



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **092012-001**

Project Number: 2012-05-091
Installation Number: 155-0077

Parent Company: Marquis-Missouri Terminal, LLC
 Parent Company Address: 11953 Prairie Industrial Parkway, Hennepin, IL 61327
 Installation Name: Marquis-Missouri Terminal, LLC
 Installation Address: Port Rd, Hayti, MO 63851
 Location Information: Pemiscot County, S01, T18N, R12E

Application for Authority to Construct was made for:
 The installation of a crude oil storage and loadout operation. This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*.

Standard Conditions (on reverse) are applicable to this permit.

Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

SEP 05 2012

EFFECTIVE DATE

Kyra L. Moore

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if the permittee fails to begin construction or modification within two years from the effective date of this permit. The permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

The permittee will be in violation of 10 CSR 10-6.060 if the permittee fails to adhere to the specifications and conditions listed in the application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

The permittee shall notify the Missouri Department of Natural Resources' Air Pollution Control Program of the anticipated date of startup of these air contaminant sources. The information shall be made available within 30 days of actual startup. Also, the permittee shall notify the Department of Natural Resources' Southeast Regional Office within 15 days after the actual start-up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

The permittee may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If the permittee chooses to appeal, the permittee shall file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If the permittee chooses not to appeal, this certificate, the project review and the application and associated correspondence constitutes the permit to construct. The permit allows the permittee to construct and operate the air contaminant sources, but in no way relieves the permittee of the obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources, and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Marquis-Missouri Terminal, LLC
Pemiscot County, S01, T18N, R12E

1. Capture and Control System Requirement – CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare.
 - A. The permittee shall employ a vapor collection system to capture emissions from EP-02 Crude Oil Barge Loadout Rack. The permittee shall not operate EP-02 Crude Oil Barge Loadout Rack unless the vapor collection system is in operation.
 - 1) The vapor collection system shall be designed to collect vapors displaced from marine tank vessels during loading operations and to prevent vapors collected at one loading berth from passing through another loading berth to the atmosphere as required by §63.562(b)(1)(i) of 40 CFR Part 63, Subpart Y – *National Emission Standards for Marine Tank Vessel Loading Operations*.
 - 2) The permittee shall limit marine vessel loading operations to those vessels that are equipped with vapor collection equipment that is compatible with the terminal's vapor collection system as required by §63.562(b)(1)(ii).
 - 3) The permittee shall limit marine tank vessel loading operations to those vessels that are vapor tight and to those vessels that are connected to the vapor collection system as required by §63.562(b)(1)(iii).
 - B. The permittee shall control emissions captured by the vapor collection system using an Open Flame Air Assisted Smokeless Flare (CD-01) as specified in the permit application. The permittee shall not operate EP-02 Crude Oil Barge Loadout Rack unless the flare is in operation.
 - C. CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare shall achieve an overall efficiency of 95 percent as required by §63.562(b)(4).

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- D. CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare shall be operated and maintained in accordance with the manufacturer(s) specifications. The manufacturer specifications shall be retained on-site.
 - E. Each loading and vapor return line shall be equipped with fittings that are designed to be both liquid and vapor tight.
 - F. The permittee shall maintain an operating and maintenance log for CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.
2. Record Keeping and Reporting Requirements
- The permittee shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include Material Safety Data Sheets (MSDS) for the crude oil brought to and shipped from the facility.
3. Performance Testing
- A. The permittee shall conduct performance testing as required by §63.563 to demonstrate compliance with the 95 percent overall efficiency requirement of §63.562(b)(4) for CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare.
 - B. These tests shall be performed within 60 days after achieving the maximum production rate of the installation, but not later than 180 days after initial start-up for commercial operation and shall be conducted in accordance with test methods and procedures of §63.565.
 - C. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

and must be approved by the Director prior to conducting the required emission testing.

