

**ENGINEERING EVALUATION
CONOCOPHILLIPS SAN FRANCISCO REFINERY; PLANT 16
APPLICATION 12216**

BACKGROUND

ConocoPhillips has applied for a permit for the following tanks:

S135, Tank #200, Fixed Roof, 79K barrels

S137, Tank #202, Fixed Roof, 88K barrels

These tanks were exempt from permits pursuant to BAAQMD Regulation 2-1-123.3.2 because they held light coker gas oil (LCGO), which has an initial boiling point over 302°F. and because the boiling point exceeds the storage temperature by more than 180 °F.

The tanks will also store cracked naphtha with a vapor pressure up to 11 psia and so now require permits.

This is a minor revision of the Major Facility Review permit for the following reasons:

- The change is not considered a major modification under 40 CFR Parts 51 (NSR) or 52 (PSD).
- The change is not considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act (HAP).
- There is no significant change or relaxation of monitoring. All proposed monitoring is new.
- No term is established to allow the facility to avoid an applicable requirement.
- No case-by-case determination has been made.
- No facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources has been made.
- No new federal requirement has been imposed.

EMISSION CALCULATIONS

ConocoPhillips states that the tanks are blanketed with natural gas and are routed to A7, the fuel gas vapor recovery system. Therefore, the facility concluded that there would be no increase in emissions. The District concurs that the emissions that are routed to the fuel gas system merely displace natural gas that would be burned in the heaters. Therefore, there will be no emissions increase at the heaters. However, the fugitive emissions at the various components will increase. ConocoPhillips has supplied counts of the

components associated with these tanks that will have an increase in emissions due to the higher vapor pressure of the cracked naphtha.

The emissions in kg/hr are estimated using the "Correlation Equation" method in the California Implementation Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Refineries, 1999. The following equations were used:

Valves:	(number of valves)	$2.27E-06 (SV)^{0.747}$
Connectors:	(number of connectors)	$7.5E-06 (SV)^{0.736}$
Hatches (Other)	(number of hatches)	$8.69E-06 (SV)^{0.642}$
Breather Valves (Other)	(number of breather valves)	$8.69E-06 (SV)^{0.642}$

SV is the screening value, in ppm. It refers to the value measured by Method 21 testing. Since BAAQMD Regulation 8, Rule 18, limits the valves, connectors, and hatches to 100 ppm, and the breather valves to 500 ppm, these values were used.

	# of components	Screening value, ppm	kg/hr	kg/yr	lb/yr
S135					
Valves	18	100	1.27E-03	11	25
Connectors	72	100	3.27E-03	29	63
Breather valve	1	500	4.70E-04	4	9
Hatches	2	100	3.34E-04	3	6

	# of components	Screening value, ppm	kg/hr	kg/yr	lb/yr
S137					
Valves	25	100	1.77E-03	16	34
Connectors	112	100	5.08E-03	45	98
Breather valve	1	500	4.70E-04	4	9
Hatches	2	100	3.34E-04	3	6

Total VOC Emissions 251

No pumps were affected by the proposed change.

The HAP concentrations below were supplied by the facility. The table compares the emissions to the trigger levels in BAAQMD Regulation 2, Rule 1, as amended on December 21, 2004. No trigger is exceeded.

Compound	Wt. Fraction	Emissions	Emissions	Chronic
		lb/hr	lb/yr	Trigger Level lb/yr
Benzene	0.0159	0.0005	4.0	6.7
Naphthalene	0.0003	0.0000	0.1	270
Toluene	0.0157	0.0004	3.9	39,000.0
Xylenes	0.0185	0.0005	4.6	58,000.0

No emissions have been calculated for cleaning the tank when switching between various petroleum fluids because the applicant has stated that the tanks will not be cleaned before switching. Cleaning the tanks when switching will be prohibited by a permit condition.

CUMULATIVE INCREASE AND OFFSETS

The cumulative increase for this change is 251 lbs or 0.126 tons POC. In accordance with BAAQMD Regulation 2-2-302, POC offsets must be provided at a ratio of 1.15:1. The cumulative increase at the facility will remain at 0. The offsets will come from Certificate 921.

