitted on August 1, 1995 and June 19, 1997. This version of the Technical Review Document reflects the change of ownership from Wildhorse Energy Partners to Canyon Gas Resources.

II. Source Description:

This source is classified as a natural gas compression facility defined under Standard Industrial Classification 4922. Gas is compressed to specification for transmission to sales pipelines using four Internal Combustion Engines to power four compressor units. This plant also conditions the field gas and recovers natural gas liquids. Natural gas liquids are recovered using a quick cycle plant that includes a three-tower silica absorber and a natural gas fired salt bath heater. Additional equipment includes several small storage tanks and natural gas liquids loading facilities.

The facility is located in a rural area northwest of Rio Blanco in Rio Blanco County, Colorado, in an area designated as attainment for all criteria pollutants. Utah is designated as an affected state located within a 50 mile radius of the facility. Flat Tops Wilderness Area is a Federal Class I area located within 100 kilometers of the facility. This source is considered to be major (Potential to Emit > 250 Tons/Year) with respect to Prevention of Significant Deterioration (PSD) regulations and has facility-wide potential and actual emissions as follows:

<u>Pollutant</u>	<u>Potential to Emit (tpy)</u>	<u>Actual Emissions (tpy)</u>
NOx	278.7	117.2
VOC	17.6	4.8
CO	370.7	14.9
HAPs	3.0	Unk.

Potential emissions are based on calculations using manufacturer's and AP-42 emission factors along with appropriate process parameters. Actual emissions are taken from AIRS data sheets issued in May of 1995. The actual emissions do not include the facility fugitive emissions because they have only recently been designated as an emission source.

The applicant certified that the facility was in compliance with all applicable requirements at the time of application submittal. The applicant also indicated that the facility is subject to 112(r).

III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the operating permit for this Site:

Unit P001- Waukesha Model 7042GSIU, Natural Gas Fired 4 Cycle Standard Rich Burn Internal Combustion Engine Site-Rated at 954 HP, Serial No. 295478

Discussion:

1. Applicable Requirements- Prior to Title V application submittal, Colorado Emission Permit C-11,195 defined applicable requirements for this engine. This permit was issued in 1976 and it limited the emissions from this engine to the standards allowed by the existing regulations, such as Regulation 1. There are no other emission or fuel usage limitations imposed by this permit. Thus, the applicable requirements for this engine will be the opacity limit of 20% and the requirement to calculate annual emissions for fee purposes.

2. Emission Factors- Emissions from these reciprocating engines are produced during the combustion process, and are dependent upon the air to

fuel ratio adjustment and specific properties of the natural gas being burned. The pollutants of concern are nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. The applicant claims that HAP emissions are below de minimis levels. The applicant proposes to calculate NOx, CO and VOC emissions using emission factors derived from operating experience with similar engines. These emission factors are as follows:

<u>Pollutant</u>	<u>Emission Factor</u>	<u>Source</u>
NOx	16.0 g/hphr	Mfr data
CO	28.0 g/hphr	Mfr data
VOC	1.5 g/hphr	Mfr data

Each of the emission factors proposed by the applicant is higher than the corresponding AP-42 (US EPA) factor listed in Table 3.2-1. Because AP-42 factors are considered standard values by the Division, the Division has decided to accept the higher emission factors proposed by the applicant.

3. Monitoring Plan- Conditions 1.1 and 1.2 of Section II of the Operating Permit list the Monitoring and Recordkeeping provisions necessary to verify compliance with Applicable Requirements for this engine. Specific monitoring guidance for Internal Combustion Engines in Attainment areas has been developed by the Division as shown on the attached Grid titled "Compliance/Scenario Summary - Gas Fired IC Engines." This Grid defines emission calculation and measurement of fuel use or operating hours as a minimum requirement for this engine.

