



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

**Sprague Operating Resources LLC
Waldo County
Searsport, Maine
A-97-71-M-M (SM)**

**Departmental
Findings of Fact and Order
Air Emission License
Amendment #2**

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

Sprague Operating Resources LLC (Sprague) was issued Air Emission License A-97-71-J-R/A on May 21, 2013, permitting the operation of emission sources associated with their petroleum storage and distribution and bulk materials handling facility. The license was subsequently amended on May 22, 2015 (A-97-71-L-A).

Sprague has requested a minor revision to their license to clarify emissions calculations methods from the storing and handling of residual oil and asphalt products and to include additional description of the Department's Best Practical Treatment (BPT) determination for these storage tanks.

The equipment addressed in this license is located at Trundy Road, Searsport, Maine.

B. Emission Equipment

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

Bulk Storage Tanks

Tank Number	Capacity (gal)	Product Stored	Year Installed	Tank Type
1	3,927,798 ¹	# 6 Oil	1949	Vertical, Fixed Roof
2	3,949,890	Asphalt	1949	Vertical, Fixed Roof

¹ This tank's capacity, identified as 3,927,756 gallons in air emission license A-97-71-J-R/A (May 21, 2013), has been updated to reflect the most accurate and current information as provided by the source.

<u>Tank Number</u>	<u>Capacity (gal)</u>	<u>Product Stored</u>	<u>Year Installed</u>	<u>Tank Type</u>
3	3,949,890 ²	# 6 Oil	1957	Vertical, Fixed Roof
4 (Irving Oil Tank)	7,057,764	Asphalt	--	Vertical, Fixed Roof

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. **AIR EMISSION LICENSE MINOR REVISION REQUESTS**

A. Air Emissions Calculations: Residual Oil and Asphalt Products

To comply with the reporting requirements of 06-096 CMR 137, *Emission Statements*, breathing and working losses from #6 fuel oil and asphalt storage tanks shall be quantified using AP-42 equations and factors, as applicable, and site-specific data including product storage temperatures and associated vapor pressures, when available.

Historically, for storage tanks subject to reporting requirements, the Department has accepted reported values of volatile organic compounds (VOC) and hazardous air pollutants (HAP) emissions calculated using EPA's TANKS model. The TANKS model is emissions estimation software based on the procedures of Chapter 7 of EPA's *Compilation of Air Pollutant Emission Factors*, also known as AP-42.

The AP-42 calculation determines the amount of hydrocarbon in the tank vapor space from the vapor pressure of the material in the tank at the liquid surface temperature, and then calculates the amount of vapor forced out of the tank due to 1) liquid being actively pumped into the tank (working losses), or 2) thermal expansion or contraction of tank contents driven by ambient temperature changes (breathing losses). The calculation requires a graph of the relationship between vapor pressure and temperature for the asphalt and estimates of the vapor phase molecular weight and partition of hydrocarbons into VOC and particulate, in addition to process data such as asphalt throughput, temperature, and tank contents level. As discussed in the introduction to AP-42, use of site-specific data is the preferred method for estimating a source's emissions because those data provide the best representation of the tested source's emissions.

The document dated April 2015 and entitled *EPA Review of Available Documents and Rationale in Support of Final Emissions Factors and Negative Determinations for Flares, Tanks, and Wastewater Treatment Systems* [Contract No. EP-D-11-084, Work Assignment No. 2-12], which presents the results of an evaluation of the veracity of AP-42 procedures to quantify emissions from petroleum storage tanks, states EPA's conclusion that the AP-42 Chapter 7 tank equations provide reasonably accurate

² This tank's capacity, identified as 6,023,598 gallons in air emission license A-97-71-J-R/A (May 21, 2013), has been updated to reflect the most accurate and current information as provided by the source.

estimates of emission rates when appropriate site-specific data are used, especially for materials like asphalt, for which no default data are available, or No. 6 fuel oil, which is often mixed with more volatile cutter material.

Based on the above information and data and sample calculations provided by Sprague, including but not limited to information relating to VOC sampling undertaken by Eastmount Environmental Services at Sprague's Searsport, Maine terminal in 2012 and 2013, the Department concludes that in order to obtain the most accurate estimates of VOC and HAP emissions from asphalt and residual fuel oil storage tanks, Sprague shall estimate emissions using AP-42 equations and factors, as applicable, and site-specific data including product storage temperatures and associated vapor pressures, when available.

B. Best Practical Treatment (BPT) for Asphalt and No. 6 Fuel Oil Storage Tanks

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.

Prior to issuance of the facility's air emission license, the Department evaluated the control of emissions from Sprague's tanks as compared to emissions controls commonly used in sources of similar age and design, in accordance with 38 MRSA §590(3) (1991) and 06-096 CMR 115 (3)(D)(2).

Literature and air emission licenses for other, similar sources support the BPT determination that materials exhibiting true vapor pressure (TVP) of below 70 mm Hg (9.3 kPa) at storage conditions are most appropriate for storage in fixed-roof tanks, while more volatile materials require a floating roof tank or equivalent to minimize VOC and HAP emissions.

Asphalt, CAS #8052-42-4, is obtained as the non-volatile residue from distillation of crude oil or by separation as the raffinate (the material left over after a component or components have been removed) from a residual oil in a deasphalting or decarbonization process. Asphaltic materials are complex hydrocarbon mixtures characterized by large molecular size (molecular weights ranging from 500 to 2000 and carbon numbers predominantly greater than C25), high boiling temperature ranges (752-1021°F), high

viscosity, low solubility, and negligible vapor pressure (some literature reports approximately 2.9 mm Hg at 77 °F; some literature reports negligible vapor pressure).

Residual Fuel Oil (CAS #68476-33-5) has a vapor pressure of less than 5.2 mm Hg, as specified on its material safety data sheet (MSDS). No. 6 fuel oil, CAS #68553-00-4, which is part of the residual fuel oil category, has a vapor pressure of 0.2 mm Hg at 70 °F, as specified on its MSDS.

The Department finds no evidence to contradict its original conclusion and hereby confirms that the use of fixed roof tanks and annual throughput tracking represents BPT for the residual oil and asphalt storage tanks at this Sprague facility.

C. Annual Emissions

The facility's annual emissions are not being revised with this amendment and shall remain as currently licensed.

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 A-97-71-M-M subject to the conditions found in Air Emission License A-97-71-J-R/A, in amendment A-97-71-L-A, 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 shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

Specific Condition (20) of Air Emission License A-97-71-J-R/A (May 21, 2013) shall be replaced with the following:

(20) Annual Emission Statement

In accordance with *Emission Statements*, 06-096 CMR 137 (as amended), the licensee shall annually report to the Department, in a format prescribed by the Department, the information necessary to accurately update the State's emission inventory. The emission statement shall be submitted by the date as specified in 06-096 CMR 137.

For the purposes of compliance with the reporting requirements of 06-096 CMR 137, breathing and working losses from #6 fuel oil and asphalt storage tanks shall be quantified using AP 42 equations and factors, as applicable, and site-specific data including product storage temperatures and associated vapor pressures, when available.

DONE AND DATED IN AUGUSTA, MAINE THIS 21 DAY OF July, 2015.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Patricia W. Aho for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-97-71-J-R/A.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 17, 2015

Date of application acceptance: June 22, 2015

Date filed with the Board of Environmental Protection:

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

