TECHNICAL REVIEW DOCUMENT
For
RENEWAL of OPERATING PERMIT 95OPRB091

Colorado Interstate Gas Company – Greasewood Compressor Station
Rio Blanco County
Source ID 1030055

Prepared by Jacqueline Joyce
April and May 2003
Revised July 2003
Revised October 10, 2003 based on comments made by EPA during the 45-day review period

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 by the renewed operating permit proposed for this site. The original Operating Permit was issued February 1, 1999, and expires on February 1, 2004. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted February 26, 2003, comments on the draft permit and technical review document received via e-mail on June 27, 2003, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html.

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. Description of Source

This source is classified as a natural gas transmission facility defined under Standard Industrial Classification 4922. The equipment within the Greasewood

Compressor Station are named according to the services they provide for billing purposes and company reference. Two (2) internal combustion engines are used for "Parachute" compression services. One (1) turbine is used for "Greasewood" compression services. A third compressor engine is used to provide additional capacity out of the Piceance Basin for current customers. All other equipment on site serves both compression services.

Based on the information provided in the renewal application, no changes have been made to any of the significant emission units.

The source has not requested any changes to the insignificant activity list. However, it should be noted that revisions were made to Colorado Regulation No. 3, regarding condensate storage tanks and condensate truck loading equipment and those revisions took effect on December 30, 2002. Previously, under Regulation No. 3, certain size condensate storage tanks and condensate truck loading equipment meeting a specified throughput limit were exempt from APEN reporting and permitting requirements and were considered insignificant activities for Title V operating permit purposes. With the revisions to Colorado Regulation No. 3, only condensate storage tanks and condensate loading equipment at exploration and production (E & P) sites, meeting specified throughput limits are APEN exempt and insignificant activities. Currently there are no tanks specifically listed as "condensate" tanks or condensate truck loading equipment listed in the insignificant activity list in Appendix A. The source indicated in their comment on the draft permit that Tank T-1 contains mainly water and a little bit of condensate and that the tank contents are hauled off for disposal approximately every 3 years. Based on this information it seems unlikely that VOC emissions from the tank or from truck loading would exceed 2 tons/yr.

MACT Applicability

The technical review document for the original Title V operating permit indicates that HAP emissions are below major source levels. A Part 1 application (112(j) case-by-case MACT) was not submitted for this facility. Based on conservative published emission factors and the HAP emission factors identified in the proposed MACT for combustion turbines, the Division considers that this facility is still a minor source for HAPS.

Compliance Assurance Monitoring (CAM) Applicability

None of the significant emission units at this facility are equipped with control devices, therefore the CAM requirements do not apply to any emission units at this facility.

The source is located in rural Rio Blanco County about six miles north of Piceance Creek on County Road 76, or roughly 20 miles northwest of the town of

Rio Blanco, CO. The area in which the plant operates is designated as attainment for all criteria pollutants. The source is within 50 miles of Utah. Flat Tops National Wilderness Area, a Federal Class I designated area, is within 100 kilometers of the plant.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update the potential to emit (PTE) based on the addition of an additional compressor engine (May 11, 2001 modification to current permit) and revisions to the permitted emission limits for the turbine and to update actual emissions. Emissions (in tons per year) at the facility are as follows:

Pollutant	Potential to Emit	Actual Emissions
NO_X	124.6	108.3
CO	75.4	64.4
VOC	23.4	23.3

The PTE shown above is based on permit limitations. Actual emissions are based on the APENS submitted on April 1, 2001 (turbine), May 27, 1999 (waukesha engines) and February 25, 2001 (caterpillar engine). Note that for the turbine and the caterpillar engine, CIG has reported PTE as actual emissions.

III. Discussion of Modifications Made

Source Requested Modifications

No changes were requested with the renewal application.

In their comments on the draft renewal permit, received on June 27, 2003, the source requested that alternative operating scenarios for temporary and permanent turbine replacement be included in the renewal permit. These provisions (July 18, 2003 version) were included in Section I, Condition 2.

