TECHNICAL REVIEW DOCUMENT
For
OPERATING PERMIT 09OPRB326
to be issued to:

Rockies Express Pipeline, LLC – Meeker Compressor Station
Rio Blanco County
Source ID 1030322

Prepared by Jacqueline Joyce
March and April 2010
Revised July, August and October 2010

I. Purpose:

This document establishes 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, the Public and other interested parties.

Conclusions made in this report are based on information provided by the applicant in the Title V permit application submitted on January 9, 2009, additional information submitted on August 9, 2010, comments on the draft permit and technical review document received on August 17, 2010, various telephone conversations and e-mail correspondence with the source and review of Division files. This narrative is intended as an adjunct to the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. Source Description

Upon arrival at the Rockies Express Pipeline, LLC (REX) – Meeker Compressor Station, pipeline quality gas enters a filter scrubber that separates any pipeline liquids from the gas stream prior to use as fuel for station equipment or routing through the compressors. The pipeline liquids are removed from the scrubber and stored in a condensate storage tank. When the condensate tank is full, the

condensate/pipeline liquids are transported to an off-site facility for sales. The compressors are mechanically powered by reciprocating internal combustion engines and combustion turbines. The compressors compress and transport the natural gas downstream via pipeline. The significant emission units at the REX – Meeker Compressor Station consist of two natural gas-fired combustion turbines and three natural gas-fired internal combustion engines driving natural gas compressors. In addition, there is a natural gas-fired internal combustion engine powering an electric generator, which provides power during situations when the power to the facility is interrupted. The emergency generator is considered an insignificant activity and is included in the insignificant activity list in Appendix A of the permit. In addition, emissions from blowdown events from the testing of the emergency shutdown vent and maintenance and other shutdowns of the compressors are above the APEN de minimis level. Therefore, these activities are included in Section II of the permit as significant emission units.

The facility is located on approximately 3 acres of land located approximately 20 miles west-southwest of Meeker, Colorado at 26100 County Road 5, in Rio Blanco county. The area in which the facility is located is designated as attainment for all criteria pollutants.

There are no affected states within 50 miles of the facility. Flattops National Wilderness Areas, a Federal Class I designated areas, is within 100 km of the facility. In addition, Dinosaur National Monument is federal land within 100 kilometers of the facility. This area has been designated by the State to have the same sulfur dioxide increment as federal Class I designated areas.

The facility is not considered to be a major stationary source (potential to emit < 250 tpy of any criteria pollutant) for purposes of prevention of significant deterioration (PSD) review requirements. Facility wide emissions are as follows:

	Potential to Emit						
Emission Unit	PM	PM_{10}	SO_2	NO_X	CO	VOC	HAPS
S001/ST-60-1 Turbine	1.56	1.56	3.4	13.5	13.7	7.8	0.24
S002/ST-60-2 Turbine	1.56	1.56	3.4	13.5	13.7	7.8	0.24
S003/CATG3612 Engine	1.19	1.19	1.78	24.0	6.0	9.5	2.91
S004/CATG3616A Engine	1.59	1.59	2.39	32	8.0	12.5	3.90
S005/CATG3616B Engine	1.59	1.59	2.39	32	8.0	12.5	3.90
Blowdown Events (ESD and compressors)						25	Negl.
Total	7.49	7.49	13.36	115	69.4	75.1	11.19

Potential to emit of criteria pollutants in the above table is based on permitted emission limitations for the turbines, engines and blowdown events (emissions from blowdown events include requested emissions in August 17, 2010

comments on the draft permit and technical review document). Although the permits for the engines and turbines do not include emission limitations for PM and PM_{10}, the potential to emit is based on the permitted fuel consumption limits and AP-42 emission factors (Section 3.1 (dated 4/00), Table 3.1-2a for the turbines and Section 3.2 (dated 7/00), Table 3.2-2). Although the permits for the engines do not include emission limitations for SO_2, the potential to emit is based on the permitted fuel consumption limits and the natural gas sulfur content.

The breakdown of HAP emissions for each emission unit is provided for in the table on page 32 of this document. HAPs were estimated as follows:

For the turbines, HAP emissions are based on AP-42 emission factors (Section 3.1 (dated 4/00), table 3.1-3), the permitted fuel consumption limit and a natural gas heat content of 950 Btu/scf. For the compressor engines, formaldehyde emissions are based on manufacturer's emission factors, the permitted fuel consumption limit, a natural gas heat content of 950 Btu/scf and an assumed control efficiency of 85%. Other HAP emissions from the compressor engines are based on AP-42 emission factors (Section 3.2 (dated 7/00), table 3.2-2), a natural gas heat content of 950 Btu/scf and an assumed control efficiency of 85%.

Accidental Release Prevention Program (Section 112(r) of the Clean Air Act)

The source indicated that the facility is not subject to the risk management plan provisions in section 112(r) of the Act.

Maximum Achievable Control Technology (MACT) Requirements

The Title V permit application indicated that the facility would be a major source for hazardous air pollutant emissions (HAPs) once the equipment at the adjoining TransColorado Meeker Compressor Station are constructed and commence operation. Although construction permits were issued for equipment at the TransColorado Meeker Compressor Station, in a March 2, 2009 letter to the Division the source indicated that TransColorado would not be building the facility and requested that the construction permits be cancelled. Therefore, the facility is a minor source for HAPs.

Although the facility is a minor source for HAPs, EPA has been promulgating rules for area sources (sources that are not major for HAPs). Those requirements that could potentially apply to this facility are discussed below:

Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

The final rules for paint stripping and miscellaneous surface coating were published in the federal register on January 9, 2008 and apply to area sources that perform paint stripping operations using methylene chloride, spray

application of coatings to motor vehicles and mobile equipment and spray application of coatings that contain the target HAPS (chromium, lead, manganese, nickel or cadmium). As indicated in 40 CFR Part 63 § 63.11170(a)(2) and (3), spray applications (to motor vehicles and using coatings that contain the target HAPS) that meet the definition of facility maintenance are not subject to the requirements in this rule. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. The source indicated that no paint stripping activities occur at the facility; therefore, the provisions in 40 CFR Part 63 Subpart HHHHHH do not apply.

Reciprocating Internal Combustion Engines (40 CFR Part 63 Subpart ZZZZ)

The reciprocating internal combustion engine (RICE) MACT was signed as final on February 26, 2004 and was published in the Federal Register on June 15, 2004. Under this rulemaking only RICE that were > 500 hp and located at major sources of HAPS were subject to the requirements.

However, revisions were made to the RICE MACT to address engines ≤ 500 hp at major sources and all size engines at area (minor) sources. These revisions were published in the federal register on January 18, 2008. Under these revisions, existing compression ignition (CI) engines, 2-stroke lean burn (2SLB) and 4-stroke lean burn (4SLB) engines were not subject to any requirements in either Subparts A or ZZZZ (40 CFR Part 63 Subpart ZZZZ § 63.6590(b)(3)). For purposes of the MACT, engines located at area sources are considered existing if they commenced construction or reconstruction before June 12, 2006.

The relevant definition of "construction" in 40 CFR Part 63 Subpart A § 63.2 means "the on-site fabrication, erection, or installation of an affected source." The construction permits for the engines at this facility were issued after June 12, 2006 and as such, the engines cannot be considered existing engines. Therefore, since the engines are considered new and as such are subject to the RICE MACT requirements.

Compliance Assurance Monitoring (CAM) Requirements

CAM applies to any emission unit that is subject to an emission limitation, uses a control device to achieve compliance with that emission limitation and has potential pre-control emissions greater than major source levels.

The turbines are equipped with ($SoLoNO_X$), which is dry low NO_X (DLN) combustion system, to reduce NO_X emissions. However, DLN are not considered control devices as defined in 40 CFR Part 64 § 64.1, as adopted by reference in Colorado Regulation No. 3, Part C, Section XIV, since DLN is considered inherent process equipment.

The compressor engines are equipped with oxidation catalysts to reduce CO, VOC and HAP emissions. For the Caterpillar G3616 engines, uncontrolled CO and formaldehyde emissions exceed the major source level (CO and formaldehyde emissions per engine are 114.3 tons/yr and 21.9 tons/yr, respectively) and for the Caterpillar G3612 engine, uncontrolled formaldehyde emissions exceed the major source level (formaldehyde emissions are 16.4 tons/yr). However, since controlled CO and formaldehyde emissions for each of the engines are below the major source level, in accordance with 40 CFR Part 64 § 64.5(b), CAM does not apply until renewal of this permit.

