TECHNICAL REVIEW DOCUMENT
For
OPERATING PERMIT 09OPGA339

Bill Barrett Corporation – Bailey Compressor Station
Garfield County
Source ID 0451477

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October - December 2011

I. Purpose

This document establishes the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for the Bailey Compressor Station. It is designed for reference during review of the proposed permit by the EPA, the Public and other interested parties.

Conclusions made in this report are based on information provided by the applicant in the Title V permit application submitted on October 20, 2009, additional information submitted on March 4, 2010 and September 27, 2011, various e-mail correspondences with the source and review of Division files. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

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

II. Description of Source

The Bailey Compressor Station is a natural gas compression facility as defined under Standard Industrial Classification 1311. The facility gathers gas from surrounding well sites via a gathering pipeline system. The gas undergoes a natural separation process in the inlet separator that separates the gas from the liquids. The liquids go to the on-site storage tanks. The gas then goes to the compression stage where it is compressed from field pressure to approximately 1000 psi. The compressed gas then goes through the TEG dehydration units to remove water to meet pipeline specifications. The dehydrated gas is then routed to the sales gas pipeline.

The facility is located approximately 5 miles south of Silt in Garfield County on Alta Mesa Road. The area in which the plant operates is designated as attainment for all criteria pollutants.

There are no affected states within 50 miles of the plant. The following Federal Class I designated areas are within 100 kilometers of the plant: Black Canyon of the Gunnison National Park, West Elk Wilderness Area, Flattops Wilderness Area, and Maroon Bells – Snowmass Wilderness Area.

Based on the information provided by the applicant, this facility is categorized as a synthetic minor stationary source (no single criteria pollutant emissions with a Potential to Emit of greater than 250 TPY) at the issuance date of this permit. The source therefore is not subject to the Prevention of Significant Deterioration (PSD) review requirements of 40 CFR 52.21 (Colorado Regulation 3, Part D, Section VI).

The potential to emit for the facility is listed in the table below:

Emission Unit	Potential to Emit				
	NO_X	VOC	CO	PM	PM_{10}
ENG01 – 02 (Total)	49.6	34.6	17.8	2.2	2.2
ENG03 – 07 (Total)	165.5	114.5	59.0	7.0	7.0
TEG01 – 04 (Total)		17.6			
TNK01 – 07 (Total)		10.6			
FUG		47.8			
FLARE	2.6		5.1		
LOADING		3.2			
Total	217.7	228.3	81.9	9.2	9.2

The breakdown of potential HAP emissions for each emission unit based on information provided in the Title V application is as follows:

Pollutant	Potential Emissions (lbs/yr)					Total (tpy)
	ENG01-02	ENG03-07	TEG01-04	FUG	TNK01-07	
Benzene	96	315	3796	240	7	2.23
Toluene	88	295	5848	425	111	3.38
Ethylbenzene	8	30	256	33	4	0.17
Xylene	40	135	1524	163	39	0.95
Formaldehyde	5662	18885				12.27
2,2,4 - TMP					32	0.02
Acetaldehyde	1812	6030				3.92
Acrolein	1114	3710				2.41
n-Hexane			888	1908	481	1.64
						26.99

Compliance Assurance Monitoring (CAM)

Uncontrolled emissions from each of the Caterpillar G3616 engines, each of the glycol dehydration units, and the condensate tank battery are above the major source level. The control devices on the engines and dehydrators are used to meet their emission limitations, therefore CAM applies to these units. However, since controlled emissions from the engines, dehydrators, and tank battery are below the major source level, CAM does not apply until the renewal of this permit (40 CFR Part 64 §64.5(b)).

NESHAP Subpart HH

The final rule for 40 CFR Part 63 Subpart HH was revised on January 3, 2007 to address area sources. Under the provisions of the Oil and Natural Gas Production MACT, since the Bailey compressor station meets the definition of a "production field facility", only HAP emissions from glycol dehydrators and storage vessels with the potential for flash emissions need to be aggregated to determine whether the facility is a major source for HAPS. The condensate tanks at Bailey do not meet the definition of "storage vessels with the potential for flash emissions" since the actual annual average throughput is less than 500 bbl/day. Therefore, the MACT only applies to the glycol dehydration units. The glycol dehydration units are not major for HAP emissions pursuant to the MACT, thus, the facility is only subject to the area source requirements of the MACT HH.

