MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

November 7, 2007

PERMIT TO INSTALL
No. 273-07

ISSUED TO
Northshore Petroleum, LLC

LOCATED AT
T19N, R4E, Section 17
Sterling, Michigan 48659

IN THE COUNTY OF
Arenac

STATE REGISTRATION NUMBER
N7853

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: **9/18/2007**	
DATE PERMIT TO INSTALL APPROVED: **11/7/2007**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

Section **Page**

Alphabetical Listing of Common Abbreviations / Acronyms 2

General Conditions 3

Emission Unit Identification 5

Flexible Group Identification 5

EUFLARESYSTEM Special Conditions 5

FGTREATERS Special Conditions 6

FGTANKS Special Conditions 6

FGFACILITY Special Conditions 7

FGTEST&FINISH Special Conditions 8

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	NOx	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality	PM	Particulate Matter
MIOSHA	Michigan Occupational Safety & Health Administration	PM-10	Particulate Matter less than 10 microns diameter
MSDS	Material Safety Data Sheet	pph	Pound per hour
NESHAP	National Emission Standard for Hazardous Air Pollutants	ppm	Parts per million
NSPS	New Source Performance Standards	ppmv	Parts per million by volume
NSR	New Source Review	ppmw	Parts per million by weight
PS	Performance Specification	psia	Pounds per square inch absolute
PSD	Prevention of Significant Deterioration	psig	Pounds per square inch gauge
PTE	Permanent Total Enclosure	scf	Standard cubic feet
PTI	Permit to Install	sec	Seconds
RACT	Reasonably Available Control Technology	SO_2	Sulfur Dioxide
ROP	Renewable Operating Permit	THC	Total Hydrocarbons
SC	Special Condition	tpy	Tons per year
SCR	Selective Catalytic Reduction	µg	Microgram
SRN	State Registration Number	VOC	Volatile Organic Compounds
TAC	Toxic Air Contaminant	yr	Year
TEQ	Toxicity Equivalence Quotient		
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 AQD District Supervisor shall be notified, in writing, of a change in ownership or operational control of the stationary source or emission unit(s) authorized by this Permit to Install pursuant to R 336.1219. The notification shall include all of the information required by R 336.1219(1)(a) and (b). In addition, a new owner or operator must submit a written statement pursuant to R 336.1219(1)(c), agreeing to and accepting the terms and conditions of this Permit to Install, and shall notify the AQD District Supervisor of any change in the contact person for this Permit to Install. **(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 nor does it affect any liability for past violations under the Natural Resources and Environmental Protection Act, 1994 PA 451.

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
EUHEATERTREATER1	350,000 Btu/hr heater treater for separating crude oil from water and natural gas.	SVHEATERTREATER1
EUHEATERTREATER2	350,000 Btu/hr heater treater for separating crude oil from water and natural gas.	SVHEATERTREATER2
EUOILTANKS	(2) 400 barrel crude oil storage tanks. Vapors from the tanks will be vented to the flare.	SVFLARE
EUH2OTANK	210 barrel brine water storage tank. Vapors from the tank will be vented to the flare.	SVFLARE
EUFLARESYSTEM	Flare system is designed to burn the sour gas from the heater treaters and vapors from the storage tanks.	SVFLARE
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

Flexible Group Identification

Flexible Group ID	Emission Units Included in Flexible Group	Stack Identification
FGTREATERS	EUHEATERTREATER1 and EUHEATERTREATER2	See above
FGTANKS	EUOILTANKS and EUH2OTANK	SVFLARE
FGFACILITY	All process equipment at the facility including equipment covered by other permits, grand-fathered equipment and exempt equipment.	
FGTEST&FINISH	Portions of FGFACILITY needed to accomplish the testing and completion of the wells prior to normal operation. All produced natural gas will be sent to a flare to be burned.	SVFLAREMIN

The following conditions apply to: EUFLARESYSTEM

Material Usage Limits

1.1 The amount of hydrogen sulfide burned in EUFLARESYSTEM shall not exceed 384 pounds per calendar day. **(R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

Equipment

1.2 The permittee shall not operate EUFLARESYSTEM unless the flare is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

1.3 The permittee shall equip and maintain EUFLARESYSTEM with a device to monitor the volumetric flow rate of gas going to the flare on a continuous basis. **(R 336.1910, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

Monitoring

1.4 The permittee shall monitor, in a satisfactory manner, the mass flow rate of hydrogen sulfide entering EUFLARESYSTEM and the volumetric flow rate of gas going to the flare. Satisfactory monitoring shall include determination of the hydrogen sulfide concentration using colorimetric detector tubes or their equivalent and using the volumetric gas flow rate from SC 1.3 and the hours of fluid flow to FGHEATERS to calculate the hydrogen sulfide mass flow rate per calendar day. **(R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

