MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

January 7, 2010

PERMIT TO INSTALL
327-07A

ISSUED TO
Merit Energy Company

LOCATED AT
Otsego lake 34 CPF
SE ¼, NE ¼, Section 34, T29N, R3W
Otsego Lake Township, Michigan

IN THE COUNTY OF
Otsego

STATE REGISTRATION NUMBER
N0200

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: **December 28, 2009**	
DATE PERMIT TO INSTALL APPROVED: **January 7, 2010**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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Common Abbreviations / Acronyms

Common Acronyms		Pollutant/Measurement Abbreviations	
AQD	Air Quality Division	BTU	British Thermal Unit
ANSI	American National Standards Institute	°C	Degrees Celsius
BACT	Best Available Control Technology	CO	Carbon Monoxide
CAA	Clean Air Act	dscf	Dry standard cubic foot
CEM	Continuous Emission Monitoring	dscm	Dry standard cubic meter
CFR	Code of Federal Regulations	°F	Degrees Fahrenheit
COM	Continuous Opacity Monitoring	gr	Grains
EPA	Environmental Protection Agency	Hg	Mercury
EU	Emission Unit	hr	Hour
FG	Flexible Group	H_2S	Hydrogen Sulfide
GACS	Gallon of Applied Coating Solids	hp	Horsepower
GC	General Condition	lb	Pound
HAP	Hazardous Air Pollutant	m	Meter
HVLP	High Volume Low Pressure *	mg	Milligram
ID	Identification	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	NO_x	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality (Department)	PM	Particulate Matter
MIOSHA	Michigan Occupational Safety & Health Administration	PM10	PM less than 10 microns diameter
MSDS	Material Safety Data Sheet	PM2.5	PM less than 2.5 microns diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	pph	Pound per hour
NSPS	New Source Performance Standards	ppm	Parts per million
NSR	New Source Review	ppmv	Parts per million by volume
PS	Performance Specification	ppmw	Parts per million by weight
PSD	Prevention of Significant Deterioration	psia	Pounds per square inch absolute
PTE	Permanent Total Enclosure	psig	Pounds per square inch gauge
PTI	Permit to Install	scf	Standard cubic feet
RACT	Reasonably Available Control Technology	sec	Seconds
ROP	Renewable Operating Permit	SO_2	Sulfur Dioxide
SC	Special Condition	THC	Total Hydrocarbons
SCR	Selective Catalytic Reduction	tpy	Tons per year
SRN	State Registration Number	µg	Microgram
TAC	Toxic Air Contaminant	VOC	Volatile Organic Compounds
TEQ	Toxicity Equivalence Quotient	yr	Year
VE	Visible Emissions		

* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**

2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**

4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**

5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**

6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**

7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
    a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
    b) A visible emission limit specified by an applicable federal new source performance standard.
    c) A visible emission limit specified as a condition of this Permit to Install.

12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

SPECIAL CONDITIONS

Emission Unit Identification

Emission Unit ID	Emission Unit Description	Stack Identification
EU-OL34-SGSP	SOUR GAS SWEETENING PLANT. Natural gas, crude oil, condensate, and brine fluids are extracted from wells drilled into a production reservoir. These materials are transmitted through flow lines, generally located within a 5 mile radius of the central production facility. The temperature of this stream of material is increased by inline heaters and the fluids are then separated and stored in fixed roof tanks. The gas is compressed by an internal combustion driven compressor, fueled by sweet natural gas. There is hydrogen sulfide present in some of the gas which is removed by an amine process and burned at the flare. Water vapor is removed from the gas by glycol dehydration and the remaining gas is sold.	SV- OL34-FLARE
EU-OL34-COMP1	NATURAL GAS FIRED RECIPROCATING ENGINE	SV- OL34-COMP1
EU-OL34-DEHY	GLYCOL DEHYDRATION SYSTEM. Emissions are controlled by a flare.	SV- OL34-FLARE

Flexible Group Identification

Flexible Group ID	Emission Units Included in Flexible Group	Stack Identification
FGMETHANOL	Methanol storage equipment totaling less than 5,000 gallons for all equipment	N/A
FGFACILITY	All process equipment at the stationary source including equipment covered by other permits, grand-fathered equipment and exempt equipment.	NA