TOXIC RISK MANAGEMENT

This application will not be subject to BAAQMD Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants, because it was submitted before the rule was effective (July 1, 2005).

It is not subject to a risk screen because the emissions increases are below all triggers in Table 2-1-316 of BAAQMD Regulation 2, Rule 1, as amended on December 21, 2004.

The increases would not have been subject to a risk screen under BAAQMD Regulation 2, Rule 5, if it had been submitted on or after July 15, 2005.

STATEMENT OF COMPLIANCE

BACT

The sources are not subject to BACT because they will each emit less than 10 lb POC/day.

REGULATION 8, RULE 5, STORAGE OF ORGANIC LIQUIDS

The tanks are larger than 39,626 gallons and will store liquids that have a true vapor pressure up to 11 psia, therefore they must be controlled with an internal floating roof, external floating roof, or approved emission control system. The tanks are fixed roof tanks that are vented to the fuel gas system, A7, which is an

approved emission control system with a VOC control efficiency of at least 98% by weight. This estimate is based on similar control efficiencies at Evergreen Oil and Tesoro.

The tanks will be subject to Sections 8-5-301, 8-5-303, 8-5-306, 8-5-328, 8-5-403, 8-5-404, 8-5-501.2, 8-5-503, and 8-5-605. Section 8-5-307 does not apply because it does not apply to tanks that are blanketed with natural gas.

The tanks will comply with Sections 8-5-301 and 8-5-306 because they are controlled with an approved emission control system that has an abatement efficiency of at least 95%.

The pressure/vacuum valves on the tanks will comply with the requirement to be set to a pressure within 10% of the maximum allowable working pressure in Section 8-5-303.1. The valves are expected to comply with the "gas-tight" requirement in Section 8-5-303.2 because they will be inspected twice per year in accordance with Section 8-5-403. The facility has stated that the tanks will comply with this requirement.

Section 8-5-328.1 applies only when the tank is degassed. In this case, the tanks will not be degassed when switching from low vapor pressure fluids to high vapor pressure fluids.

Monitoring and recordkeeping conditions will not be written for these tanks because BAAQMD Regulation 8, Rule 5, already contains sufficient monitoring and recordkeeping.

MONITORING ANALYSIS

BAAQMD Regulation 8, Rule 5, contains the sufficient monitoring and recordkeeping to ensure compliance with all requirements. Section 8-5-501.1 requires records of the type and amount of liquids stored, type of blanket gases used, and the true vapor pressure ranges of such liquids and gases. Section 8-5-403 requires inspection of the pressure/vacuum valves twice per year. Monitoring of the destruction efficiency of the fuel gas system is not technically feasible, but the abatement efficiency is presumed to be at least 98%, which is higher than the requirement for 95% in Section 8-5-306.

NSPS

Subparts K, Ka, Kb

S135 was built in 1992 and is therefore subject to Subpart Kb.

S137 was built in 1941 and therefore is not subject to Subpart Kb.

Although the emissions will increase at S137, it is not considered an increase for the purposes of these standards because EPA has determined in the May 17, 1999 letter from Gerald Potamis of EPA Region 1 to Paul Flaherty of Arthur D. Little (attached) that switching from one petroleum fluid to another is not a modification pursuant to 40 CFR 60.14. Therefore, this tank will not be subject to Subpart Kb.

S135 will comply with the requirements of Subpart Kb for fixed roof tanks with a closed vent system and control device. Section 60.112b(a)(3)(i) requires that the closed vent system collect all vapors and operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspections, as determined in part 60, Subpart VV, Section 60.485(b).

Section 60.112b(a)(3)(i) requires that VOC emissions be controlled by 95% or greater. The tank emissions are routed to the fuel gas system, which is expected to achieve 98% control or greater.

