Bay Area Air Quality Management District

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Final
Permit Evaluation
and
Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT
Reopening – Revision 1

for

Tesoro Refining and Marketing Company
Facility B2758 & B2759

Facility Addresses:

Avon Refinery
150 Solano Way
Martinez, CA 94553

Amorco Terminal
1750 Marina Vista Way
Martinez, CA 94553

Mailing Address:
Avon Refinery 150 Solano Way
Martinez, CA 94553

December, 2004

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Title V Statement of Basis

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit," as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

The District issued the initial Title V permit to this facility on December 1, 2003. The District has reopened the permit to amend flare and Regulation 9-10 requirements, to correct errors, and to incorporate some new conditions contained in recently issued Authorities to Construct. All changes to the permit will be clearly shown in "strikeout/underline" format. When the permit is finalized, the "strikeout/underline" format will be removed.

The District is soliciting public comment on the proposed revisions. The District is also soliciting comment on changes that were made between the version of the permits that were issued for public comment in July of 2003 and the final permits issued December 1, 2003. Though the District does not believe these changes were of such a magnitude as to render the issuance notice and comment process inadequate, these permits were the subject of considerable scrutiny, and so the District wishes to be as thorough as possible in allowing an opportunity for comment on all aspects of the final permits. The District will respond to comments received on these changes from draft to final. Any changes to the permit that result from comments received will be addressed in a future revision.

Regarding EPA's review of the final permits, EPA has indicated to the District that, because of the extent of changes made between proposal and final, it intends to conduct a new review of the refinery permits in their entirety. The District acknowledges that EPA has this authority and intends to respond appropriately to any issues EPA may raise in its review, whether or not those issues relate to the proposed revisions. EPA has informed the District that it intends to commence a 45-day review period on the entire content of each refinery Title V permit when it receives the version of the permit that is proposed for revision.

This statement of basis concerns only changes to the permit. A comprehensive statement of basis was prepared for the initial issuance of the permit and is considered to be the statement for basis for the entire permit. It is available on request.
The proposed revisions include incorporation of permit conditions resulting from modifications addressed in seven District permit applications, the details of which are included in the attached Engineering Evaluation Reports. The potential increase of criteria pollutant emissions for each of these applications is summarized as follows:

Permit Application #	Pollutant Increase (tons/yr)				
	NOx	CO	POC	SO2	PM
6201	0.000	0.000	0.000	0.000	0.000
4579	0.000	0.000	7.359	0.000	0.000
6792	0.000	0.000	0.000	0.000	0.000
7768	0.000	0.000	2.246	0.000	0.000
8301	0.000	0.000	0.000	0.000	0.000
6945	0.871	0.260	0.018	0.000	0.041
7776	0.500	0.000	0.000	0.000	0.000
Total	**1.371**	**0.260**	**9.623**	**0.000**	**0.041**

In accordance with BAAQMD Regulation 2-2-302, Tesoro was required to provide emissions offsets for NOx and POC at a ratio of 1.15 to 1.0. A total of 1.582 tons/yr of NOx and 11.067 **tons/yr POC** offsets were provided as follows. In accordance with Regulation 2-2-303, Tesoro was required to provide emissions offsets for PM10 at a ratio of 1.0 to 1.0. A total of 0.041 tons/yr of PM10 offsets were provided as follows.

Banking Certificate Number	Offsets Provided (tons/yr)		
	NOx	PM10	POC
890	N/A	N/A	2.583
641	N/A	N/A	8.463
834	N/A	N/A	0.021
836	1.002	0.041	N/A
892	0.580	N/A	N/A

B. Facility Description

The Title V permit includes the Refinery and the Amorco Terminal.

An oil refinery is an intermediary between crude oil and a refined product. It takes dirty, low-value oil from the ground and distills it under atmospheric pressure into its primary components: gases (light ends), gasolines, kerosene and diesels (middle distillates), heavy distillates, and heavy bottoms. The heavy bottoms go on to a vacuum distillation unit to be distilled again, this time under a vacuum, to salvage any light ends or middle distillates that did not get separated under atmospheric pressure; the heaviest bottoms continue on to a coker or an asphalt plant.

Other product components are processed by downstream units to be cleaned (hydrotreated), cracked (catalytic or hydrocracking), reformed (catalytic reforming), or alkylated (alkylation) to form gasolines and high-octane blending components, or to have sulfur or other impurities

removed to make over-the-road diesel (low sulfur) or off-road diesel (higher sulfur). Depending on the process units in a refinery and the crude oil input, an oil refinery can produce a wide range of salable products: many different grades of gasoline and gasoline blend stocks, several grades of diesel, kerosene, jet and aviation fuel, fuel oil, bunker fuels, waxes, solvents, sulfur, coke, asphalt, or chemical plant feedstocks.

A more detailed description of petroleum refinery processes and the resulting air emissions may be found in Chapter 5 of EPA's publication AP-42, Compilation of Air Pollutant Emission Factors. This document may be found at:

http://www.epa.gov/ttn/chief/ap42/ch05/

The principal sources of air emissions from refineries are:

- Combustion units (furnaces, boilers, and cogeneration facilities)
- FCC (Fluidized Catalytic Cracking)
- Storage tanks
- Fugitive emissions from pipe fittings, pumps, and compressors
- Sulfur plants
- Wastewater treatment facilities

Combustion unit emissions are generally controlled through the use of burner technology, steam injection, or selective catalytic reduction. Emissions from the FCCU are controlled through the use of improved catalyst regeneration, CO boilers, electrostatic precipitators, hydrotreating the feed, and use of catalysts to remove impurities. Storage tank emissions are controlled through the use of add on control and or fitting loss control. Fugitive emissions have been controlled through the use of inspection and maintenance frequencies. Sulfur plants are equipped with tail gas units to reduce emissions. Wastewater treatment facilities are controlled by covering units, gasketing covers, and add on controls such as, carbon canisters.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order that they are presented in the permit.

I. Standard Conditions

No change has been made to this section.

Changes in response to Final EPA Review Letter (October 8, 2004)

Some applicable requirements allow multiple compliance options. In some cases, the operator has chosen one specific option, and only that option is contained in the permit. Some requirements do not require the operator to select a specific compliance method, and some operators have chosen to have more than one option incorporated into the permit. Standard permit condition I.J.4 has been added to the permit to ensure that the records necessary to determine compliance are kept, and the method for determining compliance is reported in the annual compliance certification

EPA has requested that the District make determinations regarding the applicability of certain requirements listed in Attachment 2 of the October 8, 2004 letter. EPA has requested the addition of a permit condition requiring facilities to supply relevant information by January 5, 2005. Standard permit conditions I.J.5 through I.J.10 have been added.

II. Equipment

Table II A - Permitted Sources and Table II B – Abatement Devices

S975 has been listed twice. The first reference has the incorrect capacity and the condition cited (Condition #18435, part 1) has been superseded by Condition #19199, part D1. The first reference has been deleted.

S982 has been listed twice. The first reference has the incorrect capacity and has been deleted.

S134 has been modified from an external floating roof tank to a fixed cone roof abated by A-14 Vapor Recovery System. The modifications are detailed in the engineering evaluation for Application Number 7768. The source description, throughput, and condition limit for S134 have been updated in Table IIA, while the associated applicable requirements and abatement efficiency of A-14 has been updated in Table IIB.

On May 3, 2004, Tesoro started up the following two sources:
S1487 Tank 38 Fire-Water Pump Diesel Engine
S1488 Canal Fire-Water Pump Diesel Engine
The new sources have been added to Table IIA. A new table, Table IV-DA, for the Source Specific Applicable Requirements has been created. Tables VII-DA and VII-DB have been created for the Applicable Limits and Compliance Monitoring Requirements.

In Table II-A the descriptions for S973 and S974 were corrected. S973 is heater F56 not F55. S974 is heater F55 not F56.

In Table II-A, the firing rate of S904 No. 6 Boiler has been corrected to 775 MMBtu/hr. In response to EPA comments requesting documentation and information that the designed firing rate of the boiler was 848 MMBtu/hr instead of 775 MMBtu/hr, Tesoro was asked to provide the requested information. The refinery was unable to supply the documentation, therefore the original firing rate of 775 MMBtu/hr will be retained.

In Table IIB for A904, A927, A950, A971, A1431, A1432, and A1433, the citation for Regulation 9-10-301 has been clarified to show that it is a “facility wide” requirement and not a requirement for the specific source. Similarly, the corresponding limit of 0.033 lb NO/MMBtu has been clarified to show that it is a “facility” versus “source specific” limit.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g.,

particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

No change has been made to this section.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) listed following the corresponding District Rules. SIP rules are District rules that have been approved by EPA into the California State Implementation Plan. SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portions of the SIP rule are cited separately after the District rule. The SIP portions will be federally enforceable; the non-SIP versions will not be federally enforceable, unless EPA has approved them through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Changes to this Section IV are primarily routine and include the updating of text to the current standard and updating the applicable requirements tables to reflect the current versions of the cited regulations. However, in some cases applicable requirements have been added or removed at the request of Tesoro where there were errors or omissions in the initial permit. A discussion of these "non-routine" changes follows.

Applicability of Regulation 8-2 to emissions from flares

The District has determined that properly designed and operated flares achieve a VOC destruction efficiency exceeding 90%. Emissions from such a device are exempted from Regulation 8-2 by Regulation 8-1-110.3.

Proper design of refinery flares is presumed by the District.

Proper operation is presumed if the flare is operated within its design capacity, if the BTU content of gases flared exceeds 300 Btu/scf, and if a flame is present during flaring. District regulation 12-11 requires flow monitoring, gas composition analysis, and verification of the presence of flame during flaring events.

Refinery flares are exempt from Regulation 8-2 during any flaring event where conditions ensure proper operation. The required monitoring provides assurance that the flares are operated properly.

In addition to the exemption contained in Regulation 8-1-110.3, flaring of gases from sources subject to other District rules are not subject to 8-2, because such sources are not "miscellaneous sources" (8-2-201). Thus emissions due to flaring of gases from sources subject to regulation 10 (NSPS) or other Regulation 8 rules are not subject to 8-2.

Table IV – A Facility
NESHAP Title 40 Part 63 Subparts EEEE and YYYY have been added.
40 CFR 61.357(g) and 40 CFR 63.641 have been added.

Table IV – Ja Coke Handling
S808 Coker Sluice Tank has been removed from the Table IV – Ja, since the tank contents include water and coke particulate slurry. Particulate matter is unlikely to be released from the slurry and the applicable requirements and conditions for opacity, PM, and FP do not apply. In addition Condition #19528, part 14 does not include S808.

Table IV – K FCCU
The reference to BAAQMD Condition # 11433 Part 4a has been removed. Part 4a has been removed from the condition. BAAQMD Condition #11433, Part 2A and 2B have been added to the requirements. (See Permit Conditions Section.)

Table IV – K S802 FCCU and Table IV – AQ S1401 Sulfur Recovery Unit
BAAQMD Condition #21053, Part 5 has been added to require monitoring of the fuel gas H2S with an online H2S analyzer to demonstrate compliance with Regulation 9-1-313.2.

Table IV – AA Reg. 9-10 Sources
Regulation 9, Rule 10 Refinery-Wide compliance conditions, including new NOx Box conditions, have been added (Condition #18372, parts 27 through 36).

Table IV – AF Reg. 9-10 Sources
Regulation 9, Rule 10 Refinery-Wide compliance conditions, including new NOx Box conditions, have been added (Condition #18372, parts 27 through 36).

Tables IV – BK through IV – CY Tank Clusters 05, 11, 12, 13, 20, 23, 24, 25, 26, 27, and 28
Citations to Regulation 8-5-111 (Limited Exemptions for Tank Removal/Return to Service) and 8-5-112 (Limited Exemption for Tanks in Operation) have been added to all tables.

Tables IV BL, BM, BP, BQ, BV, BX, CF, CK, CL, CM, CN, CO, CP Cluster 11
Regulation 8-5-303 does not apply and has been removed.

Table IV – BO Cluster 13
S03 Tank A-3 has been moved to Table IV – BF Cluster 01b because the tank contents are conditionally permitted for materials with a true vapor pressure of less than 0.5 psia.

Table IV – BV Cluster 23
S1464 Tank A-868 has been moved to Table BA2 Cluster 01a. S1464 is limited by permit Condition #17477 to a true vapor pressure of less than or equal to 0.2 psia. S1464 should be exempt from Regulation 8-5 and subject to MACT 63.640(n) and NSPS Subpart Kb and A.

S1465 Tank A-869 has been moved to Table BA3 Cluster 01a. S1465 is limited by permit Condition #17477 to a true vapor pressure of less than or equal to 0.2 psia. S1464 should be exempt from Regulation 8-5 and subject to MACT 63.640(n) and NSPS Subpart Kb and A.

Table IV – Ia S532 – Oil Water Separator; Tank T-532 and
Table IV – Ib S1484 – Oil Water Separator; Pressure Vessel
Tables IV – Ia and Ib have been created for the newly modified sources, S532 and S1484, in Application Numbers 6201 and 4579, respectively.

Table IV – CF Cluster 25 S134 Tank A-134 and
Table IV – CO Cluster 26 S134 Tank A-134
S134 has been newly modified in Application Number 7768. S134 was removed from Table IV – CO Cluster 26 for floating roof tanks. Table IV – CF has been created for S134, which has been converted to a fixed roof tank abated by a vapor recovery system.

Table IV – CG, Table IV – CH, Table IV – CI
References to flares (60.113b(d)) have been eliminated. The tanks are abated by A14 Vapor Recovery System and the vapors are compressed and combusted with refinery fuel gas in combustion devices S908, S909, S912, or S991. The specific monitoring requirements for the combustion devices have been added (Condition #21053, Part 6).
Table IV – CV, Table IV – CW, Table IV – CX, Table IV- CY
References to flares (63.120(e)(4) have been eliminated. The tanks are abated by A14 Vapor Recovery System and the vapors are compressed and combusted with refinery fuel gas in combustion devices S908, S909, S912, or S991. The specific monitoring requirements for the combustion devices have been added (Condition #21053, Part 6).

Summary of Subpart J Applicability for Flares
Tesoro has notified the District that flares S854, S992, and S1013 are used only for emergency or upset gasses and are not subject to 60.104(a) and the District is not aware of information to the contrary. The draft of the Title V Revision 1 Permit incorrectly identified the flares as being subject to 60.104(a). The proper characterization is that the flares are exempt to the extent they are used only for emergency or upset gases. The applicability table below has been replaced with a new table that includes the thermal oxidizers at Tesoro.

Source Number	Sources Controlled	Construction Date	Applicable to Subparts A and J (Y/N)	Subject to sulfur limit in Subpart J, 60.104(a) ***(other than emergency or /upset?)***	Applicable 40 CFR 63 (Y/N)	Upset Gas Only
Flares						
S854 East Air Flare	See Note 1	Post 1973	Y	N	N	Y
S943 Tank 691 Safety Flare	S691	before 1973	N	N	N	Y
S944 North Coker Flare	See Note 1	Before 1973	N	N	N	Y
S945 South Coker Flare	See Note 1	Before 1973	N	N	N	Y
S922 Emergency Flare	See Note 1	Post 1973	Y	N	N	Y
S1012 West Air Flare	See Note 1	Before 1973	N	N	N	Y
S1013 Ammonia Plant Flare	S1401, S1415	Post 1973	Y	N	N	Y
Thermal						

Oxidizers						
A39 API Thermal Oxidizer (natural gas fired only)	S819 (API) & S1026 (Air Stripper)	Post 1973	See Note 2 below	See Note 2 below	Y	N
A40 Tract 6 Electric Thermal Oxidizer	6 pumps in Tract 6	Post 1973	Y	N	N	Y
A42 Hydrocracker Electric Thermal Oxidizer	8 pumps at the Hydrocracker	Post 1973	Y	N	N	Y
A43 Tract 3 Electric Thermal Oxidizer	5 pumps in Tract 3	Post 1973	Y	N	N	Y
A1402 Scot Tail Gas Unit/Incinerator	S1416, S1417, S1420	Constructed 1962, Modified 1983	See Note 2 below	See Note 2 below	Y	N

Note 1:
Direct Sources: S815, S816, S817, S806, S802, S1002, S1003, S850, S1004, S1005, S1007, S1008, S1009, S1105, Tanks S656 and S658, and Air Products No. 2 H2 Plant
Sources that are indirect via vapor recovery or wet gas system: S1001, Tanks S975, S603, S714, S513, S318, S367, S323, S699, S46, S317, S324, S431, S432, S457, S46, S21 (OOS).

Note 2:
EPA commented that NSPS Subpart J, an EPA-promulgated standard, is applicable to thermal oxidizers at petroleum refineries. EPA notes that thermal oxidizers combust gas, and are therefore a "fuel gas combustion device," which is defined at 40 CFR § 60.102(g) to mean "any equipment, such as process heaters, boilers and flares used to combust fuel gas . . .." Although thermal oxidizers in most instances combust gas for no purpose other than abatement of the gas stream, and although gas combusted in a thermal oxidizer may or may not have heating value sufficient to serve as fuel gas for refinery processes, the NSPS J definition of fuel gas is clear in declaring a "fuel gas" to be "any gas which is generated at a petroleum refinery which is combusted." See 40 CFR § 60.101(d).

If EPA's comment is correct, then Subpart J would be incorporated into the Title V permit as an applicable requirement for thermal oxidizers A39 and A1402, and a schedule of compliance would be established addressing instances of non-compliance. Because incorporation of Subpart J for these units was not part of the Revision 1 proposal, and because the issue deserves consideration based after an opportunity comment by all interested parties, the District will address incorporation of Subpart J for these units in the next revision. In the mean time, no Title V permit shield is provided, and so the Title V permit does not impact the applicability of Subpart J as a federal matter. Accordingly, the District encourages refineries with affected fuel

gas combustion devices to be considering their compliance options even while the next revision is pending.

In response to an EPA comment, Tesoro was asked to provide a description of the design parameters of each flare to support the finding that they are properly designed. Tesoro is working with an engineering contractor to research into further documentation that flares are designed to achieve a 98% or greater control efficiency. The contractor has contacted all the flare manufacturers and should obtain the letters within a few weeks.

Table IV – U Flares (S854, S922, S1013)
The new flare requirements and conditions have been added to the tables. NSPS Title 40 Part 60 Appendix A (Test Methods) has been moved to Table VIII Test Methods. Regulations 6-310, 6-410 and Regulation 10 have been added. Part 11F of Condition #19582 has also been added to help ensure that these flares burn only emergency/upset gases (updated after final EPA Review Letter of October 8, 2004).

Table IV – X Flares (S944, S945, S1012)
These flares were installed or last modified prior to 1973 and are not NSPS flares. All references to NSPS have been removed. S943 has been removed from Table IV – X since it is not subject to Regulation 12-11 as per Regulation 12-11-110. Regulations 6-310, 6-410, and Regulation 10 have been added.
Table IV –Xa Flare (S943)
A separate table has been added for S943. S943 was installed or last modified prior to 1973 is not an NSPS flare. S943 is exempt from Regulation 12-11 as per Regulation 12-11-110. Regulations 6-310, 6-410, and Regulation 10 have been added.

Table IV – Xb has been added to show the applicable requirements of A39 API Thermal Oxidizer. Table IV – Xc has been added to show the applicable requirements of A40 Tract 6 Electric Thermal Oxidzer, A42 Hydrocracker Electric Thermal Oxidizer, and A43 Tract 3 Electric Thermal Oxidizer. Table IV – Xd has been added to show the applicable requirements of A1402 Scot Tail Gas Unit/Incinerator.

Table IV – Y S901Boiler #7
The reference to BAAQMD Condition # 11433 Part 4a has been removed. Part 4a has been removed from the condition. BAAQMD Condition #11433, Part 2A and 2B have been added to the requirements. (See Permit Conditions Section.)

Table IV-Da Water Pump Diesel Engines (S1487, S1488)
Table has been created for the new sources, S1487 and S1488, in Application Numbers 6945 and 7776, respectively.