NESHAP Subpart ZZZZ

The engines at this facility are subject to the major source requirements in 40 CFR Part 63 Subpart ZZZZ for stationary reciprocating internal combustion engines. For production field facilities, only HAP emissions from glycol dehydration units, storage vessel with the potential for flash emissions, combustion turbines and reciprocating internal combustion engines shall be aggregated for a major source determination. Formaldehyde emissions from engines alone are above the 10 tons per year major source threshold. The applicable requirements for the engines are based on manufacture date and horsepower rating.

NSPS Subpart JJJJ

Some engines at this facility are subject to the requirements in 40 CFR Part 60 Subpart JJJJ for stationary spark ignition internal combustion engines. Applicability of this subpart is based on the construction date, date of manufacture, and engine power rating. For the purposes of determining applicability to the provisions of Subpart JJJJ, the date that construction commences is the date the engine is ordered. All engines at this facility were ordered after June 12, 2006. All engines, with the exception of ENG02, were manufactured after July 1, 2007. This subjects the engines, save ENG02, to emissions standards for NO_X, CO, and VOC.

Regulation No. 7, Section XVII.E

All engines at this facility are subject to the requirement of Colorado Regulation No. 7, Section XVII.E. However, Reg 7 Section XVII.B.4 exempts units that are subject to NSPS or MACT control requirements from the provisions of Section XVII.E. All engines at the facility, except for ENG02, are subject to NSPS JJJJ and therefore are exempt

from the requirements of Section XVII.E. ENG02 is subject the control requirements under the reciprocating internal combustion engine MACT, Subpart ZZZZ, however, compliance with these limitations is not required until January 13, 2014, three years after the facility became major under Subpart ZZZZ. Until the MACT requirements become effective, ENG02 must follow the emission standards in Reg 7, Section XVII.E.

Greenhouse Gases

Potential greenhouse gas emissions from this facility exceed 100,000 tons per year CO_2e. Future modifications resulting in an emissions increase greater than 75,000 tons per year CO_2e may be subject to regulation.

Source Determination

The last evaluation of the source status of this facility was conducted during the second modification of the construction permit which was issued on January 13, 2011. There have been no requested changes to the facility or surrounding operations that merit revisiting this determination.

III. Emission Sources

Initial approval of modification 3 of the facility-wide construction permit 07GA0569 was issued for the facility on November 14, 2011. Self-certification has not yet been submitted and a final approval permit has not been issued. Under the provisions of Colorado Regulation No. 3, Part C, Section V.A.2, the Division will not issue a final approval construction permit and is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with first semi-annual monitoring and deviation report required by this operating permit to serve as the demonstration required pursuant to Colorado Regulation No. 3, Part B, Section III.G.2 and no final approval construction permit will be issued. An application for an additional modification to the permit was received September 27, 2011, and those changes requested have been incorporated into this Title V issuance.

Facility Wide Conditions

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows:

- Notify the APCD no later than thirty days after commencement of the permitted operation or activity by submitting a Notice of Startup (NOS) form to the APCD (Condition 1). A NOS has been submitted for all permitted equipment, except ENG07, and therefore this requirement has only been included in the Title V operating permit for ENG07.

- Within 180 days after commencement of operation, the permittee shall self-certify compliance with the condition contained on this permit (Condition 2). As discussed above, the first semi-annual monitoring and deviation report will serve

as self-certification and therefore this requirement has not been included in the operating permit.

- Permit expiration provisions (Condition 4). All equipment, except ENG07, has been installed prior to the permit expiration deadlines and therefore this requirement has only been included in the operating permit for ENG07. Since construction associated with this construction permit issuance begin in part with in installation of the TEG04 dehydrator on May 10, 2011, the source shall have 18 months from discontinuation of construction, or November 10, 2012, until the permit to construct ENG07 expires.

- The operator shall complete all initial compliance testing and sampling as required in the permit and submit the results to the Division as part of the self-certification process (Condition 5). As discussed above, the first semi-annual monitoring and deviation report will serve as self-certification and therefore this requirement has not been included in the operating permit.

- The permit number and AIRS ID number shall be marked on the subject equipment for ease of identification (Condition 6). This is a construction permit only requirement and was not included in the operating permit.

- The operator shall retain the permit final authorization letter issued by the Division after completion of self-certification (Condition 9). As discussed above, final approval for this construction permit will not be issued and therefore this condition was not included in the operating permit.

- Visible emissions shall not exceed 20% opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes (Condition 18). Visible emissions limitations have been added under the specific conditions for each piece of equipment. The requirements have not been added for emission units that only emit VOCs. For engines, the only scenario in which the 30% limit applies is during startup.