Greenhouse Gases

In 2009 and 2010, EPA issued two rules related to Greenhouse Gasses (GHG) that may affect your facility.

On October 30, 2009, EPA published a rule for the mandatory annual reporting of GHG emissions to EPA from large GHG emissions sources in 40 CFR part 98. You may be required to identify GHG emissions in future Title V permit applications. Such identification may be satisfied by including some or all of the information reported to EPA to meet the GHG reporting requirements.

III. Emission Sources

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site.

S001/ST60-1: Solar Taurus Natural Gas Fired Turbine, Model No. 60, Serial No. 1669T. The turbine is rated at 54.03 MMBtu/hr (LHV at 100% load and 20 ºF). Turbine Drives a Compressor.

S002/ST60-2: Solar Taurus Natural Gas Fired Turbine, Model No. 60, Serial No. 1668T. The turbine is rated at 54.03 MMBtu/hr (LHV at 100% load and 20 ºF). Turbine Drives a Compressor.

Applicable Requirements: Initial approval construction permits (06RB0564 and 06RB0565) were issued for these emission units on October 13, 2006. According to the Title V permit application, these units commenced operation in December 2007. According to the Division's database self-certifications for these units were received on July 2, 2008. Therefore, under the provisions of Colorado Regulation No. 3, Part C, Section V.A.3, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect. The appropriate applicable requirements from the initial approval construction permit have been incorporated into the permit as follows:

- Visible emissions shall not exceed twenty percent (20%) opacity during

normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 1).

Note that Colorado Regulation No. 1 does not identify the 20% opacity requirement as a condition that only applies during normal operation. In addition, there are more specific activities under which the 30% opacity requirement applies than identified in the construction permit. The specific activities under which the 30% opacity standard applies are: building a new fire, cleaning of fire boxes, soot blowing, startup, any process modification, or adjustment or occasional cleaning of control equipment. Based on engineering judgment the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of combustion turbines. In addition, these turbines do not have a control device. Process modifications may apply to the turbines; however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has been included in the operating permit for startup of these units.

- Emissions from each turbine shall be limited to the following (condition 3):

  - SO_2 3.4 tons/yr and 572.4 lbs/mo
  - NO_X 13.5 tons/yr and 2,294.8 lbs/mo
  - VOC 7.8 tons/yr and 1,333.4 lbs/mo
  - CO 13.7 tons/yr and 2,327.1 lbs/mo
  - Formaldehyde 0.2 tons/yr and 30.1 lbs/mo

  The monthly limits apply for the first twelve months of operation. Since the turbines have been operating for more than twelve months the monthly limitations will not be included in the permit.

  In their August 17, 2010 comments on the draft permit, REX requested that SO_2, NO_X, VOC and CO emission limitations be revised to the following: 3.6, 14.2, 8.3 and 14.4 tons/yr, respectively.

- Facility wide emissions shall be limited to the following (condition 3):

  - Formaldehyde 9.4 tons/yr and 1,603.5 lbs/mo
  - Other single HAP < 8 tons/yr
  - Total HAPS < 20 tons/yr

  Since these are facility wide requirement this condition will be included in a facility wide section of the Title V permit.

  Note that based on permitted formaldehyde emission limitations for the

turbines and three compressor engines, facility wide formaldehyde emissions are 9.5 tons/yr. Therefore, a facility wide formaldehyde limit of 9.5 tons/yr will be included in the Title V permit.

The monthly limits apply for the first twelve months of operation. Since the facility has been operating for more than twelve months the monthly limitations will not be included in the permit.

- Each turbine shall be limited to the following fuel consumption limits (condition 4):

Natural gas	42.31 MMscf/mo	and	498.21 MMscf/yr

  The monthly limits apply for the first twelve months of operation. Since the turbines have been operating for more than twelve months the monthly limitations will not be included in the permit.

- Performance tests shall be conducted to measure NO_X, VOC, formaldehyde and CO emissions (condition 5)

  Performance tests were conducted February 12 – 13, 2008 on the turbines. Therefore this requirement will not be included in the Title V permit.

- Prior to issuance of final approval, the applicant shall submit an operating and maintenance plan and shall follow the Division-approved operating and maintenance plan (condition 6)

  An operating and maintenance plan was submitted on June 12, 2008 and the Division approved the plan on December 8, 2008. The appropriate requirements from the operating and maintenance plan will be incorporated into the Title V permit.

- This facility shall be completely enclosed by a fence and posted with no trespassing signs (condition 7)

  Since this is a facility wide requirement it will be included in a facility wide section of the Title V permit.

- The turbines are subject to the requirements in NSPS Subpart KKKK (condition 8)

  Note that the construction permit includes the SO_2 limit in terms of emissions. However, in lieu of the SO_2 emission limitation, the fuel sulfur limit will be included in the Title V permit. In addition, the permit includes the provisions of both § 60.4365 and § 60.4385, but if the source chooses to follow the provisions in § 60.4365, then the provisions in § 60.4385 do not apply. The Division presumes the source would opt to follow the provisions in § 60.4365 and as a result have included those requirements

in the Title V permit.

In addition, many of the NSPS general provisions, either never applied (e.g., notification of continuous monitoring system demonstration and compliance of opacity standards) or applied but the requirements have been completed (e.g., notification of construction and initial startup). The appropriate NSPS general provisions have been included in the Title V permit.

- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of relaxation of any permit condition (condition 9)

  This condition will not be included in the operating permit, since no actual requirements apply, unless certain modifications to the permit conditions for these engines are made. Although this requirement will not be included in the permit, future modifications that cause the REX Meeker facility to become major, by themselves, for purposes of PSD, by virtue of relaxation of any of these permit conditions in Construction Permits 06RB0564 – 06RB0568 and 09RB0019 and 09RB0020 will result in the application of PSD review.

- APEN reporting requirements (condition 10)

  The APEN reporting requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 22.e.

- Insignificant activity emissions shall not exceed 0.5 tons/yr of formaldehyde (condition 11)

  Since this is a facility wide requirement, this condition will be included in a facility wide section of the permit.

  In addition, since permitted facility wide formaldehyde emissions are 9.5 tons/yr, then insignificant activity emissions must be less than 0.5 tons/yr in order to stay below the major source level. Therefore, the Title V permit will specify that insignificant activity emissions must be less than 0.5 tons/yr.

- Manufacturer, model and serial number shall provided prior to final approval (condition 12)

  The self-certification submitted on July 2, 2008 supplied this information; therefore, this requirement will not be included in the permit.

- Within 180 days after issuance of this permit, compliance with these conditions shall be demonstrated (condition 13)

A self-certification was submitted on July 2, 2008; therefore, this requirement will not be included in the permit.

- This permit will expire if construction does not commence within 18 months of permit issuance (condition 14)

  These units commenced operation in December 2007, therefore, this requirement will not be included in the Title V permit.

Although not specifically identified in Colorado Construction Permits 06RB0564 and 06RB0565, the turbines are subject to the following applicable requirements:

- Particulate matter emissions shall not exceed $0.5(FI)^{-0.26}$ lbs/MMBtu, where FI = fuel input in MMBtu/hr (Reg 1, Section III.A.1.b).

- Sulfur dioxide emissions shall not exceed 0.8 lbs/MMBtu (Reg 1, Section VI.B.4.c.(i))

- **State-only requirement:** new source performance standards for fuel burning equipment in Reg 6, Part B, Section II as follows:

  - Particulate matter emissions shall not exceed $0.5(FI)^{-0.26}$ lbs/MMBtu, where FI = fuel input in MMBtu/hr (Reg 6, Part B, Section II.C.2)
  - Opacity of emissions shall not exceed 20% (Reg 6, Part B, Section II.C.3)
  - Sulfur dioxide emissions shall not exceed 0.8 lbs/MMBtu (Reg 6, Part B, Section II.D.3.a)

Streamlining of Applicable Requirements

<u>Opacity</u>

The turbines are subject to the Regulation No. 1 opacity standards and the Regulation No. 6, Part B opacity requirement. The Reg 1 20% opacity requirement applies at all times, except for certain specific operating conditions under which the Reg 1 30% opacity requirement applies. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. 40 CFR Part 60 Subpart A § 60.11(c) specifies that the opacity requirement are not applicable during periods of startup, shutdown and malfunction. The Reg 1 20%/30% opacity requirements are more stringent than the Reg 6 Part B opacity requirements during periods of startup, shutdown and malfunction (see page 33). While the Reg 6, Part B 20% opacity requirement is more stringent during fire building, cleaning of fire boxes, soot blowing, process modifications and adjustment or occasional cleaning of control equipment. However, as discussed previously, the Division considers that for the turbine the only specific activity under which the 30% opacity standard would apply is startup. Therefore, since

the Reg 1 20%/30% opacity requirements are more stringent than the Reg 6, Part B requirements and the Reg 6 Part B opacity requirement has been streamlined out of the permit.

