

SMAQMD BACT CLEARINGHOUSE

**ACTIVE**

CATEGORY Type: **BULK TERMINAL LOADING RACK**

BACT Category: Minor Source BACT

<b>BACT Determination Number:</b> 333	<b>BACT Determination Date:</b> 9/19/2023
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**Equipment Information**

**Permit Number:** 27379  
**Equipment Description:** APC TRUCK LOADING  
**Unit Size/Rating/Capacity:** ALL  
**Equipment Location:** SFPP, LP  
 2901 BRADSHAW RD SACRAMENTO, CA

**BACT Determination Information**

**District Contact:** Matt Baldwin Phone No.: (279) 207-1119 email: mbaldwin@airquality.org

<b>ROCs</b>	<b>Standard:</b>	0.015 lb/1000 gal
	<b>Technology Description:</b>	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid transferred (A)
	<b>Basis:</b>	Achieved in Practice
<b>NOx</b>	<b>Standard:</b>	0.034 lb/1000 gal
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>SOx</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	Natural gas or LPG fired pilot and air assist
	<b>Basis:</b>	Achieved in Practice
<b>PM10</b>	<b>Standard:</b>	0.01 grains/scf
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>PM2.5</b>	<b>Standard:</b>	0.01 grains/scf
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>CO</b>	<b>Standard:</b>	0.05 lb/1000 gal
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>LEAD</b>	<b>Standard:</b>	N/A
	<b>Technology Description:</b>	
	<b>Basis:</b>	

**Comments:** (A)Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 – Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX – Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.



## BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

	<b>DETERMINATION NO.:</b> <u>333</u>
	<b>DATE:</b> <u>July 11, 2023</u>
	<b>ENGINEER:</b> <u>Matt Baldwin</u>
<b>Category/General Equip Description:</b>	<u>Bulk Terminal Loading Rack (gasoline)</u>
<b>BACT Category:</b>	<u>Minor Source BACT / Non-major modification at a Major Source.</u>
<b>Equipment Specific Description:</b>	<u>Bulk Terminal Loading Rack and Vapor Control Unit (afterburner)</u>
<b>Equipment Size/Rating:</b>	<u>All</u>
<b>Previous BACT Det. No.:</b>	<u>164</u>

This BACT determination will update determination #164 for a bulk terminal loading rack and a vapor control unit that are in service of gasoline.

The Air District reviewed all previously reviewed BACT clearinghouses and rules (EPA, CARB, SMAQMD, SCAQMD, SJVAPCD, SDCAPCD, and BAAQMD) to determine if there have been any updates.

The BACT clearinghouses for SJVAPCD were updated. The requirements for SJVAPCD Rule 4311 have also been updated.

Bulk terminals are defined as an organic liquid distribution facility which receives organic liquid from the refinery by means other than truck (District Rule 447, Section 203). For the purposes of this determination, the bulk terminal must receive, store, and distribute gasoline. Gasoline bulk terminals receive fuel by pipeline, railcar, or marine barge. Gasoline is stored in fixed or floating roof aboveground storage tanks. The gasoline is then distributed to a loading rack that transfers gasoline and other fuels to cargo tank trucks for distribution to gasoline dispensing facilities and other intermediate or end users. Fuels distributed by the loading rack primarily include gasoline and diesel. Additives such as detergents and ethanol may be blended at the loading rack depending on customer specifications.

Vapors displaced from the cargo tank trucks at the loading rack are routed to a vapor bladder tank. Once the vapor bladder is sufficiently filled, the vapors are routed to the vapor control unit, where they are either destroyed through thermal oxidation or recovered using carbon canisters and vapor concentrators. This determination will focus on vapor control units that use thermal oxidation to control vapors.