The following conditions apply to: EU-OL34-SGSP

Emission Limits

1.1 Sulfur dioxide emissions from this facility shall not exceed 485 pounds for any consecutive 24-hour period. This is equivalent to a mass flow rate of hydrogen sulfide to the flare of 258 pounds for any consecutive 24 hour period. **(R 336.1205(3), R 336.1403)**

1.2 Sulfur dioxide emissions from this facility shall not exceed 89 tons per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(3), R 336.1403)**

Process/Operational Limits

1.3 The permittee shall automatically begin a safe and orderly shutdown of all process inflow streams to EU-OL34-SGSP if the H2S concentration is more than 100 ppmv in any building enclosing any portion of EU-OL34-SGSP. The permittee shall determine the H2S concentration using a system that monitors H2S on a continuous basis. The permittee may resume full operation of EU-OL34-SGSP only after successful corrective measures have been applied. **(R 336.1403(5)(e))**

1.4 The permittee shall operate a continuously burning pilot flame at the flare. In the event that the pilot flame is extinguished, shut-in of all wells feeding EU-OL34-SGSP shall commence automatically within one second. The permittee shall not restart operation of EU-OL34-SGSP unless the pilot flame is re-ignited and maintained. Pilot fuel shall be only sweet natural gas. **(R 336.1403(2), R 336.1901, R 336.1910)**

Equipment

1.5 Permittee shall maintain the fencing and warning signs and/or other measures as necessary to prevent unauthorized individuals from entering the plant property or buildings. Signs shall read "Danger -- Poison Gas" and shall be spaced no more than 100 feet apart with at least one sign on each side of the plant property. **(R 336.1403(5)(b))**

1.6 The permittee shall not operate EU-OL34-SGSP unless all emergency relief valves, all storage tanks, and the dehydrator vent are vented to the flare or equivalent control system. **(R 336.1403(5)(c), R 336.1901, R 336.1910)**

1.7 The permittee shall not operate EU-OL34-SGSP unless the flare is installed, maintained, and operated in a satisfactory manner. **(R 336.1403(1), R 336.1901, R 336.1910)**

Monitoring

1.8 The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor the H2S concentration, on a continuous basis, in any building enclosing any portion of EU-OL34-SGSP. The sensor shall be placed as close to process equipment as practicable. The monitoring system shall provide a visual alarm when the H2S concentration is more than 50 ppmv. **(R 336.1403(5)(d))**

1.9 The permittee shall monitor the mass flow rate of hydrogen sulfide either entering the plant or going to the flare. The monitoring program shall include a determination of the hydrogen sulfide concentration using colorimetric detector tubes or the equivalent, and a determination of the volumetric flow rate. The hydrogen sulfide concentration shall be tested at least quarterly. **(R 336.1205(3), R 336.1403(5)(a))**

Recordkeeping/Reporting/Notification

1.10 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205, R 336.1225, R 336.1403, R 336.1702(a), R 336.1901)**

1.11 The permitee shall observe and record the visible emissions from the flare at least once per calendar day. If visible emissions are greater than normal visible emissions during routine operations, then the permittee shall take and record the necessary corrective actions. **(R 336.1403(1))**

1.12 The permittee shall keep, in a satisfactory manner, 24-hour, monthly and 12-month rolling time period SO2 emission calculation records for EU-OL34-SGSP, as required by SC 1.1 and 1.2. SO2 emissions shall be calculated from the hydrogen sulfide mass flow rate using the following equation:

(million cubic feet of gas produced per day) X (grains of H2S per 100 cubic feet of gas produced per day) X 2.7 = pounds SO2 per day

Alternative calculations must be approved by the AQD District Supervisor. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205(3), R 336.1403))**

1.13 The permittee shall keep, in a satisfactory manner, 24-hour time period records of the mass flow rate of hydrogen sulfide and the volumetric gas flow rate either entering the plant or going to the flare for EU-OL34-SGSP, as required by SC 1.9. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1403(5)(a))**

1.14 The permittee shall submit quarterly reports of the 24-hour time period mass flow rate of hydrogen sulfide and the volumetric gas flow rate either entering the plant or going to the flare for EU-OL34-SGSP. The report shall be submitted to the AQD District Supervisor in the format shown below within 30 days following the end of the quarter in which the data were collected. Alternate formats may be used upon approval of the AQD District Supervisor. **(R 336.1403(5)(a))**

Month:	**Plant Name:**			
Date:	**Gas sweetened (MMCF/d)**	**H_2S Content (grains / 100 cubic feet)**	**Mass Flow Rate H_2S (lb/24 hr period)**	**Mass Flow Rate SO2 (lb/24 hr period)**
1.				
2.				

