

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING & COMPLIANCE DIVISION APPLICATION PROCESSING AND CALCULATIONS	PAGES 27	PAGE 1
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PERMIT TO CONSTRUCT/SIGNIFICANT TV REVISION
COMPANY NAME

TESORO REFINING AND MARKETING CO
 P.O. BOX 817,
 WILMINGTON, CA 90748-0817

EQUIPMENT LOCATION

2101 E. PACIFIC COAST HIGHWAY
 WILMINGTON, CA 90744
 Facility ID#: 800436

Facility Type: NOx & SOx RECLAIM (Cycle 1), Title V

Note: A Title V application has been submitted, but the permit has not been issued.

EQUIPMENT DESCRIPTION

Additions are shown as underlined and deletions are shown as ~~strikeouts~~.

Section H: Permit to Construct and Temporary Permit to Operate

APPLICATION NO. 520770

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions and Requirements	Conditions
PROCESS 2: COKING AND RESIDUAL CONDITIONING					P13.1
System 6: DCU BLOWDOWN RECOVERY SYSTEM					<u>S11.3</u> , S13.4, S15.2, S15.3, S15.11, <u>S31.4</u>
<u>POT, STEAM CONDENSATE,</u> <u>V-X103, HEIGHT: 5 FT;</u> <u>DIAMETER: 2 FT</u> A/N: 520770	<u>DXXXX</u>				
ACCUMULATOR, BLOWDOWN, FC-127 (V- 923), LENGTH: 20 FT; DIAMETER:10 FT A/N: 520770/ 472874	D53				

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VESSEL, BLOWDOWN CONTACTOR, FC-128 (V-924), HEIGHT: 40 FT; DIAMETER:16 FT A/N: 520770/ 472874	D1152				
KNOCK OUT POT, DISCHARGE, V-1400, HEIGHT: 7 FT 8 IN; DIAMETER:3 FT A/N: 520770/ 472874	D63				
DRUM, FLARE SEAL, V-1613, LENGTH: 19 FT 6 IN; DIAMETER: 6 FT A/N: 520770/ 472874	D65				
COMPRESSOR, C-137, BLOWDOWN, ALSO SERVES AS FLARE GAS RECOVERY COMPRESSOR AS NEEDED A/N: 520770/ 472874	D68				H23.4
DRUM, V-1613, DCU FLARE SEAL, HEIGHT: 25 FT ; DIAMETER: 5 FT A/N: 520770/ 472874	D1350				
FUGITIVE EMISSIONS, MISCELLANEOUS A/N: 520770/ 472874	D1361			HAP: (10) [RULE 63 SUBPART CC#_5A, 06/23/03]	H23.5

- | | |
|--|--|
| * (1) Denotes RECLAIM emission factor | (2) Denotes RECLAIM emission rate |
| (3) Denotes RECLAIM concentration limit | (4) Denotes BACT emission limit |
| (5)(5A)(5B) Denotes command and control emission limit | (6) Denotes air toxic control rule limit |
| (7) Denotes NSR applicability limit | (8)(8A)(8B) Denotes 40 CFR limit(e.g. NSPS, NESHAPS, etc.) |
| (9) See App B for Emission Limits | (10) See Section J for NESHAP/MACT requirements |

** Refer to Section F and G of this permit to determine the monitoring, recordkeeping and reporting requirements for this device.

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COMPLIANCE RECORD REVIEW

The facility's compliance history for the past 2 years indicates one NOV (P52842) is still pending (see Attachment 1). P52842 was issued to Tesoro on 4-27-10 for multiple violations of Rule 1189(c)(3) on the HGU #2 unit. An emergency hearing was conducted at the AQMD Hearing Board on 4-28-10 and the facility was denied a variance. Tesoro is expected to be placed under an abatement order by the District to have this compliance issue resolved. Note that the HGU-2 unit has been shutdown since 4-6-10 and is not expected to operate until a variance or order of abatement is granted. The details of this NOV are in Attachment 1.

BACKGROUND

Tesoro Refining and Marketing Company purchased this refinery from EQUILON on May 11, 2007.

OVERALL PROJECT BACKGROUND

Tesoro is proposing a major project to improve the reliability of refinery operations and to comply with regulatory compliance at its refinery and Sulfur Recovery Plant (SRP). The proposed project includes the following changes at the Refinery: 1) install a new fuel gas treatment unit; 2) replace an existing cogeneration system with a new cogeneration system; 3) replace multiple, existing steam boilers with new equipment; 4) modify the Delayed Coking Unit (DCU), the Hydrocracking Unit (HCU), and the Fluid Catalytic Cracking Unit (FCCU) to increase recovery of liquefied petroleum gas (LPG); 5) modify the existing coke handling, screening, and loading system; 6) modify the existing Hydrotreating Unit (HTU) No. 2 in order to comply with the revised California Air Resources Board's gasoline specifications (revised CARB Phase III); 7) upgrade the existing amine/sour water system to improve hydrocarbon removal efficiency; 8) connect certain existing atmospheric pressure relief devices (PRDs) to the existing flares to prevent direct atmospheric releases; 9) recover and treat sour gas from the spent acid storage tank and the LPG sulfur extraction unit; **10) modify the coke drum blowdown system**; 11) modify heater number H-101 at the DCU; and 12) install a new crude oil storage tank.

