TECHNICAL REVIEW DOCUMENT
for
RENEWAL of OPERATING PERMIT 98OPAL203

Public Service Company, Alamosa Combustion Turbines
Alamosa County
Source ID 0030007

Prepared by Jacqueline Joyce
September 2003
Revised October 14 and November 24, 2003
Revised February 24, 2004 to address comments made by EPA during EPA's 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 April 1, 1999, and expires on April 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 November 15, 2002, comments on the draft permit received November 19, 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 facility is classified as an electric services facility under the Standard Industrial Classification 4911. This facility is an unmanned electric power generating station that consists of 2 simple cycle combustion turbines that can

each generate up to 20 MW of power. Typically this facility is used to service peak or emergency electrical load demands. The turbines are capable of burning natural gas, Nos. 1 and/or 2 fuel oil or combination. Based on the information available to the Division and provided by the applicant, it appears that no modifications to these significant emission units has occurred since the original issuance of the operating permit.

Note that neither turbine is equipped with a control device and therefore the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

The facility is located at 8073 Road 8 South, near the town of Alamosa in Alamosa County. This facility is located in an area that has been designated as attainment for all criteria pollutants. The Great Sand Dunes National Monument and the La Garita, Weminuche, and Wheeler Peak National Wilderness Areas, all federal class I designated areas, are within 100 km of this facility.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update actual emissions and to more appropriately identify the potential to emit (PTE). The PTE in the original TRD was based on emission factors and 8,760 hours per year of operation at the maximum design rate and did not take into account any regulatory emission limits, such as the Reg 1 PM and SO_2 emission limitations. In addition, since there has been a change in emission factors, for those pollutants whose PTE is based on emission factors, the PTE has been adjusted to reflect the updated emission factors. Emissions (in tons per year) at the facility are as follows:

Pollutant	Potential to Emit – 100% Natural Gas	Potential to Emit – 100% Nos. 1 and/or 2 Fuel Oil	Actual Emissions – Combination[4]
PM[1]	172.5	172.5	8.1
PM_{10}[2]	172.5	172.5	8.1
SO_2[3]	2,449.2	2,449.2	10.1
NO_X	653.2	1,796.2	86
CO	167.4	6.8	19.4
VOC	4.3	0.84	4.3
Formaldehyde[5]	1.4 [8.6]	0.6 [N/A]	
HAPS[5]	1.7 [14]	2.3 [2.5]	0.1

[1]PTE, for S002, when burning any fuel, is based on the PM limit (0.12 lbs/mmBtu) x design heat rate x 8760 hrs/yr. For S001, PTE is the permit limit of 50 tons/yr.
[2]For PTE, PM_{10} is assumed to equal PM.
[3]PTE, for both turbines when burning any fuel, is based on the SO_2 limit (1.2 lbs/mmBtu) x design heat rate x 8760 hrs/yr.

[4]Actual emissions identified in the table are based on natural gas consumption only, although the turbines may burn either natural gas, Nos. 1 and/or 2 fuel oil, or combination. In addition, note that actual emissions are based on the old AP-42 emission factors and so for VOC, actual emissions appear to equal PTE. The old AP-42 emission factor for VOC, when burning natural gas was more conservative than the current AP-42 emission factor.
[5]Values are based on AP-42 emission factors. The values in brackets are based on the emission factors in an August 22, 2003 letter from Melanie Taylor, Alpha-Gamma Technologies, Inc to Sims Roy, EPA OAWPS ESD Combustion Group, re "Revised HAP Emission Factors for Stationary Combustion Turbines".

Potential to emit for the turbines is based on the information identified in the table and the maximum hourly fuel consumption rate, AP-42 emission factors and 8760 hrs/yr of operation. Actual emissions are based on the Division's 2001 inventory.

