Global Companies LLC
Cumberland County
South Portland, Maine
A-432-71-O-M (SM)

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1

FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes Annotated (M.R.S.A.), §344 and §590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

Global Companies, LLC (Global) was issued Air Emission License A-432-71-N-R on January 23, 2013, permitting the operation of emission sources associated with their petroleum storage and distribution facility. Global has requested a minor revision to their license in order to store either No. 6 oil or asphalt in Tank #3, which has previously been licensed to store only No. 6 oil.

The equipment addressed in this license is located at 1 Clark Road in South Portland, Maine.

B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

Petroleum Storage

Equipment	Capacity (gallons)	Product Stored	Roof Type	Date Installed
Tank #3	2,300,000	#6 Fuel Oil/Asphalt	Fixed	1917

C. Application Classification

This amendment will not increase emissions of any pollutant. Therefore, this amendment is determined to be a minor revision and has been processed as such.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 CMR 100 (as amended). BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Minor Revision Description

The Global facility is a petroleum terminal that stores and distributes residual and distillate oil products. The oil products are received by ship or barge and conveyed into large, land-based storage tanks. The products are subsequently loaded into tanker trucks for delivery to customers or, in some cases, loaded onto a barge for alternate delivery. For operational flexibility, Global wishes to be able to store either No. 6 fuel oil or asphalt in Tank #3, which has previously been licensed to store only No. 6 oil. This added flexibility equips Global to more easily respond to future market demands.

Additional heating coils will be installed in Tank #3 in support of this change, to enable the asphalt contents of Tank #3 to be maintained at approximately 300 °F, a higher temperature than the typical No. 6 oil storage temperature of 140 °F. Energy for these heating coils is provided by the existing boilers at the terminal. Because Tank #3 currently has two inches of fiberglass insulation on the shell and none on the roof, four inches of insulation will be added to the roof prior to asphalt storage. Additionally, blowout hatches, designed to relieve excess pressure in the tank in the event of an emergency and recommended by American Petroleum Institute (API) design standards for the storage of asphalt, will be installed. The blowout hatches will remain closed under normal operation and only open in the event of a sudden over pressurization of the tank during an emergency event.

It is expected that asphalt will be stored in this tank and require heating for nine months of the year, March to November. Calculated annual heat requirements for this scenario as compared to No. 6 oil stored and heated year round, with the addition of roof insulation

and the differences in physical properties and corresponding storage temperatures for the two substances, show that the heat demand from the existing boilers for the storage of asphalt in Tank #3 is expected to be less than for the storage of No. 6 oil.

Data and calculations provided by Global demonstrate a net decrease in required boiler output between the two storage scenarios, thus predicting corresponding net decreases in criteria pollutant emissions from the existing boilers when storing asphalt instead of No. 6 oil in Tank #3. There will be no change to the annual fuel use cap for the boilers.

C. Characterization of Emissions

There are several different emission calculation procedures for storage and handling of residual oil, including both No. 6 fuel oil and asphalt. For temporary storage purposes in Maine's climate, both No. 6 fuel oil and asphalt storage are maintained at temperatures above ambient temperatures to facilitate ease of movement and transportation. The following will discuss each of three possible emission calculation approaches which show that emission increases will not occur using any of the three calculation methods.

1. Calculation Approach #1: EPA Emission Factors

   Within the EPA reference manual "Compilation of Air Pollutant Emission Factors" AP-42, Chapter 5 addresses *Transportation and Marketing of Petroleum Products*. Emission factors in both Table 5.2-5 for loading of tank trucks and Table 5.2-6 for loading of marine vessels only list No. 6 residual oil; i.e., not asphalt. Because asphalt is very similar to No. 6 oil and grouped under the same general category of "residual oil", industry standard practice has been to use the same emission factor for No.6 oil and asphalts. As such, Global's proposal for the storage of either No. 6 oil or asphalt in Tank #3 would not represent an emissions increase.

   The calculation of emissions associated with petroleum storage tanks has historically been done using the TANKS Model published by EPA (based on formulas detailed in AP-42, Chapter 7-*Organic Liquid Storage Tanks*). The TANKS Model does not have an input category for asphalt; hence, historical calculation of asphalt storage emissions (working and breathing) has utilized the category of No. 6 residual oil. As such, Global's proposal for the storage of either No. 6 oil or asphalt in Tank #3 would not represent an emissions increase.

2. Calculation Approach #2: Modified EPA Emission Factors

   To address recent concerns of both regulators and industry that the calculations using Approach #1 described above may understate the emission levels from heated residual oil storage tanks, an industry group conducted a voluntary program to analyze and determine vapor pressure of No. 6 oil from terminals across the U.S. Global and many other oil companies subsequently calculated tank emissions (working and breathing) using the newly identified vapor pressure value in a modified TANKS Model. Because the analytical method for determining vapor pressure was

not recommended for asphalt, it has been historically assumed that the asphalt would be similar to No. 6 oil. Based on this assumption, Global's proposal for the storage of either No. 6 oil or asphalt in Tank #3 would not represent an emissions increase.

3. Calculation Approach #3: Using Results from Terminal-Specific Emission Testing

   Global conducted emission testing at the Terminal in an effort to characterize VOC emissions associated with No. 6 oil and asphalt for tank breathing losses, tank working losses (period of time a tank is being filled), and truck loading. The test results are presented below.

Operation	No. 6 Oil (lb/hr)	Asphalt (lb/hr)
Tank Breathing	1.70	1.22
Tank Working	3.87	1.62
Truck Loading	2.58	0.15

   Based on these emission test results, Global's proposal for the storage of either No. 6 oil or asphalt in Tank #3 would likely result in a decrease of VOC emissions.

D. BACT/BPT

Literature, applicable regulations, and air emission licenses for other, similar sources support the BACT/BPT determination that materials exhibiting true vapor pressure below 70 mm Hg (9.3 kPa) at storage conditions are most appropriately stored in fixed-roof tanks, while more volatile materials, such as gasoline, may require a floating roof tank or equivalent to minimize emissions of volatile organic compounds (VOC) and hazardous air pollutants (HAP). Both asphalt and No. 6 oil exhibit true vapor pressure below the identified level. Tank #3 is an existing, fixed-roof tank. The Department finds that the storage of asphalt and No. 6 oil in a fixed-roof tank and annual throughput tracking as required in the facility's air emission license meets BACT/BPT criteria for asphalt and No. 6 oil storage at this facility.

E. New Source Performance Standards (NSPS) Applicability

Tank #3 was installed in 1917 and will be licensed to store No. 6 fuel oil or asphalt, at the facility's discretion, upon issuance of this license amendment.

NSPS 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 12, 1984*, identifies applicability based on the true vapor pressure of the liquid contents, with the lowest level of applicability being 3.5 kPa (0.5 psi). Based on data from literature and on test data from several oil storage companies, the vapor pressure of residual oil is less than 0.02 psi. Thus, Tank #3 storing either No. 6 fuel oil or asphalt is not an affected facility under Subpart Kb.

F. Annual Emissions

The proposed minor revision does not change the total annual emissions from the facility.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-432-71-O-M subject to the conditions found in Air Emission License A-432-71-N-R and the following conditions.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

This minor revision requires no new or modified license conditions.

DONE AND DATED IN AUGUSTA, MAINE THIS 14 DAY OF March , 2016.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-432-71-N-R.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: January 14, 2016
Date of application acceptance: January 14, 2016
Date filed with the Board of Environmental Protection:

This Order prepared by Jane E. Gilbert, Bureau of Air Quality.

Filed
MAR 14 2016
State of Maine
Board of Environmental Protection