PM

The turbines are subject to the Regulation No. 1 and No. 6, Part B PM standards. The PM requirements in both Reg 1 and Reg 6, Part B are the same standard. The Regulation No. 6, Part B requirement is a state-only requirement. Reg 6, Part B, Section I.A, adopts, by reference, the 40 CFR Part 60 Subpart A general provisions. Although not specifically stated in the general provisions, the Division has concluded after reviewing EPA determinations that the NSPS standards are not applicable during startup, shutdown and malfunction, unless indicated otherwise in the specific subpart, although any excess emissions during these periods must be reported in the excess emission reports. Specifically, EPA has indicated (4/18/75, determination control no. A007) that when 40 CFR Part 60 Subpart A § 60.11(d) was developed "…it was recognized that sources which ordinarily comply with the standards may during periods of startup, shutdown and malfunction unavoidably release pollutants in excess of the standards." In addition, EPA has also indicated (5/15/74, determination control number D034) that "[s]ection 60.11(a) makes it clear that the data obtained from these reports are not used in determining violations of the emission standards. Our purpose in requiring the submittal of excess emissions is to determine whether affected facilities are being operated and maintained 'in a manner consistent with good air pollution control practices for minimizing emissions' as required by 60.11(d)." Therefore, the Division considers that the Reg 6, Part B PM requirements do not apply during periods of startup, shutdown and malfunction. Therefore, the Regulation No. 1 PM requirement is more stringent than the Regulation No. 6, Part B requirement and the Regulation No. 6, Part B requirement will be streamlined out of the permit.

SO_2

The turbines are subject to the Regulation No. 1 and No. 6, Part B SO_2 standards. The SO_2 requirements in both Reg 1 and Reg 6, Part B are the same standard (0.80 lb/MMBtu). The Regulation No. 6, Part B requirement is a state-only requirement. The turbines are also subject to SO_2 requirements in NSPS Subpart KKKK. Under the NSPS, the source may choose to meet either an outlet limitation or a limitation on the potential SO_2 emissions in the fuel. The limit on the potential SO_2 emissions in the fuel is 0.060 lb/MMBtu, which is lower than the Reg 1 and Reg 6 SO_2 limit of 0.80 lb/MMBtu. Therefore, the Reg 1 SO_2 limit will be streamlined in favor of the NSPS Subpart KKK limit on potential SO_2 emissions in the fuel.

Miscellaneous

NSPS Subpart KKKK requires that the results of the annual performance tests be submitted within 60 days after completion of the test (§ 60.4375(b)). However, the Division's standard language for performance tests specifies that the results of the test shall be submitted within 45 days. Therefore, the NSPS Subpart KKKK requirement for submitting the results of the performance test shall be streamlined in favor of the Division's standard requirement.

The turbines are subject to the NSPS general provisions (40 CFR Part 60) on a federal and state basis (the units are subject to 40 CFR Part 60 Subpart KKKK) and on a state-only basis (the units are subject to Reg 6, Part B, Section II and the NSPS general provisions are adopted by reference in Reg 6, Part B, Section I.A). Therefore, the Division will streamline the state-only NSPS general provisions out of the permit in favor of the state and federal NSPS general provisions.

Emission Factors: Approval of emission factors is necessary to monitor compliance with the permit limitations. The following emission factors will be included in the operating permit for the turbines.

Pollutant	Emission Factors (lbs/MMBtu)	Emission Factor Source
PM	6.6×10^{-3}	AP-42, Section 3.1 (dated 4/00), Table 3.1-2a
PM_{10}	6.6×10^{-3}	
SO_2	1.5×10^{-2}	FERC Tariff restriction on sulfur content of fuel (5 gr/100 scf), assuming a natural gas heat content of 950 Btu/scf
NO_X	0.060	Manufacturer's Data (at 100 % load and 20 ºF)
CO	0.061	
VOC	0.035	
Formaldehyde	7.1×10^{-4}	AP-42, Section 3.1 (dated 4/00), Table 3.1-3

Note that since PM and PM_{10} emissions at the requested fuel consumption limit are all below the APEN de minimis level, emission limitations for those pollutants were not included in the construction permits and will not be included in the Title V permit.

Emissions from other HAPS shall be estimated using emission factors in AP-42, Section 3.1 (dated 4/00), Table 3.1-3.

Monitoring Plan: In order to monitor compliance with the annual emission and fuel consumption limits, the source will be required to monitor fuel consumption and calculate emissions on a monthly basis. Annual performance tests are required to monitor compliance with the NSPS KKKK NO_X requirements. In addition, the source will be required to conduct quarterly portable monitoring in order to verify compliance with the annual NO_X and CO emission limitations, as well as the NSPS KKKK NO_X emission limitations. In the absence of credible

evidence to the contrary, compliance with the particulate matter, opacity and SO_2 requirements are presumed, since only natural gas is permitted to be used as fuel in the turbines.

Compliance Status: In their Title V permit application, the source indicated that the turbines were in compliance with all applicable requirements.

S003/CATG3612: Caterpillar, Model No. G3612, 4-Cycle Lean Burn Internal Combustion Engine, Rated at 3,550 hp (nameplate) and 27.2 MMBtu/hr, Serial No. BKE00310. Natural Gas Fired. Engine Drives a Compressor.

Applicable Requirements: Initial approval construction permit 06RB0566 was issued for this engine on October 13, 2006. According to the Title V permit application, this engine commenced operation in December 2007. According to the Division's November 2008 inspection report, the engine commenced operation in January 2008. According to the Division's database self-certifications for this engine was received on January 20, 2009 (the November 2008 inspection report indicates it was received on January 9, 2009). Therefore, under the provisions of Colorado Regulation No. 3, Part C, Section V.A.3, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect. The appropriate applicable requirements from the initial approval construction permit have been incorporated into the permit as follows:

- Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 1).

  Note that Colorado Regulation No. 1 does not identify the 20% opacity requirement as a condition that only applies during normal operation. In addition, there are more specific activities under which the 30% opacity requirement applies than identified in the construction permit. The specific activities under which the 30% opacity standard applies are: building a new fire, cleaning of fire boxes, soot blowing, startup, any process modification, or adjustment or occasional cleaning of control equipment. Based on engineering judgment the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of an internal combustion engine. Although this engine has a control device, it does not control PM emissions and therefore would not affect opacity emissions. Process modifications may apply to this engine; however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has been included in the operating permit for startup of this unit.

- Emissions shall be limited to the following (condition 3):

o NO_X	24.0 tons/yr	and	4,076.7 lbs/mo
o VOC	9.5 tons/yr	and	1,606.9 lbs/mo
o CO	6.0 tons/yr	and	1,019.2 lbs/mo
o Formaldehyde	2.5 tons/yr	and	419.6 lbs/mo

  The monthly limits apply for the first twelve months of operation. Since this engine has been operating for more than twelve months the monthly limitations will not be included in the permit.

- Facility wide emissions shall be limited to the following (condition 3):

o Formaldehyde	9.4 tons/yr	and	1,603.5 lbs/mo
o Other single HAP	< 8 tons/yr		
o Total HAPS	< 20 tons/yr		

  Since these are facility wide requirements this condition will be included in a facility wide section of the Title V permit.

  As discussed under the turbines, a facility wide formaldehyde emission limit of 9.5 tons/yr will be included in the permit.

  The monthly limits apply for the first twelve months of operation. Since the facility has been operating for more than twelve months the monthly limitations will not be included in the permit.

- This engine shall be limited to the following fuel consumption limits (condition 4):

Natural gas	21.28 MMscf/mo	and	250.52 MMscf/yr

  The monthly limits apply for the first twelve months of operation. Since this engine has been operating for more than twelve months the monthly limitations will not be included in the permit.

- Performance tests shall be conducted to measure NO_X, VOC, formaldehyde and CO emissions (condition 5)

  Performance tests were conducted October 28-30, 2008 for the engines. Therefore this requirement will not be included in the Title V permit.

