TECHNICAL REVIEW DOCUMENT for OPERATING PERMIT 03OPGA267

Issued to:

EnCana Oil & Gas (USA) Inc. Hunter Mesa Compressor Station Garfield County Source ID 0450367

Prepared November 2005 and updated February 2008 – May 2009 By: Matthew S. Burgett (2005) and Lisa Clarke (2008 - 2009)

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emissions factors, monitoring plan and compliance status of emission units covered by the operating permit proposed for this site. It is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. This narrative is intended only as an adjunct for the reviewer and has no legal standing. The conclusions made in this report are based on information provided in the original application submittal January 14, 2004, and subsequent supplemental technical submittals.

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

II. Source Description:

This is a natural gas gathering facility as defined under Standard Industrial Classification 1311. It consists of field compression, natural gas dehydration, and atmospheric storage tanks. Gas is compressed to specification for transmission using four (4) Internal Combustion Engines to power compressor units. All four engines are controlled with an oxidation catalyst for control of carbon monoxide (CO) and Formaldehyde emissions. Other activities conducted on site include dehydration of the gas through contact with triethylene glycol, gravity separation of condensates, condensate truck loadout, and a water treatment and recycling facility, to be equipped with a dissolved air flotation (DAF) unit followed by a flare to control volatile organic compounds (VOC) emissions from the North impoundment. The dehydrators and the 300 bbl condensate tanks are equipped with a vapor recovery unit to control VOC emissions.

The facility is located near Rifle, Garfield County, Colorado. There are no states within 50 miles of the facility. The following Federal Class I areas are within 100 kilometers of the facility: Black Canyon of the Gunnison National Park, West Elk Wilderness Area, Flattops Wilderness Area, Maroon Bells – Snowmass Wilderness Area, Colorado National Monument, and the Gunnison Gorge Recreation Area. Colorado National Monument and the Gunnison Gorge Recreation Area are not Federal Class I areas, but they have been designated by the State to have the same sulfur dioxide increment as a Federal Class I area. This facility is located in an area designated attainment for all pollutants. There are no other Operating Permits associated with this facility.

MACT Applicability

112(g) – Source Specific MACT

The Section 112(g) regulation covers construction ("new") and reconstructed major sources of hazardous air pollutant (HAP) emissions. A major source emits or has the potential to emit 10 tons per year or more of any single HAP or 25 tons per year or more of any combination of HAPs. The primary requirement of this section that these sources apply MACT for control of HAPs on a case-by-case basis, if EPA has not established a source-specific MACT standard as of the date of the source's application. During review of source S012, the water treatment and recycling facility, the Division reviewed and conferred with EPA to determine if S012, the water treatment and recycling facility is subject to section 112(g). EPA noted that produced water impoundments, or units, are part of the Oil and Gas subcategory, and were considered under the MACT Subpart HH. In the proposed rule, EPA did not identify any controls for these units. Therefore, the source-specific MACT section 112(g) does not apply to this facility.

HHH – Natural Gas Transmission and Storage:

The Hunter Mesa facility is not a natural gas transmission and storage facility as described in 40 CFR Part 63 Subpart HHH, "National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage". The Hunter Mesa facility is an upstream natural gas production-related gathering and compression station and not subject to this MACT.

HH – Oil and Natural Gas Production Facilities:

The glycol dehydrators are covered by Construction Permit 04GA0026, which was written to include HAP limits on the dehydrators in order to avoid applicability to the provision in 40 CFR Part 63 Subpart HH, "National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities" (Oil and Natural Gas Production MACT). Hunter Mesa is a production field facility. During the Operating Permit review, it was discovered that the source had requested Toluene emissions greater than 10 ton/yr and that formaldehyde limits at the facility are greater than 10 ton/yr. The construction permit should not have been written with Synthetic Minor HAP limits, or an exemption from MACT HH.

Under the provisions of the Oil and Natural Gas Production MACT, since the Hunter Mesa facility 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 the Hunter Mesa facility 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 (79,500 l/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, and EnCana is required to determine an optimum glycol circulation rate that shall not be exceeded. EnCana determined this rate and submitted the circulation rate calculations to the Division on April 2, 2009.

