Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Permit Evaluation
and
Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT
Revision 4, Significant Revision

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

Air Quality Engineer: Arthur Valla

November, 2007

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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 permit has been reopened several times, as outlined below.

Revision 1: The District issued a reopened permit, Revision 1, that amended flare and Regulation 9-10 requirements, corrected errors, and incorporated some new sources and permit conditions on December 16, 2004. This reopening is generally referred to as "Revision 1".

Revision 1.5: On October 8, 2004, EPA sent a letter formally objecting to the permit because it did not include monitoring or a design review for the destruction efficiency of thermal oxidizers. The permit was revised to address EPA's objection in a reopening of the permit that was proposed on February 1, 2005. The revised permit was issued on April 12, 2005. This reopening is generally referred to as "Revision 1.5". There are no revisions designated 1.1, 1.2, 1.3 or 1.4.

Revision 2: EPA's October 8, 2004 letter also included comments identifying a number of issues to be resolved in the District's refinery Title V permits. (Note that EPA commented on five refineries in this letter. Not all comments concern this facility.) To address those deficiencies, the District proposed another reopening, generally referred to as "Revision 2", and published it for public comment on April 15, 2005. In addition, some issues raised in the refinery's appeal to the December 16, 2004 permit and some refinery comments on that permit were addressed.

Revision 3: On March 15, 2005, shortly before the Revision 2 reopening was proposed, EPA issued an Order directing the District to reopen the permit to address possible deficiencies that EPA had identified based on petitions it received from the public to object to the permit. To address those possible deficiencies, the District proposed another reopening, generally referred to as

Revision 3, in order to address the issues raised in the Order. The District proposed Revision 3 and published it for public comment on August 2, 2005. EPA and one other organization submitted comments.

The District finalized Revision 2 and Revision 3 concurrently. The revised permit was issued on March 9, 2007 (and would be replaced by this proposed Revision 4).

During the time the District was addressing the issues of the Revision 2 reopening and the Revision 3 reopening, many permit applications were received from the facility. This proposed Revision 4 is a Significant Revision incorporating changes from all of these applications (listed below). This Revision 4 is intended to be the final permit revision prior to the permit renewal scheduled for issuance December 1, 2008. 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.

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 for the Revision 1 issuance. These documents are considered to be the statement for basis for the entire permit. They are available on request.

The Revision 4 permit would incorporate the following recent Title V revision applications into the permit:

Application Number(s)	**Description**	**Revision**
14144/14141&16390/16389	Coker Modification Project and Revisions	Significant
14326/14325	No. 1 HSD Unit Modification	Minor
14375/14374	Sulfur Pit Vent Reroute (Consent Decree)	Minor
14753/14752	No. 2 Reformer Reactor Feed Preheater F-27	Minor
14893/14894	Benzene Saturation Unit Throughput Increase	Minor
14917/16496/16495	Firewater Pumps	Minor
14918/14919	New Tank S-896	Minor
15430/15429	Avon Wharf Slop Tanks	Minor
15683/15212	FCCU Change of Conditions (Consent Decree)	Minor
15681/15682	NOx Box	Minor
16015/15949	Sulfur Recovery Unit (Consent Decree)	Significant
16114/16018	Blowdown Tower S-822 Removal	Minor
16217/16125	New Gasoline/Blendstock Storage Tank	Minor
16891/15944	Isocracker Unit Hydrogen Recycle Compressor Leak	Minor

The incorporation of these applications would not significantly increase emissions. There are no emission changes for Applications 14326/14325, 14753/14752, 15430/15429, 15683/15212, 15681/15682, 16015/15949, and 16114/16018. The following table summarizes the emissions for the remaining applications:

	NOx	POC	CO	SO2	PM10	Comments

14141, et. al. Ton/yr	-282.370	6.420	-48.990	-3139.190	-53.750	Offsets provided for POC
14375/14374, Ton/yr				-37.060		
14893/14894, Ton/yr		0.027				Offsets provided
14917, et. al., Ton/yr	0.152	0.005	0.030	0.006	0.004	Offsets provided for POC and NOx
14918/14919, Ton/yr		1.409				Offsets provided
16217/16125, Ton/yr		1.055				Offsets provided
15944, Ton/yr		0.008				Offsets provided
Total Emissions, ton/yr	-282.218	8.924	-48.960	-3176.244	-52.376	
Emissions Offset, ton/yr	0.152	8.924				
Total Net Emissions, ton/yr	-282.370	0.000	-48.960	-3176.244	-52.376	
Total Net Emissions exclusive of Coker Modification Project (14141), ton/yr	0.000	0.000	0.030	0.006	0.004	

Details of proposed permit changes are listed in Section F of this document.

B. Facility Description

The facility description can be found in the statement of basis that was prepared for the reopening issued on December 16, 2004. It is available on request from the Engineering Division of the District.

C. Permit Content

The legal and factual basis for the permit revision follows. The permit sections are described in the order that they are presented in the permit. Generally, this statement of basis/permit evaluation addresses only the proposed revisions to the permit. A comprehensive statement of basis was prepared for the previous issues of the permit and are available on request.

I. Standard Conditions

No change is being made to this section.

II. Equipment

The following changes are being made to this section:

Remove S314 Tank A-314 which was demolished.
Remove S428 Tank A-428 which was demolished.
Update capacity and limit basis for S659 and S660 Coke Storage.
Remove S822/A23 and A1420 because they are no longer in service.
Update capacity of S1002 No. 1 HDS Unit
Update capacity and limit basis for S1038 Benzene Saturation Unit.
Added New Sources S1508, S1510 through S1519 and S1521.
Added New Abatement Devices A1511, A1512, A1514 and A1515.

III. Generally Applicable Requirements

No change is being made to this section.

IV. Source-Specific Applicable Requirements

The following substantive changes are being made to this section:

- Added/Expanded the NESHAPS 40 CFR 63 Subpart UUU requirements on Tables IV-A, IV-K, IV-AQ, IV-S, IV-AJi.
- Revised Table IV-J.
- Revised Table IV-K.
- Revised Table IV-L.
- Revised Table IV-AA.
- Revised Table IV-AAa.
- Revised Table IV-Z.
- Revised Table IV-AAb.
- Added Table IV-AAc.
- Revised Table IV-AF.
- Revised Table IV-AF1.
- Revised Table IV-AI.
- Revised Table IV-AI.
- Revised Table IV-AK.
- Revised Table IV-AQ.
- Revised Table IV-AS.
- Added Table IV-BY.

- Revised Table IV-CB.
- Deleted Table IV-CP.
- Added Table IV-CXa.
- Revised Table IV-CZ
- Added Table IV – Dh.
- Added Table IV-XX1.
- Added Table IV-XX2.
- Added Table IV-XX3.
- Added Table IV-XX4.
- Added Table IV-XX5.
- Added Table IV-XX6.

A detailed list of the changes associated with each minor revision application is included in Section F.

V. Schedule of Compliance

No change is being made to this section.

VI. Permit Conditions

Changes to this section in this revision are located in the following permit conditions:

Condition 267
Condition 1910
Condition 4357
Condition 8077
Condition 8350
Condition 11433
Condition 11896
Condition 18372
Condition 19528
Condition 22850
Condition 23129
Condition 23258
Condition 23486
Condition 23562
Condition 23715

VII. Applicable Limits and Compliance Monitoring Requirements

The following substantive changes are being made to this section:

- Added/Expanded the NESHAPS 40 CFR 63 Subpart UUU requirements on Tables VII-H, VII-K, and VII-AK.
- Revised Table VII-AM.
- Deleted Table VII-BMa.
- Added Table VII-Ha.
- Added Table VII-CXa
- Revised Table VII-K.
- Added Table VII - Dh
- Revised Table VII-L.
- Revised Table VII-AA.
- Revised Table VII-AC.
- Revised Table VII-AC1.
- Revised Table VII-AF.
- Revised Table VII-AG.
- Revised Table VII-AI.
- Revised Table VII-AJ.
- Revised Table VII-AK.
- Revised Table VII-AO.
- Revised Table VII-W.
- Revised Table VII-X.
- Revised Table VII-Y.
- Revised Table VII-Z.
- Added Table VII-AJ1.
- Added Table VII-XX1.
- Added Table VII-XX2.
- Added Table VII-XX3.
- Added Table VII-XX4.
- Added Table VII-XX5.
- Added Table VII-XX6.
- Revised Table VII-H.
- Added Table VII-BMb.

A detailed list of the changes associated with each minor revision application is included in Section F.

VIII. Test Methods

Test Procedures for NSPS Subpart J and NESHAPS Subpart UUU have been added to this section.

IX. Permit Shield:

NSPS Subpart J Tables IX-A-1 and IX-A2 have been deleted, and Table IX-A7 NSPS Subpart J shield for S1106 was added because S-1106 only fires natural gas.

D. Alternate Operating Scenarios:

No change is being made to this section.

E. Compliance Status:

The Coker Modification Project (Applications 14141, 14144, 16389 & 16390) will address the recurring violations of various District regulations as a result of emissions of flue gas from its Coker, S-806.

F. Permit Changes since the Final Revision 3 Permit issued March 9, 2007.

General changes:

All Section IV and VII future effective dates that occur in the past have been removed from the permit.

Section I, II, III changes

1. Application 14374/14375 (Consent Decree –new abatement for S-1405 Sulfur Pit): removed A-1420 from Table IIB; Deleted Condition 19528, Part 15 in Table IV-AS and VII-AM, and in Section VI; added Condition 267, Part 4 in Table IV-AS and in Section VI.
2. Application 14918/14919 (new S-896 Fixed Roof Tank A-896 replacing S-428 External Floating Roof Tank A-428): Removed S-428 from Table IIA; deleted Table IV-CP; deleted Table VII-BMa.
3. Application 14325/14326 (throughput increase for S-1002 No 1 HDS Unit): Changed limits in Table IIA and in Condition 8350 in Section VI.
4. Application 14893/14894 (throughput increase for S-1038 Benzene Saturation Unit): Changed limits in Table IIA; added Condition 23258 to Table IV-AI and in Section VI, added Table VII-Ha.
5. Application 15429/15430 (new Avon Wharf Slop Oil Tanks): Added S-1508 to Table IIA and IID; added Table IV-CXa and Table VII-CXa; added Condition 23486 to Section VI.
6. Applications 14917, and 16495/16496 (new Firewater Pumps). Added S-1518 and S-1519 to Table IIA, added Tables IV – Dh and Table VII - Dh, and added Condition 23811 in Section VI.
7. Application 16018/16114 (S-822 Blowdown Tower Removal). Deleted S-822 from Tables IIA, IV-L and VII-L, and deleted A-23 from Table IIB.

8. Applications 14141/14144 and 16389/16390 (Coker Modification Project and Revisions). Added new sources S-1510 through S-1517 to Table IIA and new abatement devices A-1511, A-1512, A-1514 and A-1515 to Table IIB; revised Tables IV-J and IV-CZ; added Tables IV-XX1, IV-XX2, IV-XX3, IV-XX4, IV-XX5, IV-XX6, VII-XX1, VII-XX2, VII-XX3, VII-XX4, VII-XX5 and VII-XX6; added Condition 23129 to Section VI; added test procedures to Table VIII.
9. Applications 16217/16125 (New Gasoline Tank S-1521). Added S-1521 to Table IIA, added Tables IV-BY and VII-BMb, and added Condition 23715 in Section VI.

Section IV, Applicable Requirements

1. Application 14374/14375 (Consent Decree –new abatement for S-1405 Sulfur Pit): removed A-1420 from Table IIB; Deleted Condition 19528, Part 15 in Table IV-AS and VII-AM, and in Section VI; added Condition 267, Part 4 in Table IV-AS and in Section VI.
2. Application 14752/14753 (clarification of S-927 abatement during startup/shutdown): Added clarification to Condition 4357, Part 7A and Condition 18372, Part 18 in Section VI, and to Table IV-AA.
3. Application 14918/14919 (new S-896 Fixed Roof Tank A-896 replacing S-428 External Floating Roof Tank A-428): Removed S-428 from Table IIA; deleted Table IV-CP; deleted Table VII-BMa..
4. Application 14893/14894 (throughput increase for S-1038 Benzene Saturation Unit): Changed limits in Table IIA; added Condition 23258 to Table IV-AI and in Section VI, added Table VII-Ha.
5. Application 15212/15683 (Consent Decree – FCCU requirements): Added NSPS Subpart A and Subpart J, and Condition 11433 Parts 7, 8, 9, 10, 11 & 12 to Table IV-K; added Condition 11433 Parts 7, 8, 9, 10, 11 & 12 in Section VI; added additional monitoring requirements to Table VII-K; deleted Table IX A-1.
6. Application 15681/15682 (NOx Box): Deleted Condition 18372, part 4 through 17 in Table IV-AA; deleted parts 4 through 17 and completed part 31A of Condition 18372 in Section VI.
7. Application 15429/15430 (new Avon Wharf Slop Oil Tanks): Added S-1508 to Table IIA and IID; added Table IV-CXa and Table VII-CXa; added Condition 23486 to Section VI.
8. Applications 14917, and 16495/16496 (new Firewater Pumps). Added S-1518 and S-1519 to Table IIA, added Tables IV – Dh and Table VII - Dh, and added Condition 23811 in Section VI.
9. Application 16018/16114 (S-822 Blowdown Tower Removal). Deleted S-822 from Tables IIA, IV-L and VII-L, and deleted A-23 from Table IIB.
10. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added ‘Consent Decree’ and ‘ppmvd’ in Section XI Glossary.

11. Applications 14141/14144 and 16389/16390 (Coker Modification Project and Revisions). Added new sources S-1510 through S-1517 to Table IIA and new abatement devices A-1511, A-1512, A-1514 and A-1515 to Table IIB; revised Tables IV-J and IV-CZ; added Tables IV-XX1, IV-XX2, IV-XX3, IV-XX4, IV-XX5, IV-XX6, VII-XX1, VII-XX2, VII-XX3, VII-XX4, VII-XX5 and VII-XX6; added Condition 23129 to Section VI; added test procedures to Table VIII.
12. Added/Expanded the NESHAPS 40 CFR 63 Subpart UUU requirements on Tables IV-A, IV-K, IV-AQ, IV-S, IV-AJi, VII-H, VII-K, VII-AK and Table VIII.
13. Applications 16891/15944 (Compressor Case Leak). Added Condition 1910, Part 3 in Section VI, Table IV-AK and Table VII-H.
14. Applications 16217/16125 (New Gasoline Tank S-1521). Added S-1521 to Table IIA, added Tables IV-BY and VII-BMb, and added Condition 23715 in Section VI.

Section VI, Permit Conditions

1. Application 14374/14375 (Consent Decree –new abatement for S-1405 Sulfur Pit): removed A-1420 from Table IIB; Deleted Condition 19528, Part 15 in Table IV-AS and VII-AM, and in Section VI; added Condition 267, Part 4 in Table IV-AS and in Section VI.
2. Application 14752/14753 (clarification of S-927 abatement during startup/shutdown): Added clarification to Condition 4357, Part 7A and Condition 18372, Part 18 in Section VI, and to Table IV-AA.
3. Application 14325/14326 (throughput increase for S-1002 No 1 HDS Unit): Changed limits in Table IIA and in Condition 8350 in Section VI.
4. Application 14893/14894 (throughput increase for S-1038 Benzene Saturation Unit): Changed limits in Table IIA; added Condition 23258 to Table IV-AI and in Section VI, added Table VII-Ha.
5. Application 15681/15682 (NOx Box): Deleted Condition 18372, part 4 through 17 in Table IV-AA; deleted parts 4 through 17 and completed part 31A of Condition 18372 in Section VI.
6. Application 15212/15683 (Consent Decree – FCCU requirements): Added NSPS Subpart A and Subpart J, and Condition 11433 Parts 7, 8, 9, 10, 11 & 12 to Table IV-K; added Condition 11433 Parts 7, 8, 9, 10, 11 & 12 in Section VI; added additional monitoring requirements to Table VII-K; deleted Table IX A-1.
7. Application 15429/15430 (new Avon Wharf Slop Oil Tanks): Added S-1508 to Table IIA and IID; added Table IV-CXa and Table VII-CXa; added Condition 23486 to Section VI.
8. Applications 14917, and 16495/16496 (new Firewater Pumps). Added S-1518 and S-1519 to Table IIA, added Tables IV – Dh and Table VII - Dh, and added Condition 23811 in Section VI.
9. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added ‘Consent Decree’ and ‘ppmvd’ in Section XI Glossary.

10. Applications 14141/14144 and 16389/16390 (Coker Modification Project and Revisions). Added new sources S-1510 through S-1517 to Table IIA and new abatement devices A-1511, A-1512, A-1514 and A-1515 to Table IIB; revised Tables IV-J and IV-CZ; added Tables IV-XX1, IV-XX2, IV-XX3, IV-XX4, IV-XX5, IV-XX6, VII-XX1, VII-XX2, VII-XX3, VII-XX4, VII-XX5 and VII-XX6; added Condition 23129 to Section VI; added test procedures to Table VIII.
11. Applications 16891/15944 (Compressor Case Leak). Added Condition 1910, Part 3 in Section VI, Table IV-AK and Table VII-H.
12. Applications 16217/16125 (New Gasoline Tank S-1521). Added S-1521 to Table IIA, added Tables IV-BY and VII-BMb, and added Condition 23715 in Section VI.

Section VII, Monitoring Requirements

1. Application 14374/14375 (Consent Decree –new abatement for S-1405 Sulfur Pit): removed A-1420 from Table IIB; Deleted Condition 19528, Part 15 in Table IV-AS and VII-AM, and in Section VI; added Condition 267, Part 4 in Table IV-AS and in Section VI.
2. Application 14918/14919 (new S-896 Fixed Roof Tank A-896 replacing S-428 External Floating Roof Tank A-428): Removed S-428 from Table IIA; deleted Table IV-CP; deleted Table VII-BMa.
3. Application 14893/14894 (throughput increase for S-1038 Benzene Saturation Unit): Changed limits in Table IIA; added Condition 23258 to Table IV-AI and in Section VI, added Table VII-Ha.
4. Application 15429/15430 (new Avon Wharf Slop Oil Tanks): Added S-1508 to Table IIA and IID; added Table IV-CXa and Table VII-CXa; added Condition 23486 to Section VI.
5. Application 15212/15683 (Consent Decree – FCCU requirements): Added NSPS Subpart A and Subpart J, and Condition 11433 Parts 7, 8, 9, 10, 11 & 12 to Table IV-K; added Condition 11433 Parts 7, 8, 9, 10, 11 & 12 in Section VI; added additional monitoring requirements to Table VII-K; deleted Table IX A-1.
6. Applications 14917, and 16495/16496 (new Firewater Pumps). Added S-1518 and S-1519 to Table IIA, added Tables IV – Dh and Table VII - Dh, and added Condition 23811 in Section VI.
7. Application 16018/16114 (S-822 Blowdown Tower Removal). Deleted S-822 from Tables IIA, IV-L and VII-L, and deleted A-23 from Table IIB.
8. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added ‘Consent Decree’ and ‘ppmvd’ in Section XI Glossary.
9. Applications 14141/14144 and 16389/16390 (Coker Modification Project and Revisions). Added new sources S-1510 through S-1517 to Table IIA and new abatement devices A-1511, A-1512, A-1514 and A-1515 to Table IIB; revised Tables IV-J and IV-CZ; added Tables IV-XX1, IV-XX2, IV-XX3, IV-XX4, IV-XX5, IV-XX6,

VII-XX1, VII-XX2, VII-XX3, VII-XX4, VII-XX5 and VII-XX6; added Condition 23129 to Section VI; added test procedures to Table VIII.

10. Added/Expanded the NESHAPS 40 CFR 63 Subpart UUU requirements on Tables IV-A, IV-K, IV-AQ, IV-S, IV-AJi, VII-H, VII-K, VII-AK and Table VIII.
11. Applications 16891/15944 (Compressor Case Leak). Added Condition 1910, Part 3 in Section VI, Table IV-AK and Table VII-H.
12. Applications 16217/16125 (New Gasoline Tank S-1521). Added S-1521 to Table IIA, added Tables IV-BY and VII-BMb, and added Condition 23715 in Section VI.

Section VIII, Test Methods

1. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added 'Consent Decree' and 'ppmvd' in Section XI Glossary.
2. Applications 14141/14144 and 16389/16390 (Coker Modification Project and Revisions). Added new sources S-1510 through S-1517 to Table IIA and new abatement devices A-1511, A-1512, A-1514 and A-1515 to Table IIB; revised Tables IV-J and IV-CZ; added Tables IV-XX1, IV-XX2, IV-XX3, IV-XX4, IV-XX5, IV-XX6, VII-XX1, VII-XX2, VII-XX3, VII-XX4, VII-XX5 and VII-XX6; added Condition 23129 to Section VI; added test procedures to Table VIII.
3. Added/Expanded the NESHAPS 40 CFR 63 Subpart UUU requirements on Tables IV-A, IV-K, IV-AQ, IV-S, IV-AJi, VII-H, VII-K, VII-AK and Table VIII.

Section IX, Permit Shield

1. Application 15212/15683 (Consent Decree – FCCU requirements): Added NSPS Subpart A and Subpart J, and Condition 11433 Parts 7, 8, 9, 10, 11 & 12 to Table IV-K; added Condition 11433 Parts 7, 8, 9, 10, 11 & 12 in Section VI; added additional monitoring requirements to Table VII-K; deleted Table IX A-1.
2. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added 'Consent Decree' and 'ppmvd' in Section XI Glossary.