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The following table shows the estimated VOC emission impact for the 12 projects at the Refinery (some estimates are preliminary with more accurate emission estimates to be provided at the time the individual applications are submitted)

Table 1

Tesoro Reliability Improvement and Regulatory Compliance Project Refinery Operational Emissions

Source	Emissions (lbs/day)					
	CO	VOC	NOX	SOX	PM10	PM
FUGITIVES						
Cogeneration Unit		34.92				
Boilers		15.68				
LPG/HCU		8.24				
LPG/FCCU		3.25				
LPG/DCU		7.08				
Fuel gas HDT		68.81				
Amine Flash		9.85				
Coker blowdown		5.02				
DCU Modifications		6.12				
Sour Gas Treatment		8.43				
HTU-2		3.45				
H-101		5.58				
Ammonia Storage		6.78				
Generator		3.17				
Boiler 11	312.17	38.72	92.40	40.88	91.20	89.38
Boiler 12	312.17	38.72	92.40	40.88	91.20	89.38
Retired Boilers	-1233.39	-80.76	-1468.32	-494.59	-308.35	-302.18
Cogen	57.36	36.00	134.40	102.96	159.36	159.04
Replaced Cogens - ---	-1542.91	--39.51	-602.11	-528.73	-264.00	-263.47
Tank		16.09				
Backup Generator	181.89	66.87	836.32	12.66	59.74	58.54
Total Emissions	-1912.7	+262.5	-914.9	-826.1	-170.9	-169.3

The entire project is subject to full review under CEQA, and AQMD as lead agency certified the final EIR on April 10, 2009.

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COKE DRUM BLOWDOWN MODIFICATION PROJECT BACKGROUND

Tesoro proposes to modify the permit for the DCU Blowdown Recovery System, described in Process 2, System 6 of the Facility Permit. All devices listed in Process 2, System 6 are considered together as a single permit unit. Currently, Tesoro has a permit to operate the DCU Blowdown Recovery System as listed in Section D of the Facility Permit. In addition, a permit to construct (Section H) was issued on November 29, 2007, under permit application number 472871, for a modification to the DCU Blowdown Recovery System. At this time, Tesoro proposes to modify the permit for the Delayed Coking Unit to upgrade the Coker Blowdown Recovery system. The modification includes:

- Add a new steam condensate pot, V-X103.
- Add a new blowdown contactor heat exchanger (steam heater), E-X101
- Add a new condensate desuperheater, ME-X101
- Add a new coke drum condensate injection, ME-X102
- Add a new heavy blowdown oil (HBO) injection, ME-X103
- Modify the existing blowdown contactor, V-924 (Device 1152) by installing new hold down grid on top of packing, a new outlet nozzle bar screen, a new 6" nozzle for the HBO recycle stream; and a new wash oil internal spray distributor.

The table below lists all the permitted devices in the permit unit (new device is underlined, modified device is **bolded**, and deleted device is ~~strikethrough~~. The third column shows the most recent application number associated with previous permit action. The last column shows the application number associated with this proposed modification.

Permit Unit	List of Permitted Devices in the Permit Unit (System)	Application No. Associated with Current Permit	Status of Permit Prior to this Proposed Modification	Application No. For This Proposed Modification
DCU Blowdown Recovery System Process 2, System 6	D53, D1152, D63, D65, D68, D1350, D1361, <u>DXXXX</u>	472871	Permit to Construct issued for previous modification	520770

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FEE ANALYSIS

Table 2 lists permit processing fees and equipment information.

Table 2 – Summary of Permit Processing Fees

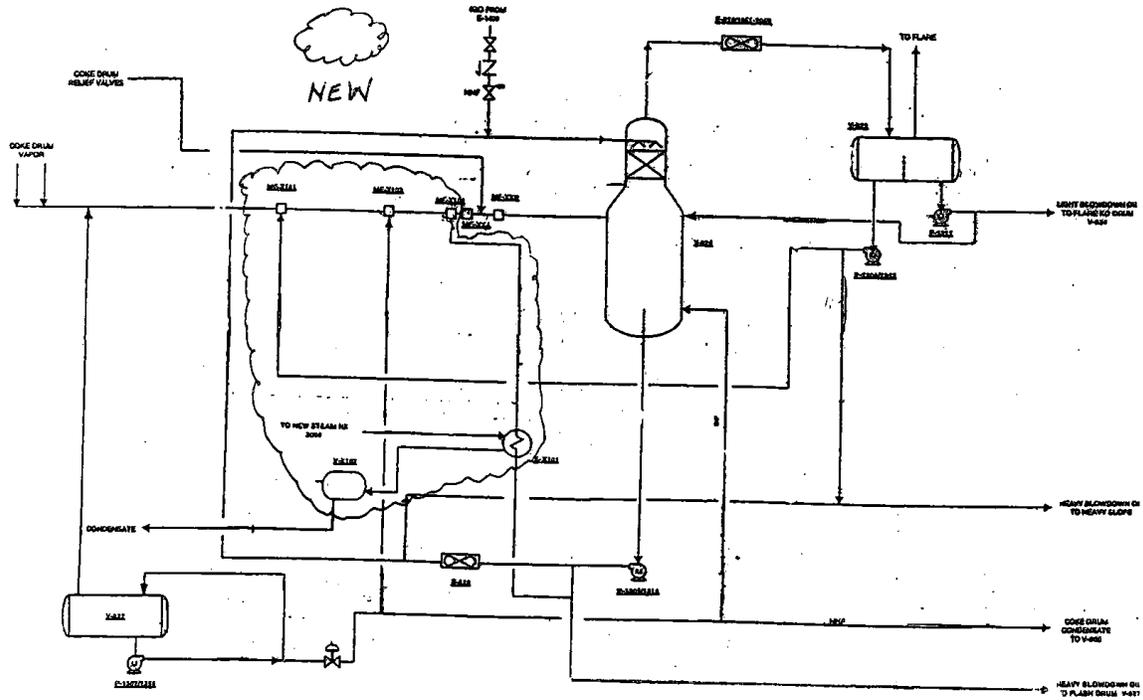
	Equipment Description	BCAT/CCAT	Fee Schedule	Fee Type	Fee	XPP Fee	Total Fee
520770	DCU Blowdown System	000059	E	Modification	\$5,257.06	\$2,628.53	\$7,885.59
520771	Permit Amendment	555009		Title V Significant Amendment	\$1,723.07		\$1,723.07
Total Permit Processing							\$9,608.66