Table IV – DA Components
The requirements of 60.486(d), 60.482-10(b), 60.482-10(c), 60.482-10(e), 60.482-10(g) were added to the table.

Changes in response to Final EPA Review Letter (October 8, 2004)

Table IV – A Source Specific Applicable Requirements
Table IV – S S848 FCCU: Merox Unit, S850 No. 3 HDS Unit, S1020 No. 3 UOP Reformer
Table IV – AJi S1004 No. 2 Catalytic Reformer
The permit did not specify whether the requirement of Regulation 8, Rule 10 referred to the SIP approved version adopted on 7/20/83 or the new BAAQMD version adopted on 1/21/2004, which has not yet been SIP approved. Both versions must be included in the permit. All requirements of the SIP approved version are federally enforceable. The District has determined that additional monitoring is required to assure compliance with SIP Regulation 8-10-301.4. The monitoring required by BAAQMD Regulation 8-10-501 and 8-10-502 is adequate to determine compliance with SIP Regulation 8-10-301.4. These non-SIP regulations have therefore been flagged as federally enforceable.

EPA commented that NSPS Subpart A (40 CFR 60.1-60.19) should be incorporated into the permit when any NSPS is included as an applicable requirement. Because Subpart A is incorporated into every NSPS standard (unless otherwise specified), Subpart A applies to each facility that is subject to an NSPS. The District has assumed that incorporation of Subpart A is automatic with incorporation of any NSPS. Some District permits reflect this assumption by not specifically listing Subpart A as applicable. However, the District agrees with EPA that this should be clarified in the permit rather than assumed, and accordingly is adding specific reference to Subpart A. Not every section of Subpart A is relevant to every NSPS affected facility. Provisions of Subpart A that are not relevant at a facility may be disregarded.

Table IV – U S854 East Air Flare, S992 Emergency Flare, S1013 Ammonia Plant Flare

To address Item 3 of attachment 3 to EPA's letter dated October 8, 2004, the requirements contained in 40 CFR 60, Subpart A, Section 60.11 (a) and (d), concerning good engineering practice have been added for the following abatement devices: S854, S992, and S1013. The remaining subsections, 60.11(b), (c), and (e), concern compliance with opacity standards in the New Source Performance Standards. Since these abatement devices are not subject to the opacity standards, they are not subject to these subsections.

The sunrise date for BAAQMD permit condition #19528 for flares has been changed from 12/1/04 to 1/1/05 to make the compliance date consistent with the compliance 'reporting' date of 1/1/05.

Table IV – X S944 North Steam Flare, S945 South Steam Flare, S1012 West Air Flare
The sunrise date for BAAQMD permit condition #19528 for flares has been changed from 12/1/04 to 1/1/05 to make the compliance date consistent with the compliance 'reporting' date of 1/1/05.

Table IV - AA
S908-NO. 8 FURNACE, S909-NO. 9 FURNACE, S912-NO. 12 FURNACE, S913-NO. 13 FURNACE, S915-NO. 15 FURNACE, S916-NO. 16 FURNACE, S919-NO. 19 FURNACE, S920-NO. 20 FURNACE, S921-NO. 21 FURNACE, S922-NO. 22 FURNACE, S924-NO. 24 FURNACE, S926-NO. 26 FURNACE, S927-NO. 27 FURNACE, S928-NO. 28 FURNACE, S-929-NO. 29 FURNACE, S930-NO. 30 FURNACE, S931-NO. 31 FURNACE, S932-NO. 32 FURNACE, S933-NO. 33 FURNACE, S934-NO. 34 FURNACE, S935-NO. 35 FURNACE, S937-NO. 1 HYDROGEN PLANT FURNACE, S950-NO. 50

FURNACE
The sunrise date for BAAQMD permit condition #18372 for the NOx Box has been changed from 12/1/04 to 1/1/05 to make the compliance date consistent with the compliance 'reporting' date of 1/1/05.

Table IV – AF
S917 NO. 17 FURNACE, S951 NO. 51 FURNACE, S971–NO. 53 FURNACE, S972–NO. 54 FURNACE, S973–NO. 56 FURNACE, S974–NO. 55 FURNACE,
The sunrise date for BAAQMD permit condition #18372 for the NOx Box has been changed from 12/1/04 to 1/1/05 to make the compliance date consistent with the compliance 'reporting' date of 1/1/05.

Table IV – Xd A1402 Scot Tail Gas Unit/IncineratorNSPS 40 CFR 60 Subpart J was missing from the Table IV - Xd and had had been added.
Table IV – A Source Specific Applicable Requirements for B2758<u>Table IV – A1 Source Specific Applicable Requirements for B2758</u>
BAAQMD Regulation 9-1-302, General Emission Limitation, was deleted because it does not apply to facilities that have ground level monitoring pursuant to BAAQMD Regulation 1, General Requirements.

Table IV – AAa S925 NO. 25 Furnace, S938 NO. 38 Furnace E, S939 NO. 39 Furnace, S1412 Acid Plant Start-up Heater
Table IV – AA S908-NO. 8 Furnace, S909-NO. 9 Furnace, S912-NO. 12 Furnace, S913-NO. 13 Furnace, S915-NO. 15 Furnace, S916-NO. 16 Furnace, S919-NO. 19 Furnace, S920-NO. 20 Furnace, S921-NO. 21 Furnace, S922-NO. 22 Furnace, S924-NO. 24 Furnace, S926-NO. 26 Furnace, S927-NO. 27 Furnace, S928-NO. 28 Furnace, S-929-NO. 29 Furnace, S930-NO. 30 Furnace, S931-NO. 31 Furnace, S932-NO. 32 Furnace, S933-NO. 33 Furnace, S934-NO. 34 Furnace, S935-NO. 35 Furnace, S937-NO. 1 Hydrogen Plant Furnace, S950-NO. 50 Furnace
Table IV – AF S917 NO. 17 Furnace, S951 NO. 51 FurnacE, S971–NO. 53 Furnace, S972–NO. 54 Furnace, S973–NO. 56 Furnace, S974–NO. 55 Furnace,
Table IV – AF1 S991-NO. 57 Furnace, S1106-NO. 72 Furnace, S1470-NO. 71 Furnace
BAAQMD Regulation 9-1-302, General Emission Limitation, was deleted because it does not apply to facilities that have ground level monitoring pursuant to BAAQMD Regulation 1, General Requirements.

<u>Table IV – Ra S975-NO. 4 Gas Plant Cooling Tower, AND S982-NO. 2 HDS Cooling Tower</u>
Condition #19199 requires weekly sampling and testing for POC in the recirculating water return line of cooling towers S975 and S982. Condition #19199 limits the POC content in the recirculated water to detect and prevent process leaks into the cooling tower water. Tesoro uses "best modern practices" for leak detection and prevention and is not subject to Regulation 8, Rule 2 as per Regulation 8-2-114.

<u>District permit applications not included in this proposed permit</u>

This facility sends a large number of permit applications to the District every year. Review of the following permit applications was not completed in time to include the results in this Title V permits. The Title V permit will be revised periodically to incorporate these applications as permit revisions following the procedures in Regulation 2, Rule 6, Major Facility Review.

Application #	Project Description
2298	Replacement Storage Tank
2750	Coke Transfer Project
5626	Pipe Change
6673	Coke Silo Modifications
6674	S-1485 Replacement For S-312
6820	Fuel Gas Tie-In
7264	2 Portable Tanks
7311	3 Portable Tanks
7642	2 Temporary Boilers
7678	1 Temporary Boiler
8002	Storage Tank

V Schedule of Compliance

No change has been made to this section.

VI. Permit Conditions

As part of the Title V permit reopening, the District is proposing changes made to several permit conditions, these include: conditions regarding flares and Regulation 9-10 requirements, and, as appropriate, revised conditions for clarity and enforceability. The Title V permit is being updated to accurately reflect these applicable requirements. All changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all ‘strikeout” language will be deleted; all “underline” language will be retained, subject to consideration of comments received. Where changes have been made more than once as a result of comments from Tesoro, the original underlined text has been struck through and the proposed new text is italicized and underlined.

Condition #4357

EPA Comment Number 32 was to be addressed in Revision 1 of the Title V Permit. EPA points out that the SO2 emissions from the flares should be monitored to assure compliance with the emission caps for the plant. It is unclear at this time whether the existing emission cap includes flares. More time is required to review the emission caps. The plant emission caps for all criteria pollutants will be thoroughly reviewed for all sources in Revision 2 of the Title V Permit.

EPA Comment Number 38 was also to be addressed in Revision 1 of the Title V Permit. EPA wants to "add CEMs or another accurate method of quantifying SO2 emission from any other units with SO2 emissions from refinery feed stock (i.e., not just from combustion of refinery fuel gas that is already continuously monitored)." Except for combustion sources, there are no other

sources of SO2 from refinery feed stock. Only combustion sources supply the heat of reaction required to oxidize H2S to SO2. Tesoro does not have any asphalt tanks onsite, which would be the only other source of SO2.

Condition #8077, Part B4B
Remove S1031 2 H2 Plant Reforming Furnace and S1032 2 H2 Plant Dissociation Furnace because they are not owned by Tesoro and should not be included in the Title V Permit. The sources are owned and operated by Air Products.

Condition #8077, Part B9
The sources in part B9 are already in operation. Startup conditions have been deleted.

Condition #11433, Part 2A and 2B have been added to clarify monitoring requirements. The addition is consistent with Tesoro's current practices and is required to show compliance with the emission limits in Condition #11433, Part 2.

Condition #18372
Regulation 9-10 NOx Box condition language has been added in parts 27 through 36. The current NOx Box language in parts 5 through 17 and part 24 expire on June 1, 2004. The new NOx Box conditions are effective June 1, 2004. Parts 1 through 3, 18 through 23, and 25 through 26, contain conditions that are not related to the NOx Box and have been retained. All other sources subject Regulation 9, Rule 10 have been added to part 27 and are subject to the conditions of the new NOx Box condition language. The following sources were added to the Regulation 9-10 condition: S908, S909, S915, S917, S924, S928, S929, S930, S931, S932, S933, S934, S935, S937, S951, S973, and S974.

Regulation 9-10 Background Analysis and Basis for Conditions

The following discussion explains changes to refinery permit conditions prescribing monitoring for compliance with Regulation 9-10 at units for which CEMs are not required, commonly known as the "NOx Box" permit conditions. To facilitate the reader's understanding of the proposed changes, this discussion provides background on the 9-10 rule and CEM-equivalency monitoring provided for therein.

Regulation 9-10 requires each refinery to reduce NOx emissions from boilers and heaters. All of the boilers and heaters at each refinery above 10 MMBTU that were in existence on January 5, 1994 are included in determination of compliance with a facility-wide average emission rate of 0.033 lb/MMBtu. BAAQMD 9-10-301.

In order to demonstrate compliance, each affected heater must be equipped with a NOx CEM, or equivalent verification system (BAAQMD 9-10-502). Where combustion processes are sufficiently static over time, emissions factors combined with MMBtu data can be used to verify compliance with accuracy equivalent to that of CEMs. An emissions factor approach can be deemed equivalent if the integrity of the emissions factors can be assured. The NOx Box approach does this by: 1) verifying emissions factor accuracy through source-testing, 2) defining the parameters of operation within which emissions factors have been proven, and 3) requiring that any excursions outside of those parameters be the subject of a new source test.

Source tests to establish the NOx Box are conducted at extreme operating conditions (the "corners" of the NOx Box). As long as the facility operates within the perimeter defined by these source tests, emissions are assumed to be equal to the highest emission rate tested. By monitoring firing rate and O2 in the exhaust, the validity of using the emission factor is reasonably assured. Periodic source tests confirm that the emission factor is still valid for the operating range. Operation outside the box results in scrutiny to determine compliance with the emission standard, including conduct of a test at the unproven conditions.

That the NOx Box approach is consistent with the intent of Regulation 9-10 is evidenced in the District Staff Report for that rule, which stated:

> "District staff recommends that CEMS be only required on units equipped with SCR and SNCR due to high capital and maintenance costs. NOx can vary significantly for SCR and SNCR units based on temperature and amount of ammonia injected. On the contrary, NOx from non-SCR and SNCR units equipped with FGR and low NOx burners and are relatively stable and CEMS should not be necessary for these units."

Rule Development Staff Report, Regulation 9, Rule 10, November 19, 1993, p. 7.

Federal Enforceability

9-10-301 and 9-10-502 are not included in the SIP, and are therefore not federally enforceable. Revisions to the NOx Box Condition in the Title V permit may be made by Administrative Amendment. BAAQMD 2-6-201.

Changes from the current conditions

The current Title V refinery permits contain NOx Box conditions based on an earlier District policy for demonstrating verification system equivalence. Experience with implementation of these conditions has allowed the District to identify certain areas for improvement. One problem with the current set of conditions is that it allows sustained operation at conditions that have never been tested for compliance with the NOx Box emission factor.

The proposed condition addresses this problem, and several others that have been raised by EPA, the facilities, and the public.

The changes can be summarized as follows:

- The old policy allowed for operation at conditions outside the perimeter of test conditions. The reason for this was to account for the fact that requiring the facility to test the furnace at specific conditions could have an expensive impact on production. While this is still true, there was also considerable opportunity for circumvention, where a facility could have sustained operation outside the box, and then test at conditions that happened to be well within the box. The new policy requires that a test be conducted that

would capture the new conditions. The impact on process operation is mitigated by allowing the facility to delay testing until the next periodic source test.

- The old policy used one emission factor for all allowable operating conditions. The new policy allows two boxes, with two factors. One lower factor applies to routine operating conditions, while another higher factor may be used for normal operation at higher levels. This provides more flexibility without sacrificing the assurance of compliance.
- The NOx box can be a 5-sided polygon, rather than a simple box.
- Because the policy is, in some ways, more stringent, time to conduct the source tests to establish the new boxes has been allowed. Existing NOx Box conditions will remain in effect until June 1, 2004, when they will be replaced by the new conditions.
- Under the old policy, two Notices of Violations (NOVs) issued because of a single source would automatically trigger a requirement to install a NOx CEM. Under the new policy, two NOVs will trigger a review by District staff to determine if the NOx Box for that source is still deemed equivalent to a NOx CEM. If it is not, a NOx CEM will be required.
- The new policy allows a facility to operate at low firing rates (idling) for a limited period of time, without having to expand the box to include those conditions. There are two reasons for this. First, emissions at low fire are much lower than normal, even if the emission factor is higher. Second, it is an extreme hardship to require the facility to turn down its production in order to test at very low fire conditions.

The following summarizes the various parts of the proposed NOx Box conditions:

Part 27 of the condition lists all of the combustion devices subject to 9-10-301.

Part 28 requires installation of oxygen monitors. This is necessary because some of the smaller heaters are not required by Regulation 9-10 to have oxygen monitors. Oxygen content must be monitored continuously to demonstrate compliance with the condition. Operators will be allowed six months to install any newly-required oxygen monitors.

Part 29 requires operation of each combustion device within the box. Failure to operate within the box is a violation of this condition, unless excused by one of the deviation procedures in Part 33.

Part 29B covers small units (<25MMBtu/hr). The NOx Box for small units is essentially the entire potential operating range for the unit. Rather than establishing the “corners” of the box, the box is defined to be the full range of firing rates, and all possible oxygen contents. Existing data may be used to establish the emission factor that will be applied. Unless the unit is fired above its rated capacity, it is not possible to operate outside the box. An annual source test will confirm that the factor used is still valid.

Part 30 requires the operators to conduct the source tests necessary to establish the initial NOx boxes. Each combustion device may have two NOx boxes, one larger than the other. The smaller NOx box, with the lower emission factor, represents the typical operating range of the unit. As long as the unit operates within this range, the listed emission factor and the measured firing rate will be used to determine the unit’s contribution to the refinery-wide average. The operator may

choose to have a second, larger box, to cover unusual operating conditions. This larger box will have a higher emission factor associated with it. The allowance for two boxes means that a higher emission factor can be used for occasional operation at harsher, higher-emitting conditions, while still allowing use of a lower emission factor during normal operation. The District believes this is an appropriate degree of flexibility that does not unduly complicate implementation.

The NOx box may be expanded by replacing corner points with new ones that have been tested. The operator may also decide to increase the emission factor associated with a NOx box. This may allow operation at a wider range of conditions; it may be necessary because a source test has shown that the old factor is no longer valid; it may be desirable to provide a margin of compliance.

Part 31 describes the actual NOx box.

Part 31A contains the table that defines the perimeter of the NOx box, the perimeter of the second NOx box (if the operator chooses to use one), and the emission factors used

Part 31B allows established emission factors to be used for operation outside the box at low firing rate conditions. Although NOx or CO emission factors (expressed as lb/MMBtu) may be higher under these conditions, overall emissions are lower because of the greatly reduced firing rate. Testing under these conditions would have a significant cost because the operator would need to reduce firing (and production) to conduct a test. Instead, reduced firing will be treated in the same manner as a shutdown: for purposes of calculating the refinery average, the furnace will be treated as if it were operating at its normal firing rate and emission rate. In other words, though emission factors may be inaccurate in this low-firing range, there is not a possibility that emissions will be underestimated.

Part 31C allows a facility to conduct source tests outside the NOx box in order to increase the range of allowable operation.

Part 32 describes the steps to be taken if operation outside the box occurs.

Operation outside the range for which the emission factor has been demonstrated raises certain questions. Is the emission factor valid for these conditions? If not, and if emissions were higher, did the higher emissions result in a violation of the refinery-wide average? The procedures of this part answer these questions.

Operation outside the NOx box triggers a requirement for the operator to test the unit under conditions that capture the new operating conditions. The test may be conducted in lieu of the next scheduled periodic source test (small furnaces, which may not normally be tested so soon, will have to be tested within 8 months). It is possible that the operator may not be able to reproduce the operating conditions during a source test. Failure to conduct the test will result in a violation of the Part 31 of the permit condition, and would be considered a violation of 9-10-502. If more than one such violation occurs during a 5-year period at a given unit, the District will review the NOx Box for that unit to determine whether it is, in fact, equivalent to a CEM. The District considered whether to establish in permit conditions a threshold for concluding that the

NOx Box approach was inadequate for a particular unit and that CEMs must be installed. However, a simple algorithm for making this determination was not apparent. Instead, the District will evaluate each situation case by case, and will use its authorities to require installation of a CEM where appropriate.

If the test shows that emissions are below the factor used for the box, then no violation has occurred. The operator may choose to expand the box to utilize the new test results. This emission factor will then be used in the future.

If, however, the test shows that the emission factor for the new operating conditions exceeds the NOx box factor, the operator must reassess past emissions utilizing the higher emission factor. This may result in violations of the refinery-wide average (Regulation 9-10-301).

Part 33 requires periodic source tests to demonstrate that the NOx Box factor is still valid. Usually, tests will be conducted at whatever conditions the unit is operating at on the day of the test. If, however, it has been some time since the extreme corners of the box have been tested, or if there is reason to believe that difficult operating conditions are being avoided during tests, the APCO may require that the test be conducted under specific conditions.

Small furnaces are tested once per year. Large furnaces are tested every six months.

Part 34 requires periodic CO source tests for units equipped with NOx CEMs.

Part 35 requires installation of a CO CEM if two sources tests show CO levels greater than 200 ppm. Normal CO concentrations are an order of magnitude lower. One high CO reading is an anomaly. Two high readings are an indication that CO may be a problem, and continuous monitoring of firing rate and O2 is not equivalent to continuous monitoring for CO.

Part 36 requires maintenance of records for the monitoring required by the permit condition.

After the public comment period for Revision 1, comments were received from the Western States Petroleum Association (WSPA). As a result of those comments, the conditions to the NOx box were modified slightly to fix typographical and grammatical errors and to allow an extension of source test report submittals if requested by the refineries. Source testing is also required within 30 days of startup if the source has been shutdown for a period of time that is longer than the required source test frequency.

In Part 28, the clarification for “each source with a maximum firing rate greater than 25 MMBtu/hr” has been added. Part 29 B does not require a minimum or maximum O2 for units with a maximum firing rate less than 25 MMBtu/hr.

