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# Response to Comments

&

# Final Determination

*concerning*

# TransGas Development Systems, LLC

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**Permit Application No. R13-2791**  
**Facility ID No. 059-00102**

**Date: February 25, 2009**

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## **BACKGROUND INFORMATION**

On October 27, 2009, pursuant to §45-13-8, the West Virginia Division of Air Quality (DAQ) provided notice to the public of a preliminary determination to issue Permit Number R13-2791 to TransGas Development Systems, LLC (TransGas) for the construction of a coal-to-liquids (CTL) plant proposed to be located near Wharncliffe, Mingo County, WV. At that time, the draft permit and Engineering Evaluation/Fact Sheet were made available to the public for review. The permit application had previously been available for public review and remained so during the public comment period.

The public notice was followed by a public comment period (required to be a minimum of 30 days under §45-13-8) originally scheduled to end at 5:00 P.M. on November 30, 2009. The public comment period was, however, by order of the DAQ Director, extended to 5:00 P.M. on December 18, 2009. During the public comment period, the DAQ accepted comments on our preliminary determination to issue permit R13-2791 to TransGas and on all documents related thereto. To provide information on the permitting action and to facilitate the submission of comments, the DAQ held, on December 17, 2009, and pursuant to §45-13-9, a public meeting concerning R13-2791.

## **OVERVIEW OF COMMENTS RECEIVED**

The DAQ received written comments from approximately 471 individuals and organizations (this number includes some duplicate submissions) during the public comment period. An additional 37 oral comments were made during the public meeting. Most comments were general in nature (and non-technical) either in support of issuance of the permit or against it. However, technical questions/comments were also submitted, including a large number in a package submitted by the Sierra Club Environmental Law Program (on behalf of the Sierra Club, Appalachian Center for the Economy and the Environment (ACEE), Ohio Valley Environmental Coalition (OVEC), Coal River Mountain Watch, and West Virginia Highlands Conservancy). Additional substantive technical questions/comments were submitted by Vincent Trivelli on behalf of the Affiliated Construction Trades Foundation, Ms. Stephanie Tyree, Mr. Jim and Ms. Virginia Wagner, and Mr. Matt Noerpel. TransGas submitted several comments on the engineering evaluation and draft permit. Pursuant to §45-13-8.8, all submitted comments received during the public comment period have been reviewed and are appropriately addressed in this document.

## **ORGANIZATION OF COMMENT RESPONSE**

The DAQ's response to the submitted comments will include both a general and specific response section. The general response will define issues over which the DAQ has authority and by contrast, identify those issues that are beyond the purview of the DAQ. The general response will also describe the statutory basis for the issuance/denial of a permit, discuss the role of the pre-construction permitting process in the larger divisional goal maintaining air quality in WV, and detail the current status of the ambient air quality of Mingo County.

The specific response will summarize each relevant non-general comment that falls within the purview of the DAQ and provide a response to it. Due to the size and number of the comments, this document will not reproduce all the comments here (they are available for review in the R13-2791 file). Instead, each comment will be summarized and key points will be listed. The DAQ makes no claim that the summaries are complete; they are provided only to place the responses in a proper context. For a complete understanding of submitted comments, please see the original documents in the file. The DAQ responses, however, are directed to the entire comments and not just to what is summarized. Comments that are not directly identified and responded to in the specific response section of this document are assumed to be answered under the general response section (or not relevant to the TransGas application or an air quality-related issue).

## **GENERAL RESPONSE TO COMMENTS**

### ***Statutory Authority of the DAQ***

The statutory authority of the of the DAQ is given under the Air Pollution Control Act (APCA) - West Virginia Code §22-5-1, *et. seq.* - which states, under §22-5-1 (“Declaration of policy and purpose”), that:

It is hereby declared the public policy of this state and the purpose of this article to achieve and maintain such levels of air quality as will [underlining and emphasis added] protect human health and safety, and to the greatest degree practicable, prevent injury to plant and animal life and property, foster the comfort and convenience of the people, promote the economic and social development of this state and facilitate the enjoyment of the natural attractions of this state.

Therefore, while the code states that the intent of the rule includes the criteria outlined in the latter part of the above sentence, it is clear by the underlined and bolded section of the above sentence that the scope of the delegated authority does not extend beyond the impact of air quality on these criteria. Based on the language under §22-5-1, *et. seq.*, the DAQ, in making determinations on issuance or denial of permits under 45CSR13, does not take into consideration substantive non-air quality issues such as job creation, economic viability of proposed product, energy independence, nuisance potential (noise, sight line obstruction, traffic), non-air quality environmental impacts, grant eligibility, *etc.* Beyond the DAQ’s position that the code does not grant us the authority to take into consideration such issues, it is also self-evident that these issues are beyond the expertise of the Division of Air Quality and that most are regulated by other Bodies with the mandates and expertise to do so.

### ***Statutory Basis for Permit Denial***

Pursuant to §22-5-4 (“Powers and duties of director; and legal services; rules”), the DAQ is authorized to:

To promulgate legislative rules . . . providing for . . . [p]rocedures and requirements for permit applications, transfers and modifications and the review thereof;

This authorization is effected under WV Legislative Rule 45CSR13 - "Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation." Pursuant to §45-13-5.7, the DAQ shall issue a permit unless:

a determination is made that the proposed construction, modification, registration or relocation will violate applicable emission standards, will interfere with attainment or maintenance of an applicable ambient air quality standard, cause or contribute to a violation of an applicable air quality increment, or be inconsistent with the intent and purpose of this rule or W. Va. Code §22-5-1 et seq., in which case an order denying such construction, modification, relocation and operation shall be issued. The Secretary shall, to the extent possible, give priority to the issuance of any such permit so as to avoid undue delay and hardship.

It is clear under 45CSR13 that denial of a permit must be based on one of the above explicitly stated criteria or, as noted, is inconsistent with the intent of 45CSR13 or §22-5-1, *et. seq.* As is stated above, it is the DAQ's position that the intent of both of the APCA and 45CSR13 is to circumscribe the authority of the DAQ to air quality issues as outlined in the APCA and in West Virginia's State Implementation Plan (SIP).

The air quality issues evaluated relating to TransGas' application to construct a CTL plant are outlined in the DAQ's Engineering Evaluation/Fact Sheet made public on October 27, 2009. The issues covered under that document represent the extent of the substantive air quality issues over which the DAQ believes it has authority to evaluate under 45CSR13 and the APCA as relating to TransGas permit application R13-2791.

### ***DAQ Permitting Process in Context***

It is important to note here that the DAQ permitting process is but one part of a system that works to meet intent of the APCA in WV. The DAQ maintains a Compliance/Enforcement (C/E) Section, a Monitoring Section, a Planning Section, *etc.* to effect this. Most pertinent to the permitting process, the C/E Section regularly inspects permitted sources to determine the compliance status of the facility including compliance with all testing, monitoring, record-keeping, and reporting requirements. If the source is not in compliance, the DAQ has legal means to require the facility to cease operating until it is again demonstrated to be in compliance.

### ***Ambient Air Quality Status of Mingo County***

The quality of the air of a defined local area - in this case Mingo County, WV - is determined by its status with respect to the National Ambient Air Quality Standards (NAAQS). The Clean Air Act, which was last amended in 1990, requires the Environmental Protection Agency (EPA) to set NAAQS for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.

Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. They are listed at <http://www.epa.gov/air/criteria.html>.

Counties that are known to be violating these standards are, for specific pollutants, designated by the EPA as in "non-attainment" with the NAAQS. Counties that are not known to be violating these standards are, for specific pollutants, designated by the EPA as in "attainment" with the NAAQS. Mingo County is designated by EPA as in attainment with the NAAQS.

### ***General Response Conclusion***

In conclusion, in response to all commenters who referenced substantive non-air quality issues, the APCA and 45CSR13 does not grant the DAQ the authority to take into consideration such issues in determining to issue or deny the permit. Further, the requirements of 45CSR13 require the DAQ to, when denying a permit, explicitly state the reason pursuant to §45-13-5.7. Additionally, the permit is but the beginning of the involvement of the DAQ with a source. After issuance, the facility will receive regular inspections to determine compliance with the requirements as outlined in the applicable permit. Finally, with respect to the quality of the ambient air of Mingo County, the USEPA has designated the County as in attainment with the NAAQS.

## **SPECIFIC RESPONSES TO COMMENTS**

### ***Sierra Club Environmental Legal Program***

On December 18, 2009 the Sierra Club Environmental Legal Program (SCELP), on behalf of the Sierra Club, ACEE, OVEC, Coal River Mountain Watch, and the West Virginia Highland Conservancy, submitted the following comments concerning R13-2791. The comments are numbered here according to the designation in the SCELP document (I through III are introductory and general comments). For a full reading of the comments, please see the SCELP comment document located in the R13-2791 file.

#### **IV. The Draft Permit Is Not in the Public Interest**

SCELP commented that, using the authority under West Virginia Code §22-5-1, *et. seq.* and 45CSR13, the "Department has an obligation to consider the [sic] whether a coal-to-gasoline plant will serve the public interest overall. [The groups noted above] emphatically believe that it will not." SCELP provided several reasons for this conclusion: including the "societal costs of mining three million tons of coal per year," the lack of greenhouse gas (GHG) restrictions in the draft permit, and the poor future for high carbon-based transportation fuels (as it relates to the "economic wisdom of building this plant").

### *DAQ Response*

The DAQ does not believe it has the authority under §22-5-1, *et. seq.* and 45CSR13 to consider non-air quality related issues when determining to issue or deny a permit (please see discussion under GENERAL RESPONSE TO COMMENTS above). Therefore, consideration of the societal costs of mining coal and the economic wisdom of building the proposed facility are not within the purview of the DAQ. With respect to GHGs, the DAQ notes that there are not currently any state or federal air quality standards or permitting requirements applicable to the TransGas facility. For a complete discussion of GHGs, please see our response to comment X below.

#### V. The Department Must Release Information that is “Indispensable or Essential to Determining Emissions” from the TransGas Facility for Public Review and Comment Prior to Issuing a Final Permit

SCELP commented that information claimed as Confidential Business Information (CBI) was “essential to verifying the plant’s minor source status” and was, pursuant to 45CSR31B, “indispensable or essential to determining emissions.” Information specified by SCELP as incorrectly claimed CBI was “the entire methanol-to-gasoline process flow diagram and supplemental process description as well as certain information necessary to determining emissions from the methanol synthesis process. . .” SCELP further commented that “[w]ithout the a process flow diagram for the MTG system that lays out its battery limits and process flows, and identifies fugitive components, it is not possible to evaluate the accuracy of the Draft Permit’s emission estimates.”

### *DAQ Response*

Section 6 of 45CSR31 states that “[n]o person shall claim as confidential, information concerning the types and amounts of air pollutants discharged.” “Types and amounts of air pollutants discharged” is defined under Section 2.4. Substantively relevant to the TransGas claims of CBI, within the definition, it generally states that “emissions data” (§45-31-2.4.a.1 and 2.4.a.2) may not be claimed CBI. Section 4 of 45CSR31B provides some clarification of what constitutes emissions data. Specifically, the section states that

Information or data that is indispensable or essential to determining emissions or location in accordance with subsection 2.3 will be considered emission data and thus non-confidential, unless there is a readily available non-confidential alternative for determining emissions or location. Where there is no readily available non-confidential alternative, the Secretary may approve non-confidential alternatives through the use of aggregation, categorization, surrogate parameters, emissions monitoring or sampling, or parametric monitoring; provided that such use is consistent with applicable rules and standards and results in a practically enforceable method of determining emissions.

The above section, if read unreasonably broad enough, could be used (the DAQ believes inappropriately) to conclude that no information in a permit application is eligible for classification as CBI. This conclusion would be based on an observation that every parameter associated with a

plant, to a level of unreasonable specificity, could possibly have some effect, however undetectably small, on the facility's emissions. Implementing the rule in this manner would effectively prohibit the classification of any data in the application as CBI and would self-evidently serve to circumvent the intent of the rule.

The DAQ believes, however, that 45CSR31 allows an applicant to make publically available emissions calculations in the application that attain a reasonable level of confidence that is appropriate in a pre-construction permitting program. This is understood within the context of the testing, monitoring, record-keeping, and reporting requirements in the draft permit that will allow the DAQ to enforce the emission limits after issuance of a permit.

The publically available Methanol and Methanol-to-Gasoline (MTG) Plant emissions calculations submitted by TransGas in Attachment N of the permit application (including the estimate fugitive emissions) is appropriate and does not, to a reasonable degree as discussed above, omit any information or data that is indispensable or essential to determining emissions. The DAQ does not believe the information noted by SCEL P is indispensable or essential to determining emissions from these sources.

However, even if the information claimed CBI was considered to be indispensable or essential to determining emissions, the DAQ believes that the publically available emissions calculations submitted under Attachment N would certainly qualify as a "readily available non-confidential alternative for determining emissions."

With respect to the TransGas application, the DAQ preliminarily determined that the information claimed CBI does not constitute "emissions data" in that it is not "indispensable or essential to determining emissions or location." The DAQ, pursuant to §45-31B-4.4, which states that the "the determination as to what information constitutes emission data will be made by the Secretary on a case-by-case basis upon application of the provisions stated in this rule," reaffirms this determination.

#### VI. The Application is Inconsistent and Incomplete

SCEL P provided comments asserting that "the application materials provided by TransGas are incomplete and riddled with inconsistencies" and stated that the "Department should have required TransGas to clarify its assumptions and calculations, and provide all the information requested on the application forms." Without this information, SCEL P commented that "it is impossible to verify the Applicant's claims about the plant's potential emissions or to include the needed limitations in the permit to enforce minor source emissions levels." Specific instances of the above:

- The application "failed to include a process and instrument diagram or an accurate inventory of fugitive components by process unit." In a footnote to this paragraph SCEL P notes that "[s]ince published factors for natural gas combustion are generally provided on the basis of one pound of pollutant per standard cubic foot of natural gas consumed, any one of the first four fields is necessary to determinate emissions associated with year-round combustion of natural gas to maintain a pilot flame on the flare."

- The application “fails to include information sufficient to determine whether the assumptions the Applicant makes about equipment performance are valid” and that as manufacturers have not yet been selected for certain equipment, the use of emission estimates based upon “vender’s guarantee” for these emissions are invalid.
- “[T]he documents provided by the Applicant contain numerous inconsistencies, making it unnecessarily difficult to review the provided information.” SCEL P cited a specific example of this: “the summary table provided in Attachment N is inconsistent with the Attachments 1 through 3 to Task Order 1.”
- “[S]ignificant portions of the Application are printed in such small, smudged type as to be illegible, *e.g.*, the plot plan and process flow diagrams.”