In their comments on the draft renewal permit, the source requested the permit shield for the provisions of 40 CFR Part 63 Subpart A §§ 63.50 thru 63.56 (112(j) provisions), 40 CFR Part 63 Subpart HH (oil and gas production MACT) and 40 CFR Part 63 Subpart HHH (natural gas transmission and storage MACT) as these requirements are not applicable because the Greasewood facility is a minor source for HAPS. The Division has included these requirements in the permit shield for non-applicable requirements based on the source's justification. In addition, the Division added language indicating that the provisions in Subpart HH do not apply, because the facility is not a natural gas production facility and that HHH does not apply because there is no glycol dehydrator at the facility.

Other Modifications

In addition to the modifications requested by the source, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

Page Following Cover Page

It should be noted that the monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

- Added language specifying that the semi-annual reports and compliance certifications are due in the Division's office and that postmarks cannot be used for purposes of determining the timely receipt of such reports/certifications.

Section I – General Activities and Summary

- Minor language changes were made to Condition 3.1 to more appropriately reflect the status of the source with respect to PSD.

- Based on comments made by EPA on another operating permit, the phrase "Based on the information provided by the applicant" was added to the beginning of Condition 4.1 (112(r)).

- Added a "new" Section 5 for compliance assurance monitoring (CAM).

Section II – Specific Permit Terms

S001 – Allison Turbine

- The portable monitoring language has been moved to Section II, Condition 4, so that the language does not have to be repeated numerous times. The portable monitoring language was updated to the current language, which requires that the portable monitoring conducted verify the emission factors in the permit.

- Revised the language in Condition 1.1 (for calculating emissions) based on changes to the portable monitoring language.

- In their comments on the draft permit, the source requested that the CO emission factor be increased by 25% to 0.075 lbs/mmBtu. The Division increased the CO emission limit to 12 tons/yr in order to accommodate the new emission factor. The source submitted a letter and APEN requesting an increase in the CO emission limit to 12 tons/yr on August 21, 2003.

- Added language to Condition 1.1 indicating the source of the emission factors.

- Added the following phrase after the construction permit citation in Conditions 1.1 and 1.2 to indicate that the underlying construction permit was revised directly in the operating permit. The underlying construction permit was revised with the initial Title V operating permit issuance to remove short term emission and fuel consumption limits.

- The Division's short term emission limit policy was in effect prior to issuance of the current operating permit for this facility. Therefore, the Division removed the lbs/hr emission limits and the hourly fuel consumption limits. However, the permit includes short term emission limits for NO_X and CO, in units of ppm. The technical review document for the original operating permit indicates that the NO_X ppm limit included in the operating permit is the NO_X ppm limit that was set by the construction permit. The NSPS GG NO_X limit was streamlined out of the permit in favor of the more stringent construction permit NO_X limit. Since the Greasewood facility is not a major stationary source, the CO and NO_X concentration limits are not BACT limits, therefore, the Division reviewed the files to determine the basis for these limits. The initial approval construction permit (91RB570) for the turbine was issued on January 24, 1992. The permit included the NSPS GG NO_X limit but also included a note indicating that "as stated in the application, NO_X emissions shall not exceed 19.2 lbs/hr….which corresponds to NO_X concentration of 91.8 ppmv at 15% O_2". A subsequent review of the preliminary analysis indicates that the 91.8 ppmv was calculated from the lbs/hr NO_X emission rate and the lbs/hr NO_X emission rate is the estimated hourly emissions based on the emission factor (2.63 g/hp-hr) and the maximum horsepower (3304 hp). In the final approval construction permit (issued September 13, 1994), the Division converted the NO_X ppm limit to ISO conditions and included a ppm limit for CO, which presumably is based on the 2.2 lbs/hr limit for CO. The final approval permit indicated that the emission limits for NO_X and CO were a tons/yr limit <u>and</u> the ppm <u>or</u> lbs/hr limit. In subsequent revisions to the construction permit, the format was revised such that the permit no longer indicated that there was either a lbs/hr <u>or</u> a ppm emissions limit. Based on the file review, since the NO_X and CO ppm limits were derived from the lbs/hr limit they should not have been included in the operating permit under the Division's short term emission limit policy. Therefore, the NO_X and CO ppm limits have been removed in the draft renewal permit. Since there is no longer a construction permit

NO_X concentration limit, the NSPS GG NO_X limit has been put back into the draft renewal permit. Note that the technical review document for the original operating permit incorrectly indicates that the NSPS GG NO_X limit is 136 ppm, it is actually 162 ppm.