- The engine shall be equipped with an oxidizing catalyst capable of reducing uncontrolled emissions of VOC by at least 80%, CO by at least 93% and formaldehyde by at least 85% (condition 6)

  The percent efficiency requirement for the catalytic oxidizers with respect to VOC, CO and formaldehyde emissions has not been included in the

permit. As long as the source meets the outlet emission limitations, meeting a specific percent reduction is not necessary.

However, the Division considers that monitoring the percent reduction of CO serves as a surrogate for monitoring formaldehyde emissions. The Division's monitoring guidelines for engines with catalysts (see page 34) specify that portable monitoring be conducted semi-annually to verify that the engine is meeting the specified CO percent reduction. Therefore, for purposes of monitoring compliance with the formaldehyde emission limits portable monitoring will be required semi-annual to verify that the CO percent reduction is at least 93%.

- This facility shall be completely enclosed by a fence and posted with no trespassing signs (condition 7)

  Since this is a facility wide requirement it will be included in a facility wide section of the Title V permit.

- Prior to issuance of final approval, the applicant shall submit an operating and maintenance plan and shall follow the Division-approved operating and maintenance plan (condition 9)

  An operating and maintenance plan was submitted on June 12, 2008 and the Division approved the plan on July 17, 2008. The appropriate requirements from the operating and maintenance plan will be incorporated into the Title V permit.

- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of relaxation of any permit condition (condition 9)

  As discussed above for the turbines, this requirement will not be included in the operating permit as there are no applicable requirements unless modifications are made to the permit conditions for this equipment.

- MACT Subpart ZZZZ applies at any time that the source becomes major for HAPS by virtue of relaxation of any permit condition (Condition 10)

  This condition will not be included in the permit as it is not an applicable requirement. Regardless of whether the conditions in this construction permit are relaxed, once the facility exceeds the major source threshold for HAPs, major source MACT requirements apply. In addition, although this facility is not a major source for HAPs, MACT Subpart ZZZZ applies to both major and minor sources of HAPs. Therefore, the appropriate applicable MACT requirements will be included in the permit for this engine.

- APEN reporting requirements (condition 11)

  As discussed previously for the turbines, the APEN reporting requirements are included in Section IV, Condition 22.e.

- Insignificant activity emissions shall not exceed 0.5 tons/yr of formaldehyde (condition 12)

  Since this is a facility wide requirement, this condition will be included in a facility wide section of the permit.

  As discussed previously the turbines, this condition will be clarified to indicate that insignificant activity emissions must be less than 0.5 tons/yr.

- Manufacturer, model and serial number shall provided prior to final approval (condition 13)

  The self-certification submitted on July 2, 2008 supplied this information; therefore, this requirement will not be included in the permit.

- Within 180 days after issuance of this permit, compliance with these conditions shall be demonstrated (condition 13)

  A self-certification was submitted in January 2009; therefore, this requirement will not be included in the permit.

- This permit will expire if construction does not commence within 18 months of permit issuance (condition 15)

  This unit has commenced operation; therefore, this requirement will not be included in the Title V permit.

Although not specifically identified in Colorado Construction Permit 06RB0566, this engine is subject to the following applicable requirements:

- MACT Subpart ZZZZ

  The construction permit did not include specific MACT Subpart ZZZZ requirements for area sources. MACT Subpart ZZZZ applies to all size new or reconstructed engines (commenced construction or reconstruction after June 12, 2006) located at area sources. As discussed previously, the relevant definition of “construction” is in 40 CFR Part 63 Subpart A § 63.2 and is based on “on-site” fabrication. The construction permit for this unit was issued on October 13, 2006 and as a result “on-site” construction could not have commenced prior to June 12, 2006. Therefore, this engine is considered “new” and is subject to the RICE MACT requirements. As specified in § 63.6590(c), new or reconstructed RICE located at area sources must meet the requirements of Subpart ZZZZ by meeting the

requirements in 40 CFR Part 60 Subpart JJJJ and no further requirements apply under 40 CFR Part 63 Subpart ZZZZ.

NSPS Subpart JJJJ applies to owners or operators of engines that commenced construction after June 12, 2006 and were manufactured after July 1, 2007 for engines > 500 hp. NSPS Subpart JJJJ indicates that the commence construction date is the date the engine is ordered (per § 60.4230(a)). The source provided documentation indicating that this engine was ordered on April 3, 2006. Therefore, the NSPS Subpart JJJJ requirements do not apply. Note that the source also provided information indicating that this engine was manufactured on March 3, 2006.

Therefore, since the engine is "new", the requirements of MACT Subpart ZZZZ are met by meeting the requirements in NSPS Subpart JJJJ. Although the engine is not subject to any NSPS Subpart JJJJ requirements, no further requirements apply under MACT Subpart ZZZZ.

- Colorado Regulation No. 7, Section XVII.E.2.b

  The emission limitations in this section apply to engines that were constructed after the specified applicability dates. Although Reg 7 doesn't include a definition of "constructed", the definition of "commence construction" in Reg 3, Part A, Section I.B.10 is based on actual site construction. In their Title V permit application, the source indicated that this engine was constructed after July 1, 2007. However, in their comments on the draft permit (received August 17, 2010) REX indicated that construction on this engine commenced on June 12, 2007 and as a result these requirements do not apply.

- Colorado Regulation No. 7, Section XVII.E.3.b

  These requirements apply to existing engines. Although Reg 7 doesn't include a definition of existing engines, the Division considers that an existing engine is an engine that was operating prior to February 1, 2009 (these revisions to Reg 7 were adopted December 12, 2008 and took effect February 1, 2009). Since this engine began operation prior to February 1, 2009, it is an existing engine and as such is required to have an oxidation catalyst.

  Note that since the construction permit requires that oxidation catalysts be installed and sets emission limitations, the Reg 7 Section XVII.3.b requirement will be streamlined in favor of the construction permit requirement.

Emission Factors: Approval of emission factors is necessary to monitor compliance with the permit limitations. For some pollutants, the source proposed

emission factors in units of g/hp-hr. The Division generally includes emission factors in units of lbs/MMBtu in the operating permit. Therefore, the emission factors have been converted to lbs/MMBtu using the following equation and the maximum heat rate of the engine (7,653 Btu/hp-hr).

$$\text{EF (lbs/MMBtu)} = \frac{\text{EF (g/hp-hr)} \times 10^6 \text{ Btu/MMBtu}}{\text{Heat Rate (Btu/hp-hr)} \times 453.6 \text{ g/lb}}$$

The source's proposed and the Division's converted emission factors are as follows:

Pollutant	Uncontrolled Emission Factors	Emission Factor Source	Converted Emission Factors (lb/MMBtu)	
			Uncontrolled	Controlled
PM	9.99×10^{-3} lb/MMBtu	AP-42, Section 3.2 (dated 7/00), Table 3.2-2	9.99×10^{-3}	
PM_{10}	9.99×10^{-3} lb/MMBtu		9.99×10^{-3}	
SO_2	1.5×10^{-2} lb/MMBtu	FERC Tariff restriction on sulfur content of fuel (5 gr/100 scf), assuming a natural gas heat content of 950 Btu/scf	1.5×10^{-2}	
NO_X	0.70 g/hp-hr	Manufacturer's Data[1] (NO_X and CO at maximum load, VOC (non-methane hydrocarbons) and formaldehyde at 59% of site rated load	0.20	
CO	2.50 g/hp-hr		0.72	5.04×10^{-2}
VOC	1.33 g/hp-hr		0.38	7.66×10^{-2}
Formaldehyde	0.48 g/hp-hr		0.14	2.07×10^{-2}

[1] Note that the construction permit lists a VOC emission factor of 1.38 g/hp-hr, but this was not consistent with the highest non-methane hydrocarbon (NMHC) emission factor on the manufacturer's data sheets, hence the Title V permit will utilize a VOC emission factor of 1.33 g/hp-hr (highest NMHC emission rate on manufacturer's data sheet).

The oxidation catalyst reduces CO emission by 93%, formaldehyde by 85% and VOC emissions (and other non-formaldehyde HAPs) by 80%. The converted controlled emission factors will be included in the permit.

Note that since PM, PM_{10} and SO_2 emissions at the requested fuel consumption limit are all below the APEN de minimis level, emission limitations for those pollutants were not included in the construction permit and will not be included in the Title V permit.