<u>Condition #19528, Parts 11 and 11A</u>
Parts 11 and 11A have been amended and Parts 11B through 11F have been added with the new flare monitoring language.

Background Analysis for Flare Conditions

All of the refinery Title V permits contain permit conditions implementing requirements for flares. As explained in the response to comments on the initial Title V permit issuance, development of Title V permit conditions related to flaring occurred in parallel with the District's rulemaking on flare monitoring. The flare monitoring rule (BAAQMD 12-11) addressed many of the issues that the District was attempting to address in parallel through Title V, and so the Title V effort was to a significant extent subsumed by incorporation of 12-11 into the final permits. The District's flare monitoring rule in some ways went beyond similar existing regulations promulgated by other agencies and in that sense was unprecedented in scope and effect. As far as the District is aware, its efforts to craft Title V permit conditions is similarly innovative, and similarly has undergone re-evaluation and evolution. Even prior to issuance of the refinery Title V permits, District staff had begun a re-evaluation of some of the approaches and determinations slated for inclusion in the final permits. The current proposal to revise certain Title V permit conditions for flares is the outcome of that re-evaluation. The future effective dates attached to some of the Title V flare conditions was, in part, a reflection of the expectation that a re-evaluation was underway and that some additional time should be allowed before effort and expense were invested in a particular approach.

All of the flare conditions that were added during the initial Title V permit issuance process proposed for deletion and replacement with new conditions. The new conditions address proper operation, monitoring for visible emissions, and enforcement of determinations that NSPS Subpart J sulfur monitoring is not applicable.

The new conditions apply only to flares that are subject to Regulation 12-11. All of the flares that are fully exempt from 12-11 (vapor recovery flares, wastewater flares) operate under conditions, and burn materials, that are unlikely to result in visible emissions. Additionally, because they are not emergency flares, they are not likely to encounter flow rates above capacity. The reasons that led to exemption of these flares from 12-11 are also the reasons why additional Title V conditions addressing these three areas are not appropriate.

Proper operation

Proper flare operation is being addressed to support the conclusion that flare emissions are not subject to the miscellaneous VOC regulation, BAAQMD 8-2. A source is exempt from District Regulation 8 (and therefore from 8-2) if, pursuant to 8-1-110.3, organic compounds are reduced by at least 90% due to abatement by incineration. Flare emissions qualify for this exemption if there is a reasonable assurance that 90% reduction is occurring. The District surveyed available information on flare efficiency and concluded there is a strong assurance that a 90% reduction is achieved during proper flare operation. The Title V permit conditions being proposed are intended to provide assurance that flares will be operated properly.

The District's Advisory Council has reviewed flare available information about refinery flares, and has rendered an opinion that hydrocarbon destruction efficiency of a properly designed and operated flare is greater than 98%. District staff have been working with the facilities, activists, citizen groups, and various experts to develop flare monitoring and control regulations. In the course of that work, the current body of knowledge about refinery flare operation has been reviewed. A consensus seems to be that the modern steam-assisted flares commonly found at

refineries are "properly designed" relative to the purposes for which they are used. District staff have determined that a properly designed flare may be said to be "properly operated" if the flow rate is below the design capacity, if the gas being flared has sufficient fuel value (i.e., 300 Btu/cubic foot), and if flame is present at all times.

The District is in the process of gathering additional information about refinery flare design with the goal of further informing its conclusions regarding the proper design and operation of flares at the bay area refineries. The information being collected includes information relevant to the flare design elements contained in 40 CFR 60.18. At the time of issuance of this permit revision, that information gathering effort has not been completed. The flare design information and any conclusions drawn from it by the District will be included in the statement of basis for the next revision of the refinery permits, currently scheduled for Spring of 2005.

Because it has been established by Tesoro that flares S854, S992, and S1013 burn solely emergency/upset gases, condition #19528, Part 11F applies to these flares.

Design Capacity

Part 11 of the flare condition requires the facility to operate the flare below its rated capacity. This raises the question: what happens if more gas needs to be flared than the flare is rated for? In that situation, all of the gas will be routed to the flare; the alternative is to vent the gas to the atmosphere without abatement, which in turn would precipitate the extreme safety hazard that flares are designed to prevent. The District therefore anticipates that the safe operation of the flare will cause the flare to exceed its capacity, with a possible reduction in destruction efficiency. This will result in a violation, but the event will be handled safely. The proposed permit condition is not expected to prohibit the use of the flare as necessary to avoid safety hazards. There is a functional overlap between the goal of preventing release of uncombusted gases for safety reasons, and the 90% reduction threshold contained in 8-1-110.3. A failure to achieve at least 90% reduction would be at odds with preventing the safety hazard posed from release of uncombusted gases. In this sense, flares are categorically distinguishable from the typical "end of pipe" air pollution control device that is installed to meet a regulatory requirement but does not otherwise promote the self-interest of the facility. Refineries have a strong interest in proper flare operation that prevents the potentially severe consequence of releasing explosive gases over or near the facility. The fact that proper operation for safety purposes is also proper operation for District regulatory purposes provides a substantial assurance that 90% will be achieved. The permit condition prohibiting operation above rated capacity provides an additional regulatory enforcement tool to deter such events from occurring.

Part 11A requires recordkeeping to demonstrate compliance with Part 11.

Fuel value

Flares that are designed to receive low-btu gas are equipped with supplemental fuel gas lines to ensure that the gas vented to the flares has sufficient heating value. The new flare monitoring rule, 12-11, requires vent gas composition monitoring. District staff have presumed that the systems designed to ensure that flared gases are combustible are working properly. The monitoring required by 12-11 will provide a means of verifying this.

Flame

12-11-503 requires monitoring to ensure that flame is present. A permit condition would be redundant.

Visible emissions

The flare monitoring rule is designed to gather information to ensure that flares are properly operated, and to be used for possible a future control measure. It is not designed to assure compliance with other applicable rules, specifically those regarding particulate and visible emissions. Therefore, the District is proposing conditions to provide a reasonable assurance of compliance with visible emissions and particulate emissions standards.

The new Title V permit condition requires frequent monitoring of a flare during a flaring event. The operator must check the flare for visible emissions every half hour until the flaring event is over, or until a violation is detected.

If the flare is under video surveillance, and if the video image is of sufficient clarity for the operator to say with certainty that no visible emissions are present, the video may be used. Otherwise, the operator must directly view the flare. Regulation 6-301 is the Ringelmann standard, and requires a trained observer to read the smoke plume. When a trained observer is not available, the facilities have agreed to operate under a more stringent "no visible emissions" standard.

Part 11D states that, if the surveillance is by a trained observer, compliance will be demonstrated using EPA Method 9 (the method specified in Regulation 6-301). Otherwise, an untrained observer observes the stack, and if visible emissions are detected for three consecutive minutes, the flare violates the surrogate standard contained in the permit condition.

NSPS Subpart J

Any flare built or modified after June 11, 1973 is subject to NSPS Subpart J. Modification of a flare, as defined in Subpart J, would likely only occur if the burner tip is replaced by one with a larger capacity – which is likely to be a rare event. As a result, NSPS Subpart J typically applies to flares that are built after the effective date.

There is only one requirement for flares subject to subpart J: a limitation on the sulfur content of gas combusted, and the monitoring to demonstrate compliance. Subpart J exempts from this requirement the flaring of upset gases, and fuel gas that is the result of an emergency breakdown.

Some of the facilities have identified NSPS flares (flares built after 1973) that are not designed to burn anything other than upset gases or fuel gases that result from emergency breakdowns. These flares are therefore exempt from the NSPS monitoring requirement, provided they are used only in that manner. However, at least some of these flares have a potential for broader use because the physical construction that enables flaring of gases from upsets or emergencies also enables flaring of gases from routine processes.

Part 11F imposes a condition on these flares to assure compliance with the exemption criteria. The same prohibition found in Part 7 could be enforced by directly enforcing applicability of Subpart J, that is, by a determination that the facility has been in violation of Subpart J if, for instance, routine disposal of gases through flaring has occurred. However, enforcement of Subpart J in federal court (through the CAA citizen enforcement provisions) is an unwieldy tool for use by a permitting agency such as the District that can much more readily enforce in state court. By incorporating the prohibition against routine flaring into Title V permits, enforcement of this prohibition becomes substantially more feasible for the District.

Issues raised by comments

The District received a number of comments related to flares during the initial permit issuance. In anticipation that similar comments may be received regarding this proposal, the District here offers anticipatory responses. The formerly-received comments are presented below, together with a response that tells how the comment is addressed by the revised permit condition. The District will of course respond to any new comments received or to refinements of comments noted here.

Comment: The Air District should require the performance of independent testing using available methods for monitoring flare efficiency under worst case conditions.
Response: There is no way to directly monitor flare efficiency. However, it is possible to monitor flare parameters (flow rate, etc) in a way to ensure that flares operate as designed. This is the approach taken in Part 1 of this proposal. The District disagrees with the suggestion that, because performance measurement techniques are limited, it follows that specification of minimum flare destruction efficiency is contrary to Title V requirements. Flare destruction efficiency is a provision of 12-11, and therefore should be incorporated in the permit. Despite the technical limits of direct compliance verification, the requirement has relevance and import as a design requirement.

This comment, proposing as it does “independent testing” and “worst case conditions,” is not a monitoring proposal, but a recommendation for data development. While perhaps appropriate for rule development, such a proposal is not within the scope of Title V.

Comment: A flaring event that lasts between 3 and 15 minutes could exceed opacity limits, and this type of violation would go unmonitored under existing permit monitoring requirements. The District implies that opacity limitations need only be monitored if the emission is “significant” or is “ a real problem.” The District’s opacity regulation does not allow for these exemptions from its requirements.

Response: The comment is based upon the faulty premise that the purpose of Title V monitoring is to detect every violation. Continuous monitoring for violations can be cost-prohibitive, impractical, and even, in a case such as this, at odds with good air pollution practices. The purpose of Title V monitoring is to provide reasonable assurance of compliance. This requires a balance between cost and difficulty of the testing, and the likelihood and severity of non-

compliance. See, for example, EPA's guidance on the required monitoring for other sources subject to visible emission standards.

Because the visual observation and sample collection that comprise flare monitoring are going to be performed by the process unit operator, both Rule 12-11 and the permit condition require the initial monitoring to occur 30 minutes into the episode. This is to allow the operator to place his or her attention, at the beginning of the event, where it belongs: trying to address the conditions that are resulting in flaring. A flaring event that can be ended within 15 minutes should be, and should not be prolonged while the operator goes out to look at the stack. A flaring event that goes on for thirty minutes, though, is probably not going to be resolved so quickly. Three minutes to check on the flare's appearance is not going to seriously affect the duration of the incident.

The frequency and duration of monitoring for visible emissions is a matter of judgment, balancing the value of information gained against the costs of collection. Taking into consideration all of the factors, District staff have determined that a periodic check every half hour provides the necessary assurance that significant non-compliance will be detected.

Comment: Regulation 8-2 should apply to refinery flares. Either monitoring to assure compliance with 8-2 should be imposed, or monitoring to assure compliance with the 85% destruction efficiency requirement in 8-1-110.3.
Response: Part 1 and Part 2 of the revised permit condition are intended to address this. By ensuring that the flare is properly operated, the condition assures that combustion efficiency is maintained at a high level, thereby assuring that application of the exemption contained in 8-1-110.3 is appropriate. As noted above, flare destruction efficiency cannot be measured directly, and so a reasonable substitute must be used. The District believes there is a reasonable basis for concluding that 90% destruction efficiency will be met because efficient destruction is the very reason for the existence of a flare. However, the permit conditions in this proposal will provide an added measure of assurance and a regulatory enforcement tool to supplement this inherent design goal.

Comment: The permit should contain monitoring to determine compliance with subpart J, including fuel H2S monitoring for those flares subject to the fuel H2S limit.
Response: The fuel H2S monitoring is, in fact, the only monitoring needed to determine compliance with subpart J. This has been included in Table IV an VII for each flare subject to the limit. Flares subject to Subpart J, but not the limit, because they only burn upset gas, are subject to Part 7 of the flare condition.

Comment: Please also include record-keeping and reporting requirements for those flares subject to NSPS J but exempt from the fuel H2S limit.
Response: It is unclear what monitoring is being requested. If the proposal is to include monitoring to ensure that non-exempt gases are not vented to exempt flares, the requirements of Regulation 12-11-401 should suffice. We do not consider, however, this monitoring to be federally enforceable. The only federally enforceable monitoring for assuring compliance with Subpart J is spelled out in Subpart J.

EPA Comment: We also understand that the District will include opacity monitoring on process flares for compliance with Ringlemann/opacity Regulations 6-301 & 302 and each of the requirements that apply on a unit specific basis, and mark all flame monitoring as "continuous" monitoring.
Response: The new condition includes visible emission monitoring to assure compliance with Regulations 6-301 and 6-302.

EPA Comment: Where the necessary Title V monitoring coincides with the District's Regulation 12-11 flare monitoring rule, the District may list Reg 12-11 as the monitoring that will satisfy Title V if it is listed as federally enforceable.
Response: Only monitoring to assure compliance with a federally enforceable limit is supposed to be labeled as "federally enforceable."

EPA comment: For sources that must meet a given control efficiency, the District must include a compliance determination and monitoring method for those requirements.
Response: The District has determined that properly designed, properly operated flare meet 98% destruction efficiency. All refinery flares are properly designed and some assurance of proper operation derives from the fact that an improperly operated flare is not an effective safety device. Monitoring to provide an additional assurance that each flare is properly operated has been added to the permit. See discussion above.

EPA Comment: For thermal oxidizers, the permit evaluations [*sic*] must also contain the applicable requirements.
Response: The District permit contains all requirements identified by the District as applicable.

EPA Comment: The permits must also require monitoring the flow rate if necessary to determine compliance with residence time requirements. This monitoring is in addition to the temperature monitoring that the District already includes.
Response: For electric flares abating pump fugitives (A-40 through A-43), condition #11609 parts A1, B1, C1, and D1 contain minimum residence time requirements. Parts A2, B2, C2, and D2 require both a continuous temperature monitor as well as flow indicators.

<u>Condition #19528, Part 12.1</u>
For organic liquid storage tanks that are exempt from Regulation 8, Rule 5 due to the exemption in Regulation 8-5-117, the initial contents of the tank must be tested to ensure that the true vapor pressure of the organic liquid is less than 0.5 psia. If the organic liquid being stored is on Table 1 of Regulation 8, Rule 5, then Table 1 may be used for vapor pressure determination. Otherwise, BAAQMD MOP, Method 28 shall be used. Condition #19528, Part 12 already requires vapor pressure determination when the type of organic liquid in the tank is changed. Part 12.1 was added to ensure that the 'current' contents are less than 0.5 psia.

<u>Condition #19528, Parts 16</u>
Start-up and shutdown reporting conditions for process units were deleted by mistake and have been replaced. This requirement is a state-only requirement (not federally enforceable). The basis of the condition is Regulation 2-1-403. Table IV – A for the facility already contains Condition #19528, part 16 as an applicable requirement.

The following permit conditions are being incorporated into the Title V permit. These conditions were not included in the Title V permit as initially issued because they were either established or changed during or subsequent to the issuance process. Because the current action is merely to incorporate these conditions into the Title V permit, the District is not soliciting comment on the substance of these conditions. For informational purposes, however, the engineering evaluation for each condition is attached to this statement of basis. Revisions were made to the permit conditions for existing sources as follows:

Condition #573
Tesoro applied for a modification to S903 No. 5 Boiler (Application Number 8301) to allow the use of KI-85 corrosion-inhibitor. Material throughput limits have been updated in the condition. A new condition number, #21136, has been created for S903 in the Engineering Evaluation for Application Number 8301. Instead of creating a new condition number, the existing condition for S903, Condition #573, has been updated.

Condition #8636 and Condition #20923
S134 has been modified in Permit Application #7768. S134 has been deleted from Condition #8636 for external floating roof tanks. S134 is now subject to Condition #20923 for a fixed roof tank abated by a vapor recovery system. Condition limits for tank contents and throughput have been imposed in Condition #20923.

Condition #20099
Condition #20099 is a new condition for S532, which has been modified to operate as an oil water separator from a fixed roof storage tank. Modifications were made in Application Number 6201.

Condition #19762, Part B
S1484 was given the Permit to Operate in Application Number 4579. Part B of Condition #19762 contains the conditions for S1484 and was erroneously omitted from the condition in the Title V Permit. Part B has been added to Condition #19762.

Condition #20672
Condition #20672 is a new condition for new sources S1487 and S1488. S1487 and S1488 were issued the Authority to Construct in Application Numbers 6945 and 7776.

Condition #21053, Part 5 has been added to require the owner/operator to monitor fuel gas H2S with a continuous online H2S analyzer to determine compliance with Regulation 9-1-313.2 for S802 FCCU and S1401 Sulfur Recovery Unit.

Condition #21053, Part 6 has been added to show the monitoring requirements for the combustion devices (S908, S909, S912, S913, or S991) that burn vapor from the A14 Vapor Recovery System that abates the following tanks: S318, S367, S134, S137, S513 (basis: 60.113b(c)(2)) AND S323, S317, S324, S431, S432, S457, S46, S603, S21 (basis: 63.646(a), 63.120(d)(5)).

Changes in response to Final EPA Review Letter (October 8, 2004).

Condition #18372 sunrise dates for compliance with the NOx Box conditions have bee been changed from 12/1/04 to 1/1/05 to make the compliance date consistent with the compliance 'reporting' date of 1/1/05.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

Changes made to this section of the permit generally reflect the changes to other parts of the permit that have previously been discussed. The "Future Effective Dates" for the Permit Conditions have been entered.

The requirements of Regulations 8-5-328.1.2 and 8-5-502 have been added to the following: Table VII – BE Cluster 5 and Tables VII – BF, BG, BH, BI, BJ, BKL, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY ,BZ, CA, CB, CC, CD, and CE , which are all 'Cluster 11'.

Annual source testing was added as per Regulation 8-5-306 to the following tank tables: Table VII – BE Cluster 5, BI Cluster 13, BS Cluster 25, BT Cluster 25, BU Cluster 25, CA Cluster 28, CB Cluster 28, CB Cluster 28, CC Cluster 28, CD Cluster 28, and CE Cluster 28.

For Table VII – BJ Cluster 20 and Table VII – BK Cluster 20, for 60.112a(a)(1)(iii) and (iv) requirements, the monitoring type has been specified. "Visual Inspection" is required on an event basis.

Table VII - BS, Table VII – BT, Table VII – BU
References to flares (60.113b(d)) have been eliminated. The tanks are abated by A14 Vapor Recovery System and the vapors are compressed and combusted with refinery fuel gas in combustion devices S908, S909, S912, or S991. The specific monitoring parameters for the combustion devices have been added.

Table VII – CB, Table VII – CC, Table VII – CD, Table VII - CE
References to flares (63.120(e)(4) have been eliminated. The tanks are abated by A14 Vapor Recovery System and the vapors are compressed and combusted with refinery fuel gas in combustion devices S908, S909, S912, or S991. The specific monitoring parameters for the combustion devices have been added.

Vapor pressure determination is required for the initial or current tank contents for organic liquid storage tanks that are exempt from Regulation 8, Rule 5 due to Regulation 8-5-117. Condition #19528 Part 12.1 had been added to require vapor pressure determination if the tank contents are not found on Table 1 of Regulation 8, Rule 5. Condition #19528, Part 12 already required vapor

pressure determination when the organic liquid type is changed in the tank. The following tables have been updated to require initial vapor pressure determination: Table VII – AS, AT, AU Cluster 01a and Table VII – AV, AW, AX, AY, and AZ Cluster 01b.

Table VII – Ia has been added for S532 Oil Water Separator, which was modified in Permit Application Number 6201.

Table VII – Ib has been added for new source S1484 in Permit Application Number 4579.

Monitoring for 9-1-313 has been added to Table VII – K for S802 FCCU Fluid Catalytic Cracker.