As stated above in the 112(g) discussion, the Division notes that S012, the water treatment and recycling facility, is covered under the MACT HH, but is not affected at this time. However, the facility, in particular the North pond, remains a major source of HAPs and is over the 10 tons/year threshold for benzene and toluene and over the 25 ton/year for BTEX, and therefore total HAP emissions. This does not include methanol, which is not controlled by the DAF unit or the flare.

ZZZZ – Stationary Reciprocating Internal Combustion Engines:

Under the rules for reciprocating internal combustion engines, for production field facilities, only emissions from glycol dehydrators, storage vessel with the potential for flash emissions, reciprocating internal combustion engines and combustion turbines need to be aggregated to determine if the facility is a major source for HAP emissions. An analysis was conducted to determine HAP emissions from the equipment at this facility. Total HAP emissions, based on permitted production, were calculated to be greater than major source levels. Specifically, formaldehyde and toluene emissions exceed 10 tons per year. The engines at this facility are potentially subject to the RICE MACT.

The Caterpillar G3612 engines (CE01, CE03, and CE04) are not considered new 4-stroke lean burn engines subject to the RICE MACT, since they were constructed prior to the effective date of December 19, 2002. However, engine CE02 was replaced with a new 4-stroke lean burn engine on March 23, 2008. This new engine is subject to the requirements of the MACT ZZZZ. This Operating Permit includes the applicable requirements from MACT ZZZZ for engine CE02. The draft permit will assume that EnCana will comply with the option to reduce carbon monoxide by 93 percent or more (instead of the formaldehyde concentration limit

The Caterpillar engines (CE01, CE03, and CE04) are not subject to the area source requirements of the MACT ZZZZ since they are not considered new 4-stroke lean burn engines since they were constructed prior to the effective date of June 12, 2006. CE02 is already subject to the MACT ZZZZ, which supersede the area source requirements for this same MACT.

NSPS Applicability

JJJJ – Stationary Reciprocating Internal Combustion Engines:

The Caterpillar engines (CE01, CE03, and CE04) are not subject to this NSPS since they commenced construction (were ordered) before June 12, 2006. Engine CE02 is also not subject since the manufactured date was April 2004, before the effective date of July 1, 2008.

Regulation No. 7 Applicability

<u>Section V.A – Disposal of Volatile Organic Compounds</u>

EnCana must operate the Water Treatment and Recycling Facility (S012), in accordance with Section V.A, which states: "No person shall dispose of volatile organic compounds by evaporation or spillage unless Reasonably Available Control Technology (RACT) is utilized. EnCana submitted an initial RACT analysis to the Division for the impoundment on March 14, 2007, now referred to as the North Impoundment, in Construction Permit 04GA0709. The Operating Permit has been updated to include all three impoundments at the facility, the North, Middle and South Impoundments. The North Impoundment receives produced water from the field, and contains entrained hydrocarbons and methanol.

The Middle and South Impoundments are grouped in the Operating Permit, as both of these impoundments receive flowback water from a pipeline and have one throughput limit. Flowback water originates from re-fracturing wellheads and the hydrocarbon and methanol concentrations in this water are much lower than in produced water. However, RACT analyses were conducted for all three impoundments, one for the North Impoundment and one for the Middle and South impoundments. The size of the impoundments, or impoundments, makes traditional "tailpipe" controls difficult, therefore controls must be applied to the inlets of the impoundments to reduce the amount of VOCs that enter the impoundment.

The Division notes that EnCana is already applying oil/water separation techniques to the North Impoundment, using separation tanks to remove condensate, which is then sold. This oil/water separation is considered a part of RACT at the facility because it serves to reduce the hydrocarbon concentrations in the water entering the North Pond. These tanks are addressed as point S011. Initially, an air stripper followed by either catalytic oxidation or thermal oxidation was considered. The siloxanes in the anti-foam used extensively in the field would contaminate an oxidation catalyst and the catalyst would then cease to control emissions; therefore catalytic oxidation would not be viable as an emission control technology. Therefore, EnCana and the Division initially proposed that an air stripper followed by thermal oxidation would be RACT for the North Impoundment.