PROCESS DESCRIPTION

DCU BLOWDOWN RECOVERY SYSTEM MODIFICATION

The purpose of the Coker Blowdown project is to upgrade the existing facilities by improving oil/water separation within the existing Coker Blowdown Recovery System. The improved oil/water separation will be accomplished with changes in operating conditions, new equipment, and controls added within the system. This modification will maintain the Blowdown Contactor bottoms at a temperature above the water dew point, allowing for better separation of water from the heavy blowdown oil stream, thus reducing the amount of water/heavy blowdown oil mixture that must be reprocessed with raw crude. The overall capacity of the DCU Blowdown system does not change as a result of this project, nor does the total hydrocarbon throughput capacity at the DCU.

In general, the coke drum cycle comprises of blowdown, quench, and coke drum warm-up. The key to a better water separation is to maintain the temperature of liquid in the blowdown contactor at 350 deg F. Under the current operation, the temperature of the liquid in the blowdown contactor is maintained at 350 deg F. However when the coke drum condensate is transferred to the blowdown contactor, the temperature at the bottom of the contactor can drop very quickly if the condensate is comprised mainly of water. This project will add a heat exchanger (steam heater), E-X101, that is sized to return the temperature of the liquid in the bottom of the blowdown contactor from 275 deg F to 350 deg F in one hour. A new steam condensate pot V-X103 is added to separate condensate from the steam leaving E-X101.



EMISSIONS CALCULATIONS

The proposed modifications to the DCU Blowdown Recovery System, Process 2, System 6, include:

- Add a new steam condensate pot, V-X103.
- Add a new blowdown contactor heat exchanger (steam heater), E-X101
- Add a new condensate desuperheater, ME-X101
- Add a new coke drum condensate injection, ME-X102
- Add a new heavy blowdown oil (HBO) injection, ME-X103
- Modify the existing blowdown contactor, V-924 (Device 1152) by installing new hold down grid on top of packing, a new outlet nozzle bar screen, a new 6" nozzle for the HBO recycle stream; and a new wash oil internal spray distributor.

See the attached P&IDs submitted by Tesoro

This equipment listed above and the associated fugitive components will result in a 0.43 lb/day increase in ROG emissions. *Because the increase in emissions is less than 0.5 lb/day, offsets nor BACT are required.*

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Table3-Fugitive Emission Calculation for DCU Blowdown Project

New Source Unit with BACT		Service	Number of Sources	BACT Emission Factor (lb/yr)	Total Annual Emissions lbs/yr
Valves	Sealed Bellows	Gas/Vapor and Light Liquid	29	0.00	0.0
	SCAQMD Approved I & M Program	Gas/Vapor	0	23	0.0
		Light Liquid	0	19	0.0
		Heavy Liquid	19	3	57.00
Pumps	Sealless Type	Light Liquid	0	0.00	0.0
	Double Mechanical Seals or Equivalent Seals	Light Liquid	0	104	0.0
		Single Mechanical Seal	Heavy Liquid	0	80
Compressors		Gas/Vapor	0	514	0.0
Flanges (ANSI B 16.5-1988)		All	68	1.5	102
Demolition of Existing Equipment					
Pressure Relief Valves		All	0	0.00	0.0
Process Drains with P-Trap or Seal Pot		All	0	80	0.0
				Totals	
					lbs/year
					159
					lbs/day
					0.43

Note:(1) All new source units are subject to SCAQMD BACT with monthly inspection and maintenance (I&M) and 500 ppm by OVA.

(2) The non-zero BACT emission factors are based on an 80 percent reduction from the correlation factor 500 ppm screening value.

(3) Light liquid and gas/liquid streams: Liquid or gas/liquid stream with a vapor pressure greater than that of kerosene (>0.1 psia @ 100°F or 689 Pa @ 38°C), based on the most volatile class present at >20% by volume

(4) Heavy liquid: streams with a vapor pressure equal to or less than that of kerosene (0.1 psia @ 100°F or 689 Pa @ 38°C) based on the most volatile class present >20% by volume.

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RULES EVALUATION:

PART 1 SCAQMD REGULATIONS

Regulation II- PERMITS

Rule	Standards for Approving Permits	November 14, 1997
212	<p>This project is considered as a significant project due to the modifications and new equipment proposed. In accordance with Rule 212(c), a significant project is a new or modified facility in which:</p> <p>(1) the new or modified permit unit is located within 1000 feet of a school;</p> <p>(2) the new or modified facility has on-site emission increases exceeding the daily maximum specified in subdivision (g); or</p> <p>(3) the new or modified permit unit has an increased cancer risk greater than, or equal to, one in a million (1×10^{-6}) during a lifetime of 70 years or pose a risk of nuisance.</p> <p>As noted in Table 1 in the background section of this evaluation page 4, the emissions from this project as a whole will exceed the daily maximums specified in subdivision (g). Therefore, prior to granting Permits to Construct for this project, a public notice shall be prepared by the District. This public notice shall be distributed to each address within a ¼ mile radius of the project, a local newspaper publication, as well as those parties listed in subdivision (g) of the rule, including EPA (Region 9), California Air Resources Board, City of Los Angeles (Wilmington), County of Los Angeles, State Land Manager, and Federal Land Manager.</p>	

Regulation IV PROHIBITIONS

Rule	Visible Emissions	November 9, 2001
401	<p>Visible emissions are not expected under normal operating conditions of the unit.</p>	

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<i>Rule</i> 402	<i>Nuisance</i>	<i>May 7, 1976</i>
	Nuisance complaints associated with the above project are not expected under normal operating conditions.	

Regulation XI Source Specific Standards

Rule 1123	Refinery Process Turnaround	December 7, 1990
(b) Requirements	(1) During process turnarounds, the operator shall not depressurize any vessel containing organic materials unless the vapors released from the vessel are collected and contained for use as fuel or sent to a gas disposal system until the pressure in the vessel is below 5 psig, or is within 10 % above the minimum gauge pressure at which the vapors can be collected, whichever is lower.	
	(2) If the refinery uses inert gas displacement or vacuum eduction for process turnaround, the refinery operator shall submit a Rule 1123 plan per Rule 1123(b)(2). Tesoro submitted R1123 plan under A/N 474117 and it was approved and was issued 7/21/10.	
(c) Recordkeeping	The operator is required to maintain a record of each refinery process unit turnaround containing at a minimum the date the unit was shut down, the approximate vessel hydrocarbon concentration when hydrocarbons were first discharged into the atmosphere, and the approximate amount of hydrocarbons emitted into the atmosphere.	
	Each process unit with a vessel containing organic materials will contain a system condition (S13.4) that specifies that the devices in the systems are subject to Rule 1123.	

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Rule 1173	Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants	December 6, 2002
	<p>The proposed modification will add valves, flanges, pumps, pressure relief devices and drains that are subject to control of fugitive emissions. Tesoro has an approved Inspection and Maintenance (I&M) Program (A/N 477506). Tesoro will include the new components into their I&M program.</p>	

Regulation XIII. New Source Review

REG XIII	New Source Review	(Amended December 6, 2002) Application Deem Complete Date: April 11, 2011
	<p>The modifications proposed in this project will cause an emission increase of ROG. The emission increase due to this project is shown in Table 3. The following is a discussion of each requirement in NSR.</p>	
BACT: 1303(a)	<p>BACT has been included in the design of the proposed project. BACT means the most stringent emission limitation or control technique which:</p> <ol style="list-style-type: none"> (1) has been achieved in practice for such category or class of source; or (2) is contained in any State Implementation Plan (SIP) approved by the US EPA for such category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer or designee that such limitations or control technique is not presently achievable; or (3) is any other emission limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost effective as compared to measures as listed in the Air Quality Management Plan (AQMP) or rules adopted by the District Governing Board. 	

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REG	New Source	(Amended December 6, 2002)
XIII	Review	Application Deem Complete Date: April 11, 2011
	<p><i>Fugitive emissions.</i> BACT is required for fugitive emission control and is follows:</p> <ul style="list-style-type: none"> • Valves: Bellow-sealed valves are required with the following exemptions which must included in the approved I&M program, <ol style="list-style-type: none"> 1. Heavy liquid service (i.e., streams with a vapor pressure <0.1 psia @ 100 °F (kerosene) based on the most volatile class present > 20% by volume) 2. Control valve 3. Instrument tubing application 4. Applications requiring torsional valve stem motion 5. Applications where valve failure could pose safety hazard (e.g., drain valves with valve stem in horizontal position) 6. Retrofit/special applications with space limitation (special applications such as skid mounted standard packaged systems) 7. Valves not commercially available <p>Valves installed where Bellow-sealed valves are not available will be subject to a leak rate of less than 500 ppmv by EPA Method 21 and an approved I&M program.</p> • Relief Valves: All relief valves will be connected to a closed vent system or equipped with a rupture disc. • Process Drain: Process drains will be equipped with p-traps or seal pots and included in the approved I&M program. • Pumps: Pumps in light liquid service will be equipped with double or tandem seals vented to a closed system with a leak rate less than 1000 ppm by EPA Method 21 and included in an approved I&M program. • Flanges: All flanges must meet ANSI/API standards and included in an approved I&M program 	
Modeling 1303(b)(1)	<p>Modeling: The only emissions resulting from the proposed modification will be ROG. According to the screening requirements in Rule 1303 Appendix A, Table A-1, modeling is not required for ROG. Therefore, no air quality modeling is required for the new installations.</p>	