Tables VII – K S802 FCCU Fluid Catalytic Cracker
Table VII – AK S1401 Claus 3-Stage Sulfur Recovery Unit

1) Monitoring of the facility fuel gas H2S is measured by Tesoro and is now required by Condition #21053 Part 5 in order to demonstrate compliance with Regulation 9-1-313.2. All sulfur compounds in the fuel gas are assumed to be converted to SO2, which is measured continuously with the SO2 CEM. The SO2 CEMs indicate compliance between the annual source tests, which are also required to demonstrate compliance with Regulation 9-1-313.2.
2) Tesoro has agreed to change the effective date for particulate testing for 9-1-313.2 from June 1, 2004 to December 1, 2003. This changes the date that the source must be completed by from June 2, 1005 to December 1, 2004.

Table VII – AK S1401 Claus 3-Stage Sulfur Recovery Unit
Annual source testing for PM has been added to determine compliance with 6-310.
Table VII – R for flares S854, S992, and S1013 has been updated to reflect the monitoring required by BAAQMD Regulation 12-11. Monitoring for Regulation 6 has been added. Monitoring has also been added for 60.18(c).

Table VII - S has been created for flares S944, S945, and S1012 that were built or last modified prior to 1973. These flares are subject to BAAQMD Regulation 12-11 monitoring, but are not subject to NSPS 40 CFR 60 Subpart J (sulfur oxide compliance schedule, fuel gas H2S limit, and SO2/O2 or H2S monitoring). Monitoring for Regulation 6 has been added.

Table VII – Sa has been created for flare S1013 that requires monitoring for Regulation 6.

Table VII – Sb has been created for A39 API Thermal Oxidizer. Table VII – Sc has been created for A40 Tract 6 Electric Thermal Oxidzer, A42 Hydrocracker Electric Thermal Oxidizer, and A43 Tract 3 Electric Thermal Oxidizer. Table VII – Sd has been created for A1402 Scot Tail Gas Unit/Incinerator.Table VII – Ta for No. 4 Gas Plant Cooling Tower (S975) Condition #18435 requires that the water circulation flow rate be measured by a third party on a monthly basis beginning June 1, 2204. This requirement was added to the table.

Added monitoring required by Condition #19199, Part D6 to Table VII – Ta. Added monitoring required by Condition #19199, Part E6 to Table VII – Tb.

Added S134 to Table VII – BT. Table S134 has been modified from a floating roof to fixed roof tank with vapor recovery.

Table VII – Y, Table VII – Z, Table VII – AA, Table VII – AC, Table VII – AC1, Table VII – AF for heaters, boilers, and furnaces have been updated to reflect the new Regulation 9-10 NOx Box conditions in Condition #18372.

Table VII – Y and Table VII – AA
Federally enforceable monitoring for 9-10-303 was erroneously deleted and has been replaced. The monitoring requirement citation has been updated (Condition 18372, Part 33).

Source testing requirements have been added for ESP's in Table VII_- W S904 Boiler #6 and Table VII – AB S903 Boiler #5. Source testing will be required to determine compliance. Source testing will be used to establish the correlation between opacity and particulate emissions.

Monitoring requirements have been clarified for S901 in Table VII – V to reflect Tesoro's current practices as required to demonstrate compliance with the emission limits in Condition #11433, Part 2.

Clarification of process trains to address preface to EPA Comment #73:
The CO gas from S802 FCCU goes to S901 #7 Boiler and the stack flue gas is abated by A30 ESP. The CO gas from S806 Coker goes to S903 #5 Boiler and the stack flue gas is abated by A806 ESP. A11 ESP is a two stage ESP on S904 #6 Boiler which can be used as a CO boiler when S903 #5 Boiler is inoperable. As seen in Table IIB of the Title V permit, the operating parameters of the ESP's are to be established. Source testing will be used to establish a correlation between the opacity monitor readings on the ESP's and particulate emissions.

Table VII – Da has been added for new source S1487 in Permit Application Number 6945.

Table VII – Db has been added for new source S1488 in Permit Application Number 7776.

Condition #19528, Part 14 does not contain any requirements for S660, therefore S660 was removed from Table VII – Ja for S810 and S821. S660 was added to Table J since it is abated by the A9 Coker Precipitator.

Table VII-CF Components

1) Monitoring has been added to the table for Regulations 8-18-306.1 and 1-18-307. A recordkeeping requirement has been added for Regulation 8-18-306.2.
2) The requirement for a CEM as per 60.695(a)(1) has been clarified to specify that a continuous 'temperature' monitor is required. Continuous temperature monitors are required for thermal oxidizers used as control devices.
3) Monitoring has been added for the following regulations: 60.482-10(b), 60.482-10(c), 60.482-10(g), 61.242-11(b), and 61.242-11(c).
4) Recordkeeping requirements have been added to the monitoring requirements for 61.242-11(g) and 61.242-8(a).

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section VI of the permit. Inspection procedures from Appendix A of the NSPS Title 40 Part 60 was moved from Table IV – U for flares to Table VIII.

IX. Permit Shield:

Additional detail has been added to the permit shields in Tables IX –1 through IX – 4. The applicability dates of the requirements have been added to the explanations in the table.

Changes in response to Final EPA Review Letter (October 8, 2004)

Table IX A-6

The permit shield is against Regulation 8, Rule 2 on the basis that the sources are subject to Regulation 10, which incorporates NSPS by reference. Four of the flares are not subject to NSPS and the permit shield does not apply. The flares not subject to NSPS (S943, S944, S945, and S1012) have been deleted from the permit shield.

D. Alternate Operating Scenarios:

No change has been made to this section.

E. Compliance Status:

The facility is not currently in violation of any requirement. Moreover, the District has updated its review of recent violations and has not found a pattern of violations that would warrant imposition of a compliance schedule.

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APPENDIX A
GLOSSARY

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

API
American Petroleum Institute

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

BARCT
Best Available Retrofit Control Technology

Basis
The underlying authority that allows the District to impose requirements.

C5
An Organic chemical compound with five carbon atoms

C6
An Organic chemical compound with six carbon atoms

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEC
California Energy Commission

CEQA
California Environmental Quality Act

CEM
A "continuous emission monitor" is a monitoring device that provides a continuous direct measurement of some pollutant (e.g., NOx concentration) in an exhaust stream.

CFP

Clean Fuels Project

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

CO2
Carbon Dioxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

DAF
A "dissolved air flotation" unit is a process vessel where air bubbles injected at the bottom of the vessel are used to carry solids in the liquid into a froth on the liquid surface, where it is removed.

DWT
Dead Weight Ton

District
The Bay Area Air Quality Management District

DNF
Dissolved Nitrogen Flotation (See DAF)

dscf
Dry Standard Cubic Feet

dscm
Dry Standard Cubic Meter

E 6, E 9, E 12
Very large or very small number values are commonly expressed in a form called scientific notation, which consists of a decimal part multiplied by 10 raised to some power. For example, 4.53 E 6 equals (4.53) x (10^6) = (4.53) x (10 x 10 x 10 x 10 x 10 x 10) = 4,530,000. Scientific notation is used to express large or small numbers without writing out long strings of zeros.

EFRT
An "external floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an EFRT, the floating roof is not enclosed

by a second, fixed tank roof, and is thus described as an "external" roof.

EPA
The federal Environmental Protection Agency.

ETP
Effluent Treatment Plant

Excluded
Not subject to any District Regulations.

FCC
Fluid Catalytic Cracker

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

FR
Federal Register

FRT
Floating Roof Tank (See EFRT and IFRT)

GDF
Gasoline Dispensing Facility

GLM
Ground Level Monitor

grains
1/7000 of a pound

Graphitic
Made of graphite.

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

H2S
Hydrogen Sulfide

H2SO4

Sulfuric Acid

Hg
Mercury

HHV
Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60F and all water vapor is condensed to liquid.

IFRT
An "internal floating roof tank" minimizes VOC emissions with a roof with floats on the surface of the liquid, thus preventing the formation of a VOC-rich vapor space above the liquid surface as the level in the tank drops. If such a vapor space were allowed to form, it would be expelled when the tank was re-filled. On an IFRT, the floating roof is enclosed by a second, fixed tank roof, and thus is described as an "internal" roof.

ISOM
Isomerization plant

LHV
Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60F.

Lighter
"Lightering" is a transfer operation during which liquid is pumped from an ocean-going tanker vessel to a smaller vessel such as a barge. Like any liquid transfer operation, lightering of organic liquids produces organic vapor emissions.

Long ton
2200 pounds

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MDEA
Methyl Diethanolamine

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Act and implemented by District Regulation 2, Rule 6.

Mo Gas
Motor gasoline

MOP
The District's Manual of Procedures

MOSC

Mobil Oil Sludge Conversion (licensed technology)

MSDS
Material Safety Data Sheet

MTBE
methyl tertiary-butyl ether

NA
Not Applicable

NAAQS
National Ambient Air Quality Standards

NESHAPs
National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC
Non-methane Hydrocarbons

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx
Oxides of nitrogen.

SNCR
Selective Non-Catalytic Reduction

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O2
The chemical name for naturally occurring oxygen gas.

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Total Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

Process Unit
For the purpose of start-up and shutdown reporting, a unit is defined as found in 40 CFR Part 60 Subpart GGG, which states:

> *Process Unit means components assembled to produce intermediate or final products from petroleum, unfinished petroleum derivatives, or other intermediates; a process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.*

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

Regulated Organic Liquid
"Regulated organic liquids" are those liquids which require permits, or which are subject to some regulation, when processed at a liquid-handling operation. For example, for refinery marine terminals, regulated organic liquids are defined as "organic liquids" in Regulation 8, Rule 44.

RFG
Refinery Fuel Gas

RMG
Refinery Make Gas

SCR
A "selective catalytic reduction" unit is an abatement device that reduces NOx concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates at a specific temperature range, and injected ammonia to promote the conversion of NOx compounds to nitrogen gas.

Shutdown
For reporting purposes only, a shutdown shall be defined as any of the following; there is no process feed to a unit, no furnace fires, or the boundary blinds are installed.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

Start-up
For reporting purposes only, a start-up shall be defined as any of the following; the removal of boundary blinds, first fire to a furnace, or the introduction of process feed to a unit. A start-up only occurs following a shutdown unless in involves a newly constructed process unit.

SO2
Sulfur dioxide

SO2 Bubble
An SO2 bubble is an overall cap on the SO2 emissions from a defined group of sources, or from an entire facility. SO2 bubbles are sometimes used at refineries because combustion sources are typically fired entirely or in part by "refinery fuel gas" (RFG), a waste gas product from refining operations. Thus, total SO2 emissions may be conveniently quantified by monitoring the total amount of RFG that is consumed, and the concentration of H2S and other sulfur compounds in the RFG.

SO3
Sulfur trioxide

THC
Total Hydrocarbons (NMHC + Methane)

therm
100,000 British Thermal Unit

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TRS
"Total reduced sulfur" is a measure of the amount of sulfur-containing compounds in a gas stream, typically a fuel gas stream, including, but not limited to, hydrogen sulfide. The TRS content of a fuel gas determines the concentration of SO2 that will be present in the combusted fuel gas, since sulfur compounds are converted to SO2 by the combustion process.

TSP

Total Suspended Particulate

TVP
True Vapor Pressure

VOC
Volatile Organic Compounds

Units of Measure:

bbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower
btu	=	British Thermal Unit
C	=	degrees Celsius
F	=	degrees Farenheight
f^3	=	cubic feet
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m^2	=	square meter
min	=	minute
M	=	thousand
Mg	=	mega-gram, one thousand grams
µg	=	micro-gram, one millionth of a gram
MM	=	million
mm	=	millimeter
MMbtu	=	million btu
mm Hg	=	millimeters of Mercury (pressure)
MW	=	megawatts
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

Symbols:

<	=	less than
>	=	greater than
≤	=	less than or equal to
≥	=	greater than or equal to

APPENDIX B

BAAQMD ENGINEERING EVALUATION REPORTS

TDC:tc\4579evl4\tesoro\eval/f\07-26-02

ENGINEERING EVALUATION
TESORO REFINING AND MARKETING COMPANY
APPLICATION #4579 - PLANT #12758

BACKGROUND

Ultramar, Inc. submitted this permit application to modify the permit conditions imposed regarding the following equipment to change the material authorized for storage from MTBE, ETBE, or TAME to gasoline. After this permit application was submitted to the District, Tesoro Refining and Marketing Company (TRMC) gained ownership of the Avon refinery. The new owner has requested that the permit be processed with TRMC specified as the permittee. The current source description is as follows:

S-775 Internal Floating Roof Tank; Tank 849, Capacity: 109,000 BBL, Storing: MTBE, ETBE or TAME

After the change in permit conditions is granted, the new source description will be as follows:

S-775 Internal Floating Roof Tank; Tank 849, Capacity: 109,000 BBL, Storing: Gasoline

S-775 was originally issued an Authority to Construct pursuant to permit application #6625. Pursuant to permit application #14580, the source description was changed from being an external floating roof tank to being an internal floating roof tank. In permit application #14580, the amount of POC emissions charged to the facility for S-775 was calculated to be 2701.24 pounds per year.

Pursuant to permit application #4579, S-775 is proposed to store gasoline only. MTBE, ETBE, or TAME will not be allowed for storage at S-775. The maximum true vapor pressure of all materials stored will be 11 psia.

Additionally, in this application Ultramar, Inc. has applied to obtain an accelerated permit to operate for S-605 to modify the source description for S-605 from being an oil water separator to being a pressure vessel. Pursuant to a telephone discussion with Sharon Lim on Friday, July 5, 2002, Tesoro clarified that existing permitted source S-605 may or may not be present at the facility and that this application should, in fact, be used to process the accelerated permit application for the new pressure vessel that is abated by vapor recovery at A-14. Therefore, S-605 was not modified. S-1484 is a new source. The pressure vessel, S-1484, will have a volume of approximately 1350 gallons. It will be used to process oily water from the desalters at S-1001 No. 50 Unit. S-1484 will be used to remove some of the tramp (slop) crude oil entrained in the effluent desalter wash water before it is dumped to the refinery's sewer system for treatment at the refinery's wastewater plant. The vessel will act as a quiescent vessel in which oil and water will separate due the difference in their densities and through the use of demulsifying chemical additives. The S-1484 source description is as follows:

S-1484 Oil Water Separator; Pressure Vessel; Volume: 1350 Gallons, Capacity: 286 BPH abated by A-14 Vapor Recovery

The effluent wash water from the No. 50 Unit desalters may contain tramp (slop) crude oil in quantities ranging from less than 1 percent to as high as 5 or more percent.

EMISSIONS CALCULATION

The Tanks 4.0 emission calculation for S-775 appears at the end of the engineering evaluation report.

S-775 Internal Floating Roof Tank; Tank 849, Capacity: 109,000 BBL, Storing: Gasoline

From Tanks 4.0 Output

POC:	16918.1 lb/yr	
New POC:	8.459 Ton/yr	(this value is used for air toxin calculations)
Prior POC:	1.351 Ton/yr	(this value already charged in application #14580)
Net POC:	7.108 ton/yr	(this value is charged to cumulative and must be offset)

air toxins	%	lb/yr
benzene	2	3.38E+02
ethylbenzene	2	3.38E+02
hexane	0	0.00E+00
hydrogen sulfide	0	0.00E+00
naphthalene	1	8.46E+01
toluene	5	8.46E+02
xylenes	7	1.18E+03

S-1484 Oil Water Separator; Pressure Vessel; Volume: 1350 Gallons, Capacity: 286 BPH abated by A-14 Vapor Recovery

$$\frac{2{,}505{,}360\ \text{gal}}{\text{yr}} \left| \frac{0.2\ \text{lb}}{1000\ \text{gal}} \right. = 501.1\ \text{lb/yr POC}$$

Emission Factor is from Edition 5, EPA AP-42, Table 5.1-2, January 1995

POC:	501.1 lb/yr
POC:	0.251 ton/yr

air toxins	ppb	lb/yr
benzene	61,000	3.06E-02
ethylbenzene	79,000	3.96E-02
hexane	280,000	1.40E-01
hydrogen sulfide	900,000	4.51E-01
naphthalene	0	0.00E+00
toluene	220,000	1.10E-01
xylenes	346,000	1.73E-01

Emissions Summary to Charge to the Plant Cumulative and Requiring Offsetting

POC (lb/yr)	14717.2
POC (ton/yr)	7.359

Summary	Emissions
air toxins	lb/yr
benzene	3.38E+02
ethylbenzene	3.38E+02
hexane	1.40E-01
hydrogen sulfide	4.51E-01
naphthalene	8.46E+01
toluene	8.46E+02
xylenes	1.18E+03

PLANT CUMULATIVE INCREASE

POC: 0.000 tpy (current) + 7.359 tpy (proposed) = 7.359 tpy (new total)

TOXIC RISK SCREENING ANALYSIS

Toxic Pollutant Emitted (lb/yr)	Emission Rate (lb/yr)	Risk Screening Trigger Required?	Screening
benzene	3.38E+02	6.7E+00	YES
ethylbenzene	3.38E+02	N/A	NO
hexane	3.87E-01	8.3E+04	NO
hydrogen sulfide	1.24E+00	8.1E+03	NO
naphthalene	8.46E+01	2.7E+02	NO
toluene	8.46E+02	3.9E+04	NO
xylenes	1.18E+03	5.8E+04	NO

A risk screen has been completed by the District's Toxic Section because the projected maximum annual benzene emission rate is greater than the risk screening trigger for benzene. This conclusion is based on the risk triggers listed in Table 2-1-316. The Toxics Section has quantified the health risk associated with application #4579 at less than 1 in a million at 0.33 in a million and with a hazard index of 0.00019. The memorandum from the Toxic Section indicates that this level of risk is acceptable pursuant to the District's Risk Management Policy. See the memorandum included in the application folder from B. Bateman, Engineering Manager, dated July 15, 2002.

The risk screen completed by Toxics was based on the permitted throughput of wastewater at S-1484 being 17,520,000 BPY (2000 BPH). After the risk screen was completed, the applicant opted to reduce the permitted throughput of wastewater at S-1484 to 2,505,360 BPY (286 BPH).

BEST AVAILABLE CONTROL TECHNOLOGY

BACT for S-1484

BACT is not triggered for S-1484. Anticipated and permitted POC emissions from this source are less than 10 pounds per highest day, at less than 4.0 pounds per day, on average.

BACT for S-775

BACT is triggered for S-775. Anticipated and permitted POC emissions from this source are equal to or greater than 10 pounds per highest day. The District's BACT/TBACT Workbook provides the following information as BACT for an internal floating roof tank:

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Vapor recovery system w/ an overall system efficiency ≥98%*[a,T] 2. *BAAQMD Approved roof w/ liquid mounted primary seal and zero gap secondary seal, all meeting design criteria of Reg. 8, Rule 5. Also, no ungasketed roof penetrations, no slotted pipe guide pole unless equipped with float and wiper seals, and no adjustable roof legs unless fitted w/ vapor seal boots or equivalent*[a,T]	1. *Thermal Incinerator; or Carbon Adsorber; or Refrigerated Condenser; or BAAQMD approved equivalent*[a,T] 2. *BAAQMD Approved Roof and Seal Design*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *Vapor recovery system w/ an overall system efficiency ≥98%*[a,T] 2. *Same as for POC above*	1. *Carbon Adsorber; or Refrigerated Condenser; or BAAQMD approved equivalent*[a,T] 2. *BAAQMD Approved Roof and Seal Design*[a,T]

BACT (1) Thermal Incinerator

For S-775, in order for the use of a thermal incinerator to be cost effective, the installed cost of the abatement device could not exceed $145,072.00. This value is back calculated from the equations in the District BACT/TBACT Workbook for cost effectiveness and annualized cost based on 98 percent, by weight, abatement of POC emissions from S-775.