Since then, EnCana has informed the Division that the air stripper/thermal oxidation RACT-proposed combination would not be effective for the North Impoundment since air strippers have been found to be unsuccessful in reducing VOCs in waters with high solids content. The solids in the water would limit air and VOC contact, reducing VOC stripper efficiency. Maintenance of the air stripper would be expensive and frequent due to plugging of the stripper with solids. Air strippers are better suited to work in a clear water environment, such as contaminated groundwater.

EnCana noted that a dissolved air flotation (DAF) unit would work better for this type of water contamination because of the unit's ability to remove solids as well as free-phase hydrocarbons. In December 2008, EnCana proposed installing a DAF unit followed by a combustion device as a control technology. This type of system is being utilized at a similar facility with moderate VOC destruction efficiencies. However, this system does not control methanol, which is highly soluble in water. Uncontrolled VOC emissions from the North impoundment, based on mass

balance techniques, are 172 tons per year. This system will result in approximately 92 tons of VOC emissions removed per year from the North Impoundment using mass balance techniques (63% removal) and is considered RACT-equivalent by both EnCana and the Division. The permitted VOC emissions for the North Impoundment are 80.1 tons per year.

A RACT analysis using a DAF system was conducted for the Middle and South impoundments and the Division found that is was not economical for RACT purposes, with a cost of greater than \$25,000 per ton of VOC emissions removed. Oil/water separation techniques are not feasible for the water in these impoundments, as recovery of hydrocarbons would be minimal in comparison to cost in addition to the fact that the flowback water is continuously reused throughout the field. Total VOC emissions from both the Middle and South impoundments are 69.5 tons per year. The Division has determined at this time, that RACT for the Middle and South impoundments is best management practices. Best management practices include emission and throughput limits on both impoundments and inlet constituent concentration limits and sampling.

Prevention of Significant Deterioration (PSD) Analysis

This source is classified as a synthetic minor source for PSD purposes. HAP emissions are **not** subject to PSD requirements. Fugitive emissions at non-listed source categories are **not** included in determining major source status under the PSD program. Since the Potential to Emit criteria pollutant emissions do not exceed 250 tons per year, this source is classified as synthetic minor for purposes of PSD requirements. Please refer to the "Emissions" section for more details on specific emission limits and facility controls.

Compliance Assurance Monitoring (CAM) Applicability

The following emission points at this facility use a control device to achieve compliance with an emission limitation or standard to which they are subject and have pre-control emissions that exceed or are equivalent to the major source threshold. They are therefore subject to the provisions of the CAM program as set forth in 40 CFR Part 64 as adopted by reference into Colorado Regulation No. 3, Part C, Section XIV:

S012 – Water Treatment and Recycling Facility

The Water Treatment and Recycling Facility is subject to the CAM plan requirements. S012 has precontrol emissions that exceed or are equivalent to the major source threshold and the control device achieves compliance with an emission limitation or standard to which they are subject.

For Indicator No. 1, the source has chosen to monitor the air pressure of the DAF using a pressure indicator and monitor. The specifications require the operator to continuously monitor the pressure using an indicator/monitor system. The pressure shall be maintained between 70 and 90 psi. Since this system was not installed at the time of issuance of this Operating Permit, there is no testing data available on the combustion device. However, the source will conduct testing on the dissolved air filtration unit (DAF) within ninety (90) days after start up of the system, which must be installed one hundred and eighty days (180) days after the date of permit issuance.

For Indicator No. 2, the source has the choice one of two options, dependent on whether a flare or

another combustion device is installed. The flare specifications require the operator to detect the presence of flame using ultraviolet light detectors for Option No. 1. Alternatively, a temperature shall be maintained between 850° F and 1900° F using a thermocouple or resistance temperature detector for Option No. 2. Since this combustion device was not installed at the time of issuance of this Operating Permit, there is no testing data available on the combustion device. However, the source will conduct testing ninety (90) days after start-up of the system, which must be installed (or a permit modification application submitted) one hundred and eighty days (180) days after the date of permit issuance.