## BACT / T-BACT ANALYSIS

### A. ACHIEVED IN PRACTICE (Rule 202, §205.1a):

The following control technologies are currently employed as BACT/T-BACT for a bulk terminal loading rack by the following agencies and air pollution control and air quality management districts:

#### US EPA

#### BACT

Source: [EPA RACT/BACT/LAER Clearinghouse](#)

Bulk Terminal Loading Rack	
<b>VOC</b>	19.05 mg/L (0.1590 lb/kgal) 0.014 lb/kgal (diesel) 0.016 lb/kgal (kerosene) Compliance with NESHAP Subpart BBBB [IN-0243]
<b>NO<sub>x</sub></b>	N/A – No BACT determinations found
<b>SO<sub>x</sub></b>	N/A – No BACT determinations found
<b>PM<sub>10</sub></b>	N/A – No BACT determinations found
<b>PM<sub>2.5</sub></b>	N/A – No BACT determinations found
<b>CO</b>	N/A – No BACT determinations found

#### T-BACT

There are no T-BACT standards published in the clearinghouse for this category, but the NESHAP standards (see 40 CFR, Part 63 standards below) represent Maximum Achievable Control Technology (MACT) or Generally Available Control Technology (GACT) for HAPs and can therefore be considered T-BACT.

#### RULE REQUIREMENTS:

40 CFR Part 60 Subpart XX – Standards of Performance for Bulk Gasoline Terminals. This regulation sets emission standards for loading racks and includes a requirement to operate vapor collection equipment, emission limits on the loading of liquid product, vapor tightness standards for pressure-vacuum vents on a vapor collection system, and monthly inspections for leaks.

VOC: 35 mg of total organic compounds per liter of gasoline loaded (0.29 lb/1000 gallons)

40 CFR Part 63 Subpart R – National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations). This regulation sets VOC emission standards for loading racks bulk terminals and pipeline breakout stations which are major sources of HAP. VOCs are being controlled as a surrogate for HAPs found in gasoline.

VOC: 10 mg of total organic compounds per liter of gasoline loaded (0.08 lb/1000 gallons)

**US EPA (continued)**

40 CFR Part 63 Subpart BBBBBB – National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities. This regulation establishes national emission limitations and management practices for VOCs emitted from area source gasoline line distribution bulk terminals, bulk plants, and pipeline facilities. VOCs are being controlled as a surrogate for HAPs found in gasoline.

VOC: 80 mg of total organic compounds per liter of gasoline loaded (0.67 lb/1000 gal)

**California Air Resources Board (CARB)**

**BACT**

Source: [CARB BACT Clearinghouse](#)

There are no BACT standards published in the clearinghouse for this category.

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category.

**RULE REQUIREMENTS**

There are no regulations with standards for this source category. However, the State Board is required to certify gasoline vapor recovery systems including bulk terminal loading racks. (Health & Saf. Code 41954).

**Sacramento Metropolitan AQMD**

**BACT**

Source: [SMAQMD BACT Determination #164](#)  
 (Last revised 08/15/2017)

<b>Bulk Terminal Loading Rack Vapor Processing</b>	
<b>VOC</b>	Bottom Loading with dry break couplers and vapor collection system venting to a vapor control unit that meets 0.02 lb/1000 gallons loaded <sup>(A)</sup>
<b>NOx</b>	0.034 lb/1000 gallons loaded
<b>SOx</b>	Natural gas or LPG fired flare
<b>PM10</b>	0.01 grains/scf
<b>PM2.5</b>	0.01 grains/scf
<b>CO</b>	0.05 lb/1000 gallons loaded

(A) Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 – Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX – Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.

**Sacramento Metropolitan AQMD (continued)**

**T-BACT**

The toxics at issue with this technology are VOCs. The control of VOCs through meeting the BACT standard will also control toxic air contaminants found in the VOCs. Therefore, the BACT VOC controls are also the T-BACT controls.

**RULE REQUIREMENTS**

[Rule 447 – Organic Liquid Loading](#) (Amended 04/02/1998)

Section 301 - A person shall not transfer or permit the transfer of organic liquids into any tank truck, trailer, or railroad tank car from a bulk terminal unless the emissions to the atmosphere do not exceed 0.08 pounds of VOC per one thousand (1,000) gallons of organic liquids transferred as determined by a method specified in Section 501.1.