This approach was taken because of the limited data available to determine the cost of retrofitting an existing internal floating roof tank with vapor recovery to a thermal incinerator, or carbon adsorption, or a refrigerated condenser. Two quotes for the installed cost a thermal incinerator (afterburner) in a separate permit application #10519 were $800,000 and another was $1,200,000. These quotes did not include any construction costs associated with adding a cover

and/or vapor recovery to any external floating roof tank. Both quotes are in excess of $145,072.00 and therefore it is not cost effective to require that S-775 be abated with vapor recovery ducted to a thermal incinerator abating POC emissions by 98 percent, by weight.

Calculation of annualized cost:

$800,000.00 x (0.163 + 0.01 + 0.01 + 0.02 + 0.05) = $202,400.00

0.163	cost recovery factor
0.01	tax
0.01	insurance
0.02	G and A factor
0.05	operating and maintenance

cost in $/ton = $202,400.00 / (0.98) (16,918.1 lb/yr/2000 lb/ton)
= $24,415.35/ton

The cost in $/ton is > $17,500.00 and therefore BACT (1) is not cost effective for a thermal oxidizer.

BACT (1) Carbon Adsorption

It is not cost effective to require that S-775 be abated with a carbon adsorption system with a capture/destruction efficiency of $\geq$ 98 wt %. This conclusion is based on the office memorandum from D. Jang to Permit Engineers dated March 20, 1992 regarding POC abatement cost efficiency. To make use of the graph attached to Jang's memorandum, the POC exhaust rate was calculated as a flow rate in standard cubic feet based on the average POC emission rate from S-1484. The calculated POC emission rate is approximately 2 pounds of POC per hour based on the Ideal Gas Law. It is reasonable to use the Ideal Gas Law for this calculation because the pressure involved is low, less than 2 atmospheres. The Ideal Gas Law calculation is provided below:

PV = nRT

P = 1 atm
R = 1.314
T = 63 F = 17 C = 17 C+273 K = 290 K
n = 2 lb/65 lb/lb-mole = 0.031 lb-moles

V = nRT/P

V = (0.031) (1.314) (290) / (1)
= 11.3 ft3

Therefore, 11.3 cubic feet of POC and 2 pounds of POC are emitted from S-1484 per hour. This equates to 0.03 standard cubic foot per minute of POC. Based on the Jang memorandum, it is not cost effective to require that S-775 be equipped with vapor recovery and a carbon adsorption

system. The exhaust flow rate, in the absence of additional blowers to transport the POC emissions from S-775 to the carbon system, is 0.03 sfcm. This exhaust flow rate and anticipated POC emission rate, when plotted on the graph attached to the Jang memorandum does not support requiring that S-775 be retrofitted with a roof and ducting to vapor recovery system.

A fan could and would be used to increase the exhaust flow rate of POC from S-775 to transport POC emissions from S-775 to a carbon adsorption system, the cost of retrofitting S-775 with a new roof and ducting to Tesoro's vapor recovery system is estimated to be in excess of $150,000. This cost does not include the cost of the carbon adsorption system or the ongoing electrical, hauling, and carbon regeneration costs associated with a carbon adsorption system installed to abate S-775. The cost estimate is obtained from B. Nishimura's research during Regulation 8, Rule 5 rule development activities during which I was informed that ducting existing refinery fixed roof tanks to existing vapor recovery systems would have a variable cost in area of $75,000.00 or more per tank. To retrofit S-775 with a roof and ducting to route emissions to vapor recovery should cost double this amount. The surface area of S-775 is in excess of 15,000 square feet, at 15394 square feet. In summary, the expected cost for abatement in $/ton is > than $17,500.00. Therefore, BACT (2) and not BACT (1) must be applied to S-775.

BACT (2) for S-775

To satisfy BACT requirements, S-775 must be exclusively equipped and operated with a District approved roof with a liquid mounted primary seal and a zero gap secondary seal, each complying with Regulation 8, Rule 5. Additionally, at S-775 there shall be no ungasketted roof penetrations, no guide pole that is slotted (unless the guide pole is equipped with float and wiper seal), no adjustable roof legs (unless fitted with a vapor seal boot or equivalent).

Permit conditions for S-775 will require that S-775 is to be operated with a liquid mounted mechanical shoe seal, that its secondary seal is a District approved zero gap rim mounted seal, that all roof penetrations at S-775 are gasketted, that each adjustable roof leg at S-775 is fitted with a District approved vapor seal boot, that each slotted guide pole is equipped with a District approved float and wiper seal and pole sleeve.

OFFSETS

Emission offsets are required for S-775 and for S-1484. For S-775, the source for which a change in permit conditions is sought, POC offsets amounting to 1.351 ton/yr were already provided pursuant to permit application #14580. This prior cumulative has already been deducted from the cumulative increase charged in this application. See the emission calculation for S-775 above. POC emissions amounting to 7.359 ton/yr must be offset for S-775 and S-1484. The remaining POC offsets that are due will come from permit application #669, in which S-1462 was never constructed though POC emission offsets were provided by Tosco amounting to 9.508 ton per year (8.268 tpy x 1.15). The offsets were obtained from banking certificate #641 for POC emissions originally banked in 1987. TRMC has opted to cancel the Authority to Construct for S-1462 issued pursuant to permit application #669 and to use the emission offsets

for application #4579. The emission reductions are not contemporaneous emission reduction credits as defined in Regulation 2, Rule 1, Section 242:

> **2-2-242 Contemporaneous:** The five year period of time immediately prior to the date of application for an authority to construct or permit to operate. (Adopted June 15, 1994)

Therefore, 8.174 tons/yr of POC must be surrendered to the District, calculated as follows:

7.359 ton/yr x 1.15 = 8.463 ton/yr POC.

	POC (tpy)	Explanation
New POC:	8.459	(this value is used for air toxin calculations for S-775)
Prior POC:	1.351	(this value already charged to cumulative in application #14580 for S-775)
Net POC:	7.108	(this value is charged to cumulative for S-775 in application #4579 and must be offset)
Net POC:	0.251	(this value is charged to cumulative for S-1484 in application #4579 and must be offset)
Ratioed to 1.15	8.463	(this amount of POC must be offset)
Offsets available:	9.508	(this value is available for use from application #669 S-1462 @ 8.268 x 1.15)
Net refund:	1.045	(this value is the amount to be refunded to Tesoro Refining and Marketing Company)

Therefore, POC emission credits amounting to 1.045 tpy are due to be refunded to Tesoro Refining and Marketing Company.

STATEMENT OF COMPLIANCE

S-775 is subject to Regulation 8, Rule 5: Storage of Organic Liquids. This source is subject to the requirements of Regulation 8, Rule 5, Sections 304.2, 311.2.1 or 311.2.3, 321.1, 321.3.1, and 321.3.2.

Section 304.2 invokes the applicability of Section 311.2.1 or 311.2.3. It reads as follows:

> **8-5-304 Storage Tanks Larger than 75 m^3:** A person shall not store organic liquid in any storage tank with a capacity greater than 75 m^3 (19,813 gal) unless such tank meets the following conditions:
> **304.2** Storage tanks with a capacity of 150 m^3 (39,626 gal) or greater storing an organic liquid with a true vapor pressure greater than 25.8 mm Hg (0.5 psia) must meet the requirements of Section 8-5-311.

Either 311.2.1 or 311.2.3 is applicable to S-775, but since S-775 must be equipped with a liquid mounted mechanical shoe seal in addition to a secondary seal that is a zero gap rim mounted seal, Section 311.2.3 applies to S-775 and S-311.2.1 does not apply. The two Sections read as follows:

> **8-5-311 Vapor Loss Control Device Requirements:** The vapor loss control device shall be one of the following:
> **311.2** An internal floating roof which satisfies one of the following conditions:

2.1 A liquid mounted primary seal, mounted in full contact with the liquid in the annular space between the tank shell and floating roof; or

2.3 A liquid mounted primary and a secondary seal which satisfies the requirements of Sections 8-5-321 and 322, if the seals were installed after February 1, 1993.

Section 311.2.3 invokes the applicability of Sections 321 and 322. Section 321 sets forth requirements for the primary seal at S-775. Sections 321.1, 321.3.1, and 321.3.2 apply to the primary seal at S-775. These Sections read as follows:

8-5-321 Primary Seal Requirements: A person shall not operate a storage tank equipped with a primary seal subject to the requirements of Section 8-5-311 unless such tank meets the following conditions:

321.1 There shall be no holes, tears, or other openings in the primary seal fabric which allow the emission of organic vapors.

321.3 Metallic-shoe-type seals shall be installed so that one end of the shoe extends into the stored liquid and the other end extends a minimum vertical distance of 61 cm (24 in.) for external floating roofs and 18 inches for internal floating roofs above the stored liquid surface.

3.1 The geometry of the shoe shall be such that the maximum gap between the shoe and the tank shell is no greater than double the gap allowed by the seal gap criteria for a length of at least 46 cm (18 in.) in the vertical plane above the liquid surface.

3.2 For welded tanks, no gap between the tank shell and the primary seal shall exceed 3.8 cm (1-1/2 in.). No continuous gap greater than 0.32 cm (1/8 in.) shall exceed 10% of the circumference of the tank. The cumulative length of all primary seal gaps exceeding 1.3 cm (1/2 in.) shall be not more than 10% of the circumference, and the cumulative length of all primary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 40% of the circumference.

Section 322 sets forth secondary seal requirements. The secondary seal at S-775 must comply with Sections 322.1, 322.2, and 322.3. These Sections read as follows:

8-5-322 Secondary Seal Requirements: A person shall not operate a storage tank equipped with a secondary seal subject to the requirements of Section 8-5-311, unless such tank meets the following conditions:

322.1 There shall be no holes, tears, or other openings in the secondary seal fabric which allow the emission of organic vapors.

322.2 The secondary seal shall allow easy insertion of probes up to 3.8 cm (1-1/2 in.) in width in order to measure gaps in the primary seal.

322.3 For welded tanks, no gap between the tank shell and the secondary seal shall exceed 1.3 cm (1/2 in.). The cumulative length of all secondary seal gaps exceeding 0.32 cm (1/8 in.) shall be not more than 5% of the circumference of the tank.

NSPS requirements are triggered for S-775. This source is expected to comply with the applicable NSPS requirements. These requirements are set forth in 40 CFR 60, Subpart Kb, Section 60.112b (2). These requirements are expected to be met because S-775 is required to be equipped/operated such that it is of welded construction, such that its primary seal is a liquid mounted mechanical shoe seal, such that its secondary seal is a zero gap rim mounted seal, such that all roof penetrations are gasketted, such that each adjustable roof leg shall is fitted with a vapor seal boot, such that each slotted guide pole is equipped with a float and a wiper seal and a pole sleeve.

S-1484 is subject to Regulation 8, Rule 8: Wastewater (Oil Water) Separators. S-1484 meets the definition of a wastewater oil-water separator as set forth in Section 202 of this regulation and it also meets the definition of an oil-water slop oil vessel as set forth in Section 213 of this regulation:

8-8-202 **Wastewater (Oil-Water) Separator:** Any device used to separate liquid organic compounds from oil-water waste streams (excluding Wastewater Separator Forebay, Air Flotation (AF) units, Sludge-dewatering Units, Oil-Water Separator and /or AF Unit Slop Oil Vessels, and Junction Boxes).

8-8-213 **Oil-Water Separator Slop Oil Vessel:** Any vessel which, as its sole function, treats or dewaters oil-water separator slop oil.

S-1484 has a capacity of 286 barrels per hour, or 200 gallons per minute. S-1484 is subject to Sections 302.3 and 305 of Regulation 8, Rule 8:

8-8-301 **Wastewater Separators Greater than 760 Liters per Day and Smaller than 18.9 Liters per Second:** A person shall not operate any wastewater separator and/or forebay with a design rated or maximum allowable capacity greater than 760 liters per day and smaller than 18.9 liters per second (oil-water separators and/or forebays between 200 gals per day to 300 gals per min.) unless such wastewater separator and/or forebay is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

301.3 An OC vapor recovery system with a combined collection and destruction efficiency of at least 95 percent, by weight.

8-8-305 **Oil-Water Separator And/Or Air Flotation Unit Slop Oil Vessels:** A person shall not store any oil-water separator and/or air flotation unit sludges in an oil-water separator slop oil vessel unless such oil-water separator slop oil vessel is equipped with one of the following:

305.2 An OC vapor recovery system with a combined collection and destruction efficiency of at least 70 percent, by weight.

S-1484 is expected to comply with Sections 301.3 and 305 of Regulation 8, Rule 8, because S-1484 is a pressure vessel abated by vapor recovery. The vapor recovery system abating S-1484 captures organic emissions at S-1484 and routes them to the No. 1 Gas Plant for treatment and eventual use in the refinery's fuel gas system. The combustion devices that may burn the emissions abated by A-14 at S-1484 are expected to be burned and hence abated by at least 95%, by weight.

This project (change of conditions for S-775 and accelerated Permit to Operate for S-1484) is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. The ministerial nature of this project is set forth in Permit Handbook Chapter 3.3 and Permit Handbook Chapter 4.2.

This project is not within 1,000 ft of the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis has been completed for this project. The Toxics Section has quantified the health risk associated with application #4579 at less than 1 in a million at 0.33 in a million with a hazard index of 0.00019. The memorandum from the Toxic Section indicates that this level of risk is acceptable pursuant to the District's Risk Management Policy. See the memorandum included in the application folder from B. Bateman, Engineering Manager, dated July 15, 2002.

NSPS BACT, PSD, and offsetting requirements have been satisfied.

NESHAPS are not triggered.

CONDITIONS

S-775 Internal Floating Roof Tank; Capacity: 109,000 BBL, Storing: Gasoline

1) Permittee/Owner/Operator shall ensure that the total throughput of all VOC/petroleum materials to S-775 does not exceed 11,336,000 barrels during any 12 consecutive month period.
(basis: cumulative increase, toxics, offsets)

2) Permittee/Owner/Operator shall ensure that the true vapor pressure of each and all VOC/petroleum materials throughput to and/or stored in S-775 is always less than or equal to 11 psia.
(basis: cumulative increase, toxics, offsets)

3) Permittee/Owner/Operator shall ensure that S-775 is of welded construction, that its primary seal is a District approved liquid mounted mechanical shoe seal, that its secondary seal is a District approved zero gap rim mounted seal, that all roof penetrations at S-775 are gasketted, that each adjustable roof leg at S-775 is fitted with a District approved vapor seal boot, that each slotted guide pole is equipped with a District approved float and wiper seal and pole sleeve.
(basis: BACT, Regulation 8-5, cumulative increase, toxics, NSPS, Regulation 10 Subpart Kb, offsets)

4) Permittee/Owner/Operator shall ensure that S-775 is equipped with ONLY the following fittings, in the number indicated in parenthesis:
access hatch (1)
radar level detector at access hatch (1)
automatic gauge float well (1)
roof drain (1)
adjustable roof leg (84)
slotted guide pole-sample well (1)
vacuum breaker (2)
(basis: cumulative increase, toxics, offsets)

5) VOC/petroleum material other than Gasoline may be throughput to or stored at S-775, if in doing so, Permittee/Owner/Operator complies with each and all of the following:
a) the Permittee/Owner/Operator shall ensure that the storage of each material complies with all other conditions applicable this source.
b) the Permittee/Owner/Operator shall ensure the storage of each material complies with all other applicable regulatory requirements applicable to this source.

c) the Permittee/Owner/Operator shall ensure that it creates and maintains accurate and factual District approved records that demonstrate to the District's satisfaction that no toxin listed in Table 2-1-316 is emitted from S-775 in an amount in excess of the toxin's respective trigger emission level set forth in Table 2-1-316.
(basis: cumulative increase, toxics, offset)

6) On a monthly basis, in a District approved log, the Permittee/Owner/Operator shall record the throughput of each VOC/petroleum material throughput to S-775, in gallon or barrel units, by name (e.g., naphtha, Jet A, gasoline) for each month and for each rolling 12 consecutive month period. The Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is be made available to District staff upon request.
(basis: cumulative increase, toxics, offsets)

S-1484 Oil Water Separator; Pressure Vessel; Volume: 1350 Gallons, Capacity: 286 BPH abated by A-14 Vapor Recovery

1) Permittee/Owner/Operator shall ensure that the total throughput of all VOC/petroleum materials to S-1484 does not exceed 2,505,360 barrels during any 12 consecutive month period.
(basis: cumulative increase, toxics, offsets)

2) Permittee/Owner/Operator shall ensure that S-1484 is of welded construction and that S-1484 is vapor tight. Vapor tight has the same meaning as set forth in Regulation 8, Rule 8.
(basis: Regulation 8-8, cumulative increase, toxics, offsets)

3) **Notwithstanding any provision of District regulations allowing for the mal-function of A-14 due to a valid breakdown at No. 1 Gas Plant vapor recovery compressor(s),** Permittee/Owner/Operator shall ensure that S-1484 is abated by A-14 at all times that S-1484 is operated and at all times that S-1484 contains VOC/petroleum materials.
(basis: Regulation 8-8, cumulative increase, toxics, offsets)

4) On a monthly basis, in a District approved log, the Permittee/Owner/Operator shall record the throughput of liquid material throughput to S-1484, in gallon or barrel units, for each month and for each rolling 12 consecutive month period. The Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from

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date of last entry, and that it is be made
available to District staff upon request.
(basis: cumulative increase, toxics, offsets)
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RECOMMENDATION

Issue an **Accelerated Permit to Operate** to **Tesoro Refining and Marketing Company** for the following equipment:

S-1484 Oil Water Separator; Pressure Vessel; Volume: 1350 Gallons, Capacity: 286 BPH abated by A-14 Vapor Recovery

Issue a **Change of Conditions Letter** to **Tesoro Refining and Marketing Company** for the following equipment explaining that conditions have been modified for the following equipment:

S-775 Internal Floating Roof Tank; Tank 849, Capacity: 109,000 BBL, Storing: Gasoline

Issue a **Banking Reissue Balance Letter** to **Tesoro Refining and Marketing Company** for the following amount of POC emission credits explaining that the following banking credit is being refunded:

POC: 1.045 TPY

The refund is for offsets provided for permit application #669 pursuant to banking certificate #641 for S-1462. The Authority to Construct issued for S-1462 pursuant to permit application #669 has been cancelled and 1.045 tpy of POC are available to be refunded to the permittee, Tesoro Refining and Marketing Company.

_____
Terry D. Carter
Senior Quality Engineer
Permit Services Division

TDC:tc/4579evl4/tesoro/eval/f/07-26-02

TDC:tc/6201evl/tesoro/eval/f/10-29-02

ENGINEERING EVALUATION
TESORO REFINING AND MARKETING COMPANY
APPLICATION #6201 - PLANT #14628

BACKGROUND

Tesoro Refining and Marketing Company submitted this permit application to obtain District authorization to demolish the following existing permitted source used as an oil water separator for desalter brine effluent at the No. 50 Unit desalters at S-1001 No 50 Unit:

S-46 Fixed Roof Tank; Tank 46, Volume: 252K gallons, Storing: Oily Water, Crude Oil, Slop Oil abated by A-14 Vapor Recovery System

and replace it with the following source, currently operating under an exemption from permitting, for use as an oil water separator for the same desalter brine effluent at the No. 50 Unit desalters at S-1001 No. 50 Unit:

S-532 Fixed Roof Tank; Tank 532, Volume: 630K gallons, Storing: Oily Water, Crude Oil, Slop Oil abated by A-14 Vapor Recovery System

After its modification, the source description for S-532 will be as follows:

S-532 Oil Water Separator; Tank 532, modified to operate as an Oil Water Separator; Volume: 630K Gallons, Capacity 286 BPH abated by A-14 Vapor Recovery

Essentially S-532 will be converted into S-46 service. S-46 is used as an oil-water separator to better recover crude oil from water that comes from the desalter. Once S-532 is converted into S-46 service, S-46 will be demolished. The existing Vapor Recovery System (A-14) will have its piping extended to S-532. S-532 will be modified to assure vapor tightness and suitable regulators will be installed. As part of the project, Tesoro will also install a new floor with leak detection, and new feed nozzles to allow for a change in elevation due to the new floor. Secondary containment will also be added.