The engines were reviewed to determine if CAM applies. The uncontrolled criteria pollutant emissions do not exceed major source levels. Uncontrolled CO emissions are 85 ton/yr according to the 11/12/04 02GA0231 construction permit analysis. The CAT engines do have uncontrolled formaldehyde emissions in excess of 10 ton/yr. However, the permit does not contain any limit on HAP or formaldehyde emissions. Thus CAM does not apply to the engines since the permit contains no HAP limits and the uncontrolled criteria pollutant emissions are all below 100 ton/yr. It is important to note that the requirements of the MACT ZZZZ are very similar to the CAM requirements. Since these engines are subject to MACT ZZZZ, CAM would likely be a streamlined requirement as these engines are replaced, like engine CE02.

The VRU controlled glycol dehydration units (DU01 – DU04) were reviewed to determine of CAM applies. The emissions from the dehydration units and condensate storage tank battery (TK01 - TK04) are routed to the VRU. The VRU routes any emissions to the natural gas inlet separator of the plant. Uncontrolled emissions would exceed major source levels and the Division originally believed that CAM would apply. However, it was discovered that MACT HH does not consider the VRU as a control device. Also, the VRU is an unusual control device for CAM since it does not have obvious parameters to monitor. It is either operating, or it is not operating. The Division ultimately determined that CAM should not apply to the VRU since MACT HH does not consider it a control device and due to the lack of appropriate parameters to monitor.

Emissions

Facility wide emissions (tons per year) are as follows:

Pollutant	Potential to Emit	2007 Actual
	(TPY)	Emissions
		(TPY)
NO_X	111.2	81.4
CO	80.7	74.6
VOCs (point)	177.8	105.9
VOCs (fugitive)	157.1	43.1
Total HAPs	>25	23.5

The PTE shown above is based on permit limitations. Actual criteria pollutant emissions are based on the most recent APENs submitted to the Division.

The potential emissions classify this facility as a synthetic minor source with respect to PSD

requirements. All of the engines at this facility are controlled. The four Caterpillar 3612 engines are lean burn and controlled with oxidation catalysts. The catalysts on engines CE-01, CE-02, and CE-03 reduce CO emissions by 75% and HAPs by 75%. The catalyst on engine CE-02 reduces CO emissions by 93% and HAPs by 75%. Additionally, the three triethylene glycol units are controlled with a Vapor Recovery Unit (VRU), controlling VOC and HAP emissions by 95%. The North Impoundment at the water treatment and recycling facility is controlled by a dissolved air flotation unit (DAF) followed by a combustion device. The VOC emissions from the North, South, and Middle impoundments are considered fugitive because reasonable controls/practices have been applied to remove VOCs from the water prior to discharge to the ponds.

III. Emission Sources:

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

CE-01, CE-02, CE-03, CE-04 – Four (4) Caterpillar Model G3612 TALE, 4 cycle low-NOx lean burn engines, 3506 HP, natural gas fired, S/Ns: 1YG00257, BEK00246, 1YG00251, 1YG00168. Equipped with oxidation catalysts.

EnCana submitted construction permit applications for these units on March 7, 2002 (02GA0231, 02GA0232 & 02GA0233) & October 21, 2002 (02GA0944). The Initial Approval construction permits were issued on September 24, 2002 & November 15, 2002. Final Approval permits were issued December 29, 2004. The requirements of the construction permits were added to the Title V Operating Permit as requested. On April 7, 2008, EnCana submitted an Alternative Operating Scenario permanent replacement for engine CE-02, with the underlying construction permit 02GA0232. This engine is the same make and model as the previous engine. The original engine was constructed prior to the MACT ZZZZ effective date of December 19, 2002. The replacement engine is subject to Subpart MACT ZZZZ.