Under the federal Clean Air Act (the Act), EPA is charged with promulgating maximum achievable control technology (MACT) standards for major sources of hazardous air pollutants (HAPs) in various source categories by certain dates. Section 112(j) of the Act requires that permitting authorities develop a case-by-case MACT for any major sources of HAPs in source categories for which EPA failed to promulgate a MACT standard by May 15, 2002. These provisions are commonly referred to as the "MACT hammer".

Owner or operators that could reasonably determine that they are a major source of HAPs which includes one or more stationary sources included in the source category or subcategory for which the EPA failed to promulgate a MACT standard by the section 112(j) deadline were required to submit a Part 1 application to revise this operating permit by May 15, 2002. The source submitted a notification prior to May 15, 2002 indicating that the Alamosa facility was not a major source for HAPS.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications identified in the renewal application were addressed as follows:

Page following cover page

The Responsible Official and Permit Contact were changed as requested.

Section II, Conditions 1.1 and 2.1 – Emission Factors

The source requested that the revised AP-42 emission factors be included in the permit. The Division agrees that the revised AP-42 emission factors should be included in the permit and therefore the following emission factors will be included in the permit.

Emission factors are from AP-42, Section 3.1 (April 2000), Tables 3.1-1 (for uncontrolled turbines) and 3.1-2a. The following emission factors will be included in the permit:

Pollutant	Natural Gas – Emission Factor (lbs/mmBtu)	Distillate Oil - Emission Factor (lbs/mmBtu)
PM	1.9×10^{-3}	4.3×10^{-3}
PM_{10}	1.9×10^{-3}	4.3×10^{-3}
SO_2[1, 2]	3.4×10^{-3}	1.01S[1]
NO_X	0.32	0.88
CO	0.082	3.3×10^{-3}
VOC	2.1×10^{-3}	4.1×10^{-4}

[1] The emission factor for natural gas in the table 3.1-2a is 0.94S, but footnote h indicates that if "S" is not available, for natural gas, then an emission factor of 3.4×10^{-3} may be used. The Division is including the lbs/mmBtu emission factor in the permit.
[2] S = weight percent sulfur in fuel

Section II, Condition 2.7 – 30% Opacity requirement

The source requested that the 30% opacity requirement be removed from the permit for the same reasons that the condition was removed from the source's Ft. Lupton renewal permit. The Division agrees that the 30% opacity requirement can be removed from the permit for the same reason provided in the renewal permit for Ft. Lupton. The justification is as follows:

The 30% opacity requirement in Reg 1, Section II.A.4, applies under the following specific operating activities: 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 are activities that do not apply to the operation of a simple cycle combustion turbine. In addition, the turbines are not equipped with control devices, so adjustment or occasional cleaning of control equipment are also activities that do not apply to these units. Process modifications may apply to these turbines, however, based on engineering judgment, the Division believes that such activities would be unlikely to occur for longer than six minutes. Startup is an activity that applies to these turbines, however the source has indicated that startup for these turbines is quick and lasts less than twelve (12) minutes. Under the Reg 1 30% opacity standard, one 6 minute interval in each hour while one of the specific activities is occurring, is not subject to an opacity limitation. For the remainder of the hour, the opacity emissions are limited to 30%, however, the 30% opacity standard is based on a six minute average. Therefore, for an emission unit that takes less than twelve (12) minutes to start up, the 30% opacity standard is not applicable. Therefore, the 30% opacity requirement has not been included in the operating permit.

Appendix A – Insignificant Activities

The source requested that the insignificant activity list be modification to reference the applicable exemptions in Reg 3, Part C. These changes will be made as requested.

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.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments, to the Alamosa Combustion Turbines Operating Permit with the source's requested modifications. These changes are as follows:

Page following Cover Page

Clarified dates for monitoring and compliance periods, i.e. changed "April - September" to "April 1 - September 30".

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 the 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).

The citation (above "issued to" and "plant site location") on the page following the cover page provides the incorrect title for the state act. The title will be changed from "Colorado Air Quality Control Act" to "Colorado Air Pollution Prevention and Control Act". In addition, the dates were removed from the citation.