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REG XIII	New Source Review	(Amended December 6, 2002) Application Deem Complete Date: April 11, 2011
Offset 1303(b)(2)	Offset: This project will result in increase of ROG emissions of 0.43 lb/day which is less than 1 lb/day. No offset is required.	
1303(b)(3)	Sensitive Zone Requirements. Offset is not required.	
1303(b)(4)	Facility Compliance. This facility complies with all applicable District rules and regulations.	
1303(b)(5)	Major Polluting Facilities. This Project is a modification at a major polluting facility. Therefore, the facility shall comply with the following requirements.	
	<p>(A) <i>Alternative Analysis</i> – Applicant must conduct an analysis of alternative sites, sizes, production processes, and environmental control techniques for such proposed source and demonstrate that the benefits of the proposed project significantly outweigh the environmental and social costs associated imposed as a result of its location, construction, or modification (42 U.S.C. Section 7503(a)(5));</p> <p>In lieu of conducting an alternative analysis, Tesoro will meet the requirements of this subparagraph with compliance with the California Environmental Quality Act (CEQA) in accordance with Rule 1303(b)(5)(D). Since this proposed project has been analyzed by an environmental impact report, pursuant to Public Resources Code Section 21002.1 and Title 14 California Code of Regulations, Section 15080 et seq., this subparagraph shall be deemed satisfied.</p> <p>As discussed previously, the final EIR for Tesoro Reliability Improvement and Regulatory Compliance Project was certified on April 10, 2009. The requirements of 1303(b)(5)(D) are satisfied.</p>	
	(B) Statewide Compliance. Demonstrate that all major sources in the state under control of the applicant are in compliance or on a schedule for compliance with all applicable federal emissions standards and all standards under the Clean Air Act be demonstrated for all facilities located within California for a major modification at a major polluting facility. Compliance must be demonstrated prior to the issuance of	

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REG XIII	New Source Review	(Amended December 6, 2002) Application Deem Complete Date: April 11, 2011
	<p>the Permit to Construct.</p> <p>A letter certified Statewide Compliance was provided by David Reed of Tesoro Refining dated May 16, 2011. The certification is provided in Attachment 4.</p>	
	<p>(C) Protection of Visibility. Visibility modeling is not required because there is no increase in PM10 or NOx.</p>	
	<p>(D) Compliance Through California Environmental Quality Act.</p> <p>The proposed project has been analyzed by an environmental impact report pursuant to Public Resources Code Section 21002.1 and Title 14 CCR Section 15080 subparagraph (b)(5)(A) and the final EIR for Tesoro Reliability Improvement and Regulatory Compliance Project was certified on April 10, 2009.</p> <p>Therefore, compliance of Rule 1303(b)(5) is expected.</p>	

Regulation XIV. Toxics and Other Non-Criteria Pollutants

Rule 1401	New Source Review of Toxic Air Contaminants	May 3, 2002 Application Deem Complete Date: April 8, 2004
	<p>A health risk assessment (HRA) was performed to determine if emissions of toxics air contaminants generated by the <i>proposed ENTIRE Refinery upgrade project</i> would exceed the District's thresholds of significance for cancer risk and was included in Volume II of the Environmental Impact Report (EIR). Tesoro ran HARP modeling analysis to determine maximum cancer risks. They also evaluated acute and chronic risks from emissions of toxic air contaminants using the ARB/ Office of Environmental Health Hazard Assessment (OEHHA) Health Risk Assessment Program.</p> <p>Based on air quality modeling and related assumptions, results show that the maximum incremental cancer risk (MICR) to the Maximum Exposed Individual Worker (MEIW) associated with the proposed project is 3.14 in a million and to the Maximum Exposed</p>	

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Rule 1401	New Source Review of Toxic Air Contaminants	May 3, 2002 Application Deem Complete Date: April 8, 2004
	<p>Individual Resident (MEIR) was calculated to be 6.76 in a million, which is below the Rule 1401 threshold limits of 10 in a million if T-BACT employed. The proposed project is using T-BACT. The calculated Acute Hazard Index (HIA) was 0.5080, less than the rule limit of 1.0. Additionally, the Chronic Hazard Index (HIC) was 0.0846, and the cancer burden was 0.0914 which also less than the rule limit of 1.0. A copy of the summary of Tesoro refinery proposed project HRA results is in attachment 2</p>	
	<p>The proposed DCU Blowdown recovery <i>modification</i> will result in a small increase in toxic emissions that come from additional fugitive emission components. A Tier 1 Toxics Analysis using AQMD's screening analysis was performed.(see Attachment 3).</p> <p>Based on Tier 1 Toxics Analysis, results show that The calculated Acute Hazard Index (HIA) was 4.36E-3, less than the rule limit of 1.0. Additionally, the Chronic Hazard Index (HIC) was 6.38E-1, and the cancer burden is less than the rule limit of 1.00.</p>	

Regulation XVII	PREVENTION OF SIGNIFICANT DETERIORATION (PSD)	<i>(Adopted October 7, 1988)</i>
	<p>The goal of PSD is to ensure that air quality in clean areas does not significantly deteriorate while maintaining a margin for future industrial growth. It applies to net emission increases of criteria air pollutants that are currently in attainment. The District recently signed a new Limited PSD Delegation agreement with EPA (effective July 26, 2007) that gives the District limited responsibility for all new PSD sources and all modifications to existing PSD sources where the applicant is requesting to use our existing Regulation XVII to determine PSD applicability for a modification.</p> <p>This rule requires an application for a permit to construct which has a significant emission increase of an attainment air contaminant to use BACT, do modeling, conduct one year continuous ambient air monitoring, among other requirements. In the South Coast Basin, the four attainment air contaminant are sulfur dioxide(SO₂), nitrogen Oxide (NO_x), Carbon monoxide(CO) and lead (Pb). Rule 1702(t) defines</p>	

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significant emission increase for NO_x, SO₂ as 40 tons /year and for CO 100 tons/year.

A recent EPA Endangerment Finding for greenhouse gases (GHG) means that emissions of GHG need to be evaluated under PSD. Note that ambient air quality standards have not yet been released for GHG. Therefore, as the South Coast Air Basin is *not* in *nonattainment*, GHG emissions are also subject to PSD in South Coast.