Emissions from other HAPS shall be estimated using emission factors in AP-42, Section 3.2 (dated 7/00), Table 3.2-2. A control efficiency of 80% may be applied to HAPs other than formaldehyde.

Monitoring Plan: In order to monitor compliance with the annual emission and fuel consumption limits, the source will be required to monitor fuel consumption and calculate emissions on a monthly basis.

The Division has developed monitoring requirements for engines with catalysts (see page 34 for the 10/28/04 monitoring grid). Therefore, in accordance with the monitoring grid, the source will be required to record the pressure drop across the catalysts monthly and monitor catalyst inlet temperature daily. The monitoring grid also requires semi-annual portable monitoring to verify the percent reduction of CO emissions and quarterly portable monitoring to measure outlet NO_X and CO emissions. The quarterly portable monitoring will be required in order to verify compliance with the annual NO_X and CO emission limitations, as well as the Reg 7 NO_X and CO emission limitations.

In the absence of credible evidence to the contrary, compliance with the Reg 1 opacity, limits shall be presumed since only natural gas is permitted to be used as fuel.

Compliance Status: In their Title V permit application, the source indicated that this engine in compliance with all applicable requirements.

S004/CATG3616A: Caterpillar, Model No. G3616, 4-Cycle Lean Burn Internal Combustion Engine, Rated at 4,735 hp (nameplate) and 36.5 MMBtu/hr, Serial No. BLB00328. Natural Gas Fired. Engine Drives a Compressor.

S005/CATG3616B: Caterpillar, Model No. G3616, 4-Cycle Lean Burn Internal Combustion Engine, Rated at 4,735 hp (nameplate) and 36.5 MMBtu/hr, Serial No. BLB00326. Natural Gas Fired. Engine Drives a Compressor.

Applicable Requirements: Initial approval construction permits (06RB0567 and 06RB0568) were issued for these emission units on October 13, 2006. According to the Title V permit application, these engines commenced operation in December 2007. According to the Division's November 2008 inspection report, these engines commenced operation in January 2008. According to the Division's database self-certifications for these engines were received on January 20, 2009 (the November 2008 inspection report indicates it was received on January 9, 2009). Therefore, under the provisions of Colorado Regulation No. 3, Part C, Section V.A.3, the Division will not issue final approval construction permits and is allowing the initial approval construction permits to continue in full force and effect. The appropriate applicable requirements from the initial approval construction permits have been incorporated into the permit as follows:

- Visible emissions shall not exceed twenty percent (20%) opacity during

normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 1).

Note that Colorado Regulation No. 1 does not identify the 20% opacity requirement as a condition that only applies during normal operation. In addition, there are more specific activities under which the 30% opacity requirement applies than identified in the construction permits. As discussed previously under the Caterpillar G3612 engine, the Division considers that startup is the only specific activity applicable to these engines. Therefore, the 30% opacity requirement has been included in the operating permit for startup of these units.

- Emissions shall be limited to the following (condition 3):

o NO_X	32.0 tons/yr	and	5,437.3 lbs/mo
o VOC	12.5 tons/yr	and	2,128.4 lbs/mo
o CO	8.0 tons/yr	and	1,358.9 lbs/mo
o Formaldehyde	3.3 tons/yr	and	558.8 lbs/mo

  The monthly limits apply for the first twelve months of operation. Since this engine has been operating for more than twelve months the monthly limitations will not be included in the permit.

- Facility wide emissions shall be limited to the following (condition 3):

o Formaldehyde	9.4 tons/yr	and	1,603.5 lbs/mo
o Other single HAP	< 8 tons/yr		
o Total HAPS	< 20 tons/yr		

  Since these are facility wide requirements this condition will be included in a facility wide section of the Title V permit.

  As discussed under the turbines, a facility wide formaldehyde emission limit of 9.5 tons/yr will be included in the permit.

  The monthly limits apply for the first twelve months of operation. Since the facility has been operating for more than twelve months the monthly limitations will not be included in the permit.

- Each engine shall be limited to the following fuel consumption limits (condition 4):

Natural gas	28.54 MMscf/mo	and	336.1 MMscf/yr

  The monthly limits apply for the first twelve months of operation. Since the engines have been operating for more than twelve months the monthly

limitations will not be included in the permit.

- Performance tests shall be conducted to measure NO_X, VOC, formaldehyde and CO emissions (condition 5)

  Performance tests were conducted October 28-30, 2008 on the engines. Therefore this requirement will not be included in the Title V permit.

- The engines shall be equipped with an oxidizing catalyst capable of reducing uncontrolled emissions of VOC by at least 80%, CO by at least 93% and formaldehyde by at least 85% (condition 6)

  As discussed previously for the Caterpillar G3612 engine, the percent efficiency requirements for the catalytic oxidizers with respect to VOC, CO and formaldehyde emissions have not been included in the permit, although monitoring the percent reduction of CO will serve as a surrogate for monitoring formaldehyde emissions.

- This facility shall be completely enclosed by a fence and posted with no trespassing signs (condition 7)

  Since this is a facility wide requirement it will be included in a facility wide section of the Title V permit.

- Prior to issuance of final approval, the applicant shall submit an operating and maintenance plan and shall follow the Division-approved operating and maintenance plan (condition 9)

  An operating and maintenance plan was submitted on June 12, 2008 and the Division approved the plan on July 17, 2008. The appropriate requirements from the operating and maintenance plan will be incorporated into the Title V permit.

- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of relaxation of any permit condition (condition 9)

  As discussed previously for the turbines, this requirement will not be included in the operating permit as there are no applicable requirements unless modifications are made to the permit conditions for this equipment.

- MACT Subpart ZZZZ applies at any time that the source becomes major for HAPS by virtues of relaxation of any permit condition (Condition 10)

  As discussed previously for the Caterpillar G3612, this condition will not be included in the permit as it is not an applicable requirement.

- APEN reporting requirements (condition 11)

As discussed previously for the turbines, the APEN reporting requirements are included in Section IV, Condition 22.e.

- Insignificant activity emissions shall not exceed 0.5 tons/yr of formaldehyde (condition 12)

  Since this is a facility wide requirement, this condition will be included in a facility wide section of the permit.

  As discussed previously for the turbines, this condition will be clarified to indicate that insignificant activity emissions must be less than 0.5 tons/yr.

- Manufacturer, model and serial number shall provided prior to final approval (condition 13)

  The self-certification submitted on July 2, 2008 supplied this information; therefore, this requirement will not be included in the permit.

- Within 180 days after issuance of this permit, compliance with these conditions shall be demonstrated (condition 13)

  A self-certification was submitted in January 2009; therefore, this requirement will not be included in the permit.

- This permit will expire if construction does not commence within 18 months of permit issuance (condition 15)

  These units have commenced operation; therefore, this requirement will not be included in the Title V permit.

Although not specifically identified in Colorado Construction Permits 06RB0567 and 06RB0568, these engines are subject to the following applicable requirements:

- MACT Subpart ZZZZ

  The construction permits did not include specific MACT Subpart ZZZZ requirements for area sources. MACT Subpart ZZZZ applies to all size new or reconstructed engines (commenced construction or reconstruction after June 12, 2006) located at area sources. As discussed previously, the relevant definition of “construction” is in 40 CFR Part 63 Subpart A § 63.2 and is based on “on-site” fabrication. The construction permits for these units were issued on October 13, 2006 and as a result “on-site” construction could not have commenced prior to June 12, 2006. Therefore, these engines are considered “new” and are subject to the RICE MACT requirements. As specified in § 63.6590(c), new or reconstructed RICE located at area sources must meet the requirements of Subpart ZZZZ by meeting the requirements in 40 CFR Part 60 Subpart

JJJJ and no further requirements apply under 40 CFR Part 63 Subpart ZZZZ.

NSPS Subpart JJJJ applies to owners or operators of engines that commenced construction after June 12, 2006 and were manufactured after July 1, 2007 for engines > 500 hp. NSPS Subpart JJJJ indicates that the commence construction date is the date the engine is ordered (per § 60.4230(a)). The source provided documentation indicating that these engines were ordered on April 3, 2006. Therefore, the NSPS Subpart JJJJ requirements do not apply. Note that the source also provided information indicating that these engines were manufactured on October 17 and 26, 2006.