- In the original Title V permit, the Division required that performance testing be conducted on the turbine twice per permit term to monitor compliance with the NSPS GG NO_X limit. Based on the results of the initial performance test (conducted in 1994) and the two tests required by the Title V permit, the average test results (average of results for all 4 loads tested) range from 50 – 58% of the NSPS GG limit and the highest NO_X concentration from each test (in all cases this was the high load run) ranged from 59 – 65% of the NSPS GG limit. Therefore, in the renewal permit, the Division will only require one performance test (in the 3rd year) to monitor compliance with the NSPS GG NO_X limit.

  In addition, EPA has proposed revisions to NSPS GG (published in the April 14, 2003 Federal Register). The revisions were proposed as a direct final rule and if no adverse comments are received by May 14, 2003, the revisions would take effect on May 29, 2003. In these revisions, EPA intended to include many alternative monitoring options that have already been approved on a case-by-case basis. The revisions to NSPS GG include changes to the performance test requirements (i.e. additional test methods have been approved and more specific information on the testing at additional loads). Adverse comments were received and the direct final rule was withdrawn in the Federal Register on May 28, 2003. EPA did however indicate that they would take action on the proposed rule and any final rule would be issued without further public comment. Therefore, the Division revised the language in the permit to indicate the performance test shall be conducted in accordance with the provisions in 40 CFR Part 60 Subpart GG § 60.335. By referencing the testing provisions in Subpart GG, the permit will not restrict CIG from taking advantage of any future revisions of the Subpart GG testing procedures.

- Revised the language in Condition 1.2 to more appropriately address the NSPS GG and Reg 1 SO_2 limits.

- The language in the current permit does not require any fuel sampling to monitor compliance with either the Reg 1 or NSPS GG SO_2 requirements, since natural gas is used as fuel. For purposes of monitoring compliance with the NSPS GG SO_2 requirements the Division has included language in the permit indicating that the natural gas used as fuel shall meet the definition of pipeline quality natural gas and that the source shall use the methods in 40 CFR Part 75, Appendix D, Section 2.3.1.4 to demonstrate that the fuel burned is pipeline quality natural gas.

The proposed revisions to NSPS GG (as discussed above) specified that no fuel sampling would required for sources that use natural gas as fuel and the revisions included a definition of natural gas and methods to demonstrate that the fuel gas meets the definition of natural gas. Although these rules have been withdrawn, EPA has previously indicated in an August 14, 1987 memo that the fuel sampling requirements to determine the nitrogen content for pipeline quality natural gas can be waived. In addition, for other turbines burning pipeline quality natural gas (in accordance with the definition in 40 CFR Part 72), EPA has approved the use of the "Optional Sulfur Dioxide Emissions Data Protocol for Gas-Fired and Oil-Fired Units" of Appendix D of 40 CFR Part 75 as a custom fuel monitoring schedule for SO_2 (March 13, 2000 letter from John Hepola to Daniel Ewan, re "Approval of Alternative Monitoring for NSPS Subpart GG Pine Bluff Energy, LLC – Pine Bluff Energy Center Pine Bluff, Arkansas Operating Air Permit # 1822-AOP-R0", Control Number 0000015, from EPA Region 6). It should be noted that EPA had included test methods from 40 CFR Part 75 Appendix D in their proposed revisions.

- Revised the language in Condition 1.3.

- Added language to Condition 1.4 to indicate that fuel use is determined using the turbine's fuel meter. The source has indicated that the turbine and engines each have their own fuel meter.

- Under "monitoring method" in the Table for Condition 1.6, replaced "EPA Methods" with "ASTM Methods or In-Line Gas Chromatograph".

- In addition, the language for determining the heat content of the fuel (Condition 1.6) will be revised. The current permit specifies a specific ASTM method and requires that the lowest gross heating value be used. Other CIG permits allow the lower heating value to be used. Therefore, to be consistent with other CIG permits the Division will change the permit to allow the lower heating value to be used. In addition, the permit will not specify the specific ASTM method, but will say that the appropriate ASTM method be used or the in-line gas chromatograph. The procedures for calculating the lower heating value of the fuel are identified in ASTM 3588. The revisions to the language allow the source to determine the heating value of the fuel by in-line gas chromatograph, calculation or any other method for which an ASTM standard has been published.