Section 303 – Effective May 31, 1991, a person shall not load gasoline as defined in RULE 448, GASOLINE TRANSFER INTO STATIONARY STORAGE CONTAINERS into any tank truck, trailer, or railroad tank car from a bulk plant or bulk terminal unless the bulk plant or bulk terminal is equipped with a California Air Resources Board-certified vapor collection and disposal system.

Section 304 – All equipment associated with loading facilities shall be maintained to be leak free and vapor tight.

**South Coast AQMD**

**BACT**

Source: [SCAQMD BACT Guidelines for Non-Major Polluting Facilities \(Part D\)](#)

Liquid Transfer and Handling

Subcategory/ Rating/Size <sup>(A)</sup>	VOC	NOx	SOx	CO	PM10
Class A : Tank, Truck, and Rail Car Bulk Loading, (SCAQMD Rule 462)	Compliance with SCAQMD Rule 462 (0.08 lbs/1000 Gals) (10-20-2000)	N/A	N/A	N/A	N/A
Classes B and C: Tank, Truck, and Rail Car Bulk Loading, (SCAQMD Rule 462)	Bottom Loading with Vapor Collection System Vented to: -Incinerator; or -Compression/adsorption with Tail Gas Vented to Incinerator; or -Refrigeration System; or -Carbon Adsorption system and Compliance with SCAQMD Rule 462 (10-20-2000)	N/A	N/A	N/A	N/A

(A) Class A facilities are those that have a throughput of more than 20,000 gallons per day. Classes B and C have throughputs of less than 20,000 gallons per day.

Additionally, the following standards were identified during the review for BACT Determination No. 164.

**South Coast AQMD (continued)**

<b>Bulk Terminal Loading Rack</b>	
<b>VOC</b>	0.0565 lb/ 1000 gal
<b>NOx</b>	0.034 lb/ 1000 gal
<b>SOx</b>	No Standard
<b>PM10</b>	0.01 grains/scf
<b>PM2.5</b>	0.01 grains/scf
<b>CO</b>	0.0835 lb/ 1000 gal

(A) South Coast AQMD Permit to Construct AN 568675 & 56877 (08-24-2015) for a Bulk Terminal Loading Rack and vapor collection with bladder tank and afterburner, 118 MMBtu/hr

For the above permitting action, the VOC emission factor is limited to 0.0565 lb/1000 gallons to comply with offsetting requirements for the facility. BACT was triggered for NOx, CO, and PM10 since there was an emission increase of 1 lb/day. The SCAQMD determined that the manufacturer emission factors were considered BACT/LEAR for this source category.

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category. However, since the primary VOCs controlled by the VOC BACT standard include HAPs, the VOC BACT standard will be considered the T-BACT standard. This approach is consistent with the way EPA NESHAPs regulate HAP emissions from gasoline distribution facilities.

**RULE REQUIREMENTS**

[Reg. IV, Rule 462 – Organic Liquid Loading](#) (Amended 05/14/1999)

This rule requires Class A Facilities (> 20,000 gallons/day) to use bottom loading and have a CARB certified or District-approved vapor recovery and/or disposal system that meets 0.08 lb VOC/1000 gallons. For Class B facilities, this rule requires bottom loading and a CARB certified or District-approved vapor recovery and/or disposal system that can recover 90 percent of displaced vapors. For Class C facilities, this rule requires submerged fill or bottom fill loading.

[Reg. IV, Rule 1118.1 – Control of Emissions from Non-refinery Flares](#) (Adopted 01/04/2019)

This rule requires new, relocated, or replacement flares at organic liquid loading operations to meet a NOx emission rate of 0.034 lb/1,000 gallons loaded and a CO emission rate of 0.5 lb/1,000 gallons loaded.