Stack/Vent Restrictions

	Stack & Vent ID	**Maximum Diameter (inches)**	**Minimum Height Above Ground Level (feet)**	**Applicable Requirements**
1.15	SV-OL34-FLARE	8	75	R336.1403(2)
	The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			

The following conditions apply to: EU-OL34-COMP1

Emission Limits

	Pollutant	Limit	Time Period	Equipment	Testing / Monitoring Method	Applicable Requirements
2.1a	NO_x	86.0 tpy	12-month rolling time period as determined at the end of each calendar month.	EU-OL34-COMP1	SC 2.12 and Appendix A	R 336.1205
2.1b	CO	6.0 tpy	12-month rolling time period as determined at the end of each calendar month.	EU-OL34-COMP1	SC 2.13 and Appendix A	R 336.1205

Material Usage Limits

2.2 The natural gas usage for EU-OL34-COMP1 shall not exceed 23.5 million cubic feet per 12-month rolling time period as determined at the end of each calendar month. This limit is not applicable if the engine has add-on control equipment. **(R 336.1205, R 336.1225, R 336.1702(a))**

Process / Operational Limits

2.3 No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for EU-OL34-COMP1. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate EU-OL34-COMP1 unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:

a. Identification of the equipment and, if applicable, air-cleaning device and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair

b. Description of the items or conditions to be inspected and frequency of the inspections or repairs

c. Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures

d. Identification of the major replacement parts that shall be maintained in inventory for quick replacement

e. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits

If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1205, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912)**

2.4 The permittee shall not operate any engine equipped with an add-on control device for more than 200 hours per engine per year without that control device consistent with the PM / MAP (pursuant to SC 2.3). The 200 hours shall include times after an engine change-out occurs and general maintenance performed as allowed by the PM / MAP. The hours per year limit is based on a 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205, R 336.1702(a))**

Equipment

2.5 The permittee shall not operate any engine that contains an add-on control device unless that device is installed, maintained, and operated in a satisfactory manner, except as specified in SC 2.4. Satisfactory operation includes performing the manufacturer's recommended maintenance on the control device and operating in conjunction with the PM / MAP specified in SC 2.3. **(R 336.1205, R 336.1702(a), R 336.1910)**

Testing

2.6 Upon request by the AQD District Supervisor, the permittee shall verify NO_x emission factors used to calculate emissions from EU-OL34-COMP1, by testing at owner's expense, in accordance with Department requirements. If a test has been conducted, any resulting increase in an emission factor shall be implemented to calculate NO_x. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004)**

Monitoring

2.7 The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor the natural gas usage for EU-OL34-COMP1 on a continuous basis. **(R 336.1205)**

Recordkeeping / Reporting / Notification

2.8 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205, R 336.1702(a), R 336.1901)**

2.9 The permittee shall maintain a log of all maintenance activities conducted according to the PM / MAP (pursuant to SC 2.3). The permittee shall keep this log on file at a location approved by the AQD District Supervisor for a period of at least five years and make it available to the Department upon request. Except as provided in R 336.1285, if the engine is replaced with an equivalent-emitting or lower-emitting engine, the permittee shall notify the AQD District Supervisor of such change-out and submit acceptable emissions data to show that the alternate engine is equivalent-emitting or lower-emitting. The data shall be submitted within 30-days of the engine change out. **(R 336.1205, R 336.1702(a), R 336.1911)**

2.10 The permittee shall keep, in a satisfactory manner, for any engine equipped with an add-on control device, monthly and 12-month rolling time period records of the hours that the engine is operated without the control device. The permittee shall keep all records on file at a location

approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205, R 336.1702(a))**

2.11 The permittee shall keep, in a satisfactory manner, monthly fuel use records for EU-OL34-COMP1, as required by SC 2.7. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205)**

2.12 The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period NO_x emission calculation records for EU-OL34-COMP1, as required by SC 2.1a and Appendix A. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205)**

2.13 The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period CO emission calculation records for EU-OL34-COMP1, as required by SC 2.1b and Appendix A. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205)**