Therefore, since the engines are "new", the requirements of MACT Subpart ZZZZ are met by meeting the requirements in NSPS Subpart JJJJ. Although these engines are not subject to any NSPS Subpart JJJJ requirements, no further requirements apply under MACT Subpart ZZZZ

- Colorado Regulation No. 7, Section XVII.E.2.b

  The emission limitations in this section apply to engines that were constructed after the specified applicability dates. Although Reg 7 doesn't include a definition of constructed, the definition of "commence construction" in Reg 3, Part A, Section I.B.10 is based on actual site construction. In their Title V permit application, the source indicated that these engines were constructed after July 1, 2007. However, in their comments on the draft permit (received August 17, 2010) REX indicated that construction on these engines commenced on June 12, 2007 and as a result these requirements do not apply.

- Colorado Regulation No. 7, Section XVII.E.3.b

  These requirements apply to existing engines. Although Reg 7 doesn't include a definition of existing engines, the Division considers that an existing engine is an engine that was operating prior to February 1, 2009 (these revisions to Reg 7 were adopted December 12, 2008 and took effect February 1, 2009). Since these engines began operation prior to February 1, 2009, they are existing engines and as such are required to have oxidation catalysts.

  Note that since the construction permits require that oxidation catalysts be installed and set emission limitations, the Reg 7 Section XVII.3.b requirement will be streamlined in favor of the construction permit requirement.

Emission Factors: Approval of emission factors is necessary to monitor compliance with the permit limitations. For some pollutants, the source proposed

emission factors in units of g/hp-hr. The Division generally includes emission factors in units of lbs/MMBtu in the operating permit. Therefore, the emission factors have been converted to lbs/MMBtu using the following equation and the maximum heat rate of the engine (7,697 Btu/hp-hr).

$$\text{EF (lbs/MMBtu)} = \frac{\text{EF (g/hp-hr)} \times 10^6 \text{ Btu/MMBtu}}{\text{Heat Rate (Btu/hp-hr)} \times 453.6 \text{ g/lb}}$$

The source's proposed and the Division's converted emission factors are as follows:

Pollutant	Uncontrolled Emission Factors	Emission Factor Source	Converted Emission Factors (lb/MMBtu)	
			Uncontrolled	Controlled
PM	9.99×10^{-3} lb/MMBtu	AP-42, Section 3.2 (dated 7/00), Table 3.2-2	9.99×10^{-3}	
PM_{10}	9.99×10^{-3} lb/MMBtu		9.99×10^{-3}	
SO_2	1.5×10^{-2} lb/MMBtu	FERC Tariff restriction on sulfur content of fuel (5 gr/100 scf), assuming a natural gas heat content of 950 Btu/scf	1.5×10^{-2}	
NO_X	0.70 g/hp-hr	Manufacturer's Data[1] (NO_X and CO at maximum load, VOC (non-methane hydrocarbons) and formaldehyde at 59% of site rated load	0.20	
CO	2.50 g/hp-hr		0.72	5.04×10^{-2}
VOC	1.32 g/hp-hr		0.38	7.66×10^{-2}
Formaldehyde	0.48 g/hp-hr		0.14	2.07×10^{-2}

[1] Note that the construction permit lists a VOC emission factor of 1.37 g/hp-hr, but this was not consistent with the highest non-methane hydrocarbon (NMHC) emission factor on the manufacturer's data sheets, hence the Title V permit will utilize a VOC emission factor of 1.32 g/hp-hr (highest NMHC emission rate on manufacturer's data sheet).

The oxidation catalyst reduces CO emission by 93%, formaldehyde by 85% and VOC emissions (and other non-formaldehyde HAPs) by 80%. The converted controlled emission factors will be included in the permit.

Note that PM, PM_{10} and SO_2 emission limitations were not included in the construction permit. Typically if requested emissions for a given pollutant are below the APEN de minimis level, the Division typically does not include emission limitations for those pollutants in the permit. Both PM and PM_{10} emissions at the requested fuel consumption limit are below the APEN de minimis level and as a result emission limitations for those pollutants were not included in the construction permit and will not be included in the Title V permit. Based on the proposed emission factor for SO_2 and the requested fuel

consumption limit, SO_2 emissions for these units are above the 2 ton/yr APEN de minimis level; therefore, emission limitations for SO_2 will be included in the Title V permit.

Emissions from other HAPS shall be estimated using emission factors in AP-42, Section 3.2 (dated 7/00), Table 3.2-2. A control efficiency of 80% may be applied to HAPs other than formaldehyde.

Monitoring Plan: In order to monitor compliance with the annual emission and fuel consumption limits, the source will be required to monitor fuel consumption and calculate emissions on a monthly basis.

The Division has developed monitoring requirements for engines with catalysts (see page 34 for the 10/28/04 monitoring grid). Therefore, in accordance with the monitoring grid, the source will be required to record the pressure drop across the catalysts monthly and monitor catalyst inlet temperature daily. The monitoring grid also requires semi-annual portable monitoring to verify the percent reduction of CO emissions and quarterly portable monitoring to measure outlet NO_X and CO emissions. The quarterly portable monitoring will be required in order to verify compliance with the annual NO_X and CO emission limitations, as well as the Reg 7 NO_X and CO emission limitations.

In the absence of credible evidence to the contrary, compliance with the Reg 1 opacity, limits shall be presumed since only natural gas is permitted to be used as fuel.

Compliance Status: In their Title V permit application, the source indicated that the engines were in compliance with all applicable requirements.

S007: Emissions from Blowdown Events from Testing of the Plant Emergency Shutdown Vent
S008: Emissions from Blowdown Events from Maintenance and Other Shutdowns of Compressors Driven by Engines and Turbines

Applicable Requirements: Colorado Construction Permits 09RB0019 (blowdowns from emergency shutdown vent) and 09RB0020 (blowdowns from compressors) were issued on July 31, 2009. According to the Title V permit application these blowdown events commenced operation in December 2007. According to the startup notices these events commenced operation in January 2008. According to the Division's database a self-certifications for these events was received on January 29, 2010. The Division has completed the final approval process for these events and the final authorization for these permits will be issued upon payment of the fees. An application was submitted on July 1, 2010 to revise the construction permits for these events. However in their comments on the draft permit and technical review document (received on August 17, 2010), REX requested further changes to these permits (these

changes rendered the July 1, 2010 application obsolete). In their August 17, 2010 submittal, REX requested that all blowdown events be included on one permit and that no restrictions on the number of events be included in the permit. The Division has agreed to combine the two permits into one permit (09RB0019). REX will need to submit a request to cancel construction permit 09RB0020 following issuance of the Title v permit. The requested changes to 09RB0019 have been incorporated into the permit as follows:

- Startup notification must be submitted within 30 days after startup (condition 1)

  Startup notifications were submitted on January 29, 2010; therefore, this condition will not be included in the permit.

- Within 180 days after issuance of this permit, compliance with these conditions shall be demonstrated (condition 2)

  As previously indicated, self-certifications were submitted for both permits on January 29, 2010; therefore, this condition will not be included in the permit.

- The operator shall retain the permit final authorization letter after completion of the self-certification (condition 3)

  The provisions of this construction permit will be incorporated into the Title V permit, as such this condition is not necessary and will not be included in the permit.

- Emissions of formaldehyde from all insignificant activities shall not exceed 0.44 tons/yr (condition 5)

  Since this is a facility wide requirement, this condition will be included in a facility wide section of the permit.

  The preliminary analyses for the blowdown events from the emergency shutdown vent and the compressors included formaldehyde emissions from the emergency generator, which is an insignificant activity. As indicated under the turbine discussion, permitted formaldehyde emissions from all significant emissions units (those requiring an APEN) are 9.5 tons/yr; therefore, emissions from insignificant activities must be less than 0.5 tons/yr to remain a minor source for HAPs. Therefore, the Title V permit will specify that formaldehyde emissions from insignificant activities must be less than 0.5 tons/yr.

- Emissions of air pollutants from blowdown events shall not exceed the following limitations (condition 6)

Emergency shutdown vent (09RB0019)

VOC 4.4 tons/yr

Compressors (09RB0020)

Engine Blowdowns :	VOC	3.0 tons/yr
Turbine Blowdowns:	VOC	3.2 tons/yr

In their August 17, 2010 comments on the draft permit, REX requested one permit for all blowdown events and a single VOC emission limitation of 25 tons/yr for all events. The Division has included VOC limit of 25 tons/yr for all blowdown events in the permit.

- Facility wide emissions shall be limited to the following (condition 6):
  - single HAP other than formaldehyde < 8 tons/yr
  - Total HAPS < 20 tons/yr

  Since these are facility wide requirements this condition will be included in a facility wide section of the Title V permit.