- The language specifying the 20% opacity requirement (Condition 1.7) was rewritten to more closely resemble the language in Regulation No. 1.

- Under "monitoring" in the Table for Condition 1.7, placed "fuel restriction" under the "monitoring method" and "whenever natural gas is used as fuel" under "monitoring interval".

- Added the Reg 1 30% opacity requirement. The 30% opacity requirement is applicable under certain operating activities. 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, this turbine does not have a control device, so adjustment or occasional cleaning of control devices do not apply to this turbine. Process modifications may apply to the turbine, 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 the unit.

- At the request of the source, the Division added a note to the opacity conditions (Condition 1.7 and "new" Condition 1.8) specifying that natural gas is the only fuel used in this turbine.

The original Title V operating permit did not indicate that the turbine was subject to the requirements in Colorado Regulation No. 6, Part B, Section II, "Standards of Performance for New Fuel-Burning Equipment", which includes the following limitations:

- particulate matter emissions not to exceed $0.5(FI)^{-0.26}$ (Reg 6, Part B, Section II.B.2)

- 20% opacity (Reg 6, Part B, Section II.3)

- SO_2 emissions not to exceed 0.8 lbs/MMBtu (Reg 6, part B, Section II.B.3.a)

Since the Reg 1 particulate matter and SO_2 emission limitations are the same as the Reg 6, Part B emission limitations, the Reg 6, Part B requirements will be streamlined out of the permit in favor of the Reg 1 requirements.

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 requirements are not applicable during periods of startup, shutdown and malfunction. The Reg 1 20%/30% requirements are more stringent than the Reg 6 Part B opacity requirements during periods of startup, shutdown and malfunction (see attached opacity grid). 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 the Reg 6 Part B requirements have been streamlined out of the permit.

S002 and S003 – Waukesha Engines

- The portable monitoring language has been moved to Section II, Condition 4, so that the language does not have to be repeated numerous times. The portable monitoring language was updated to the current language, which requires that the portable monitoring conducted verify the emission factors in the permit.

- Revised the language in Condition 2.1 (for calculating emissions) based on changes to the portable monitoring language.

- Added language to Condition 2.1 indicating the source of the emission factors.

- Added the following phrase after the construction permit citation in Conditions 2.1 and 2.2 to indicate that the underlying construction permit was revised directly in the operating permit. The underlying construction permit was revised with the initial Title V operating permit issuance to remove short term emission and fuel consumption limits.

- Added language to Condition 2.2 to indicate that fuel use is determined using the engines' fuel meters. The source has indicated that the turbine and engines each have their own fuel meter.

- Under "monitoring method" in the Table for Condition 2.3, replaced "EPA Methods" with "ASTM Methods or In-Line Gas Chromatograph".

- In addition, the language for determining the heat content of the fuel (Condition 2.3) will be revised. The current permit specifies a specific ASTM method and requires that the lowest gross heating value be used. Other CIG permits allow the lower heating value to be used. Therefore, to be consistent with other CIG permits the Division will change the permit to allow the lower heating value to be used. In addition, the permit will not specify the specific ASTM method, but will say that the appropriate ASTM method be used or the in-line gas chromatograph. The procedures for calculating the lower heating value of the fuel are identified in ASTM 3588. The revisions to the language allow the source to determine the heating value of the fuel by in-line gas chromatograph, calculation or any other method for which an ASTM standard has been published.

- The language specifying the 20% opacity requirement (Condition 2.4) was rewritten to more closely resemble the language in Regulation No. 1. At

the request of the source, the Division added a note to this condition specifying that natural gas is the only fuel used in these engines.

- Under “monitoring” in the Table for Condition 2.4, placed “fuel restriction” under the “monitoring method” and “whenever natural gas is used as fuel” under “monitoring interval”.

Note that no condition is included for the 30% opacity standard, which is applicable during certain operating activities. 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 internal combustion engines. In addition, this engine does not have a control device, so adjustment or occasional cleaning of control devices do not apply to this engine. Process modifications and startup may apply to engines, 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 not been included in the operating permit.