Subpart J

40 CFR 60, Subpart J defines "fuel gas" as "any gas which is generated at a petroleum refinery and which is combusted." Fuel gas includes natural gas when it is combined with other fuel gas and burned. The tanks are vented to the fuel gas system; therefore all of the gas vented is subject to Subpart J. The standard is that the fuel gas may not contain more than 0.10 gr S/dscf.

The fuel gas system desulfurizes the gases prior to combustion and therefore this project will not cause non-compliance with Subpart J.

CEQA

This application is not subject to CEQA because the modification of tanks is considered ministerial pursuant to BAAQMD Regulation 2-1-311.

NESHAPS

The tanks are not subject to 40 CFR 63, Subpart CC, because Section 63.640(d)(5) states that emission points routed to a fuel gas system are not subject.

PSD

The emissions increase is not large enough to trigger PSD.

PERMIT CONDITIONS

The tanks were subject to Condition 20773, which requires recordkeeping to ensure that tanks that are not subject to BAAQMD Regulation 8, Rule 5, do not contain organic liquids with a vapor pressures over 0.5 psia. Since these tanks are now subject to the rule, they are no longer subject to the condition below:

CONDITION 20773

This condition applies to tanks that are exempt from Regulation 8, Rule 5, Storage of Organic Liquids, due to the exemption in Regulation 8-5-117 for storage of organic liquids with a true vapor pressure of less than or equal to 25.8 mm Hg (0.5 psia).

1. Whenever the type of organic liquid in the tank is changed, the owner/operator shall verify that the true vapor pressure at the storage temperature is less than or equal to 25.8 mm Hg (0.5 psia). The owner/operator shall use Lab Method 28 from Volume III of the District's Manual of Procedures, Determination of the Vapor Pressure of Organic Liquids from Storage Tanks. For materials listed in Table 1 of Regulation 8 Rule 5, the owner/operator may use Table 1 to determine vapor pressure, rather than Lab Method 28. If the results are above 25.8 mm Hg (0.5 psia), the owner/operator shall report non-compliance in accordance with Standard Condition I.F and shall submit an application to the District for a new permit to operate for the tank as quickly as possible. [Basis: 8-5-117 and 2-6-409.2]
2. The results of the testing shall be maintained in a District-approved log for at least five years from the date of the record, and shall be made available to District staff upon request. [Basis: 2-6-409.2]

The new permit condition for these tanks is shown below. The tanks have new limits to ensure that the emissions will be no greater than represented in Application 12216.

CONDITION 22518

For Sources S135 (Tank 200), S137 (Tank 202)

1. The owner/operator shall ensure that S135 contains only petroleum liquid with a true vapor pressure less than or equal to 11 psia. [Cumulative Increase]
2. The owner/operator shall ensure that S137 contains only petroleum liquid with a true vapor pressure less than or equal to 11 psia. [Cumulative Increase]
3. The owner/operator shall ensure that the throughput of petroleum liquids at S135 and S137 does not exceed 10,000,000 barrels/yr at each tank. [Cumulative Increase]

4. The owner/operator shall ensure that S135 and S137 are controlled at all times that petroleum fluids are stored in the tanks by A7, Vapor Recovery System. [Cumulative Increase]
5. The owner/operator shall not clean S135 and S137 when switching from one petroleum fluid to another. [Cumulative Increase]

RECOMMENDATION

Waive the authority to construct and issue a permit to operate for the following sources:

- S135, Tank 200, 75,000 bbl fixed roof tank containing petroleum liquids; abated by A7, Vapor Recovery System
- S137, Tank 202, 88,000 bbl fixed roof tank containing petroleum liquids; abated by A7, Vapor Recovery System

Impose permit condition 22518 as shown above.

Delete the link to permit condition 20773 for tanks S135 and S137

By: _____
Brenda Cabral **Date**
Senior Air Quality Engineer

APPENDIX 1

5/17/99 Letter from Gerald Potamis of EPA Region 1 to Paul Flaherty of Arthur D.
Little



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Title: Modification of Petroleum Storage Vessels
Recipient: Paul Flaherty
Author: Gerald POTAMIS

Subparts: Part 60, A, General Provisions

References: 60.14

Abstract:

Q1. Does a change in liquid service of a storage vessel at a facility from a low vapor pressure material (stormwater or diesel fuel) to a high vapor pressure material (crude oil or gasoline) constitute a modification under 40 CFR 60.14?