- D. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
- E. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2012-05-091
Installation ID Number: 155-0077
Permit Number:

Marquis-Missouri Terminal, LLC
Port Road
Hayti, MO 63851

Complete: 7/19/2012

Parent Company:
Marquis-Missouri Terminal, LLC
11953 Prairie Industrial Parkway
Hennepin, IL 61327

Pemiscot County, S01, T18N, R12E

REVIEW SUMMARY

- The permittee has applied for authority to construct a new crude oil storage and loadout operation in Hayti, MO.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. There will be evaporative losses of Toluene (108-88-3), Xylene (1330-20-7), Hexane (110-54-3), and Benzene (71-43-2) from the crude oil handled by the installation.
- 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984* is applicable to T-01 Crude Oil Internal Floating Roof Storage Tank, T-02 Crude Oil Internal Floating Roof Storage Tank, and T-03 Crude Oil Internal Floating Roof Storage Tank.
- 40 CFR Part 63, Subpart Y – *National Emission Standards for Marine Tank Vessel Loading Operations* is applicable to EP-02 Crude Oil Barge Loadout Rack. In the application the permittee stated that they were not subject to this regulation; however, §63.560(b)(2) does not exempt the installation from the entire regulation, only from the emission standards in §63.562(c) and (d). The permittee is subject to the emission standards of §63.562(b) and shall demonstrate compliance as required by §§63.563, 63.564, 63.565, 63.566, and 63.567, as applicable.
- CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare is being used to control VOC and HAP emissions from EP-02 Crude Oil Barge Loadout Rack.

- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of VOC are above *de minimis* levels.
- This installation is located in Pemiscot County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2 #22 *Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels*; therefore, the installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Ambient air quality modeling was not performed for this review. VOC emissions are above the *de minimis* levels; however, no model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions. Toluene (108-88-3), Xylene (1330-20-7), Hexane (110-54-3), and Benzene (71-43-2) are below each HAP's respective Screening Model Action Level (SMAL); therefore, no HAP modeling was performed.
- Emissions testing is required to determine the overall capture and control efficiency of CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is granted with special conditions.

INSTALLATION DESCRIPTION

Marquis-Missouri Terminal, LLC is proposing to construct a new crude oil storage and loadout operation in Hayti, Missouri. The proposed crude oil storage and loadout operation has a petroleum storage and transfer capacity exceeding 300,000 barrels; therefore, the installation is a named installation per 10 CSR 10-6.020(3)(B), Table 2 #22 *Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels*. As a named installation, the major source threshold for the installation is 100 tons per year for each criteria pollutant. This is a new installation; therefore, no permits have been issued to the permittee by the Air Pollution Control Program. The installation will require a Basic Operating Permit within 30 days of equipment startup.

PROJECT DESCRIPTION

The permittee has applied for authority to construct a 1,310,400,000 gallon per year (31,200,000 barrel per year) crude oil storage and loadout operation. According to the application, crude oil will be transported by railcar from the North Dakota Bakken Oil Shale Formation. Each train is expected to consist of a maximum of 120 cars and will hold approximately 3,600,000 gallons of crude oil. The installation will accept a maximum of 7 trains per week. Each railcar will be connected to a 7,400 feet long 24 inch diameter underground pipeline via an unloading hose. Emissions from the

unloading of the railcars will be reported under EP-01 Railcar Unloading/Initial Pipeline Filling.

The 24 inch diameter 7,400 feet long underground pipeline connects to a 16 inch diameter 8,000 feet long underground pipeline at a central sump pump. The sump pump is electrically powered.

The pipeline will transfer the crude oil to one of three identical 5.6 million gallon internal floating roof tanks (T-01, T-02, and T-03). Each tank is 146 feet in diameter and is estimated to have an annual throughput of 490,560,000 gallons. The tanks will have a vapor-mounted primary seal and a rim-mounted secondary seal and are subject to the requirements of 40 CFR Part 63, Subpart Kb.

Crude oil will leave T-01, T-02, and T-03 by a 12 inch diameter 900 feet long underground pipeline and will enter a 10,000 gallon above ground pressurized storage tank (T-04). T-04 will be designed to maintain an internal pressure of 275 psia at 125°F and an external pressure of 14.7 psia at 125°F. The pressurized storage tank will be operated such that no venting to the atmosphere will occur.