S-46 and S-532 will not be operated concurrently. S-532 is currently exempt from permitting. S-46 is currently permitted and it will be demolished after the District issues an Authority to Construct to Tesoro for the modification of S-532 and Tesoro modifies S-532 to operate as an oil water separator. The Permit to Operate for S-46 will be cancelled upon the District's receipt of the Tesoro's start-up notification for S-532.

Contemporaneous POC emission reduction credits are to be generated by shutting down S-46 and relinquishing the Permit to Operate for this source.

Desalter brine is a continuous liquid process stream from crude unit desalters that contains tramp crude oil and a portion of the tramp crude oil will be recovered at S-532. Tesoro did not consistently or routinely monitor or record the volumetric flow rate of desalter brine effluent throughput to S-46. S-46 had been operated down stream from another tank operated as an oil

water separator, S-603. S-532 will be operated in place of S-46 and in exactly the same manner as S-46.

The desalter brine, which is also called effluent wash water, from the No. 50 Unit desalters may contain tramp (slop) crude oil in quantities ranging from less than 1 percent to as high as 5 percent or more.

EMISSIONS CALCULATION

S-532 Oil Water Separator; Tank 532, modified to operate as an Oil Water Separator;
Volume: 630K Gallons, Capacity 286 BPH abated by A-14 Vapor Recovery

$$\frac{105{,}225{,}120\ \text{gal}}{\text{yr}} \times \frac{0.2\ \text{lb}}{1000\ \text{gal}} = 21045.0\ \text{lb/yr POC}$$

Emission Factor is from Edition 5, EPA AP-42, Table 5.1-2, January 1995

POC: 21045.0 lb/yr
POC: 10.523 ton/yr

air toxins	ppb	lb/yr
benzene	61,000	1.28E+00
ethylbenzene	79,000	1.66E+00
hexane	280,000	5.89E+00
hydrogen sulfide	900,000	1.89E+01
toluene	220,000	4.63E+00
xylenes	346,000	7.28E+00

Emissions Summary to Charge to the Plant Cumulative and Requiring Offsetting

POC (lb/yr)	21045.0
POC (ton/yr)	10.523

PLANT CUMULATIVE INCREASE

POC: 0.000 tpy (current) + 10.523 tpy (proposed) = 10.523 tpy (new total)

TOXIC RISK SCREENING ANALYSIS

Toxic Pollutant Emitted (lb/yr)	Emission Rate (lb/yr)	Risk Screening Trigger Required?	Screening
benzene	1.28E+00	6.7E+00	NO
ethylbenzene	1.66E+00	N/A	NO
hexane	5.89E+00	8.3E+04	NO
hydrogen sulfide	1.89E+01	8.1E+03	NO

toluene	4.63E+00	3.9E+04	NO
xylenes	7.28E+00	5.8E+04	NO

A risk screen is not required for this project. The emission rate of each toxin is less than its respective risk screening trigger as set forth in Table 2-1-316 in Regulation 2, Rule 1.

BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for S-532 because calculated and anticipated POC emissions from this source are greater than or equal to 10 pounds per highest day at approximately 58 pounds per highest day.

The District's BACT/TBACT Workbook on the web has no relevant BACT determination that would be considered precedential for use or consideration in determining what BACT should be for S-532. Similarly, the California Air Resources Board's BACT Clearinghouse Database website has no relevant BACT determination that would be considered precedential for use or consideration in determining what BACT should be for S-532. Finally, US EPA's BACT LEAR Clearinghouse has no relevant BACT determination that would be considered precedential for use or consideration in determining what BACT should be for S-532.

For S-532 BACT for POC emissions, the focus is to reduce POC fugitive emissions, to maximize POC capture efficiency, and to maximize POC emission destruction efficiency.

Fugitive Emissions

S-532 is already required to comply with Regulation 8, Rule 8 Wastewater Oil Water Separators, including a requirement for S-532 to be vapor tight as defined in Regulation 8, Rule 8, Section 204:

8-8-204 **Vapor-tight:** The concentration of precursor organic compounds, measured one centimeter from the source, shall not exceed 500 ppm (expressed as methane) above background.

At S-532 there is a pressure/vacuum vent. Except for fugitive POC emissions from the vacuum/pressure vent that opens when S-532 overpressures, all of the POC emissions from S-532 will be ducted under negative pressure by A-14 Vapor Recovery System into the refinery's 40# fuel gas system and burned in at existing combustion devices.

The vacuum vent/pressure vent is designed to prevent the tank from over-pressuring and from collapsing under vacuum. It is designed to operate as set forth below:

> Vapor Recovery Storage Tank 532 will be equipped with a pressure / vacuum relief system. The purpose of the relief system is to protect the tank during normal operation and emergency conditions.
>
> During normal operation the double port regulators provide control so that operating pressure within the tank remains stable.

- The regulator which protects the tank from over pressure is connected to vapor recover system. When the pressure in the tank approaches the set pressure of .5 inch water column, the vapor recovery control valve will open.

- The natural gas regulator provides makeup gas to protect the tank from under pressure. When the condition in the tank approaches a vacuum of .5 inches water column , the natural gas regulator will open.

The pressure/vacuum relief valve (PV vent) will be located on the roof of tank and is designed to protect the tank during emergency conditions such as an external fire. This PV vent is designed to relieve to the atmosphere in an over pressure scenario and draw in air during an abrupt under pressure condition.

This tank relief system is designed according to industry standards and follows the Inherently Safer design principles. The regulators and PV vent offer redundant protection with an independent outlet per the Inherently Safer systems requirements. For example: This relief system is designed so that if the vapor recovery system failed, the tank would still have a path to relieve increasing internal pressure.

Relief device	**Pressure Setting**	**Vacuum Setting**
PV vent	1 inch water column	1 inch water column
Pressure /Vacuum Regulator	.5 inch water column	.5 inch water column

The 500 ppm emission limitation in the definition of vapor tight in Regulation 8, rule 8, Section 204 is mirrored in Regulation 8, Rule 18 Equipment Leaks which sets the same leak standard of 500 ppmv for POC from pressure relief devices:

8-18-305 **Pressure Relief Devices:** A person shall not use any pressure relief device that leaks total organic compounds in excess of 500 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 15 days; or if the leak has been discovered by the APCO, repaired within 7 days.

BACT for a pressure relief device is the same as the requirements under Regulation 8, Rule 18.

Regulation 8, Rule 28 does not apply to tanks per Section 112.

8-28-112 **Exemption, Storage Tanks:** The requirements of this rule shall not apply to any pressure relief device on storage tanks. (Amended December 17, 1997)

<u>POC Capture and Destruction</u>

The combined capture and destruction for POC emissions from S-532 is expected to meet the 95% efficiency because S-532 will be abated by A-14 Vapor Recovery System. The vapor recovery system will compress the vapors to the No. 1 Gas Plant and into the refinery's 40 pound fuel gas system where the vapors will be combusted in a furnace or other combustion device.

S-908, S-909, S-912, S-913, S-916, S-917, and S-991 burn 40 pound fuel gas. S-991is only operated

is operated with the lowest firebox temperature and of all the combustion sources, it is expected to be least likely to meet a 95%, by weight, abatement efficiency for POC ducted to its burners.

BACT for S-532 will require that it is abated by A-14 Vapor Recovery System. A-14 in conjunction with the efficiency of the combustion devices that burn 40# fuel gas are expected to meet the required capture destruction efficiency of 95 percent, by weight.

OFFSETS

Emission offsets are required for the permitted POC emission increase for S-532. The offsets will be contemporaneous emission reduction credits from the concurrent shut down of S-46.

2-2-242 Contemporaneous: The five year period of time immediately prior to the date of application for an authority to construct or permit to operate. (Adopted June 15, 1994)

Since S-532 will be operated in the same manner as S-46 and the contemporaneous shutdown of S-46 will offset the emission increase at S-532. Emissions for S-532 and S-46 are based on throughput. The emission factor is 0.2 pounds per thousand gallons of throughput. The throughput at S-46 was not measured or recorded, but is a loosely a function of the crude throughput at S-1001 No. 50 Crude Unit. The throughput to be imposed as a permit condition on S-532, 105,225,120 gallons per year, is the value used for the throughput at S-46 and there is no net emission increase. Pursuant to Regulation 2, Rule 2, Section 302, contemporaneous emission reductions are made at a 1:1 ratio.

STATEMENT OF COMPLIANCE

S-532 is subject to Regulation 8, Rule 8: Wastewater (Oil Water) Separators. S-532 meets the definition of a wastewater oil-water separator as set forth in Section 202 of this regulation and it also meets the definition of an oil-water slop oil vessel as set forth in Section 213 of this regulation:

8-8-202 Wastewater (Oil-Water) Separator: Any device used to separate liquid organic compounds from oil-water waste streams (excluding Wastewater Separator Forebay, Air Flotation (AF) units, Sludge-dewatering Units, Oil-Water Separator and /or AF Unit Slop Oil Vessels, and Junction Boxes).

8-8-213 Oil-Water Separator Slop Oil Vessel: Any vessel which, as its sole function, treats or dewaters oil-water separator slop oil.

S-532 has a capacity of 286 barrels per hour, or 200 gallons per minute. S-532 is subject to Sections 302.3 and 305 of Regulation 8, Rule 8:

8-8-301 Wastewater Separators Greater than 760 Liters per Day and Smaller than 18.9 Liters per Second: A person shall not operate any wastewater separator and/or forebay with a design rated or maximum allowable capacity greater than 760 liters per day and smaller than 18.9 liters per second (oil-water separators and/or

forebays between 200 gals per day to 300 gals per min.) unless such wastewater separator and/or forebay is operated within its design rated or maximum allowable capacity and is equipped with one of the following:

301.3 An OC vapor recovery system with a combined collection and destruction efficiency of at least 95 percent, by weight.

8-8-305 Oil-Water Separator And/Or Air Flotation Unit Slop Oil Vessels: A person shall not store any oil-water separator and/or air flotation unit sludges in an oil-water separator slop oil vessel unless such oil-water separator slop oil vessel is equipped with one of the following:

305.2 An OC vapor recovery system with a combined collection and destruction efficiency of at least 70 percent, by weight.

S-532 is expected to comply with Sections 301.3 and 305 of Regulation 8, Rule 8, because S-532 is a vapor tight vessel abated by vapor recovery. The vapor recovery system abating S-532 captures organic emissions at S-532 and routes them to the No. 1 Gas Plant for treatment and eventual use in the refinery's fuel gas system. The combustion devices that may burn the emissions abated by A-14 at S-532 are expected to do so with an efficiency of at least 98%, by weight, as measured across the combustion device; with likely destruction efficiency approaching 99%.

Permit conditions will be imposed, based on the results of source testing required pursuant to this permit application, to require parametric monitoring at each of the combustion sources that will burn the emissions from S-532 (each combustion source that will burn 40 Pound Fuel Gas) to ensure that 98% destruction efficiency of the fuel gas is consistently achieved. The parametric monitoring will require that oxygen in the exhaust and firebox/flue gas temperatures are recorded and kept above limits to be set by the District based on the source testing results.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. The ministerial nature of this project is set forth in Permit Handbook Chapter 3.3.

This project is not within 1,000 ft of the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is not required for this project.

BACT and offsetting requirements have been satisfied.

NESHAPS are not triggered.

CONDITIONS

```
S-532   Oil Water Separator; Tank 532,
        modified to operate as an Oil Water
        Separator; Volume: 630K Gallons,
        Capacity: 286 BPH abated by
        A-14 Vapor Recovery System

1)   Permittee/Owner/Operator shall ensure that
```

the total throughput of all VOC/petroleum materials to S-532 does not exceed 2,505,360 barrels during any 12 consecutive month period. (basis: cumulative increase, toxics, BACT, offsets)

2) Permittee/Owner/Operator shall ensure that S-532 is of welded construction and that S-532 is vapor-tight. Vapor-tight has the same meaning as set forth in Regulation 8, Rule 8. (basis: Regulation 8-8, cumulative increase, toxics, offsets, BACT)

3) Notwithstanding any provision of District regulations allowing for the malfunction of A-14 due to a valid breakdown at No. 1 Gas Plant vapor recovery compressor(s), Permittee/ Owner/Operator shall ensure that S-532 (excluding the pressure vacuum relief valve vent), including the pressure vent at S-532, is abated by A-14 at all times that S-532 is operated and at all times that S-532 contains VOC/petroleum materials.
basis: BACT, Regulation 8-8, cumulative increase, toxics, offsets)

4) Permittee/Owner/Operator shall ensure that VOC/POC emissions from S-532 that are ducted to A-14 are abated with a destruction efficiency of at least 98 percent, by weight, as measured across the combustion device(s) burning (the vapors from the) 40 Pound Fuel Gas system. (basis: BACT)

5) Not more than 120 days after the start-up of S-532 pursuant to Authority to Construct #6201, Permittee/Owner/Operator shall conduct a District approved source test at each of the following sources:

S-908 No. 8 Furnace @ No. 3 Crude Unit
S-909 No. 9 Furnace @ No. 1 Feed Prep.
S-912 No. 12 Furnace @ No. 1 Feed Prep.
S-913 No. 13 Furnace @ No. 2 Feed Prep.
S-916 No. 1 HDS Heater
S-917 No. 17 Furnace, No 1 HDS Prefractionator

to measure for each source each of the following:

- the fuel feed rate in pounds/hr
- the POC emission rate at the stack
- the flue gas flow rate in SCFM at the stack
- the oxygen content of the stack flue gas
- the firebox temperature
- the location of the firebox thermocouple
- the destruction efficiency of POC/VOC as measured across the Furnace/combustion device

Permittee/Owner/Operator shall ensure that two copies of the results of the source testing along

with related calculations and relevant process data are received by the District's Permit Services Division not more than 35 days following the date of the source test.

The source test data will be used to determine firebox temperature and flue gas oxygen content required to ensure that 98 percent, by weight, combustion of POC/VOC is achieved.

5A) Not more than 5 days after S-991 undergoes its first start-up subsequent to the first maintenance turnaround at the FCCU after December 31, 2002, Permittee/Owner/Operator shall ensure that a District approved source test is conducted at S-991 FCCU Preheat Furnace to measure each of the following:

- the fuel feed rate in pounds/hr
- the POC emission rate at the stack
- the flue gas flow rate in SCFM at the stack
- the oxygen content of the stack flue gas
- the firebox temperature
- the location of the firebox thermocouple
- the destruction efficiency of POC/VOC as measured across the Furnace/combustion device

Permittee/Owner/Operator shall ensure that two copies of the results of the source testing along with related calculations and relevant process data are received by the District's Permit Services Division not more than 35 days following the date of the source test.
(basis: BACT)

6) During periods of preventative maintenance on A-14 Vapor Recovery System not to exceed 36 hours per rolling consecutive 12 month period, Permittee/Owner/Operator shall ensure that there is no liquid flow into S-532 and that under no circumstances shall the preventative maintenance begin prior to 6:00 PM PST. During the preventative maintenance on A-14 Vapor Recovery System S-532 does not need to be abated by A-14.
(basis: BACT)

7) On a daily basis, twice each day, for each of S-908, S-909, S-912, S-913, S-916, S-917, and S-991, Permittee/Owner/Operator shall measure and record in District approved log(s), the firebox/flue temperature. Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is made available to District staff upon request.
(basis: BACT)

8) On a continuous basis, for each of S-908, S-909, S-912, S-913, S-916, S-917, and S-991, Permittee/Owner/Operator shall continuously

measure and record in District approved log(s), the oxygen content in the flue gas using a District approved oxygen sensing device and a District approved recording device. Permittee/ Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is made available to District staff upon request. Each of the temperature monitors and each of the oxygen monitors required pursuant to these conditions is considered to be a para-metric monitor as defined in Regulation 1, Section 238.
(basis: BACT, Reg. 1-238)

9) On a monthly basis, in a District approved log, the Permittee/Owner/Operator shall record the throughput of liquid material throughput to S-532, in gallon or barrel units, for each month and for each rolling 12 consecutive month period. The Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is made available to District staff upon request.
(basis: cumulative increase, toxics, offsets)

10 On a monthly basis, in a District approved log, the Permittee/Owner/Operator shall record the time, date, duration, and reason for each instance during which S-532 is not abated by A-14. The Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is made available to District staff upon request.
(basis: cumulative increase, toxics, offsets)

11) For S-908, S-909, S-912, S-913, S-916, S-917, and S-991, after the District receives and accepts the results of the District approved source tests from conditions 5 and 5A, the District will use the data to impose conditions specifying the minimum amount of oxygen that must be present in the flue gas, and specifying the minimum temperature of the firebox and/or flue, to ensure that 98 percent, by weight, destruction of VOC/POC is achieved.
(basis: BACT)

12) Upon start-up of S-532 pursuant to Authority to Construct #6201, Permittee/Owner/ Operator shall ensure that S-46 Fixed Roof Tank, Capacity: 252K gal is not operated and is permanently taken out of service, additionally the Permit to Operate for S-46 shall become null and void. (basis: offsets)

RECOMMENDATION

Issue an **Authority to Construct** to **Tesoro Refining and Marketing Company** to modify existing source S-532 to have the following equipment description:

S-532 Oil Water Separator; Tank 532, modified to operate as an Oil Water Separator; Volume: 630K Gallons, Capacity 286 BPH abated by A-14 Vapor Recovery

_____
Terry D. Carter
Senior Quality Engineer
Permit Services Division

TDC:tc/6201evl/tesoro/eval/f/10-29-02

ENGINEERING EVALUATION
TESORO REFINING AND MARKETING COMPANY
APPLICATION #6792 - PLANT #14628

BACKGROUND

Tesoro Refining and Marketing Company (Tesoro) submitted this permit application to obtain an Authority to Construct and Permit to Operate to modify fuel feed lines at the following source:

S-904 CO Boiler; No. 6 Boilerhouse; Riley Stoker Type RX, Maximum Firing Rate: 848 MMBtu/hr abated by A-904 SCR System and A-11 Two Stage Electrostatic Precipitator

S-904 is a CO boiler. S-904 currently has the capacity to burn natural gas, Coker flue gas, refinery fuel gas, and fuel oil for the boiler pilots in an emergency when gaseous fuel flow to the burner pilots is lost. Refinery fuel gas called 100-pound fuel gas is the primary fuel fired at S-904. Pursuant to the this application Tesoro intends to modify the natural gas fuel feed line to S-904 from a two inch line to a six inch line and Tesoro also intends to eliminate the capacity of S-904 to fire any liquid fuels including fuel oil used for the pilots at S-904 during an emergency.

The new 6-inch natural gas line will have its own fuel flow meter. The 100 pound fuel gas Btu content is continuously measured.

EMISSIONS CALCULATION

There is no expected increase in the emission rate of any pollutant associated with this application. The size of the natural gas fuel line is being increased. Since the sulfur content of the 100-pound refinery fuel gas is higher than natural gas and since the refinery intends to continue using 100-pound refinery fuel gas as the primary fuel at S-904, sulfur dioxide emissions from S-904 are not expected to increase and may decrease. Furthermore, since all fuel oil firing capacity will be eliminated at S-904, no emission increase is expected for this application.

PLANT CUMULATIVE INCREASE

POC: 0.000 tpy (current) + 0.000 tpy (proposed) = 0.000 tpy (new total)

TOXIC RISK SCREENING ANALYSIS

A risk screen is not required for this project. There is no anticipated increase in the emission rate of any pollutant associated with this application.

BEST AVAILABLE CONTROL TECHNOLOGY

BACT is not triggered for this permit application. There is no anticipated increase in the emission rate of any pollutant associated with this application.

OFFSETS

There is no emission increase to be offset pursuant to this application.

STATEMENT OF COMPLIANCE

Valves installed as part of the project are required to comply with Regulation 8, Rule 18, Sections 302 and 402.

8-18-302 **Valves:** A person shall not use any valve that leaks total organic compounds in excess of 100 ppm unless the leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or if the leak has been discovered by the APCO, repaired within 24 hours.