### *DAQ Response*

The minor source permitting program administered under 45CSR13 is effectively a pre-construction permitting program. A permit is required to be issued before most substantive construction and all operation activities are authorized. Due to the time required for air permit application preparation, regulatory review, public review procedures, *etc.*, the application is often being prepared and revised simultaneously with various aspects of project engineering. In some instances, businesses will not release funds to finish project engineering or select vendors until a permit is issued.

These realities influence the detail of the information that an applicant can be reasonably be expected to submit as part of a permit application. The DAQ requires an applicant to make a reasonable emission estimate backed by defensible calculations based on, where possible, the most appropriate source of emissions information available. However, as stated in the Engineering Evaluation/Fact Sheet, this determination is made with the understanding that the proposed source is not one in which there exists a well-developed and accepted database of available emission factors for all sources of potential emissions or is a replica of any other known source with easily accessible and historically verifiable operational data. Therefore, use of, where applicable, assumptions and process data based on engineering analysis or operation of other similar sources (including non-U.S. sources) is accepted. The DAQ believes that requiring the level of detail only available at the conclusion of all project engineering and vendor selection is not only unnecessary to meet the requirements of §22-5-1, *et. seq.* and 45CSR13, it is impractical and doing so would place an undue burden on applicants.

It is important to note here that the above considerations do not change the binding nature of emission limits in a final permit. Emission limits, and all associated testing, monitoring, record-keeping, and reporting requirements (TMR&R) must be met or the DAQ will consider the facility in violation. Any change to permitted emission limits would require the DAQ to review the proposed changes according to 45CSR13 and, if applicable, to revisit the designation of a source as “minor.”

Concerning the specific instances cited by SCEL P:

- The DAQ does not regularly require P&ID diagrams to be submitted in permit applications. This information is usually beyond what is required for the DAQ to issue or deny a permit application and the DAQ considers that the case with respect to R13-2791. The DAQ believes that the information in Attachment N (including information on fugitive emissions) of the permit application and the Engineering Evaluation/Fact Sheet is sufficient for the public to “accurately verify emission estimates or evaluate proposed permit conditions for practicality and enforceability.”

Concerning the footnote, the DAQ would point out that the flare is limited under 4.1.8.2 of the draft permit to combusting only natural gas and is limited to a maximum design heat input (MDHI) of 0.60 mmBtu/Hr. The methodology for estimating emissions from the pilot flame of the flare is discussed on page 14 of the Engineering Evaluation/Fact Sheet.

- As explained above, the DAQ accepts the emission estimate as provided in Attachment N of the permit application including, where applicable, use of “vendor guarantees.” Further, as stated in the Engineering Evaluation/Fact Sheet, for various combustion sources TransGas used pollutant stack gas concentrations that were listed as “industrial standards” or as vendor guaranteed and where AP-42 was used to calculate the potential emissions of other pollutants. When compared with AP-42, the emissions estimates used by TransGas were found to be conservative (higher than AP-42). Finally, the DAQ will not “take TransGas’ word that it will self-enforce all parameters necessary to maintain the warranty for each process.” The permit includes a TMR&R section that the DAQ believes is sufficient to make the emission limits practically enforceable.
- SCEL P did not provide a specific reference to an inconsistency and, therefore, the DAQ is unable to respond.
- The DAQ agrees that some information in the electronic versions of the application are not or are only barely legible. The DAQ would have made available hard copies of the application upon request.

With respect to the permit application submitted and subsequently revised by TransGas, the DAQ preliminarily concluded, when the Engineering Evaluation/Fact Sheet and Draft Permit were made available to the public, that it contained sufficient information to determine whether the proposed source construction was in conformance with the provisions of any and all applicable rules. The DAQ, pursuant to §45-13-5.4, reaffirms that determination.

#### VII. The Department’s Decision to Permit the Facility as a “Minor Source” of Criteria Air Pollutants and HAPs Is Based on a Faulty and Incomplete Analysis of the Facility’s Potential-to-Emit

SCEL P commented that, when all and corrected emission sources are included, the potential-to-emit (PTE) of the proposed TransGas facility is in excess of 100 tons per year (TPY). This PTE

would define the source as “major” and require review under the Prevention of Significant Deterioration (PSD) permitting program. SCELP also referenced other CTL projects of a similar scale as the proposed TransGas facility that are defined as major. SCELP states that the DAQ should “revisit its estimates of the TransGas Facility’s potential to emit. . . and require the Applicant to comply with the preconstruction requirements for major sources found in 45CSR14. . .” They provided specific examples as discussed below.

*DAQ Response*

See responses to specific comments below.

A. The Draft Permit Omitted Several Emission Sources from the Facility’s Potential-to-Emit

1. Criteria Pollutants and HAP Emissions from the Emergency Equipment

SCELP commented that TransGas did not include an estimate of emissions from emergency equipment.

*DAQ Response*

TransGas did not include emergency generators in their permit application and the DAQ is not authorized to include equipment in a permit (and subsequently include the potential emissions in the facility’s PTE) that is not included in a permit application. The permit does not authorize the use of air emissions-generating equipment or processes, with the exception of those *de minimis* sources listed under Table 45-13B, other than those listed in Table 1.0: Emission Units. Any use of air emissions-generating equipment or processes not in this table is considered a permit violation.

Addition of emergency generation equipment at a later date will subject TransGas to all applicable permitting requirements under 45CSR13 or 45CSR14 as applicable. Any increase of the facility-wide PTE that results in any criteria pollutant emissions over 100 TPY will result in retroactive PSD applicability and the requirement for the entire source to undergo PSD permitting under 45CSR14.

2. Particulate Matter and Reduced Sulfur Compound Emissions from the Sulfur Solidification Process

SCELP commented that the potential particulate matter and hydrogen sulfide emissions from the solidification of liquid sulfur and the storage and handling of the sulfur flakes were not quantified and added to the facility’s potential to-emit.

*DAQ Response*

While requirement 4.1.5.7. requires that “[t]he Sulfur Recovery Unit (SRU) shall . . . reintroduce any off gases back into the AGR,” the DAQ is concerned that the sulfur solidification process would produce potential particulate matter emissions during both production and load-out

that would not be reasonably rerouted to the AGR without disruption of the AGR. TransGas was not able to provide, upon request, any reasonable justification for the elimination of particulate matter emissions from the sulfur solidification process. For this reason, language has been added to the permit prohibiting the solidification of liquid sulfur at the proposed facility (*Requirement 4.1.5.7.*).

### 3. CO, VOC, and HAP Emissions from the Methanol Synthesis Process Vents

SCELP commented that the potential-to-emit of the facility incorrectly omitted emissions associated with “the methanol synthesis process vents during normal operation of the methanol production process.”

#### *DAQ Response*

Requirement 4.1.6.1. of the permit states that “[t]he Methanol Production and MtG Units shall be designed, operated, and maintained so that tail gases or offgases (not including process heater combustion exhaust) from these units shall not be released directly into the atmosphere.” This requirement would extend to “methanol synthesis process vents.” Any vents in the Methanol and MTG Plant that release CO or VOCs directly to the atmosphere are prohibited by the permit.

To further strengthen the language under 4.1.6.1., this requirement has been revised to include “indirect” releases to the atmosphere and specifies that “process vents” are included.

### 4. VOC Emissions from the Cooling Tower

SCELP commented that VOC emissions from the Cooling Tower were not included in the facility-wide PTE estimate. They stated that the process units in the proposed facility are similar to those found in petroleum refineries and that a VOC emission factor exists for Cooling Towers.

#### *DAQ Response*

The DAQ notes that AP-42, Table 5.1-2, which contains the D-rated emission factor for hydrocarbons that SCELP uses to calculate potential VOC emissions, is meant for Petroleum Refining. The DAQ also notes that the proposed TransGas CTL Plant is not a “petroleum refinery” and is unable to find any substantive justification for using this emission factor for a proposed CTL facility.

In a June 2009 response to a comment concerning CO in the cooling water, TransGas noted that “[t]he facility is not a typical petroleum based gasoline refinery which has a higher need for cooling” and did not include any VOC emissions from the Cooling Tower in the permit application. In a response to this comment, TransGas noted that “[m]ainly the exchanger service is for cooling water in the wash cycle of the gasification plant. There are only a few exchangers cooling hydrocarbons and therefore no estimation as in a refinery [sic] can be applied.”

The DAQ does not expect and has not authorized any VOC emissions from the Cooling Tower. The DAQ also does not expect and has not authorized any SO<sub>2</sub>, NO<sub>x</sub>, etc. emissions from the Cooling Tower. However, based on the concerns presented in the SCEL P comment, the DAQ will add VOCs to the Cooling Tower CO emissions and testing language within the permit to develop a knowledge base on this issue (*Requirement 4.1.7.2(b) and 4.3.6.4.*).

#### 5. VOC Emissions from the Wastewater Treatment System

SCEL P commented that potential-to-emit of the facility incorrectly omitted emissions associated with wastewater treatment plant.

##### *DAQ Response*

In a response to this comment, TransGas stated that “[a] gasification process can not be compared with a SOCM process or a refinery. Waste Water from the gasification process has no contact with Hydrocarbons or VOC. . . Water from the gasification and gas treatment is stripped. This gas is utilized in the Claus process (Sulfur recovery) and doesn’t cause emissions.”

TransGas did not include emissions associated with a wastewater treatment system in their permit application. The permit does not authorize the use of air emissions-generating equipment or processes, with the exception of those *de minimis* sources listed under Table 45-13B, other than those listed in Table 1.0: Emission Units. Any use of air emissions-generating equipment or processes not in this table is considered a permit violation.

Addition of emissions associated with a wastewater treatment system at a later date will subject TransGas to all applicable permitting requirements under 45CSR13 or 45CSR14 as applicable. Any increase of the facility-wide PTE that results in any criteria pollutant emissions over 100 TPY will result in retroactive PSD applicability and the requirement for the entire source to undergo PSD permitting under 45CSR14.

#### B. The Draft Permit Underestimates Emissions from Several Emission Sources

##### 1. Entrained Road Dust Particulate Matter Emissions from Trucking of Raw Materials, Products and Waste Materials

SCEL P made the following comments:

- The haulroad distance limitations in the draft permit are not adequate to enforce the haulroad fugitive dust emissions as estimated by TransGas.
- The draft permit failed to account for the potential removal of gasoline and LPG by truck rather than by railcar.
- The silt-loading value used by TransGas in their haulroad emissions calculations was too low.

- The use of a fugitive dust control efficiency of 85% on paved haulroads is too high.

#### *DAQ Response*

The haulroad distances limited in the draft permit were not restrictions of “the length of on-site paved road.” They were, however, as stated in the permit, limits on the “truck hauling distances.” This was intended and, in the opinion of the DAQ, clearly understood to be representative of round-trip distances for each scenario limited. However, to remove any ambiguity from the condition, clarifying language will be added to each requirement (*Requirement 4.1.4.9(b)(3)*).

SCELP is incorrect, the permit limits the total amount of “Sulfur, LPG, Gasoline, Miscellaneous Out of Facility” to the amount shown in Table 4.1.4.3. TransGas is not authorized to remove any additional gasoline out of the facility by truck than what is allowed under Table 4.1.4.3.

AP-42, Table 13.2.1-4 gives mean silt loading ranges from 7.4 to 292 g/m<sup>2</sup> (with ranges from 0.09 to 400 g/m<sup>2</sup>) based only on a total of 16 sites and 73 samples. The range from within a single source category can vary as much as 212 g/m<sup>2</sup> (copper smelting). As stated in AP-42, site-specific data is preferred where available. However, in the case of a proposed greenfield construction, the representative site data is not available. In that case, a reasonable value must be selected. The number selected by TransGas is almost identical to the mean value listed in AP-42 for quarries (8.2 g/m<sup>2</sup>), which, based on the material handling operations at the proposed site seems more appropriate than copper smelting. Therefore, the DAQ accepted the silt loading used in the TransGas application as not unreasonable.

Note that the permit also requires that TransGas utilize “underbody truck wash, rumble strips or employ other suitable measures to prevent tracking of solids by vehicular traffic from access and/or haulroads onto any public road or highway” and to “collect, in a timely fashion, material spilled on haulroads that could become airborne if it dried or were subject to vehicle traffic.” These measures will help reduce the silt loading on the haulroads.

The DAQ included in the Engineering Evaluation/Fact Sheet a justification of the use of a control efficiency of 85% on the paved haulroads. It is reproduced here:

The control efficiency used for calculating potential fugitive emissions from use of paved haulroads was 85%. Due to the site specific nature of potential control strategies for paved haulroads, the DAQ has not given general guidance on control efficiencies for paved haulroad control. In most cases, the DAQ will accept the default control efficiencies for unpaved haulroads - which includes 85% for use of water truck using a chemical dust suppressant solution. TransGas listed their control strategy as a water truck using a chemical dust suppressant solution. However, again, due to unique features of paved haulroads, the DAQ believes that additional control strategies are required along with a water truck using a chemical dust suppressant solution to achieve practical enforceability of an 85% control of uncontrolled fugitive emission from paved haulroads. These include the use of a vacuum sweeper truck, posted speed limits, and shoulder paving which shall be required in the draft permit.