The applicant has not indicated how emissions will be calculated for fee purposes, although it will probably be based on actual annual operating hours and the horsepower-hour emission factors. Because the NOx, CO and VOC emission factors being used to calculate emissions are equal to, or greater than, AP-42, calculation of emissions will be the only requirement for these pollutants. The applicant will be required to conduct the emission calculation annually and submit a revised APEN to the Division if emissions increase by more than 5 tons/year or 50%, whichever is less, compared to the latest APEN on file with the Division.

The opacity standard of 20% will be demonstrated by a certification that the

engine has used pipeline-quality natural gas exclusively during the reporting period. The Division has determined, based on AP-42 emission factors and engineering judgement, that particulate emissions from this engine will be insignificant if the listed condition is met.

4. Compliance Status- The applicant submitted certified information stating that this engine burns only natural gas. Since the only applicable requirement for this unit is the opacity, and since the combustion of natural gas satisfies that requirement, this unit is currently in compliance with all applicable requirements.

**Unit P002A&B- Ingersol-Rand Model 62SVG, Natural Gas Fired 4
Cycle Standard Rich Burn Internal Combustion Engine Site-
Rated at 253 HP, Serial Nos. 6CS555 and 6CS553 (2 engines)**

Discussion:

1. Applicable Requirements- Each of these units was installed and began operation in 1956, and each is therefore grandfathered from Colorado construction permitting requirements per Regulation No. 3, Part B.I.A. Consequently, the only applicable requirements for each engine are a 20% opacity limitation and APEN reporting in accordance with Regulation No. 3, Part A.II.

2. Emission Factors- Emissions from these reciprocating engines are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment and specific properties of the natural gas being burned. The pollutants of concern are nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. The applicant claims that HAP emissions are below de minimis levels. The applicant proposes to calculate NOx, CO and VOC emissions using emission factors taken from AP-42 (US EPA). These emission factors are as follows:

<u>Pollutant</u>	<u>Emission Factor</u>	<u>Source</u>
NOx	10.0 g/hphr	AP-42
CO	8.6 g/hphr	AP-42

VOC

0.14 g/hphr

AP-42

Because AP-42 factors are considered standard values by the Division, the Division has decided to accept these emission factors.

3. Monitoring Plan- Conditions 2.1 and 2.2 of the Operating Permit list the Monitoring and Recordkeeping provisions necessary to verify compliance with Applicable Requirements for these engines. Specific monitoring guidance for Internal Combustion Engines in Attainment areas has been developed by the Division as shown on the attached Grid titled "Compliance/Scenario Summary - Gas Fired IC Engines." This Grid defines emission calculation and measurement of fuel use or operating hours as minimum requirements for these engines.

The applicant has not indicated how emissions will be calculated for fee purposes, although it will probably be based on actual annual operating hours and the horsepower-hour emission factors. The applicant will be required to conduct the emission calculation annually and submit a revised APEN to the Division if emissions increase by more than 5 tons/year or 50%, whichever is less, compared to the latest APEN on file with the Division.

The opacity standard of 20% will be demonstrated by a certification that the engine has used pipeline-quality natural gas exclusively during the reporting period. The Division has determined, based on AP-42 emission factors and engineering judgement, that particulate emissions from these engines will be insignificant if the listed condition is met.

4. Compliance Status- The applicant submitted certified information stating that these engines burn only natural gas. Since the only applicable requirement for these units is the opacity limit, and since the combustion of natural gas satisfies that requirement, these units are currently in compliance with all applicable requirements.

**Unit P003-Parkersburg Model BBHD30 Natural Gas Fired Salt Bath Heater
Rated at 3.0 MMBtu/hour, Serial No. H13846**

Discussion:

1. Applicable Requirements- Prior to Title V application submittal, Colorado

Construction permit 89RB300 defined applicable requirements for this heater. As a result of the application process, WEP demonstrated that emissions of all criteria pollutants are less than de minimis and requested that this unit be treated as an insignificant activity in the operating permit. The Division agrees to treat this unit as an insignificant activity and the construction permit for this unit will be canceled.