  This permit does not include a facility wide limit on formaldehyde emissions probably because blowdown events would not result in formaldehyde emissions. Nevertheless, the facility is subject to a facility wide formaldehyde limit. As discussed under the turbines, a facility wide formaldehyde emission limit of 9.5 tons/yr will be included in the permit.

- The blowdown events shall be limited to the following (condition 7):

  09RB0019: Testing of emergency shutdown vent to 4 events per year

  09RB0020: Engine blowdowns 120 events per year

  09RB0020: Turbine blowdowns 48 events per year

  In their August 17, 2010 comments on the draft permit, REX requested one permit for all blowdown events and requested that no limit on the number of events be included in the permit. The Division agreed to not include a limit on the number of events, however, to make the permit practically enforceable, the Division has included a limit of 30.3 MMscf/yr. Based on the information in the Title V permit application, this throughput limit equates to 25 tons/yr of VOC emissions.

- The date and time of each blowdown event shall be recorded (condition 8)

  Note that the permit will also require that the source record the duration of the event and determine the quantity of natural gas vented during each

event.

- Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (condition 9).

  Blowdown vents are not considered to be a source of opacity emissions; therefore, this condition will not be included in the permit.

- **State-only** Reg 2 odor requirements (Condition 10)

  The odor requirements will not be identified in the permit as a specific condition but are included in Section IV (General Conditions) of the permit, condition 18.

- APEN reporting (condition 11)

  As discussed previously for the turbines, the APEN reporting requirements are included in Section IV, Condition 22.e.

- An application to modify the Operating Permit for this source is due within 12 months of commencing operation (condition 12)

  A Title V permit application was submitted on January 9, 2009 for this facility and it included provisions for these blowdown events. Therefore, this requirement has been fulfilled and will not be included in the Title V permit.

- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of relaxation of any permit condition (condition 13)

  As discussed previously for the turbines, this requirement will not be included in the operating permit as there are no applicable requirements unless modifications are made to the permit conditions for this equipment.

- General Terms and Conditions (conditions 14 – 20)

  The general terms and conditions are covered by the Title V permit general conditions and/or the Colorado Revised Statutes and as a result these requirements will not be specified in the Title V permit.

Emission Factors: Emissions from blowdown events will be estimated by material balance. Emissions from blowdown events shall be determined using the volume of natural gas vented during each event, the molecular weight of the gas and the VOC and HAP content of the natural gas. The composition of the

natural gas shall be estimated using the composition data from the in-line gas chromatograph from the day of the event.

Monitoring Plan: The source will be required to record the date, time and duration of each event. In addition, the source will be required to estimate the quantity of natural gas vented for each event and to calculate emission from each event based on the composition of the natural gas. The composition of the natural gas will be verified semi-annually. Monthly emissions shall be used in a rolling twelve month total to monitor compliance with the annual limitations.

Compliance Status: In their Title V permit application, the source indicated that they were in compliance with all applicable requirements for both permits issued for blowdown events. The source submitted a construction permit application for blowdown events from the emergency shutdown vent and from maintenance and shutdown of the compressors with the Title V permit application and construction permits (09RB0019 and 09RB0020) for these events were issued on July 31, 2009. The source certified compliance with the requirements in both construction permits (09RB0019 and 09RB0020) on January 29, 2010.

IV. Insignificant Activities

The source indicated that the following general categories of insignificant activities at this site include: individual fuel burning equipment (gaseous fuel) < 5 MMBtu/hr, oil production wastewater tanks (< 1% volume crude), lube oil storage tanks < 40,000 gal, condensate tanks < 40,000 gal, storage tanks limited throughput (400,000 gal/yr) and liquids stored and stationary internal combustion engines – emergency generators. Specific insignificant activities identified in the Title V permit application are as follows:

<u>Units with emissions less than the APEN de minimis – criteria (Reg 3 Part C.II.E.3.a)</u>

Fugitive VOC emissions from equipment leaks (VOC emissions < 2 tons/yr)
TK-1 - 5,830 gal condensate storage tank (VOC emissions < 2 tons/yr)
TK-3 – 5,830 gal produced water tank (VOC emissions < 2 tons/yr)
TK-5 - 5,830 gal ambitrol tank (VOC emissions < 2 tons/yr)

<u>Fuel (gaseous) burning equipment < 5 MMBtu/hr (Reg 3, Part C.II.E.3.k)</u>

Nineteen (19) line heaters (each rated at 60,000 Btu/hr)
One (1) fuel gas heater (rated at 864,000 Btu/hr)

<u>Storage tanks less than 40,000 gal capacity - lubricating oil (Reg 3 Part C.II.E.3.aaa)</u>

TK-4 lube oil tank (6,050 gal)

TK-2 used oil tank (5,830 gal)

Emergency Power Generators – limited size or hours (Reg 3 Part C.II.E.nnn.(iii))

Waukesha, Model L5774LT, 1246 hp, emergency generator – formerly covered under 06RB0569 (less than 1,840 hp and operates less than 100 hrs/yr)

Under the catch-all provisions in Colorado Regulation No. 3, Part C, Section II.E emission units cannot be considered insignificant activities if they are subject to NSPS, MACT or Reg 7 requirements. Although there are NSPS, MACT and/or Reg 7 requirements that potentially apply to the emergency generator, as discussed below, they do not apply to the emergency generator and it can be considered an insignificant activity.

NSPS Subpart JJJJ: Emergency generators that commence construction (date the engine was ordered) after June 12, 2006 and were manufactured after January 1, 2009 are subject to requirements in NSPS Subpart JJJJ. Although the emergency generator was ordered on November 28, 2006, it was manufactured on March 17, 2005. Therefore, the emergency generator is not subject to any requirements under NSPS Subpart JJJJ.

MACT Subpart ZZZZ: New or reconstructed (constructed or reconstructed on or after June 12, 2006) engines located at area sources are subject to requirements in MACT Subpart ZZZZ. The emergency generator commenced construction after June 12, 2006. As specified in § 63.6590(c), new or reconstructed RICE located at area sources must meet the requirements of Subpart ZZZZ by meeting the requirements in 40 CFR Part 60 Subpart JJJJ and no further requirements apply under 40 CFR Part 63 Subpart ZZZZ. Therefore, since the engine is "new", the requirements of MACT Subpart ZZZZ are met by meeting the requirements in NSPS Subpart JJJJ. Although the engine is not subject to any NSPS Subpart JJJJ requirements, no further requirements apply under MACT Subpart ZZZZ.

Colorado Regulation No. 7, Section XVII.E: As specified in Colorado Regulation No. 7, Section XVII.E.1, the Section XVII.E requirements do not apply to any engines with actual uncontrolled emission below permitting thresholds listed in Regulation No. 3, Part B. This engine is APEN exempt if it is operated less than 100 hours per year and emission units that are APEN exempt are not required to have a construction permit (Reg 3, Part B, Section II.D.1.a). In addition, at 500 hours per year of operation, which is a value used to estimate potential to emit for emergency generators, emissions are below 10 tons/yr and the engine is exempt from construction permit requirements in accordance with Reg 3, part B, Section II.D.1.c.(iii)(B).

V. Alternative Operating Scenarios

The construction permits for the engines included an alternative operating scenario (AOS) for both permanent and temporary engine replacement. Therefore, the AOS for engine replacement has been included in the Title V permit.

In addition, in their comments on the draft permit (received August 17, 2010), REX requested the AOS for temporary and permanent turbine replacement.

VI. Permit Shield

The source requested the permit shield for the following non-applicable requirements:

- Reg 8, Part A, Federal NESHAPs. The Title V permit application form refers back to Chapter 3 of the application (regulatory analysis and permit shield request). However, no requirements from 40 CFR Part 61 are indicated in Chapter 3 of the application, therefore, the Division will not grant the shield for any of the requirements in 40 CFR Part 61, since they have not been specifically identified, nor has a justification been provided.

- Reg 8, Part E, Federal MACT. The Title V permit application form again refers back to Chapter 3 of the application (regulatory analysis and permit shield request), which notes that 40 CFR Part 63 Subparts HH and HHH as non-applicable requirements. The permit application indicates that 40 CFR Part 63 Subpart HH is not applicable since the facility does not meet the definition of an oil and natural gas production facility. The permit shield has been granted based on the source's justification. The source indicated that 40 CFR Part 63 Subpart HHH does not apply since there are no glycol dehydrators at the facility. Although not noted in the application, the facility is also not a major source for HAPS, and the provisions in Subpart HHH only apply to major sources. Therefore, the shield has been granted based on the source's justification and because the facility is a minor source for HAPs.