The DAQ would note that a quick search on the internet showed other states with comparable paved road control efficiencies. See the following:

- In a March 2008 memorandum to the Permitting Branch, the State of Utah provides guidance indicating that “Pave Road Surface with Sweeping and Watering” has a control efficiency of 90% and “Pave Road Surface with Vacuum Sweeping and Watering” has a control efficiency of 95%. The memorandum is located at:

[http://www.paradoxsustainability.org/documents/airpollution/10\\_UDAQ%20Haul%20Road%20Policy.pdf](http://www.paradoxsustainability.org/documents/airpollution/10_UDAQ%20Haul%20Road%20Policy.pdf)

- In a February 2007 “Permit Statement of Basis,” the Commonwealth of Kentucky states that “emissions from haul roads (paved and unpaved) are controlled by a wet suppression method. The paved haul road has a control efficiency of 90% . . .” This document is located at:

<http://www.air.ky.gov/NR/rdonlyres/3729464B-25C8-4B86-8D05-5052EA49FE7C/0/V07006Basis22107.pdf>

- In a 2006 “Statement of Basis - Narrative,” the State of New Mexico states that “[t]ruck traffic haul road [sic] from the entrance to the facility to the truck sales shall be paved and cleaned to control particulate emissions (95% emission control allowed).” This document is located at:

[http://www.nmenv.state.nm.us/aqb/permit/drafts/Statement%20of%20Basis%20\(0879M2\).rtf](http://www.nmenv.state.nm.us/aqb/permit/drafts/Statement%20of%20Basis%20(0879M2).rtf)

Additionally, the DAQ notes the following other sources of information:

- The Air Pollution Engineering Manual © 1992, pp. 145, states that, with respect to “Measured Efficiency Values for Industrial Paved Road Controls,” the use of “[w]ater flushing followed by sweeping” has a “Cited Efficiency” of 96% minus a degradation of 0.263% per truck after sweeping.
- In a post 2004 paper entitled “Fugitive Dust Modeling with AERMOD for PM10 Emissions from a Municipal Waste Landfill” jointly issued by BlueScape Environmental and SCS Engineers, they note that “Paved Main Haul Roads emissions were assumed to have 79% cumulative emissions control from watering and sweeping.” This document is located at:

[http://www.scs-energy.com/Papers/Sullivan\\_Fugitive\\_Dust\\_Modeling.pdf](http://www.scs-energy.com/Papers/Sullivan_Fugitive_Dust_Modeling.pdf)

The above references show that the control efficiency used by TransGas is comparable to the other states noted above and with the other specified sources. However, to strengthen the vacuum sweeping language, the permit will be revised to include a condition requiring TransGas to flush the haulroads with water prior to each vacuum sweep (*Requirement 4.1.4.9(c)*).

## 2. Particulate Matter Emissions from Coal Handling

SCELP commented that the moisture content of the coal used in estimating the emissions from material handling operations was too high. Instead of the 5% used in the calculations, they

commented that a more realistic number would be 3.5% - based on sampled moisture contents of coal from Mingo County, WV.

#### *DAQ Response*

TransGas did not cite the source of the coal to be gasified in the proposed facility and the DAQ does not have the authority to dictate that the coal be from Mingo County. The DAQ generally accepts a moisture content of 5% for raw coal and a moisture content of greater than 5% for cleaned coal. AP-42, Table 13.2.4-1 provides a range of moisture contents for as-received coal at a coal-fired power plant from 2.7% to 7.4% with a mean of 4.6%. This source classification in Table 13.2.4-1 would seem appropriate for the proposed TransGas facility and the 5% chosen for the proposed facility is clearly within the given range. The DAQ notes that it reserves the right to require testing under Requirement 3.3 of the permit if it is observed that the moisture content of the feedstock coal is unusually dry and/or contributing to fugitive emissions problems at the constructed facility. However, for the purposes of estimating the coal handling emissions, the DAQ believes the use of a 5% moisture content was appropriate.

### 3. Particulate Matter and HAP Emissions from Gasification Process

SCELP commented that TransGas' claim in the permit application that toxic metals would remain in the slag and would not be emitted was incorrect. SCELP stated that a "recent study indicates that regardless of the slag tap opening radius. . . the gas in the quench tank is volatile and easily released to atmosphere during emptying of the quench tank."

#### *DAQ Response*

In response to this comment, TransGas stated that "[i]n the PDQ gasifier slag and slag fines will be quenched or washed out in the scrubber with water. Slag and slag fines are non leachable solid products and will be further processed by filtering the slurry. Solid in the filter cake are [sic] non leachable."

The DAQ is concerned about the fate of expected trace metals (HAPs) in the feedstock coal. For this reason, the draft permit (*Requirement 4.3.2.*) requires testing on the raw syngas sent to the flare to determine if any additional HAPs, other than those already identified and quantified by TransGas in their permit application, are present. To address your comment, additional language has been added to the permit to specify no HAP metal emissions are permitted and the HAP testing language has been revised to require testing on the slag to determine the metal retention rate (*Requirements 4.1.3(c) and 4.3.2(b), respectively*).

### 4. Criteria Pollutant and HAP Emissions from Flaring

SCELP commented that the limiting of maximum aggregate dry gas volume of raw syngas sent to the flare from the gasifiers to a volume of 100,000 m<sup>3</sup>/hr was:

- “not enforceable as a practical matter” because the “Draft Permit does not place a limit on the duration of each startup or the total number of startups per year;” and
- “not technically feasible based on TransGas’s [sic] production goals and would likely be exceeded” and that the “Application provides evidence that TransGas intends to operate at higher flow rates than assumed. . .”

*DAQ Response*

TransGas, in Attachment N of the permit application, bases their emissions calculations from the startup/shutdown of the gasifiers on a maximum aggregate dry gas volume of raw syngas sent to the flare from the gasifiers of 100,000 m<sup>3</sup>n/hr and 6,000,000 m<sup>3</sup>n/yr. While TransGas notes that the duration of an individual gasifier startup is 1 hour, the calculations are independent of the duration. The controlling factor of the calculations is the amount of raw syngas flared, and the permit (as noted below) will explicitly limit the hourly and annual volume of raw syngas that can be flared and will require monitoring of the volume of syngas. The permit practically enforces this basis of the calculations with the following permit requirements:

- The maximum aggregate dry gas volume of raw syngas sent to the flare from the gasifiers shall not exceed 100,000 m<sup>3</sup>n/hour or 6,000,000 m<sup>3</sup>n/per rolling twelve month period. (*Requirement 4.1.5.5(e)*)
- During each startup/shutdown of a gasifier, the permittee shall *monitor and record* [emphasis added] the following: The volume . . . of raw syngas sent to the flare. The aggregate rolling yearly total of volume of raw syngas sent to the flare shall be calculated and recorded. (*Requirement 4.2.5.4(c)*)

The DAQ believes the above permitting requirements provide practical enforceability of the emissions produced from the flaring of raw syngas during gasifiers startup/shutdown operations (with respect to the limitation of the volume of raw syngas flared). Any exceedance of the limit under 4.1.5.5.(e) will be considered a violation of the permit and subject TranGas to the actions of the DAQ’s C/E Section.

The DAQ strongly disagrees that the permit represents a “sham permit.” The permit contains emission limits that define the source as “minor” and provides the associated means, to an appropriate and reasonable degree, to determine compliance with those emission limits. Any modification to those emission limits will subject the facility to a reevaluation of the “minor” source designation.

a. Emissions from Flaring Under Less-than-Ideal Conditions

SCELP commented that the 99.5% CO combustion efficiency of the flare was too high and that the rate was not realistically achievable. SCELP also commented that “even a small decrease in flare efficiency could put the facility over then [sic] major source threshold for SO<sub>2</sub> emissions.”

## *DAQ Response*

The DAQ has seen no evidence that the CO combustion efficiency of 99.5% is not achievable at the proposed facility. The DAQ notes that the study provided in Exhibit 3 of the SCEL P comments does show that CO combustion efficiencies of up to 99.9% were recorded. Additionally, previous studies such as the “Evaluation of the Efficiency of Industrial Flares: H<sub>2</sub>S Gas Mixtures and Pilot Assisted Flares” (EPA-600/2-86-080) and the “Flare Efficiency Study” (EPA-600/2/83-052) provided results that showed flared combustion efficiencies of over 99.5% were achievable.

TransGas noted that, in response to this comment, according to AP-42 emission factor, the CO emissions from the flare are conservative. Using the CO emission factor from AP-42, Table 13.5-1 of 0.37 lbs-CO/mmBtu-flared gas and a maximum heating value of the flared gas of 1,065 mmBtu/hr, the CO emission rate of the flare would be 394.05 lbs-CO/hr. This emission rate represents only 48% of the TransGas estimated CO emissions from the flared gasifier raw syngas (826.67 lb-CO/hr).

However, to strengthen the enforceability of the CO emission limit from the flared gasifier syngas, the following requirements have been added to the permit:

- TransGas shall be required to utilize steam assistance on the flare (*Requirement 4.1.8.2(a)*);
- TransGas shall be required to “operate the flare at all times with an adequate steam to hydrocarbon ratio in each flare and a minimum heat content of 300 Btu/scf in the vent gas.” (*Requirement 4.1.8.2(c)*);
- TransGas shall be required to “submit a ‘Flare Monitoring and Compliance Demonstration Report’ that includes a determination of the appropriate steam-to-hydrocarbon ratios, the basis for the ratios, a detailed description of the monitoring of the flare (including monitor specifications), a description of QA/QC procedures related to the operation of the flare (as related to requirements in this permit), access to a copy of all vendor recommended maintenance procedures, and access to a copy of any vendor combustion efficiency guarantees for the flare.” (*Requirement 4.1.8.2(d)*);
- TransGas shall be required to monitor and record the steam flow rate to the flare, the steam to hydrocarbon ratio, and the heat content of the gas venting to the flare. (*Requirement 4.2.8.3*); and
- A limit will be placed in the permit restricting the total annual heat input of the waste gases sent to the flare to 63,900 mmBtu. (*Requirement 4.1.5.5(e)*).

Based on the above, including the revisions to the draft permit, the DAQ believes the CO emissions from the flared gasifier syngas are appropriate and enforceable.

The DAQ would note that a decrease in the combustion efficiency of reduced sulfur compounds (including H<sub>2</sub>S) would not result in an increase in SO<sub>2</sub> as less of the sulfur would be oxidized.

b. Emissions from Flaring during Malfunctions

SCELP commented that the DAQ incorrectly omitted the emissions from the facility associated with malfunctions.

*DAQ Response*

As stated in the Engineering Evaluation/Fact Sheet, it is not the policy of the DAQ to permit general operational malfunctions (with the associated releases of emissions) and quantification and inclusion of these emissions into a facility's PTE is not required (nor, for most sources without a site-specific operating history, considered practicable). Emissions resulting from operational malfunctions shall be considered "excessive" and considered a Compliance/Enforcement matter. Provisions dealing with malfunctions are, however, present in several state air quality rules rules and are included in various monitoring, record-keeping, and reporting requirements.

The DAQ would add to that while certain EPA Regional Offices have intervened in several specific scenarios and indicated that malfunction emissions should be quantified and included in a proposed facility's PTE, the DAQ is not aware of any existing general guidance or blanket requirement for *all facility types* and *in all situations* to attempt to quantify the emissions associated with future malfunctions.

The proposed TransGas facility is a relatively unique facility and there yet exists no evidence that the facility will experience the malfunction rates of a refinery or other large petro-chemical facilities. And while the Puertollano IGCC facility was reasonably used as the basis for various assumptions regarding specific operating data, it is noted here that it is an IGCC facility and not a CTL facility. There is no evidence that the integrated and facility-wide operating history of an IGCC facility would serve as an appropriate basis for estimating malfunction emissions from a CTL facility.

The DAQ would also note that the facility-wide PTE does take into account gasifier and AGR startups and shutdowns. These terms are defined as "periods of time when [a gasifier/the AGR is venting raw syngas to the flare during unit startup and shutdown." Regardless of cause, during the periods as defined above, TransGas must monitor and record the volume of raw syngas that is being sent to the flare and the amount flared is counted toward the specific flaring limits.

Additionally, Requirement 4.5.1. of the draft permit requires that TransGas submit information to the DAQ detailing "[a]ll instances of deviation from permit requirements. . ." and information relating to specific equipment and times that were out of compliance with the permit.

c. Emission Estimates for Flare Are Not Supported by Practically Enforceable Permit Limitations

SCELP commented that portions of the permit are not practically enforceable. Two examples were given: the concentration of NO<sub>x</sub> in the offgas of the flare and lack of a requirement that the flare be assisted.

### *DAQ Response*

As flares do not lend themselves to stack testing, it is understood that estimating flaring emissions that are unrelated to the constituent properties of the waste gas are based on a reasonable emission factor or pollutant concentration. The DAQ has found no evidence that the concentration of NO<sub>x</sub> used in the emission calculations was not reasonable.

TransGas noted that, in response to this comment, according to AP-42 emission factor, the NO<sub>x</sub> emissions from the flare are conservative. Using the NO<sub>x</sub> emission factor from AP-42, Table 13.5-1 of 0.068 lbs-NO<sub>x</sub>/mmBtu-flared gas and a maximum heating value of the flared gas of 1,065 mmBtu/hr, the NO<sub>x</sub> emission rate of the flare would be 72.4 lbs-NO<sub>x</sub>/hr. This emission rate represents only 22% of the TransGas estimated NO<sub>x</sub> emissions from the flared raw syngas from the gasifier(333 lb-NO<sub>x</sub>/hr).

As noted under VII.B.4, additional requirements have been added to the permit concerning steam assistance and heat content monitoring. Considering these revisions to the permit and the conservative nature of the NO<sub>x</sub> emission estimate, the DAQ considers all the emission limits from the flare as reasonable and practically enforceable.

### 5. VOC and HAP Emissions from the Methanol Synthesis Unit

SCELP commented that TransGas underestimated VOC and HAP emissions from leaks in the Methanol Synthesis Unit because they used “average” emission factors instead of more appropriate “screening ranges.”

### *DAQ Response*

TransGas based their equipment leaks calculations on emission factors and control methodology effectiveness from the document EPA-453/R-95-017 - “Protocol for Equipment Leak Emission Estimates.” In this document, four approaches are given to estimate emissions: (1) Average Emission Factor Approach, (2) Screening Range Approach, (3) EPA Correlation Approach, and (4) Unit-Specific Correlation Approach.

The document states that the “four approaches described here can be used by any chemical-handling facility to develop an inventory of TOC or VOC emissions from equipment leaks” and that “[e]xcept for the Average Emission Factor Approach, all of the approaches require screening data.” Screening data is “collected by using a portable monitoring instrument to sample air from potential leak interfaces on individual pieces of equipment.” The Average Emission Factor Approach is described as an “accepted approach” under Section 2.3.1. of the document and while the approach is “not intended to be used to estimating emissions from an individual piece of equipment” the factors are “most valid for estimating emissions from a population of equipment.”

While the document states that the Screening Ranges Approach “offers some refinement over the Average Emission Factor Approach” the document also states that the “[Screening Ranges

Approach] is included in this section primarily to aid in the analysis of old datasets which were collected for older regulations that used 10,000 ppmv as the leak definition.” The document also states that the approach “*may be applied when screening data are available* [emphasis added] as either ‘greater than or equal to 10,000 ppmv’ or as ‘less than 10,000 ppmv.’”

The DAQ notes that the emission factors used by SCEL P were taken from Table 2-6 of the document and were based on “refinery screening ranges emission factors” with leaks over 10,000 ppm<sub>v</sub>.

In consideration of the four approaches offered in the document and the lack of site-specific screening values for a source not yet constructed, the DAQ accepts the use of the SOCM I Average Emission Factors as reasonable for the estimation of potential emissions associated with equipment leaks at the proposed facility.