2. Emission Factors - Emissions from this heater are produced during the combustion of natural gas. The pollutants of concern are nitrogen oxides (NO_x), carbon monoxide (CO) and volatile organic compounds (VOCs). The applicant has calculated the NO_x, CO and VOC emissions using AP-42 emission factors for commercial boilers, 0.3 to 10.0 MMBtu/hour. These emission factors are as follows:

	<u>Pollutant</u>	<u>Emission Factor</u>	<u>Source</u>
	NO _x	100 lb/MMscf	AP-42
	CO	21 lb/MMscf	AP-42
VOC		3.8 lb/MMscf	AP-42
	PM	12 lb/MMscf	AP-42

Based on these emission factors, calculated emissions are less than de minimis and this unit will be treated as an insignificant activity.

3. Monitoring Plan - Because this unit will be treated as an insignificant activity, monitoring will not be required.

4. Compliance Status - The applicant indicated, and certified, that this unit was in compliance with all applicable requirements at the time of application submittal. The applicant did not provide actual prior annual fuel use or emissions, although the PTE for this unit is below the permit limits for all pollutants except particulate matter. Considering the fact that this unit will now be considered an insignificant activity, the Division considers this unit to be currently in compliance with all applicable requirements.

Unit P004-Ingersol-Rand Model 83KVGA, Natural Gas Fired 4 Cycle Standard Rich Burn Internal Combustion Engine Site-Rated at 855 HP, Serial No. 83PLT903

Discussion:

1. Applicable Requirements- This unit was installed and began operation in 1972, and was certified as grandfathered from Colorado construction permitting requirements per Regulation No. 3, Part B.I.A. Consequently, the only applicable requirements for this engine are a 20% opacity limitation and APEN reporting in accordance with Regulation No. 3, Part A.II.

2. Emission Factors- Emissions from this reciprocating engine are produced during the combustion process, and are dependent upon properties of the natural gas being burned. The pollutants of concern are nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. The applicant claims that HAP emissions are below de minimis levels. The applicant proposes to calculate NOx, CO and VOC emissions using emission factors taken from AP-42 (US EPA). These emission factors are as follows:

<u>Pollutant</u>	<u>Emission Factor</u>	<u>Source</u>
NOx	10.0 g/hphr	AP-42
CO	8.6 g/hphr	AP-42
VOC	0.14 g/hphr	AP-42

Because AP-42 factors are considered standard values by the Division, the Division has decided to accept these emission factors.

3. Monitoring Plan- Conditions 3.1 to 3.2 of the Operating Permit list the Monitoring and Recording provisions necessary to verify compliance with Applicable Requirements for this engine. Specific monitoring guidance for Internal Combustion Engines in Attainment areas has been developed by the Division as shown on the attached Grid titled "Compliance/Scenario Summary - Gas Fired IC Engines." This Grid defines emission calculation and measurement of fuel use or operating hours as a minimum requirement for this engine.

The applicant has not indicated how emissions will be calculated for fee purposes, although it will probably be based on actual annual operating hours and the horsepower-hour emission factors. The applicant will be required to

conduct the emission calculation annually and submit a revised APEN to the Division if emissions increase by more than 5 tons/year or 50%, whichever is less, compared to the latest APEN on file with the Division.

The opacity standard of 20% will be demonstrated by a certification that the engine has used pipeline-quality natural gas exclusively during the reporting period. The Division has determined, based on AP-42 emission factors and common sense, that particulate emissions from this engine will be insignificant if the listed condition is met.

4. Compliance Status- The applicant submitted certified information stating that this engine burns only natural gas. Since the only applicable requirement for this unit is the opacity limit, and since the combustion of natural gas satisfies that requirement, this unit is currently in compliance with all applicable requirements.