From T-04, the crude oil will be transferred onto barges by Crude Oil Barge Loadout Rack (EP-02). EP-02 will transfer a maximum of 1,471,680,000 gallons of crude oil each year. Emissions from EP-02 will be captured and controlled by a Vapor Collection System and Open Flame Air Assisted Smokeless Flare (CD-01). CD-01 is required to obtain a minimum overall capture and control efficiency of 95 percent by 40 CFR Part 63, Subpart Y. The flare consists of a 0.1 MMBtu/hr natural gas pilot light and a vapor combustion capacity of 12.4 MMBtu/hr for an overall capacity of 12.5 MMBtu/hr.

Leaks from the 118 valve seals, two pump seals, and 118 flanges/connectors associated with the pipelines will be reported under FS-01 Equipment Leaks.

EMISSIONS/CONTROLS EVALUATION

Uncontrolled emissions of VOC, HAP, Toluene, Xylene, Hexane, and Benzene exceed the major source levels; however, the facility is required to use Vapor Collection System and Open Flame Air Assisted Flare (CD-01) to reduce volatile emissions from Barge Loadout Rack (EP-02). Conditioned emissions of HAP, Toluene, Xylene, Hexane, and Benzene are below the *de minimis* levels. Conditioned emissions of VOC are above the *de minimis* level; therefore, a Section 6 permit is required.

Potential VOC emissions from Railcar Unloading/Initial Pipeline Filling (EP-01) were calculated based upon a maximum of 10 pipeline emptying events per year. During each pipeline emptying event it was assumed that the entire volume of the 24 inch diameter 7,400 feet long and 16 inch diameter 8,000 feet long pipelines was filled (67,926 ft³). Using a conversion factor of 7.4805 gallon/ft³, the two pipelines can hold a maximum of 508,120 gallons. The 508,120 gallons was entered into Equation 1 of EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 5.2.2.1.1 "Loading Losses" (July 2008) to calculate the emissions from EP-01 –

assuming a saturation factor of 0.6 (AP-42 Table 5.2-1), a true vapor pressure of 3.1222 psia, a molecular weight of 50 lb/lb-mole, and a temperature of 524.18°R.

Potential working and breathing loss emissions from T-01, T-02, and T-03 Crude Oil Internal Floating Roof Tanks were calculated using EPA software TANKS 4.0.9d using the meteorological data for Memphis, Tennessee as Memphis, Tennessee was determined to be the closest city to Hayti, Missouri contained within the TANKS 4.0.9d meteorological database. Roof tank landing emissions were calculated using equations from AP-42 Section 7.1.3.2.2 “Roof Landings” (November 2006). The roof tank landing calculations assumed a maximum of four drain-dry landings per year for the entire installation and a maximum of eight roof landings with a 6’ liquid heel per year for the entire installation. Each roof landing event was evaluated at a maximum length of three days at a temperature of 82.84°F to represent the worst-case average daily temperature.

The 10,000 gallon pressurized tank T-04 was assumed to have zero emissions due to the nature of its design.

Potential volatile emissions from EP-02 Crude Oil Barge Loadout Rack were calculated based upon a maximum design rate of 168,000 gallons per hour using Equations 2 and 3 from AP-42 Section 5.2.2.1.1 “Loading Losses” (July 2008) using an arrival emission factor of 0.86 (AP-42 Table 5.2-3), a true vapor pressure of 3.1222 psia, a molecular weight of 50 lb/lb-mole, and a temperature of 524.18°F. As Equations 2 and 3 calculated the volatile emissions including 15 percent methane, the potential VOC emissions were then calculated as 85 percent of the volatile emissions.