The newly-promulgated Tailoring Rule specifies that GHG emissions must be evaluated under PSD for permits issued after January 2nd, 2011 for projects at existing PSD or Title V sources in South Coast according to a phased-in applicability time frame. The subject equipment is located at a Title V facility (Tesoro was issued an initial Title V permit effective 11/23/09).

The increase in annual emissions on a ton per year basis is shown in the tables below, along with the PSD modification significance thresholds. See Attachments 5 for GHG Emissions Calculations.

GHG Emissions Increase

GHG Increase	Emissions (lb/year)	CO ₂ e Emissions(lbs/year)	CO ₂ e Emissions (tpy)
Methane(CH ₄)	94.170	1977.57	0.988

PSD Applicability Determination

Pollutant	Pre- Modification Emissions (tpy)	Post- Modification Emissions (tpy)	Emissions Increase (tpy)	PSD Significance Threshold (tpy)	Exceed Threshold?
GHG	0.9414	1.930	+0.988	75,000	No

Because all emission increases for attainment pollutants are below the significance thresholds, PSD is not triggered for the proposed modification. Further analysis under Reg. 17 is not required.

Note that the original construction of this equipment also did not trigger PSD.

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Regulation	Title V Permits	March 16, 2001
XXX	<p><u>Rule 3001(a): Applicability (Amended November 14, 1997)</u></p> <p>Tesoro Refinery is currently subject to Title V. The permit issued for the new cogeneneration unit will be issued as a revision of the Title V permit. Permit revisions are categorized into the following four types: administrative, minor, de minimus significant and significant.</p> <p>As defined in Rule 3000, a significant permit revision means any facility permit revision that is not eligible for administrative permit revision, minor permit revision, or de minimis significant permit revision procedures. Such revisions include any of the following:</p> <ol style="list-style-type: none"> 1. relaxation of any monitoring, recordkeeping, or reporting requirement, term, or condition in the Title V permit; 2. the addition of equipment or modification to existing equipment or processes that result in an emission increase of non-RECLAIM pollutants or hazardous air pollutants (HAP) in excess of any of the emission threshold levels ; 3. any modification at a RECLAIM facility that results in an emission increase of RECLAIM pollutants over the facility's starting Allocation plus the nontradeable Allocations; 4. requests for a permit shield when such requests are made outside applications for initial permit or permit renewal issuance; 5. any revision that requires or changes a case-by-case evaluation of: reasonably available control technology (RACT) pursuant to Title I of the federal Clean Air Act; or maximum achievable control technology (MACT) pursuant to 40 CFR Part 63, Subpart B; 6. any revision that results in a violation of regulatory requirements; 7. any revision that establishes or changes a permit condition that the facility assumes to avoid an applicable requirement; 8. installation of new equipment subject to a New Source Performance Standard (NSPS) pursuant to 40 CFR Part 60, or a National Emission Standard for Hazardous Air Pollutants (NESHAP) pursuant to 40 CFR Part 61 or 40 	

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- CFR Part 63; or,
9. modification or reconstruction of existing equipment, resulting in an emission increase subject to new or additional NSPS requirements pursuant to 40 CFR Part 60, or to new or additional NESHAP requirements pursuant to 40 CFR Part 61 or 40 CFR Part 63.

Since the proposed modification is part of the major project to improve the reliability of refinery operations and to comply with regulatory compliance and the entire project was subject to full review under CEQA, and AQMD as lead agency prepared the EIR, and the whole project would result in an emission increase in excess of any emission thresholds levels as defined in no.2 of this section, this revision will be considered a significant revision to the existing Title V permit. For Significant revisions, AQMD needs to notify the public and the EPA prior to permit issuance. Therefore, the permit is subject to a 30 day public Notice and a 45 day EPA review and comment period.

PART 2 STATE REGULATIONS

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq., requires that the environmental impacts of proposed "projects" be evaluated and that feasible methods to reduce, avoid or eliminate significant adverse impacts of these projects be identified and implemented. According to the District's CEQA guidelines, the thresholds for significant effect are:

NOx	55 pounds per day
ROG	55 pounds per day
PM10	150 pounds per day
CO	550 pounds per day
SOx	150 lbs per day

Based on the emissions shown in Table 1, the overall Reliability Improvement and Regulatory Compliance project qualifies as a significant project so preparation of a CEQA document was required. The draft Environmental Impact Report (DEIR) for the project was issued on January 21, 2009. The public review period for this document ended on March 6, 2009. The final Environmental Impact Report (FEIR) was certified on April 10, 2009.

The modification of the Delayed Coker Blowdown Unit related permit will be issued with condition (S11.3) that specifies that Tesoro shall comply with all applicable mitigation measures stipulated in the "Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan" document which is part of the AQMD Certified Final Environmental Impact Report.