Recordkeeping/Reporting/Notification

1.5 The permittee shall keep, in a satisfactory manner, monthly records of each calendar day hydrogen sulfide mass flow rate to EUFLARESYSTEM and of the hydrogen sulfide concentrations, volumetric flow rates, and calculations supporting each calendar day's mass flow rate to show compliance with SC 1.1. The permittee shall keep all records on file for a period of at least five years and make them available to the Department upon request. **(R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d))**

Stack/Vent Restrictions

	Stack & Vent ID	Maximum Diameter (inches)	Minimum Height Above Ground Level (feet)	Applicable Requirement
1.6	SVFLARE	NA	40	**R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d)**
	The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			

The following conditions apply to: FGTREATERS

Material Usage Limits

2.1 The permittee shall not burn sour natural gas in either FGTREATERS heater treater. Based on the definitions in Rule 119(i) and (dd), sweet gas is gas that contains at most 1 grain of hydrogen sulfide per 100 standard cubic feet and at most 10 grains of total sulfur per 100 standard cubic feet. **(R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

Equipment

2.2 The permittee shall not operate either FGTREATERS heater treater unless the flare is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

The following conditions apply to: FGTANKS

Equipment

3.1 The permittee shall not operate FGTANKS unless the flare is installed, maintained, and operated in a satisfactory manner. **(R 336.1225, R 336.1702(a), R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

3.2 The permittee shall not load out any oil storage tank unless a vapor return system is installed, maintained and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1901)**

The following conditions apply to: FGFACILITY

Emission Limits

	Pollutant	Limit	Time Period	Equipment	Testing/ Monitoring Method	Applicable Requirement
4.1	SO_2	89 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC 4.9	**R 336.1205(3)**

Process/Operational Limits

4.2 The permittee shall not use FGFACILITY to process wells other than the Klimek 1-17, Stawowy 1-17, or Wojtowicz 2-17 without prior notification to the AQD District Supervisor. **(R 336.1403, R 336.1901)**

Equipment

4.3 The permittee shall not process oil in FGFACILITY unless the flare is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

4.4 The permittee shall not operate FGFACILITY unless all emergency relief valves (not including safety burst plates), all storage tanks, and all dehydrators are vented to a flare, an incinerator or a vapor recovery system. **(R 336.1224, R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

4.5 The permittee shall operate a continuously burning pilot flame at the flare. In the event that the pilot flame is extinguished, a control valve located at the inlet to FGFACILITY shall automatically close immediately and isolate FGFACILITY from all wells feeding FGFACILITY. Furthermore, each well feeding FGFACILITY shall shut-in before the pressure reaches a company-determined safety set-point. The permittee shall not resume fluid flow into FGFACILITY unless the pilot flame is re-ignited and maintained. **(R 336.1224, R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

4.6 The permittee shall install and maintain fencing, warning signs, and/or other measures as necessary to prevent access to the flare by unauthorized individuals. **(R 336.1201(3), R 336.1901, R 336.2802, 40 CFR 52.21)**

Monitoring

4.7 The permittee shall perform visible emission observations of the flare at least once each calendar day that FGFACILITY is operating. If excessive visible emissions are observed, the permittee shall implement the following procedures:

a) Determine the cause of the excessive visible emissions within 1 hour of discovery; and,

b) Identify, implement, and record the corrective measures to reduce/eliminate the excessive visible emissions within five hours.

c) If the excessive visible emissions cannot be reduced/eliminated within five hours, the permittee shall immediately cease fluid flow to FGFACILITY and not resume fluid flow to FGFACILITY until the excessive visible emissions have been reduced/eliminated. **(R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

Recordkeeping / Reporting / Notification

4.8 The permittee shall keep, in a satisfactory manner, records of each occurrence of implementing corrective measures taken to reduce/eliminate excessive visible emissions for the flares, as required by SC 4.7b as well as per calendar day records of each visible emission observation. The record for each occurrence and observation shall include the date, time, and duration of the occurrence and observation. The permittee shall keep all records on file for a period of at least five years and make them available to the Department upon request. **(R 336.1225, R 336.1403, R 336.1901, R 336.1910)**

4.9 The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of the calculations of SO_2 emissions from FGFACILITY, as required by SC 4.1. The permittee shall keep all records on file for a period of at least five years and make them available to the Department upon request. **(R 336.1205(3))**

The following conditions apply to: FGTEST&FINISH

Process/Operational Limits

5.1 All produced natural gas shall be directed to the flare for combustion. **(R 336.1901)**

Stack/Vent Restrictions

	Stack & Vent ID	Maximum Diameter (inches)	Minimum Height Above Ground Level (feet)	Applicable Requirement
5.2	SVFLAREMIN	NA	20	**R 336.1901**
	The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			

Permit Dates

5.3 The special conditions in FGTEST&FINISH are the only special conditions that need to be complied with during the oil and gas well drilling, testing, completion, rework, and/or plugging activities. Once these activities are completed, and the wells are in production mode, the permittee shall comply with all other portions of this permit. **(R 336.1288)**