Applicable requirements are as follows:

- NO_x emissions shall not exceed 27.8 tons/yr, CO emissions shall not exceed 24.6 tons/yr, VOC emissions shall not exceed 28.3 tons/yr, Pollutants limits are based on a 12-month rolling basis.
- Gas use shall not exceed 226.0 million scf per year on a 12-month rolling basis.
- Reg. 1 opacity requirement (Reg. 1, Section II.A.1).
- Engine and catalyst operated according to manufacturer's recommendations and Division-approved parameters covered in Permit Conditions 1.6 and 1.7.
- Engine CE-02 is subject to the RICE MACT (40 CFR Part 63, subpart ZZZZ). This Caterpillar engine is considered a new 4-stroke lean burn engine subject to the RICE MACT. This Operating Permit includes the applicable requirements from MACT ZZZZ. The The draft permit will assume that EnCana will comply with the option to reduce carbon monoxide by 93 percent or more (instead of the formaldehyde concentration limit). Initial performance test to measure O₂ and CO was required by September 23, 2008. EnCana completed the initial performance test on CE-02 on September 4, 2008. Subsequent performance tests will be conducted semi-annually with the option to revert to annual testing upon completion of two consecutive passing semi-annual tests. The various limits, testing, monitoring, recordkeeping and reporting

requirements are outlined in Conditions 1.9 and 1.10.

Emission Factors - The emission factors were submitted during the construction permit process and are based on manufacturer's emission factors. These emission factors have been converted from gram/hp-hr to lb/MMBtu and are listed in the Operating Permit. The Btu value used by the Division in determining emission limits was 1155 Btu per standard cubic foot of natural gas.

Monitoring - The Division has developed specific monitoring guidance for Internal Combustion engines located in attainment areas titled "Compliance/Scenario Summary - Gas Fired IC Engines". The emission factors proposed are below AP-42 factors, therefore, according to the monitoring grid, the source will be required to: conduct the emission calculations and record fuel use on a rolling twelve month basis; monitor catalyst parameters on a monthly basis; perform quarterly portable monitoring; and conduct a one time stack test. Daily monitoring of the catalyst inlet temperature and monthly monitoring of the pressure drop across the catalyst are also required for all of the engines, according to the guidance grid, except for engine CE-02. Engine CE-02 is subject to the RICE MACT, which requires monthly pressure drop monitoring and continuous inlet temperature monitoring.

As mentioned, the guidance grid requires a one-time stack test. The controlled facility-wide emissions are below 120 ton/yr for both NO_x and CO. Since these emissions are below 200 ton/yr, a stack test will not be required. A stack test could be required upon modification or renewal if facility-wide NO_x or CO emissions increase.

The BTU content of the natural gas shall be determined semi-annually (twice per year) and used in the emission calculations.

Compliance with the opacity limits is assumed when natural gas is used as a fuel.

S005, S006 & S007 – Three glycol dehydration units: J.W. Williams 50.0 MMscf/day, Model BTEX Buster, s/n: 7514-1, Hanover 25.0 MMscf/day, s/n: 0010-012 & 0106-259. Equipped with condensers, flash tank and Vapor Recovery Unit (VRU).

The source submitted construction permit application for these units on March 16, 2003 (04GA0026). The Initial Approval construction permit was issued on March 17, 2004. The Final Approval permit has not been issued. The requirements of the construction permit were added to the Title V Operating Permit as requested. Note that construction permit 04GA0026 contains emissions from the glycol dehydration units and the condensate storage tanks that have emissions routed to the VRU. These units were all erroneously combined onto one emission point. The Division had EnCana submit separate APENs to correct this. EnCana submitted separate APENs for the dehydrators and storage tanks on February 15, 2008.

The optimum glycol circulation rate for each dehydrator is detailed below for MACT HH purposes. This information was submitted to the Division on April 2, 2009.

Dehydrator	Inlet water	Outlet Water	Optimum Glycol
Design	content	Content	Circulation Rate
Throughput	(lb/MMscf)	(lb/MMscf)	(gal/hr)
(MMscf/day)			
50.0	38.88	1.75	266.87
25.0	38.88	1.69	133.65
25.0	38.88	1.69	133.65

Applicable requirements are as follows:

Monthly emission limits have been removed.