Controlled VOC emissions from EP-02 were calculated based upon the 95 percent overall capture and control efficiency required by 40 CFR Part 63, Subpart Y for CD-01 Vapor Collection System and Open Flame Air Assisted Smokeless Flare. Emissions from the flare’s pilot light were calculated using emission factors from AP-42 Tables 1.4-1 and 1.4-2 (July 1998) and 40 CFR Part 98 – *Mandatory Greenhouse Gas Reporting*. GHG emissions from the flare’s vapor combustion were calculated using the 15 percent methane content from Equations 2 and 3 of AP-42 Section 5.2.2.1.1 “Loading Losses” (July 2008) and assuming a 100 percent conversion of the 85 percent VOC content to CO₂. All other emissions from the flare’s vapor combustion were calculated using AP-42 Tables 13.5-1 and 13.5-2 (September 1991).

VOC emissions from FS-01 Equipment Leaks were calculated using emission factors from EPA document *Protocol for Equipment Leak Emission Estimates* Table 2.1 (November 1995).

Emissions of HAP, Toluene, Xylene, Hexane, and Benzene were calculated using a mass balance approach. The Material Safety Data Sheet for the crude oil processed by the installation listed the maximum weight percent of Toluene as 5 percent, of Xylene as 5 percent, of Hexane as 3 percent, and of Benzene as 2 percent, resulting in a maximum weight percent of HAP of 15 percent. Each calculated emission of VOC was multiplied by the weight percent of each HAP to obtain the emissions of HAP.

The following table provides an emissions summary for this project. As a new installation, the facility has no existing potential emissions or existing actual emissions. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year), unless otherwise noted above.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions	Uncontrolled Installation Potential Emissions	Conditioned Installation Potential Emissions
PM	25.0	N/A	N/A	0.003	0.003
PM ₁₀	15.0	N/A	N/A	0.003	0.003
PM _{2.5}	10.0	N/A	N/A	0.003	0.003
SO _x	40.0	N/A	N/A	0.0003	0.0003
NO _x	40.0	N/A	N/A	0.04	3.73
VOC	40.0	N/A	N/A	667.94	58.30
CO	100.0	N/A	N/A	0.04	20.14
GHG ¹	100,000	N/A	N/A	50.17	4,565.56
HAPs	25.0	N/A	N/A	100.19	8.38
Toluene ² (108-88-3)	10.0	N/A	N/A	33.40	2.79
Xylene ² (1330-20-7)	10.0	N/A	N/A	33.40	2.79
Hexane ² (110-54-3)	10.0	N/A	N/A	20.04	1.69
Benzene ³ (71-43-2)	10.0	N/A	N/A	13.36	1.11

N/A = Not Applicable; N/D = Not Determined

¹The GHG values within this table are expressed as CO₂e.

²The SMALs for Toluene, Xylene, and Hexane are 10.0 tons per year each. Conditioned emissions of each of these HAPs are below 10.0 tons per year; therefore, modeling was not required.

³The SMAL for Benzene is 2.0 tons per year. Conditioned emissions of Benzene are below 2.0 tons per year; therefore, modeling was not required.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of VOC are above *de minimis* levels.

APPLICABLE REQUIREMENTS

The permittee shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

GENERAL REQUIREMENTS

- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.070 *New Source Performance Regulations*
 - 40 CFR Part 60, Subpart Kb – *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*
- 10 CSR 10-6.075 *Maximum Achievable Control Technology (MACT) Regulations*
 - 40 CFR Part 63, Subpart Y – *National Emission Standards for Marine Tank Vessel Loading Operations*

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, I recommend this permit be granted with special conditions.

Alana L. Rugen, EIT
Environmental Engineer II

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 21, 2012, received May 23, 2012, designating Marquis-Missouri Terminal, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Mr. Jason Marquis
President
Marquis-Missouri Terminal, LLC
11953 Prairie Industrial Parkway
Hennepin, IL 61327

RE: New Source Review Permit - Project Number: 2012-05-091

Dear Mr. Jason Marquis:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and submittal of an operating permit application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Alana Rugen at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 526-0189. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:arl

Enclosures

c: Southeast Regional Office
PAMS File: 2012-05-091

Permit Number: