

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT****STATIONARY SOURCE COMPLIANCE DIVISION**

APPLICATION PROCESSING AND CALCULATIONS

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8/24/2012Processed  
By Rafik  
BeshaiChecked  
By**PERMIT TO OPERATE**COMPANY NAME: BP WEST COAST PRODUCTS LLC  
FACILITY ID: 131003MAILING ADDRESS: P.O. BOX 6210  
CARSON, CA 90749EQUIPMENT ADDRESS: 2350 E. 223<sup>rd</sup> STREET  
CARSON, CA 90810

Equipment	ID No.	Connected To	RECLAIM Source Type/Monitoring Unit	Emissions and Requirements	Conditions
Process 16: PETROLEUM STORAGE TANKS					
System 1: FIXED ROOF TANKS					S13.8
STORAGE TANK, FIXED ROOF, NO. 614, OILY SLUDGE, HEATED WITH STEAM COILS, 1200 BBL; DIAMETER: 25 FT; HEIGHT: 13 FT  A/N: 433622	D1106	D1313 D1314 D2807			C1.64, E336.2, K67.5

Note: D1313, D1314, and D2807 are the compressors of the Refinery Vapor Recovery System**BACKGROUND**

Under A/N 433622 a Permit to Construct (PC) was issued to BP West Coast Products LLC (BP) on February 21, 2008, for modification Tank No. 614 (Device ID: D1106). This application involved amendment of the permit to show connection of the tank to the Refinery Vapor Recovery System. The application also entailed a change in tank service (eliminating "Wastewater" and listing "Oily Sludge" as material stored), amending the equipment description to show that the tank is heated with steam coils, and permitting an increase in tank throughput (from 45 tank turnovers per year to 120 tank turnovers per year). These permit changes were required so that the tank could be used for continuous feeding of Oily Sludge to the Coker Unit. Tank No. 614 is permitted under Process 16, System 1 and the Refinery Vapor Recovery System is permitted under Process 21, System 4 of the facility permit. All modifications of Tank No. 614 have been completed and the tank became operational in 2010. However, in evaluating the tank for conversion of the PC into a Permit to Operate (PO), it was determined that one of the PC requirements is not met. Amendment of throughput condition C1.64 is proposed (as described below) to remedy this compliance issue. Upon amendment of

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condition C1.64, compliance with all permit terms is expected and therefore issuance of a PO is recommended. The District issued the initial Title V permit to BP on September 1, 2009.

A site visit was conducted on August 4, 2011, to assess whether modifications of Tank No. 614 have been completed and to determine if the tank is operating in compliance with all terms of the PC. Attached to this evaluation is a report for this site visit. The site visit determined that all modifications of Tank No. 614 have been completed. However, the tank is not operating in compliance with all terms of the PC. As required under condition C1.64, the tank is equipped with an Automatic Tank Level Gauge (ATLG). For this tank the ATLG consists of two Infrared (IR) level gauges. The condition also requires quarterly verification of the ATLG. BP staff informed the District that quarterly verification of the ATLG serving Tank No. 614 has not been performed. Initially, the reason given for this is that the "Oily Sludge" stored in Tank No. 614 does not permit accurate manual tank level measurement. More recently, BP staff informed the District (e-mail attached) that ATLG verifications are not performed because the tank roof is not equipped with an access hatch for such measurements. Since the tank is loaded via product transfer from truck tanks serving the sludge dewatering operation, it is now proposed to amend C1.64 by allowing use of truck tank volumes or sludge dewatering process records (i.e. volumes of oily sludge produced), for throughput determination. BP staff indicated that these alternate techniques for throughput determination may be more accurate than tank level measurements, as tank loading with "Oily Sludge" results in an un-even level across the tank (note: this effect may be over stated as heating of oily sludge reduces its viscosity and should result in leveling of the liquid surface).

Under A/N 433624 a PC was issued for modification of the Refinery Vapor Recovery system. However, this evaluation does not include this application, as there have been subsequent PCs issued for modification of the Refinery Vapor Recovery System and all modifications required under these PCs have not been completed. Thus, this evaluation is limited to A/N 433622 for modification of Tank No. 614.

A review of District records indicates that there have been no Notices of Violation (NOV) or Notices to Comply (NTC) issued for Tank No. 614 over the past three years. Previous permits issued for this equipment are described in the table below.