**San Joaquin Valley APCD**

**BACT**

Source: [SJVAPCD BACT Guideline 7.1.10](#) <sup>(A)</sup>  
 (Last revised 07/19/2018)

<b>Loading Rack/Switch Loading</b>	
<b>VOC</b>	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid transferred
<b>NOx</b>	Natural gas or LPG fired pilot and air assist
<b>SOx</b>	Natural gas fired flare
<b>PM10</b>	Air assisted flare with smokeless combustion
<b>PM2.5</b>	No standard
<b>CO</b>	Natural gas fired pilot and air assist

(A) BACT Guideline 7.1.10 consists of three parts – 7.1.10 A, B, and C. Guideline 7.1.10 A is for Loading Rack/Switch Loading  $\geq$  384,000 gallons/day. BACT was not triggered for SOx, PM, or CO. Guideline 7.1.10 B is for truck loading of light crude with a true vapor pressure not to exceed 6 psia. Gasoline is generally more volatile (up to 11 psia) and has different combustion characteristics from light crude. Thus, the emission standards (VOC, NOx, and PM) listed in 7.1.10 B are not applicable to a gasoline bulk terminal. However, the good combustion practices are applicable to a vapor combustor for a gasoline bulk terminal. Guideline 7.1.10 C is a proactive BACT update for VOC emissions.

Guideline 7.1.10 C is listed as a Proactive BACT Update and as Achieved in Practice. Although listed as a proactive BACT, the standard has been applied to the vapor combustion unit at two bulk terminal facilities (Facilities N-829 & N-2369). Both facilities have Title V permits and the conditions are federally enforceable through those permits. Therefore, the standard is Achieved in Practice.

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category. However, since the primary VOCs controlled by the VOC BACT standard include HAPs, the VOC BACT standard will be considered the T-BACT standard. This approach is consistent with the way EPA NESHAPs regulate HAP emissions from gasoline distribution facilities.

**RULE REQUIREMENTS:**

[Rule 4624 – Transfer of Organic Liquid](#) (Amended 12/20/2017)

This rule requires Class 1 Facilities (> 20,000 gallons/day) to use bottom loading and have a vapor recovery and/or disposal system that meets 0.08 lb VOC/1000 gallons. For Class 2 facilities, this rule requires bottom loading and a vapor recovery and/or disposal system that can recover 95 percent of displaced vapors.

[Reg. IV, Rule 4311 – Flares](#) (Amended 12/17/2020)

This rule requires flares at organic liquid loading operations to meet a NOx emission rate of 0.034 lb/1,000 gallons loaded.

**San Diego County APCD**

**BACT**

Source: [NSR Requirements for BACT](#)

There are no BACT standards published in the clearinghouse for this category.

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category.

**RULE REQUIREMENTS**

[Regulation 4, Rule 61.2 – Transfer of Organic Compounds into Mobile Transport Tanks](#)  
(Amended 02/10/2021)

This rule requires bulk gasoline facilities to use submerged filling and have a vapor recovery and/or disposal system that meets 0.08 lb VOC/1000 gallons.

**Bay Area AQMD**

**BACT**

Source: [BAAQMD BACT/TBACT Workbook Document #109.2](#)  
(Last revised 06/28/2000)

<b>Liquid Transfer &amp; Handling - Tank Truck &amp; Rail Car Bulk Loading / Gasoline Bulk Terminals</b>	
<b>VOC</b>	0.02 lb/1000 gallons loaded. Submerged Loading with Vapor Collection System vented to a Thermal Oxidizer, Carbon Adsorber with vapor tank, or District Approved Equivalent.
<b>NOx</b>	0.10 lb/1000 gallons Low-NOx combustion system
<b>SOx</b>	No standard
<b>PM10</b>	No standard
<b>PM2.5</b>	No standard
<b>CO</b>	0.05 lb/1000 gallons Good Combustion Practice

**T-BACT**

There are no T-BACT standards published in the clearinghouse for this category. However, since the primary VOCs controlled by the VOC BACT standard include HAPs, the VOC BACT standard will be considered the T-BACT standard. This approach is consistent with the way EPA NESHAPs regulate HAP emissions from gasoline distribution facilities.