#### 6. Other Underestimated Emissions

SCEL P commented that:

- The steady-state particulate matter emissions from the MTG process are underestimated.
- The particulate matter emission are underestimated because TransGas did not estimate emissions of ammonium sulfate and ammonium carbonate from the CO<sub>2</sub> wash column.
- TransGas underestimated NO<sub>x</sub> emission from the flare because Uhde assumed a flare exhaust flow rate that is less than the actual flow rate to the flare.
- The steady-state CO emissions are underestimated from the CO<sub>2</sub> Purification Unit because TransGas underestimated emissions associated with the production of CO byproduct from the MTG process.
- The fugitive CO emissions associated with gasification - including scrubbing - are underestimated because TransGas assumed that the stream was composed of organic compounds only.
- The steady-state VOC and HAP emissions from the MTG process are underestimated because TransGas did not estimate emissions of methanol and dimethyl ether from this process.
- The VOC emissions from the proposed facility are underestimated because TransGas did not estimate fugitive VOC emission from leaking components in bottoms stream from the CO<sub>2</sub> wash column.
- The HAPs, carbonyl sulfide and hydrogen cyanide, and the NSR-regulated pollutants, hydrogen sulfide and total reduced sulfurs, from the proposed facility are underestimated because

TransGas underestimated the flow rate of these pollutants in the syngas and inflated the control efficiency of the flare.

*DAQ Response*

- Requirement 4.1.6.3. of the draft permit states that “[t]he regeneration offgas shall not contain any detectable amount of . . . particulate matter . . .” Requirement 4.3.5.3. of the draft permit requires TransGas to perform a “test on the catalyst regeneration offgas stream sent to the CO<sub>2</sub> Purification Unit so to determine if reasonably detectable levels of . . . particulate matter. . . are present in the gas stream.” Any detectable amount of petroleum coke byproduct in the MTG Plant regeneration offgas shall be considered a violation of the permit and TransGas will be required to address the issue before resuming operation.

In response to this comment, TransGas noted that “any coke formed in the process can not cause emissions to the atmosphere, as it forms a solid laydown on the catalyst, which is filled as fixed bed inside the MTG reactors. During regeneration of the catalyst (which is non-continuous) coke laydown on the catalyst will be burned in-situ inside the reactors with air and converted mainly to CO<sub>2</sub> and some CO. . .”

In conclusion, the DAQ does not believe that particulate matter, in the form of coke byproduct, shall be present in the MTG Plant regeneration offgas sent to the CO<sub>2</sub> Purification Unit. However, as noted above, a performance test will be required on the offgas to determine if reasonably detectable levels of particulate matter are present.

- In response to this comment, TransGas noted that “[f]ormation of Ammonium sulfide salts according to equilibrium calculations as presented in the Sierra Club letter would require presence of substantial amounts of ammonia entering into the AGR. In our process design however virtually all ammonia (NH<sub>3</sub>) produced in the gasification will be removed from the syngas via dissolution in process condensate in the cooling chain upstream of the AGR. It will then be removed from the process in the condensate stripper and further destroyed inside the plant in the Claus process. Furthermore the MeOH wash cycle is being monitored for ammonia concentration to avoid any issues of sulfur retainment through ammonia.”

The DAQ does not believe that particulate matter will be emitted during normal operations from the CO<sub>2</sub> Wash Column and the permit does not authorize any direct emissions from the CO<sub>2</sub> Wash Column. Any particulate matter emissions from the CO<sub>2</sub> Wash Column shall be considered a violation of the permit. Please see DAQ response to SCEL P comment VII.B.4(c) for a discussion of malfunction emissions.

- As noted above, the permit requires that “[d]uring each startup/shutdown of a gasifier, the permittee shall *monitor and record* [emphasis added] the following: The volume . . . of raw syngas sent to the flare. The aggregate rolling yearly total of volume of raw syngas sent to the flare shall be calculated and recorded. (*Requirement 4.2.5.4(c)*)

The DAQ believes the estimation of NO<sub>x</sub> emissions from the flare is appropriate and has seen no evidence that the given flare exhaust rate and NO<sub>x</sub> exhaust concentration is inappropriate. Please see DAQ response to SCERP comment VII.B(c) for a discussion of NO<sub>x</sub> emissions from the flare and associated revisions to the permit to increase practical enforceability.

- The draft permit limits the CO concentration in the CO<sub>2</sub> Purification Unit offgas (Emission Point C1) to 1 ppm<sub>v</sub> (*Requirement 4.1.5.8*). Language has been added to this requirement clarifying that the 1 ppm<sub>v</sub> CO limit in the offgas is in effect at all times (*Requirement 4.1.5.8*). The permit also limits the maximum flow rates of offgases from the AGR and MTG Plant to the CO<sub>2</sub> Purification Unit (*Requirements 4.1.5.8 and 4.1.6.3, respectively*). TransGas used these parameters to calculate the potential aggregate CO emissions from Emission Point C1 as limited in Appendix A.

The permit requires continuous monitoring of the (added) flow rate and CO concentration at the outlet of the CO<sub>2</sub> Purification Unit (*Requirement 4.2.5.2*).

In total, the DAQ believes these requirements are sufficient for practically enforcing the maximum potential CO emissions as emitted from the CO<sub>2</sub> Purification Unit. Any CO emissions in excess of 1 ppm<sub>v</sub> or any flow rates above those as limited in the permit shall be considered a permit violation.

- The average emission factors provided in EPA's guidance document "Preferred and Alternative Methods for Estimating Fugitive Emissions From Equipment Leaks," are "intended to be used for estimating total organic compound (TOC) emissions." However, the emission factors "may be used to estimate emissions of inorganic compounds - particularly . . . those present as a gas or vapor." CO is generally considered an inorganic compound and, therefore, would not be included in the emission factors for TOC given in the document. Use of the average emission factors and the associated weight percent of CO would be an appropriate method for estimating potential emissions where site-specific data does not exist.

The DAQ notes that under the cited Chapter 3.2 of EPA's guidance document, it states that the equation given under 4.3-1 is used to "estimate emissions of a specific VOC [emphasis added] in a mixture of several chemicals."

In response to this comment, TransGas stated that the cited rawgas CO+CO<sub>2</sub> concentration from the Uhde brochure (PRENFLO Gasification) refers to a dry gas composition from the PRENFLO Puertollano plant operating with a mixture of petcoke and high ash hard coal and a oxygen purity of 85 vol.-%. The real gas concentration of CO in the raw gas from the scrubber of the PRENFLO PDQ plant in the TGDS design, based on the TGDS coal, is less than 30 mol-% (while more than 50 mol% of the real gas is H<sub>2</sub>O)."

The draft permit requires that TransGas conduct performance tests "on the syngas to verify the accuracy of the constituent weight fractions used in the fugitive emissions calculations located under 'Attachment N: Attachment 3 to Task Order 1' in permit application R13-2791." Any substantive deviation from the assumptions upon which the emissions were based (that would

result in higher emissions) that are discovered in the performance test will be considered a violation of the permit which requires that the facility be constructed and operated in accordance with the plans and specifications filed in Permit Application R13-2791. (*Requirement 2.5.1*)

The permit has been revised to require the submission, prior to startup, of a report that will include a description of the appropriate LDAR monitors (*Requirement 4.3.8.3.*).

- In response to this comment, TransGas stated that Process Stream 31, “as it results from burning of coke off the MTG catalyst, does not contain any Methanol or DME. MeOH and DME traces, if any, in the raw MTG product (steady-state stream) as indicated in the source cited in the Sierra Club letter will be separated downstream in the MTG plant and recycled and recovered internally either via process condensate or via the tail gas stream. The tail gas stream of the MTG process is recycled internally to the front end of the plant.”

The permit states that “[t]he regeneration offgas [Process Stream 31] shall not contain any detectable amount of . . . VOCs” and requires TransGas to perform “a test on the catalyst regeneration offgas stream sent to the CO<sub>2</sub> Purification Unit so to determine if reasonably detectable levels of . . . VOCs are present in the gas stream.” (*Requirements 4.1.6.3. and 4.3.5.3., respectively*) The DAQ does not expect any methanol or DME in the regeneration offgas stream but will require TransGas to perform a test to determine compliance with the requirement prohibiting any VOCs in Process Stream 31.

- In response to this comment, TransGas noted that the “VOC fugitive emissions associated with the bottoms stream of the CO<sub>2</sub> wash column, the product stream from MeOH / water separation and with the regenerated MeOH stream have all been considered in the calculations of fugitive VOC emissions from the AGR as on page 8/9 of Attachment 3 (Fugitive Emissions) to the response to the DEP questions.”

The DAQ considers these emissions as accounted for in the fugitive emissions calculated for AGR.

- In response to this comment, TransGas noted that the “the rawgas composition from the Uhde brochure (PRENFLO Gasification) refers to a dry gas composition from the PRENFLO Puertollano plant operating with a mixture of petcoke (with high sulfur content) and high ash hard coal and a oxygen purity of 85 vol.-%. In the TGDS coal feed sulfur levels are moderate and therefore COS content in the syngas from the TGDS plant will be much lower than in the Puertollano plant. The TGDS design will further use Oxygen purity of 99.5% (vs. 85 vol-% in Puertollano) and CO<sub>2</sub> as carrier gas for the coal feeding (vs. N<sub>2</sub> as carrier gas for coal feeding in the Puertollano plant). Furthermore, as shown in page 9 of the Uhde brochure (PRENFLO gasification) the main Nitrogen component in the Puertollano syngas is molecular nitrogen (N<sub>2</sub>) from Oxygen and from the carrier gas rather than any HCN formed in the gasification. Calculations of COS and HCN concentrations in the TGDS syngas were based on design calculations for TGDS coal with CO<sub>2</sub> feeding and 99.5% Oxygen purity as per

TGDS design. COS and HCN will be partially converted in the CO shift and the remainder removed in the AGR and sent to the Claus plant where these components will be destroyed.”

Appendix A of the permit limits the emissions of COS, H<sub>2</sub>S, and HCN. These emission are based on the raw syngas assumptions used by TransGas in the permit application as explained in their response above. The permit, in order to determine the validity of these assumptions, requires (*Requirement 4.3.4.3*) a performance test on the “on the gasifiers’ and AGR waste gas streams sent to the flare so as to determine the validity of the substantive mass balance assumptions made in calculation of the potential emissions in Permit Application R13-2791.” Any substantive deviation from the assumptions upon which the emissions were based (that would result in higher emissions) that are discovered in the performance test will be considered a violation of the permit which requires that the facility be constructed and operated in accordance with the plans and specifications filed in Permit Application R13-2791. (*Requirement 2.5.1*)

To further increase the practical enforceability of the HCN emission limits, N<sub>2</sub> will be prohibited as used as a carrier gas in the coal dust feeding system (*Requirement 4.1.5.2.*).

C. The Draft Permit Potentially Underestimates Emissions from the Several Emission Sources

1. VOC and CO Emissions Associated with Equipment Leaks in Gasification Process

SCELP commented that TransGas has potentially underestimated emissions of VOC and CO from coal milling and drying operations based on unsupported VOC and CO contents.

*DAQ Response*

Language has been added to requirement 4.1.5.5(b) limiting the CO and VOC emissions from coal volatilization to the values used by TransGas in their emissions calculations. Additionally, a condition has been added to 4.3.4.2(b) requiring a test on coal feedstock to determine the rate at which CO and VOCs volatilize.

2. VOC Emissions from the Methanol Storage Tank

SCELP commented that the limit on methanol tank (TK6) turnovers was not consistent with emission estimates for this tank.

*DAQ Response*

After an additional review of the methanol tank emissions calculations provided in Attachment N of the application, the DAQ agrees that the limits on the methanol tank in requirement 4.1.7.3(a) are incorrect. They have been corrected (30 turnovers per year and 60,000,000 gallons annual throughput) and the emissions limit from the methanol tank has also been lowered to equal that as given in the TANKS emission report.

## VIII. The Department Must Directly Regulate and Evaluate the Impacts of PM<sub>2.5</sub> Emissions from the TransGas Facility

In Section VIII (VII.A through VIII.C), SCEL P provided comments outlining their view that the DAQ ignored PM<sub>2.5</sub> and incorrectly used PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>. They also provided an overview of the public health effects of PM<sub>2.5</sub>. SCEL P made the following specific comments concerning PM<sub>2.5</sub>:

- "The Draft Permit is flawed because it fails to directly regulate or evaluate emissions of PM<sub>2.5</sub> from the TransGas plant."
- "[T]he Department failed to publish the amount of PM<sub>2.5</sub> that would be emitted at the source, as required by state law."
- "[I]t is unclear whether the purported PM<sub>2.5</sub> emission limits are achievable, and they certainly are not enforceable."
- "The Department may not use PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>"

### *DAQ Response*

The DAQ does directly regulate and evaluate PM<sub>2.5</sub> by placing a footnote to Appendix A of the draft permit and to Attachment B of the Engineering Evaluation/Fact Sheet. The footnote reads: "For the purposes of this permit, all PM<sub>10</sub> emission limits are equal to PM<sub>2.5</sub> emission limits." This language is unambiguous and clearly sets the emission limit of PM<sub>2.5</sub> and the PTE of PM<sub>2.5</sub>, respectively, to the amount of PM<sub>10</sub>. As PM<sub>2.5</sub> emissions are a subset of PM<sub>10</sub> emissions, it is self-evident that compliance with practically enforceable PM<sub>10</sub> emission limits guarantees compliance with the identical PM<sub>2.5</sub> limits. SCEL P provides no detail as to why these PM<sub>2.5</sub> limits would not be achievable or enforceable.

Section 8.3 and 8.5 of 45CSR13 states that the applicant's and the DAQ's Class I legal advertisement ". . . shall contain. . . the type and amount of air pollutants that will be discharged . . ." The language of the rule does not require the advertisement to include the amount of *all* "regulated pollutants that will be discharged." The statutory language allows the DAQ to exercise reasonable discretion in the amount of information that is placed in the legal advertisement. Without this discretion, it is obvious in some situations - *e.g.*, natural gas combustion - that the advertisement would have to include an unreasonably large number of pollutants - *e.g.*, speciated Hazardous Air Pollutants (HAPs) - potentially emitted at trace or undetectable levels.

The DAQ places information, including data concerning the "type and amount of air pollutants that will be discharged," in the advertisement that provides, along with other general information concerning the proposed source, a reasonably clear and concise overview of the source. Directions in the advertisement provide the public with access to other documents and a DAQ contact that can provide much more in-depth information concerning the proposed source and the preliminary

determination. Without the allowed discretion, legal advertisements would, in the view of the DAQ, become overly detailed and confusing.