Section XI, Glossary

1. Application 15949/16015 (Consent Decree for SRU and Heaters). Added NSPS Subpart A and J requirements to Tables IV-AA, -AAa, -AAb, -AF, -AF1, -AQ, -Z and Tables VII-AA, -AC, -AC1, -AF, -AG, -AI, -AJ, -AK, -AO, -W, -X, -Y, -Z; added new Tables IV-AAc and VII-AJ1; added Condition 267 Part 5, changed Condition 8077 (Introduction and Part B4.A), and added Condition 23562 in Section VI; added Subpart

J methods to Table VIII; deleted Table IX-A2 and added Table IX-A7; and added 'Consent Decree' and 'ppmvd' in Section XI Glossary.

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APPENDIX A Permit Evaluations

Public Copy

APPLICATION 14141, COKER MODIFICATION PROJECT
ENGINEERING EVALUATION REPORT
TESORO REFINING AND MARKETING COMPANY
GOLDEN EAGLE REFINERY
150 SOLANO WAY
MARTINEZ, CALIFORNIA 94533
PLANT NUMBER 14628

COKER MODIFICATION PROJECT
PERMIT APPLICATION NUMBER 14141
JULY 28, 2006

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CALIFORNIA 94109

BY: THU BUI
AIR QUALITY ENGINEER II

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I.EXECUTIVE SUMMARY

I.EXECUTIVE SUMMARY

Tesoro Refining and Marketing Company is requesting authorization for modifications to the Coker Unit at the Tesoro Golden Eagle Refinery in Martinez, California. The modifications consist of converting the Coker from a fluid coking technology to a delayed coker technology. The delayed coker process is inherently cleaner than fluid coking because the coke particles that are produced as a byproduct of the process are collected in drums and removed in solid form, instead of being emitted in the exhaust gases from the process, which can result in coke particulate being released into the atmosphere. The modifications also involve other elements that will benefit air quality and public health, including (i) a change from burning coker exhaust gas to provide heat for the coking process to burning cleaner refinery fuel gas (RFG) or natural gas; (ii) the routing of pressure relief devices that currently vent unabated directly into the atmosphere to a gas recovery system or to a safety flare; and (iii) a switch from anhydrous ammonia currently used in the Selective Catalytic Reduction ("SCR") system at the No. 5 Boiler to aqueous ammonia, which is inherently safer.

Tesoro is undertaking these modifications in part to satisfy the requirements of an Abatement Order issued by the Bay Area Air Quality Management District's Hearing Board on December 22, 2005. The Hearing Board issued the Order in response to a series of problems with sooty coker flue gas emissions that have occurred when the existing Fluid Coker and the associated Carbon Monoxide (CO) Boiler # 5 at the refinery have malfunctioned. The Hearing Board initially ordered Tesoro to evaluate ways to prevent these problems from recurring, and Tesoro determined that the switch to the delayed coking technology would be the most appropriate alternative. Based on that determination, the Hearing Board ordered Tesoro to implement the modifications that are the subject of this permit application.

The modified Coker will have the same maximum capacity as the existing fluid Coker of 53,200 barrels per stream day (BPSD) (24 hours/day), and an annual average of 47,800 barrels per calendar day (BPCD) (365 days/yr) to match the existing Title V permit limit. The overall emissions from the delayed coker are decreased due to burning cleaner fuel (refinery fuel gas (RFG) and natural gas) instead of coke in the specialized coker's burner, which created particulates and caused gray or black plumes when the No. 5 Boiler has a process upset or tube failure in the past.

The net emissions changes are summarized in Table I (detailed calculation are presented in Appendix A and B):

Table I
Coker Modification Project Offset Emission Summary, tons per year (TPY)

	POC	NOx	SO2	CO	PM/PM_{10}	Ammonia
Current	2.22	301.96	3,146.93	79.78	68.65	678.31
Future	8.613	19.191	7.741	30.658	14.139	9.173
pre-net emissions	6.40	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)
Offsets Required	(7.36)					
Post - Net emissions	0.0	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)

The proposed new equipment triggered Best Available Control Technology (BACT) pursuant to Regulation 2-2-301. Compliance with BACT for all sources and all pollutants will be enforced

I.EXECUTIVE SUMMARY

through permit conditions. This proposed project does not require offsets for NOx, SO2 and particulates per Regulation 2-2-302 and 303 since there is a net emission reduction. Tesoro may bank any allowable emissions reductions after the project is built and the actual equipment has shut down. The POC emission increases of 6.40 tons/yr will be offset at a ratio of 1:15 to 1:0 by Tesoro Banking Certificate # 968.

The District also required a Health Risk Assessment (HRA) for emissions of toxic air pollutants. For the purpose of this evaluation, the District only considered the increased health risks described in the project HRA. The carcinogenic risk from this project, based on urban modeling results, is less than one in a million. In accordance with Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants", this level of risk passed the risk screening analysis and is acceptable to the District. The sum of the chronic Health Indexes for the project is well below the significance level of 1.0. (See Appendix C for Health Risk Assessment)

The Contra Costa County Health Services Department has confirmed that the modification is consistent with the Coker's existing land use permit, and no County permit amendment will be needed. The County's determination is based on a Hazard Score of 52 for the modified coker, which is less than the Hazard Score for the existing process. (See letter dated May 19, 2006 in Appendix D). In addition, the Contra Costa County has reviewed the airport influence area, noise, safety and airport protection surface and determined all requirements are within the range or acceptable. (See letter dated June 1, 2006 in Appendix D)

As a replacement of an existing facility, the project is categorically exempt from the environmental review requirements of the California Environmental Quality Act (CEQA). The project will replace the existing coker at the Golden Eagle Refinery. The new coker will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced. (See CEQA Analysis in Appendix E)

The District performed dispersion modeling for Precursor Organic Compounds (POC) at the new flare, and particulate matter with an aerodynamics diameter of 10 microns or less (PM_{10}) at the new coke handling system on June 27, 2006. The results demonstrated that National Ambient Air Quality Standards (NAAQS) will not be exceeded. (See Appendix E -Attachment 1, 2, and 3)

II. INTRODUCTION

Tesoro proposes to modify the existing Fluid Coker Unit (S-806) and its associated equipment with delayed Coker technology (S-1510) and new associated equipment to eliminate particulate emissions. This replacement should resolve the intermittent black or gray plumes in the coker flue gas caused by coke burning in the Fluid Coker's burner, which then must be abated by the No. 5 Boiler (S-903). This Coker Modification Project (CMP) is being undertaken in response to a final Abatement Order (Docket # 3492) issued by the Bay Area Air Quality Management District on December 22, 2005. Tesoro is committed to complete the CMP by July 1, 2008.

The CMP will involve the installation of two new coker heaters (S-1511 and S-1512) with new associated emission control equipment, four new coke drums, a new fractionator, two side strippers, knockout and settling drums (S-1510), a new coke handling system (S-1513 through S-1516), a new flare (S-1517), and miscellaneous pumps, piping and heat exchangers. (See Appendix F, Simplified Process Flow Diagram- Coker Modification Project and Delayed Coke Handling System)

This proposed project has many beneficial effects and will:

(i) reduce hydrocarbon emissions from the coking operation by redirecting process gases from all coker's pressure relief valves into the new flare instead of venting them to atmospheric blowdown tower during upset condition, and

(ii) reduce NOx, CO, SO2, PM10 and ammonia emissions by shutting down the NO. 5 Boiler (S-903) and installing two new heaters (S-1511, S-1512), which will meet BACT standards with low NOx burners and Selective Catalyst Reduction (SCR), and

(iii) eliminate coker start up excess emissions by converting the current coker design from a fluid coker to a delayed coker; thus eliminating the coker flue gas stream.

III. PROJECT DESCRIPTION

The CMP equipment will be located on the same site of the existing Coker Complex in the main processing area of Tesoro Refinery. The new modified Coker will have the same maximum capacity of 53,200 BPSD, and an annual average of 47,800 BPCD to match the existing Title V permit limits for the existing fluid coker. (See Appendix F, Table A-1 Coker Maximum Annual Throughput in 1995).

The delayed coker process will use all possible existing equipment, while shutting down and adding the following equipment:

New Equipment:

S-1510 Delayed Coker with 4 Coke Drums and associated equipment
S-1511 Delayed Coker Heater #1, 230 MMBtu/hr abated by A-1511 Selective Catalytic Reduction System (SCR)
S-1512 Delayed Coker Heater #2, 230 MMBtu/hr abated by A-1512 Selective Catalytic Reduction System (SCR)
S-1513 Coke Screen/Crusher, 1,200 tons/hr.
S-1514 Coke Silo #1 abated by A-1514 Baghouse, 1,400 cfm.
S-1515 Coke Silo #2 abated by A-1515 Baghouse, 1,400 cfm
S-1516 Coker Truck Loadout
S-1517 Coker Flare (low pressure hydrocarbon) to handle 1.25MM lbs/hr of emergency process gas: 3 natural gas fired pilot flames, 50 scfh/pilot.

New Exempt Equipment:

S-1525 Anti-Foam Tank
S-1526 De-Coking Water Tank
S-1527 Aqueous Ammonia Storage Tank: 18,000 gallons

Existing Permitted Equipment to be reused in the delayed coker process:

S-659 Coke Storage Tank A-659, abated by A-9, Coker Silo Precipitator, and A-10, Coker Sluice Tank Spray Box
S-660 Coke Storage Tank A-660, abated by A-9, Coker Silo Precipitator, and A-10, Coker Sluice Tank Spray Box
S-807 Coker Blowdown Drum
S-810 Coker Loader System at Pile
S-821 Coke Storage Pile
S-833 Coker/Feed Product Handling System

Existing Permitted Equipment to be shutdown in the delayed coker process:

S-806 Coker Fluid Coking, 740 MMBtu/hr, abated by A-806, Electrostatic Precipitator, and A-903, No.5 Boiler.
S-808 Coker Sluice Tank, abated by A-10, Coker Sluice Tank Spray Box
S-836 Coker Elutriator Loading System
S-837 Coker Reactor Chuck Coke Draw-Off
S-838 Coker Pit Feeder
S-903 No. 5 Boiler, abated by A-8, Coker CO Boiler Precipitator
S-923 Coking Startup Burner
S-924 #24 Furnace Coker Anti-Coking Steam Superheater
S-925 #25 Furnace Coker Attriting Steam Superheater

The annual average production rate over a six-year period of feed to the Coker is expected to increase from 40,600 BPCD to the currently permitted annual limit of 47,800 BPCD. This is

III. PROJECT DESCRIPTION

due to a combination of longer run time between turnarounds (5 years vs. 3 years), shorter turnarounds (35 days vs. 45 days), and elimination of the need to cut fluid Coker rate during the last year of the run due to coking of the Reactor cyclones.

The CMP will result in an increase in coke production. [redacted] Also, the existing fluid coking process consumes some of the coke produced by burning it to produce the heat needed for the operation, while the delayed coking process relies upon cleaner burning RFG-fired heaters for process heat. Coke production is expected to be 3,000 ton per day (TPD) on a dry basis following implementation of the proposed project, up from year 2005 historical average of approximately 1,542 TPD. (See Appendix F – Table A-2 Coke Yields from Accounting)

1. Delayed Coker Process Description

The delayed coker operation consists of four coke drums and two heaters. There will be two process heaters (230 MMBtu/hr each, low NOx burner equipped with SCR), each of which will be dedicated to a set of two drums in the four-drum configuration. The coke will be produced in four large coke drums. The coker feed, vacuum residuum, will be fed to the coke heaters from the fractionator. The coker heaters heat the feed to approximately 950 degrees Fahrenheit (°F). The heated feed will be sent to two of the coke drums. Upon entering the lower pressure of a coke drum, the cracked hydrocarbons will flash and pass overhead, be quenched with heavy coker gas oil, and then enter the bottom of the fractionator. The finely divided carbon particles formed in the cracking of the large chain hydrocarbons will remain in the coke drum, coalesce, and form solid coke particles. These particles will solidify in a matrix and build up in the drum, filling it to a predetermined limit. Two drums will be online filling with coke while the other two will be offline either having the coke removed from the drum or being prepared to be switched back online. A filled coke drum will be stripped of residual vapors with steam, and then quenched with water. The steam produced by quenching will be routed to the new enclosed blowdown system to remove coke particles and oil droplets prior to being condensed in new air-cooled condensers. The remaining vapors will be routed to the existing Wet Gas Compressors.

Three gas oil products will be produced in the fractionator. The light coker gas oil will be sent to the hydrocracker. The medium and heavy coker gas oils will be combined and sent to the Fluidized Catalytic Cracker (FCC) feed hydrotreater. The overhead vapors and distillate from the fractionator will flow through existing water-cooled condensers, a water trim cooler and an accumulator vessel through transfer lines to processing equipment that will be reused from the Fluid Coker.

Once the coke is quenched, the large slide valve on the bottom of the drum will be opened and the coke will be cut from the drum with high-pressure water and fall out of the drum and into the coke handling system.

The primary continuous emission sources in the delayed coking operation are the two gas-fired process heaters. Each heater will be equipped with low-NO_X burners and SCR for the reduction of NO_X. The SCR system will use aqueous ammonia (19.5 percent concentration by weight) as the reducing agent from a new 18,000-gallon storage tank. Emissions of NO_X will meet the BACT requirement of less than or equal to 7 ppm dry corrected to 3 percent oxygen. The refinery fuel gas (RFG) used in the heaters will be treated to meet the BACT requirement of less than 100 ppm total reduced sulfur (TRS) compounds in a consecutive 24-hour period. The CO emissions from the heaters will meet a tiered BACT requirement of less than or equal to 35 ppm except for periods of potential upset of upstream sources, or startup and shutdown situation

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where the CO limit is less than or equal to 50 ppm. No more than 100 days per year will be permitted at the higher CO level.

The coke and water from the coke drums falls into a coke pit. The coke is moved from the pit to a pad by a bridge crane to allow water to drain off. The water drains from the pad back to the coke pit and then flows into a settling basin (also called a "maze pit") where the water is recovered for further use. Coke that settles out of the water is recovered from the settling basin using the bridge crane. Using the bridge crane, the coke is moved from the coke pad to the grizzly, which in turn feeds the crusher. The coke is crushed and conveyed via belt conveyor to storage silos. The silos are equipped with baghouses for PM_{10} emission control. Coke is loaded from the silos into trucks for shipment. Transport by truck is a continuation of current practices at the Tesoro. PM_{10} emissions from vehicle loading are controlled by enclosing the area, where the trucks drive through a tunnel structure by covering both ends with thick plastic flaps. Due to coke production increase, the number of trucks may increase up to 66 trucks per day (total 136 trucks/day).

Tesoro has several options to transfer the coke byproduct out of the refinery, but at this time, a specific option has not been chosen. The byproduct coke from the delayed coker will be transferred out of Tesoro by one or more of the following methods:

1. Truck load to Pittsburg Plant (Plant #14630) and then moved to other location by ships
2. Truck load to the nearby Koch Carbon facility (Plant # 10684) and then moved to other location by ships
3. Truck load to other port terminal facilities
4. Ship coke free on board (the location where the buyer takes full responsibility for the goods that are being shipped) from the refinery to destination determined by purchaser

A new flare (S-1517) will be installed to control emissions from pressure relief valves during emergency situations, such as a power failure, cooling water failure, steam failure, shutdown, or similar situation. Hydrocarbon pressure relief valves will be removed from the existing atmospheric blowdown tower and will be incorporated into the new flare system. The flare will be a 275-foot high elevated flare[1] with a relief capacity of 1,250,000 pounds per hour. The flare will have three small (50 standard cubic foot per hour [scfh]) natural gas-fired pilot flames. The area is adjacent to Tesoro's existing flare systems.

2. Fluid Coker Process Description

A brief process description for the fluid coking process is provided herein to provide background regarding the nature of the changes that are proposed, and the sources of emissions reductions that will be realized as a result of the proposed project. Condition # 573 will be deleted as soon as the No. 5 Boiler (S-903) is shut down. (See Appendix F – Condition #573)

The Fluid Coking process has two major vessels, including a reactor, and a burner. The heavy hydrocarbon feed is introduced into the scrubber (a distillation column mounted on top of the reactor) where it exchanges heat with the reactor overhead effluent and condenses the heaviest fraction of the hydrocarbons. The reactor feed includes both the fresh feed and the recycle condensed feed in the scrubber. The total feed is injected into a bed of

[1]. The design for the flare has not been finalized as of the date of application submittal. The flare will be a minimum of 275 feet and a maximum of 325 feet tall. The minimum height of 275 feet is used in the regulatory evaluation as it represents the worst-case condition for dispersion analysis. Final flare design will be in accordance with Good Engineering Practice.

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fluidized coke in the reactor where it is thermally cracked at about 1,000º F to produce lighter products, gas, and coke. The coke is laid down on the fluidized coke particles while the hydrocarbon vapors pass overhead into the scrubber. The reactor overhead stream is scrubbed for solids removal and the material boiling above 875º F is condensed and recycled to the reactor. The lighter hydrocarbons are sent from the scrubber to conventional fractionation, gas compression, and light ends recovery units.

Heat is required to maintain the reactor at coking temperatures and is supplied by circulating coke between the reactor and the burner. A portion of the coke produced in the reactor is burned with air to satisfy the process heat requirements. The excess coke is withdrawn from the burner, cooled with steam-atomized water in the Quench Elutriator and then transferred to on-site coke silos and an on-site storage pile. The flue gas from the burner is sent to the No. 5 Boiler for complete combustion of the components in the flue gas, which were not fully combusted (e.g., coke particles and CO). Tesoro is using anhydrous ammonia at this No. 5 Boiler, which is more hazardous than aqueous ammonia as proposed for the replacement delayed coker.

3. CMP Impacts to Other Refinery Process Units

The implementation of the proposed project may increase (or decrease) throughput of process units upstream and downstream of the Coker resulting in emission increases (or decreases) from existing equipment. As shown in Appendix F- Simplified Block Flow Diagram and supporting documents, the CMP will not cause any of the upstream or downstream sources to exceed the permitted limit.

IV. EMISSION SUMMARY

Air emission rates have been calculated for each replacement source as well as for sources that will be shutting down (onsite contemporaneous emission reductions). The emission rates are based on Best Available Control Technology (BACT) determination and operational data supplied by Tesoro. Calculation methods use EPA emission factors, emission factors based on source test results, material balances, other established emission factors, and continuous emission monitoring (CEM) data. Detailed emission calculations for each source are included in Appendix A.

1. Emission Increases

Source S-1510 - Delayed Coker

Only fugitive emissions are calculated for this source. The fugitive emission factors are based on refinery wide fugitive component screening data applied to the US EPA Correlation Equations as approved in Application #2508 (Factors from Tesoro CARB III Project, Tesoro's Actual Monitoring Data). The feed to the Delayed Coker will be increased, but will not exceed the 47,800 BPCD annual average limit established in 1995, or 53,200 BPSD maximum.

Component	Emission Factor (lbs/day/source)	Added	Removed	Net
Valves in Gas Service	0.0015288	309	70	239
Valves in Liquid Service	0.0014736	719	312	407
Pumps	0.028872	14	8	6
Compressors	0.00804	0	0	0
PRV in Gas Service	0.00972	0	0	0
PRV in Liquid Service	0.006312			0
Flanges	0.004	1296	392	904
Sample Connectors	0.079	0	0	0
Sewer Drains	0.34	0	0	0
TOTAL		2338	782	1556

Source S-1511 – Delayed Coker Heater # 1, 230 MMBtu/hr equipped with low-NOx burners fired on treated refinery fuel gas (RFG) or natural gas, and abated by selective catalytic reduction (SCR).

The NOx and CO emission factors for the new heater are based upon BACT limits. The SO2 emission rate is based on the BACT requirement of using natural gas or RFG with less than or equal to 35 ppmv total reduced sulfur averaged over any 365-day period. The PM10 and POC emission factors are from EPA AP-42 Section 1.4 for Natural Gas Combustion. In addition, Tesoro is also allowed to emit 400 ppm CO and 50 ppm NOx for 144 hours during startup, shutdown and malfunction. Tesoro requested an additional 100 days of operation for CO at 50 ppmv since Tesoro cannot guarantee that the heater will always meet 35 ppmv of CO. Tesoro has three valid reasons for allowing the CO at 50 ppmv. First, the delayed coker heater will need 36 days for tube spalling (cleaning of coke built up on the heater's tubes). Second, the FCC and Crude Unit turnaround will need total 55 days, so these units would operate at a reduced feed rate, resulting in lower operating temperature at the coker heater. The third reason is for 9 days of all other unplanned events. This could be power outages, fires, pump problems, crude shortages, and any other possible reason for cutting rate.

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Aqueous ammonia at 19% concentration will be used for the SCR and 10 ppmv of ammonia slip is allowed in the exhaust outlet at the heaters as consistent with other heaters equipped with SCR within the District.

NOx = 7 ppmv @ 3% O2 for 359 days (BACT)
NOx = 50 ppmv @ 3% O2 for 144 hrs (6 days)
Total Sulfur = 100 ppmv maximum for treated refinery gas fuel per day
Total Sulfur = 35 ppmv annual average for treated refinery gas fuel (BACT)
PM10 = 7.6 lb/10^6 SCF – AP-42, Table 1.4-2 Natural Gas Emissions
POC = 5.5 lb/10^6 SCF – AP-42, Table 1.4-2 Natural Gas Emissions
CO= 35 ppmv @ 3% O2 for 259 days (BACT)
CO = 50 ppmv @ 3% O2 for maximum 100 days for reduced feed rate & unplanned events
CO = 400 ppmv @ 3% O2 for 144 hrs (6 days)
NH3 = 10 ppmv @ 3% O2 for SCR

Source S-1512 – Delayed Coker Heater # 2, 230 MMBtu/hr equipped with low-NOx burners fired on RFG or natural gas, and abated by SCR. Same basis as above.