A1. In recent determinations, EPA found the activity of a petroleum vessel storage facility changing the type of petroleum product stored (i.e., diesel fuel to gasoline) was equivalent to the use of an alternative fuel and exempted from the definition of modification as provided in 40 CFR Sec. 60.14(e)(4). These determinations were based on the assumption that petroleum products were essentially equivalent and therefore, any petroleum storage vessel could reasonably accommodate an alternative petroleum product. Please note that EPA's determinations only pertained to petroleum storage vessels. A storage vessel converting from water or other non-petroleum liquid storage over to petroleum storage would not be exempted from the NSPS modification definition. With regards to the example, EPA would find the activity of a vessel changing from diesel fuel storage to gasoline storage was not a modification as defined in 40 CFR 60.14 and therefore the vessel would not be subject to the NSPS, Subpart Kb.

Q2. What are the specific criteria for determining whether a vessel was designed to accommodate an alternative use? If the original construction specification are not available - how is such a determination made?

A2. EPA did not develop any specific criteria for determining if a fuel storage vessel could accommodate an alternative petroleum material in these determinations. As described previously, EPA's determinations centered on assuming that petroleum products are similar and that a petroleum storage vessel could reasonably accommodate different types of petroleum products. However, if EPA did receive a request for a determination on a specific storage vessel significantly altering its design to accommodate an alternative petroleum product, EPA may adjust its determination considering the specific facts of the case.

Letter:

May 7, 1999

Paul E. Flaherty
Arthur D. Little, Inc.
Acorn Park
Cambridge, Massachusetts 02140-2390

Dear Mr. Flaherty:

Thank you for your letter dated August 24, 1998 requesting EPA applicability guidance and clarification regarding the New Source Performance Standard (NSPS), Subparts K, Ka, and Kb. The letter requests guidance, through a series of questions, on whether the conversion of a storage vessel that formally stored diesel fuel to crude oil or gasoline constituted a modification under 40 CFR 60.14. Our answers are provided below.

Question 1a and 1b. Change in a liquid service of a storage vessel: In recent determinations, EPA found the activity of a petroleum vessel storage facility changing the type of petroleum product stored (i.e., diesel fuel to gasoline) was equivalent to the use of an alternative fuel and exempted from the definition of modification as provided in 40 CFR Sec. 60.14(e)(4). These determinations were based on the assumption that petroleum products were essentially equivalent and therefore, any petroleum storage vessel could reasonably accommodate an alternative petroleum product. Please note that EPA's determinations only pertained to petroleum storage vessels. A storage vessel converting from water or other non-petroleum liquid storage over to petroleum storage would not be exempted from the NSPS modification definition.

With regards to the problem described in 1b, EPA would find the activity of a vessel changing from diesel fuel storage to gasoline storage was not a modification as defined in 40 CFR 60.14 and therefore the vessel would not be subject to the NSPS, Subpart Kb.

Question 2a and 2b. Development of criteria used to determine accommodation: EPA did not develop any specific criteria for determining if a fuel storage vessel could accommodate an alternative petroleum material in these determinations. As describe previously, EPA's determinations centered on the assuming that petroleum products are similar and that a petroleum storage vessel could reasonably accommodate different types of petroleum products. However, if EPA did receive a request for a determination on a specific storage vessel significantly altering its design to accommodate an alternative petroleum product, EPA may adjust its determination considering the specific facts of the case.

EPA was also requested to determine if installation of an internal floating roof was considered an NSPS modification. In this case, EPA considered the floating roof to be a pollution control device and exempt from the definition of an NSPS modification (ref: 40 CFR Sec. 60.14(e)(5)). If you have any questions concerning this matter, please contact Allen Jarrell of my staff at (617) 918-1314.

Sincerely,

Gerald C. POTAMIS, P.E.
Manager, Air Permits Program

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