**Bay Area AQMD (continued)**

**RULE REQUIREMENTS**

[Reg 8, Rule 6 – Organic Liquid Bulk Terminals and Bulk Plants](#) (Amended 11/03/2021)

A person shall not transfer or allow the transfer of organic liquids from bulk terminal loading equipment unless a vapor loss control system is properly connected and used. Such transfer operations shall not emit into the atmosphere more than 21 grams of organic compounds per cubic meter (0.17 pounds per 1,000 gallons) of organic liquid loaded. Switch loading shall be subject to this standard.

**Summary of Achieved in Practice Control Technologies**

The following control technologies have been identified and are ranked based on stringency:

<b>SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES</b>	
<b>Pollutant</b>	<b>Standard</b>
<b>VOC (A)</b>	<p><u>Bulk Terminal Loading Rack</u></p> <ol style="list-style-type: none"> <li>Bottom loading with dry break couplers and vapor collection vented to a Vapor Control Unit [SJVAPCD, SCAQMD]</li> <li>Submerged fill loading and vapor collection vented to a Vapor Control Unit [BAAQMD, SDAPCD, EPA]</li> </ol> <p><u>Vapor Control Unit</u></p> <ol style="list-style-type: none"> <li>0.015 lb/1000 gallons loaded [SJVAPCD]</li> <li>0.02 lb/1000 gallons loaded [SMAQMD, BAAQMD]</li> <li>0.0565 lb/1000 gallons loaded [SCAQMD]</li> <li>0.08 lb/1000 gallons loaded [SDAPCD, EPA]</li> <li>19.05 mg/L loaded (0.159 lb/1000 gallons) [EPA]</li> <li>35 mg/L loaded (0.29 lb/1000 gallons) [EPA]</li> <li>80 mg/L loaded (0.6 lb/1000 gallons) [EPA]</li> </ol>
<b>NOx</b>	<ol style="list-style-type: none"> <li>0.034 lb/1000 gallons loaded [SMAQMD, SCAQMD, SJUVAPCD]</li> <li>0.10 lb/1000 gallons loaded [BAAQMD]</li> <li>Natural gas or LPG fired pilot and air assist [SJVAPCD]</li> </ol>
<b>SOx</b>	<ol style="list-style-type: none"> <li>Natural gas fired flare [SJVAPCD]</li> </ol>
<b>PM10</b>	<ol style="list-style-type: none"> <li>0.01 grains/scf [SCAQMD, SMAQMD]</li> <li>Air assisted flare with smokeless combustion [SJVAPCD]</li> </ol>
<b>PM2.5</b>	<ol style="list-style-type: none"> <li>0.01 grains/scf [SMAQMD]</li> </ol>
<b>CO</b>	<ol style="list-style-type: none"> <li>0.05 lb/1000 gallons loaded [BAAQMD, SCAQMD]</li> <li>0.0835 lb/1000 gallons loaded [SCAQMD]</li> <li>Natural gas or LPG fired pilot and air assist [SJVAPCD]</li> </ol>
<b>T-BACT (BTEX)</b>	Same as achieved in practice BACT for VOC.

**Summary of Achieved in Practice Control Technologies (continued)**

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

<b>BEST CONTROL TECHNOLOGIES ACHIEVED</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
VOC	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid transferred <sup>(A)</sup>	SMAQMD, SJVAPCD
NOx	0.034 lb/1000 gallons loaded	SMAQMD, SCAQMD, SJUVAPCD
SOx	Natural or LPG gas fired flare <sup>(B)</sup>	SMAQMD, SCAQMD
PM10	0.01 grains/scf	SMAQMD, SCAQMD
PM2.5	0.01 grains/scf	SMAQMD, SCAQMD
CO	0.05 lb/1000 gallons loaded	SMAQMD
T-BACT	0.015 lb VOC/1000 gallons loaded	ALL

(A) Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 – Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX – Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.

(B) The SJVAPCD guideline lists only a natural gas flare as being BACT for SOx, although for other pollutants, LPG is included. Since LPG using the national average sulfur content of 0.54 gr/100 ft<sup>3</sup> and EPA’s propane SOx emission factor of 0.1S lb/1000 gallons results in sulfur emissions equivalent to those of natural gas, the District assumes that LPG and natural gas are equivalent for purposes of achieved in practice BACT for SOx.