<b>Equipment</b>	<b>Previous P/O</b>	<b>Date</b>	<b>Permit History</b>
Storage Tank No. 614, D1106, in Process 16, System 1	F49632/395653 D67360/246128	3/05/2002 12/23/1992	Tank No. 614 is currently permitted under Permit No. F49632 (A/N 395653) issued on March 5, 2002. This application involved Change of Ownership from ARCO Products Co. to BP West Coast Products LLC.  Previously, this tank was permitted under Permit No. D67360 (A/N 246128) issued on December 23, 1992. Under this application Tank No. 614 was originally permitted.



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## PROCESS DESCRIPTION

Tank No. 614 (Device ID: D1106) is a 1,200 barrel fixed roof storage tank with diameter of 25 feet and height of 13 feet. Prior to submittal of A/N 433622, the tank was in wastewater service and had a permit throughput limit of 45 turnovers per year. Annual Emissions Reports (AERs) filed by the facility between 2002 and 2005 indicate that the tank had no throughput (i.e. annual throughput was 0 gallons/year). The tank is connected to the Refinery Vapor Recovery System. Under A/N 433622 the tank was permitted for storage of "Oily Sludge" and the throughput limit was increased to 120 turnovers per year (or 12,000 barrels per month). BP reports that this material has a vapor pressure of 0.37 psia at 68°F. Product stored in Tank No. 614 is heated by steam coils inside of the tank. The storage temperature ranges from 140°F to 190°F. The MSDS for "Coker Injection Sludge" stored in Tank No. 614 indicates that it is a dark brown liquid slurry which is a mixture of slop oil and wastewater sludge. It has the following constituents: toluene (1-5%, by weight), ethylbenzene (1-5%), trimethylbenzene (1-5%), n-octane (1-5%), n-hexane (1-5%), benzene (0.1-1%), and hydrogen sulfide (0-0.1%).

It is expected that the Refinery Vapor Recovery System operates with a control efficiency of 99.9% (i.e. minus losses through fugitive components, 100% of hydrocarbon vapors from the tank are captured and processed). Further, the Refinery Vapor Recovery System is expected to easily handle the added vapor load resulting from the increase in tank throughput. For example, tank loading at a rate of 60 gallons per minute, corresponds to a vent flow rate of 481 scfh; which is 0.12% of the vapor recovery capacity of 400,000 scfh.

The connection of Tank No. 614 to the Refinery Vapor Recovery System is shown in the facility permit through listing of Compressors 5, 6, and 8 (Devices D1313, D1314, and D2807) in the "Connected To" column and tagging of the tank with condition E336.2, which requires that vent vapors from the tank to be directed to the Refinery Vapor Recovery System.

## EMISSIONS

According to applicant information, Tank No. 614 was originally constructed in 1957. The tank was first permitted by the District in 1992, under A/N 246128. Under this application the tank was issued a PO, as it was previously constructed without a PC. Thus, Tank No. 614 is an NSR tank. The pre-modification potential-to-emit of VOC, calculated under A/N 246128, considered storage of "Wastewater" and made use of a vapor pressure of 0 psia. The post-modification case considers storage of "Oily Sludge" at a temperature between 140 and 190°F, a throughput of 144,000 barrels per year, and an expected control efficiency of 99.9%. Pre-modification and post-modification emissions are compared below. The Tanks 4.09d output indicates that the average TVP of the heated product is 2.92 psia @ 140°F.

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By**Tank No. 614, Change in VOC Emissions (Calculated Under A/N 433622)**

Case	Uncontrolled VOC Emissions	Controlled VOC Emissions
Pre-Modification Emissions	2.4 lbs/yr	2.4 lbs/yr
Potential-to-Emit Calculated under A/N 246128	0 lbs/day 0.00 lbs/hr	0 lbs/day 0.00 lbs/hr
Post-Modification Emissions Potential-to-Emit Storage of "Oily Sludge"	20,950.71 lbs/yr 57.40 lbs/day	20.95 lbs/yr 0.06 lbs/day
Throughput = 144,000 barrels/yr Heated Tank	2.39 lbs/hr	0.00 lbs/hr 0 lbs/day – 30 day average
Change due to Modification		+18.55 lbs/yr +0.05 lbs/day 0.00 lbs/hr 0 lbs/day – 30 day average

TAC emissions resulting from storage of "Oily Sludge" in Tank No. 614 are listed below. With the exception of hydrogen sulfide emissions, all emissions rates were calculated using the Tanks 4.09d program output and the expected control efficiency of 99.9%.