- This source is subject to the odor requirements of Regulation No. 2 (Condition 19). This requirement is included in the general conditions section of the operating permit and to reduce redundancy throughout the permit, this requirement was not included in the specific conditions.

- All previous versions of this permit are cancelled upon issuance of this permit (Condition 36). This is not a requirement for the source and pertains to the construction permit only and was not included in the operating permit.

- APEN reporting requirements (Condition 37). The APEN reporting requirements are included in Section IV (General Conditions) Condition 22.e of the operating permit.

- This facility shall be completely enclosed by a fence and posted with no trespassing signs that preclude public access to this site (Condition 39). This requirement has been included in the operating permit.

- This source is subject to the provisions of Regulation No. 3, Part C, Operating Permits. The provisions of this construction permit must be incorporated into the operating permit (Condition 40). This condition was not included in the operating permit since with this permit action the requirement is fulfilled.

- PSD requirements shall apply to this source at any such time that this source becomes major solely by virtue of relaxation of any permit condition (Condition 41). This condition was not included in the operating permit since no actual requirements apply. The PSD status of the source is discussed in Section I, Condition 3 of the permit.

- The major source provisions of MACT Subpart HH requirements shall apply to this source at any such time that this source becomes major for HAPs by virtue of relaxation in any permit limitation (Condition 42). This condition was not included in the permit as it is not an applicable requirement. Regardless of whether the conditions in this construction permit are relaxed, once the facility exceeds the major source threshold for HAPs, major source MACT requirements apply.

ENG01-02: Two (2) Caterpillar G3612 TALE, 4-Cycle Lean Burn, Spark Ignition, Air-To-Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, 3,665 HP, equipped with an oxidation catalyst, each engine drives a compressor.

ENG03-06: Four (4) Caterpillar G3616 TALE, 4-Cycle Lean Burn, Spark Ignition, Air-To-Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, 4,890 HP, equipped with an oxidation catalyst, each engine drives a compressor.

ENG07: One (1) Caterpillar G3612 TALE or G3616, 4-Cycle Lean Burn, Spark Ignition, Air-To-Fuel Ratio Controlled, Natural Gas Fired Internal Combustion Engine, 3,665 HP or 4,890 HP, equipped with an oxidation catalyst, engine drives a compressor.

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows. The specific requirements are intended to apply to each engine.

- **ENG07 (Point 013):** Submit an APEN for the actual equipment constructed within 30 days of after commencement of operation of this point (Condition 3). This requirement was included in the permit as specific to ENG07 only.

- **ENG07 (Point 013):** The permit holder shall provide the model and serial number of this engine to the Division within 30 days after commencement of operation (Condition 8). This condition was included in the permit under the requirement to submit a NOS.

- Emissions from **each engine** shall be limited to the following: (Condition 10)

  For engines ENG01-02:

o NO_X	24.8 tons/yr	and	2.10 tons/mo
o VOC	17.3 tons/yr	and	1.47 tons/mo
o CO	8.9 tons/yr	and	0.75 tons/mo
o PM_{10}	1.1 tons/yr	and	0.09 tons/mo
o $PM_{2.5}$	1.1 tons/yr	and	0.09 tons/mo

  For engines ENG03-07:

o NO_X	33.1 tons/yr	and	2.81 tons/mo
o VOC	22.9 tons/yr	and	1.95 tons/mo
o CO	11.8 tons/yr	and	1.00 tons/mo
o PM_{10}	1.4 tons/yr	and	0.12 tons/mo
o $PM_{2.5}$	1.4 tons/yr	and	0.12 tons/mo

  The monthly limits apply for the first twelve months of operation and were not included for equipment that has been in operation longer than one year. As of the issuance date of the operating permit, only ENG07 will be applicable to the monthly limits. The PM10 and PM2.5 limits are below APEN reportable levels and therefore were not included in the permit.

- **Each engine** shall be limited to the following fuel consumption limits: (Condition 16)

  For engines ENG01-02:

o Natural gas	204.7 MMscf/yr	and	17.4 MMscf/mo

  For engines ENG03-07:

o Natural gas	272.5 MMscf/yr	and	23.1 MMscf/mo

  The monthly limits apply for the first twelve months of operation and were not included for equipment that has been in operation longer than one year. As of the issuance date of the operating permit, only ENG07 will be applicable to the monthly limits.

- Each engine shall be equipped with an oxidation catalyst capable of reducing uncontrolled emissions from the unit to the emission levels listed in the permit (Condition 11). The annual emission limitations included in the permit incorporate these control efficiency requirements. Portable monitoring is required to confirm compliance with these limitations.