It is, as of this writing, the current DAQ policy to not routinely place potential PM<sub>2.5</sub> emission rates into legal advertisements for minor sources in areas that are classified as in attainment with the PM<sub>2.5</sub> standards. The DAQ has found that there already exists a confusion in the public concerning the distinction between the PM<sub>10</sub> and total PM emissions (they tend to aggregate them). With respect to the TransGas legal advertisement, for the above reasons and as facility-wide PM<sub>2.5</sub> emissions were equal to facility-wide PM<sub>10</sub> emissions, a distinct reference to PM<sub>2.5</sub> emissions was not included.

The DAQ did not use PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub> during the review of the TransGas permit application. While the facility-wide PTE and emission limits of PM<sub>10</sub> and PM<sub>2.5</sub> were set to the same values, no required air impacts analysis or any other pollutant-specific analysis was performed by using PM<sub>10</sub> as a surrogate for PM<sub>2.5</sub>. The DAQ notes that, however, for purposes of PSD applicability analysis and review, the EPA stated in the preamble to the “Implementation of the New Source Review Program for Particulate Matter Less Than 2.5 Micrometers,” that states with a SIP-approved PSD program (such as West Virginia) may “continue to implement a PM<sub>10</sub> program as a surrogate to meet the PSD program requirements for PM<sub>2.5</sub> pursuant to the 1997 guidance. . .” This policy is to expire three years after the publication date of the Federal Register, which would not be until 2011, or at an earlier time upon approval of a revised SIP. The DAQ does note that, on February 4, 2010, the EPA *proposed* to end the PM<sub>10</sub> surrogate policy earlier than previously promulgated.

#### IX. The Department Must Quantify Sulfuric Acid Mist Emissions

SCELP commented that the sulfuric acid emissions were not quantified from the facility. They stated that sulfuric acid mist would be emitted from the “Claus sulfur recovery unit, the Rectisol acid gas removal unit, the diesel-driven emergency equipment, the gasifier vent, and other sources.”

##### *DAQ Response*

Appendix A of the draft permit lists the permitted emission points and limits at the proposed facility. Identification of any non-malfunction, non-emergency emission points, or any emissions of pollutants not specified under Appendix A are considered a violation of the permit. Sulfuric acid emissions from the “Claus sulfur recovery unit, the Rectisol acid gas removal unit, the diesel-driven emergency equipment, the gasifier vent, and other sources” are not permitted.

Please see the DAQ response to SCELP comment VII.A.1 for a discussion of emergency equipment. With respect to the sulfur recovery unit, the DAQ would note that, pursuant to 4.1.5.7. of the draft permit, the SRU “shall, during all times of operation, reintroduce any off gases back into the AGR.”

With respect to any other potential sources of sulfuric acid, language under 4.1.5.4. of the permit has been clarified to disallow any release of “raw or clean syngas or any other offgases” directly into the atmosphere.

Additionally, additional language has been added under 4.1.2. that explicitly states that only the emission points or sources of fugitive emissions identified under Appendix A are authorized by the permit.

X. The Department Must Evaluate and Limit the Facility's Greenhouse Gas Emissions

SCELP commented under Section X (X.A and X.B) that the DAQ unlawfully ignored the emissions of GHGs, violated state law by not considering these emissions as "statutory air pollution," violated state law by not providing and maintaining a "healthful environment for our citizens, and violated the Clean Air Act by not requiring TransGas to obtain a PSD permit and undergo a BACT analysis for GHGs. SCELP included the following specific comments concerning GHGs:

- "The 3.6 million tons/year of carbon dioxide that would be emitted by TransGas foar exceed the EPA's proposed major source threshold for greenhouse gases of 25,000 tons/year."
- SCELP commented that the language under §22-1-1 stating "[O]ur government has a duty to provide and maintain a healthful environment for our citizens" requires the DAQ to limit GHGs. Further, they stated that the DAQ is "prohibited from granting this permit without mitigating the global warming impacts because it would allow the project proponent to emit carbon dioxide and other greenhouse gases such as methane in such quantities that would cause 'statutory air pollution.'"
- SCELP has commented that the CAA requires a Best Available Control Technology Analysis for Greenhouse Gas Emissions from the TransGas facility.

*DAQ Response*

On October 27, 2009 the EPA published in the Federal Register the "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Proposed Rule." The purpose of the *proposed* rule, as explained in the preamble, was to:

tailor the major source applicability thresholds for GHG emissions under the PSD and Title V programs. . .because EPA expects soon to promulgate regulations under the CAA to control GHG emissions from light-duty motor vehicles and, as a result, trigger PSD and title V applicability requirements for GHG emissions.

The EPA, however, also noted in the proposed rule that:

EPA treats sources as subject to PSD requirements only if they emit 'regulated NSR pollutants' at specified threshold levels. Currently, EPA does not consider GHG emissions to be 'regulated NSR pollutants' under the PSD program because GHG emissions have not, thus far, been subject to regulation requiring control under the CAA.

and:

the [Clean Air Act] does not require that minor source programs apply to GHGs because there are no NAAQS for GHGs.

While EPA has proposed a major source applicability threshold for GHGs of 25,000 TPY of CO<sub>2</sub>e and an implementation date triggered on the light-duty motor vehicle rule, they solicited comment on the proposed rule. To this end, on December 28, 2009 the National Association of Clean Air Agencies (NACAA) provided comments on the PSD/Title V Tailoring Rule. In the NACAA comment letter, they “strongly urge that EPA provide state and local permitting authorities with additional time - 12 to 24 months - to increase PSD and Title V thresholds above the current 100/250-tpy levels to avoid the administrative burden and delay in issuing permits. . .” NACAA also commented that “EPA consider a step-down approach for these programs where the initial thresholds are set at 50,000 tpy CO<sub>2</sub>e. . .” Clearly, the language of the final rule and the date of implementation remain in flux, and the final form of GHG regulation remains unknown.

On December 15, 2009 the EPA published in the Federal Register the “Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act; Final Rule.” In this rule EPA found that “six greenhouse gases taken in combination endanger both the public health and public welfare of current and future generations.” They also stated that “[t]his action is a stand alone set of findings regarding endangerment and cause or contribute for greenhouse gases under CAA section 202(a), and does not contain any regulatory requirements.”

The DAQ has concluded that there are not currently any state or federal air quality standards or permitting requirements applicable to the TransGas facility - including major source applicability thresholds for GHGs (as shown above). Therefore, at this time, the DAQ is under no mandate to require quantification and control of GHGs or the application of Best Available Control Technology (BACT) to sources of GHGs at the proposed facility. The DAQ believes that taking regulatory action at the Division level without a state or federal statutory basis is both beyond the authority given in the APCA and inappropriate. Section §22-5-4 of the APCA states that:

no . . . program of the [DAQ] hereafter adopted shall be any more stringent than any federal . . . program except to the limited extent that the [DAQ] first makes a specific written finding for any such departure that there exists scientifically supportable evidence for such . . . program reflecting factors *unique to West Virginia* [emphasis added] or some area thereof;

The DAQ believes that a Division-level regulatory program targeting GHGs in West Virginia would certainly violate the intent of the APCA. At the very least, no reasonable argument can be made that issues surrounding global climate change are unique to West Virginia. The APCA would not support a “statutory air pollution” conclusion with respect to GHG regulation even if the DAQ were prepared to make that determination.

## XI. The Draft Permit Fails to Address Odorous Emissions

SCELP commented that the DAQ failed to address odorous emissions from the facility by not having “directly limited emissions of hydrogen sulfide or ammonia, which can both cause odor

problems.” SCELP also notes that “[t]he permit limits sulfur gas emissions to 1 ppm, which will be mostly H<sub>2</sub>S and COS. The odor detection limit for H<sub>2</sub>S in humans is 0.0047 ppm.”

#### *DAQ Response*

The odor threshold is the concentration of a chemical where 50% of odor panelists can detect that the chemical is present based upon their olfactory sensitivity to odors. There exists no absolute list of values which define the threshold of an “objectionable odor.” 45CSR4, the WV Legislative Rule that is “designed to prevent and control the discharge of pollutants into the open air which causes or contributes to an objectionable odor or odors” also does not contain any quantified odor thresholds. §45-4-2.6 defines an objectionable odor in the following manner:

[I]n addition to odors generally recognized as being objectionable, an odor shall be deemed objectionable when in the opinion of a duly authorized representative of the Director, based upon his investigations or his investigations and complaints, such odor is objectionable.

An objectionable odor must be determined by the DAQ in the course of an inspection or investigation. The DAQ believes that it is very difficult to prove an objectionable odor before a facility is in operation. The DAQ also believes that nothing in the permit application indicated that objectionable odors - as defined under 45CSR4 - will definitely be produced from the proposed facility. If, in the course of an inspection or investigation, the DAQ determines that the proposed facility is causing or contributing to an objectionable odor, the DAQ will take the actions as required under 45CSR4.

The DAQ notes that, while, the cleaned syngas is required to have a Total Reduced Sulfur level of less than 1 ppm, it is not authorized to be released directly into the atmosphere.

## XII. The Draft Permit Fails to Assure Compliance with All Applicable Regulations

### A. Performance Standards for VOC Emissions from SOCFI Distillation Operations

SCELP commented that the preliminary determination that 40 CFR 60, Subpart NNN: “Standards of Performance for Volatile Organic Compound Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations” was not applicable to the proposed facility was incorrect based on the production of ethylene, propylene, and mixed butanes as byproducts in the MTG process.

#### *DAQ Response*

Upon request, and based on the information provided in the SCELP comment, TransGas could not justify a 40 CFR 60, Subpart NNN non-applicability determination. Therefore, the appropriate language has been added to the permit (*Requirements 4.1.6.7., 4.2.6.7., 4.3.5.4., and 4.3.7.1.*). Please see “Additions/Revisions to Regulatory Applicability” below for a discussion of these rules.

B. Performance Standards for Coal Preparation and Processing Facilities

SCELP commented that the draft permit was not in compliance with 40 CFR 60, Subpart Y and 45CSR5 for the following reasons:

- TransGas was not required to minimize fugitive dust emissions under 45CSR5 and did not submit a “fugitive dust control plan” in accordance with Subpart Y;
- The draft permit was confusing in applying different statutory opacity standards to the same emission points;
- The coal dust feeding system was not required to meet the standards of Subpart Y.

*DAQ Response*

As stated in the Engineering Evaluation/Fact Sheet, the DAQ considers the proposed controls on the coal handling operations as an appropriate fugitive dust control system under 45CSR5.

§60.254(c) states:

The owner or operator of *an open storage pile* [emphasis added], which includes the equipment used in the loading, unloading, and conveying operations of the affected facility, constructed, reconstructed, or modified after May 27, 2009, must prepare and operate in accordance with a submitted fugitive coal dust emissions control plan that is appropriate for the site conditions as specified in paragraphs (c)(1) through (6) of [§60.254].

Under Subpart Y, “open storage pile” is defined as

any facility, including storage area, *that is not enclosed* [emphasis added] that is used to store coal, including the equipment used in the loading, unloading, and conveying operations of the facility.

The draft permit does not authorize any Subpart Y affected facility that “stores” coal that is not enclosed - including the coal storage pile. Requirement 4.1.4.4(a)(2) of draft permit R13-2791 states that “[c]oal shall be enclosed in a building that is vented through a maximum of four baghouses.” The coal storage pile authorized at the proposed facility is not defined as an “open storage pile” under Subpart Y and, therefore, a fugitive coal dust emissions control plan is not required. The DAQ notes, however, that if a fugitive coal dust emissions control plan was required, Subpart Y specifies only that the plan be submitted “prior to startup” for a new facility.

Language was added to footnote (1) to “Table 1.0: Emission Units” specifying that “VF” is being used as a designation for particulate matter filters.

The draft permit contains language reproducing emissions standards from both applicable state and federal rules. The inclusion or absence of this language, however, does not make applicable on not applicable, respectively, the standard. In the case of 45CSR5/Subpart Y, where more than one

opacity standard exists, it is self-evident that both apply to the source (with the more stringent being the controlling standard). This would be the case if the language were placed in the draft permit or not. The DAQ believes that this method actually provides clarity in placing all substantive applicable standards in the permit and that any confusion from this approach is negligible.

The reference to 4.1.8.7.b has been corrected.

The DAQ considers all coal handling past the plant feed bunkers as part of a “manufacturing process” (the process of manufacturing gasoline) and not part of the “coal preparation plant” as defined under 45CSR5. §45-5-2.4 defines “coal preparation plant” as

any facility . . . that prepares coal by one or more of the following processes: screening, breaking, crushing, wet or dry cleaning and thermal drying, and further such definition of a coal preparation plant shall include all coal handling operations associated with the processes described above, but shall not include . . . [a]ny facility or equipment subject to the requirements of . . . 45CSR7.

Under 45CSR7, a “manufacturing process” is defined as a

any action, operation or treatment, embracing chemical, industrial or manufacturing efforts, and employing, for example, heat treating furnaces, by-product coke plants, core-baking ovens, mixing kettles, cupolas, blast furnaces, open hearth furnaces, heating and reheating furnaces, puddling furnaces, sintering plants, electric steel furnaces, ferrous and non-ferrous foundries, kilns, stills, driers, crushers, grinders, roasters, and equipment used in connection therewith and all other methods or forms of manufacturing or processing that may emit smoke, particulate matter or gaseous matter.

Based on these definitions the DAQ believes it is appropriate to regulate the coal dust feeders, located after the plant feed bunkers, under 45CSR7 as a “manufacturing process” other than under 45CSR5 as a “coal preparation plant.” The DAQ also believes that it is not the intent of Subpart Y to extend into a manufacturing process and that the original determination in the draft permit is appropriate. However, the DAQ cannot provide a complete statutory basis for this determination. Therefore, the draft permit will be amended to explicitly place Subpart Y opacity and emission standards on the coal dust feeding system (*Requirement 4.1.5.2(e)*).

The DAQ considers the use of particulate matter filters as adequate control measures on these equipment and processes and believes they will meet the standards under Subpart Y. See above discussion concerning the dual applicability of 45CSR7 and Subpart Y to these units.

#### C. National Emission Standards for Hazardous Air Pollutants

SCELP commented that the proposed facility is applicable to 40 CFR 61, Subparts J and V and that these rules be added to the permit.