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

Condition 1.1 was revised to indicate that La Garita, Weminuche and Wheeler Peak National Wilderness areas, are also federal class I areas within 100 km of this facility.

Conditions 13 and 17 in Condition 1.4 were renumbered to 14 and 18 and Condition 21 in Condition 1.5 was renumbered to 22. The renumbering changes were necessary due to the addition of the Common Provisions requirements in the General Conditions of the permit.

In addition, based on comments made by EPA during their 45-day review period, Condition 1.4 was revised to add General Condition 3.g (Common Provisions, Affirmative Defense) as a state-only condition.

Revised Condition 1.5 to include the information in Condition 1.6 (location of records) and then removed Condition 1.6. This is more consistent with the way other PSCo permits are written.

Revised the language in Condition 3.1 to more appropriately address the PSD status of the source. In addition, based on comments made by EPA on another permit the following sentence was removed “Modifications up to this point in time have not triggered significance levels which would bring about PSD review.”

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.

Added a “new” Section 5 for compliance assurance monitoring (CAM), note that no emission units are subject to CAM.

Section II - Specific Permit Terms

Section II.1: Turbines Burning Natural Gas

Minor language changes were made to the table.

The equation in Condition 1.1 was revised to calculate emissions in “tons/month” rather than “lb/month”. In addition, the Division removed the language specifying that the heat value of the fuel be presumed to be 1050 Btu/SCF. The source requested in their comments on the draft permit that for the fuel heating value, they be allowed to use the annual average for the PSCo Southern Btu zone. This is consistent with the requirements in the other permits issued to PSCo. In addition, the Division presumes that the source will also wish to base emissions on the lower heating value of the gas. The AP-42 emission factors are based on the higher heating value of the fuel, therefore, the AP-42 emission factors were

adjusted as follows:

$$\text{EF lbs/mmBtu - LHV} = \frac{\text{EF lbs/mmBtu - HHV} \times \text{Btu gas, HHV}}{\text{Btu gas, LHV}}$$

Note that a value of 966.5 Btu/SCF was used for the higher heating value and 870.4 Btu/SCF for the lower heating value. These values were provided by Xcel in their comments on the draft permit received November 19, 2003.

Minor language changes were made in Condition 1.2. In addition, as discussed above, the Division removed the language about using a heat content of 1050 Btu/SCF.

Language was added to Condition 1.3 indicating how the numerical PM values were calculated.

The word “credible” was added before “evidence” in the monitoring language in Conditions 1.3, 1.4 and 1.6.

Minor language changes were made to Condition 1.5.

The opacity standard (Condition 1.6) was rewritten to more closely resemble the language in Regulation No. 1.

Section II.2: Turbines Burning Nos. 1 and/or 2 Fuel Oil

Minor language changes were made to the table.

The equation in Condition 2.1 was revised to calculate emissions in “tons/month” rather than “lb/month”. In addition, the Division removed the language specifying that the heat value of the fuel be presumed to be 140,000 Btu/gal. For periodic monitoring, the Division requires that the fuel oil be sampled annually to determine the heat content for use in emission calculations. This is consistent with the requirements in the permit for the Ft. Lupton Combustion Turbines.

Minor language changes were made in Condition 2.2. In addition, as discussed above, the Division removed the language about using a heat content of 140,000 Btu/gal.

Language was added to Condition 2.3 indicating how the numerical PM values were calculated.

The word “credible” was added before “evidence” in the monitoring language in Conditions 2.3.

The monitoring language in Condition 2.4 does not really indicate how compliance is monitored and the guaranteed sulfur content. However, based on calculation, using the AP-42 emission factor, compliance with the sulfur dioxide

standard is guaranteed if the sulfur content of the fuel is no higher than 1.19 % by weight. Typically distillate fuel oil (Nos. 1 and 2 fuel oil), generally does not have a sulfur content above 0.5 % by weight Therefore, the monitoring language in this condition has been revised to state that "In the absence of credible evidence to the contrary compliance with the sulfur dioxide standard is presumed whenever No. 1 or No. 2 distillate oil is used as fuel for these turbines."