- **ENG02:** This equipment is subject to the control requirements for natural-gas fired reciprocating internal engines under Regulation No. 7, Section XVII.E

(Condition 23). The engine must meet the following emission standards (in g/hp-hr): $NO_X \leq 2.0$, $CO \leq 4.0$, and $VOC \leq 1.0$. The provisions of Section XVII.E and appropriate monitoring requirements were included the operating permit.

- **ENG01-05:** Compliance with the requirement of Condition 27 shall commence within three years of the date of this permit issuance (Condition 24). This condition was intended to refer to the requirements of NESHAP Subpart ZZZZ, which applies three years after the sources becomes major. This facility became major under the provisions of Subpart ZZZZ upon issuance of the second modification of the construction permit, on January 13, 2011. The compliance deadline of January 13, 2014 was added to the operating permit under the Subpart ZZZZ requirements.

- **ENG06-07:** Compliance with the requirements of Condition 27 shall commence upon startup of the engines (Condition 25). This condition was intended to refer to the requirements of NESHAP Subpart ZZZZ. The compliance deadline for these engines was added to the operating permit under the Subpart ZZZZ requirements.

- These engines are subject to the requirements of NESHAP Subpart ZZZZ and NESHAP Subpart A (Condition 26). The appropriate applicable requirements from NESHAP Subpart ZZZZ were included in the operating permit. The engines are subject to the requirements for new 4SLB engines over 500 hp, which include reducing CO emissions or limiting outlet formaldehyde concentrations. The applicable general provisions from NESHAP Subpart A were also included.

- The applicant shall follow the operating and maintenance (O&M) plan and recordkeeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation (Condition 27). The following provisions from the O&M plan were included as follows:

    - Inlet temperature to the catalyst will be maintained between 450°F and 1350°F and will be checked daily.

      This is required by NESHAP Subpart ZZZZ, which was included in the operating permit.

    - Delta P will be baseline will be established during each portable analyzer test and will be maintained within 2 inches of water column from the baseline and checked monthly.

      This is required by NESHAP Subpart ZZZZ, which was included in the operating permit.

    - Portable analyzer testing will be performed quarterly, if four consecutive portable analyzer tests show compliance with the permitted emission limits then the testing frequency will decrease to semi-annual.

Quarterly portable analyzer testing requirements were included in the operating permit under the annual emissions limitation condition. Provisions to revert to a semi-annual monitoring frequency were not included in the permit, the Divisions considers portable monitoring on a quarterly basis appropriate for monitoring compliance with the annual emissions limits.

- An EPA reference method test can be used to replace a portable analyzer test if it takes place during the proper time period.

  Portable analyzer testing requirements were included in the operating permit under the annual emissions limitation condition.

The specific requirement to follow the O&M plan was not included in the operating permit, as its provisions were included elsewhere. Compliance with the operating permit's condition is monitored as specified in the permit. Revisions to any condition in a Title V operating permit shall be conducted in accordance with the modification procedures in Colorado Regulation No. 3.

- Portable analyzer testing is not required during any quarter or semi-annual period that a unit does not operate (Condition 28). The portable analyzer language in the operating permit includes provisions to skip a monitoring event for any quarter in which an engine is operated less than 100 hours.

- Requirements for initial compliance testing of NO_X, CO, and formaldehyde for ENG06 (Point 012) and ENG07 (Point 013) (Condition 29). Initial performance testing for ENG06 was performed on June 7, 2011 and has been approved by the Division. Initial compliance testing provisions have been included in the operating permit for ENG07 only.

- These engines are subject to the periodic test requirements as specified in the O&M plan as approved by the Division. Replacement of these units completed as AOSs may be subject to additional testing requirements as specified in Attachment A (Condition 33). The provisions included in the O&M plan were included in the operating permit as discussed above. The AOS language specifies the testing requirements for replacement engines.

- Stack heights shall be a minimum of 57 feet for all engines except ENG03 (Condition 38). The original issuance of the construction permit included a minimum stack height of 57 feet for ENG03. The source requested the cancellation of AIRS point 003 (GEN01) during the second modification of the construction permit. While modifying the original permit ENG03, mistaken for point 003, was accidentally removed from this condition of the permit. The stack height requirement is based on the modeling analysis and has been included in the operating permit for all engines.

- Points 001, 003, and 004: These engines are subject to 40 CFR, Part 60, Subpart JJJJ (Notes to the permit holder, Item 6). Point 003 is a standby generator which was cancelled prior to the issuance of the construction permit. Points 012 and 013 are also subject to the requirements of NSPS Subpart JJJJ.