### *DAQ Response*

Upon request, and based on the information provided in the SCEL P comment, TransGas could not provide any justification for a non-applicability determination with respect to 40 CFR 61, Subparts J and V. Language noting the applicability of these Subparts has been added to the permit (*Requirements 4.1.9.4., 4.2.9.1., and 4.3.8.2.*). Please see “Additions/Revisions to Regulatory Applicability” below for a discussion of these rules.

#### D. Standards of Performance for Petroleum Refineries

SCEL P commented that the TransGas facility is applicable to 40 CFR 60, Subpart Ja: Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007.

### *DAQ Response*

The DAQ does not believe that the TransGas facility is applicable to 40 CFR 60, Subpart Ja. As noted in your comments, “petroleum refinery” is defined under Subpart Ja as:

any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, asphalt (bitumen) or other products through distillation *of petroleum* [emphasis added] or through redistillation, cracking, or reforming of unfinished *petroleum* [emphasis added] derivatives.

Petroleum is then defined as:

the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.

The DAQ does not believe that production of gasoline from a coal-based syngas by using the MTG process meets the definition of a refinery. The definition of petroleum is explicit in including “oils derived from . . . coal.” The production of oils directly from coal (such as the Karrick Process) that require further refinement into gasoline is a process distinct from gasification of coal. Syngas produced from coal gasification is not, by any reasonable definition, included in “oils derived from . . . coal.”

### XIII. The Draft Permit’s Monitoring Requirements Are Inadequate

#### A. Monitoring of CO, PM, and PM10 Emissions from the Cooling Tower

SCEL P has commented that the “monitoring requirements for CO, PM, PM10 emissions from the cooling tower are not enforceable as a practical matter.” They state that the requirements 4.1.7.2(b) and 4.2.7.3(d), which require that the water circulated in the Cooling Tower has “no reasonably detectable amount of CO” and be monitored for CO “periodically” is “ambiguous” and does not “satisfy the burden to assure CO emissions remain below the major source threshold.”

SCELP also comments that the PM/PM<sub>10</sub> emission limit from the Cooling Tower is not enforceable as the permit only requires circulating water total dissolved solids (TDS) monitoring.

#### *DAQ Response*

While the DAQ believes the terms “reasonably detectable” and “periodically” are acceptable and have an understood and enforceable meaning, the draft permit will be modified to increase the exactness of the language (*Requirement 4.1.7.2(b)*).

The DAQ would note that AP-42 Table 5.1-2, which contains the emission factor for hydrocarbons that SCELP uses to calculate potential emissions of CO in the circulating water (as shown in the SCELP comment letter submitted in April 2009), is meant for Petroleum Refining. The DAQ also notes that the proposed TransGas CTL Plant is not a “petroleum refinery” and is unable to find any substantive justification for using the VOC emission factor meant for a “petroleum refinery” as a way to estimate potential CO emissions from a proposed CTL facility.

In a June 2009 response to a comment concerning CO in the cooling water, TransGas noted that “[t]he facility is not a typical petroleum based gasoline refinery which has a higher need for cooling” and “CO is not anticipated to be in the water sent to the cooling tower.” TransGas included no estimate of CO emissions from the Cooling Tower in the permit application. The DAQ does not expect and has not authorized any CO emissions from the Cooling Tower. The DAQ also does not expect and has not authorized any SO<sub>2</sub>, NO<sub>x</sub>, etc. emission from the Cooling Tower. However, based on the concerns presented in the SCELP comment of April 2009, the DAQ included the requirements in question to develop a knowledge base from the proposed facility. The phrase “reasonable detectable level” is used to address concerns that some undetectable trace amounts of a pollutant may be present.

Concerning PM/PM<sub>10</sub> emissions from the Cooling Tower, the DAQ notes requirement 4.2.7.3(a), which states:

The permittee shall continuously monitor *the circulating water flow rate in units of gallons per minute* [emphasis added], the circulating water’s total dissolved solids content via conductivity and the number of cycles of concentration of CT.

The comment letter is incorrect, the permit does require monitoring of the circulating water flow rate in units of gallons per minute. The DAQ considers a weekly sample to analyze the TDS content and the continuous monitoring of the circulating water flow rate as an appropriate level of monitoring to show compliance with the PM/PM<sub>10</sub> emission limit from the Cooling Tower. The DAQ considers the use of a drift eliminator to limit the maximum *permitted* drift rate to 0.001% as reasonable and, if based on inspection of the constructed facility, the Director believes that the design of the drift eliminator or use of make-up water is not supportive of the 0.001% drift rate, the Director can require appropriate testing at that time under Requirement 3.3.1. of the draft permit.

## B. Monitoring of the Flare

SCELP has commented that there is no monitoring on certain flare emission limits or on the volume of syngas sent to the flare.

### *DAQ Response*

As discussed in the Engineering Evaluation/Fact Sheet, the emissions generated by the flaring of the raw syngas during gasifier and AGR startup are based on both the levels of certain impurities in the gas and on engineering calculations independent of the impurities of the gas. Where there are potential substantive emissions from the flare dependent on impurity levels of the gas, the permit requires monitoring of these impurities. These monitoring requirements are noted in your comments. Compliance with the other emissions are based upon the acceptance of the calculations, monitoring of the volume of syngas flared, and requirements for the proper design and operation of the flare.

The comment letter is incorrect, the volume of syngas sent to the flare during gasifier and AGR startup is required to be monitored under requirements 4.2.5.4(c) and 4.2.5.6(b) of the draft permit, respectively.

The DAQ believes the monitoring of the flare required by the draft permit is reasonable, practically enforceable, and appropriate.

## C. Monitoring of PM Emissions and Opacity

SCELP has commented that the “the required monitoring of PM and opacity limits from the facility’s material handling are inadequate to ensure that emission limits in the permit are practically enforceable. . .” Specifically, SCELP comments that:

- Requirement 4.2.4.3 of the draft permit requires that TransGas only needs to “submit an estimate of emissions based on the same self-fulfilling assumptions it used in its application regarding fugitive dust emissions, without ever ground-truthing those assumptions;”
- Requirement 4.2.4.4., which requires TransGas to meet all the monitoring provisions of 45CSR5, 45CSR7, 40 CFR 60, Subpart Y, and 40 CFR 60, Subpart OOO, is inadequate with respect to the partially enclosed material handling equipment;
- The visible emissions monitoring requirement under requirement 4.2.4.2 is inadequate based on the required monthly only testing and is inconsistent with Subpart Y.

### *DAQ Response*

The DAQ uses the concept of parametric monitoring to show compliance with the material handling emission limits. Parametric monitoring uses the monitoring of other variables used in the calculation process as opposed to using continuous or predictive real-time emissions monitoring. This is generally the most practical and efficient way to determine compliance with fugitive and process fugitive material handling emissions.

In this manner, the draft permit limits the annual throughputs or sets the maximum design hourly throughput of material handling equipment and requires specific control devices for the equipment. The permit then requires TransGas to monitor and record the throughputs specified under requirement 4.1.4.3. The monitoring of the parameter of throughput guarantees compliance with the emissions as calculated using the specified throughputs and control device. This method is based on an assumption that the calculations are reasonable. The calculation methodology for the material handling emission points is discussed in the Engineering Evaluation/Fact Sheet.

As noted in that discussion, the use of the material, roadway, and weather data by TransGas in the material handling equations is considered reasonable for the purpose of estimating the PTE of a facility for pre-construction permitting applicability purposes. The material and roadway data (moisture contents, roadway silt loading) are considered appropriate for the specific materials in question and the type of facility. The weather data used are based on guidance from DAQ and are based on state or regional averages. Again, this data is considered appropriate for the estimation of PTE.

The requirement under 4.2.4.3 is intended to required TransGas to show continuously, through use of the already reviewed and approved calculation methodology, the emissions from the material handling equipment using the actual throughputs as monitored at the facility.

It is noted that the above compliance demonstrations and monitoring apply to all partially enclosed equipment. The DAQ disagrees that there is no monitoring or compliance demonstrations for the partially enclosed equipment.

As noted elsewhere in this comment response, the DAQ does not agree that it is necessary to have state or permit-based requirements perfectly consistent with federal requirements. In this case, the requirements under 4.2.4.2 are designed to provide a continuous means for monitoring the presence of visible emissions regardless of the schedule mandated under Subpart Y/000. The DAQ believes that this represents a more robust opacity monitoring than just relying on Subpart Y/000. However, to remove any ambiguity as to the interplay between the two opacity monitoring sections, clarifying language will be added to 4.2.4.2.

#### D. VOC Emissions from Truck Loading Rack

SCELP commented the draft permit needed to reproduce all the testing, reporting, and monitoring requirements of 40 CFR 60, Subpart XX and 40 CFR 63, Subpart R to “ensure that the Applicant complies with these requirements.”

#### *DAQ Response*

It is the DAQ’s policy to not, in most cases, reproduce in permits the often large amount of applicable requirements contained in state or federal rules. Doing so would potentially result in permits that were hundreds of pages long and very cumbersome to use. Generally, the DAQ will only place applicable emission standards (from federal rules) in a permit, but will not place all the

associated MRR&T requirements in the permit. This approach does not in any way relieve the permittee from the duty of meeting all applicable requirements as stated, in the case of Subpart XX and Subpart R, in requirement 4.2.7.6(b) of the draft permit.

E. Monitoring of Other Emissions

SCELP commented that the Draft Permit does not require that TransGas use site-specific testing or data and, as a result, it is impossible to determine if the facility is in compliance with the permit.

*DAQ Response*

Under Section 4.3 of the draft permit, and as outlined in the Engineering Evaluation/Fact Sheet, a broad range of site-specific testing is required. Included under the Section 4.3 requirements are performance tests on the coal crusher, Roller Mill & Heater, and Coal Dust Feeding System baghouses; performance tests on Startup/Reactivation, Startup/Regeneration, and Startup Steam boilers, performance tests on various gas streams to determine impurity fractions; performance tests on monitoring equipment to verify accuracy; a performance test on the waste gas streams sent to the flare to determine the presence of any HAPs; and a performance test on the syngas to verify the accuracy of the constituent weight fractions used in the fugitive emissions calculations.

The DAQ believes the extensive performance testing required in the draft permit, including the testing as noted above, is adequate to determine, along with other requirements included in the revised permit, the compliance status of the proposed facility.

F. Other Enforceability Concerns

SCELP commented that the limit in the draft permit to use 0.5% sulfur coal is “not supported because TransGas has not identified from what coal seams it plans to obtain its coal” and that the “applicant should be required to demonstrate, prior to construction, that it will be able to obtain enough of this ultra-low sulfur coal to fuel the plant for its expected life.”

*DAQ Response*

The requirements in the permit relating to the sulfur content of the coal must be met by TransGas unless changed in a permit modification or an administrative amendment pursuant to 45CSR13 or 45CSR14 as applicable. In no way will the DAQ “condone higher emissions levels” without the permittee being required to meet all applicable permitting requirements.

G. The Draft Permit Should Require Immediate Corrective Actions upon Discovery of Any Exceedance of an Emissions Limit of Operation Limitation

SCELP commented that the permit should contain language outlining the actions TransGas must take if they find, through monitoring or other site-specific data, that they are out of compliance with the conditions of the permit or with the assumptions made in the permit application.

## *DAQ Response*

Sections 2.5.1. and 2.5.2. of the draft permit state that:

[t]he permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application R13-2791 and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;

and

[t]he permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA

Based on the above, unless specifically noted in the permit, it is clear that the permittee is not authorized to operate out of compliance with the conditions of the permit or the plans and specifications contained in the permit application. Therefore, the DAQ does not include general out-of-compliance language in a permit as this may imply some accepted inevitability to violating permit conditions or emission limits (the exception to this is section 2.12 of the permit dealing with emergencies). However, permits will sometimes contain some specific references to required corrective action when warranted by type of equipment or process (as under 4.1.9.2. and 4.2.8.2. of the draft permit) or require record-keeping of any corrective action of a violation (as under 4.5.1.6.).

### XIV. The Department Should Correct Drafting Errors in the Draft Permit and Make Vague Provisions More Specific

SCELP made the following comments:

- The draft permit should be revised to include a table summarizing maximum annual criteria pollutant and HAP emission from the facility.
- The draft permit incorrectly specifies an H<sub>2</sub>S destruction efficiency of the flare of 99.5% when it should be referring to VOC destruction efficiency.
- The draft permit fails to limit the number of startups per year and number of hours per startup.
- The draft permit condition 4.1.7.3 lists the maximum number of turnovers and maximum throughput in gallons for each storage tank without indicating that these limits are annual limits.
- Section 1.0 of the draft permit fails to require use of a drift eliminator on the Cooling Tower.
- Appendix A of the permit does not limit emissions from individual stockpiles and it is unclear to what “Material Transfer Points” is referring.

- Attachment A to the Engineering Evaluation/Fact Sheet does not reflect that each pressure relief device is routed through closed loop system back to the process as required in the draft permit.
- The language in condition 4.1.4.9 of the draft permit is vague.
- The draft permit does not restrict the maximum throughput of LPG.
- The draft permit incorrectly defines “normal conditions.”

*DAQ Response*

- Appendix A to the draft permit contains annual emission limits for each emissions unit or appropriately grouped set of emission points. It is not the policy of the DAQ to put a facility-wide emissions summary in the draft permit. One was included, however, in the Engineering Evaluation/Fact Sheet.
- The draft permit is correct. The noted flare combustion/destruction efficiencies are taken from values used by TransGas to calculate potential emissions. VOC emissions from flaring of the raw syngas is based on emission factor from Table 13.5-1 of AP-42. See emissions calculations provided by TransGas and summarized in the Engineering Evaluation/Fact Sheet.
- The permit has been revised to include limits on total hours of authorized startup/shutdown times (*Requirement 4.1.5.5(b)*). This is required to guarantee compliance with those annual emissions not based on the amount of raw syngas sent to the flare but rather on the time the flaring is taking place.
- A footnote has been added to the permit to indicate that the storage tank maximum throughput and turnover limits are annual limits (*Table 4.1.7.3(a)*).
- A reference to the drift eliminator (and the associated footnote) has been added to the Emissions Units Table 1.0.
- Due to the nature of the sources, the DAQ believes it is appropriate to aggregate the stockpile and material transfer emission limits and that the phrase “material transfer points” is sufficiently clear.
- Attachment A to the Engineering Evaluation/Fact Sheet is provided to give a basic understanding of the design and flow of the proposed facility in a one-page block diagram format. It should be used with the more detailed discussions in the Engineering Evaluation/Fact Sheet and the requirements in the draft permit to acquire a more in depth understanding of the proposed facility with respect to potential air emissions. The DAQ feels Attachment A to the Engineering Evaluation/Fact Sheet is appropriate to this effect.