8-18-402 **Identification:** Any person subject to this Rule shall comply with the following identification requirements:

402.1 All valves, pressure relief devices, pumps and compressors shall be identified with a unique permanent identification code approved by the APCO. This identification code shall be used to refer to the valve, pressure relief device, pump or compressor location. Records for each valve, pressure relief device, pump or compressor shall refer to this identification code.

402.2 All equipment with a leak in excess of the applicable leak limitation in Section 8-18-300 shall be tagged with a brightly colored weatherproof tag indicating the date the leak was detected.

Flanges installed as part of the project are required to comply with Regulation 8, Rule 18, Sections 304 and 401.

8-18-304 **Connections:** A person shall not use any connection that leaks total organic compounds in excess of 100 ppm unless one of the following conditions are met:

304.1 The leak has been discovered by the operator, minimized within 24 hours and repaired within 7 days; or

304.2 The connection is inspected as required by Section 8-18-401.6 and:

- 2.1 If the leak is discovered by the operator, minimized within 24 hours and repaired within 7 days; or
- 2.2 If the leak has been discovered by the APCO, repaired within 24 hours.

8-18-401 **Inspection:** Any person subject to this Rule shall comply with the following inspection requirements:

401.1 All connections that have been opened during a turnaround shall be inspected for leaks within 90 days after start-up is completed following a turnaround.

401.6 Any connection that is inspected annually or that is part of an APCO and EPA approved connection inspection program is subject to the provisions of Subsection 8-18-304.2.

The valves and flanges/connectors installed pursuant to this application are expected to comply with the aforementioned applicable regulatory requirements. The valves and flanges will be incorporated into the refinery's I &M program.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. The ministerial nature of this project is set forth in Permit Handbook Chapter 3.4.

This project is not within 1,000 ft of the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screening analysis is not required for this project.

BACT and offsetting requirements are not triggered.

NESHAPS are not triggered.

CONDITIONS

The only condition to be imposed on S-904 pursuant to this permit application is one prohibiting the firing of liquid fuel at the burner or its pilots.

This condition will read as follows:

```
S-906  CO Boiler; No. 6 Boilerhouse; Riley Stoker
       Type RX, Maximum Firing Rate: 848 MMBtu/hr
       abated by A-904 SCR System and A-11 Two
       Stage Electrostatic Precipitator

1.    Permittee/Owner/Operator shall ensure that
      no fuel oil or liquid fuel is fired at S-904,
      including the burner pilots at S-904.
      (basis: cumulative increase)
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The final condition text will read as follows:

```
S-904  CO Boiler; No. 6 Boilerhouse; Riley Stoker
       Type RX, Maximum Firing Rate: 848 MMBtu/hr
       abated by A-904 SCR System and
       A-11 Two Stage Electrostatic Precipitator

1. Permittee/Owner/Operator shall ensure that
   Boiler S-904 is not fired above its maximum
   firing rate of 848 MMBTU/hr (HHV) heat input at
   any time.
(basis: cumulative increase, offsets, toxics)

2. Permittee/Owner/Operator shall ensure that
   Boiler S-904 is retrofitted with and abated by
   A-904, Selective Catalytic Reduction (SCR)
   system, for the Refinery to achieve compliance
```

with the facility-wide NO_x limit of Regulation 9-10-301, 0.033 lb NO_x/MMBTU, and source specific CO limit of Regulation 9-10-305, 400 ppmvd @ 3% O2, in accordance with the District-approved control plan submitted under Regulation 9-10-401.
(basis: Regulation 9-10-301, Regulation 9-10-305, Regulation 9-10-401)

3. Permittee/Owner/Operator shall ensure that Boiler S-904 is equipped with a dedicated District approved fuel flow meter in each fuel line in accordance with Regulation 9-10-502.2. Permittee/Owner/Operator shall ensure that each flow meter is in operation prior to the performance of the initial source test described in Condition No. 6, and that each flow meter is maintained in good working order.
(basis: Regulation 9-10.502.2)

4. Permittee/Owner/Operator shall ensure that Boiler S-904 is equipped with District-approved, in-stack continuous emission monitoring systems (CEMS) for nitrogen oxides (NO_x), carbon monoxide (CO), and oxygen (O2) prior to July 1, 2000. The CEMS shall be maintained in good working order in accordance with the District Manual of Procedures, Volume V.
(basis: Regulation 9-10-302, Regulation 9-10-305)

5. Permittee/Owner/Operator shall ensure that ammonia stack emissions from Boiler S-904 resulting from the operation of A-904 SCR system shall not exceed 20 ppmv, dry @ 3% O2.
(basis: toxics)

6. Permittee/Owner/Operator shall ensure that after modification of S-904, an initial source test for NO_x and CO shall be performed in accordance with Regulation 9-10-501, for ammonia, in accordance with the District Manual of Procedures. In addition to the requirements in this regulation, Permittee/Owner/Operator shall ensure that the following procedures are followed:

A. Permittee/Owner/Operator shall submit a source test protocol to the Manager of the District's Source Test Section at least seven (7) days prior to the test, for District approval and to provide District staff the option of observing the testing.

B. Permittee/Owner/Operator shall ensure that source test conditions are representative of the normal operating ranges and conditions of the boiler.

C. Permittee/Owner/Operator shall ensure that within 45 days of test completion, a comprehensive report of the test results shall be submitted to the District's Director of Enforcement.

D. Permittee/Owner/Operator shall ensure that the ammonia source test shall be repeated on a semi-annual basis.
(basis: Regulation 9-10-501, toxics)

7. Permittee/Owner/Operator shall maintain hourly records of the type and amount of fuel burned at Boiler S-904, the continuous emission monitoring (CEMS) measurements for NO_x, CO, and O2, and source test data for NO_x, CO, O2, and ammonia shall be maintained in a District-approved log for at least 5 years from date of last entry and the log shall be made made available to District staff upon request.
(basis: toxics, offsets, cumulative increase)

8. Boiler S-904 shall continue to be subject to the Refinery Cap Permit No. 27769, Condition ID No. 4357.
(basis: offsets, bubble)

9. Permittee/Owner/Operator shall ensure that no fuel oil or liquid fuel is fired at S-904, including S-904 burner pilots.
(basis: cumulative increase)

RECOMMENDATION

Issue an **Authority to Construct** to **Tesoro Refining and Marketing Company** to modify the following source:

S-904 CO Boiler; No. 6 Boilerhouse; Riley Stoker Type RX, Maximum Firing Rate: 848 MMBtu/hr abated by A-904 SCR System and A-11 Two Stage Electrostatic Precipitator (authorization to remove all fuel oil firing capacity and to increase the size of the natural gas feed line from two inches to six inches)

_____
Terry D. Carter
Senior Quality Engineer
Permit Services Division

TDC:tc/6792evl/tesoro/eval/f/03-13-03

TDC:tc\7768evl\tesoro\eval/f\10-22-03

ENGINEERING EVALUATION
Tesoro Refining and Marketing Company
A**PPLICATION** #7768 - P**LANT** #14628

BACKGROUND

Tesoro Refining and Marketing Company submitted this permit application to obtain an Authority to Construct to physically modify the following source:

S-134 External Floating Roof Tank; Tank 137, Capacity: 651,000 Gallons, Storing: Fuel Oil, Jet A, Gas Oil, Recovered Oil

to have the following **new** source description:

S-134 Fixed Cone Roof Tank; Tank A-134, Capacity: 651,000 Gallons, Storing: Recovered Oil abated by A-14 Vapor Recovery System

The recovered oil stored in S-134 in past (and that expected to be stored in S-134 in the future) has been malodorous. Recovered oil is slop oil, also known as tramp oil. Tesoro has two grades of refinery fuel gas that are burned as fuels at combustion sources throughout the refinery. One is called 40# Fuel Gas and the other is called 100# Fuel Gas. 40# Fuel Gas is made up of approximately 75 volume percent 100# Fuel Gas with the balance of the 40# Fuel Gas being vapors recovered from throughout the Tesoro refinery's vapor recovery systems A-12 and A-14. A-14 is one of two vapor recovery systems used to capture VOCs from various tanks, oil water separators and loading or material transfer sources. Once captured by A-14, the vapors are compressed to the No. 1 Gas Plant where they are bubbled through diethanolamine (DEA) to remove sulfurous compounds and then burned as a fuel by being throughput directly to the burners at various combustion sources throughout the refinery. A destruction efficiency close to 100 percent by weight is expected at each burner where the VOC will burned, since the VOC will be ducted directly into the burners themselves. This means that the capture efficiency is conservatively expected to be slightly better than 98.5 percent by weight.

S-134 has been in existence since 1956 and the applicant wants to modify the tank from an external floating roof tank into a fixed cone roof tank abated by an existing permitted vapor recovery system. In modifying S-134, the floor and roof of the tank will be replaced. The shell will remain but its diameter will be decreased by 6 inches.

S-134 is a grandfathered source for which a permit was first issued to Tosco by the District in or about 1978. There is currently no express or implied throughput limit for S-134 and there is currently no express or implied true vapor pressure limitation on the material stored in S-134.

Pursuant to the modification, Tesoro wants S-134 to be permitted with a maximum recovered oil throughput limit not to exceed 700,000 barrels per 12 consecutive month period, and with a maximum true vapor pressure limit not to exceed 11 psia. Permitted emissions from S-134 after

modification will be larger than the baseline emissions from S-134. The modification will trigger BACT and offsets.

Tesoro completed this application on July 31, 2003. The calculation of emission reduction credits for shut down of S-134 will be based on the 36 consecutive month period ending on June 30, 2003.

EMISSIONS CALCULATION

The Tanks 4.0 emission calculation for S-134 (after modification) as a fixed roof tank appears at the end of the engineering evaluation report. The emission calculation is based on the maximum true vapor pressure of the material stored in S-146 being not greater than 11 psia. No monitoring has been imposed for true vapor pressure because the vapor pressure is expected to be significantly lower than 11 psia. Test data demonstrates the true vapor pressure to be have been as high as 1.9 psia. The capture and destruction efficiency of VOC emitted from S-134 after it is converted to a fixed roof tank is conservatively estimated to be 98.5 percent by weight. This capture and destruction efficiency is appropriate because once captured by A-14, the vapors are compressed to the No. 1 Gas Plant where they are bubbled through diethanolamine (DEA) to remove sulfurous compounds and then the VOC is burned as a fuel by being throughput directly to the burners at various combustion sources throughout the refinery.

Tanks 4.0 Output		
(Gross Emissions Prior to abatement at A-14)		
POC:	414333.2	lb/yr
	207.167	ton/yr
(Net Emissions After 98.5 wt% abatement)		
POC:	6215.0	lb/yr
	3.107	ton/yr

Baseline Emissions While External Floating Roof Tank

EFRT Baseline Throughput:	1,149,226.1	gallons/yr
Corresponding POC Emissions Tanks 4.0:	1,722.6	lb/yr

Toxic Emissions

Slop Oil Laboratory Analysis

toxin	content (ug/Kg)
benzene	4300
ethylbenzene	59000
hexane	4000
toluene	70000
xylene	360000

toxin	content (lb/lb)
benzene	4.30E-06
ethylbenzene	5.90E-05
hexane	4.00E-06
toluene	7.00E-05
xylene	3.60E-04

material	gross throughput (lb/yr)	total throughput (wt%)	emissions (lb/yr)
benzene	9.11E+02	4.3E-04	2.7
ethylbenzene	1.25E+04	5.9E-03	36.7
hexane	8.48E+02	4.0E-04	2.5
toluene	1.48E+04	7.0E-03	43.5
xylene	7.63E+04	3.6E-02	223.7

PLANT CUMULATIVE INCREASE

POC: 0.000 tpy (current) + 2.246 tpy (proposed) = 2.246 tpy (new total)

TOXIC RISK SCREENING ANALYSIS

Toxic Pollutant Emitted (lb/yr)	Emission Rate (lb/yr)	Risk Screening Trigger Required?	Screening
benzene	2.7	6.70E+00	NO
ethylbenzene	36.7	N/A	NO
hexane	2.5	8.30E+04	NO
dtoluene	43.5	3.90E+04	NO
xylenes	223.7	5.80E+04	NO

The calculated emission rate of each toxin is less than its risk screening trigger and no risk screen is required for this project.

BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for S-134. Anticipated and permitted POC emissions from this source are greater than 10 pounds per highest day, at 17 pounds per day on average. S-134 is proposed as a fixed roof tank abated by vapor recovery. The District's BACT/TBACT Workbook specifies the following for a fixed roof tank.

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

Source Category

Source:	***Storage Tank - Fixed Roof, Organic Liquids***	Revision:	***2***
		Document #:	***167.3.1***
Class:	***≥20,000 Gallons***	Date:	***03/03/95***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *Vapor recovery system w/ an overall system efficiency ≥98%*[a,T]	1. *n/d* 2. *Thermal Incinerator; or Carbon Adsorber; or Refrigerated Condenser; or BAAQMD approved equivalent*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NPOC	1. *n/d* 2. *Vapor recovery system w/ an overall system efficiency ≥98%*[a,T]	1. *n/d* 2. *Carbon Adsorber; or Refrigerated Condenser; or BAAQMD approved equivalent*[a,T]

References

a. BAAQMD
T. TBACT

As proposed, S-134 complies as BACT(2), a District approved equivalent to carbon adsorption or a refrigerated condenser. Organic emissions from S-134 are slightly above the BACT trigger.

OFFSETS

The calculation of annualized baseline emissions for S-134 (when it existed) as an external floating roof tank is consistent with Regulation 2, Rule 2, Section 605, which reads as follows:

2-2-605 Emission Calculation Procedures, Emission Reduction Credits: The following methodology shall be used to calculate emission reduction credits.

605.1 The baseline period consists of the 3 year period immediately preceding the date that the application is complete (or shorter period if the source is less than 3 years old). The applicant must have sufficient verifiable records of the source's operation to substantiate the emission rate and throughput during the entire baseline period.

605.2 Baseline throughput is the lesser of:

2.1 actual average throughput during the baseline period; or

2.2 average permitted throughput during the baseline period, if limited by permit condition.

Tesoro completed this permit application on July 31, 2003. The baseline period for this application is the 36 consecutive month period ending on June 30, 2003. The baseline throughput of petroleum liquid to S-134 by calendar month as disclosed by Tesoro, in completing this application, in barrels per month is as follows:

	month	barrels/mo.	
1	Aug-00	6169	
2	Sep-00	142	
3	Oct-00	10822	
4	Nov-00	150	
5	Dec-00	116	
6	Jan-01		
7	Feb-01		
8	Mar-01		
9	Apr-01		
10	May-01		
11	Jun-01		
12	Jul-01		
1	Aug-01		
2	Sep-01		
3	Oct-01		
4	Nov-01		
5	Dec-01	53762	update value
6	Jan-02		
7	Feb-02		
8	Mar-02		
9	Apr-02		
10	May-02		
11	Jun-02		
12	Jul-02		
1	Aug-02		
2	Sep-02		
3	Oct-02		
4	Nov-02		
5	Dec-02	9429	update value
6	Jan-03	186	
7	Feb-03	103	
8	Mar-03	173	
9	Apr-03	227	
10	May-03	238	
11	Jun-03	262	
12	Jul-03	310	

82087.6 barrels/36 months

27362.526 barrels/yr

Baseline Throughput:	1,149,226.1	gallons/yr

This throughput will be used in the Tanks 4.0 emission calculation yielding this output.

Tanks 4.0 Output	
POC:	1722.6 lb/yr
	0.861 ton/yr

These offsets from S-134 are contemporaneous emission reductions as defined in Regulation 2, Rule 2, Section 242:
42:

2-2-242 Contemporaneous: The five year period of time immediately prior to the date of application for an authority to construct or permit to operate.

Net Emission Increase Requiring Offsetting	
POC:	6215.0 lb/yr AFTER
	1722.6 lb/yr BASELINE
POC:	4492.4 lb/yr NET INCREASE
	2.246 ton/yr

Therefore, POC emission credits amounting to 2.246 tpy are due to the District from Tesoro Refining and Marketing Company. The offset ratio is 1.15 to 1. Tesoro has authorized the District to take 2.246 tons per year of POC from banking certificate number 890.

Banking Certificate: 890
Application no: 7642
Final Disposition: Certificate Issued 06/19/03
Reduction Location: Ford Motor Co [San Jose]
Certificate owner: Tesoro Refining & Marketing Company
Contact: Sharon Lim, tel: (925) 335-3467
Mailing address: 150 Solano Way, Martinez, CA 94553

Transfer from #: 834
Original cert.#: 26

tons per year	PM	POC	NOX	SO2	CO	NPOC	PM10
Requested	.000	.000	.000	.000	.000	.000	.000
Approved	.000	7.412	.000	.000	.000	.000	.000
Balance	.000	7.412	.000	.000	.000	.000	.000

Pollutant	POC
Certificate #	890
Beginning Balance (ton/yr)	7.412
Amount to be Offset (ton/yr)	2.246
Offset Ratio	1.15
Amount Due (ton/yr)	2.583
Ending Balance (ton/yr)	4.829

STATEMENT OF COMPLIANCE

S-134 is subject to Regulation 8, Rule 5: Storage of Organic Liquids. This source is subject to the requirements of Regulation 8, Rule 5, Sections 301:

8-5-301 **Storage Tanks Control Requirements:** A person shall not store organic liquid in any storage tank unless such tank is equipped with a vapor loss control device that is specified by the table below for the tank capacity, or for a higher capacity, and for the true vapor pressure of the tank organic liquid contents, or for a higher true vapor pressure.

Tank Capacity	True Vapor Pressure of Tank Organic Contents		
	>0.5 to ≤1.5 psia	>1.5 to <11 psia	≥ 11 psia
≥150 m^3 (≥39,626 gallons)	Internal floating roof, external floating roof, or approved emission control system	Internal floating roof, external floating roof, or approved emission control system	Pressure tank or approved emission control system

To comply S-134 will need to be abated by an approved emission control system. The requirements for such a system are set forth as follows:

8-5-306 **Requirements for Approved Emission Control Systems:** An Approved Emission Control System must be gas tight. It must also provide an abatement efficiency of at least 95% by weight, except as allowed by subsection 8-5-328.1.2.

NSPS requirements are triggered for S-134. This source is expected to comply with the applicable NSPS requirements. These requirements are set forth in 40 CFR 60, Subpart Kb, Section 60.112b (3).

Sec. 60.**112b** Standard for volatile organic compounds (VOC).

(a) The owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m\3\ containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m\3\ but less than 151 m\3\ containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa, shall equip each storage vessel with one of the following:

(3) A closed vent system and control device meeting the following specifications:

(i) The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated 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, Sec. 60.485(b).
(ii) The control device shall be designed and operated to reduce inlet VOC emissions by 95 percent or greater. If a flare is used as the control device, it shall meet the specifications described in the general control device requirements (Sec. 60.18) of the General Provisions.

These requirements are expected to be met because S-134 is required to be equipped/operated such that it is of welded construction and such that it is abated by vapor recovery system A-14. The leak standard to which S-134 is subject pursuant to District regulations is set at 100 ppm, more stringent than the leak standard under the NSPS. A capture and destruction efficiency of 98.5 percent, by weight is conservatively expected for VOC emitted by S-134 in being abated by A-14. This level of capture and abatement is greater than and in compliance with the NSPS requirement.

The calculation of contemporaneous emission reduction credits associated with S-134 when it was operated as an external floating roof tank was conducted in compliance with Regulation 2, Rule 2, Section 605.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. The ministerial nature of this project is set forth in Permit Handbook Chapter 4.1.

This project is not within 1,000 ft of the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

NSPS, BACT, and offsetting requirements have been satisfied.

NESHAPS and PSD are not triggered.

CONDITIONS

```
S-134  Fixed Cone Roof Tank; Tank A-134,
       Capacity: 651,000 Gallons,
       Storing: Recovered Oil
       abated by A-14 Vapor Recovery System

1.)   Permittee/Owner/Operator shall ensure that
the total throughput of all VOC/petroleum
materials to S-134 does not exceed 700,000
barrels during every 12 consecutive month period.
(basis: cumulative increase, toxics, offsets)