The federal-only provisions of Subpart JJJJ, which set emissions standards for NO_X, CO, and VOC, were included in the operating permit.

Emission Factors: Controlled emission factors, in g/hp-hr, from the manufacturer were provided in the Title V permit application. The emission factors have been converted to lb/MMBtu.

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

NSPS Subpart JJJJ requires performance testing every 8,760 hours of operation or every three years, whichever comes first, to monitor compliance with the NOX, CO and VOC emission standards. MACT Subpart ZZZZ requires the continuous monitoring of catalyst inlet temperature, monthly pressure drop readings, and semiannual performance tests. The permit requires quarterly portable monitoring to verify compliance with the annual NO_X and CO emission limitations.

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

TEG 1-4: Four (4) Triethylene Glycol Dehydrators, 40 MMscf/d, equipped with a flash tank, two electric glycol pumps each rated at 7.5 gpm, and associated still vent. Each unit is equipped with a condenser. Emissions are routed to a VRU or flare as back-up.

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows. The specific requirements are intended to apply to each dehydrator unless otherwise noted.

- **TEG04 (Point 014):** The permit shall provide the manufacturer, model, and serial number to the Division within 30 days after commencement of operation (Condition 8). This information was not included on the notice of startup for this unit, which was received on June 2, 2011. This information has since been provided to the Division; therefore this requirement was not included in the operating permit.

- Emissions of air pollutant from **each dehydrator** shall not exceed the following limitations (Condition 10):

  - VOC 4.4 tons/yr and 0.38 tons/mo

  The monthly limits apply for the first twelve months of operation and therefore were not included for equipment that has been in operation longer than one year. TEG04 is the only unit for which the short term limit applies.

- **Each dehydrator** shall be limited to the following wet natural gas throughput limits (Condition 16):

  - Natural gas 14,600 MMscf/yr and 1,240 MMscf/mo

The monthly limits apply for the first twelve months of operation and therefore were not included for equipment that has been in operation longer than one year. TEG04 is the only unit for which the short term limit applies.

- Compliance with the emissions limits in this permit shall be demonstrated by running GRI GLYCalc model version 4.0 or higher on a monthly basis (Condition 12). The annual emission limitation condition requires monitoring of GLYCalc input parameters and monthly emissions calculations using the GLYCalc program.

- Still vent emissions shall be routed to a condenser. Condenser off gas shall be either routed to the flare or to a vapor recovery unit that recycles gas to the plant inlet. Flash tank emissions shall be routed to the dehydrator reboiler fuel line or to the condensate tanks. This control system shall be capable of reducing uncontrolled emissions to the levels listed in the permit. (Condition 13). The annual emission limitations included in the operating permit incorporate the use of control equipment. The Reg 7, Section XVII.D requirement to operate a control system was included in the operating permit. Specific routing details were not included.

- Each unit shall be limited to a maximum pumping rate of lean glycol of 7.5 gallons per minute. The lean glycol recirculation rate shall be recorded weekly in a log maintained on site and made available to the Division for inspection upon request (Condition 17). This requirement was included in the operating permit.

- This equipment is subject to the control requirements for glycol natural gas dehydrators under Regulation No. 7, Section XVII.D. Uncontrolled emissions shall be reduced by an average of at least 90 percent through the use of air pollution control equipment (Condition 21). This requirement has been included in the operating permit.

- These sources are subject to the area source requirements of 40 CFR, Part 63, Subpart HH – National Emission Standards for Hazardous Air Pollutants for Source Categories from Oil and Natural Gas Production Facilities (Condition 22). The applicable requirements from NESHAP Subpart HH have been included in the operating permit.

- The applicant shall follow the operating and maintenance (O&M) plan and recordkeeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation (Condition 27). The following provisions from the O&M plan were included as follows:

    - Dehy still vent vapors are routed back to the plant inlet via VRU or a flare as backup. Flash tank vapors are routed to the reboiler burner, if fuel is not needed then vapors are routed to the condensate tanks, which are also controlled by the VRU.

Reg 7, Section XVII.D requires the dehy to be equipped with a control system, which was included in the permit. Control system specifications were included in this condition as well.

- Glycol recirculation rate will be checked weekly.

  This requirement is included in the annual emissions limitation and lean glycol pumping rate condition of the operating permit.

- Contactor temperature and pressure and flash tank temperature and pressure will be checked monthly.

  Weekly monitoring of these parameters is included in the annual emissions limitation condition of the operating permit.