Minor language changes were made to Condition 2.5.

The opacity standard (Condition 2.6) was rewritten to more closely resemble the language in Regulation No. 1. In addition, the frequency of conducting method 9 readings was changed to annual, since the language in the current permit was somewhat confusing.

Added a separate condition (Condition 2.7) for determining the heat content of the fuel oil. The source will be required to sample and analyze the fuel oil for heat content, annually, using ASTM methods, or equivalent if approved by the Division in advance.

Section III – Permit Shield

The citation for the permit shield is incorrect. The reference to Part A, Section I.B.43 should be Part A, Section I.B.44 and the reference to Part C, Section XIII should be Part C, Section XIII.B.

The title for Section 1 was changed from "Specific Conditions" to "Specific Non-Applicable Requirements" and a new section 3 was added for subsumed (streamlined) conditions. Note that there were no streamlined conditions.

Based on comments made by EPA on another permit, the following statements were added after the introductory sentence in Section 1 "This shield does not protect the source from any violations that occurred prior to or at the time of permit issuance. In addition, this shield does not protect the source from any violations that occur as a result of any modification or reconstruction on which construction commenced prior to permit issuance".

Based on comments made by EPA on another permit, the following phrase was added to the beginning of the introductory sentence "Based upon the information available to the Division and supplied by the applicant".

In comments received on another operating permit, EPA indicated that the Division could not grant the shield for PSD review or NSPS requirements unless the site or affected facility was an existing source prior to the applicability date, since we may not have all of the information available to determine whether there has been a modification that may have triggered either PSD review or NSPS requirements. Therefore, the language in the justification (Section 1 - table) regarding modifications for the PSD and NSPS GG shield were removed. The shield for the PSD and NSPS requirements as non-applicable is based on the

construction date of the facility.

Section IV - General Conditions

Added an “and” between the Reg 3 and C.R.S. citations in General Condition 3 (compliance requirements).

Added language from the Common Provisions (new condition 3). With this change the reference to “21.d” in Condition 20 (prompt deviation reporting) will be changed to “22.d”, since the general conditions are renumbered with the addition of the Common Provisions. Note that based on EPA’s comments during their 45-day review period, added language indicating that affirmative defense provisions are state-only until approved by EPA.

The citation in General Condition 7 (fees) was changed to cite the Colorado Revised Statue. In addition, any specific identification of a fee (i.e. $100 APEN fee) or citation of Reg 3 was removed and replaced with the language “…in accordance with the provisions of C.R.S. [appropriate citation].”

The citation in General Condition 13 (odor) was corrected. In addition, the phrase “Part A” was added to the citation for Condition 13 (odor). Colorado Regulation No. 2 was revised and a Part B was added to address swine operations. Colorado Regulation No. 2, Part B should not be included as a general condition in the operating 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”.

The reference in Condition 28 (volatile organic compounds) to Regulation No. 7, Section III.C.3 was corrected to Regulation No. 7, Section VIII.C.3.

Added the requirements in Colorado Regulation No. 7, Section V.B (disposal of volatile organic compounds) to General Condition 28.

Appendices

First Page of Appendices – The phrase “except as otherwise provided in the permit” was added after the word “enforceable” in the disclaimer at the request of EPA.

The table in Condition 5.1 and the Technical review document for the original permit issuance indicated that the turbines were rated at 233 mmBtu/hr. However, the table in Appendix B indicated that the maximum site rating of S001 was 237 mmBtu/hr and that the maximum site rating of S002 was 212 mmBtu/hr. The Division assumes that the table in Appendix B is an error and the table was revised to indicate that both units are rated at 233 mmBtu/hr.

Appendix B and C were replaced with revised Appendices.

The EPA addresses in Appendix D were corrected.