- Reg 7, Section XVII.E. The Title V permit application form does not provides a justification for requesting the permit shield for Reg 7, Section XVII.E as a non-applicable requirement, nor does it refer to Chapter 3 of the application. However, Chapter 3 of the application (regulatory analysis and permit shield request) indicates that the compressor engines are subject to the emission standards in Reg 7, Section XVII.E.2.b (construction commenced after the applicability date) but that the emergency generator is not subject to the requirements since it is exempt from obtaining a construction permit (per Reg 7, Section XVII.E.1). The shield has been granted for the emergency generator, since it is exempt from obtaining a construction permit.

<u>Permit Shield for Streamlined Requirements</u>

These requirements are applicable to the emission units at the REX – Meeker Compressor Station. As discussed previously in this document, under streamlining of applicable requirements, the Division has included the above requirements, as appropriate in the permit shield for streamlined/subsumed conditions.

The following applicable requirements were streamlined out of the permit **for the turbines** and have been included in the permit shield.

- **State-only –** 20% opacity (Reg 6, Part B, Section II.C.3), streamlined out since Reg 1 20% / 30% opacity requirement is more stringent.

- **State-only –** PM emissions shall not exceed $0.5(FI)^{-0.26}$ lb/MMBtu (Reg 6, Part B, Section II.C.2), streamlined out since Reg 1 PM requirement is more stringent.

- **State-only –** SO_2 emissions shall not exceed 0.80 lbs/MMBtu (Reg 6, Part B, Section II.D.3.b), streamlined out since the NSPS Subpart KKKK SO_2 requirement is more stringent.

- SO_2 emissions shall not exceed 0.80 lbs/MMBtu (Reg 1, Section VI.B.4.c.(i)), streamlined out since the NSPS Subpart KKKK SO_2 requirement is more stringent.

- Submit performance test results within 60 days after the performance test is conducted (40 CFR Part 60 Subpart KKKK § 60.4375(b)), in favor of the Division's standard 45-day requirement.

- **State-only –** NSPS general provisions (Reg 6, Part B, Section I), streamlined out since units are subject to federal NSPS general provisions.

The following applicable requirements were streamlined out of the permit **for the engines** and have been included in the permit shield.

- Lean Burn engines greater than 500 hp shall be equipped with an oxidation catalyst (Colorado Regulation No. 7, Section XVII.E.3.b.(i)) streamlined out since the construction permit requirement sets a control efficiency and emission limitations.

Rockies Express Pipeline, LLC – Meeker Compressor Station
Facility Wide HAP Emissions

Pollutant	Emissions (tons/yr)								
	Turbine 1	Turbine 2	Cat G3612	Cat G3616	Cat G3616	Emerg. Gen	Heaters	Total (w/ insig activities)	Total (w/o insig activities)
formaldehdye[1]	1.68E-01	1.68E-01	2.46	3.30	3.30	1.72E-01	3.42E-05	9.58	9.41
1,3-butadiene	1.02E-04	1.02E-04	6.35E-03	8.53E-03	8.53E-03	6.57E-04		2.43E-02	2.36E-02
2,2,4-trimethlypentane			5.95E-03	7.98E-03	7.98E-03	6.15E-04		2.25E-02	2.19E-02
acetaldehyde	9.47E-03	9.47E-03	1.99E-01	2.67E-01	2.67E-01	2.06E-02		7.72E-01	7.52E-01
Acrolein	1.51E-03	1.51E-03	1.22E-01	1.64E-01	1.64E-01	1.26E-02		4.66E-01	4.54E-01
benezene	2.84E-03	2.84E-03	1.05E-02	1.40E-02	1.40E-02	1.08E-03	9.58E-07	4.53E-02	4.42E-02
ethylbenzene	7.57E-03	7.57E-03	9.45E-04	1.27E-03	1.27E-03	9.77E-05		1.87E-02	1.86E-02
methanol			5.95E-02	7.98E-02	7.98E-02	6.15E-03		2.25E-01	2.19E-01
n-hexane			2.64E-02	3.54E-02	3.54E-02	2.73E-03	8.21E-04	1.01E-01	9.73E-02
naphtalene	3.08E-04	3.08E-04	1.77E-03	2.38E-03	2.38E-03	1.83E-04	2.78E-07	7.32E-03	7.14E-03
PAH	5.21E-04	5.21E-04	6.40E-04	8.59E-04	8.59E-04	6.62E-05		3.47E-03	3.40E-03
toluene	3.08E-02	3.08E-02	9.71E-03	1.30E-02	1.30E-02	1.00E-03	1.55E-06	9.83E-02	9.73E-02
xylene	1.51E-02	1.51E-02	4.38E-03	5.88E-03	5.88E-03	4.53E-04		4.69E-02	4.64E-02
Total HAPS	0.24	0.24	2.91	3.90	3.90	0.22	8.58E-04	11.41	11.19

[1]The above formaldehyde emissions are based on the Division's estimate. Permitted formaldehyde emissions for each turbine are 0.2 tpy and permitted formaldehyde emissions for the Cat G3612 are 2.50 tpy. Based on permit limits, formaldehyde emissions are 9.5 tpy for the significant emission units.

insig activities are the emerg. gen (assuming 500 hrs/yr of operation) and the heaters (assuming 8760 hrs/yr of operation).
HAP emissions from blowdown events and storage tanks are not included in this analysis. Since total HAPs are well below the 20 tpy level and these sources are not sources of formaldehyde emissions (the highest single HAP), HAP emissions from these will not push the facility over the major source level.

Opacity Streamlining Grid

Reqmt Source	Normal	Start-up	Shutdown	Malfunction	Fire Building	Cleaning of Fire Boxes	Soot Blowing	Process Modifications	Adjustment/ Cleaning of Control Equipment
Reg 1 Sections II.A.1 & 4	20%	30% with one 6 minute interval in excess of 30% per hour	20%	20 %	30% with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour	30 % with one 6 minute interval in excess of 30% per hour	30% with one 6 minute interval in excess of 30% per hour
Reg 6, Part B, Section II.C.3 **- State Only**	20%	No standard[1]	No standard[1]	No standard[1]	**20%**	**20%**	**20%**	**20%**	**20%**

[1]Although the opacity standards are not applicable during start-up, shutdown and malfunction 40 CFR ' 60.7(c) (2) requires the source to report each period of excess emissions that occurs during startups, shutdowns, and malfunctions, the nature of the malfunction and the corrective action taken or preventative measures adopted. Note that for Reg 6, Part B requirements, the NSPS general provisions are adopted by reference and so any opacity exemption provided in the NSPS applies to source subject to Reg 6, Part B.

* Shaded regions are the most stringent **Federal** requirements

** Values in bold are the most stringent **State-only** requirements however **federal** requirements cannot be streamlined out of the permit due to more stringent **state-only** requirements

*** Cross-hatch regions indicate that the Division considers that the activity does not apply to emission units or that the activity will last less than 6 minutes.

T5 Monitoring for Engines with Control Devices

ver 10/28/04

Parameter	T5 Source (Periodic Monitoring)	T5 Source Syn minor for HAPS ($\leq$ 8/20 TPY)	T5 Source Syn minor for HAPS (> 8/20 TPY)	T5 Source Subject to CAM
Inlet temp	Monthly, keep inlet temp within mfgrs range	Monthly, keep temp within mfgrs range	Daily, keep temp within mfgrs range	Daily (small PSEU) Continuously (large PSEU), keep temp within mfgrs range
Outlet temp				
Δ T				
Δ P	Monthly	Monthly	Monthly	Monthly
Portable Monitoring	Quarterly CO and NO_X outlet emissions	Quarterly CO and NO_X outlet emissions	Quarterly CO and NO_X outlet emissions	Quarterly CO and NO_X outlet emissions
Inlet/outlet CO **for lean burn with cats only**			Semi-annual & compare to mfg % reduction range	Semi-annual & compare to mfg % reduction range **– only if CAM for HAPS**
AFR controller (mV value) **for NSCR only**	Monthly	Monthly	Monthly	Monthly
O_2 concentration in exhaust	During portable monitoring	During portable monitoring. When measuring inlet and outlet CO, measure inlet and outlet O_2	During portable monitoring. When measuring inlet and outlet CO, measure inlet and outlet O_2	During portable monitoring