Source S-1513 – Coker Screen/Crusher
The emission factors were based on "Mojave Desert Air Quality Management District Antelope Valley Air Pollution control District **Emission Inventory Guidance** Mineral Handling and Processing Industries, April 10, 2000. (See Appendix A – Emission Inventory Guidance) for the crushing process. The screening process is assumed to be dry even though the coke will be wet with up to 12% moisture content. The District will assume 75% controlled for wet coke and water spray when necessary. The crushing operation is assumed to be wet, primary or secondary crushing. The proposed emission factors used in for the crusher is acceptable and conservative because the emission factors listed on EPA, AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing is the same or lower. Tesoro is planning to process maximum 1,200 ton/hr and 1,277,500 ton/yr of wet coke.

Process	*PM_{10} Emission Factor (lb/ton)*
Screening	*0.0022*
Crushing	*0.001*

Source S-1514 and S-1515 – Coker Silo No. 1 and No. 2 abated by baghouses A-1514 and A-1515
The silos' emissions are based on the guaranteed 0.01 grain/dscf outlet grain loading of the baghouses (A-1514 and A-1515) and the designed flow rate of 1,400 scfm for each baghouse plus 8,760 hrs of operation per year.

Source S-659 and S-660, Coke Storage Tanks abated by A-9, Coker Silo Precipitator, and A-10, Coker Sluice Tank Spray Box

These are existing sources that are currently permitted and continue to be used with the CMP. S-659 and S-660 shared the same Condition # 20682 (See Appendix F-Condition # 20862) with maximum throughput of 1,016,160 tons/yr (2,784 ton/day) of dry coke. Currently, the coke produced from the fluid coker and stored in S-659 and S-660 is dry coke. With the CMP, the coke will be wet when it is being sent to silos and shipped. Tesoro plans to increase production by 215 ton/day of coke, which will bring the permit level to maximum 1,095,000 dry ton/yr (3000 dry ton/day) or 1,277,500 wet tons/yr (3,500 wet

IV. EMISSION SUMMARY

ton/day) of coke. The emissions associated with this change already have been included along with the new proposed throughput. In the future, Condition # 20682 will be deleted (Appendix F), and a new condition will be issued to combine four silos (2 new and 2 existing) for one process. The Coker Silo Precipitator has been previously tested and confirmed meet the new BACT requirement of 0.01 grain/scf (Source test dated 7/14/93, see Appendix A-S-659 and S-660 Coke Storage Tanks abated by a Precipitator A-9)

Source S-1516 Coke Truck Loadout

The truck load out will include emissions from the batch drop operation into the truck, and the particulate emissions from traffic on paved road within the boundary of Tesoro facility. The batch drop operation emission factor is from EPA, AP-42 Section 13.2.4 Aggregate Handling and Storage Pile dated 1/95. The paved road emission factor is from EPA, AP-42 Section 13.2.1.3 Paved Road, Equation (2) dated 12/03 with the following assumptions:

Maximum Throughput = 1,200 wet ton/hr
Annual Throughput = 1,277,500 wet ton/yr, based on 3,500 wet ton/day X 365 day/yr
Mile = 3900 ft (0.74 mile) between Tesoro gate and truckload out silos
Future Trucks = 58,068 trucks/yr at 25-26 wet tons/truck
These roads will be maintained by water flush and swept at least once a day = 77% control efficiency.

S-1517 Coker Flare (low pressure hydrocarbon) to handle 1.25MMBtu/hr of emergency process gas: 3 natural gas fired pilot flames, 50 scfh/pilot.

Pilot flare emissions are based on EPA's emission factors, AP-42 Section 1.4 Natural gas residential of less than 0.3 MMBtu/hr (uncontrolled) at 50 scfh/pilot. The emissions for shut down were also calculated although the planned shut down event only occurs approximately once every five years. The flare event associated with the delayed shut down will be approximately 30 minutes. The new delayed coker is designed for flareless startup. It will be connected into the flare gas recovery compressor and the process gas will be brought back into existing wet gas system (gas plant) instead of the flare. The delayed coker is designed to minimize flaring. The flare is used for shutdown and emergencies only such as power outage or shut down operations.

Existing Sources

The following sources will be reused at the new delayed coker. Their emissions have been accounted for by previous applications. No change in emissions expected from these sources, since no modification or physical change is involved.

S-807 Coker Blowdown Drum
S-810 Coker Loader System at Pile
S-821 Coke Storage Pile
S-833 Coker/Feed Product Handling System

New Exempt Equipment

The following sources are exempt from permit; therefore, emissions are not included in this application.

S-1525 Anti-Foam Tank is exempt per Regulation 2-1-123.3.3 for flash point of greater than 130°F.

S-1526 De-Coking Water Tank is exempt per Regulation 2-1-123.2 for storage of aqueous solution, which contains less than 1% organic compound.

S-1527 Aqueous Ammonia Storage Tank is exempt per Regulation 2-1.123.2 for storage of aqueous solution, which contains less than 1% organic compound.

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IV. EMISSION SUMMARY

Table II
Project Emission Summary (annual average)

Source	*NOx (lbs/day)*	*SO2 (lbs/day)*	*PM10 (lbs/day)*	*POC (lbs/day)*	*CO (lbs/day)*	*NH3 (slip) (lbs/day)*
S-1510				*7.120*		
S-1511	*47.603*	*60.595*	*27.673*	*20.026*	*207.0*	*25.132*
S-1512	*47.603*	*60.595*	*27.673*	*20.026*	*207.0*	*25.132*
S-1513			*92.160*			
S-1514			*2.880*			
S-1515			*2.880*			
S-1516			*10.270*			
S-1517 Pilot	*0.338*	*0.0022*	*0.0274*	*0.020*	*0.144*	
Total	*95.545*	*121.191*	*163.563*	*47.193*	*414.086*	*50.264*

Source	*NOx (tons/yr)*	*SO2 (tons/yr)*	*PM10 (tons/yr)*	*POC (tons/yr)*	*CO (tons/yr)*	*NH3 (slip) (tons/yr)*
S-1510				*1.299*		
S-1511	*9.565*	*3.870*	*5.050*	*3.655*	*15.316*	*4.587*
S-1512	*9.565*	*3.870*	*5.050*	*3.655*	*15.316*	*4.587*
S-1513			*1.752*			
S-1514			*0.526*			
S-1515			*0.526*			
S-1516			*0.938*			
S-1517 Pilot	*0.062*	*0.0004*	*0.005*	*0.0036*	*0.0263*	
Total	*19.191*	*7.741*	*14.139*	*8.613*	*30.658*	*9.173*

2. Onsite Project Contemporaneous Emission Reductions

S-806 Fluid Coker Unit
This onsite emission reduction is based on the actual number of valves and flanges that will be removed from service. The calculation is included along with S-1510 increase as shown in Appendix A – Source S-1510.

A-903 No. 5 Boiler
The emission reductions for No. 5 Boiler are based on the actual Continuous Emission System (CEM) data for SO2 and NOx, averaged of the past three years (2003-2005). For PM10, POC, and CO, Tesoro is using the actual emission formula (equation) required by the District under Condition #4357. See Appendix B - "Furnace Emission Calculation and an example of CEM daily readout"

Table III

Pollutant	*3-yr Ave. (2003-2005), ton/yr*
NOx	*(301.96)*
SO2	*(3,146.93)*
PM10	*(68.65)*
POC	*(2.22)*
CO	*(79.78)*
NH3	*(678.31)*

IV. EMISSION SUMMARY

S-924 and S-925 Furnace 24 and 25
The emission reductions for these furnaces are included in the Table III above, because the gas exhaust from these sources are coming out from the same stack and monitor by the same CEM system.

Current Truck Traffic
The particulate emissions from entrained road dust are based on the three year average truck traffic (number of actual trucks) and included in the Appendix B.

The delayed coker shut down flaring event (every 5 years) emissions will not be included in the emission increase for this project because it would be offset by the fluid coker flaring event (every 3 years), which would result in much more emission reduction at the rate of approximately 5.3 MMSCF/event compare to 0.418 MMSCF/event.

3. Net Project Emissions Changes

Table IV
Coker Modification Project Emission Summary, tons per year (TPY)

	POC	NOx	SO2	CO	PM/PM_{10}	Ammonia
Current	2.22	301.96	3,146.93	79.78	68.65	678.31
Future	8.613	19.191	7.741	30.658	14.139	9.173
Net emissions	6.40	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)

The number in parenthesis ( ) is the reduction from this project. Tesoro may bank any allowable emissions reduction after the project has been completed.

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1. Best Available Control Technology (BACT)

- Source S-1510 Delayed Coker (fugitive emissions): BACT is not triggered for PM10 because emissions are less than 10 lb/highest day per Regulation 2-2-301. S-1510 emits only PM10. No other pollutant is emitting from S-1510.

- Source S-1511 and S-1512, Heaters: BACT is triggered for NOx, SO2, PM10, POC and CO because emissions from each source are greater than 10 lb/highest day. Tesoro is using Selective Catalytic Reduction (SCR) and low NOx Burners to achieve the BACT for NOx at 7 ppmv at 3% O2 dry. This BACT level is achieved in practice. BACT(2) for SO2 emissions on refinery fuel gas is set at 35 ppm Total Reduced Sulfur (TRS) (averaged over any rolling 365 day period) and 100 ppm TRS in any rolling 24 hour period. BACT(2) for CO is 35 ppmv at 3% O2 dry on normal day to day operation, and 50 ppmv at 3% O2 dry when the coker is running at reduced feed rate due to maintenance of coker heaters, upstream Fluidized Catalytic Cracker (FCC) and Crude units estimated approximately for 100 days. BACT(1) for CO is not determined to date. Tesoro will be using natural gas or treated refinery gas fuel to meet BACT(2) for PM10. BACT (1) for PM10 is also not determined. BACT(1&2) for POC is not determined but requires good combustion practice per District's BACT Guideline, Document 94.3.1. The NOx, CO, and oxygen concentrations will be monitored continuously using a continuous emissions monitor (CEM). Therefore, emission concentrations of NOx and CO will be limited to parts per million (ppm) emissions concentrations in the permit conditions.

- Source S-1513 Screener/Crusher is subject to BACT because the particulate emissions from the process are greater than 10 lb/highest day. According to BACT (1) guideline Document 156.1- Wet Solid Material Handling (conveying, size reduction) the use of water spray and/or chemical suppressants is BACT for PM10. Tesoro will be using side walls on the grizzly to reduce windblown dust when dropping the coke into the grizzly / crusher. The coke will be wet between 10-12% moisture, so this source meets BACT(1) for PM10.

- Sources S-1514 and S-1515 silos: BACT is not triggered for the silos since PM10 emissions are less than 10 lb/highest day per Regulation 2-2-301. These silos will be abated by baghouses (A-1514 and A-1515) that meet the BACT (1) requirement of 0.01 grain/dscf outlet loading per BACT Guideline, Document 28.1.

- Source S-1516, Coke Truck Loadout: BACT is required for this operation since the operation emit more than 10 lb highest /day of PM10. Tesoro will enclose the loadout area with two side-walls, where trucks can drive through in and out. The road would be paved and water sprayed along with the road sweeper at least once a day. Before the trucks leave the refinery, they will also go through a truck wash to remove coke dust.

- Source S-1517 Flare: BACT is required for this new flare since it is expected to emit more than 10 lb/highest day of POC during scheduled shutdown and emergency power outage. This flare will meet BACT(2) requirement (BACT Guideline, Document 82.1) for elevated flares using steam or air-assisted, with staged combustion. The POC destruction efficiency will be equal to or greater than 98.5%, and will use natural gas as pilot fuel. This coker has been designed for a flareless startup, and will operate only during periods of emergency plant upset or breakdown. Any process gases, which are routinely vented to the flare, will be recovered by the existing recycle compressors, which will be sent to the wet gas system and then to the fuel gas recovery system or other appropriate use.

2. Offsets

Offsets are required for this project pursuant to Regulation 2, Rule 2, Sections 302 and 303. Tesoro has enough contemporaneous emission reduction credits to

V. STATEMENT OF COMPLIANCE

fully offset NOx, CO, SO2 and PM10, as shown in 3. Net Project Emission Changes in Section IV. The POC emission increases require the use of banked POC credits. The company will use the Certificate of Deposit # 968 to provide the needed offsets at a ratio of 1.15:1 per Regulation 2-2-302.2.

Available offsets = 28.407 ton/yr (Certificate of Deposit # 968)
Emissions from this application = 6.40 TPY POC
POC Offset provided = 6.40 tons/yr X 1.15 = 7.36 tons/yr

Thus, the Banking Certificate No. 968 will be reissued to Tesoro in the amount of 21.047 tons POC/yr. The total POC emissions may change based on the actual final fugitive component count consisting of valves, pumps and flanges/connectors. Since Tesoro's offset obligation for POC may increase or decrease at that time, the District will make adjustments to reflect the actual fugitive components count in accordance with Part 7 of Condition number 23129.

Table V
Coker Modification Project Offset Emission Summary, tons per year (TPY)

	POC	NOx	SO2	CO	PM/PM_{10}	Ammonia
Current	2.22	301.96	3,146.93	79.78	68.65	678.31
Future	8.613	19.191	7.741	30.658	14.139	9.173
CMP emissions	6.40	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)
Offsets Required (1.15:1)	(7.36)					
Pre-existing Cumulative Increase since 4/5/91	0.0	0.0	0.0	5.24	0.0	0.0
Net CMP emissions	0.0	(282.77)	(3,139.19)	(43.88)	(54.51)	(669.14)

3. Health Risk Assessment

A Toxic Risk Screening Analysis is required for this project because the following sources triggered the following toxic trigger level. See attached Appendix C for detailed toxic calculations of each source.

Table VI
Sources Required Toxic Risk Analysis

Source	*Toxic Pollutant Emitted*	*Hour Rate Emission (lb/hr)*	*Acute Trigger Level (lb/hr)*	*Annual Emission (lb/yr)*	*Chronic Trigger Level (lb/yr)*
S-1510	*Benzene*	*0.0069*	*2.9*	*60.61*	*6.4*
S-1511	*PAH*	*Appendix C*		*Appendix C*	*1.1 E-2*
	Arsenic	*1.95 E-4*	*4.2 E-4*	*1.71*	*1.2 E-2*

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Table VI
Sources Required Toxic Risk Analysis

Source	*Toxic Pollutant Emitted*	*Hour Rate Emission (lb/hr)*	*Acute Trigger Level (lb/hr)*	*Annual Emission (lb/yr)*	*Chronic Trigger Level (lb/yr)*
	Cadium			*1.99*	*4.5 E-2*
	Chromium			*2.16*	*1.3 E-3*
	Formaldehyde	*2.6 E-1*	*2.1 E-1*	*224*	*30*
	Lead			*9.85*	*5.4*
	Nickel	*0.002*	*1.3 E-2*	*19.0*	*7.3 E-1*
S-1512	*PAH*	*Appendix C*		*Appendix C*	*1.1 E-2*
	Arsenic	*1.95 E-4*	*4.2 E-4*	*1.71*	*1.2 E-2*
	Cadium			*1.99*	*4.5 E-2*
	Chromium			*2.16*	*1.3 E-3*
	Formaldehyde	*2.6 E-1*	*2.1 E-1*	*224*	*30*
	Lead			*9.85*	*5.4*
	Nickel	*0.002*	*1.3 E-2*	*19.0*	*7.3 E-1*
S-1517	*Chromium*			*1.8 E-3*	*1.3 E-3*

The District's Toxic Evaluation Section conducted a risk screen analysis for the CMP. The risk analysis included emissions from stationary sources such as the delayed coker's (S-1510) fugitive components, two heaters (S-1511 and S-1512) abated by SCR (A-1511 and A-1512), a flare (S-1517), and particulate emissions from coke handling operations. BAAQMD permitting rules require potential health risks be evaluated for increases in permitted emission levels associated with only the new or modified sources. Results from the health risk screening analysis indicate that the maximum cancer risk at the point of maximum impact (PMI) is estimated at 0.2 in a million. The estimated maximum chronic hazard index and acute hazard index at the PMI are both less than 1.0. In accordance with the District's Regulation 2, Rule 5, these risk levels are considered acceptable.

Further details on these health risk calculations can be found in the Appendix C – Interoffice Memorandum dated June 27, 2006. The proposed actions contained in this Authority to Construct Application comply with Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants".

4. PSD Air Quality Air Impact Analysis

Because the Tesoro CMP is a modification of a major facility under District regulations, the cumulative impact analysis under Section 2-2-304 must be performed. If the project's net emission increase minus contemporaneous emissions reduction credits exceeds the relevant threshold, a Prevention of Significant Deterioration (PSD) analysis must be performed.

In order to determine whether or not the PSD requirement (Section 2-2-304) is triggered, the emissions from the project are calculated. If the project emissions are less than the significant thresholds, then the evaluation is complete. However, if the emissions exceed the triggers, then the cumulative increase/decreases are evaluated.

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This project does not exceed any PSD threshold that would require a PSD permit. Table VII lists the criteria pollutants for the project and shows that there is no net increase for any of the pollutants. The project emissions reduction resulting from the CMP will occur from the shutdown of Fluid Coker (S-806), No. 5 boiler (S-905), two furnaces (S-924 and S-925).

Table VII
PSD REQUIREMENT APPLICABILITY DETERMINATION

Pollutant	Nitrogen Oxides (NOx) TPY	Carbon Monoxide (CO) TPY	Sulfur Dioxide (SO2) TPY	Particulate Matter < 10 microns (PM10) TPY	Lead (Pb) TPY
Project Emissions Increase	19.19	30.66	7.74	14.14	0.01
Project Emission Reductions	-301.96	-79.78	-3146.93	-68.65	0.0
(i) Project Net	**-282.77**	**-49.12**	**-3139.19**	**-54.51**	**0.01**
PSD Trigger Level (TPY)	40	100	40	15	0.6
PSD Triggered?	No	No	No	No	No

PSD for Lead
Lead (Pb) emissions from the project will be less than the PSD threshold of 0.6 ton/year per Regulation 2-2-306. The estimated lead emissions for the CMP is 0.01 ton/year for delayed coker, 2 heaters, screening/crushing, silos, and the flare. Lead is particulate.

PSD for Mercury and Beryllium
Mercury (Hg) and beryllium (Be) emissions from the project will be less than the PSD threshold of 0.1 and 0.0004 ton/year, respectively.

To the District's knowledge, beryllium has never been detected in the exhaust of a refinery combustion device. Tesoro has not done a source test on its refinery gas for beryllium. However, based on the value from Appendix A - EERC August 14, 1998 Document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II" – Development of Emission Factors using CARB approach, the beryllium emissions from the heaters are below the limit of detection (LOD). When all test results are below LOD, the emission rate is reported as zero. The total project's beryllium emission is 7.88 E-9 tpy (mostly from flare natural gas fuel emission), much below the threshold value.

Tesoro has not done a source test on its refinery gas for mercury. Mercury has been detected in the source tests reported in the CARB database. Based on the value from Appendix A - EERC August 14, 1998 Document "Air Toxic Emission Factors for Combustion Sources Using

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Petroleum Based Fuels, Final Report, Vol. II" – Development of Emission Factors using CARB approach, the total project's mercury emission is 3.63 E-4 tpy, much below the threshold value. (Appendix C - Toxic Summary)

PSD For Sulfuric Acid Mist

The sulfuric acid mist (SAM) emissions from the project will be less than the PSD threshold of 7 tons per year. The delayed coker should emit less sulfuric acid mist than the existing fluid coker operation. The applicant has accepted an enforceable permit condition (Part #26) to conduct an initial source test for SO2, SO3, SAM and ammonium sulfates to demonstrate that the existing fluid coker will emit less sulfuric acid mist than the future delayed coker. Compliance will be determined by use of emission factors (using fuel gas rate and sulfur content as input parameters) derived from initial compliance source tests. This approach is necessary because the extent of conversion in the heater of fuel sulfur to SO3, and then to H2SO4 is not well established.

5. Other Applicable District Rules and Regulations

Source S-1510, Delayed Coker

- Source S-1510 is subject to and expected to comply with the requirement of Regulation 6 – Particulate Matter and Visible Emissions. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and 302 limits the source to less than 20% opacity. Section 305 prohibits fallout of visible particles onto neighboring properties in sufficient quantities to cause annoyance to any other person.

- Source S-1510 Delayed Coker (fugitive emissions) is subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The leak standards for valves, pumps and flanges will be 100 ppm, 100 ppm and 100 ppm, respectively.

VALVES -- Most valves will use graphite packing, which is the best material available to achieve low emissions in a wide variety of applications. All valves will be required to meet a leak rate of no more than 100 ppm.

PUMPS -- The pumps will be equipped with double mechanical seals and operated in accordance with an approved Inspection and Maintenance (I&M) Program to reduce emissions from compressors seals. A leak standard of 100 PPM will be required to be met.

FLANGES -- The flanges will use graphite or equivalent designed flange gaskets to reduce POC fugitive emissions. A leak standard of 100 PPM will be required to be met.

- Source S-1510 Delayed Coker (fugitive emissions) is subject to Regulation 8, Rule 28- Episodic Releases from Pressure Release Devices at Petroleum Refinery and Chemical Plants. This rule requires that new and modified pressure release valves shall meet all applicable requirements of Regulation 2, Rule 2, including BACT. Tesoro will comply with this rule by normally venting all pressure relief valves to a recycle compressor to recovery the gas at No. 5 Gas Plant, or a flare with a recovery/destruction efficiency greater than or equal to 98% during overflow or emergency situation.