**Tank No. 614, Emissions of TACs Listed Under Rule 1401 (Calculated Under A/N 433622)**

Species	Emissions, lbs/yr
Toluene	3.32
Ethylbenzene	1.49
n-Hexane	12.22
Benzene	1.73
Hydrogen Sulfide	54.43

The PC evaluation included a Tier I Screening Health Risk Assessment (HRA) for TAC emissions from Tank No. 614, performed using the Rule 1401 Risk Assessment Program. This screening HRA determined that TAC emissions from the tank would not result in non-compliance with Rule 1401 standards. The distance from Tank No. 614 to the nearest residential receptor is 1030 meters and the distance to the nearest offsite worker receptor is 240 meters.

**RULE EVALUATION****CEQA – California Environmental Quality Act**

Under CEQA, a significant project is one associated with the emissions levels stated below, during the operations phase of the project:

- CO 550 lbs/day
- VOC 55 lbs/day
- NOx 55 lbs/day
- SOx 150 lbs/day
- PM10 150 lbs/day



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The CEQA applicability form submitted for this project indicated that it was not expected to result in a significant environmental impact. Thus, a CEQA analysis - in the form of Environmental Impact Report (EIR) - was not required prior to issuance of the PC. The connection of a fixed roof storage tank to the Refinery Vapor Recovery System has a beneficial environmental impact. Thus, the project met all requirements under CEQA. The conversion of the PC into PO and the amendment of the throughput condition have no associated environmental impacts and thus there are no additional requirements under CEQA.

**Rule 212 – Standards for Approving Permits**

This rule requires public noticing if the modified or new source is located within 1000 feet of a school, if the increase in TAC emissions results in exposure to a Maximum Individual Cancer Risk (MICR) of  $1 \times 10^{-6}$  or greater during a lifetime (70 years), or if there is an emissions increase exceeding limits stated in Rule 212(g). Tank No. 614 is not within 1000 feet of a school, the VOC emissions increase from the tank does not exceed 30 lbs/day (212(g) limit), and the Screening HRA performed in the PC evaluation demonstrates that the MICR associated with this project is under  $1 \times 10^{-6}$ . The conversion of the PC into a PO and the amendment of the throughput condition have no impact on pollutant emissions. Therefore, public noticing is not required for this project and compliance with the requirements of Rule 212 is assured.

**Rule 401 & 402 - Visible Emissions and Nuisance**

Tank No. 614 is not expected to be a source of nuisance odors or visible emissions exceeding a shade as dark as or darker than that designated No. 1 on the Ringelmann Chart, as published by the US Bureau of Mines, for a period exceeding 3 minutes in any hour. The connection of Tank No. 614 to the Refinery Vapor Recovery System is expected to minimize pollutant emissions, resulting in elimination of nuisance odors. Continued compliance with these rules is expected.

**Rule 463 – Storage of Organic Liquids**

This rule states requirements for above ground tanks with a capacity greater than 19,815 gallons, storing organic liquids, and for storage tanks with a capacity between 251 and 19,815 gallons storing gasoline. Tank roof requirements are stated for tanks with a capacity of 39,630 gallons or greater, storing organic liquid having a true vapor pressure of 0.5 psia or greater under actual storage conditions, or for tanks with a capacity greater than 19,815 gallons, storing organic liquid having a vapor pressure of 1.5 psia or greater under actual storage conditions. Fixed roof tanks are required to be equipped with a vapor recovery system, venting to a control device with a minimum control efficiency of 95% (by weight). Further requirements include that gauging and sampling devices be equipped with vapor tight covers in a closed position (unless in-use), that the tank roof be maintained vapor tight with no holes/tears/uncovered



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openings, and that piping, valves and fittings be maintained in a vapor tight condition. Continued compliance with these requirements is expected for Tank No. 614.

**Reg. IX - New Source Performance Standards**

This permit action does not meet the criteria for designation as “modification” or “reconstruction,” under 40 CFR 60.14 and 60.15. This project involved both a change in service and a throughput increase for Tank No. 614. However, the project was deemed not to be a “modification” under this regulation, since the throughput increase was accomplished without a capital expenditure and the tank was already designed to accommodate the alternate material (Oily Sludge). These exemptions are stated under 40 CFR 60.14(d). Therefore, this permit action did no trigger applicability of any additional New Source Performance Standards (NSPS) under 40 CFR 60.

**Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants**

This rule specifies leak control, identification, operator inspection, maintenance, and recordkeeping requirements for valves, pumps, compressors, pressure relief valves, and other components from which fugitive VOC emissions may emanate. The facility continues to conduct monthly (where applicable), quarterly and annual monitoring and repair of fugitive VOC components. Piping and components in the Refinery Vapor Recovery System are under vacuum and are thus not subject to the requirements of this rule. Further, components carrying commercial natural gas or those carrying fluids with VOC content under 10% (by weight) are exempt from the requirements of this rule. Continued compliance with this rule is expected.

**Rule 1178 – VOC Emissions from Storage Tanks at Petroleum Facility**

This rule applies to storage tanks with a capacity equal to or greater than 19,815 gallons, storing organic liquids with a True Vapor Pressure (TVP) greater than 0.1 psia under actual storage conditions, and which are located at petroleum facilities which emit more than 20 tons VOC per year (for any emissions inventory year, starting with the year 2000). Requirements for fixed roof tanks include that they be vented to a control device with a minimum control efficiency of 95%, or to the fuel gas system. Further requirements include that tank gauging or sampling devices be equipped with vapor tight cover and be maintained closed (except when in use), that all roof openings be maintained in vapor tight condition, and that the tank be equipped with a pressure/vacuum vent valve set to open the lesser of 10% under the maximum working pressure of the roof or 0.5 psig. Tank No. 614 is vented to the Refinery Vapor Recovery System, which supplies fuel gas to the refinery. The facility conducts quarterly testing to ensure tank roof appurtenances are maintained vapor tight. The attached report for the field inspection conducted on August 4, 2011 includes results of fugitive VOC monitoring of the tank roof. Continued compliance with the requirements of this rule is expected



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**Reg. XIII - New Source Review**

This rule has requirements including that projects meet standards considered Best Available Control Technology (BACT), that emissions offsets be provided for increases in non-attainment air contaminant emissions, and that air quality modeling is performed to assess the impacts of the project on ambient air quality. Venting of fixed roof tanks to the Refinery Vapor Recovery System, which is expected to have a control efficiency of 99.9% (capturing all VOCs vented to it except fugitive emissions), meets BACT standards for this application. The modification of Tank No. 614 was found to result in a small increase in VOC emissions (18.55 lbs/year). Since this emissions increase does not result in 0.5 lbs/day ERC, emissions offsets were not required. Air quality modeling applies to cases where there is an increase in NO<sub>x</sub>, CO or PM<sub>10</sub> emissions. Since the subject equipment does not emit these pollutants, air quality modeling was not required. Further, there is no associated change in pollutant emissions resulting from the conversion of the PC into a PO and from amendment of the throughput condition. Thus, compliance with Reg XIII requirements has been achieved.

**Rule 1401 – New Source Review of Carcinogenic Air Contaminants**

This rule has requirements that TAC emissions from any new construction or modification not result in a Maximum Individual Cancer Risk (MICR) of one in a million ( $1 \times 10^{-6}$ ), if T-BACT is not used, or ten in a million ( $10 \times 10^{-6}$ ) if T-BACT is applied, that chronic and acute hazard indices not exceed 1.0, and that the cancer burden not exceed 0.5. TAC emissions associated with the modification of Tank No. 614 were quantified in the PC evaluation. The screening HRA for this project, prepared in accord with the risk assessment procedures for Rule 1401 Tier I, determined that the TAC emissions do not result in a MICR is one in a million or a hazard index greater than one. Thus, the project was deemed to be in compliance with this rule. The conversion of the PC into a PO and the amendment of the throughput condition have no associated impacts on TAC emissions. Continued compliance with the requirements of this rule is expected.



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**Reg XVII – Prevention of Significant Deterioration**

This rule applies to emissions of air contaminants for which attainment with ambient air quality standards has been achieved in the South Coast Air Basin (NO<sub>2</sub>, SO<sub>2</sub>, and CO). The subject equipment (Tank No. 614) does not emit these pollutants. Therefore, Reg XVII requirements do not apply to this project.

**Reg. XX - RECLAIM**

This facility is subject to Reg. XX, RECLAIM with respect to NO<sub>x</sub> and SO<sub>x</sub> emissions. This project does not impact emissions of these pollutants and therefore there are no additional requirements under this regulation, for Tank No. 614. The facility is expected to continue to comply with RECLAIM requirements.