- VOC emissions shall not exceed 45.1 tons/yr, Pollutants limits are based on a 12-month rolling basis.
- Gas processed shall not exceed 36,500 million scf per year on a 12-month rolling basis.
- Maximum pumping rate of lean glycol shall be limited.
- The VRU system shall be capable of reducing VOC emissions by at least 95%.
- Condenser outlet temperature shall not exceed 170 °F on a monthly average basis.
- Reg. 1 opacity requirement (Reg. 1, Section II.A.1).
- Glycol dehydration units and control device operated according to Division-approved parameters covered in Conditions 2.6 and 2.7.
- Compliance with 40 CFR Part 63, Subpart HH. (See MACT discussion above)

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 and HAPs entrained in the water are also released. The emissions from this process may be estimated using the Gas Research Institute's GLYCalc Model. The Model algorithm estimates the VOC and HAP 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 Gas Research Institute's manual for the GLYCalc Model defines the wet gas (inlet) temperature, glycol recirculation rate, and gas BTEX content as the three critical inputs to the Model for triethylene glycol units. Changes to the gas flow rate and inlet pressure do not radically affect emissions from glycol dehydrators. The Division is requiring weekly monitoring of the following parameters, which are used in GLYCalc: glycol circulation rate, inlet gas temperature & pressure, and flash tank temperature & pressure. Condenser outlet daily temperatures will be used to determine an average temperature. Samples of the inlet gas shall be collected and analyzed quarterly. The natural gas processing rate shall be recorded monthly. The source has requested that the Division require monthly modeling using GLYCalc, instead of the parameter monitoring approach that some other sources use to show compliance. The Division will allow this approach.

A condenser and VRU are used to reduce the dehydrator emissions. The source shall follow the

current Operations & Maintenance Plan to maintain compliance.

The hours/days of operation of the TEG shall also be monitored.

S008 – Four 300-bbl condensate tanks with Vapor Recovery Unit (VRU)

It should be noted that revisions were made to Colorado Regulation No. 3, regarding condensate storage tanks and condensate truck loading equipment and those revisions took effect on December 30, 2002. Previously, under Regulation No. 3, certain size condensate storage tanks and condensate truck loading equipment meeting a specified throughput limit were exempt from APEN reporting and permitting requirements and were considered insignificant activities for Title V operating permit purposes. With the revisions to Colorado Regulation No. 3, only condensate storage tanks and condensate loading equipment at exploration and production (E & P) sites meeting specified throughput limits are APEN exempt and insignificant activities. EnCana has submitted an APEN for the condensate storage tanks at the Hunter Mesa facility. Therefore, since these tanks are subject to APEN reporting requirements, the Division will include the condensate storage tanks in Section II of the Operating Permit.

The source submitted a construction permit application for these units on March 16, 2003 (04GA0026). The Initial Approval construction permit was issued on March 17, 2004. The Final Approval permit has not been issued. The requirements of the construction permit were added to the Title V Operating Permit as requested. Note that construction permit 04GA0026 contains emissions from the glycol dehydration units and the condensate storage tanks that have emissions routed to the VRU. These units were all erroneously combined onto one emission point. The Division had EnCana submit separate APENs to correct this, submitted on February 18, 2008.

Applicable requirements are as follows:

Monthly emission limits have been removed.

- Condensate production shall not exceed 36,500 bbl per year based on a 12-month rolling total.
- VOC emissions shall not exceed 13.6 tons/yr based on a 12-month rolling total.
- The control system shall be capable of reducing VOC emissions by at least 95.0%.
- Reg. 1 opacity requirement (Reg. 1, Section II.A.1).
- **2. Emission Factors** The emissions are estimated using API's E&P Tanks. Emissions are calculated on a monthly basis.
- **3. Monitoring Plan** The source will be required to record the quantity of condensate processed and calculate emissions monthly.

Some E&P Tanks input parameters must be monitored. The separator temperature and pressure will be monitored monthly. Liquids shall be analyzed annually. Sales condensate shall be analyzed annually to determine the RVP. API gravity will be

determined from one sales receipt each month (to be recorded within 5 days of the beginning of each month) to determine emissions on a monthly basis.