**B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (RULE 202, §205.1.b.)**

**Technologically Feasible Alternatives:**

Any alternative basic equipment, fuel, process, emission control device or technique, singly or in combination, determined to be technologically feasible by the Air Pollution Control Officer.

The table below shows the technologically feasible alternatives identified as capable of reducing emissions beyond the levels determined to be “Achieved in Practice” as per Rule 202, §205.1. a.

<b>Pollutant</b>	<b>Technologically Feasible Alternatives</b>	<b>Source</b>
<b>VOC</b>	No other technologically feasible option identified	
<b>NOx</b>	No other technologically feasible option identified	
<b>SOx</b>	No other technologically feasible option identified	
<b>PM10</b>	No other technologically feasible option identified	
<b>PM2.5</b>	No other technologically feasible option identified	
<b>CO</b>	No other technologically feasible option identified	

**C. SELECTION OF BACT:**

Based on the review of SMAQMD, SCAQMD, SDCAPCD, BAAQMD, SJVAPCD, SBCAPCD, VCAPCD, ARB, and EPA BACT Clearinghouses and cost effectiveness determinations, BACT for VOC, NOx, SOx, PM10, PM2.5, and CO will be the following:

<b>BACT #333 for Bulk Terminal Loading Rack</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
<b>VOC</b>	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid transferred <sup>(A)</sup>	SMAQMD, SJVAPCD
<b>NOx</b>	0.034 lb/1000 gallons loaded	SMAQMD, SCAQMD, SJUVAPCD
<b>SOx</b>	Natural gas or LPG fired flare	SMAQMD, SCAQMD
<b>PM10</b>	0.01 grains/scf	SMAQMD, SCAQMD
<b>PM2.5</b>	0.01 grains/scf	SMAQMD, SCAQMD
<b>CO</b>	0.05 lb/1000 gallons loaded	SMAQMD

(A) Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 – Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX – Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.

<b>T-BACT #333 for Bulk Terminal Loading Rack</b>		
<b>Pollutant</b>	<b>Standard</b>	<b>Source</b>
<b>T-BACT (toxics)</b>	0.015 lb VOC/1000 gallons loaded (VOCs are surrogate for HAPs)	SJVAPCD

APPROVED BY: Brian F Krebs DATE: 09-19-2023

# Attachment A

## Review of BACT Determinations Published by EPA

RBLC #	Permit Date	Process Code	Equipment	Pollutant	Standard	Case-By-Case Basis
IN-0243	06/03/2016	42.006	Loading Rack	VOC	35 mg/L (0.3 lb/kgal) 0.014 lb/kgal (diesel) 0.016 lb/kgal (kerosene) Compliance with NESHAP Subpart BBBBBB	OTHER CASE-BY-CASE
IN-0244	06/03/2016	42.006	Loading Rack	VOC	0.1590 lb/kgal 0.014 lb/kgal (diesel) 0.016 lb/kgal (kerosene) Compliance with NESHAP Subpart BBBBBB	OTHER CASE-BY-CASE
IN-0231	07/06/2016	42.006	Loading Rack	VOC	35 mg/L (0.3 lb/kgal) 0.014 lb/kgal (diesel) 0.016 lb/kgal (kerosene) Compliance with NESHAP Subpart BBBBBB	OTHER CASE-BY-CASE
NJ-0083	05/02/2016	42.006	Light Products Loading Rack (Gasoline)	VOC	95% control Compliance with NESHAP Subparts R and BBBBBB	LAER