- Inlet gas will be sampled and analyzed annually. BBC has the ability to request a decrease in sample frequency if the gas stream is consistent.

  This requirement is included in the extended gas analysis condition of the operating permit. Provisions to decrease sampling frequency were not included in the permit.

The specific requirement to follow the O&M plan was not included in the operating permit, as its provisions were included elsewhere. Compliance with the operating permit's condition is monitored as specified in the permit. Revisions to any condition in a Title V operating permit shall be conducted in accordance with the modification procedures in Colorado Regulation No. 3.

- The owner or operator shall complete the initial wet gas analysis testing required by this permit and submit the results to the Division as a part of the self-certification process to ensure compliance with emission limits (Condition 20). An initial wet gas analysis was performed July 16, 2009 and was submitted as part of the self-certification of the first issuance of the construction permit. Therefore this requirement was not included in the operating permit.

- The owner or operator shall complete an extended wet gas analysis at the plant inlet at this facility on an annual basis (Condition 34). This requirement was included in the operating permit.

Emission Factors: Triethylene glycol is contacted with the natural gas stream to reduce the moisture in the natural gas to a desired level. This glycol-water mixture is heated in the still vent portion of the unit to remove the collected moisture from the glycol. VOCs entrained in the water are also released. The emissions from this process are estimated using the Gas Research Institute's GLYCalc Model. The Model algorithm estimates the VOC emissions based on inputs of the glycol recirculation rate, cubic feet of gas processed, inlet temperature and pressure of the processed wet gas, and percentage breakdown by volume of constituents in the natural gas.

Monitoring Plan: The Division requires monthly monitoring of parameters used in monthly GLYCalc modeling, with exception of glycol circulation rate and condenser outlet temperatures, which will be monitored weekly. Samples of the inlet gas will be

collected and analyzed annually. The natural gas processing rate is recorded monthly. The hours/days of operation of the each TEG is also monitored.

TNK01-07: Condensate Tank Battery, consisting of seven (6) storage tanks, 400 barrel capacity each.

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows. The specific requirements are intended to apply to the battery of six tanks collectively.

- Emissions of air pollutant from the tank battery shall not exceed the following limitations (Condition 10):

  - VOC 10.6 tons/yr and 0.90 tons/mo

  The monthly limit applies for the first twelve months of operation and therefore was not included in the operating permit, since the tank battery has been in operation longer than one year.

- The tank battery shall be limited to the following condensate throughput limits (Condition 16):

  - Condensate 43,800 bbl/yr and 3,720 bbl/mo

  The monthly limit applies for the first twelve months of operation and therefore was not included in the operating permit, since the tank battery has been in operation longer than one year.

- Condensate tank vapors shall be either routed to the flare or to a vapor recovery unit the recycles gas to the plant inlet. This control system shall be capable of reducing uncontrolled emissions to the emissions levels listed in the permit (Condition 14). The annual emission limitations included in the operating permit incorporate the use of control equipment. The Reg 7, Section XVII.C requirement to operate a control system was included in the operating permit. Specific routing details were not included.

- The condensate tanks are subject to Regulation 7, Section XVII emission control requirements. These requirements include the general provisions in Section XVII.B and emission reduction requirements in Section XVII.C (Condition 20). The applicable requirements from Reg 7, Section XVII were included in the operating permit.

- The applicant shall follow the operating and maintenance (O&M) plan and recordkeeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation (Condition 27). The following provisions from the O&M plan were included as follows:

  - Vapors from the condensate tanks are routed to the VRU.

The tank battery is required by Reg 7, Section XVII to operate with controls.

- All tank hatches will stay closed when not in use.

  This requirement has been incorporated in the operating permit.

- Any maintenance performed on the tank will be recorded.

  This requirement has been incorporated in the operating permit.

- Condensate sales, API gravity and inlet separator temperature will be recorded monthly.

  This requirements has been included in the operating permit, with the exception that inlet separator temperature is to be monitored on a weekly basis.

The specific requirement to follow the O&M plan was not included in the operating permit, as its provisions were included elsewhere. Compliance with the operating permit's condition is monitored as specified in the permit. Revisions to any condition in a Title V operating permit shall be conducted in accordance with the modification procedures in Colorado Regulation No. 3.

Emission Factors: The emissions are estimated using API's E&P Tanks. Emissions are calculated on a monthly basis.

Monitoring Plan: The source is required to calculate emissions on a monthly basis. Some E&P Tanks input parameters are also monitored: the inlet separator temperature and pressure are monitored weekly, condensate sales are recorded monthly and API gravity is determined on a monthly basis.