**Reg. XXX - TV Operating Permits**

The BP Carson Refinery is subject to Reg. XXX and the initial Title V permit was issued on September 1, 2009. As defined under Rule 3000, the conversion of a previously issued PC into a PO, with no change in permit terms or conditions - except for removal of conditions which are no longer applicable - involves an Administrative Revision of the Title V permit. However, this permit action also involves an amendment of throughput condition C1.64. Therefore, this permit action qualifies as a Minor Revision of the Title V permit under Rule 3000. As such, the project is subject to EPA review (45 day review and comment period), but is not subject to public noticing requirements (including a 30 day comment period) under Rule 3006.

**40 CFR 63, Subpart CC**

Storage tanks which are vented to the Refinery Vapor Recovery System are not subject to the Refinery MACT regulation, under 40 CFR 63, Subpart CC. Per 40 CFR 63.640(d)(5), emissions points routed to a fuel gas system are not affected sources subject to this regulation. Therefore, fixed roof tanks venting to the refinery fuel gas system are exempt from the requirements of this regulation.

**RECOMMENDATION:**

Issue the Permit to Operate with the following conditions:

S13.8 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	463
VOC	District Rule	1178

**[RULE 1178, 4-7-2006; Rule 463, 5-6-2005]**



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[Systems subject to this condition: Process 16, System 1]

C1.64 The operator shall limit the throughput to no more than 12,000 barrel(s) in any one calendar month.

~~The operator shall calculate the throughput, in barrels, by the following equation:  $0.14 \times D \times D \times L$ , where D is the diameter of the tank in feet based on the tank strapping chart and L is the total vertical one way tank level travel in feet per month.~~

~~The operator shall install and maintain an automatic tank level gauge (ATLG) and recorder to continuously record the vertical movement of the tank level. For the purpose of this condition, continuous recording is defined as once per hour.~~

~~The operator shall calculate the total one way tank level movement at the end of each month. The total one way tank level movement shall be determined for the calendar month and shall be expressed as feet.~~

~~The ATLG installed shall be verified once per quarter by comparing against a manual tank level measurement. If the ATLG differs from the manual tank level measurement by more than 1.0 inch or 0.8%, whichever is greater, the ATLG shall be repaired and put back into service within 10 days. While the ATLG is being repaired, throughput shall be determined by the hourly tank level data averaged for the previous 30 days, prior to the discovery of the discrepancy.~~

~~In the event of a failure or routine maintenance of the ATLG, the ATLG shall be repaired (if necessary) and put back into service within 10 days of the time that the ATLG failed or was removed from service for maintenance. While the ATLG is being repaired or maintained, the throughput shall be determined by the hourly tank level data averaged from the previous 30 days prior to the time that the ATLG went out of service.~~

The operator shall calculate the throughput from tank truck unloading records. The throughput shall be the sum of the volumes of liquid unloaded into the tank, over the calendar month. Records retained shall include the number of truck tanks unloaded and their volumes.

Alternately, throughput may be calculated from sludge dewatering process records. This method may only be used if all materials loaded into Tank No. 614 are processed through the sludge dewatering equipment. The throughput shall be the sum of the volumes of dewatered sludge processed through sludge dewatering equipment, over the calendar month. Records of the volumes of dewatered sludge processed daily shall be retained.



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The operator shall use a single calculation method for throughput determination for any calendar month. Once it is determined which throughput calculation method will be used (i.e. truck tank unloading records, or sludge dewatering process records), the operator will continue to calculate the throughput using this method for the entire month.

**[RULE 1303(b)(2)-Offset, 5-10-1996]**

[Devices subject to this condition: D1106]

E336.2 The operator shall vent the vent gases from this equipment as follows:

All vent gases under normal operating conditions shall be directed to a vapor recovery system.

This equipment shall not be operated unless the vapor recovery system (consisting of three compressors operated independently or concurrently at any given time) is in full use and has a valid permit to receive vent gases from this equipment.

**[RULE 1303(a)(1)-BACT, 5-10-1996]**

[Devices subject to this condition: D1106]

K67.5 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Throughput and vapor pressure of stored liquid.

**[RULE 1178, 4-7-2006; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997; RULE 463, 5-6-2005]**

[Devices subject to this condition: D1106]