S006 - Fugitive VOC Emissions from Equipment Leaks

The source submitted a construction permit application for these emissions on May 7, 2003 (03GA0378). The Initial Approval construction permit was issued on December 26, 2003 and the Final Approval permit was issued on September 17, 2004. The requirements of the construction permit were added to the Title V Operating Permit as requested.

Applicable requirements are as follows:

• VOC emissions shall not exceed 8.8 tons/yr.

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 - The permittee will be required to conduct an initial count of valves, seals, etc. in order to verify levels of emissions based on the EPA Protocol within one year of the permit issuance date. Records shall be kept of all additions and deletions and a running tally maintained, and a "hard count" shall be conducted every five years.

S010 – Condensate truck loading

The source submitted a construction permit application for these emissions on September 22, 2003 (03GA0763). The Initial Approval construction permit was issued on January 14, 2004. An Initial Approval Modification application was submitted October 16, 2003 and issued March 17, 2004. The Final Approval permit has not been issued. The requirements of the construction permit were added to the Title V Operating Permit as requested.

Applicable requirements are as follows:

- VOC emissions shall not exceed 2.8 tons/yr based on a 12-month rolling total.
- Condensate loaded into trucks shall not exceed 1,533,000 gal/yr based on a 12-month rolling total.

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 is listed in the Operating Permit.

Monitoring Plan - The permittee will be required to calculate emissions on a 12-month rolling basis.

<u>S011 – Two 400 bbl condensate tanks</u>

These tanks are for condensate recovered from produced water associated with exploration and

production wells. EnCana states that this condensate does not experience any "flash".

The source submitted a construction permit application for these tanks on September 3, 2003 (03GA0775). The Initial Approval construction permit was issued on January 16, 2004 and the Final Approval permit was issued on November 15, 2004. The requirements of the construction permit were added to the Title V Operating Permit as requested.

Applicable requirements are as follows:

- VOC emissions shall not exceed 4.0 tons/yr based on a 12-month rolling total.
- Condensate throughput shall not exceed 29,200 bbl/yr based on a 12-month rolling total.
- Reg. 1 opacity requirement (Reg. 1, Section II.A.1).

Emission Factors – The emissions are to be estimated using a compliance emission factor determined using sampling and past TANKS 4.0 runs. The source shall calculate monthly emissions in a twelve (12) month rolling total to monitor compliance with the annual.

Monitoring Plan - The source will be required to record the quantity of condensate processed and calculate emissions monthly.

S012 – Water treatment and recycling facility

The source submitted a construction permit application for these emissions on May 12, 2004 (04GA0709). The Initial Approval construction permit was issued on July 20, 2004. The Final Approval permit has not been issued. This Initial Approval permit was for one impoundment only. The impoundment intended for this permit is labeled the North impoundment.

Since the time of the initial permit, EnCana has also changed the operation of the facility to include the Middle and South impoundments, which receive flowback water via truck loadout or pipeline. The requirements of the construction permit, significantly modified under Section II, Condition 1.3, were added to the Title V Operating Permit as requested.

Applicable requirements are as follows:

- VOC emissions for the North impoundment shall not exceed 80.1 tons/yr on a 12-month rolling basis.
- VOC emissions for the Middle & South impoundments shall not exceed 69.5 tons/year on a 12-month rolling basis..
- Produced water processed in the North impoundment shall not exceed 3,200,000 bbl/yr on a 12-month rolling basis.
- Produced water processed in the Middle & South impoundments shall not exceed 1,500,000 bbl/yr on a 12-month rolling basis.
- Samples of benzene, toluene, ethylbenzene, total xylenes, methanol, and TVH+TEPH gasoline shall be taken on a monthly basis at least ten (10) days apart. Constituent concentrations shall not exceed the specified concentrations outlined in Condition 7.3 of the permit on a 12-month rolling basis.
- This source is subject to RACT. A dissolved air floatation unit (DAF) followed by a

flare must be installed or a permit modification application submitted within one hundred and eighty (180) days after the date of permit issuance.