- Source S-1510 is subject to and expected to comply with the requirement of Regulation 9, Rule 8 -301– Vacuum Producing Systems. Tesoro will control or pipe the precursor organic compound (POC) emissions to an appropriate

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compressor, and will add to the fuel gas system or will collect and treat the gas so as to prevent their emission into the atmosphere.

- Source S-1510 is subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart GGG Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
- 40 CFR, Part 60, Subpart QQQ Standard of Performance for Petroleum Refineries Waste Water System

- Source S-1510 is subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 61, Subpart FF
- 40 CFR Part 61, Subpart V
- 40 CFR Part 63, Subpart CC

Sources S-1511 and S-1512, Heaters

- Source S-1512 and S-1512 are subject to and expected to be in compliance with Regulation 1-Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Ringelmann No. 1 limitation can be exceeded for no more than 3 minutes in an hour. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. All of these sources are expected to continue to comply with the requirements of Regulation 6.

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with Regulation 6-304 – Tube Cleaning. During tube cleaning, and except for three minutes in any one hour, a person shall not emit from any heat transfer operation using fuel at a rate of not less than 148 GJ (140 million BTU) per hour, a visible emission as dark or darker than No. 2 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree, or equal to or greater than 40% opacity as perceived by an opacity sensing device in good working order. The aggregate duration of such emissions in any 24 hour period shall not exceed 6.0 minutes per 1055 GJ (one billion BTU) gross heating value of fuel burned during such 24 hour period.

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with Regulation 6-310.3 – Particulate Weight Limitation. Tesoro will not emit more than 343 mg per dscm (0.15 grain/dscf) of exhaust gas volume. For the purposes of 6-310, the actual measured concentration of particulate matter in the exhaust from any heat transfer operation shall be corrected to the concentration which the same quantity of particulate matter would constitute in

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the exhaust gas minus water vapor, corrected to standard conditions, containing 6% oxygen by volume.

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with Regulation 9, Rule 1 – Sulfur Dioxide. This regulation limits the ground level concentration of sulfur dioxide to less than 0.5 ppm continuously for 3 consecutive minutes ore 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours per Regulation 9-1-301. Regulation 9-1-302 limits stack SO2 concentration to 300 ppm dry unless the applicant is subject to the monitoring requirements of Regulation 1. Regulation 9-1-303 limits the sulfur content of liquid and solid fuels to less than 0.5 percent by weight.

All combustion sources in this project will burn only gaseous fuels. The total reduced sulfur in the refinery fuel gas will be limited to 35 ppm on an annual average and 100 ppm maximum, respectively. All other fuels will contain less sulfur compounds. Tesoro will continue to monitor ground level SO2 concentrations at the refinery property line, and therefore, is expected to comply with these provisions.

- Regulation 9-2-301 limits the maximum ground level concentration of H2S to 0.06 and 0.03 ppm (42 ug/m3), averaged over three minutes and one hour, respectively. Tesoro will continue to monitor ground level H2S concentrations at the refinery property line, and therefore, is expected to comply with these provisions.

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with Regulation 9, Rule 3 -303 – Nitrogen Oxides from Heat Transfer Operations. This regulation limits the NOx emission to less than 125 ppm when gaseous fuel is burned. These heaters are subjected to 7 ppm of NOx at 3% O2 as required for BACT.

- Sources S-1511 and S-1512 are subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart A - Standards of Performance for New Stationary Sources

- Sources S-1511 and S-1512 are subject to and expected to be in compliance with the following requirements of NSPS 40 CFR 60 Subpart J-Standard of Performance for Petroleum Refineries.

a. H2S in refinery fuel gas is limited to 0.1 grain/dscf (163 pmm), on a 3 hour average;
b. A continuous SO2 monitor is required on the outlet from the heater unit tail gas; or
c. A continuous H2S monitor is required for the inlet fuel gas system.

Tesoro will comply with these requirements by installing a fuel flow meter and TRS fuel gas monitor.

- Sources S-1511 and S-1512 are subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 63, Subpart DDDDD for Carbon Monoxide Emission Limits.

Source S-1513 Screener/Crusher

- Source S-1513 Screener/Crusher is subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the

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comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Source S-1513 Screener/Crusher is subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and Section 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. In addition, Regulation 6, Rule 311 limits S-1513 PM_{10} emissions to less than 40 lb/hr. Source S-1513 is expected to comply with the requirements of Regulation 6 since the coke is wet at 10-12 % moisture and will be water sprayed with chemical suppressant if necessary.

Sources S-1514 and S-1515 Silos

- Source S-1514 and S-1515 Silos are subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Source S-1514 and S-1515 Silos are subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and Section 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. In addition, Regulation 6, Rule 311 limits two stacks PM_{10} emissions to less than 40 lb/hr. S-1514 and S-1515 Silos are expected to comply with the requirements of Regulation 6 since these silos are abated by baghouses with 0.01 grain PM10/dscf at the outlet.

Source S-1516 Coke Truck Loadout

- Source S-1516 Coke Truck Loadout is subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Source S-1516 Coke Truck Loadout is subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and Section 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. In addition, Regulation 6, Rule 311 limits S-1516 PM_{10} emissions to less than 40 lb/hr. S-1516 Coke Truck Loadout is

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expected to comply with the requirements of Regulation 6 since these truck loads are covered and the roads are paved and scheduled for sweeping at least once a day.

Source S-1517 Flare

- Source S-1517 Flare is subject to and expected to be in compliance with Regulation 1- Public Nuisance. No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property.

- Source S-1517 Flare is subject to and expected to be in compliance with Regulation 6, Particulate Matter and Visible Emissions. This regulation limits the quantity of particulate matter in the atmosphere by controlling emission rates, concentration, visible emissions, and opacity. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and Section 302 limits the source to less than 20% opacity. Section 305 limits the particulate emissions from any operation in sufficient quantity to cause annoyance to any other person. In addition, Regulation 6, Rule 311 limits main stack PM_{10} emissions to less than 40 lb/hr.

- Source S-1517 Flare is subject to and expected to be in compliance with Regulation 6-310 – Particulate Weight Limitation. Tesoro will not emit more than 343 mg per dscm (0.15 grain/dscf) of exhaust gas volume.

- Source S-1517 Flare is subject to and expected to be in compliance with Regulation 12-11 Flare Monitoring at Petroleum Refineries. Tesoro will be conditioned to meet the requirements of Regulation 12-11.

- Source S-1517 Flare is subject to and expected to be in compliance with Regulation 12-12 Flare at Petroleum Refineries. Effective August 1, 2006, Tesoro will submit a flare minimization plan, which will include the new flare.

- Source S-1517 Flare is subject to and expected to be in compliance with the following requirements of NSPS 40 CFR 60 Subpart J-Standard of Performance for Petroleum Refineries.

a. H2S in refinery fuel gas is limited to 0.1 grain/dscf (163 pmm), on a 3 hour average;
b. A continuous SO2 monitor is required on the outlet from the heater unit tail gas; or
c. A continuous H2S monitor is required for the inlet fuel gas system.

Tesoro will comply with these requirements by installing a fuel flow meter and fuel gas H2S monitor.

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

6. California Environmental Quality Act (CEQA)

This project is subject to CEQA per Regulation 2-1-310. The Bay Area Air Quality Management District (District) acted as the lead agency under CEQA. The District determined that this replacement project is categorically exempt from CEQA in accordance with the CEQA Guidelines Section 15302 for "Class 2" replacement projects. See Appendix E for the CEQA analysis. The proposed project will be at the same location and of substantially the same purpose and capacity as the replaced structure. Even though there are certain important

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exceptions to the "Class 2" Replacement Project exemption, as set forth in Guideline Section 15300.2, the District's staffs have examined each of them and have determined that none of these exceptions is triggered for the Coke Modification Project. Through this categorical exemption, the requirements of CEQA have been met and no environmental analysis needs to be performed.

VI. CONDITIONS

The following permit conditions will be imposed to ensure that the proposed project complies with all applicable District, State, and Federal Regulations. The conditions limit operational parameters such as fuel use, stack gas emission concentrations, and mass emission rates. Permit conditions will also specify abatement device operation and performance levels. For compliance assurance purpose, conditions specifying emission monitoring, source testing, and record keeping requirements are included. Furthermore, pollutant mass emission limits (in units of lb/hr) will ensure that daily and annual emission rate limitations are not exceeded.

Compliance with CO and NOx limitations will be verified by continuous in-stack emission monitors (CEMs) that will be in operation during all heater operating modes, including start-up and shutdown. Compliance with SO2 and H2S limits will be determined by monitoring the total reduced sulfur (TRS) concentration level in the refinery fuel gas with a TRS analyzer. If natural gas is burned, the sulfur content will be assumed to be the same as natural gas specifications. Compliance with POC and PM10 mass emission limits will be demonstrated by annual source testing.

Delayed Coker (S-1510)

1. The owner/operator of source S-1510 shall not exceed Ringlemann No. 1.0, for three minutes in any consecutive 60-minutes period. (basis: Regulation 6).

2. The owner/operator of the delayed coker (S-1510) shall wash the pad area surrounding the Coke Pit and dewatering pad (where coke drops from the coker) at least once per day when the coker is operating or when coke is being removed from the coke drums. (basis: cumulative increase)

3. The owner/operator of S-1510 delayed coker shall not process more than 53,200 barrels per day (12 midnight to 12 midnight), and 17,447,000 barrels in any consecutive 12-month period. (basis: Cumulative increase)

4.The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall inspect and maintain all new valves, pumps and flanges/connectors associated with this project according to District Regulation 8-18. (basis: Regulation 8-18)

5.The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall ensure that each new pressure relief valve installed in hydrocarbon service is vented to the refinery fuel gas system or an abatement device with a capture/destruction efficiency of 98 wt% POC, or more, approved for this use in advance by the District. (basis: Regulation 8-28, BACT)

6. The owner/operator of all sources (S-1510 through S-1517, A-1511, A-1512, A-1514, A-1515) shall ensure that each new process sample system in light liquid service installed is a closed loop, continuous flow design and in no event shall there be any line purging to process drains. (basis: cumulative increase)

7. The owner/operator shall submit a final count of installed pumps, compressors, valves, and flanges/connectors within 90 days after startup. The owner/operator has been permitted to install fugitive components (1,028 valves, 1,296 flanges/connectors, 14 pumps) with a total POC emission rate of 1.299 TPY. If there is an increase in the total fugitive component emissions, the plant's cumulative

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emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator may have enough remaining contemporaneous emissions reduction credits (ERC's) to cover any increase in POC fugitive emissions beyond the original projection. If not, the Owner/Operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after the submittal of the final POC fugitive equipment count. If the actual component count is less than the predicted, at the completion of the project, the total will be adjusted accordingly. Any ERC's applied by the facility in excess of the actual total fugitive emissions will be credited back to Owner/Operator prior to issuance of the permits. (basis: cumulative increase, toxics)

8. To demonstrate compliance with the above conditions, the owner/operator shall maintain the following records in a District-approved log:

a. The daily record of the throughput
b. The monthly record of the throughput summarized on a consecutive 12-month basis

These records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: recordkeeping)

Delayed Coker Heater # 1 and # 2 (S-1511 and S-1512)

9. The owner/operator of source S-1510 shall not exceed Ringlemann No. 1.0, for three minutes in any consecutive 60-minutes period. (basis: Regulation 6).

10. The owner/operator shall burn in sources S-1511 and S-1512 only natural gas or refinery fuel gas. (basis: cumulative increase, BACT)

11. The owner/operator shall not burn in sources S-1511 and S-1512 refinery fuel gas having total reduced sulfur (TRS) greater than 100 ppmv, based on 24-hour average and 35 ppmv, based on consecutive 365 day average. (basis: BACT)

12. Except as described below, the owner/operator of sources S-1511 or S-1512 shall not exceed 7 ppmv NOx (calculated as NO2) corrected to 3% oxygen dry (based on a three-hour average), and 35 ppmv CO, corrected to 3% oxygen dry (based on a three-hour average). (basis: BACT)

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a. During startup, shut down and malfunction periods, the owner/operator of source S-1511 or S-1512 shall not exceed 50 ppmv NOx (calculated as NO2) corrected to 3% oxygen dry (based on a three hour average), and 400 ppmv CO, corrected to 3% oxygen dry (based on a three hour average). Startup, shutdown or malfunction shall not exceed 144 hours during any consecutive 12-month period. (basis: cumulative increase, offsets)

b. For up to 100 days per consecutive 12 month period, the owner/operator of source S-1511 or S-1512 shall not exceed 50 ppmv CO at 3% O2 dry (based on a three hour average). (basis: basis: cumulative increase, offsets)

13. The owner/operator shall not exceed 10 ppmv ammonia at 3% O2 dry at the outlet of A-1511 or A-1512. (basis: cumulative increase, toxics)

14. The owner/operator shall not exceed 2,014,800 MMBtu of refinery fuel gas and natural gas combined at each source (S-1511 or S-1512) in any consecutive 12-month period. (basis: cumulative increase)

15. The owner/operator shall ensure that the total sulfur content in the natural gas shall not exceed 1.0 grain per 100 scf of natural gas. The owner/operator shall use PG&E specification or equivalent pipeline quality natural gas. Compliance will be demonstrated through records that show the specification of natural gas by the supplier. (basis: BACT for SO2 when firing natural gas)

16. The owner/operator shall ensure that the total sulfur content in the natural gas shall not exceed 1.0 grain per 100 scf of natural gas. The owner/operator shall use PG&E specification or equivalent pipeline quality natural gas. Compliance will be demonstrated through records that show the specification of natural gas by the supplier. (basis: BACT for PM10 when firing natural gas)

17. The owner/operator of sources S-1511, S-1512, A-1511 and A-1512 shall comply with the requirement of Regulation 2-2-306 for sulfuric acid mist emissions (SAM). (basis: PSD)

18. The owner/operator of S-1511, S-1512, A-1511 and A-1512 shall ensure that the emissions from A-1511 or A-1512 shall not exceed 230 mg/dsm (0.10 gr/dscf or 163 ppmv (dry basis)) of H2S average over 3 hours at the inlet of S-1511 or S-1512, or 20 ppmv (dry basis) of SO2 at the outlet of A-1511 or A-1512 except as allowed by NSPS Subpart J and Subpart A for startup, shutdown, or malfunction. (basis: NSPS 40 CFR 60, Subpart J)

19. The owner/operator of S-1511, S-1512, A-1511 and A-1512 shall install a total reduced sulfur (TRS) or SO2 continuous monitoring and recording system to verify compliance with the requirement of Part 18. The owner/operator shall maintain the equipment in accordance with manufacturer's recommendations. (basis: NSPS (40 CFR 60, Subpart J))

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20. The owner/operator shall abate Heater #1 and Heater #2 (S-1511 and S-1512) with Selective Catalyst Reduction systems (A-1511 and A-1512), respectively at any time that S-1511 and S-1512 are in operation, except for 144 hours each in any consecutive 12-month period during startup, shutdown and malfunction. (basis: cumulative increase)

21. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of nitrogen oxides (calculated as NO2), in ppmv units, in the combustion exhaust from A-1511 and A-1512, corrected to 3% oxygen, dry. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

22. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of carbon monoxide (CO), in ppmv units, in the combustion exhaust from A-1511 and A-1512, corrected to 3% oxygen, dry. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

23. The owner/operator shall install, calibrate, maintain, and operate a District-approved continuous emission monitoring (CEM) device that continuously measures and records the concentration of oxygen in the combustion exhaust from A-1511 and A-1512. This CEM device shall be in operation at all times when S-1511 and S-1512 operate except as allowed in the District's Manual of Procedures, which includes maintenance and malfunction. (basis: cumulative increase, BACT, offsets)

24. The owner/operator shall install a District approved fuel flow meter that measures the volume of fuel throughput to S-1511 and S-1512 in units of standard cubic feet. (basis: cumulative increase)

25. The owner/operator shall install a District approved calorimeter that measures the heating value when refinery fuel gas is fired at S-1511 and S-1512. (basis: BACT, cumulative increase, offsets, toxics)

26. Within 45 days of initial startup, the owner/operator shall conduct a District approved source test to demonstrate compliance with the NOx, CO, TRS (H2S or SO2), NH3, PM10 and SAM levels in Parts 11, 12, 13, and 18. For purposes of SAM, the applicant shall also test for SO3 and ammonium sulfates. The test results shall be forwarded to the District within 45 days of completion of the field test. The test should verify emission compliance at 80% or more of maximum firing on:

    a. Heater # 1 and # 2 firing natural gas only
    b. Heater # 1 and # 2 firing refinery fuel gas only (within 60 days after the refinery fuel gas is first being used)

    (basis: compliance demonstration, PSD avoidance)

    The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall

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notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM10 emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District within 45 days of conducting the tests. (basis: source test compliance verification)

27. The owner/operator shall maintain all records and reports required by this permit in a District-approved log. These records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made (basis: Regulation 2-6-501)

28. When burning refinery fuel gas in sources S-1511 and S-1512, the owner/operator shall record the consecutive 3-hour average total reduced sulfur content of the refinery fuel gas. On an annual basis, the owner/operator shall report: (a) the daily fuel consumption, (b) hourly total reduced sulfur content (as averaged over 24 consecutive hours) and (c) annual average reduced sulfur content. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 60 days after the end of the calendar year. (basis: BACT, offsets, cumulative increase)

Coker Screen/Crusher (S-1513) and Conveyors & Dewatering Pad

29. The owner/operator of S-1513 shall not exceed 1,277,500 wet tons of coke in any consecutive 12-month period. (basis: cumulative increase, BACT)

30. The owner/operator of S-1513 shall keep the moisture of the coke product to 5% by weight or more. (basis: cumulative increase)

31. The owner/operator of S-1513 shall not exceed Ringelmann No. 1.0, or 20% opacity visible emissions, for three minutes in any consecutive 60 minute period. (basis: Regulation 6)

32. The owner/operator shall use a water spray abatement system with chemical suppressant, if necessary, and take other control measures, as necessary, to maintain compliance with Regulation 6. (basis: Regulation 6, BACT)

33. The owner/operator shall completely enclose all coke conveyors downstream of the crusher and use water sprays to minimize particulate emissions from crushing operations. (basis: BACT)

34. The owner/operator shall inspect S-1513 for visible emissions no less than once per day when the equipment is in operation. If there are visible emissions, the owner/operator shall immediately take corrective action to eliminate the visible emissions. Upon

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completion of each inspection, in a District approved log, the owner/operator shall record the visible emission observation, and when visible emissions are detected, the corrective action taken to eliminate the visible emissions. During each day that S-1513 is not in operation for the entire day and when there is no petroleum coke stored or processed at S-1513, the owner/operator need not complete this inspection for S-1513. (basis: Regulation 2-1-403, Regulation 2-6-503).

35. The owner/operator shall use water sprays, as necessary, to minimize particulate emissions from the surfaces of the coke piles on the Coke Dewatering Pad. If particulate emissions from the Coke Dewatering Pad result in 3 or more visible emission violations within a six month period, or two public nuisance violations within a 5 year period, the owner/operator shall install additional controls, as approved by the District, which may include one or more of the following:

a. Additional water sprays;

b. Chemical suppressant in water spray system;

c. Additional/improved enclosures;

d. Wind screens; or

e. Equivalent, as approved by the District. (basis: BACT)

36. Within 45 days of startup, the owner/operator shall test the moisture content of the wet coke at S-1513 to demonstrate compliance with Part 31. The report shall be sent to the District's Director of Compliance and Enforcement, and the Manager of the Permit Evaluation Section no later than 45 days after the test. (basis: cumulative increase)

37. To demonstrate compliance with the above Parts, the owner/operator shall maintain the monthly records, and the consecutive 12-month summary of coke (wet) produced in a District-approved log. These records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: recordkeeping)

Coker Silos (S-1514 and S-1515 abated by A-1514 and A-1515, respectively) and (S-659 and S-660 Storage Tanks, both abated by A-9 Electrostatic Precipitator)

38. The owner/operator shall not operate S-659, S-660, S-1514, S-1515, A-9, A-1514, and A-1515 unless the visible particulate emissions from the listed equipment are less than or equal to Ringelmann Number 1.0 for three minutes in any consecutive 60-minutes period, or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6, and Regulation 1)

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39. The owner/operator shall not operate S-1514 and S-1515 unless all particulate emissions from the silos are vented to A-1514 and A-1515, respectively. The owner/operator shall not operate S-659 and S-660 unless all particulate emissions from the storage tanks are vented to A-9. Particulate emissions from A-9 Precipitator, A-1514 and A-1515 baghouses shall not exceed 0.01 grains/dscf each. (basis: cumulative increase)

40. The owner/operator shall install, maintain, and operate an approved bag failure warning device such as manometer or equivalent on A-9, A-1514 and A-1515. (basis: cumulative increase)

41. The owner/operator of each abatement device A-1514 or A-1515 shall not exceed 1,400 scfm of exhaust air flow rate without District approval. The owner/operator of abatement device A-9 shall not exceed 550 scfm of exhaust air flow rate without District approval (basis: cumulative increase)

42. The owner/operator of S-659, S-660, S-1514 and S-1515 shall record and keep the following records on site and make the log available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)
    a. Total monthly hours of operation, summarized on a consecutive 12-month period.