# Attachment B

## Review of BACT Determinations Published by Air Districts

ACTIVE

SMAQMD BACT CLEARINGHOUSE

CATEGORY: **Bulk Terminal Loading Rack**

BACT Size: Minor Source BACT **Bulk Terminal Loading Rack and VCU**

**BACT Determination Number:** 164 **BACT Determination Date:** 8/15/2017

### Equipment Information

**Permit Number:** 25229  
**Equipment Description:** Bulk Terminal Loading Rack and VCU  
**Unit Size/Rating/Capacity:** 39.1 MMBtu/hr  
**Equipment Location:** PHILLIPS 66 COMPANY  
 76 BROADWAY  
 SACRAMENTO, CA

### BACT Determination Information

<b>ROCs</b>	<b>Standard:</b>	0.02 lb/1000 gal
	<b>Technology Description:</b>	Bottom Loading with dry break couplers and vapor collection system venting to a vapor control unit that meets 0.02 lb/1000 gallons loaded (A)
	<b>Basis:</b>	Achieved in Practice
<b>NOx</b>	<b>Standard:</b>	0.034 lb/1000 gal
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>SOx</b>	<b>Standard:</b>	
	<b>Technology Description:</b>	Natural gas or LPG fired flare
	<b>Basis:</b>	Achieved in Practice
<b>PM10</b>	<b>Standard:</b>	0.01 grains/scf
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>PM2.5</b>	<b>Standard:</b>	0.01 grains/scf
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>CO</b>	<b>Standard:</b>	0.05 lb/1000 gal
	<b>Technology Description:</b>	
	<b>Basis:</b>	Achieved in Practice
<b>LEAD</b>	<b>Standard:</b>	N/A
	<b>Technology Description:</b>	
	<b>Basis:</b>	

**Comments:** (A) Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 - Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX - Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.

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San Joaquin Valley  
Unified Air Pollution Control District

**Best Available Control Technology (BACT) Guideline 7.1.10\***

Last Update: 7/19/2018

**Organic Liquid Loading Rack**

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a State Implementation Plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

**\*This is a Summary Page for this Class of Source**

**Best Available Control Technology (BACT) Guideline 7.1.10 C**

<b>Emissions Unit:</b>	Organic Liquid Loading Rack	<b>Equipment Rating:</b>	All
<b>Facility:</b>	N/A	<b>References:</b>	Proactive BACT Update, Project N-1171002
<b>Location:</b>	N/A	<b>Date of Determination:</b>	7/19/2018

<b>Pollutant</b>	<b>BACT</b>
VOC	Bottom fill loading (submerged pipe fill loading) with dry break couplers, or equivalent, and VOC emissions from the vapor collection and control system less than or equal to 0.015 pounds per 1,000 gallons of organic liquid transferred

<b>BACT Status</b>	<b>Comment</b>
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Achieved in Practice

**Best Available Control Technology (BACT) Guideline 7.1.10 B**

<b>Emissions Unit:</b>	Loading Rack/Switch Loading	<b>Equipment Rating:</b>	=> 384,000 gallon/day
<b>Facility:</b>	ST Services	<b>References:</b>	ATC # N-137-12-0; 1043040
<b>Location:</b>	Stockton	<b>Date of Determination:</b>	2/23/2005

<b>Pollutant</b>	<b>BACT</b>
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CO	BACT NOT TRIGGERED
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<b>Pollutant</b>	<b>BACT</b>
NOx	natural gas or LPG fired pilot and air assist
PM10	BACT NOT TRIGGERED
SOx	BACT NOT TRIGGERED
VOC	bottom loading with dry break couplers and vapor collection vented to a thermal incinerator or flare with destruction efficiency => 99%

**BACT Status**

**Comment**

Achieved in Practice

**Best Available Control Technology (BACT) Guideline 7.1.10 A**

<b>Emissions Unit:</b>	Light Crude Oil Truck Loading Operation	<b>Equipment Rating:</b>	12,000 bbl/day of 6 psia max TVP crude oil load out served by 5 MMBtu/hr flare
<b>Facility:</b>	Texaco Trading and Trans Inc	<b>References:</b>	ATC #: S-83-6-0 Project #: 940993
<b>Location:</b>	Bakersfield	<b>Date of Determination:</b>	4/27/1995