- The requirements given under 4.1.4.9 use standard DAQ language to require proper dust control methods and procedures on haulroads and mobile work areas. The DAQ believes providing specific and detailed timing schedules for various methods of haulroad and mobile work areas dust control is overly burdensome and does not take into account variations in weather (rain or dry conditions, calm or windy conditions, etc.) that may require a more or less frequent use of the methods in question. The facility will receive regular inspections by the DAQ pursuant to the scheduling of the C/E section.
- TransGas based their calculations on “normal conditions” as defined as 0 degrees centigrade and 1 atmosphere. It is noted that International Union of Pure and Applied Chemistry (IUAPC) currently uses this definition.

### ***The Law Office of Vincent Trivelli, PLLC***

On December 18, 2009 the The Law Office of Vincent Trivelli, PLLC, (Trivelli) on behalf of the Affiliated Construction Trades Foundation, a division of the West Virginia Building and Construction Trades Council, AFL-CIO, submitted the following comments concerning R13-2791. The comments were prepared by Carpenter Environmental Associates. The comments are numbered here according to the designation in the comment document (1.0 is introductory and general comments). For a full reading of the comments, please see the Trivelli comment document located in the R13-2791 file.

#### 2.0 Assessment of Key Air Pollutants

##### 2.1 Criteria Air Pollutants

##### 2.1.1 Particulate Matter

Trivelli provided the following substantive specific comments/questions:

- It cannot and should not be assumed that emissions of  $PM_{2.5}$  will be controlled similarly to emissions of  $PM/PM_{10}$ .
- Are the haul road lengths provided in the calculations correct?
- Do the haul road lengths represent road lengths or round-trip distances?
- Are the roadway emissions from product transport vehicles included in potential projections?
- Have particulate matter emissions from all vehicles exhaust, brake wear, and tire wear added elsewhere?
- There appears no basis for using a control efficiency of 85% on paved haulroads.
- More detail is required to verify the projected control efficiencies of multiple fabric filters including maintenance procedures.

- Are storage buildings to be fully enclosed as stipulated?
- There is no basis for the use of a TDS of 5,000 ppm in the Cooling Tower emissions calculations.
- Why is there no potential particulate matter emissions projected for the SRU and associated operations?

*DAQ Response*

The DAQ provides the following responses to above questions/comments:

- For a discussion of PM<sub>2.5</sub>, please see the DAQ Response to the SCEL P comment V.III.
- TransGas provided the proposed haul road lengths in the permit application as part of the haulroad emission calculations. As the source has not yet been constructed, verifying the length of the haul roads is not yet possible. However, the permit limits the “truck hauling distances” as used in the calculations (*Requirement 4.1.4.9(b)*).
- The haul road lengths used in the application represent round-trip distances. The permit has been revised to clarify this (*Requirement 4.1.4.9(b)*).
- Haulroad emissions from product transported from the proposed facility was calculated in the permit application. Please see Attachment N, pp. N14.
- §45-13-1.1 states that “[t]his rule does not apply to . . . motor vehicles. . . or other emission sources regulated under Subchapter II of the federal Clean Air Act.” Direct vehicle emissions, such as exhaust, brake wear, and tire wear are considered mobile source/motor vehicle emissions and are not included in the PTE of the proposed stationary source.
- For a discussion of the 85% control efficiency, please see the DAQ Response to the SCEL P comment VII.B.1.
- TransGas proposed the use of baghouses and fabric filters with the control efficiency and maximum exhaust concentrations as specified in the draft permit. The control efficiency and maximum exhaust concentrations were reasonable (as noted in the Engineering Evaluation/Fact Sheet, “[t]he value used for particulate matter baghouse outlet loading is within the range described for ‘well-designed’ baghouses as listed in the *Air Pollution Control Device Manual* (pp. 115). The emission rate of 5 mg-PM/m<sup>3</sup> is also considered reasonable according to the USEPA’s *Air Pollution Control Technologies Fact Sheets* for baghouses and fabric filters.”).

Under Section 4.3 of the draft permit, various baghouses and fabric filters will be required to be tested to show compliance with the associated control efficiency/maximum exhaust

concentration. Additionally, the permit requires that TransGas “install, maintain, and operate all pollution control equipment required by this permit in a manner consistent with safety and good air pollution control practices for minimizing emissions, and shall follow all manufacture’s recommendations concerning control device maintenance and performance.” (*Requirement 4.1.8.3.*)

- Pursuant to the draft permit, the coal, limestone, and slag storage piles are required to be fully enclosed (*Requirement 4.1.4.4(a)(2), (b)(2), and (c)*). Operation of these storage piles while not fully enclosed will be considered a violation of the permit.
- TransGas provided a TDS concentration of 5,000 ppm in the Cooling Tower emissions calculations. This TDS concentration was limited in the permit (*Requirement 4.1.7.2(a)*) and weekly monitoring required to show compliance (*Requirement 4.2.7.3.*). Operation of the Cooling Tower with a TDS concentration in the cooling water in excess of 5,000 ppm will be considered a permit violation.
- Please see DAQ Response to SCELPL comment VII.A.2 for a discussion of potential particulate matter from the SRU.

### 2.1.2 Carbon Monoxide

Trivelli commented that potential carbon monoxide emissions calculated for the facility were “extraordinarily low” and that two particular issues contributed to this problem. One, start-up activities for the plant will exceed the 80 hours used to calculate start-up emissions, and two, the CO emissions from the exhaust of the transportation system (trucks, trains, endloaders, etc.) was not included in the CO PTE.

#### *DAQ Response*

The DAQ reviewed the CO emission calculations included in Attachment N of the permit application and determined they were reasonable. The calculations determining the potential emissions during startup/shutdown were based on the operating scenarios provided by TransGas in the permit application. The controlling values (startup/shutdown hours, total volumes flared, etc.) have been limited in various permit requirements. Operation of the facility beyond these limitations will be considered a permit violation. Nothing has been provided to reasonably show that TransGas will be unable to meet the limitations of startup/shutdown scenarios provided in the permit application.

§45-13-1.1 states that “[t]his rule does not apply to . . . motor vehicles. . . or other emission sources regulated under Subchapter II [Emission Standards for Moving Sources] of the federal Clean Air Act.” Additionally, under Table 45-13B (DE MINIMIS SOURCES), “Combustion emissions from propulsion of mobile sources” is specifically listed. Pursuant to §45-13-2.6a:

Unless otherwise determined by the Secretary, emissions from a de minimis source shall not be included in determining the “potential to emit” for purposes of applicability under this rule.

Direct mobile source emissions, such as exhaust from trucks, trains, endloaders, etc., are considered mobile source/motor vehicle emissions and are not included in the PTE of the proposed stationary source.

### 2.1.3 Oxides of Nitrogen

Trivelli commented that the permit application underestimates NO<sub>x</sub> emissions for the same two reasons as the application underestimates CO emissions. Additionally, Trivelli commented that the proposed facility may exacerbate the ozone non-attainment problem in Wayne County.

#### *DAQ Response*

Please see the DAQ response to Trivelli comment 2.1.2 for a discussion of startup emissions and exhaust from transportation devices.

Currently, Wayne County is in attainment with the 1997 0.08 ppm 8-hour ozone standard. It is, however, expected to be designated as in non-attainment with the 2008 0.075 ppm 8-hour standard sometime in 2010. TransGas has proposed to locate the CTL facility in southern Mingo County in a south-southeasterly direction (approximately 30 miles) from the Wayne County border. Based on the PTE of NO<sub>x</sub> from the proposed facility and the location of the source, the DAQ has no reason to believe that the facility will cause or contribute to the potential ozone non-attainment problem in Wayne County.

### 2.1.4 Sulfur Oxides

Trivelli commented that “the applicant must perform a facility-wide mass balance of sulfur including each sulfur-bearing compound and potential air pollutant. A more meaningful review of the permit will be reasonable only following such a more thorough and complete analysis by the applicant . . . and WVDEP.”

#### *DAQ Response*

The DAQ has determined that TransGas provided a reasonable estimate of maximum facility-wide potential SO<sub>2</sub> emissions. The commentor has not provided any specific examples of TransGas’ errors or omissions in this estimate.

### 2.1.5 Volatile Organic Compounds

Trivelli commented that “the permit application and [Engineering Evaluation/Fact Sheet] must be revised to reflect accurately both the potential emissions of VOCs (absent emissions controls) and realistic emission expectations for a refinery of this size and complexity.” Additionally, Trivelli commented that the proposed facility’s VOC emissions from transportation systems may exacerbate the ozone non-attainment problem in Wayne County.

## *DAQ Response*

The DAQ has determined that TransGas provided a reasonable estimate of maximum facility-wide PTE of VOC emissions - which includes emission controls. Additionally, TransGas provided uncontrolled emissions, where applicable, in Attachment J of the permit application. The commentor has not provided any specific examples of TransGas' errors or omissions in this estimate.

Currently, Wayne County is in attainment with the 1997 0.08 ppm 8-hour ozone standard. It is, however, expected to be designated as in non-attainment with the 2008 0.075 ppm 8-hour standard sometime in 2010. TransGas has proposed to locate the CTL facility in southern Mingo County in a south-southeasterly direction (approximately 30 miles) from the Wayne County border. Based on the PTE of VOC from the proposed facility and the location of the source, the DAQ has no reason to believe that the facility will cause or contribute to the potential ozone non-attainment problem in Wayne County.

Please see DAQ response to Trivelli comment 2.1.2. for a discussion on the applicability of the exhaust from transportation systems.

## 2.2 Hazardous Air Pollutants

### 2.2.1 Carbonyl Sulfide and Hydrogen Sulfide

Trivelli commented that the estimated startup operations are not realistic and, as a result, the actual Carbonyl Sulfide (COS) emissions will be higher than the PTE estimated by TransGas. Trivelli also commented that "specific concerns with respect to COS creation and emission should focus on worker exposure through inhalation and odors."

## *DAQ Response*

The DAQ notes that Hydrogen Sulfide (H<sub>2</sub>S) is not considered a HAP. Please see <http://www.epa.gov/ttn/atw/pollutants/atwsmmod.html>. However, H<sub>2</sub>S emissions are limited from the emission points B2/1 and B2/2 (raw syngas flared during gasifier startup and shutdown). Please see the Engineering Evaluation/Fact Sheet (TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS) for discussion on the toxicity of non-criteria regulated pollutants.

Please see the DAQ response to Trivelli comment 2.1.2 for a discussion of startup emissions.

The DAQ does not review air quality within the plant boundary for risks of potential worker exposure. These issues would be under the purview of the Occupational Health and Safety Administration (OSHA).

Please see DAQ response to SCEL P comment X.I for a discussion of odors.

### 2.2.2 Hydrogen Cyanide

Trivelli has commented that, concerning emissions of hydrogen cyanide (HCN), the principle concern is worker exposure and that the “proposed syngas flow and ‘Rectisol was system’ should be equipped with effective monitoring and alarm systems to identify any inadvertent HCN release.”

#### *DAQ Response*

Appendix A to the draft permit contains HCN limits on the raw syngas from the gasifier flared during times of startup/shutdown. Please see the Engineering Evaluation/Fact Sheet (TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS) for discussion on the toxicity of non-criteria regulated pollutants.

The DAQ does not review air quality within the plant boundary for risks of potential worker exposure. These issues would be under the purview of the Occupational Health and Safety Administration (OSHA).

### 2.2.3 Mercury

Trivelli commented that, with respect to the emissions of mercury, “[i]n order to describe the potential and actual environmental fate of Hg more completely, a mass balance must be performed and provided for this important contaminant.”

#### *DAQ Response*

The draft permit contains a facility-wide limit (*Requirement 4.1.3(b)*) on mercury emissions of 20 lbs/year, requires the use of a mercury control systems (mercury adsorber and Rectisol system), and requires a monthly calculation of the amount of mercury emitted based on the actual tested mercury content of the coal being gasified (*Requirement 4.2.2.*) The DAQ considers the estimated maximum PTE of mercury reasonable and the compliance demonstration requirements in the permit appropriate.

### 2.2.4 BETX

Trivelli commented that, with respect to benzene, ethylbenzene, toluene, and xylene (BTEX), “rigorous systems maintenance and monitoring are very important. Benzene is a known human carcinogen, and [the] other compounds have the potential to cause diverse effects to human health and the environment.”

#### *DAQ Response*

The proposed facility will have potential emissions of BTEX as constituent compounds when emissions are produced from the handling and storage of gasoline. The estimated PTEs of these compounds are given in Table 3 of the Engineering Evaluation/Fact Sheet. The handling and storage of gasoline will be subject to the following federal requirements including:

- *40 CFR 60, Subpart Kb* - Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
- *40 CFR 60, Subpart XX* - Standards of Performance for Bulk Gasoline Terminals
- *40CFR63, Subpart R* - National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)

Additionally, the permit requires an LDAR program (*Requirement 4.1.9.*) at the facility to minimize leaks from equipment and processes. Throughput and monitoring requirements and gasoline handling and storage are also in the draft permit.

The DAQ considers the estimated maximum PTE of BTEX compounds reasonable and the control strategies, compliance demonstration, and monitoring requirements in the permit appropriate.

### 3.0 Determination of Source as Minor/Major

Trivelli commented that the “proposed TransGas facility must be considered as a ‘major source’ of air pollution.” This assertion is based on the following:

- Underestimation of the particulate matter emissions from haul roads as noted under comment 2.1.1.
- Underestimation of the CO emissions as noted under comment 2.1.2.
- Underestimation of the VOC emissions as noted under comment 2.1.5.

#### *DAQ Response*

The DAQ has determined that the calculated maximum PTE of the facility is reasonable and is below the applicability thresholds that would define the proposed facility as “major” under the Prevention of Significant Deterioration (PSD) program administered in WV under 45CSR14. Please see DAQ responses to the specific comments noted above.

### 4.0 Odors

Trivelli commented that objectionable odors are likely to be generated from the proposed facility and that “simple dispersion modeling could characterize both the sources of odorous emissions and focus mitigation efforts on the sources of greatest concern.”

#### *DAQ Response*

Please see DAQ response to Trivelli comment 2.1.2. for a discussion of startup/shutdown scenarios.

Please see DAQ response to SCEL P comment X.I for a discussion on odors.

## 5.0 Summary of Conclusions

In this section Trivelli mostly summarized the previous comments which the DAQ has provided responses to above. However, the following several additional points were raised:

- The permit should explicitly state how start-up conditions will be determined, defined, and enforced;
- The permit should stipulate explicitly that any reduction in the performance of the flare should trigger immediate process cessation until the requisite removal efficiencies can be resumed.