S005 - Caterpillar Engine

- The portable monitoring language has been moved to Section II, Condition 4, so that the language does not have to be repeated numerous times. The portable monitoring language was updated to the current language, which requires that the portable monitoring conducted verify the emission factors in the permit.

- Revised the language in Condition 3.1 (for calculating emissions) based on changes to the portable monitoring language.

- Added language to Condition 3.1 indicating the source of the emission factors.

- Added language to Condition 3.2 to indicate that fuel use is determined using the engine’s fuel meter. The source has indicated that the turbine and engines each have their own fuel meter.

- Under “monitoring method” in the Table for Condition 3.3, replaced “EPA Methods” with “ASTM Methods or In-Line Gas Chromatograph”.

- In addition, the language for determining the heat content of the fuel (Condition 3.3) will be revised. The current permit specifies an ASTM method and requires that the lowest gross heating value be used. Other CIG permits allow the lower heating value to be used. Therefore, the Division will change the permit to allow the lower heating value to be used.

In addition, the permit will not specify the specific ASTM method, but will say that the appropriate ASTM method be used or the in-line gas chromatograph. The procedures for calculating the lower heating value of the fuel are identified in ASTM 3588. The revisions to the language allow the source to determine the heating value of the fuel by in-line gas chromatograph, calculation or any other method for which an ASTM standard has been published.

- Removed Conditions 3.4, 3.5 and 3.6 since the engine started up more than 180 days prior to the issuance of the renewal permit, therefore, these conditions no longer apply.

- The language specifying the 20% opacity requirement (Condition 3.7) was rewritten to more closely resemble the language in Regulation No. 1. At the request of the source, the Division added a note to this condition specifying that natural gas is the only fuel used in this engine.

- Under "monitoring" in the Table for Condition 3.7, placed "fuel restriction" under the "monitoring method" and "whenever natural gas is used as fuel" under "monitoring interval".

Note that no condition is included for the 30% opacity standard, which is applicable during certain operating activities. 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 judgement the Division considers that building a new fire, cleaning of fire boxes and soot-blowing does not apply to the operation of internal combustion engines. In addition, this engine does not have a control device, so adjustment or occasional cleaning of control devices do not apply to this engine. Process modifications and startup may apply to engines, however, based on engineering judgement, the Division believes that such activities would be unlikely to occur for longer than six minutes. Therefore, the 30% opacity requirement has not been included in the operating permit.

<u>Section III – Permit Shield</u>

- The citation in the permit shield was corrected. The reference to Part A, Section I.B.43 was changed to Part A, Section I.B.44 and the reference to Part C, Section XIII was changed to Part C, Section XIII.B.

- Based on comments made by EPA on another permit, the phrase "based on the information available to the Division and provided by the applicant" to the beginning of the justification for the shield for the PSD requirements.

- Based on comments made by EPA on another permit, the phrase regarding reconstruction or modification under the shield for NSPS K, Ka,

and Kb was removed. It is EPA's opinion that the Division may not have all of the information available to determine whether a reconstruction or modification has occurred and as a result the justification should not address modifications or reconstructions.

- Revised the permit shield for the Reg 1, Section III particulate matter requirements as non-applicable. The turbine is subject to the Reg 1, Section III particulate matter requirements so it is excluded from the shield. In addition, revised the citation to reflect that the shield applies to particulate matter requirements for fuel burning equipment as the justification is based on equipment not being defined as fuel burning equipment.

- Added the Reg. 6, Part B, Section II particulate matter, opacity and sulfur dioxide requirements to the table for streamlined conditions.

Section IV – General Conditions

- Revisions were made to the Common Provisions Regulation (general condition 3), effective September 30, 2002. The appropriate revisions were made to the language in the permit.

- The citation in General Condition 16 (open burning) was revised. The open burning requirements are no longer in Reg 1 but are in new Reg 9. In addition, changed the reference in the text from "Reg 1" to "Reg 9".

Appendices

- Based on comments from the source, the list of required safety equipment in Appendix A was updated.

- Corrected Table in Appendix B, Part I (changed "IN" and "OUT" under "deviations noted" to "YES" and "NO")

- Added the following acronyms to Appendix E: PPM (parts per million), PPMV (parts per million, by volume) and PPMVD (parts per million, by volume, dry)