Unit F005-Facility Fugitive Emissions

Discussion:

1. Applicable Requirements- The Division has determined that fugitive VOC emissions at gas compression or processing facilities must be calculated and evaluated in terms of appropriate permitting requirements. This source had not reported fugitive emissions prior to submittal of the operating permit application. Because the majority of the Greasewood Gas Plant is grandfathered, the facility fugitive emissions are also considered to be grandfathered and a construction permit is not required. Consequently, the only applicable requirements for this source are a 20% opacity limitation and APEN reporting in accordance with Regulation No. 3, Part A.II.

2. Emission Factors- Emissions from this source consist of VOC leaks from equipment and associated piping and components at the facility. Emissions from leaking equipment and piping are estimated using facility component counts and EPA emission factors as described in the EPA document *Protocol for Equipment Leak Emission Estimates*. The emission factors used are revised factors from August 1995.

3. Monitoring Plan- Condition 4.1 of the operating permit lists the monitoring and recordkeeping provisions necessary to verify compliance with the

applicable requirements. Specifically, WEP must maintain an annual accounting of the number of all equipment components that could contribute to fugitive VOC leaks. This can be accomplished by conducting an actual component count before the permit is issued and then maintaining records of component additions and deletions. The applicant will be required to conduct the emission calculation annually, using the EPA emission factors described above, and submit a revised APEN to the Division if emissions increase by more than 5 tons/year or 50%, whichever is less, compared to the latest APEN on file with the Division.

4. Compliance Status - Wildhorse Energy Partners submitted an Air Pollution Emission Notice (APEN) and construction permit application for this emission point. The facility did not indicate that they were out of compliance for failing to report this emission point. However, because this point will be treated as a grandfathered source, this source is considered to be currently in compliance with all applicable requirements.

IV. Insignificant Activities

Several insignificant activities were listed by the applicant as an addendum to form 102B. These activities consist of two storage tanks, a standby generator, a lawnmower and miscellaneous chemical storage containers, all of which were deemed insignificant based on size or emission level.

V. Alternative Operating Scenarios

The applicant requested an alternative operating scenario that provided for permanent replacement of compressor engines necessitated by engine breakdown, periodic maintenance or major overhaul. The current Division policy does not allow for such replacement under the terms described in the applicant's suggested condition. Consequently, temporary replacement of compressor engines as a result of breakdown or periodic maintenance has been included as an alternative operating scenario.

VI. Permit Shield

The regulation citations identified as not applicable to this source in Section III of the Operating Permit are based on a condensed version of the requested Permit Shield

citations as submitted with the original application for this facility. The original list contained many citations that were clearly unnecessary for the shield. For example, the original application stated that Incinerator regulations would not apply since this facility does not operate incinerators. It is the Division's opinion that the Shield should be reserved for regulations that might reasonably otherwise apply to equipment at the facility in question. Therefore, the review engineer decided that many of the requested shield items were unnecessary and so included only certain ones. The Division proposes that the requested list of citations be condensed to the list contained in Section III of the Operating Permit.

**COMPLIANCE/SCENARIO SUMMARY - GAS-FIRED IC ENGINES
ATTAINMENT AREA LOCATION**

11/18/97

WILDHORSE - GREASEWOOD - NOx, CO AND VOC EMISSIONS

EMISSIONS CALCULATED USING EMISSION FACTORS = or > AP-42

COMPLIANCE DEMONSTRATION METHOD	EMISSION UNIT SCENARIO										
	FACILITY CRITERIA PTE > 250 TPY, OR FACILITY CRITERIA PTE < 200 TPY			CRITERIA REVISIONS NEAR MAJOR MOD, OR FACILITY CRITERIA PTE > 200, < 250 TPY			EMISSION UNIT PSD/BACT REQUIREMENTS		EMISSION UNIT HAP EMISSIONS		
	G'FATHERED/ EXEMPT/ NO LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	G'FATHERED/ EXEMPT/ NO LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	NO PERMIT LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS
NONE											NOT APPLICABLE
EMISSION FACTORS/CALCULATION	X(A)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)			
HP/HR/FUEL USE MEASUREMENT	X(A)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)			
CATALYST PARAMETERS			R(M)				R(M)				
A/F CONTROLLER PARAMETERS			R(M)				R(M)	R(M)			
PORTABLE MONITOR			X(S)				X(Q)	X(Q)	X(Q)		
STACK TEST							X(1)	X(1)			
CEM											▼