FUG: Fugitive VOC Emissions from Equipment Leaks

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows.

- Emissions of air pollutant from equipment leaks shall not exceed the following limitations (Condition 10):

  - VOC 30.8 tons/yr

  A construction permit modification request submitted September 27, 2011 requested an increase in the annual emission limit for fugitive emissions to 47.8 tons of VOC per year. An updated component count was included with this modification. The annual emission limitation was set in the operating permit to 47.8 tons/yr, as requested.

- The operator shall calculate actual emissions from this point based on representative actual component counts for the facility along with the most recent gas analysis (Condition 15). Specifications for calculating annual emissions were

included in the operating permit.

- The emissions limitations for this point have been determined using the equipment configuration as listed below (Notes to Permit Holder, Item 4, updated by modification submittal):

Component	Component Count		
	Gas Service	Heavy Oil Service	Light Oil Service
Valves	1241	380	688
Connectors	16403	7504	5325
Flanges	981	407	63
Pump Seals		19	2
Open-Ended Lines	1	4	6
Other	88		1
VOC Content (wt%)	20.0	100.0	100.0

The component count has been included in the permit.

- The construction permit does not require the fugitive emissions point to follow an O&M plan, however, requirements specific to fugitive VOC from equipment leaks are included in the O&M plan.
    - Hours of operation for the facility will be tracked monthly.

      A condition requiring the facility to track hours of operation was included in the operating permit.
    - Auditory, visual and olfactory inspections for equipment leaks will be performed and recorded quarterly.

      A condition requiring quarterly inspections was included in the operating permit.
- Within 180 days after commencement of operation, the permittee shall complete the initial extended gas analysis of gas samples that are representative of VOC that may be released as fugitive emissions (Condition 31). This initial extended gas analysis has already been conducted and therefore this requirement was not included in the operating permit.
- Within 180 days after commencement of operation, the operator shall complete a hard count of components at the source and establish the number of components that are operated in “heavy liquid service”, “light liquid service”, “water/oil service” and “gas service” (Condition 32). A physical count of the components at the facility had already been completed and therefore this requirement was not included in the operating permit. The operating permit does, however, require an additional hard count to be conducted every 5 years.

- On an annual basis, the permittee shall complete an extended gas analysis of gas samples that are representative of VOC that may be released as fugitive emissions (Condition 35). This requirement was included in the operating permit.

Emission Factors: Emissions from equipment leaks have been calculated based on emission factors from EPA's Protocol for Emission Leak Estimates (Table 2-6 (EPA 453/R-95-017)). Factors are multiplied by the number of components of each type (e.g. Compressor Seals) and the VOC weight percentage in the organic portion of the gas stream as determined in the most recent analysis. EPA factors are given in terms of Total Organic Compounds.

Monitoring Plan: Records will be kept of the component count and a physical "hard count" will be conducted every five years. Hours of operation of the facility will also be monitored monthly.

FLARE: Leeds Model 36 S Flare

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows.

- Emissions of air pollutant from the flare shall not exceed the following limitations (Condition 10):
  - NO_X 2.6 tons/yr and 0.22 tons/mo
  - CO 5.1 tons/yr and 0.43 tons/mo

  The monthly limit applies for the first twelve months of operation and has not been included in the permit since the flare has been in operation longer than one year.
- The flare shall be limited to the following fuel consumption limits (Condition 16):
  - Gas from dehydrator still vents and flash tanks:

    25.23 MMscf/yr and 2.14 MMscf/mo
  - Gas from condensate storage tanks:

    7.87 MMscf/yr and 0.67 MMscf/mo
  - Pilot Gas 1.74 MMscf/yr and 0.15 MMscf/mo

  The monthly limit applies for the first twelve months of operation and has not been included in the permit since the flare has been in operation longer than one year.

- The applicant shall follow the operating and maintenance (O&M) plan and recordkeeping format approved by the Division, in order to demonstrate compliance on an ongoing basis with the requirements of this permit. Revisions to your O&M plan are subject to Division approval prior to implementation

(Condition 27). The following provisions from the O&M plan were included as follows:

- Flare operates as a backup for the VRU

  This O&M plan provisions does not include any requirements and therefore was not included in the operating permit. Please note that Reg 7 requires certain equipment at this site to be controlled at all times.

- Pilot light will be inspected daily to ensure that it is lit and downtime will be recorded.

  The operating permit requires the flare to be operated with a thermocouple to continuously monitor the presence of a pilot flame. Pilot light downtime will be reported as a deviation.

- VRU run time will be tracked.