### *DAQ Response*

The draft permit does explicitly define what constitutes a period of startup/shutdown (*Requirements 4.1.5.5(a) and 4.1.5.6*) for the gasifier and AGR and the describes the associated monitoring and compliance demonstration requirements (*Requirements 4.2.5.4(a) and 4.2.5.6(a)*). The permit will be revised to include a definition and associated monitoring and compliance demonstration requirements for startup of the Rolling Mills and Heaters (*Requirements 4.1.5.1(d) and 4.2.5.1(b)*).

Please see response to SCEL P comment X.III.G. for a discussion on operation of the proposed facility out of compliance with an issued permit.

### ***Stephanie Tyree***

On December 17, 2009 Stephanie Tyree submitted comments on the draft permit R13-2791. The comments included both air quality related issues and non-air quality related issues. The air quality-related comments are summarized as follows:

- Particulate matter is produced from the crushing of coal which will lead to respiratory problems.
- The use of 3.5 million tons of coal is not a “minor source.”
- What pollutants will the plant emit?
- Emissions of benzene have been found to cause anemia and leukemia. Exposure to hydrogen sulfide is linked to respiratory problems like asthma.
- TransGas did not provide engineering and construction maps of the plant.

### *DAQ Response*

As noted above, please see the General Response section of this document for a discussion of non-air quality related issues and a discussion on the quality of the ambient air in Mingo County. In response to the specific questions:

- The DAQ notes that the coal crusher is required to be fully enclosed and the emissions controlled by a baghouse with a minimum capture efficiency of 99%. The permit limits the emissions from coal crushing to less than one pound/hour and less than one ton/year of total particulate matter. It is expected that the coal crusher will have a negligible effect on the ambient air quality of Mingo County - which is currently classified as in attainment with the NAAQS.
- The DAQ has determined that the potential emissions of the facility are below the applicability thresholds that would define the proposed facility as “major” under the Prevention of Significant Deterioration (PSD) program administered in WV under 45CSR14. Therefore, the permit application was reviewed as a construction of a synthetic minor source under WV’s minor source permitting rule - 45CSR13.
- The maximum PTE of the pollutants emitted by the proposed facility are summarized in Table 2 and Table 3 of the Engineering Evaluation/Fact Sheet.
- Please see the Engineering Evaluation/Fact Sheet (TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS) for discussion on the toxicity of non-criteria regulated pollutants including benzene and hydrogen sulfide. Note that there are no federal or state ambient air quality standards for benzene or hydrogen sulfide.
- TransGas provided the information required by the DAQ in a complete application. This includes the Site Location map submitted as Attachment B, the Plot Plan submitted as Attachment E, and process flow diagrams submitted as Attachment G and in Attachment N of the permit application.

### ***Jim and Virginia Wagner***

On December 18, 2009 Jim and Virginia Wagner submitted comments on the draft permit R13-2791. The comments included both air quality related issues and non-air quality related issues. The air quality-related comments are summarized as follows:

- What emission protections will be included at the plant to protect local air quality?
- What levels and types of emissions are expected from the plant?
- What protections will local residents have for their respiratory and overall health?
- What impacts will the plant have on air quality?

- CTL produces nearly twice as much carbon dioxide as petroleum.

#### *DAQ Response*

As noted above, please see the General Response section of this document for a discussion of non-air quality related issues and a discussion on the quality of the ambient air in Mingo County. In response to the specific questions:

- The requirements of permit R13-2791 are designed to enforce the determination by the DAQ - as outlined in the Engineering Evaluation/Fact Sheet - that the proposed facility will comply with all applicable state and federal regulations.
- The maximum PTE of the pollutants emitted by the proposed facility are summarized in Table 2 and Table 3 of the Engineering Evaluation/Fact Sheet.
- Mingo County is currently designated by USEPA as in attainment with the NAAQS. Please see DAQ General Response for a discussion of the NAAQS. The DAQ does not expect, based on the proposed PTE of the facility, that it will cause or contribute to any violation of the NAAQS.
- The air quality impacts evaluated relating to TransGas' application to construct a CTL plant are outlined in the DAQ's Engineering Evaluation/Fact Sheet released made public on October 27, 2009.
- Please see DAQ response to SCEL P comment X for a discussion of greenhouse gases.

#### ***Matthew Noerpel***

On December 18, 2009 Matthew Noerpel submitted comments on the draft permit R13-2791. The comments included both air quality related issues and non-air quality related issues. The air quality-related comments are summarized as follows:

- It is foolish to permit a major source of CO<sub>2</sub> with pending regulations on the way.
- The estimated emissions of the plant do not include accidental releases.
- The plant should be regulated as a major source.

#### *DAQ Response*

As noted above, please see the General Response section of this document for a discussion of non-air quality related issues. In response to the specific questions:

- Please see DAQ response to SCEL P comment X for a discussion of greenhouse gases.

- It is not the policy of the DAQ to permit operational malfunctions (with associated emergency releases of pollutants) and quantification and inclusion of these emissions into a facility's PTE is not required (nor, for most sources without a site-specific operating history, considered practicable). Emissions resulting from operational malfunctions shall be considered "excessive" and considered a Compliance/Enforcement matter.
- The DAQ has determined that the potential emissions of the facility are below the applicability thresholds that would define the proposed facility as "major" under the Prevention of Significant Deterioration (PSD) program administered in WV under 45CSR14. Therefore, the permit application was reviewed as a construction of a synthetic minor source under WV's minor source permitting rule - 45CSR13.

### *TransGas*

On December 3, 2009 Potesta & Associates submitted comments on behalf of TransGas. The comments are summarized in the following:

- TransGas requested that the condition in Table 4.1.9.1 of draft permit R13-2791 that requires all "Pumps" to be of a "Sealless Design" be changed to "Pumps in hydrocarbon service."
- TransGas noted four typos/misstatements in the Engineering Evaluation/Fact Sheet - the aggregate amount of flared raw syngas was listed as 100,000 m<sup>3</sup>/year instead of 100,000 m<sup>3</sup>/hour on pages 6 and 11, and it was not clear on pages 5 and 10 that limestone and coal are injected into the gasifiers after processing in the Rolling Mill and Heaters.

### *DAQ Response*

A review of the fugitive emission calculations in Attachment N of the permit application indicates that sealless design pumps are only in service in areas handling hydrocarbons. Therefore, making the requested change to the permit is appropriate and maintains enforceability of the emissions. The DAQ notes that, pursuant to 4.1.9.3, TransGas shall "shall not exceed the number and type of components (valves, compressors, pressure relief valves, etc.) as listed for each area of the plant in Attachment 3 to Task Order 1 in Attachment N of Permit Application R13-2791."

The noted typos/misstatements in the Engineering Evaluation/Fact Sheet will be corrected.

## **CHANGES TO DRAFT PERMIT & ENGINEERING EVALUATION/FACT SHEET**

As a result of comments received, Draft Permit R13-2791 has been revised. All revisions due to comments received were noted above in the DAQ's responses to comments. Several additional corrections were made to the draft permit upon discovery by the DAQ. All revisions are listed here for clarity:

<b>Permit Requirement No.</b>	<b>Page</b>	<b>Substantive Revision/Addition Description</b>
Table 1.0	5	Added Control Device “DE” to Cooling Tower.
Table 1.0	6	Added description of “DE” and “VF” to footnote (1).
4.1.2.	16	Added language authorizing only points or sources in Appendix A at the facility.
4.1.3(c)	16	Added language prohibiting emissions of HAP metals.
4.1.4.9(b)(3)	19	Defined “truck hauling distance.”
4.1.4.9(c)	19	Added requirement to flush roadways with water prior to vacuum sweeping.
4.1.5.1(a)	22	Added CO and VOC emission limits to Rolling Mills and Heaters feedstock requirement.
4.1.5.1(d)	23	Defined “Startup” of Rolling Mills and Heaters.
4.1.5.2(a)	23	Added prohibition on using N <sub>2</sub> as a carrier gas in the Coal Dust Feeding System.
4.1.5.2(e)	23	Added requirement applying Subpart Y to the Coal Dust Feeding System.
4.1.5.4.	24	Clarified requirement relating to release of raw or clean syngas or process offgases.
4.1.5.5(b)	24	Added an aggregate annual startup/shutdown hours limit for the gasifiers.
4.1.5.5(e)	24	Added an aggregate annual vent gas heat content limit for the gasifiers.
4.1.5.6(c)	25	Added an aggregate annual startup/shutdown hours limit for the AGR.
4.1.5.7.	25	Added prohibition on sulfur solidification.
4.1.5.8.	25	Added clarifying language stating CO limit in effect at all times.
4.1.6.1.	26	Clarified requirement relating to release of raw or clean syngas or process offgases.
4.1.6.7. 4.2.6.7. 4.3.5.4. 4.3.7.1.	28 35 40 41	Addition of 40 CFR 60, Subpart NNN applicability language to the permit.
4.1.7.2(b)	29	Increased exactness of Cooling Tower pollutant language and added VOCs prohibition in cooling water.
Table 4.1.7.3(a)	30	Correction of maximum turnovers/throughput for TK6.
4.1.8.2(a)	31	Language has been added requiring steam assistance of the flare.
4.1.8.2(c)	31	Language has been added requiring an appropriate steam-hydrocarbon ratio and minimum heat content of 300 Btu/scf of the flared gas.

4.1.8.2(d)	31	Added requirement for a Flare Monitoring and Compliance Demonstration Report
Table 4.1.9.1.	32	Added phrase “In hydrocarbon service” to pumps under LDAR requirements.
4.1.9.4. 4.2.9.1. 4.3.8.2.	32 37 41	Addition of 40 CFR 61, Subpart J and V applicability language to the permit.
4.2.4.2(d)	34	Added requirement clarifying applicability of material handling rules.
4.2.5.1(b)	34	Added Rolling Mills and Heaters startup hours monitoring.
4.2.5.2.	34	Added flow rate to CO <sub>2</sub> Purification Unit monitoring requirement.
4.2.5.4(c)	35	Added heat content monitoring to gasifiers.
4.2.7.3(d)	35	Removed cooling water CO monitoring.
4.2.8.3(d) 4.2.8.3(e)	37	Required monitoring of steam flow rate, steam-to-hydrocarbon ratio, and heat content of the flare.
4.3.2(b)	38	Added additional HAP metal testing language.
4.3.4.2(b)	39	Added test on coal feedstock to determine CO and VOC volatilization rates.
4.3.6.4.	40	Added test on cooling water to determine CO and VOC concentrations.
4.3.8.3.	41	Added requirement for a LDAR Monitoring and Compliance Demonstration Report
Appendix A	A4	Addition of incorrectly omitted H <sub>2</sub> S limits on Emission Point B2/1.

## **ADDITIONS/REVISIONS TO REGULATORY APPLICABILITY**

As noted above under DAQ Response to SCELPC comments XII.A and XII.C, TransGas was unable to provide a justification of non-applicability to 40 CFR 60, Subpart NNN and 40 CFR 61, Subpart J and V. Each of these rules will be discussed below:

### **40 CFR, 60, Subpart NNN: Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations**

Subpart NNN applies to “distillation units” that are “part of a process unit that produces any of the chemicals listed in §60.667 as a product, co-product, by-product, or intermediate.” While methanol is listed under §60.667 as a regulated chemical product, the TransGas facility will produce methanol as an intermediate product prior to converting it to gasoline in the MtG plant. In the Engineering Evaluation/Fact Sheet, it was noted that the only distillations at the facility are located

in the MtG plant that does not produce methanol as a product, co-product, by-product, or intermediate and, instead, uses methanol as a feedstock. Based on this analysis, Subpart NNN was determined not to be applicable to the proposed facility. However, SCEL commented that the potential production of ethylene, propylene, and mixed butanes as “byproducts” in the MTG process would trigger applicability of Subpart NNN.

Upon request, TransGas was not able to justify a determination of non-applicability of this rule (*i.e.*, no potential production of ethylene, propylene, and mixed butanes). In reviewing the Subpart NNN applicability requirements, the DAQ therefore concurs that Subpart NNN does apply to the distillation units in the MtG Plant and appropriate Subpart NNN language was added to the permit.

The substantive requirement under Subpart NNN is to control any vented gas streams produced in “distillation units” by one of the three options given under §60.662. TransGas will meet this requirement by flaring the tail gas (during times the front end of the plant is shutdown) from their distillation units with a flare that is compliant with §60.18.

#### 40 CFR 61, Subpart J: National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene

As noted above, SCEL commented that 40 CFR 61, Subpart J was, based on the potential throughput of gasoline (and, as a part of gasoline, its benzene content), applicable to the proposed TransGas facility. Upon request, TransGas could not provide any justification for a determination of non-applicability of Subpart J. In reviewing the Subpart J applicability requirements, the DAQ concurs that Subpart J does apply to affected facilities at the proposed facility and has placed appropriate language in the permit.

Subpart J applies to “each of the following sources that are intended to operate in benzene service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart.” The substantive requirement of Subpart J is for TransGas to “comply with the requirements of subpart V.” Subpart V is discussed below.

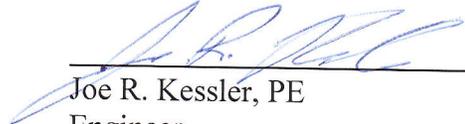
#### 40 CFR 61, Subpart V: National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

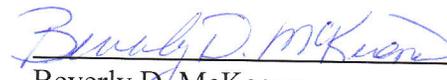
As noted above, 40 CFR 61, Subpart V applicability to the proposed TransGas facility is triggered by the applicability of Subpart J. Subpart V provides specific LDAR requirements and standards for those sources noted in Subpart J. Subpart V language has been added to the permit.

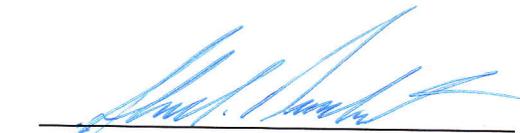
## **FINAL DETERMINATION**

Pursuant to §45-13-8.8, all submitted relevant comments received during the R13-2791 public comment period have been reviewed and are appropriately addressed in this document. It is the view of the DAQ that, after consideration of all comments received and revisions to the draft permit as

noted above, the available information indicates TransGas Development Systems, LLC's proposed construction of a coal-to-liquids (CTL) plant proposed to be located near Wharncliffe, Mingo County, WV will meet the emission limitations and conditions set forth in the permit and should comply with all currently applicable state and federal air quality management rules and standards.

  
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*2-25-10*  
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Date