<b>Pollutant</b>	<b>BACT</b>
CO	BACT exempt, NSR balance less than 550 lb/day
NOx	0.1 lb NOx/MMBtu, Air assisted flare
PM10	0.012 lb PM10/MMBtu, Air assisted flare with smokeless combustion (i.e. visible emissions less than 5% opacity)
SOx	BACT exempt, less than 2 lb/day uncontrolled emissions
VOC	0.004 lb VOC/MMBtu and 99% VOC destruction efficiency, bottom loading with dry break couplers, and vapor collection with air assisted waste gas flare with natural gas fired pilot

**BACT Status**

**Comment**

Achieved in Practice

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**  
**Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities\***

10-20-2000 Rev. 0

12-02-2016 Rev.1

Equipment or Process:    Liquid Transfer and Handling

**Criteria Pollutants**

<b>Subcategory/ Rating/Size</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>CO</b>	<b>PM<sub>10</sub></b>	<b>Inorganic</b>
Marine, Loading	For VOC Emissions: Vapor Collection System Vented to Incinerator (1990)					
Tank Truck and Rail Car Bulk Loading, Class A (Rule 462)	Compliance with Rule 462 (0.08 Lbs/1000 Gals) (10-20-2000)					For Ammonia: Bottom Loading with Vapor Collection System Vented to Packed Column Scrubber (10-20-2000)
Tank Truck and Rail Car Bulk Loading, Classes B and C (Rule 462)	Bottom Loading with Vapor Collection System Vented to: - Incinerator; or - Compression/absorption with Tail Gas Vented to Incinerator; or - Refrigeration System; or - Carbon Adsorption system and Compliance with Rule 462 (10-20-2000)					Same as Above
Gasoline Transfer and Dispensing	Compliance with Rule 461 (12-02-2016)					

\* Means those facilities that are not major polluting facilities as defined by Rule 1302 - Definitions



**BAY AREA AIR QUALITY MANAGEMENT DISTRICT**  
**Best Available Control Technology (BACT) Guideline**

**Source Category**

Source:	<i>Liquid Transfer &amp; Handling - Tank Truck &amp; Rail Car Bulk Loading</i>	Revision:	<i>1</i>
		Document #:	<i>109.2</i>
Class:	<i>Gasoline Bulk Terminals</i>	Date:	<i>06/28/00</i>

**Determination**

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. <i>n/d</i> 2. <i>0.02 pounds/1000 gallons loaded<sup>a,b</sup></i>	1. <i>n/d</i> 2. <i>Submerged Loading with Vapor Collection System vented to a Thermal Oxidizer, Carbon Adsorber with vapor tank, or BAAQMD Approved Equivalent<sup>a,b</sup></i>
NOx	1. <i>n/a</i> 2. <i>0.10 pounds/1000 gallons loaded<sup>a,b</sup></i>	1. <i>n/a</i> 2. <i>Low-NOx combustion system<sup>a,b</sup></i>
SO <sub>2</sub>	1. <i>n/a</i> 2. <i>n/a</i>	1. <i>n/a</i> 2. <i>n/a</i>
CO	1. <i>n/a</i> 2. <i>0.05 lb CO/1000 gallons loaded<sup>a,b</sup></i>	1. <i>n/a</i> 2. <i>Good Combustion Practice<sup>a,b</sup></i>
PM <sub>10</sub>	1. <i>n/a</i> 2. <i>n/a</i>	1. <i>n/a</i> 2. <i>n/a</i>
NPOC	1. <i>n/d</i> 2. <i>0.02 pounds/1000 gallons loaded<sup>a,b</sup></i>	1. <i>n/d</i> 2. <i>Submerged Loading with Vapor Collection System vented to a Carbon Adsorber with vapor tank, or BAAQMD Approved Equivalent<sup>a,b</sup></i>

**References**

*a. BAAQMD Application #100.*  
*b. BAAQMD Interoffice memorandum dated 6/9/2000 from B. Young to Bill deBoisblanc, Director of Permit Services, titled "BACT Revision for Gasoline Bulk Terminals".*