Coker Truck Loadout S-1516

43. The owner/operator of S-1516 shall not exceed Ringelmann Number 1.0 for three minutes in any consecutive 60-minutes period or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6, and Regulation 1)

44. The owner/operator of S-1516 shall not exceed 1,277,500 tons of wet coke in any consecutive 12 month period. (basis: cumulative increase, BACT)

45. The owner/operator shall only conduct material truck loading in an enclosed structure that is either equipped with a water spray system to be used as

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needed to prevent visible dust emissions or vented to permitted air pollution control equipment that is operated during loading activities. The ends of the structure shall have overlapping flaps that reduce the opening to no greater than 11 feet high by 10 feet wide, or other equally effective devices as approved by the APCO. (basis: BACT)

46. The owner/operator shall load the trucks so that the level of coke is not higher than the top of the truck trailer. After loading onto trucks, the coke shall be completely covered with tarpaulin or other similar material, to minimize particulate spillage and entrainment during transit. If a slot-top type cover is used, either the material contained in the trailer is moist material, or a chemical stabilizer is applied to the surface of the material in sufficient amounts and concentration so as to prevent fugitive dust emissions during transport. (basis: BACT)

47. Before leaving the coke loading area, the owner/operator shall pass the trucks through a water wash system to remove coke from the truck and trailer tires, wheels and undercarriage, in order to minimize the tracking of coke onto the roadway. (basis: BACT)

48. The owner/operator shall sweep accumulated mud, dirt, or coke from the coke truck route in the refinery at least once a day except during periods of rain and equipment maintenance, and whenever there is visible accumulation. Dry rotary brushes shall not be used except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Blower devices shall not be used. (basis: BACT)

49. In order to demonstrate compliance with the above Parts, the owner/operator of S-1516 shall maintain the daily records, monthly records and the consecutive 12-month summary of coke (wet) loaded into trucks in District approved logs. These records shall be kept on site and made available for District inspection for a minimum period of 5 years from the date on which a record was made. (basis: cumulative increase)

Flare S-1517

50. The owner/operator of S-1517 shall not exceed Ringelmann Number 1.0 for three minutes in any consecutive 60-minutes period or result in fallout on adjacent property in such quantities as to cause a public nuisance per Regulation 1-302. (basis: Regulation 6, and Regulation 1)

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51. The owner/operator of S-1517 shall use steam in the flare to minimize smoking. (basis: BACT)

52. The owner/operator of S-1517 shall have a hydrocarbon destruction efficiency of at least 98.5 wt.% POC on a mass basis: (basis: BACT)

53. The owner/operator of S-1517 shall not exceed 1,314,000 standard cubic feet of natural gas for flare pilots in any consecutive 12-month period. (basis: cumulative increase)

54. The owner/operator shall comply with the requirements of 40 CFR 60, Subpart J. (basis: NSPS 40 CFR 60, Subpart J)

55. The owner/operator of S-1517 shall install H2S continuous monitoring and recording system to verify compliance with the requirement of Regulation 12-11. The owner/operator shall maintain the equipment in accordance with manufacturer's recommendations. (basis: Regulation 12, Rule 11)

56. The owner/operator of S-1517 shall fire only natural gas at all flare pilots. (basis: cumulative increase)

57. The owner/operator shall maintain all records and reports required by this permit in a District-approved log. The following records shall be kept on site and made available for District inspection for a period of at least 5 years from the date on which a record is made. (basis: Regulation 2-6-501)

a. The continuous H2S concentration at source S-1517.

b. Total daily flow rate of the gas through the flare, summarized in a consecutive 12-month period.

Contemporaneous Emissions reduction credit

58. The owner/operator of sources S-806, S-808, S-836, S-837, S-838, S-903, S-923, S-924 and S-925 shall completely shutdown the equipment no later than 90 days after startup of the delayed coker (S-1510 through S-1517, A-1511, A-1512, A-1514, and A-1515). The owner/operator shall enter into the record log the shut down date of each source. (Basis: offsets)

VII. RECOMMENDATION

Issue a conditional Authority to Construct to Tesoro for the following equipment:

S-1510 Delayed Coker with 4 Coke Drums and associated equipment
S-1511 Delayed Coker Heater #1, 230 MMBtu/hr abated by A-1511 Selective Catalytic Reduction System (SCR)
S-1512 Delayed Coker Heater #2, 230 MMBtu/hr abated by A-1512 Selective Catalytic Reduction System (SCR)
S-1513 Coke Screen/Crusher, 1,200 tons/hr.
S-1514 Coke Silo #1 abated by A-1514 Baghouse, 1,400 cfm.
S-1515 Coke Silo #2 abated by A-1515 Baghouse, 1,400 cfm
S-1516 Coke Truck Loadout
S-1517 Coker Flare (low pressure hydrocarbon) to handle 1.25MM lb/hr of emergency process gas: 3 natural gas fired pilot flames, 50 scfh/pilot**.**

VIII. EXEMPTION

Issue an exemption letter to Tesoro for the following equipment:

S-1525 Anti-Foam Tank **is exempt per Regulation 2-1-123.3.3 for flash point of greater than 130^{o}F.**
S-1526 De-Coking Water Tank **is exempt per Regulation 2-1-123.2 for storage of aqueous solution, which contains less than 1% organic compound.**
S-1527 Aqueous Ammonia Storage Tank: 18,000 gallons *is exempt per Regulation 2-1.123.2 for storage of aqueous solution, which contains less than 1% organic compound.*

IX. BANKING CREDITS

NOx: 282.77 ton (Excess Contemporaneous Emission Credit)
As shown in Table I, it is anticipated that the CMP will generate a NOx credit of 282.77 tons. This credit stems from the shut down of the Fluid Coker, No. 5 Boiler, and Furnaces. If the delayed coker is installed pursuant to this Authority to Construct, and operates as described in Tesoro's application, any remaining emissions reduction may be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

SO2 Emissions Reduction Credits from No. 5 Boiler:
Tesoro has requested to bank 3,139.19 tons of SO2 emission reductions from the installation of the CMP. If the delayed coker is installed pursuant to this Authority to Construct, and operates as described in Tesoro's application, any remaining emissions reduction may be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

CO Emissions Reduction Credits from No. 5 Boiler:
Tesoro has requested to bank 49.12 tons of CO emission reductions from the installation of the CMP. If the delayed coker is installed pursuant to this Authority to Construct, and operates as described in Tesoro's application, any remaining emissions reduction may be eligible for banking after being

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demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

PM10 Emissions Reduction Credits from No. 5 Boiler:

Tesoro has requested to bank 54.51 tons of PM10 emission reductions from the installation of the CMP. If the delayed coker is installed pursuant to this Authority to Construct, and operates as described in Tesoro's application, any remaining emissions reduction may be eligible for banking after being demonstrated by source test or other means acceptable to the APCO, including emission factors [Regulation 2-2-301]. The baseline emissions shall be calculated in accordance with Regulation 2-2-605.

APPENDIX A

Detailed Emission Calculations/Emission Factors

1. ***Summary of Criteria Pollutant Emissions Increases and Decreases***
2. ***Summary of Emissions from New Sources – Future Emissions***
3. ***S-1510 Delayed Coker Fugitive Emissions***
4. ***S-1511 Delayed Coker Heater #1 and # 2, plus Ammonia Emissions***
5. ***S-1513 Coke Screen/Crusher Emissions***
6. ***S-1514 and S-1515 Coke Silo #1 and #2 Emissions***
7. ***S-1516 Coker Truck Loadout - Material Transfer & Truck Traffic Emissions***
8. ***S-1517 Flare Pilot Emissions***
9. ***EPA, AP-42, Section 1.4 Natural Gas Combustion, Table 1.4-2. http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf***
10. ***Emission Inventory Guidance – Mojave Desert Air Quality Management District Antelope Valley Air Pollution Control District (hard copy only)***
11. ***EPA, AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing. http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s1902.pdf***
12. ***Source test dated 7/14/93, S-659 and S-660 Coke Storage Tanks abated by a Precipitator A-9***
13. ***EPA, AP-42 Section 13.2.4 Aggregate Handling and Storage Pile dated 1/95. http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s02-4.pdf***
14. ***EPA, AP-42 Section 13.2.1.3 Paved Road, Equation (2) dated 12/0. http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf***
15. ***Summary of Source Test Result for existing S-659 and S-660 abated by Precipitator A-9***
16. ***EERC August 14, 1998 Document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II (hard Copy)***

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Summary of Criteria Pollutant Emissions Increases and Decreases

Criteria Pollutant	Emission Increase - Based on 3-Year Baseline (2003-2005)		Total Emission Increase
	Pre -Project	Post Project	
	Tons/year		
SO2	3146.93	7.74	(3139.19)
NOx	301.96	19.19	(282.77)
CO	79.78	30.66	(49.12)
POC	2.22	8.61	6.40
PM	68.65	14.14	(54.51)

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Summary of Emissions from New Sources

Future Emissions

Criteria Pollutant	S-1510 Fugitive Emissions	S-1511 Delayed Coker Heater #1	S-1512 Delayed Coker Heater #2	S-1513 Screening/Crushing	S-1514 Coke Silo #1	S-1515 Coke Silo #2	S-1516 Coke Truck Loadout	S-1517 Flare Pilot only	Total New Source Emissions
	Lb/hr								**Lb/hr**
NOx		1.983	1.983					0.014	3.981
SO_2		2.525	2.525					0.000	5.050
PM10		1.153	1.153	3.840	0.120	0.120	0.428	0.001	6.815
POC	0.297	0.834	0.834					0.001	1.670
CO		8.624	8.624					0.006	17.254
NH_3 (SCR slip)		1.047	1.047						2.094
	Lb/day								**Lb/day**
NOx		47.603	47.603					0.338	95.545
SO_2		60.595	60.595					0.002	121.191
PM10		27.673	27.673	92.160	2.880	2.880	10.270	0.027	163.563
POC	7.120	20.026	20.026					0.020	47.193
CO		206.971	206.971					0.144	414.086
NH_3 (SCR slip)		25.132	25.132						50.264
	Tons/year								**Tons/year**
NOx		9.565	9.565					0.062	19.191
SO_2		3.870	3.870					0.000	7.741
PM10		5.050	5.050	2.044	0.526	0.526	0.938	0.005	14.139
POC	1.299	3.655	3.655					0.004	8.613
CO		15.316	15.316					0.026	30.658
NH_3 (SCR slip)		4.587	4.587						9.173

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Process Piping Component Fugitive Emissions

S-1510 Delayed Coker Fugitive Emissions

Component	Emission Factor (lbs/day/source)*	No. Components			Emissions, lb/day		
		Added	Removed	Net	Added	Removed	Net
Valves in Gas Service	0.0015288	309	70	239	0.472	0.107	0.365
Valves in Liquid Service	0.0014736	719	312	407	1.060	0.460	0.600
Pumps	0.028872	14	8	6	0.404	0.231	0.173
Compressors	0.00804	0	0	0	0.000	0.000	0.000
PRV in Gas Service	0.00972	0	0	0	0.000	0.000	0.000
PRV in Liquid Service	0.006312	0	0	0	0.000	0.000	0.000
Flanges	0.004	1296	392	904	5.184	1.568	3.616
Sample Connectors	0.079	0	0	0	0.000	0.000	0.000
Sewer Drains	0.34	0	0	0	0.000	0.000	0.000
TOTAL		2338	782	1556	7.120	2.366	4.754
Total, Tons/Year					1.299	0.432	0.868

*Factors from Tesoro CARB III Project, application 2508, approved by District from Tesoro's Actual Monitoring Data

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Delayed Coker Combustion Emissions

S-1511 Delayed Coker Heater #1	230	MMBTU/H
S-1512 Delayed Coker Heater #2	230	MMBTU/H

Source Information	Delayed Coker Furnace 1	Delayed Coker Furnace 2
Heat Input (MMBtu/hr)	230	230
Fuel Type	Refinery Fuel Gas	Refinery Fuel Gas
Fuel HHV - Heating Value (Btu/scf)	1,516	1,516
F Factor (scf exh./MMBtu)	8,831	8,831
Sulfur Content, TRS in fuel gas (ppm)	50	50
Fuel Usage if RFG, Mscf/hr	152	152
Fuel Usage if Natural Gas, Mscf/hr	230	230
Fuel Usage if RFG, Mscf/yr	1,329,024	1,329,024
Fuel Usage if Natural Gas, Mscf/yr	2,014,800	2,014,800

Number of days at 50 ppm CO	100	days
Number of days at 35 ppm CO	259	days
Startup, shutdown, malfunction 400 ppm CO, 50 ppm NOX	144	hours
Number of days at 7 ppm NOX	359	days
Number of hours of operation per year	8760	hours

Pollutants	Emission Factor	Units	Emission Factor[(1)] (lb/MMBtu)	Delayed Coker Each Furnace 230 MMBtu/hr				Reference
				Lb/hr	Lb/day	Lb/year	TPY	
NOx	7	ppmv @ 3% O_2	0.0086	1.98	47.6	17089.6	8.54	BAAQMD, Refinery Process Heater >50 MMBtu/hr, Doc 94.3.1
NOx	50	ppmv @ 3% O_2	0.0616	14.17	340.0	2040.1	1.02	Concentration per Tesoro Engineering, 144 hours per year for startup, shutdown and manfunction
SO_2	100	Max Daily ppmv TRS in fuel gas	0.0110	2.52	60.6		---	BAAQMD, Refinery Process Heater >50 MMBtu/hr, Doc 94.3.1
SO_2	35	Annual Average ppmv TRS in fuel gas	0.0038	---	---	7741.0	3.9	BAAQMD, Refinery Process Heater >50 MMBtu/hr, Doc 94.3.1
PM10	7.6	lb/10^6 scf	0.0050	1.15	27.7	10100.6	5.05	AP42 Section 1.4 Natural Gas Combustion
POC	5.5	lb/10^6 scf	0.0036	0.83	20.0	7309.6	3.65	AP42 Section 1.4 Natural Gas Combustion
CO	35	ppmv @ 3% O_2	0.0262	6.04	144.9	37523.8	18.76	Vendor Specification
CO	50	ppmv @ 3% O_2	0.0375	8.62	207.0	20697.1	10.35	BAAQMD, Refinery Process Heater >50 MMBtu/hr, Doc 94.3.1
CO	400	ppmv @ 3% O_2	0.3000	68.99	1,655.8	9934.6	4.97	Concentration per Tesoro Engineering, 144 hours per year for startup, shutdown and manfunction
NH_3[(2)]	10	ppmv @ 3% O_2	0.0046	1.05	25.1	9173.3	4.59	Proposed by Tesoro

S-1513 Screen/Crusher				
Grizzley screen action*				
Table 11.19.2-2 Emsision Factors for crushed stone processing Operations (lb/tons)				
Throughput, tpy		1,277,500		
Throughput, tph		1200.0		
		PM30	**PM10**	**PM2.5**
Emission Factor, lb/ton**		0.160	0.0022	0.0380
Wet Material factor**	Control Efficiency included with the EF			
Emissions, lb/yr		204,400	2,811	48,545
Emissions, lb/hr		192.000	2.640	45.600
Emissions, lb/day		4608	63	1094
Emissions, tpy		102.200	1.405	24.273
Crushing				
Material Crushing and Screening Table 1	Mojave Desert Air Quality Mangemen District			
Throughput, tpy		1,277,500		
Throughput, tph		1200.0		
		PM30	**PM10**	**PM2.5**
Wet Emission Factor, lb/ton		0.0180	0.00100	0.00100
Emissions, lb/yr		22,995	1,278	1,278
Emissions, lb/hr		21.600	1.200	1.200
Emissions, lb/day		518.40	28.8	28.80
Emissions, tpy		11.4975	0.6388	0.6388

Silo Exhaust for one silo	**S-1514 or S-1515**			
BAAQMD BACT Limit	0.01	gr/dscf		
Baghouse Exhaust Flow	1,400	scfm		
			PM10	
Emissions, lb/hr			0.120	
Emissions, lb/day			2.88	
Emissions, tpy			0.53	
Existing Silo (one)-Emsisions are not included in cumulative increase			**S-659 or S-660**	
BAAQMD BACT Limit	0.01	gr/dscf		
Baghouse Exhaust Flow	550	scfm each		
			PM10	
Emissions, lb/hr			0.047	
Emissions, lb/day			1.13	
Emissions, tpy			0.21	

* Mojave Desert Air Quality Management District Antelope Valley Air Pollution Control District Emissions Inventory Guidance

Mineral Handling and Processing Industries, April 10, 2000

Material Handling Table 5 - Control Techniques

** Material Crushing and Screening Table 1 states factor is negligible for wet screening. Dry factor is used with wet control.

S-1516 Coker Truck Loadout - Material Transfers

Material Transfers

AP-42 Section 13.2.4 Aggregate Handling and Storage Pile, version 1/95

where:	**PM30**		**PM10**	**PM2.5**
E = emission factor, lb/ton throughput	0.00043		0.00020	0.00006
k = particle size multiplier (dimensionless)	0.74		0.35	0.11
U = mean wind speed, meters per second	7.6	mph		
http://www.city-data.com/city/Martinez-California.html				
M = material moisture content	10	%		Worst case scenario
Daily Process Rate (wet = dry x 1.1668))	3,500	tpd		
Annual Process Rate (wet)	1,277,500	tpy		
Throughput, tpy	1,277,500	tpy		
Thoughput, tph	1200.0	tph		
Emissions, lb/hr	0.5145		0.2434	0.0765
Emissions, lb/day	12.3485		5.8405	1.8356
Emissions, tpy	0.2739		0.1295	0.0407

S-1516 Coker Truck Loadout-Truck Traffic

Once a day sweeping and water flush

sL from Table 13.2.1-4 for Iron and Steel, average:

sL = 0.4 g/m^2

9.7	(Iron & Steel	AP42
0.4	low traffic roads	MDAQMD
100	Industrial Site	MDAQMD

W = Average Vehicle Weight

W = 58000 lbs

W = 29 tons

P 60 wet days per year

N 365 days per year

			Equation 1	Equation 2		Emissions	Rain only	Water Flush	Flush & Sweep
Pollutant	k, lb/VMT	C, lb/VMT	E, lb/VMT	E_{est}, lb/VMT	Emissions, ton/yr	lbs/D	Emissions, ton/yr	Emissions, ton/yr	Emissions, ton/yr
PM2.5	0.004	0.00036	0.04	0.04	0.90	4.92	0.86	0.61	0.20
PM10	0.016	0.00047	0.17	0.16	3.61	19.80	3.46	2.45	0.81
PM30	0.082	0.00047	0.87	0.83	18.56	101.68	17.79	12.57	4.15
PM10 Flush & Sweep								4.42928571 lb/day	

Miles travel on site:

Round trip between Coke gate and loading hoppers:

3900 ft 0.74 mile

Future coke trucks

58,068 Trucks

Total VMT:

42,891 miles = Number of trucks x roundtrip miles

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

1517 Flare Pilot Emissions

Source Information	Flare
Nat. gas, SCFH per pilot	50
No. of pilots	3
Pilot gas volume, SCFH	150
Shutdown volume, SCF/event[1]	417,934
Nat. gas heat value, Btu/SCF	1050
Pilot Gas Consumption Rate, MMBtu/hr	0.16

[1]Based on CMP volume of 261,209 ft^3. Multiplying by 1.6 yields a natural gas volume of 417, 934 ft^3

Pollutants	Emission Factor(1)	Emission Factor	Flare Emissions		
	Lb/MMSCF	Lb/MMBtu	Lb/hr	Lb/day	TPY
NOx	94	0.0895	0.014	0.338	0.0618
SO_2	0.6	0.0006	0.0001	0.0022	0.0004
PM10	7.6	0.0072	0.0011	0.0274	0.0050
POC	5.5	0.0052	0.0008	0.0198	0.0036
CO	40	0.0381	0.0060	0.1440	0.0263

[1]AP-42 Section 1.4 Natural Gas, residential <0.3 MMBtu/hr (uncontrolled)

STRIBUTION:
Firm
Permit Services
Enforcement
Technical Services
Planning
Requester
DAPCO

BAY AREA
AIR QUALITY MANAGEMENT DISTRICT
939 Ellis Street
San Francisco, California 94109
(415) 771-6000

SUMMARY OF SOURCE TEST RESULTS

Report No. 94004
Test Date: 07/14/93
Test Times:
Run A: 0933-1023
Run B: 1041-1131
Run C: 1144-1234

SOURCE INFORMATION

Firm Name and Address
TOSCO CORPORATION
Avon Refinery
Martinez, CA 94553

Firm Representative and Title
Mr. Michael DeLeon,
Manager, Air Programs
Phone No. (510) 228-1220

Source: Coke Storage Tanks
(S-659, 660)
Abated by Precipitator (A-9)
Plant No. 13
Operates 24 hr/day 360 day/year

Permit Conditions
None

BAAQMD REPRESENTATIVES

Source Test Engineers
C. McClure/H. Doi

Permit Services Division / Enforcement Division
K. Lim

Test Requested by:
J. Gove

Operating Parameters:
Data is considered proprietary. See attached confidential statement.