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PART 3 FEDERAL REGULATIONS

40 CFR Part 60 Subpart GGG	Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
§60.590	Applicability and designation of affected facility. In accordance with §60.590(b), any affected facility (petroleum refinery) that commences construction or modification after January 4, 1983 is subject to the requirements of this subpart.
§60.592	<p>Standards.</p> <p>(a) The facility shall comply with the requirements of §§60.482-1 to 60.482-10 as soon as practicable, but no later than 180 days after initial startup. §§60.482-1 to 60.482-10 refers to Subpart VV – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry and sets standards for the following:</p> <ul style="list-style-type: none"> ▪ §60.482-1 Standards: General ▪ §60.482-2 Standards: Pumps in light liquid service. ▪ §60.482-3 Standards: Compressors ▪ §60.482-4 Standards: Pressure relief devices in gas/vapor service ▪ §60.482-5 Standards: Sampling connection systems. ▪ §60.482-6 Standards: Open-ended valves or lines. ▪ §60.482-7 Standards: Valves in gas/vapor service and in light liquid service. ▪ §60.482-8 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors. ▪ §60.482-9 Standards: Delay of repair. ▪ §60.482-10 Standards: Closed vent systems and control devices. <p>The DCU Blowdown system was built before January 4, 1983, therefore, the existing fugitive components are not subject to the above requirements.</p>

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40 CFR Part 60 Subpart GGGa	Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification commenced after November 7, 2006
§60.590a	Applicability and designation of affected facility. In accordance with §60.590(b), any affected facility (petroleum refinery) that commences construction or modification after November 7, 2006 is subject to the requirements of this subpart.
§60.592a	<p>Standards.</p> <p>(a) The facility shall comply with the requirements of §§60.482-1a to 60.482-10a as soon as practicable, but no later than 180 days after initial startup. §60.482-1a to 60.482-10a refers to Subpart VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry and sets standards for the following:</p> <ul style="list-style-type: none"> ▪ §60.482-1a Standards: General ▪ §60.482-2a Standards: Pumps in light liquid service. ▪ §60.482-a Standards: Compressors ▪ §60.482-4a Standards: Pressure relief devices in gas/vapor service ▪ §60.482-5a Standards: Sampling connection systems. ▪ §60.482-6a Standards: Open-ended valves or lines. ▪ §60.482-7a Standards: Valves in gas/vapor service and in light liquid service. ▪ §60.482-8a Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors. ▪ §60.482-9a Standards: Delay of repair. ▪ §60.482-10a Standards: Closed vent systems and control devices. <p><i>According to the 40 CFR60.590a(c) allows for the addition or replacement of equipment for the purpose of process improvement without triggering applicability under Subpart GGGa as long as the change does not constitute a “capital expenditure”.</i></p> <p>40 CFR 60.481a, which is incorporated by reference in Subpart GGGa, defines a “capital expenditure” by a set of calculations. Subpart GGGa is triggered when the cost of the project exceeds the term “P” in the equations below.</p>

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40 CFR Part 60 Subpart GGGa	<p>Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification commenced after November 7, 2006</p>
	<p> $Y = 1 - 0.575 \log X$ where X is 2006 minus the year of construction Since the DCU Blowdown Recovery was constructed in 1968, $Y = 0.09$ </p> <p> $A = Y \times (B/100)$ </p> <p> Since $B = 7$, as per the definition in VVa, $A = 0.0063$ </p> <p> $P = R \times A$ </p> <p> Tesoro's engineers estimate the replacement cost (R) for the equipment in the DCU Blowdown recovery at approximately \$600 million. Therefore, the maximum amount that can be spent without triggering Subpart GGGa is \$3.78 million. </p> <p> The approximate cost for the components installed for the project is less than \$3.28 million. See attached cost supplied by Tesoro. </p> <p> Since the cost of the project is less than \$3.78 million, Subpart GGGa is not triggered for the DC Blowdown Unit . </p>

40CFR Part 63 Subpart CC	<p>National Emission Standard for Hazardous Air Pollutants from Petroleum Refineries</p>
§63.648	<p> This process unit is subject to the equipment leak standards, detection, and repair requirements of 40.CFR63 Subpart CC, Section 63.648. The equipment leak inspection and monitoring requirements of Rule 1173 are in general more stringent than that specified in Section 63.648. Therefore, compliance with the inspection, maintenance, and recordkeeping requirements of this rule are expected. </p>

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RECOMMENDATIONS

A permit to construct is recommended subject to the following conditions:

PROCESS CONDITIONS

P13.1 All devices under this process are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
Benzene	40CFR61, SUBPART	FF

[40CFR 61 Subpart FF, 11-12-2002]

[Processes subject to this condition : 1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 15]

SYSTEM CONDITIONS

S11.3 The operator shall comply with all applicable mitigation measures stipulated in the "Statement of Findings, Statement of Overriding Considerations, and Mitigation Monitoring Plan" document which is part of the AQMD Certified Final Environmental Impact Report dated 4-10-2009 for this facility.

This condition shall only apply to equipment listed in Section H of this facility permit.

[CA PRC CEQA, 11-23-1970]

[Systems subject to this condition : : **Process 2, System 6**, Process 8, System 1, Process 17, System 4]

S13.4 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1123

[RULE 1123, 12-7-1990]

[Systems subject to this condition : Process 1, System 1 , 2; Process 2, System 1 , 3 , 4 , 6 , 7 , 10; Process 3, System 1 , 2 , 4 , 5; Process 4, System 1 , 3 , 5 , 7 , 9; Process 5, System 1 , 3 , 5; Process 6, System 1 , 3; Process 8, System 1; Process

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9, System 1 , 2 , 3 , 4; Process 12, System 5 , 8; Process 19, System 3; Process 21, System 1 , 3]

S15.2 The vent gases from all affected devices of this process/system shall be vented as follows:

This process/system shall not be operated unless the blowdown flare system is in full use and has a valid permit to receive vent gases from this system.