- A source compliance test on the control equipment for the impoundment(s) shall be conducted within ninety (90) days after commencement of operation for total VOCs, benzene, toluene, ethylbenzene, total xylenes, and methanol. A source compliance test on the flare shall be conducted within one hundred and eighty (180) days after commencement of operation for oxides of nitrogen, carbon monoxide, total VOCs, benzene, toluene, ethylbenzene, total xylenes, and methanol.
- This source is subject to the odor requirements of Regulation No. 2 (state-only enforceable)
- The flare is subject to the opacity requirements of Regulation No. 1, II.A.5.
- The flare is subject to the requirements of 40 CFR §60.18.
- This source is subject to the Compliance Assurance Monitoring (CAM) requirements, outlined in Section II, Condition 9 of this Operating Permit.

Emission Factors – Emissions from this system are estimated using monthly water samples from the impoundments, a mass balance, and produced water throughputs for the impoundments.

Please note that the flare emissions during the initial test must be less than APEN or permit required thresholds as the flare or combustion device is currently assumed to be APEN and permit exempt (the flare size should be under 4.6 MMBtu/hr according to AP-42 calculations).

Monitoring Plan - The permittee will be required to calculate emissions on a rolling monthly basis. This will be based on the last 12 months of actual quantity of produced water, monthly water samples, and a mass balance calculation.

The permittee is allowed the flexibility to move water sample frequency to quarterly after the first year, semi-annually after the second year, then to annually (calendar year) after the third year if constituent concentrations remain below the established values as identified in Condition 7.3.

A revised APEN is required if a significant increase of VOC or HAP emissions occur as defined in Colorado Regulation No. 3, Part A, Section II.C.2 compared to the APEN currently on file with the Division.

This source is also subject to CAM, specifically the North Impoundment. The requirements are explained earlier in this TRD.

III. Short Term Limits

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short-term emission and production/throughput limits on Construction Permits. These procedures are being directly implemented in all operating permits that had not started the Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance

with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures.

IV. Final Approval for Initial Construction Permits

The due date of the first semi-annual monitoring and deviation report required by this operating permit will be more than 180 days after the initial approval construction permits 03GA0763, 04GA0026 & 04GA0709 were issued and/or the equipment commenced operation. Therefore, under the provisions of Regulation No. 3, Part C, Section V.A.2., the Division is allowing the initial approval construction permit to continue in full force and effect and will consider the Responsible Official certification submitted with that report to serve as the demonstration required pursuant to Regulation No. 3, Part B, Section III.G.2. and no final approval construction permit will be issued. The appropriate provisions of the initial approval construction permit have been directly incorporated into this operating permit.

V. Emission Factors

From time to time published emission factors and/or other emission estimating methods are changed based on new or improved data. A logical concern is what happens if the use of the new factors/methods in a calculation results in a source being out of compliance with a permit limit. Except as noted below, the emission factors, equations, and/or other emission estimating methods included in the permit are considered to be fixed until changed by the permit. Obviously, emission factors dependent of the fuel sulfur content or heat content of the fuel cannot be fixed and will vary with the test results. The method for determining the emissions is, however, fixed. It is the responsibility of the permittee to be aware of changes in the emission factors, etc. and to notify the Division in writing of impacts on the permit requirements when there is a change. Upon notification, the Division will work with the permittee to address the situation. In addition, the Division will review the factors, etc. as appropriate during permit modifications and renewals.

The exception to the above is that emission factors and/or other emission estimating methods used only to comply with the reporting requirements of Regulation No. 3, Part A, Section II can be updated and modified without a permit modification, although the resulting emission estimate may trigger permitting activities.

VI. Accidental Release Program - 112(r)

Section 112(r) of the Clean Air Act mandates a new federal focus on the prevention of chemical accidents. Sources subject to these provisions must develop and implement risk management programs that include hazard assessment, a prevention program, and an emergency response program. They must prepare and implement a Risk Management Plan (RMP) as specified in the Rule.

Based on the information provided by the applicant, this facility is not subject to the provisions of the Accidental Release Prevention Program (Section 112(r) of the Federal Clean Air Act).