  Tracking VRU run time is required under the dehydrator conditions and therefore was not included again under the flare permit requirements.

The specific requirement to follow the O&M plan was not included in the operating permit, as its provisions were included elsewhere. Compliance with the operating permit's condition is monitored as specified in the permit. Revisions to any condition in a Title V operating permit shall be conducted in accordance with the modification procedures in Colorado Regulation No. 3.

- The flare shall be operated with the pilot flame present at all times. This requirement was not included in the construction permit, but is a necessary parameter for proper operation of the flare and therefore was added to the operating permit.

- This flare is subject to the requirements of Reg 7, Section XVII.B.1.c which requires any flare used as control to be enclosed. The flare installed at this facility is an enclosed combustor and therefore this requirement was not included in the permit.

Emission Factors: The source utilizes emission factors from the Texas National Resource Conservation Commission's Flare Guidance, October 2000 RG-109, page 20, Table 4 to calculate NO_X and CO emission from the flare.

Monitoring Plan: In order to monitor compliance with the annual emission and fuel consumption limits, the source is required to monitor the quantity of gas flared and calculate emissions on a monthly basis. The heat content and quantity of gas sent to the flare shall be determined from the modeling outputs for the tanks and the dehydrators. The presence of a pilot flame is monitored continuously using a thermocouple.

Compliance with opacity will be monitored by conducting a non-Method 9 visible emissions observation annually. In the event that visible emissions are noted, a Method 9 will be performed.

LOADING: Tank Truck Loadout

Applicable Requirements: The appropriate applicable requirements from the initial approval construction permit 07GA0569 have been incorporated into the permit as follows:

- Emissions of air pollutant from the loadout shall not exceed the following limitations (Condition 10):

  o VOC 3.2 tons/yr and 0.27 tons/mo

  The monthly limit applies for the first twelve months of operation and has not been included in the permit since the loadout has been in operation longer than one year.

- The loadout shall be limited to the following condensate throughput limits (Condition 16):

  o Condensate 43,800 bbl/yr and 3,720 bbl/mo

  The monthly limit applies for the first twelve months of operation and has not been included in the permit since the loadout has been in operation longer than one year.

Emission Factors: Emissions have been calculated using equation (1) found in AP-42 5.2 – Transportation and Marketing of Petroleum Liquids. The resultant emission factor of 0.1436 lb/bbl loaded was listed in the operating permit.

Monitoring Plan: The permittee is required to calculate emissions on a 12-month rolling basis. Condensate throughput is recorded during each loading period. This throughput data is used to monitor compliance with annual throughput limits as well as used in the calculation for the annual emissions limits.

IV. Modeling

Modeling of emissions was conducted for this facility in 2010 for the most recent construction permit modification. The modeling analysis demonstrated that the modification would not cause or contribute to a violation of ambient air quality standard for all pollutants and averaging times analyzed. Since the construction permit application was submitted prior to April 12, 2010, the Division does not consider compliance with the hourly NO_2 primary NAAQS an applicable requirement.

The construction permit modification applied received September 17, 2011 is for a minor increase in fugitive VOC emissions only and does not merit a modeling analysis.

V. Insignificant Activities

The source identified in the Title V permit application the following general categories of insignificant activities and specific insignificant activities that occur at the facility:

- Three (3) 1.28 MMBtu/hr Reboilers
- 0.942 MMBtu/hr Reboiler
- Seven (7) 0.75 MMBtu/hr Tank Heaters
- Gas-driven Pneumatic Devices
- Chemical storage tanks or containers that hold less than 500 gallons, and which have a daily throughput less than 25 gallons.
- Chemical storage areas where chemicals are stored in closed containers, and where total storage capacity does not exceed 5000 gallons.
- Oil production wastewater (produced water tanks), containing less than 1% by volume crude oil.
- Storage tanks of capacity < 40,000 gallons of lubricating oils
- Crude oil or condensate storage tanks with a capacity of 40,000 gallons or less.

VI. Alternative Operating Scenarios

The construction permit for the engines included an alternative operating scenario (AOS) for both permanent and temporary engine replacement. The most current version (10/1/2011) of the AOS for engine replacement has been included in the operating permit.

VII. Permit Shield

In their original Title V permit application, the source did not provide justification for any of the specific non-applicable requirements requested. The list also contained many citations that were clearly unnecessary for the shield. It is the Division's opinion that the shield should be reserved for regulations that might reasonably otherwise apply to equipment at the plant in question. Only key non-applicable requirements were included in the operating permit rather than the list identified in the application.