

# PERMIT BOOK



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

[www.dnr.mo.gov](http://www.dnr.mo.gov)

**JUN 03 2015**

Mr. Jesse England  
Operations Manager  
Blue Sun St. Joe Refining, LLC  
5701 Stockyards Expressway  
St. Joseph, MO 64504

RE: New Source Review Temporary Permit Request - Project Number: 2014-11-043

Installation ID Number: 021-0120

Temporary Permit Number: **06 2015 - 001**

Expiration Date: December 31, 2015

Dear Mr. England:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to the proposed modifications at the Blue Sun Advanced Fuels (BSAF) renewable jet/diesel fuel pilot plant located at Blue Sun St. Joe Refining, LLC, in St. Joseph, Missouri. The Air Pollution Control Program is hereby granting your request to conduct this temporary operation at this location in accordance with Missouri State Rule 10 CSR 10-6.060(3) with an expiration date of December 31, 2015.

The pilot plant is an intermittent-use temporary facility. BSAF is proposing to modify the pilot plant as part of the secondary phase of operation of the unit, which was originally permitted under Temporary Permit No. 122013-008. The first phase (Phase I) of the pilot plant ended operation during the summer of 2014. Based on the results from the first phase, BSAF has received additional funding to modify the plant for testing of additional technologies. The proposed modification (Phase II) will include the installation of a rectification column and a 200 standard cubic foot per minute (scfm) low-flow flare to control an expected increase in process vent emissions. The existing thermal oxidizer will remain in place and may be used to control process vent emissions; however, it is not sized to handle the maximum amount of vent gas expected during the second phase of testing. Under normal operations, it is expected that the flare will be the primary control device, which is sized to handle the maximum expected vent gas flow rate of 139 pounds per hour (approximately 25 scfm).

The modification is not expected to increase the throughput of the plant, approximately 4,200 gallons per day; however, there will be a slight increase in emissions due to the flare and fugitive components associated with the new rectification column. The potential emissions from the flare



Recycled Paper

Mr. Jesse England

Page Two

were estimated using emission factors obtained from the *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources*, Fifth Edition (AP-42), Section 13.5, *Industrial Flares*. The vent stream composition and flow rate were estimated by ASPEN process simulation software (provided by BSAF) at the capacity of the pilot plant. The potential emissions of volatile organic compounds (VOCs) through fugitive component losses were calculated from emission factors obtained from Table 2-1 of the EPA document *Protocol for Equipment Leak Emission Estimates*, November 1995.

The results of the analysis are summarized in Table 1 below and indicate that the potential to emit (PTE) of the pilot plant at 25 scfm, following the proposed modification, will remain below 100 tons per year (tpy) for each regulated pollutant. As a comparison, the PTE of the pilot plant at the maximum capacity of the flare at 200 scfm was also calculated and still indicates emissions below 100 TPY.

Table 1: Emissions Summary (tons per year)

Pollutant	De Minimis Level (tpy)	Potential to Emit (tpy) Phase I	PTE with Thermal Oxidizer (tpy) Phase I	PTE Estimated Vent Gas Flow (25 SCFM) Phase II	PTE Capacity (200 SCFM) of Flare Phase II
PM	25	0.05	0.05		
PM <sub>10</sub>	15	0.05	0.05	0.05	0.05
PM <sub>2.5</sub>	10	0.05	0.05	0.05	0.05
CO	100	0.60	0.60	3.83	27.23
NO <sub>x</sub>	40	0.71	0.71	1.25	5.55
SO <sub>2</sub>	40	0.0044	0.0044	0.00	0.00
VOC	40	45.44	9.83	19.05	62.83
<sup>1</sup> HAPs	10/25	0.07	0.07	0.21	1.59
GHG CO <sub>2</sub> (mass)	0.0 / 100.0 / 250.0	773.8	773.8		
GHG CO <sub>2e</sub>	75,000/100,000	774.5	774.5		

<sup>1</sup>Hexane (C<sub>6</sub>H<sub>14</sub>) was the only HAP calculated by ASPEN software. SMAL of hexane is 10 tpy.

The potential VOC emissions at the BSAF biodiesel facility were calculated to be above *de minimis* source limit. BSAF will be required to operate the LFF (Low Flow Flare) System to control the VOC emissions to below the 100 ton threshold as required by 10 CSR 10-6.060 (3) *Temporary Installations and Pilot Plants*. The VOC destruction efficiency of the flare is expected to be 98%. Therefore, the attached special conditions will be required in this temporary permit.

Mr. Jesse England  
Page Three

BSAF shall design and operate the flare in accordance with 40 CFR §60.18 Ch. I (7-1-10 Edition) *General control device and work practice requirements*. BSAF shall maintain documentation that demonstrate compliance on site and have it available to Department of Natural Resources' personnel upon request.

You are still obligated to meet all applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you should avoid violating 10 CSR 10-6.045 *Open Burning Requirements*, 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*, 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*, and 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes*.

A copy of this letter should be kept with the unit and be made available to Department of Natural Resources' personnel upon verbal request. If you have any questions regarding this determination, please do not hesitate to contact Kathy Kolb at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or by telephone at (573) 75 1-4817. Thank you for your time and attention to this matter.

Sincerely,  
AIR POLLUTION CONTROL PROGRAM

  
Kyra L. Moore  
Director

KLM:kk1

c: PAMS File: 2014-11-043  
Kansas City Regional Office

Page No.	4
Permit No.	
Project No.	2014-11-043

## SPECIAL CONDITIONS:

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

### SPECIAL CONDITIONS

*The special conditions listed in this temporary 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."*

Blue Sun St. Joe Refining  
Buchanan County, S31, T57N, R35W

#### 1. Control Device Requirements

Blue Sun St. Joe Refining, LLC/Blue Sun Advanced Fuels (BSAF) shall vent emissions from the rectification column/condenser and subsequent tanks to the flare at all times when the renewable jet/diesel fuel pilot plant is in operation. Blue Sun St. Joe Refining, LLC/Blue Sun Advanced Fuels (BSAF) shall design and operate the flare in accordance with 40 CFR §60.18 (7-1-10 Edition) *General control device and work practice requirements*. Blue Sun St. Joe Refining, LLC/Blue Sun Advanced Fuels (BSAF) shall maintain documentation that demonstrate compliance on site and have it available to Missouri Department of Natural Resources' personnel upon request. A thermal oxidizer may be used in conjunction with the flare as needed.

#### 2. Record Keeping and Reporting Requirements

- A. Blue Sun St. Joe Refining, LLC/Blue Sun Advanced Fuels (BSAF) 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 Sheet (MSDS) for all materials used.
- B. Blue Sun St. Joe Refining, LLC/Blue Sun Advanced Fuels (BSAF) shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.