Stack / Vent Restrictions

	Stack & Vent ID	Maximum Diameter (inches)	Minimum Height Above Ground Level (feet)	Applicable Requirement
2.14	SV- OL34-COMP1	8	22	R 336.1225
	The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			

The following conditions apply to: EU-OL34-DEHY

Process/Operational Limits

3.1 The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart HH, as they apply to EU-OL34-DEHY by the compliance date of January 5, 2009. **(40 CFR Part 63, Subpart HH)**

Equipment

3.2 The permittee shall not operate EU-OL34-DEHY unless the flash tank is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes routing the flash tank exhaust gas to the compressor for destruction. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1901, R 336.1910)**

3.3 The permittee shall not operate EU-OL34-DEHY unless the flare, or a condenser, or other equivalent air pollution control device is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.1403(5)(c), R 336.1702(a), R 336.1901, R 336.1910)**

Testing

3.4 At least once each calendar year the permittee shall obtain, by sampling, an analysis of the wet gas stream. The permittee shall analyze the sample for nitrogen, carbon dioxide, hydrogen sulfide, C1 through C6 series hydrocarbons, benzene, toluene, xylene, ethylbenzene, and heptanes plus. The permittee must submit any request for a change in the sampling frequency to the AQD District Supervisor for review and approval. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1901)**

Monitoring

3.5 If EU-OL34-DEHY meets the exemption criteria in 40 CFR 63.764(e)(1)(i) for glycol dehydrators with actual annual average flowrate of natural gas less than 85,000 cubic meters per day, the actual flowrate of natural gas shall be determined using either of the procedures below:

(i) The permittee shall install and operate a monitoring instrument that directly measures natural gas flowrate to the glycol dehydration unit with an accuracy of plus or minus 2 percent or better. The permittee shall convert annual natural gas flowrate to a daily average by dividing the annual flowrate by the number of days per year the glycol dehydration unit processed natural gas. **(40 CFR 63.772(b)(1)(i))**

(ii) The permittee shall document, to the AQD District Supervisor's satisfaction, that the actual annual average natural gas flowrate to the glycol dehydration unit is less than 85,000 cubic meters per day. **(40 CFR 63.772(b)(1)(ii))**

3.6 If EU-OL34-DEHY meets the exemption criteria in 40 CFR 63.764(e)(1)(ii) for glycol dehydrators with actual average benzene emissions less than 0.90 megagram per year, the emissions shall be determined either uncontrolled, or with federally enforceable controls in place and using either of the procedures below:

(i) The permittee shall determine actual average benzene emissions using the model GRI-GLYCalc™ , Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc™ Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit and may be determined using the procedures documented in the Gas Research Institute (GRI)

report entitled "Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions" (GRI–95/0368.1). **(40 CFR 63.772(b)(2)(i))**

(ii) The permittee shall determine an average mass rate of benzene emissions in kilograms per hour through direct measurement using the methods in 40 CFR 63.772(a)(1)(i) or (ii), or an alternative method according to 40 CFR 63.7(f). Annual emissions in kilograms per year shall be determined by multiplying the mass rate by the number of hours the unit is operated per year. This result shall be converted to megagrams per year. **(40 CFR 63.772(b)(2)(ii))**

Recordkeeping / Reporting / Notification

3.7 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1901)**

3.8 The permittee shall keep, in a satisfactory manner, records of the wet gas composition as determined through analysis of wet gas samples for EU-OL34-DEHY, as required by SC 3.4. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1901)**

3.9 If EU-OL34-DEHY meets the exemption criteria in 40 CFR 63.764(e)(1)(i) for glycol dehydrators with actual annual average flowrate of natural gas less than 85,000 cubic meters per day, the permittee shall keep records of the actual annual average natural gas throughput (in terms of natural gas flowrate to the glycol dehydration unit per day) as determined in accordance with SC 3.5. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make it available to the Department upon request. **(40 CFR 63.774(d)(1)(i))**

3.10 If EU-OL34-DEHY meets the exemption criteria in 40 CFR 63.764(e)(1)(ii) for glycol dehydrators with actual average benzene emissions less than 0.90 megagram per year, the permittee shall keep records of the actual average benzene emissions (in terms of benzene emissions per year) as determined in accordance with SC 3.6. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make it available to the Department upon request. **(40 CFR 63.774(d)(1)(ii))**

3.11 The permittee shall submit all applicable notifications and reports required by 40 CFR 63.775 by the dates specified in 40 CFR 63.775. **(40 CFR 63.775)**

The following conditions apply to: FGFACILITY

Emission Limits

	Pollutant	Equipment	Limit	Time Period	Testing/ Monitoring Method	Applicable Requirements
4.1	NOx	FGFACILITY	89.0 tpy	12-month rolling time period as determined at the end of each calendar month	SC 4.6 and Appendix A	R336.1205(3), 40 CFR 52.21(c)&(d)

Material Limits

4.2 The permittee shall not burn any sour natural gas in FGFACILITY. Sour gas is defined as any gas containing more than 1 grain of hydrogen sulfide or more than 10 grains of total sulfur per 100 standard cubic feet. **(R 336.1205(3))**

Process / Operational Limits

4.3 The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart HH, as they apply to FGFACILITY. **(40 CFR Part 63, Subpart HH)**

Testing

4.4 Verification of H_2S and/or sulfur content of the natural gas burned in FGFACILITY may be required upon request by the AQD District Supervisor. This condition is necessary to ensure compliance with SC 4.2. **(R 336.1205(3))**

Recordkeeping / Reporting / Notification

4.5 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205(3))**

4.6 The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period NOx emission calculation records for FGFACILITY, as required by SC 4.1 and Appendix A. The permittee shall keep all records on file at a location approved by the AQD District Supervisor for a period of at least five years and make them available to the Department upon request. **(R 336.1205(3))**

APPENDIX A
Procedures for Calculating NOx and CO Emissions

The permittee shall demonstrate compliance with the NOx and CO emission limits by keeping track of all fuel usage for all equipment using such fuel at this facility and multiplying that fuel usage by an equipment-specific emission factor. The emission factors are typically expressed as the mass of pollutant per unit of fuel.

EU-OL34-COMP1:
The permittee shall use emission factors from vendor data or from source specific testing (stack testing), as available for EU-OL34-COMP1. This also applies to engine(s) from engine change-out(s). If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions.

Fuel burning equipment at the facility:
The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions.

The permittee shall document the source of each emission factor used in the calculations.

Preventative Maintenance / Malfunction Abatement Plan (PM / MAP)
Content Checklist for Engines Required to Submit a PM / MAP

	PM / MAP Content	Location	
		Page	Section / Table
1	Contact Person		
	Engines		
2	Engine Identification: Include the engine make / model and type of engine (i.e.rich or lean burn). Identify engines with add on control and AFRC. If add on control is present, identify type of control.		
3	Engine Operating Variables To Be Monitored. Include a copy of the normal engine maintenance log.		
4	Corrective procedures or operational changes that will be taken in the event of a malfunction.		
5	Major parts replacement inventory for engines.		
	Add-On Controls		
6	Catalytic Converter operating variables to be monitored. Include the method and frequency of monitoring these variables, provide the normal operating range of these variables.		
7	Corrective actions to be taken in event of malfunction of the catalytic converter.		
8	AFRC O_2 Sensor replacement schedule or operating variables to be monitored.		
9	Corrective actions to be taken in event of malfunction of the AFRC.		
10	Emission testing utilizing portable analyzer.		
11	Scheduled maintenance of control equipment.		
12	Major parts replacement inventory for add on control.		
13	Identify supervisory personnel responsible for overseeing inspection, maintenance and repair of add on controls.		
14	Recordkeeping and retention of records.		
15	Updates of PM / MAP as necessary.		

Guidance Document For
Preventative Maintenance / Malfunction Abatement Plan (PM / MAP) Checklist

1. Contact Person: Include the name, title, telephone number (extension if applicable) and e-mail address for the person that may be contacted with questions regarding this Preventative Maintenance / Malfunction Abatement Plan (PM / MAP) with the transmittal letter accompanying the PM / MAP rather than within the body of the PM / MAP.

Engines

2. Engine Identification: For each engine at the facility, list the engine manufacturer, model and type of engine (rich burn or lean burn) and the type of add-on control equipment used (oxidation catalyst, three-way catalyst), if any. Also, identify each engine with an air to fuel ratio controller (AFRC).