Applicable Regulations: 6-310, 6-311
VN Recommended: NO

Source Test Results and Comments:

METHOD:	TEST	RUN A	RUN B	RUN C	AVERAGE	LIMIT
ST-17	Stack Volume Flowrate, SDCFM				5100	
	Stack Gas Temperature, °F	248	252	251	250	
ST-23	Water Content, Volume %	5.3	5.5	5.9	5.5	
ST-14	Oxygen, Volume %	20.0	20.2	20.4	20.2	
ST-5	Carbon Dioxide, Volume %	.2	.2	.2	.2	
ST-6	Carbon Monoxide, ppm	230	250	230	240	
	Carbon Monoxide, lb/hr	5.1	5.6	5.2	5.3	
C.A.R.B. 5	Particulate, gr/SDCF	.003	.003	.004	.003	.15
	Particulate, lb/hr	.1	.1	.2	.1	40
	Isokinetic Ratio, ACT./THEO.	.97	1.01	1.00		

NO COMMERCIAL USE OF THESE RESULTS IS AUTHORIZED

r Quality Engineer II	Date	Supervising Air Quality Engineer	Date	Approved by Source Test Manager	Date
C. McClure II . McClure	7/30/93	K. Kunaniec K. Kunaniec	8/5/93	~~G. Karels~~ D.A. CEDA GGC	8/16/93

m: Summary of Source Test Results

FSSTS: ej: 15 July 88

APPENDIX B

Contemporaneous Emission Reductions/CEM Data

1. S-1510 delayed Coker Fugitive Emissions
2. Ammonia Emission Reductions
3. CEM (ton/yr) for S-805 Coker, S-903 Boiler No. 5, S-924 Furnace 24, and S-925 Furnace 25

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project
Historic Actual Emissions
S-806 Coker
S-903 No. 5 Boiler
S-924 Furnace 24
S-925 Furnace 25
Truck Traffic
Actual calculations is in separate spreadsheet for CEMS data.

Coker/5 Boiler House, tons

Pollutant	2003	2004	2005	2-yr avg	3-yr avg
SO2	3,084.2	3,064.6	3,292.0	3,178.3	3,146.9
NOx	314.0	258.8	333.1	296.0	302.0
CO	86.8	64.0	88.6	76.3	79.8
POC	2.1	1.6	1.7	1.6	1.8
PM	62.7	56.0	86.3	71.1	68.5

Emissions as previously reported by
Tesoro
Based on CEMS (Reported in tons/year, see attachment), Source Data and Correlations

Lb/hour = Flow Rate (MSCFM*60 min/hr) x ppmv /10^6 /379 SCF/lbmole x MW

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project
Process Piping Component Fugitive Emissions

S-1510 Delayed Coker Fugitive Emissions

Component	Emission Factor (lbs/day/source)*	No. Components			Emissions, lb/day		
		Added	Removed	Net	Added	Removed	Net
Valves in Gas Service	0.0015288	309	70	239	0.472	0.107	0.365
Valves in Liquid Service	0.0014736	719	312	407	1.060	0.460	0.600
Pumps	0.028872	14	8	6	0.404	0.231	0.173
Compressors	0.00804	0	0	0	0.000	0.000	0.000
PRV in Gas Service	0.00972	0	0	0	0.000	0.000	0.000
PRV in Liquid Service	0.006312	0	0	0	0.000	0.000	0.000
Flanges	0.004	1296	392	904	5.184	1.568	3.616
Sample Connectors	0.079	0	0	0	0.000	0.000	0.000
Sewer Drains	0.34	0	0	0	0.000	0.000	0.000
TOTAL		2338	782	1556	7.120	2.366	4.754
Total, Tons/Year					1.299	0.432	0.868

*Factors from Tesoro CARB III Project, application 2508, approved by District from Tesoro's Actual Monitoring Data

Ammonia Emission Reductions			
Year	**2003**	**2004**	**2005**
Average, MSCFM	222	188	220
Total, MMSCF	116984	99084	115949
NH3 Concentration, ppmv	215	281	325
NH3 Emissions, lb/yr	1,130,745	1,249,371	1,689,763

Average	1,356,626 lb/year 678.31 tons/year

Ammonia Slip from Source Tests

Test Date	**Boiler 5 (actual ppm)**
January-03	103.4
February-03	73.3
March-03	194.9
April-03	153.4
May-03	157.6
July-03	172.4
August-03	407.6
September-03	328.6
October-03	351.4
November-03	20.8
December-03	294.9
Average	**215.5**

Test Date	**Boiler 5 (actual ppm)**
02/20/04	13.0
02/27/04	169.2
03/12/04	366.4
04/16/04	331.2
05/04/04	347.6

06/25/04	354.0
07/23/04	319.2
08/24/04	348.3
Average	**281.1**

Test Date	**Boiler 5 (actual ppm)**
06/21/05	324.9

Coker Emissions					
3-year average from 5/1/2003 to 5/1/2006					
S-806 Coker					
S-903 No. 5 Boiler					
S-924 Furnace 24					
S-925 Furnace 25					

Based on Data from EMIT Database

PM Emissions (T/D)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	0.183	0.171	0.195	0.183	0.177	0.077	0.184	0.211	0.177	0.173	0.167	0.162
2004	0.169	0.165	0.162	0.163	0.168	0.193	0.115	0.207	0.001	0.000	0.252	0.247
2005	0.020	0.266	0.279	0.262	0.275	0.294	0.298	0.284	0.276	0.290	0.298	0.302

Average **0.196**

SO2 Emissions (T/D)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	10.007	10.661	9.867	10.963	10.875	5.893	5.250	9.679	9.439	5.951	7.558	5.471
2004	12.059	9.507	9.033	10.756	11.092	10.315	7.412	8.341	1.857	0.146	9.830	10.179
2005	5.673	11.942	13.778	9.711	7.873	9.083	5.441	6.788	7.031	10.338	8.734	9.443

Average **8.555**

NOx Emissions (T/D)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	1.445	1.253	0.703	0.686	0.692	0.523	0.843	0.805	0.890	0.770	0.856	0.879
2004	1.283	1.053	0.803	0.731	0.778	0.719	0.557	0.686	0.222	0.145	0.770	0.783
2005	0.521	1.083	1.210	0.737	0.817	0.879	0.769	0.737	0.721	0.823	0.887	0.973

Average **0.806**

CO Emissions (T/D)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	0.267	0.231	0.241	0.244	0.277	0.235	0.268	0.254	0.224	0.223	0.192	0.194
2004	0.202	0.191	0.190	0.200	0.196	0.197	0.185	0.218	0.057	0.014	0.228	0.226
2005	0.196	0.261	0.235	0.233	0.252	0.264	0.266	0.286	0.280	0.280	0.299	0.279
Average	**0.225**											

HC Emissions (T/D)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	0.007	0.007	0.007	0.007	0.007	0.004	0.005	0.006	0.004	0.004	0.005	0.006
2004	0.005	0.005	0.005	0.004	0.004	0.005	0.004	0.005	0.002	0.001	0.005	0.006
2005	0.002	0.005	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Average	**0.005**											

APPENDIX C

Health Risk Assessment/ Toxic Emissions

1. District's Interoffice Memorandum from Toxic Evaluation Section – Dated June 27, 2006
2. Total HAPs and TACs for All New Sources
3. S-1510 Toxic compounds
4. S-1511 and S-1512 Heaters Toxics from Refinery Gas Fuel
5. S-1513 TAC for Screening/Crusher
6. S-1514, S-1515, S-659 and S-660 TAC for Silos
7. S-1516 Coker Truck Loadout toxics
8. S-1517 Emergency Flare 1.25 MMlbs/hr
9. Coke Analysis from two product coke samples dated 1/31/06 (hard copy)

INTEROFFICE MEMORANDUM
JUNE 27, 2006

TO: Thu Bui **Via: Scott B. Lutz**

FROM: Daphne Y. Chong

SUBJECT: Results of Health Risk Screening Analysis for Tesoro, Golden Eagle Refinery (Martinez, CA), Coker Modification Project, Plant #14628, Application #14141

Per your request, we have completed a health risk screening analysis for the above referenced permit application. The analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from the Coker Modification Project at this facility. Results from the health risk screening analysis indicate that the maximum cancer risk at the point of maximum impact (PMI) is estimated at 0.2 in a million. The estimated maximum chronic hazard index and acute hazard index at the PMI are both less than 1.0. In accordance with the District's Regulation 2, Rule 5, these risk levels are considered acceptable.

EMISSIONS: ***Emissions of TACs presented in your interoffice memorandum dated June 7, 2006 were used in this health risk screening analysis. The following sources were included in this risk screening evaluation:***

- ***S-1510 Delayed Coker with 4 Coke Drums and associated equipment;***
- ***S-1511 Delayed Coker Heater #1;***
- ***S-1512 Delayed Coker Heater #2;***
- ***S-1513 Coke Screen/Crusher;***
- ***S-1514 Coke Silo #1;***
- ***S-1515 Coke Silo #2;***
- ***S-1516 Coke Truck Loadout; and***
- ***S-1517 Coker Flare.***

MODELING: ***The ISCST3 air dispersion computer model was used to estimate annual and hourly ambient air concentrations. The model was run with Golden Eagle Refinery meteorological data (2001 – 2005) and area-specific terrain data (Benicia, Briones Valley, Clayton, Honker Bay, Walnut Creek, and Vine Hill). Model runs were made with both urban***

and rural dispersion coefficients. The highest concentrations occur for the model run using the rural dispersion coefficients, therefore these values were used in the health risk calculations. The delayed coker heaters (S-1511, S-1512) and the coker flare (S-1517) were modeled as point sources. The remaining sources were modeled as area sources (S-1510 = 595 m^2, S-1513 = 4,310 m^2, S-1514 & S-1515 = 230 m^2, S-1516 = 58m^2). Source and building parameters for the analysis were based on information provided by the applicant.

HEALTH RISK: Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 245 day per year, for 40 years. Since the estimated risks at the point of maximum impact (PMI) are located at the property boundary, and do not exceed the project risk limits, actual receptor-specific risks were not estimated. Risks for all receptor locations further from the facility boundary are lower. In addition, the nearest resident is more than 5,000 feet from the project area. The estimated health risks for this permit application are presented in the table below.

Receptor	***Cancer Risk***	***Chronic Non-cancer Hazard Index***	***Acute Non-cancer Hazard Index***
Point of Maximum Impact (PMI)	***0.2 chances in a million***	***0.003***	***0.005***
Resident	***< 0.2 chances in a million***	***< 0.003***	***< 0.005***
Worker	***< 0.2 chances in a million***	***< 0.003***	***< 0.005***

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Delayed Coker Combustion Emissions

Total HAPs and TACs for All New Sources

Substance	TAC Threshold lb/year	S-1510 Delayed Coker lb/yr	S-1511 Coker Furnace 1 Lb/yr	S-1512 Coker Furnace 2 Lb/yr	S-1513 Coke Handling Lb/yr	S-1514, S-1515, S-659 and S-660 Silos Coke Silos Lb/yr	S-1516 Loadout Lb/yr	S-1517 Flare Lb/yr	Total Lb/yr	TOTAL HAP lb/hr	TOTAL HAP TON/YR
2-methylnaphthalene								3.15E-05			
3-methylnaphthalene								2.37E-06			
7,12-Dimethylbenz(a)anthracene								2.10E-05			
Acenaphthene	PAH		4.75E-03	4.75E-03				3.15E-05	9.54E-03	2.1784E-03	4.77E-06
Acenaphthylene	PAH		3.12E-03	3.12E-03				2.37E-06	6.25E-03	1.4265E-03	3.12E-06
Acetaldehyde	6.40E+01		3.08E+01	3.08E+01					6.17E+01	1.4076E+01	3.08E-02
Antimony	7.7		1.04E+00	1.04E+00	2.74E-04	9.81E-08	8.68E-09		2.08E+00	4.7570E-01	1.04E-03
Anthracene								3.15E-06	3.15E-06		
Arsenic	1.20E-02		1.71E+00	1.71E+00				2.63E-04	3.43E+00	7.8206E-01	1.71E-03
Barium[(2)]	NA		0.00E+00	0.00E+00	1.39E-02	4.98E-06	4.40E-07	5.78E-03	1.97E-02	4.4946E-03	9.84E-06
Benzene	6.4	6.06E+01	1.30E+02	1.30E+02				2.76E-03	3.21E+02	7.3363E+01	1.61E-01
Benzo(a)anthracene	PAH		6.47E-02	6.47E-02				2.37E-06	1.29E-01	2.9533E-02	6.47E-05
Benzo(a)pyrene	PAH		1.81E-01	1.81E-01				1.58E-06	3.61E-01	8.2432E-02	1.81E-04
Benzo(b)fluoranthene	PAH		8.14E-02	8.14E-02				2.37E-06	1.63E-01	3.7169E-02	8.14E-05
Benzo(g,h,i)perylene[(2)]	PAH		0.00E+00	0.00E+00				1.58E-06	1.58E-06	3.6000E-07	7.88E-10
Benzo(k)fluoranthene	PAH		4.86E-02	4.86E-02				2.37E-06	9.71E-02	2.2173E-02	4.86E-05
Beryllium[(2)]	8.00E-02		0.00E+00	0.00E+00				1.58E-05	1.58E-05	3.6000E-06	7.88E-09
Cadmium	4.50E-02		1.99E+00	1.99E+00				1.45E-03	3.98E+00	9.0929E-01	1.99E-03

Chromium (Hex)[2]	1.30E-03		0.00E+00	0.00E+00					0.00E+00	0.0000E+00	0.00E+00
Chromium (Total)	1.30E-03		2.16E+00	2.16E+00	8.58E-03	3.07E-06	2.72E-07	1.84E-03	4.32E+00	9.8678E-01	2.16E-03
Chrysene	PAH		3.28E-03	3.28E-03				2.37E-06	6.57E-03	1.5001E-03	3.29E-06
Cobalt					2.70E-02	9.66E-06	2.72E-07	1.10E-04	2.71E-02	6.1875E-03	1.36E-05
Copper	9.30E+01		8.48E+00	8.48E+00	1.88E-02	6.74E-06	5.96E-07	1.12E-03	1.70E+01	3.8778E+00	8.49E-03
Cyclohexane		7.88E+00							7.88E+00	1.7993E+00	3.94E-03
Dibenz(a,h)anthracene[2]	PAH		0.00E+00	0.00E+00				1.58E-06	1.58E-06	3.6000E-07	7.88E-10
Dichlorobenzene								1.58E-03	1.58E-03		
Ethylbenzene	7.70E+04	6.68E-03	6.08E+01	6.08E+01					1.22E+02	2.7786E+01	6.09E-02
Fluoranthene	PAH		6.17E-03	6.17E-03				3.94E-06	1.23E-02	2.8161E-03	6.17E-06
Fluorene	PAH		2.18E-02	2.18E-02				3.68E-06	4.35E-02	9.9368E-03	2.18E-05
Formaldehyde	3.00E+01		2.24E+02	2.24E+02				9.86E-02	4.47E+02	1.0214E+02	2.24E-01
N-hexane		1.52E+02						2.37E+00	1.54E+02	3.5217E+01	7.71E-02
Hydrogen Sulfide[2]	3.90E+02		0.00E+00	0.00E+00					0.00E+00	0.0000E+00	0.00E+00
Indeno(1,2,3-cd)pyrene	PAH		2.08E-01	2.08E-01				2.37E-06	4.15E-01	9.4761E-02	2.08E-04
Lead	5.4		9.85E+00	9.85E+00				6.57E-04	1.97E+01	4.4990E+00	9.85E-03
Manganese	7.7		1.37E+01	1.37E+01				4.99E-04	2.74E+01	6.2653E+00	1.37E-02
Mercury	5.60E-01		3.63E-01	3.63E-01				3.42E-04	7.26E-01	1.6568E-01	3.63E-04
Molybdenum					2.17E-02	7.76E-06	6.87E-07	1.45E-03	2.31E-02	5.2786E-03	1.16E-05
Naphthalene	5.3		6.31E-01	6.31E-01				8.02E-04	1.26E+00	2.8814E-01	6.31E-04
Nickel	7.30E-01		1.90E+01	1.90E+01	1.14E+00	4.10E-04	7.30E-01	2.76E-03	3.98E+01	9.0951E+00	1.99E-02
Phenanthrene	PAH		2.94E-02	2.94E-02				2.23E-05	5.89E-02	1.3437E-02	2.94E-05
Phenol	7.70E+03		1.13E+01	1.13E+01					2.27E+01	5.1796E+00	1.13E-02
Phosphorus[2]	2.7		0.00E+00	0.00E+00					0.00E+00	0.0000E+00	0.00E+00
Propylene	1.20E+05		4.37E+00	4.37E+00					8.74E+00	1.9964E+00	4.37E-03
Pyrene	PAH		5.00E-03	5.00E-03				6.57E-06	1.00E-02	2.2831E-03	5.00E-06
Selenium	7.70E+02		3.95E-02	3.95E-02				3.15E-05	7.90E-02	1.8039E-02	3.95E-05
Silver	NA		3.24E+00	3.24E+00					6.49E+00	1.4812E+00	3.24E-03
Sulfur trioxide[3]	Note 4		8.03E+02	8.03E+02					1.61E+03	3.6666E+02	8.03E-01
Sulfuric acid[3]	3.90E+01		9.84E+02	9.84E+02					1.97E+03	4.4916E+02	9.84E-01

Thallium[(2)]	NA		0.00E+00	0.00E+00	5.31E-03	1.90E-06	1.68E-07		5.32E-03	1.2138E-03	2.66E-06
2,2,4-Trimethylbenzene		1.E-01							1.25E-01	2.8550E-02	6.25E-05
Toluene	1.20E+04	2.41E+00	2.16E+02	2.16E+02				4.47E-03	4.34E+02	9.8992E+01	2.17E-01
Vanadium					2.13E+00	7.61E-04	6.74E-05	3.02E-03	2.13E+00	4.8621E-01	1.06E-03
Xylene (Total)	2.70E+04	1.36E-02	7.52E+01	7.52E+01					1.50E+02	3.4319E+01	7.52E-02
Zinc	1.40E+03		4.19E+01	4.19E+01	2.33E-02	8.35E-06	7.38E-07	3.81E-02	8.39E+01	1.9150E+01	4.19E-02
				Total					2.76E+00	1259.513	2.758

(1)values are from Appendix B of EERC August 14, 1998 document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"

(2)emission factors presented in the EERC document for these compounds were all based entirely on non-detect analytical values, therefore an emission factor of zero has been substituted based on CAPCOA health risk assessment guidelines.

(3) Based on ratio of SO3/SO2 factors for fuel oil emissions, AP-42 Section 1.3, and 100 ppmv TRS in the refinery fuel gas.

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Process Piping Component Fugitive Emissions

Speciated Emissions of HAPs and TACs

S-1510 Toxic compounds

PRODUCT NAME	HAP	TAC	LT COKER GASOLINE (Weight Fraction)	LT COKER GASO TRT (Weight Fraction)	COKER MAX (Weight Fraction)	COKER PER CENT OF TOXICS	DELAYED COKER FUGITIVE EMISSIONS				HAP
NUMBER CODE			385	386			Lb/hr	Lb/day	Ton/yr	Lb/yr	Ton/yr
1,2,4-TRIMETHYLBENZENE	No	No	0	0	0	0.000%	0.000E+00	0.000E+00	0.000E+00		
1,3-BUTADIENE	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
2,2,4-TRIMETHYLPENTANE	Yes	No	4.81E-05	4.81E-05	4.81E-05	0.056%	1.428E-05	3.426E-04	6.252E-05	1.250E-01	6.252E-05
BENZENE	Yes	Yes	2.33E-02	2.33E-02	2.33E-02	27.187%	6.919E-03	1.661E-01	3.031E-02	6.061E+01	3.031E-02
CRESOLS (MIXED ISOMERS)	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
CUMENE	Yes	No	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
CYCLOHEXANE	No	No	3.03E-03	3.03E-03	3.03E-03	3.535%	8.997E-04	2.159E-02	3.941E-03	7.881E+00	
ETHYLBENZENE	Yes	No	2.57E-06	2.57E-06	2.57E-06	0.003%	7.622E-07	1.829E-05	3.338E-06	6.677E-03	3.338E-06
ETHYLENE	No	No	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
METHANOL	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
MTBE	No	No	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
NAPHTHALENE	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
N-HEXANE	Yes	Yes	5.84E-02	5.84E-02	5.84E-02	68.129%	1.734E-02	4.161E-01	7.594E-02	1.519E+02	7.594E-02
PHENOL	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
PROPYLENE	No	No	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
TOLUENE	Yes	Yes	9.29E-04	9.29E-04	9.29E-04	1.083%	2.757E-04	6.616E-03	1.207E-03	2.415E+00	1.207E-03
XYLENE (-M)	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
XYLENE (-O)	Yes	Yes	5.22E-06	5.22E-06	5.22E-06	0.006%	1.549E-06	3.718E-05	6.786E-06	1.357E-02	6.786E-06
XYLENE (-P)	Yes	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
Ammonia	No	Yes	0	0	0	0	0.000E+00	0.000E+00	0.000E+00		
DEA	Yes	No			0	0	0.000E+00	0.000E+00	0.000E+00		
TOTAL TOXICS EMISSIONS			**8.58E-02**	**8.58E-02**	**8.58E-02**	**100.00%**	**0.025**	**0.611**	**0.111**	**222.935**	**1.075E-01**
TOTAL POC EMISSIONS							**0.297**	**7.12**	**1.299**	2598.845844	