EMISSIONS CALCULATED USING EMISSION FACTORS < AP-42

COMPLIANCE DEMONSTRATION METHOD	EMISSION UNIT SCENARIO										
	FACILITY CRITERIA PTE > 250 TPY, OR FACILITY CRITERIA PTE < 200 TPY			CRITERIA REVISIONS NEAR MAJOR MOD, OR FACILITY CRITERIA PTE > 200, < 250 TPY			EMISSION UNIT PSD/BACT REQUIREMENTS		EMISSION UNIT HAP EMISSIONS		
	G'FATHERED/ EXEMPT/ NO LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	G'FATHERED/ EXEMPT/ NO LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS	NO PERMIT LIMITS	PERMIT LIMITS, NO CONTROLS	PERMIT LIMITS, CONTROLS
NONE											NOT APPLICABLE
EMISSION FACTORS/CALCULATION	X(A)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)			
HP/HR/FUEL USE MEASUREMENT	X(A)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)	X(M)			
CATALYST PARAMETERS			R(M)				R(M)				
A/F CONTROLLER PARAMETERS			R(M)				R(M)	R(M)			
PORTABLE MONITOR	X(Q)	X(Q)	X(Q)	X(Q)	X(Q)	X(Q)	X(Q)	X(Q)			
STACK TEST				X(1)	X(1)	X(1)	X(1)	X(1)			
CEM											▼

- NOTES: 1) NSPS SOURCES WILL HAVE CASE-BY-CASE REQUIREMENTS.
 2) COMPLIANCE HISTORY MAY BE USED TO ADJUST THE STRINGENCY OF THE DEMONSTRATION METHOD.
 3) USE OF PIPELINE QUALITY NATURAL GAS IS CONSIDERED ADEQUATE FOR DEMONSTRATING COMPLIANCE WITH OPACITY REQUIREMENTS.
 4) SITE LOCATION (RURAL, ETC) MAY ADJUST THE STRINGENCY OF THE DEMONSTRATION METHOD.
 5) X() = EVENT FREQUENCY AS FOLLOWS:
 1 = ONE TIME TEST A = ANNUALLY S = SEMI-ANNUALLY Q = QUARTERLY M=MONTHLY D=DAILY
 6) R = RECORD MONTHLY AND DURING PORTABLE MONITOR TESTING.
 7) STACK TESTING WILL BE A CASE-BY-CASE DETERMINATION.
 8) PARAMETRIC MONITORING MAY BE CONSIDERED AS AN ALTERNATIVE TO PORTABLE MONITORING. PERIODIC VERIFICATION OF THE PARAMETRIC RELATIONSHIPS WILL BE REQUIRED.
 9) CLEAN/LEAN BURN ENGINES SHOULD MEASURE EXHAUST GAS OXYGEN CONCENTRATION.
 10) CATALYST PARAMETERS CONSIST OF UNIT PRESSURE DROP, EXHAUST GAS TEMPERATURE DROP.
 11) A/F CONTROLLER PARAMETERS CONSIST OF UNIT MILLIVOLT READING.
 12) THE PERMIT SHOULD CONTAIN A GENERAL STATEMENT THAT THE ENGINE WILL BE MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 13) PORTABLE MONITORING RESULTS MAY TRIGGER A STACK TEST REQUIREMENT TO DEMONSTRATE COMPLIANCE.

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