3. Engine operating variables to be monitored: Provide the normal engine maintenance log.

4. Corrective procedures in the event of an engine malfunction: Provide a brief summary of the procedures that will take place in the event of an engine malfunction. A malfunction is defined in Rule 113(d) of the State of Michigan Air Pollution Control Rules which states, in part, 'any sudden, infrequent and not reasonable preventable failure of the equipment to operate in a normal or usual manner. Failures caused in part by poor maintenance or careless operations are not malfunctions.'

5. Major parts replacement inventory: Provide a list of major replacement parts that shall be maintained in inventory for quick replacement. If no replacement parts are kept on site provide a statement that no parts shall be kept.

Add-On Controls

6. Catalytic converter operating variables to be monitored: Provide the following:
   a. A list of variables that will be monitored to measure catalytic converter performance including the catalytic converter inlet and outlet temperature, pressure differential across the catalytic converter, and any other relevant catalytic converter variables that are monitored.
   b. The normal operating range that has been developed for each variable; acceptable ranges shall include documentation as to how the range was determined (i.e. manufacturer's recommendations or determined in the field with documentation or testing).
   c. The method of monitoring the variables, and
   d. The frequency of monitoring the variables.

7. Corrective procedures in the event of a malfunction of the catalytic converter: Malfunction is defined in number four above. Provide information on what steps shall be taken when a variable is out of range. This could include monitoring of emissions or cleaning and/or replacement of the catalytic converter.

8. AFRC O_2 sensor replacement schedule or operating variables to be monitored: Chose either (a) or (b).
   a. O_2 sensor replacement interval or sensor life detector
   b. If monitoring, provide:
      i. A list of variables monitored to measure AFRC performance (i.e. millivolt output, O_2, and/or any other relevant AFRC variables that are monitored).
      ii. The normal operating range that has been developed for each variable; acceptable ranges shall include documentation as to how the range was determined (i.e.

manufacturer's recommendations or determined in the field with documentation or testing).

iii. The method of monitoring the variables.

iv. The frequency of monitoring the variables.

9. Corrective procedures in the event of a malfunction of the AFRC: Malfunction is defined in number 4 above. If choosing monitoring in paragraph 8.b above, provide information on what steps shall be taken when a variable is out of range.

10. Emission checks: Describe when a portable analyzer would be used and how it will be used.
    a. Calibration of the analyzer will be conducted as required by manufacturer's specifications. Records shall be kept on file and made available to the Air Quality Division upon request.
    b. Checks for both CO and NO_x.
    c. Checks to be used to:
        i. Check performance if monitored parameter is out of normal range, e.g. low inlet temperature (an engine specific minimum inlet temperature could then be established).
        ii. When vendor cleaned catalyst is installed. This check will normally occur in the 12-18 month window as specified for routine cleaning.
    d. Companies may choose to perform any of following the three valid methods:
        i. Inlet and outlet checks and estimate destruction efficiency.
        ii. Outlet testing and check for g/hp-hr compared to levels used for permitting.
        iii. Outlet testing and use the uncontrolled vendor data to establish destruction efficiency.

11. Scheduled maintenance: Describe the <u>scheduled</u> cleaning and/or replacement of the catalytic converter.
    a. Frequency of catalytic converter inspection and field catalyst media cleaning (vacuum catalyst face): Follow vendor recommendations, typically 12-18 months unless parameters (pressure drop, temperature deviations, etc) indicate otherwise.
    b. Catalyst media removal and wash in chemical solution by manufacturer (if catalyst media does not respond to field cleaning). A replacement catalyst media will be used during the cleaning process.
    c. Catalytic converter gasket replacement: Follow vendor recommendations, typically 12-18 months when catalyst is serviced.
    d. Replace catalyst media if not functioning properly after vendor cleaning, or in lieu of vendor cleaning.

12. Major parts replacement inventory: Provide a list of major replacement parts that shall be maintained in inventory for quick replacement. If no replacement parts are kept on site provide a statement that no parts shall be kept.

13. Supervisory personnel responsible for maintenance of the control equipment: Include the contact information. This person or position can be a company employee or contractor and may or may not be the same person / position listed in number one above.

14. Retention of records: Records shall be kept on file and retained as described in the permit.

15. Updates of PM / MAP: Any updates to the plan shall be submitted to the AQD District Supervisor for written approval as required in the permit (the Department of Environmental Quality recommends the PM / MAP be reviewed annually).