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project

Delayed Coker Combustion Emissions

Speciated HAPs and TACs

S-1511 and S-1512 Heaters Toxics from Refinery Gas Fuel

				S-1511	S-1512			
Substance	**TAC Threshold lb/year**			**Coker Furnace 1**	**Coker Furnace 2**			
			Heat Input, MMBtu/hr=>	**230**	**230**	**Total**	TOTAL HAP	TOTAL HAP
		HAP	**lb/MMBTU[(1)]**	**Lb/yr**	**Lb/yr**	**Lb/yr**	lb/hr	TON/YR
Acenaphthene	PAH	Yes	2.36E-09	4.75E-03	4.75E-03	9.51E-03	1.086E-06	4.755E-06
Acenaphthylene	PAH	Yes	1.55E-09	3.12E-03	3.12E-03	6.25E-03	7.130E-07	3.123E-06
Acetaldehyde	6.40E+01	Yes	1.53E-05	3.08E+01	3.08E+01	6.17E+01	7.038E-03	3.083E-02
Antimony	7.7	Yes	5.17E-07	1.04E+00	1.04E+00	2.08E+00	2.378E-04	1.042E-03
Arsenic	1.20E-02	Yes	8.50E-07	1.71E+00	1.71E+00	3.43E+00	3.910E-04	1.713E-03
Barium[(2)]	NA	No	0	0	0	0		
Benzene	6.4	Yes	6.47E-05	1.30E+02	1.30E+02	2.61E+02	2.976E-02	1.304E-01
Benzo(a)anthracene	PAH	Yes	3.21E-08	6.47E-02	6.47E-02	1.29E-01	1.477E-05	6.468E-05
Benzo(a)pyrene	PAH	Yes	8.96E-08	1.81E-01	1.81E-01	3.61E-01	4.122E-05	1.805E-04
Benzo(b)fluoranthene	PAH	Yes	4.04E-08	8.14E-02	8.14E-02	1.63E-01	1.858E-05	8.140E-05
Benzo(g,h,i)perylene[(2)]	PAH	Yes	0	0	0	0		
Benzo(k)fluoranthene	PAH	Yes	2.41E-08	4.86E-02	4.86E-02	9.71E-02	1.109E-05	4.856E-05
Beryllium[(2)]	8.00E-02	Yes	0	0	0	0		
Cadmium	4.50E-02	Yes	9.88E-07	1.99E+00	1.99E+00	3.98E+00	4.545E-04	1.991E-03
Chromium (Hex)[(2)]	1.30E-03	Yes	0	0	0	0		
Chromium (Total)	1.30E-03	Yes	1.07E-06	2.16E+00	2.16E+00	4.31E+00	4.922E-04	2.156E-03
Chrysene	PAH	Yes	1.63E-09	3.28E-03	3.28E-03	6.57E-03	7.498E-07	3.284E-06
Copper	9.30E+01	No	4.21E-06	8.48E+00	8.48E+00	1.70E+01		
Dibenz(a,h)anthracene[(2)]	PAH	Yes	0	0	0	0		

Ethylbenzene	7.70E+04	Yes	3.02E-05	6.08E+01	6.08E+01	1.22E+02	1.389E-02	6.085E-02
Fluoranthene	PAH	Yes	3.06E-09	6.17E-03	6.17E-03	1.23E-02	1.408E-06	6.165E-06
Fluorene	PAH	Yes	1.08E-08	2.18E-02	2.18E-02	4.35E-02	4.968E-06	2.176E-05
Formaldehyde	3.00E+01	Yes	1.11E-04	2.24E+02	2.24E+02	4.47E+02	5.106E-02	2.236E-01
Hydrogen Sulfide(2)	3.90E+02	Yes	0	0	0	0		
Indeno(1,2,3-cd)pyrene	PAH	Yes	1.03E-07	2.08E-01	2.08E-01	4.15E-01	4.738E-05	2.075E-04
Lead	5.4	Yes	4.89E-06	9.85E+00	9.85E+00	1.97E+01	2.249E-03	9.852E-03
Manganese	7.7	Yes	6.81E-06	1.37E+01	1.37E+01	2.74E+01	3.133E-03	1.372E-02
Mercury	5.60E-01	Yes	1.80E-07	3.63E-01	3.63E-01	7.25E-01	8.280E-05	3.627E-04
Naphthalene	5.3	Yes	3.13E-07	6.31E-01	6.31E-01	1.26E+00	1.440E-04	6.306E-04
Nickel	7.30E-01	Yes	9.42E-06	1.90E+01	1.90E+01	3.80E+01	4.333E-03	1.898E-02
Phenanthrene	PAH	Yes	1.46E-08	2.94E-02	2.94E-02	5.88E-02	6.716E-06	2.942E-05
Phenol	7.70E+03	Yes	5.63E-06	1.13E+01	1.13E+01	2.27E+01	2.590E-03	1.134E-02
Phosphorus(2)	2.7	Yes	0	0	0	0		
Propylene	1.20E+05	No	2.17E-06	4.37E+00	4.37E+00	8.74E+00		
Pyrene	PAH	Yes	2.48E-09	5.00E-03	5.00E-03	9.99E-03	1.141E-06	4.997E-06
Selenium	7.70E+02	Yes	1.96E-08	3.95E-02	3.95E-02	7.90E-02	9.016E-06	3.949E-05
Silver	NA	No	1.61E-06	3.24E+00	3.24E+00	6.49E+00		
Sulfur trioxide(3)	Note 4	No	3.99E-04	8.03E+02	8.03E+02	1.61E+03		
Sulfuric acid(3)	3.90E+01	No	4.88E-04	9.84E+02	9.84E+02	1.97E+03		
Thallium(2)	NA	No	0	0	0	0		
Toluene	1.20E+04	Yes	1.07E-04	2.16E+02	2.16E+02	4.31E+02	4.922E-02	2.156E-01
Xylene (Total)	2.70E+04	Yes	3.73E-05	7.52E+01	7.52E+01	1.50E+02	1.716E-02	7.515E-02
Zinc	1.40E+03	No	2.08E-05	4.19E+01	4.19E+01	8.38E+01		
					Total	2.64E+00	0.182	0.799

(1)values are from Appendix B, page B-9 of EERC August 14, 1998 document "Air Toxic Emission Factors for Combustion Sources Using Petroleum Based Fuels, Final Report, Vol. II"

(2)emission factors presented in the EERC document for these compounds were all based entirely on non-detect analytical values, therefore an emission factor of zero has been substituted based on CAPCOA health risk assessment guidelines.

(3) Based on ratio of SO3/SO2 factors for fuel oil emissions, AP-42 Section 1.3, and 100 ppmv TRS in the refinery fuel gas. Sulfur trioxide readily converts to sulfuric acid.

(4) Sulfur trioxide is a TAC but no chronic trigger level is provided.

PAH	PEF	Lb/yr	Equiv.
benz(a)anthracene	0.1	1.29E-01	1.29E-02
benzo(b)fluoranthene	0.1	1.63E-01	1.63E-02
benzo(j)fluoranthene	0.1		
benzo(k)fluoranthene	0.1	9.71E-02	9.71E-03
benzo(a)pyrene	1	3.61E-01	3.61E-01
chrysene	0.01	6.57E-03	6.57E-05
dibenz(a,j)acridine	0.1		
dibenz(a,h)acridine	0.1		
dibenz(a,h)anthracene	1.05	0.00E+00	0.00E+00
7H-dibenzo(c,g)carbazole	1		
dibenzo(a,e)pyrene	1		
dibenzo(a,h)pyrene	10		
dibenzo(a,i)pyrene	10		
dibenzo(a,l)pyrene	10		
7,12-dimethylbenz(a)anthracene	64		
indeno(1,2,3-cd)pyrene	0.1	4.15E-01	4.15E-02
5-methylchrysene	1		
3-methylcholanthrene	5.7		
5-nitroacenaphthene	0.03		
1-nitropyrene	0.1		
4-nitropyrene	0.1		
1,6-dinitropyrene	10		
1,8-dinitropyrene	1		
6-nitrocrysene	10		
2-nitrofluorene	0.01		

S-1513 TAC for Screening/Crusher								
Assuming worst case coker analysis, excludes any decreases from shutdown sources.								
Coke Analysis from two product coke samples dated 1/31/06 (Appendix B)								
Metal	TAC?	Concentration, ppm	Mass Emissions, lbs/hr	Acute Toxic Trigger, lbs/hr	Exceed Acute Trigger Level	Mass Emissions, lb/year	Chronic Toxic Trigger, lbs/yr	Exceed Chronic Trigger Level
Cobalt	No	6.6	2.53E-05	NA	NA	2.70E-02	NA	NA
Molybdenum	No	5.3	2.04E-05	NA	NA	2.17E-02	NA	NA
Nickel	**Yes**	**280**	**1.08E-03**	**1.30E-02**	**No**	**1.14E+00**	**7.30E-01**	**Yes**
Thallium	No	1.3	4.99E-06	NA	NA	5.31E-03	NA	NA
Vanadium	Yes	520	2.00E-03	6.60E-02	No	2.13E+00	none	No
Zinc	Yes	5.7	2.19E-05	none	No	2.33E-02	1.40E+03	No
Barium	No	3.4	1.31E-05	NA	NA	1.39E-02	NA	NA
Antimony	Yes	0.067	2.57E-07	none	No	2.74E-04	7.70E+00	No
Chromium	**Yes**	**2.1**	**8.06E-06**	**none**	**No**	**8.58E-03**	**1.30E-03**	**Yes**
Copper	Yes	4.6	1.77E-05	2.20E-01	No	1.88E-02	9.30E+01	No
Particulate Emission Rate =			3.84	lbs/hr				
			2.04	ton/year				
			4088	lbs/yr				

S-1514, S-1515, S-659 and S-660 TAC for Silos

Metal	TAC?	Concentration, ppm	Mass Emissions, lbs/hr	Acute Toxic Trigger, lbs/hr	Exceed Acute Trigger Level	Mass Emissions, lb/year	Chronic Toxic Trigger, lbs/yr	Exceed Chronic Trigger Level
Cobalt	No	6.6	2.21E-06	NA	NA	9.66E-06	NA	NA
Molybdenum	No	5.3	1.77E-06	NA	NA	7.76E-06	NA	NA
Nickel	Yes	280	9.36E-05	1.30E-02	No	4.10E-04	7.30E-01	no
Thallium	No	1.3	4.35E-07	NA	NA	1.90E-06	NA	NA
Vanadium	Yes	520	1.74E-04	6.60E-02	No	7.61E-04	none	No
Zinc	Yes	5.7	1.91E-06	none	No	8.35E-06	1.40E+03	No
Barium	No	3.4	1.14E-06	NA	NA	4.98E-06	NA	NA
Antimony	Yes	0.067	2.24E-08	none	No	9.81E-08	7.70E+00	No
Chromium	Yes	2.1	7.02E-07	none	No	3.07E-06	1.30E-03	no
Copper	Yes	4.6	1.54E-06	2.20E-01	No	6.74E-06	9.30E+01	No
Particulate Emission Rate for 4 silos=			0.33	lbs/hr				
			1.46	ton/year				
			2928.34286	lbs/yr				

S-1516 Truck Loadout toxics

Metal	TAC?	Concentration, ppm	Mass Emissions, lbs/hr	Acute Toxic Trigger, lbs/hr	Exceed Acute Trigger Level	Mass Emissions, lb/year	Chronic Toxic Trigger, lbs/yr	Exceed Chronic Trigger Level
Cobalt	No	6.6	1.61E-06	NA	NA	8.55E-07	NA	NA
Molybdenum	No	5.3	1.29E-06	NA	NA	6.87E-07	NA	NA
Nickel	Yes	280	6.81E-05	1.30E-02	No	3.63E-05	7.30E-01	no
Thallium	No	1.3	3.16E-07	NA	NA	1.68E-07	NA	NA
Vanadium	Yes	520	1.27E-04	6.60E-02	No	6.74E-05	none	No
Zinc	Yes	5.7	1.39E-06	none	No	7.38E-07	1.40E+03	No
Barium	No	3.4	8.27E-07	NA	NA	4.40E-07	NA	NA
Antimony	Yes	0.067	1.63E-08	none	No	8.68E-09	7.70E+00	No
Chromium	Yes	2.1	5.11E-07	none	No	2.72E-07	1.30E-03	no
Copper	Yes	4.6	1.12E-06	2.20E-01	No	5.96E-07	9.30E+01	No
Particulate Emission Rate for truck load out =			0.24	lbs/hr				
			0.13	ton/year				
			259.070277	lbs/yr				

Tesoro Refining & Marketing

Golden Eagle Refinery Delayed Coker Project
Flare Pilot Emissions
Speciated HAPs and TACs
S-1517 Emergency Flare 1.25 MMlbs/hr

Flare Rate, MMSCF/hr 0.00015

Natural Gas Combustion HAP Emission Factors from AP-42 TOTAL HAP

Pollutant	HAP	TAC	Lb/MMSCF	Lb/hr	Lb/day	Ton/yr	Lbs/yr	TPY
2-Methylnaphthalene	Yes	Yes	2.4E-05	3.6E-09	8.6E-08	1.6E-08	3.2E-05	1.6E-08
3-Methylchloranthrene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
7,12-Dimethylbenz(a)anthracene	Yes	Yes	1.6E-05	2.4E-09	5.8E-08	1.1E-08	2.1E-05	1.1E-08
Acenaphthene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Acenaphthylene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Anthracene	Yes	Yes	2.4E-06	3.6E-10	8.6E-09	1.6E-09	3.2E-06	1.6E-09
Benz(a)anthracene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Benzene	Yes	Yes	2.1E-03	3.2E-07	7.6E-06	1.4E-06	2.8E-03	1.4E-06
Benzo(a)pyrene	Yes	Yes	1.2E-06	1.8E-10	4.3E-09	7.9E-10	1.6E-06	7.9E-10
Benzo(b)flouoranthene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Benzo(g,h,I)perylene	Yes	Yes	1.2E-06	1.8E-10	4.3E-09	7.9E-10	1.6E-06	7.9E-10
Benzo(k)fluoranthene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Chrysene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Dibenzo(a,h)anthracene	Yes	Yes	1.2E-06	1.8E-10	4.3E-09	7.9E-10	1.6E-06	7.9E-10
Dichlorobenzene	Yes	Yes	1.2E-03	1.8E-07	4.3E-06	7.9E-07	1.6E-03	7.9E-07
Fluoranthene	Yes	Yes	3.0E-06	4.5E-10	1.1E-08	2.0E-09	3.9E-06	2.0E-09
Fluorene	Yes	Yes	2.8E-06	4.2E-10	1.0E-08	1.8E-09	3.7E-06	1.8E-09
Formaldehyde	Yes	Yes	7.5E-02	1.1E-05	2.7E-04	4.9E-05	9.9E-02	4.9E-05
Hexane	Yes	Yes	1.8E+00	2.7E-04	6.5E-03	1.2E-03	2.4E+00	1.2E-03
Indeno(1,2,3-cd)pyrene	Yes	Yes	1.8E-06	2.7E-10	6.5E-09	1.2E-09	2.4E-06	1.2E-09
Naphthalene	Yes	Yes	6.1E-04	9.2E-08	2.2E-06	4.0E-07	8.0E-04	4.0E-07
Phenanathrene	Yes	Yes	1.7E-05	2.6E-09	6.1E-08	1.1E-08	2.2E-05	1.1E-08
Pyrene	Yes	Yes	5.0E-06	7.5E-10	1.8E-08	3.3E-09	6.6E-06	3.3E-09
Toluene	Yes	Yes	3.4E-03	5.1E-07	1.2E-05	2.2E-06	4.5E-03	2.2E-06

Arsenic	Yes	Yes	2.0E-04	3.0E-08	7.2E-07	1.3E-07	2.6E-04	1.3E-07
Barium	Yes	Yes	4.4E-03	6.6E-07	1.6E-05	2.9E-06	5.8E-03	2.9E-06
Beryllium	Yes	Yes	1.2E-05	1.8E-09	4.3E-08	7.9E-09	1.6E-05	7.9E-09
Cadmium	Yes	Yes	1.1E-03	1.7E-07	4.0E-06	7.2E-07	1.4E-03	7.2E-07
Chromium	Yes	Yes	1.4E-03	2.1E-07	5.0E-06	9.2E-07	1.8E-03	9.2E-07
Cobalt	Yes	Yes	8.4E-05	1.3E-08	3.0E-07	5.5E-08	1.1E-04	5.5E-08
Copper	Yes	Yes	8.5E-04	1.3E-07	3.1E-06	5.6E-07	1.1E-03	5.6E-07
Lead	Yes	Yes	5.0E-04	7.5E-08	1.8E-06	3.3E-07	6.6E-04	3.3E-07
Manganese	Yes	Yes	3.8E-04	5.7E-08	1.4E-06	2.5E-07	5.0E-04	2.5E-07
Mercury	Yes	Yes	2.6E-04	3.9E-08	9.4E-07	1.7E-07	3.4E-04	1.7E-07
Molybdenum	Yes	Yes	1.1E-03	1.7E-07	4.0E-06	7.2E-07	1.4E-03	7.2E-07
Nickel	Yes	Yes	2.1E-03	3.2E-07	7.6E-06	1.4E-06	2.8E-03	1.4E-06
Selenium	Yes	Yes	2.4E-05	3.6E-09	8.6E-08	1.6E-08	3.2E-05	1.6E-08
Vanadium	Yes	Yes	2.3E-03	3.5E-07	8.3E-06	1.5E-06	3.0E-03	1.5E-06
Zinc	Yes	Yes	2.9E-02	4.4E-06	1.0E-04	1.9E-05	3.8E-02	1.9E-05
								1.3E-03

APPENDIX D

Contra Costa County Health Services Letters/BACT Guidelines

1. Contra Costa County letter dated May 19, 2006 – Determination of Noncoverage by Tesoro Refining Company, for the Coker Modification Project from Community Development Department.
2. Contra Costa County letter dated June 1, 2006 – Determination of airport impact for the Coker Modification Project from Airport Land Use Commission.
3. BACT Guideline - Heater-Refinery Process, Document # 94.3.1, 8/12/94
4. BACT Guideline - Bulk Solid Material Storage-Non White Commodities (wet commodities such as coal, petroleum coke, sulfur, metals, and metals and metal ores), Document # 28.1, 9/6/91
5. BACT Guideline – Solid Material Handling (Conveying, Size Reduction, Classification) –Wet, Document # 156.1, 10/18/91
6. BACT Guideline – Flare-Refinery, Document # 82.1, 6/3/95
7. BACT Guideline – Pressure Relief Valves, Emergency, Document # 135.1, 6/30/95
8. BACT Guideline – Flanges, Document # 78.1, 1/18/06
9. BACT Guideline – Process Valves, Document # 136.1, 1/18/06
10. BACT Guideline – Pumps, Document # 137.1, 1/18/06

Community Development Department

County Administration Building
651 Pine Street
4th Floor, North Wing
Martinez, California 94553-0095

Phone: 925-335-1210

Contra Costa County

Dennis M. Barry, AICP
Community Development Director

May 19, 2006

Alan A. Savage III
Environmental Manager
Tesoro Refining and Marketing Company
Golden Eagle Refinery
150 Solano way
Martinez, CA 94553-1487

RE: County File #HZ06-0001, Request for Determination of Noncoverage by Tesoro Refining Company, for the Coker Modification Project

Dear Mr. Savage:

This letter is in response to your request dated December 14, 2005, for a determination of the applicability of County Code Chapter 84-63 to the above-referenced project. The staff of the Community Development Department (CDD) and the Contra Costa County Health Services Department, Hazardous Material Program (CCHS), reviewed the information and conducted follow-up field visits and inquiries.

The information submitted includes a description of the current coking process and the resultant process after the modifications are made. It is the County's understanding that in order to modify the existing fluid coker unit to a delayed coker, the reactor/scrubber, burner, and coke handling system of the fluid coking process will no longer be needed. The equipment to be added or that will be modified to replace existing equipment consists of: new coker heaters, new coke drums, a fractionator replacement, a side stripper, knockout drums, a new coke handling system, and an emergency flare system.

It is our understanding that the Bay Area Air Quality Management District has issued an abatement order to the refinery to address particulate emissions from upsets at the existing fluid coker unit. This project responds to that abatement order. It is also our understanding that the project will reduce air emissions from upsets, reduce excess start-up emissions, and substantially reduce daily emissions from coking operations.

The County Health Services Department confirmed a Hazard Score of 52 for the project. As such, a land use permit is not required.

If the project changes from the description provided to either the Community Development Department or the Health Services Department, please contact our office so that we can determine whether a land use permit is required. If you have any questions please feel free to contact me at 925-335-1210.

Sincerely,

Catherine Kutsuris
Deputy Director

cc: File: HZ06-0001
Randy Sawyer, Contra Costa County Hazardous Materials Program
Cho Nai Cheung

Airport
Land Use
Commission
c/o Community Development Department

Contra
Costa
County

Dennis M. Barry, AICP
Community Development Director

County Administration Building
651 Pine Street
4th Floor, North Wing
Martinez, California 94553-0095
Phone: (925) 335-1229

June 1, 2006

Attn. Sharon Lim
Tesoro Refining and Marketing Company
Golden Eagle Refinery
150 Solano Way
Martinez, CA. 94553-1487

RE: COKER UNIT MODIFICATION PROJECT AT THE GOLDEN EAGLE REFINERY WITHIN THE UNINCORPORATED MARTINEZ AREA OF CONTRA COSTA COUNTY

Dear Ms. Lim:

On May 4, 2006 the Airport Commission received your letter of request for assessment regarding the proposed coker equipment to be located on the property of the Golden Eagle Refinery. It is understood from your letter that the modification project will eliminate or reduce particulate and excess emissions and is a response to a Conditional Order of Abatement issued by the Hearing Board of the Bay Area Air Quality Management District.

The Contra Costa County Airport Land Use Commission reviews proposed land uses outside of the Buchanan airport boundaries for consistency with the Contra Costa County Airport Land Use Compatibility Plan (ALUCP) which is based on the State of California Division of Aeronautics Airport Handbook. All documents submitted by your company were reviewed for consistency with the elements within the ALUCP. Below is a summary of the determination for each element:

Airport Influence Area: The project is located within the Buchanan Airport Influence Area, which indicates the subject property is a location commonly overflown by aircraft as they approach and depart the airport. Due to the industrial nature of the project our recommendation is to provide awareness to your employees and property disclosure.