All emergency vent gases shall be directed to the refinery flares (process 21, system1) or flare gas recovery system (process 21, system 4) which may also includes DCU Blowdown Compressor C-137 (device D68) except Devices IDs D898, D20, D910, D1268, D1269, D1280, D93, D94, D96, D1283, D1284, D1288, D1292, D219, D226, D1212, D275, D1256, D375, D928, D1267 & D916 that vent to the atmosphere.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition : Process 1, System 1 , 2; Process 2, System 1 , 3 , 4 , 6 , 10; Process 3, System 1 , 2 , 5; Process 4, System 1 , 3 , 5 , 7 , 9; Process 5, System 1 , 3 , 5; Process 6, System 1 , 3; Process 8, System 1; Process 9, System 1 , 2 , 3; Process 12, System 8; Process 19, System 3; Process 21, System 4]

S15.3 The vent gases from all affected devices of this process/system shall be vented as follows:

All vent gases under normal operating conditions shall be directed to a vapor recovery system (process 21, system3) consisting of compressors, D641, D642, D643, and/or D644, which can be operated independently to maintain a system vacuum that efficiently collects all vented gases or the flare gas recovery system(process 21, system 4). This process/system shall not be operated unless the vapor recovery system (process 21, system 3) or flare gas recovery system (process 21, system 4) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition : Process 1, System 2; Process 2, System 3 , 4 , 6; Process 3, System 2 , 4; Process 4, System 1 , 3 , 5 , 7; Process 5, System 1 , 3 , 5; Process 6, System 1; Process 8, System 1; Process 9, System 2; Process 21, System 4]

S15.11 The vent gases from all affected devices of this process/system shall be vented as follows:

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All sour gases under normal operating conditions shall be directed to the fuel gas treating system(s) (Process 12, System 8 or Process 4, System 9).

This process/system shall not be operated unless the fuel gas treating system(s) is in full use and has a valid permit to receive vent gases from this system.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition: Process 2, System 6; Process 21, System 3, 4]

S31.4 The following BACT requirements shall apply to VOC service fugitive components associated with the devices that are covered by application number(s) 520770:

All sampling connections shall be closed-purge, closed loop, or closed-vent systems.

All new valves in VOC service shall be leakless type, except those specifically exempted by Rule 1173 or approved by the District in the following applications: heavy liquid service, control valves, instrument piping/tubing, applications requiring torsional valve stem motion, applications where valve failure could pose safety hazard (e.g., drain valves with valve stems in horizontal position), retrofits/special applications with space limitations, and valves not commercially available.

For the purpose of this condition, leakless valve shall be defined as any valve equipped with sealed bellows or equivalent approved in writing by the District prior to installation.

All new components in VOC service as defined by Rule 1173, except valves and flanges shall be inspected quarterly using EPA Reference Method 21. All new valves and flanges in VOC service except those specifically exempted by Rule 1173 shall be inspected monthly using EPA Method 21. Components shall be defined as any valve, flange, fitting, pump, compressor, pressure relief device, diaphragm, hatch, sight-glass, and meter, which are not exempted by Rule 1173.

The following leaks shall be repaired within 7 calendar days -- all light liquid/gas/vapor components leaking at a rate of 500 to 10,000 ppm, heavy liquid components leaking at a rate of 100 to 500 ppm and greater than 3 drops/minute, unless otherwise extended as allowed under Rule 1173.

The following leaks shall be repaired within 2 calendar days -- any leak between 10,000 to 25,000 ppm, any atmospheric PRD leaking at a rate of 200 to 25,000 ppm, unless otherwise extended as allowed under Rule 1173.

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The following leaks shall be repaired within 1 calendar day -- any leak greater than 25,000 ppm, heavy liquid leak greater than 500 ppm, or light liquid leak greater than 3 drops per minute.

If 98.0 percent or greater of the new valve and the new flange population inspected is found to leak gaseous or liquid volatile organic compounds at a rate less than 500 ppmv for two consecutive months, then the operator may revert to a quarterly inspection program with the approval of the Executive Officer. This condition shall not apply to leakless valves.

The operator shall revert from quarterly to monthly inspection program if less than 98.0 percent of the new valves and the new flange population inspected are found to leak gaseous or liquid volatile organic compounds at a rate less than 500 ppmv. This condition shall not apply to leakless valves.

The operator shall keep records of the monthly inspection (quarterly where applicable), subsequent repair, and reinspection, in a manner approved by the District.

The operator shall provide to the District, prior to initial startup, a list of all non-leakless type valves that were installed. The list shall include the tag numbers for the valves and reasons why leakless valves were not used. The operator shall not startup the equipment prior to the Districts approval for the use of all non-leakless valves

The operator shall provide to the District, no later than 90 days after initial startup, a recalculation of the fugitive emissions based on actual components installed and removed from service. The operator shall also submit a complete, as built, piping and instrumentation diagram(s) and copies of requisition data sheets or field inspection surveys for all non-leakless type valves with a listing of tag numbers and reasons why leakless valves were not used.

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(b)(2)-Offset, 5-10-1996]

[Systems subject to this condition: Process 2, System 6]

DEVICE CONDITIONS

H. Applicable Rules

H23.5 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	1173

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[RULE 1173, 5-13-1994; RULE 1173, 12-6-2002]

[Devices subject to this condition : D1357, D1361, D1419, D1454]

H23.4 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	40CFR60, SUBPART	GGG

[40CFR 60 Subpart GGG, 6-7-1985]

[Devices subject to this condition : D68, D377, D901, D918, D1338, D1600, D1601, D1602, D1603, D1604]

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Attachments

1.	NOV's and NC's Issued
2.	AQMD Toxic Analysis
3.	Summary Of Tesoro Entire Refinery Upgrade Project HRA Results
4.	Certification of Statewide Compliance
5.	GHG Emissions for the DCU Blowdown Project