2.)   Permittee/Owner/Operator shall ensure
that no VOC/petroleum material other than
recovered oil/slop oil is throughput to
or stored in S-134.
(basis: cumulative increase, offsets)

3.)   Permittee/Owner/Operator shall ensure
```

that S-134 is abated by A-14 Vapor Recovery System at all times that VOC/petroleum material is throughput to or stored/contained in S-134. (basis: BACT, Regulation 8-5, cumulative increase, toxics, NSPS, Regulation 10 Subpart Kb, offsets)

4.) On a monthly basis, in a District approved log, the Permittee/Owner/Operator shall record the throughput of each VOC/petroleum material throughput to S-134, in gallon or barrel units, by the material's name as disclosed on the MSDS for the material (e.g., cat cracked heavy naphtha, medium reformate fractionator bottoms, stabilized reformate, FCC gasoline) for each month and for each rolling 12 consecutive month period. The Permittee/Owner/Operator shall ensure that the District approved log is retained on site for not less than 5 years from date of last entry, and that it is be made available to District staff upon request.
(basis: cumulative increase, toxics, offsets)

RECOMMENDATION

1) Deduct 2.583 tons per year of POC from banking certificate #890 and refund the balance to Tesoro Refining and Marketing Company.

Pollutant	POC
Certificate #	890
Beginning Balance (ton/yr)	7.412
Amount to be Offset (ton/yr)	2.246
Offset Ratio	1.15
Amount Due (ton/yr)	2.583
Ending Balance (ton/yr)	4.829

2) Issue an **Authority to Construct** to Tesoro Refining and Marketing Company to physically **modify** S-134 to have the following equipment description:

S-134 Fixed Cone Roof Tank; Tank A-134, Capacity: 651,000 Gallons, Storing: Recovered Oil abated by A-14 Vapor Recovery System

Terry D. Carter
Senior Quality Engineer
Permit Services Division

TDC:tc/7768evl/tesoro/eval/f/10-22-03

TDC:tc/|8301evlt/|tesoro/_|eval/f/|12-30-03

ENGINEERING EVALUATION
Tesoro Refining and Marketing Company
APPLICATION #8301 - PLANT #14628

BACKGROUND

Tesoro Refining and Marketing Company submitted this permit application to obtain a change of conditions to use the additive Baker Petrolite KI-85 at the following existing, permitted source:

S-903 No. 5 Boiler; Firing: Refinery Fuel Gas, Coker Flue Gas, Maximum Firing Rate: 740 MMBtu/hr abated by A-8 Coker CO Electrostatic Precipitator

KI-85 is a corrosion-inhibiting additive that is used at S-903 to help prevent tube ruptures at S-903. It will be injected in the exhaust vent gas from S-806 Coker that is burned at S-903.

KI-75 is currently used at S-903 as a corrosion inhibitor. It is injected fireside at S-903 just as KI-85 is proposed for use. According to S. Lim of Tesoro, KI-75 is equivalent to Nuodex. Nuodex or equivalent is already authorized for use at S-903 pursuant to pursuant to permit condition ID #573 parts 11, 12, 13:

```
COND#  573  ------------------------------------------------

11.  Only "Super Cat Manganese 6 High Flash" (Nuodex
     Solution) or chemical equivalent shall be injected as a
     combustion enhancer/ESP flyash conditioner upstream of
     the Coker CO Boiler S-903.

12.  The total amount of Nuodex Solution injected at S-903
     shall not exceed 1000 gallons in any consecutive 24
     hour period.

13.  In order to demonstrate compliance with condition #12,
     Tosco shall maintain daily records in a District
     approved log to indicate the total number of gallons of
     Nuodex Solution (or chemical equivalent) injected.
     These records shall be kept on site and be available
     for inspection by District personnel for a period of 24
     months from the date on which a record is made.
```

The use of Nuodex was authorized at S-903 pursuant to permit application #7381. Nuodex usage was instituted at S-903 to enhance combustion of coke particles in the exhaust gas from S-806 Coker vented to S-903.

Current permit conditions limit the use of Nuodex or equivalent to not more than 1000 gallons per day. Not more than 200 gallons of KI-85 will be used at S-903 per day. KI-85 will be stored at Tesoro in a 3000 gallon tank.

District supervising engineering staff have concluded that the storage of KI-85 in its proposed 3000 gallon storage tank is exempt from permitting pursuant to Regulation 2-1-123.3.3, due to its flash point. This exempt source will be assigned source number S-1498.

2-1-123 **Exemption, Liquid Storage and Loading Equipment:** The following equipment is exempt from the requirements of Sections 2-1-301 and 302, provided that the source does not require permitting pursuant to Section 2-1-319.
123.3 Containers, reservoirs, tanks or loading equipment used exclusively for:
3.3 The storage or loading of petroleum oils with an ASTM D-93 (PMCC) flash point of 130°F or higher, when stored or loaded at a temperature at least 36°F below the flash point.

Since the rate of usage of KI-85 and KI-75 combined will be less than 1000 gallons per day, the current limit on Nuodex or equivalent usage, per supervising engineering staff no fee is to be charged for this application and authorization of the use of KI-85 at S-903 shall be treated by the District as an alteration with no increase in POC emissions added to the plant cumulative increase.

EMISSIONS CALCULATION

To determine the emission impact resulting from the usage of KI-85 in place of KI-75 or Nuodex, the following chart provides a comparison of the three additives:

	Nuodex	KI-75	KI-85
Additive Component	(wt%)	(wt%)	(wt%)
manganese compounds	38		
kerosene	62		
manganese salts of organic acids		30 to 60	
hydrotreated light petroleum distillates		30 to 60	
magnesium oxide			30 to 60
magnesium carboxylates			10 to 30
heavy aromatic naphtha			10 to 30
hydrotreated naphthenic distillates			10 to 30
hydrocarbon resin			1 to 5
naphthalene			0.1 to 1

Based on the kerosene content of the Nuodex, its density, and its maximum use limit of 1000 gallons per day, the follow chart shows the corresponding allowable use of each of KI-75 and KI-85 that will not result in a POC emission increase:

	Nuodex	KI-75	KI-85
density (lb/gal)	10.54	7.66	10.95
permitted POC use per day (lb/day)	6534.8	XXXXXXX	XXXXXXX
corresponding material usage to avoid emission increase (gal/day)	1000	1421.5	904

The applicant has provided temperature data disclosing that the temperature in the boiler is essentially/ordinarily/routinely between 1400 degrees Fahrenheit and 1800 degrees Fahrenheit, while in use. One hundred and eighty-five days of data were provided covering April 26, 2003 through October 29, 2003. The temperature data supports the expectation that the POC component of the Nuodex, KI-75, and/or KI-85 will be combusted in the furnace and that only negligible, if any, related POC will be emitted from S-903 due to the use of these additives.

PLANT CUMULATIVE INCREASE

POC: 0.000 tpy (current) + 0.000 tpy (proposed) = 0.000 tpy (new total)

TOXIC RISK SCREENING ANALYSIS

Aside from organics, magnesium oxide and magnesium carboxylates are the materials present in KI-85. Neither is identified as a toxic material in the District's Risk Management Policy. The Manager of the Toxics Section of the Engineering Division was consulted regarding emissions of magnesium compounds at S-903. Based on the Manager's response and the District's Risk Management Policy, no risk screen is required for this application.

BEST AVAILABLE CONTROL TECHNOLOGY

BACT is not triggered for S-903. The usage of KI-85 will be limited by permit condition to ensure that the amount of POC released into S-903 due to the use of KI-85 or KI-75 will not exceed that amount that would be released into S-903 if 1000 gallons per day of Nuodex were injected at S-903. There is no emission increase permitted pursuant to this permit application and BACT is not triggered. The permit condition will read as follows:

```
12. Permittee/Owner/Operator shall ensure that during each
    calendar day, the total usage of KI-75, KI-85, and
    Nuodex combined does not exceed 900 gallons per day.

    During each calendar day that KI-75 and/or Nuodex is
    used at S-903 and there is NO usage of KI-85 at S-903,
    Permittee/Owner/Operator shall ensure that the total
    combined usage of Nuodex and KI-75 at S-903 does not
    exceed 1000 gallons per day.
```

OFFSETS

Emission offsetting requirements are not triggered for this application. There is no emission increase permitted pursuant to permit application #8301.

STATEMENT OF COMPLIANCE

S-903 is expected to continue to comply with Regulation 6 Particulate Matter and Visible Emissions. Visible emissions should not exceed the Ringelmann 1 limitation in this regulation. Though S-903 fires only liquid fuels and Coker flue gas, S-903 is abated by A-8 Electrostatic Precipitator and it is expected to comply with visible emission limits.

S-903 is expected to continue to comply with Regulation 9, Rule 1, Sulfur Dioxide. No liquid fuel is permitted for use at S-903. Regulation 9, Rule 1, Section 302 limits SO2 emissions to less than 300 ppm dry. S-903 is expected to meet this limit.

S-903 is subject to the NOx emission limitations in Regulation 9, Rule 10, Sections 303.1 and 304, and the CO limit in Section 305. S-903 is expected to continue to comply with these limits.

9-10-303 **Emission Limit For Facility (Federal Requirements):** Effective May 31, 1995, a person shall not exceed a refinery-wide emission rate from affected units, excluding CO boilers, of 0.20 pounds NO_x per million BTU of heat input, based on an operating-day average.

303.1 Effective May 31, 1995, except during start-up and shutdown, a person shall not shall not operate a CO boiler unless the emissions of nitrogen oxides (NO_x) do not exceed 300 ppm, dry at 3% oxygen, based on an operating-day average.

9-10-304 **Emission Limit For CO Boilers, NO_x:** Except as provided in Section 9-10-403, effective July 1, 1997, except during start-up and shutdown, a person shall not operate a CO boiler unless at least one of the following is met:

304.1 Emissions of nitrogen oxides (NO_x) do not exceed 150 ppm, dry at 3% oxygen, based on an operating-day average; or

304.2 Emissions of nitrogen oxides (NO_x) are controlled by an emission control system with a NO_X control efficiency of at least 50 percent by weight.

9-10-305 **Emission Limit For Each Affected Unit, CO:** Except as provided in Section 9-10-403, effective July 1, 1997, a person shall not operate an affected unit unless carbon monoxide emissions of 400 ppmv, dry at 3% oxygen, based on an operating-day average, are not exceeded.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. The ministerial nature of this project is set forth in Permit Handbook Chapter 2.1.

This project is not within 1,000 ft of the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

A toxic risk screen is not required for this project.

NSPS, BACT, and offsetting requirements are not triggered for this application.

NESHAPS and PSD are not triggered.

CONDITIONS

Amendments to condition #573 are shown below in underline strike out format. There is another version of condition #573 that exists in Tesoro's draft Title V permit. The Title V conditions, though not yet in effect appear directly below:

1. Permittee/Owner/Operator shall ensure that only specification grade ammonia (no "Off-Spec") is used for injection into the Coker CO Boiler S-903. For the purposes of this permit, "off-spec" ammonia is ammonia which contains 20 ppm by weight or higher of either hydrocarbon, H2S, or Mercaptans. (basis: toxics)

2. If the APCO determines that ammonia in the stack exhaust in excess of 40 ppm by volume results in a health hazard or excess visible emissions, Permittee/Owner/Operator shall ensure that the ammonia in the stack exhaust does not exceed 40 ppm by volume. (basis: toxics)

3. Permittee/Owner/Operator shall determine the relationship between NOx reduction and ammonia slippage and shall operate the ammonia injection system in such a way as to minimize slippage while maximizing NOx reduction. (basis: toxics)

4. Permittee/Owner/Operator shall ensure that the ammonia injection rate shall not exceed 475 lb/hr. (basis: toxics)

5 Deleted obsolete condition.

6. Permittee/Owner/Operator shall ensure that daily records of the ammonia usage, temperature, and stack NOx are maintained in a District approved log and that monthly summaries are submitted to the District. The District approved log shall retained on site for not less than 5 years from date of last entry and it shall be made available to the District staff upon request. (basis: toxics)

7. Deleted. Condition requirements completed.

8. Deleted. Condition requirements completed.

9. In the event the APCO determines that the stack opacity is in excess of District Regulations, Permittee/Owner/Operator shall immediately curtail use of the ammonia injection to the extent required to abate the excessive emissions. (basis: Regulation 6-302)

9a. Effective June 1, 2004, Permittee/Owner/Operator shall install a continuous opacity monitor to ensure that the emission is not greater than 20% opacity for a period or periods aggregating more than three minutes in any hour when the boiler is burning coker flue gas. (basis: Regulation 6-302)

10. Permittee/Owner/Operator shall inform the District when any additional tests are performed to evaluate the ammonia injection system. (basis: cumulative increase)

11. Permittee/Owner/Operator shall ensure that only "Super Cat Manganese 6 High Flash" (Nuodex Solution) or chemical equivalent is injected as a combustion enhancer/ESP flyash conditioner upstream of the Coker CO Boiler S-903. (basis: cumulative increase)

12. Permittee/Owner/Operator shall ensure that the total amount of Nuodex Solution injected at S-903 does not exceed 1000 gallons in any consecutive 24 hour period. (basis: cumulative increase)

13. In order to demonstrate compliance with condition #12, Permittee/Owner/Operator shall maintain daily records in a District approved log to indicate the total number of gallons of Nuodex Solution (or chemical equivalent) injected. These records shall be kept on site and be available for inspection by District personnel for a period of 5 years from the date on which a record is made. (basis: cumulative increase)

14. S-903, boiler #5 shall burn only gaseous fuels. (basis: cumulative increase)

The following conditions are to be imposed pursuant to this application:

Application #7381;
Amended by Application #16484;
Amended by Application #8301;

1. Permittee/Owner/Operator shall ensure that only specification grade ammonia (no "Off-Spec") is used for injection into the Coker CO Boiler S-903. For the purposes of this permit, "off-spec" ammonia is ammonia which contains 20 ppm by weight or higher of either hydrocarbon, H2S, or Mercaptans. (basis: toxics)

2. If the APCO determines that ammonia in the stack exhaust in excess of 40 ppm by volume results in a health hazard or excess visible emissions, the ammonia in the stack exhaust shall not exceed 40 ppm by volume. (basis: toxics)

3. Permittee/Owner/Operatorshall determine the relationship between NOx reduction and ammonia slippage and shall operate the ammonia injection system in such a way as to minimize slippage while maximizing NOx reduction. (basis: toxics)

4. Permittee/Owner/Operator shall ensure that the ammonia injection rate at S-903 does not exceed 475 lbs/hr. (basis: toxics)

6. Permittee/Owner/Operator shall ensure that daily records of the ammonia usage, temperature, and

stack NOx are maintained in a District approved log and that monthly summaries are submitted to the District. Permittee/Owner/Operator shall ensure that the District approved log is made available to the District staff upon request. (basis: toxics)

9. In the event the APCO determines that the stack opacity is in excess of District Regulations, Permittee/Owner/Operator shall immediately curtail use of the ammonia injection to the extent required to abate the excessive emissions. (basis: Regulation 6-302)

10. Permittee/Owner/Operator shall inform the District when any additional tests are performed to evaluate the ammonia injection system. (basis: toxics)

11. Permittee/Owner/Operator shall ensure that only "Super Cat Manganese 6 High Flash" (Nuodex Solution or chemical equivalent shall be injected as a combustion enhancer/ESP flyash conditioner upstream of the Coker CO Boiler S-903. (basis: cumulative increase)

12. Permittee/Owner/Operator shall ensure that during each calendar day, the total usage of KI-75, KI-85, and Nuodex combined does not exceed 900 gallons per day.

    During each calendar day that KI-75 and/or Nuodex is used at S-903 and there is NO usage of KI-85 at S-903, Permittee/Owner/Operator shall ensure that the total combined usage of Nuodex and KI-75 at S-903 does not exceed 1000 gallons per day.

13. In order to demonstrate compliance with condition #12, Permittee/Owner/Operator shall maintain daily records in a District approved log to indicate the total number of gallons of Nuodex Solution, KI-75, and KI-85 (or chemical equivalent) injected/used at S-903 each calendar day. These records shall be kept on site and be available for inspection by District personnel for a period of 60 months from the date on which a record is made.
    (basis: cumulative increase)

14. S-903, boiler #5 shall burn only gaseous fuels.
    (basis: cumulative increase)

The final conditions will read as follows:

COND# 21136 ----------

Application #7381;
Amended by Application #16484;
Amended by Application #8301;

1. Permittee/Owner/Operator shall ensure that only specification grade ammonia (no "Off-Spec") is used for injection into the Coker CO Boiler S-903.

For the purposes of this permit, "off-spec" ammonia is ammonia which contains 20 ppm by weight or higher of either hydrocarbon, H2S, or Mercaptans. (basis: toxics)

2. If the APCO determines that ammonia in the stack exhaust in excess of 40 ppm by volume results in a health hazard or excess visible emissions, the ammonia in the stack exhaust shall not exceed 40 ppm by volume. (basis: toxics)

3. Permittee/Owner/Operatorshall determine the relationship between NOx reduction and ammonia slippage and shall operate the ammonia injection system in such a way as to minimize slippage while maximizing NOx reduction. (basis: toxics)

4. Permittee/Owner/Operator shall ensure that the ammonia injection rate at S-903 does not exceed 475 lbs/hr. (basis: toxics)

5. Deleted obsolete condition.

6. Permittee/Owner/Operator shall ensure that daily records of the ammonia usage, temperature, and stack NOx are maintained in a District approved log and that monthly summaries are submitted to the District. Permittee/Owner/Operator shall ensure that the District approved log is made available to the District staff upon request. (basis: toxics)

7. Deleted. Condition requirements completed.

8. Deleted. Condition requirements completed.

9. In the event the APCO determines that the stack opacity is in excess of District Regulations, Permittee/Owner/Operator shall immediately curtail use of the ammonia injection to the extent required to abate the excessive emissions. (basis: Regulation 6-302)

10. Permittee/Owner/Operator shall inform the District when any additional tests are performed to evaluate the ammonia injection system. (basis: toxics)

11. Permittee/Owner/Operator shall ensure that only "Super Cat Manganese 6 High Flash" (Nuodex Solution or chemical equivalent shall be injected as a combustion enhancer/ESP flyash conditioner upstream of the Coker CO Boiler S-903. (basis: cumulative increase)

12. Permittee/Owner/Operator shall ensure that during each calendar day, the total usage of KI-75, KI-85, and Nuodex combined does not exceed 660 gallons per day.

During each calendar day that neither KI-75 nor KI-85 is used at S-903, Permittee/Owner/Operator shall ensure that the total usage of Nuodex at S-903 does not exceed 1000 gallons per day. (basis: cumulative increase)

13. In order to demonstrate compliance with condition #12, Permittee/Owner/Operator shall maintain daily records in a District approved log to indicate the total number of gallons of Nuodex Solution, KI-75, and KI-85 (or chemical equivalent) injected/used at S-903 each calendar day. These records shall be kept on site and be available for inspection by District personnel for a period of 60 months from the date on which a record is made. (basis: cumulative increase)

14. S-903, boiler #5 shall burn only gaseous fuels. (basis: cumulative increase)

RECOMMENDATION

Issue a Change of Conditions letter to Tesoro Refining and Marketing Company for the following source:

S-903 No. 5 Boiler; Firing: Refinery Fuel Gas, Coker Flue Gas, Maximum Firing Rate: 740 MMBtu/hr abated by A-8 Coker CO Electrostatic Precipitator

Issue a letter of exemption to Tesoro Refining and Marketing Company for the follow source exempt from permitting pursuant to Regulation 2, Rule 1, Section 123.3.3:

S-1498 Fixed Volume Storage Tank; Capacity: 3000 Gallons, Storing: Corrosion Inhibitor & Fireside Additive KI-75 and/or KI-85

_____

Terry D. Carter
Senior Quality Engineer
Permit Services Division

TDC:tc/|8301evlt/|tesoro/|eval/f/|12-30-03

Application #6945

6945eval-sob.pdf

Application #7776

7776eval-sob.pdf