Noise: A relatively small portion of the project property southwest of Solano Way and north of Highway 4 is within the 55-60 db CNEL noise contour. However, the proposed coker unit and its location on the property are acceptable and consistent with the ALUCP as the unit is outside of the composite noise contours used to evaluate the noise levels.

Safety: A relatively small portion of the overall project property is within safety zone 4. The location of the proposed new units are outside of the safety zones and therefore no further determination is needed as the project is consistent.

Airspace Protection Surfaces: The site is located within the critical (United States Standard for Terminal Instrument Procedures) TERPS Airspace northeast of the airport. Penetration of this area requires aeronautical studies. On May 4, 2006 a copy of the Federal Aviation Administration aeronautical studies consistent with Part 77 of the Federal Aviation Regulations was submitted. Based on the evaluation of the structure and findings from the aeronautical study, marking and lighting are not necessary for aviation safety and a determination of no Hazard to Air Navigation has been made. The project is not within the Height Overlay zones, therefore, no exceptions or review is necessary.

The Company is required to follow the requirements of FAA form 7460-2 Notice of Actual Construction and Alteration and comply with any other Federal, State, and local government agency. The project as proposed does not require a public hearing before the Airport Land Use Commission as the proposal is determined to be consistent with the ALUCP.

If you have any questions regarding this matter, please call me directly at 925-335-1229.

Sincerely,

Lashun C. Cross
ALUC Planner

cc: ALU Commissioners
HZ06-0001-File
ALUC file

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

Source Category

Source:	***Heater - Refinery Process***	Revision:	***3***
		Document #:	***94.3.1***
Class:	***≥50 MMBtu/hr Heat Imput***	Date:	***08/12/94***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *n/s*	1. *n/d* 2. *Good Combustion Practice*[a]
NOx	1. *n/d* 2. *10 ppmv @ 3% O_2 Dry*[a,b,c,d,e]	1. *n/d* 2. *Selective Catalytic Reduction (SCR) + Low NO_x Burners*[a,b,c,d]
SO_2	1. *Natural Gas or Treated Refinery Gas Fuel w/ ≤50 ppmv Hydrogen Sulfide and ≤100 ppmv Total Reduced Sulfur*[a] 2. *Natural Gas or Treated` Refinery Gas Fuel w/ ≤100 ppmv Total Reduced Sulfur*[a]	1. *Fuel Selection*[a] 2. *Fuel Selection*[a]
CO	1. *n/d* 2. *50 ppmv @ 3% O_2 Dry*[a,f]	1. *n/d* 2. *Good Combustion Practice in Conjunction w/ Selective Catalytic Reduction (SCR) System*[a]
PM_{10}	1. *n/d* 2. *Natural Gas or Treated Refinery Gas Fuel*[a,b]	1. *n/d* 2. *Fuel Selection*[a,b]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD
b. BAAQMD A #30783
c. BAAQMD A #3318
d. BAAQMD A #8407
e. NO_x determination by Continuous Emission Monitor (3-hour average); or BAAQMD approved equivalent.
f. CO determination by Continuous Emission Monitor (3-hour average); or BAAQMD approved equivalent.

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

Source Category

Source:	***Bulk Solid Material Storage - Non-White Commodities (wet commodities such as coal, petroleum coke, sulfur, metals, and metals, and metal ores)***	Revision:	***1***
		Document #:	***28.1***
Class:	***All***	Date:	***09/06/91***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NOx	1. *n/a* 2. *n/a*	1. *Electric Power* 2. *n/d*
SO_2	1. *n/a* 2. *n/a*	1. *Electric Power* 2. *n/d*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *For dry material, enclosed storage vented to a baghouse w/ ≤0.01 gr/dscf; or for wet material, enclosed storage* 2. *Water spray w/ chemical suppressants or charged for spray*	1. *BAAQMD Approved Design and Operation*[b] 2. *BAAQMD Approved Design and Operation*[b]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

b. BAAQMD

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

Source Category

Source:	***Solid Material Handling (Conveying, Size Reduction, Classification) - Wet***	Revision:	***1***
		Document #:	***156.1***
Class:	***All***	Date:	***10/18/91***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
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. *Enclosure and vent to venturi scrubber; or water spray with chemical suppressants*[b] 2. *Water spray or adequate material moisture*[b]	1. *BAAQMD Approved Design and Operation*[b] 2. *BAAQMD Approved Design and Operation*[b]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

b. BAAQMD

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

Source Category

Source:	***Flare - Refinery***	Revision:	***2***
		Document #:	***82.1***
Class:	***All***	Date:	***06/30/95***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Ground level flare, enclosed, steam- or air-assisted, w/ staged combustion; POC destruction efficiency ≥98.5% (≥0.6 sec. retention time at ≥1400°F); use of natural gas or LPG as pilot fuel. Flare to be operated only during periods of emergency plant upset or breakdown; routine venting of process gases to be routed to fuel gas recovery system*[b,T] 2. *Elevated flare, steam- or air- assisted, w/staged combustion; POC destruction efficiency ≥98%: use of natural gas or LPG as pilot fuel. Flare to be oprated only during periods of emergency plant upset or breakdown; routine venting of process gases to be routed to fuel gas recovery system*[a,b,T]	1. *BAAQMD Approved Design and Operation*[a,T] 2. *BAAQMD Approved Design and Operation*[a,T]
NOx	1. *n/d* 2. *Staged combustion as for POC above*[a,T]	1. *n/d* 2. *BAAQMD Approved Design and Opration*[a]
SO_2	1. *n/d* 2. *n/d*	1. *n/d* 2. *n/d*
CO	1. *n/d* 2. *Same as for POC above*[a]	1. *n/d* 2. *BAAQMD Approved Design and Operation*[a]
PM_{10}	1. *n/d* 2. *Same as for POC above*[a,T]	1. *n/d* 2. *BAAQMD Approved Design and Operation*[a,T]

NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD
b. CARB/CAPCOA Clearinghouse
T. TBACT

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

Source Category

Source:	***Pressure Relief Valves, Emergency***	Revision:	***4***
		Document #:	***135.1***
Class:	***All***	Date:	***06/30/95***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Rupture disk w/ vent to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%*[a,T] 2. *Vent to fuel gas recovery system, furnace, or flare with a recovery/destruction efficiency ≥98%*[a,T]	1. *BAAQMD Approved Design and Operation*[a,T] 2. *BAAQMD Approved Design and Operation*[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. *Rupture disk w/ vent to carbon adsorption system or vapor recovery system with a*	1. *BAAQMD Approved Design and Operation*[a,T]

	capture/recovery efficiency ≥90%[a,T] 2. *Vent to carbon adsorption system or vapor recovery system with a capture/recovery efficiency ≥90%*[a,T]	2. *BAAQMD Approved Design and Operation*[a,T]

References

a. BAAQMD *T. TBACT*

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

Source Category

Source:	***Flanges***	Revision:	***3***
		Document #:	***78.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Graphitic Gaskets and BAAQMD Approved Inspection and Maintenance*[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. *100 ppm expressed as methane measured using EPA Reference*	1. *n/d* 2. *Graphitic Gaskets and BAAQMD Approved Inspection and*

	Method 21[a,T]	*Maintenance*[a,T]

References

a. BAAQMD *T. TBACT*

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

Source Category

Source:	***Process Valves***	Revision:	***3***
		Document #:	***136.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Bellows Valves; Diaphragm Valves; Quarter Turn Valves; Live Loaded Valves; or Other Low-Emission Valves; Each w/BAAQMD Approved Inspection and Maintenance*[a,T]
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a*	1. *n/a*

	2. *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. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *n/d* 2. *Bellows Valves; Diaphragm Valves; Quarter Turn Valves; Live Loaded Valves; or Other Low-Emission Valves; Each w/BAAQMD Approved Inspection and Maintenance*[a,T]

References

a. BAAQMD
T. TBACT

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

Source Category

Source:	***Pumps***	Revision:	***4***
		Document #:	***137.1***
Class:	***All***	Date:	***01/18/06***

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *Double Mechanical Seals w/ Barrier Fluid; Magnetically Coupled Pumps; Canned Pumps; Magnetic Fluid Sealing Technology; or Gas Seal System Vented to Thermal Oxidizer or Other BAAQMD Approved Control Device; all w/BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T]

	2. *500 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	2. *Double Mechanical Seals w/ Barrier Fluid, and BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,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. *100 ppm expressed as methane measured using EPA Reference Method 21*[a,T] 2. *500 ppm expressed as methane measured using EPA Reference Method 21*[a,T]	1. *Double Mechanical Seals w/ Barrier Fluid; Magnetically Coupled Pumps; Canned Pumps; or Magnetic Fluid Sealing Technology; all w/ BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T] 2. *Double Mechanical Seals w/ Barrier Fluid, and BAAQMD Approved Quarterly Inspection and Maintenance Program*[a,b,T]

References

a. BAAQMD
b. EPA NSPS: 40 CFR 60 Subpart GGG (Petroleum Refineries) and 40 CFR 60 Subpart VV (Chemical Plants)
T. TBACT

APPENDIX E

CEQA Analysis For Coker Modification Project

1. Engineering Evaluation – CEQA Analysis for Coker Modification Project
2. *Attachment 1 – Health Risk Assessment for project – diesel-fueled truck trips*
3. *Attachment 2 – Health Risk Assessment for project – diesel-fueled ships and tugboat trips*
4. *Attachment 3 – Health Risk Assessment for project – flare*
5. ***Appendix H – CEQA Environmental Information Form***

ENGINEERING EVALUATION
CEQA ANALYSIS FOR COKER MODIFICATION PROJECT
Tesoro Golden Eagle Refinery
Martinez, California
Permit Application No. 14141
Plant No. 14628

By Barry G. Young
Supervising Air Quality Engineer
Bay Area Air Quality Management District
July 13, 2006

This memorandum addresses the applicability of the California Environmental Quality Act ("CEQA") to Tesoro's proposed Coker Modification Project ("CMP"), District Application No. 14141.

I. INTRODUCTION AND SUMMARY OF CONCLUSIONS

Issuance of an Authority to Construct for the Coker Modification Project is considered a "project" for purposes of CEQA. (Public Resources Code § 21065.) CEQA requires public agencies to evaluate the potential environmental impacts of certain types of "projects" before approving them. (Public Resources Code § 21080.) CEQA exempts certain categories of projects from the formal environmental impacts analysis requirements, however. The replacement of existing structures and facilities, where the new structure will be located on the same site as the structure replaced, and will have substantially the same purpose and capacity as the structure replaced, is one such exempt category. This categorical exemption is commonly known as the "Class 2" or Replacement Project Exemption. (*See* CEQA Guidelines § 15302, 14 Cal. Code Regs. § 15302; District Regulation 2-1-312.7.) As explained herein, the CMP falls within this categorical exemption, and so it is exempt from CEQA. The District is therefore not preparing an Initial Study for the project or a Negative Declaration or Environmental Impact Report.

II. THE REPLACEMENT OF TESORO'S EXISTING FLUID COKER WITH A DELAYED COKER IS A "REPLACEMENT PROJECT" THAT IS CATEGORICALLY EXEMPT FROM CEQA

A. The Coker Modification Project is a "Replacement Project"

The "Class 2" Replacement Project Exemption applies where a structure or facility is replaced by a new structure that will be located on the same site as the structure replaced, and will have substantially the same purpose and capacity as the structure replaced. Where these criteria are satisfied, the project is categorically exempt from CEQA and no formal environmental analysis

needs to be performed. (*See* CEQA Guidelines Section 15302; District Regulation 2-1-312.7.) All of the exemption's applicability criteria are satisfied here.

(a) Location. The CMP will be located on the same site as the structure it replaces. According to the Appendix H, CEQA Information Form, submitted by Tesoro with the permit application ("CEQA Appendix H"), the CMP involves the installation of replacement equipment within and adjacent to the existing Fluid Coker plot, as well as in an area of the refinery where existing flares are located. The entire project will be constructed completely within existing refinery boundaries. The California courts have confirmed that projects such as this, involving a replacement structure built within the area bounded by an existing plant and located on the same site as the structure replaced, qualify for the Replacement Project exemption. (*See Dehne v. County of Santa Clara County* (1981) 115 Cal. App. 3d 827.)

(b) Purpose. The purpose of the Golden Eagle Refinery and the modified coker are described in the CEQA Appendix H.

The primary purpose of the Golden Eagle Refinery is to refine crude into gasoline and diesel. Other fuels and products, including propane, butane, carbon dioxide, fuel oil, heavy gas oil, light cycle oil, and coke are byproducts of the gasoline and diesel refining process, and also are sold as marketable products. The purpose of the Golden Eagle Refinery will not change due to the CMP.

The primary purpose of the existing fluid coker is to process heavy petroleum hyrdrocarbons into lighter and more useful products. The modified coker will have the same purpose as the existing fluid coker. Section 2 of the permit application (District Permit Application No. 14141) summarizes both the existing fluid coking process and the delayed coking process. In both cases, heavier hydrocarbons are heated to break longer molecules into shorter chains. These shorter chains consist of lighter liquids, gas, and coke. The lighter liquids and gas are used elsewhere in the refining process. Coke is produced as a byproduct of the process. The coke is collected and handled at the coker. Coke can be used to make barbecue briquettes or burned as fuel at specialized facilities. To modify the fluid coker to a delayed coking process, the reactor/scrubber, burner, and coke handling system of the fluid coking process will no longer be needed and components amenable to the delayed coking process will be used instead.

As the project will not involve any change in the purpose of the coker or of the refinery as a whole, it is eligible for the Replacement Project exemption.

(c) Capacity. As explained in the permit application, the modified coker will have a maximum capacity of 53.2 thousand barrels per calendar day (MBPCD), and an annual average of 47.8 MBPCD to match the existing feed rate for the existing fluid coker. The maximum capacity of the Golden Eagle Refinery will not change due to the CMP. As the project will not involve any change in the capacity of the coker or of the refinery as a whole, it is eligible for the Replacement Project exemption.

The California Courts have made clear that a project such as this, involving the upgrade of an existing heavy industrial process to a newer, more efficient type of process, is exempt from the environmental impact analysis requirement under the "Class 2" Replacement Project exemption. (*See Dehne v. County of Santa Clara* (115 Cal.App.3d 827 (1981) (involving the replacement of an existing "wet process" cement manufacturing plant with a new "dry process" plant at the same location). The fact that this is a large capital project at a petroleum refinery does not alter this conclusion, as the court held in the *Dehne* case. Public Resources Code Section 21084 does not limit to relatively minor projects the exemptions from CEQA. Where no size limitation is stated under the exemption category, no size limitation is intended (See Cal.Jur.3d, Pollution and Conservation Laws, Section 382; Am. Jur.2d, Pollution Control Section 37.)

B. The Project Does Not Trigger Any of the Exceptions to the Categorical Exemption

There are certain important exceptions to the "Class 2" Replacement Project exemption, as set forth in Guidelines Section 15300.2. The District has examined each of them and has determined that none is triggered here. The exceptions, and the reasons why they do not apply, are set forth below.

(a) Location. Certain categorical exemptions are qualified by consideration of where the project is to be located. But this exception does not apply to the "Class 2" Replacement Project exemption.

(b) Cumulative Impact. The Replacement Project exemption does not apply where the cumulative impact of successive projects of the same type in the same place, over time is significant. This exception applies where the impacts of the project under review are considerable when evaluated against the backdrop of the environmental effects of other similar projects. Where the incremental impacts of the project are not significant, by definition they are not cumulatively significant within the meaning of the exception. (*See* 14 Cal. Code Regs. § 15065(c); *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1996) 42 Cal. App. 4th 608, 622; *Leonoff v. Monterey Cty. Bd. Of Supervisors* (1990) 222 Cal. App. 3d 1337, 1338; *Newberry Springs Water Ass'n v. County of San Bernardino* (1984) 150 Cal. App. 3d 740, 750.)

This exception does not apply here because the incremental impact of this project will be environmentally *beneficial*, not harmful. The CMP has many environmental benefits, including:

1. Reduction of hydrocarbon emissions from process upsets by redirecting process gases from all coker pressure relief valves into the new safety flare, instead of venting them unabated directly into the atmosphere;

2. Reduction of over 282 tons per year of NOx, 49 tons per year of CO, 3,139 tons per year of SO2, 54 tons per year of PM, and 669 tons per year of ammonia emissions by shutting down the No. 5 Boiler (District Source No. 903) and installing two new heaters (District Source Numbers 1511 and 1512), which will meet BACT standards with low-NOx burners and selective catalytic reduction (SCR);

3. Elimination of coker start up excess emissions by converting the current coker design from a fluid coker to a delayed coker, thus eliminating the coker flue gas stream;

4. Elimination of the potential for sooty coker flue gas plumes and associate soot fallout that has been a recurring problem during periodic failures of the No. 5 Boiler; and

5. Removal of over 18 tons of anhydrous ammonia from the inventory used to reduce NOx emissions by SCR and replacement of the anhydrous ammonia with a much less hazardous form of ammonia, aqueous ammonia.

In light of these substantial environmental benefits from this project, it is evident that this project would not contribute to adverse cumulative impacts on air quality. This is because if a project does not itself contribute to an impact, then the impact is not a cumulative impact of *the project* combined with impacts of other projects.

Furthermore, even if the potential impacts from construction and operation of the delayed coker are considered in isolation, and not in the context of the reduction in impacts compared with the existing fluid coker, the impacts would still not be considered cumulatively significant. Under the CEQA Guidelines, the cumulative impacts associated with a project are less than significant where:

> ***"the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (*e.g. *water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located."***

(14 Cal. Code Regs. § 15064(h)(3).) As the District's December 1999* BAAQMD CEQA Guidelines *explains this principle as it applies to District air quality permitting,

> ***"If a project is proposed in a city or county with a general plan that is consistent with the Clean Air Plan* and *the project is consistent with that general plan (i.e., it does not require a general plan amendment), then the project will not have a significant cumulative impact (provided, of course, the project does not individually have any significant impacts). No further analysis regarding cumulative air emissions impacts is necessary."***

(BAAQMD CEQA Guidelines, December 1999, page 19.)

Here, all potential impacts associated with the construction and operation of the delayed coker are consistent with County and regional plans and mitigation programs, including the Contra Costa County General Plan and the District's Clean Air Plan. The Contra Costa County General Plan, updated in 2005, includes specific policies to preserve and enhance existing development and to provide for orderly and appropriate new development until approximately the year 2020. Actions and approvals required for the CMP by the Contra Costa Community Development Department must be consistent with the General Plan. As part of the Conservation Element of its General Plan, Contra Costa County has adopted certain goals intended to improve air quality in the County. These include:

- To meet Federal Air Quality Standards for all pollutants.
- To continue to support federal, State, and regional efforts to reduce air pollution in order to protect human and environmental health.
- To restore air quality in the area to a more healthful level.
- To reduce the percentage of Average Daily Traffic trips occurring at peak hours.

The proposed delayed coker is consistent with these policies of the Contra Costa County General Plan and the Contra Costa County General Plan is expected to be consistent with the Clean Air Plan for the Bay Area Air Basin. Construction and operation of the delayed coker will therefore not have any significant cumulative impacts even when viewed in isolation without taking into account the substantial environmental benefits compared to the existing fluid coker.

Finally, it is also important to note that notwithstanding the foregoing analysis, the District has no indication of any actual past, current, or future projects of the same type in the same place as this project. On June 13, 2006, District staff discussed the CMP and potential cumulative impacts with a senior planner from Contra Costa County Community Development, and the Tesoro permit application contact person. Based on these discussions, staff identified only two environmental impact reports (EIRs) done for projects at the Tesoro Golden Eagle Refinery, the 1994 Clean Fuels Project EIR and the 2002 Addendum to the Clean Fuels Project EIR. Per the CEQA Appendix H, Tesoro states that there are no other projects at the Golden Eagle Refinery associated with the CMP and there is no additional development related to the project. Tesoro also states that the CMP is not related to any other project at the refinery. The District also has no indication of any similar projects being undertaken or planned by any of the other refineries in the Bay Area.[2]

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[2] In the Hearing Board abatement order proceeding that gave rise to this project, Tesoro initially indicated that it was contemplating the conversion to a delayed coker as part of a larger, refinery-wide project that would have included other improvements at other process units. Tesoro has since abandoned its intention to propose the refinery-wide project, and intends to proceed with the coker modification project only. The District is therefore evaluating only the coker modification project and not any other additional refinery projects that may be considered or proposed at some future date. The coker modification project is a stand-alone project that does not depend upon any other upgrades in other parts of the refinery. While other upgrades may happen in the future, they would not result from or be a consequence of this project. Furthermore, even if any such projects are implemented, they would not change the scope or

(c) Significant Effect Due To Unusual Circumstances. The Replacement Project exemption does not apply where there is a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances. This exception involves a two-part inquiry.

The first question is whether the project presents any "unusual circumstances" that would not be expected from the typical facility replacement project. This question asks whether the circumstances involved in the project (i) differ from the general circumstances of projects that would normally be considered "Class 2" replacement projects; and (ii) those circumstances create an environmental risk that does not exist for the general class replacement projects covered by the exemption. Whether a circumstance is "unusual" is judged relative to the typical circumstances associated with a replacement project. (*See Banker's Hill etc. Preservation Group v. City of San Diego*, 2006 D.A.R. 5657 (May 12, 2006); *Santa Monica Chamber of Commerce v. City of Santa Monica* (2002) 101 Cal.App.4th 786.)

Where a project is consistent with the local zoning for the area and where there are comparable facilities in the immediate area, the circumstances are not considered "unusual" for purposes of this analysis. (*See Bloom v. McGurk* (1994) 26 Cal.App.4th 1307, 1315-16.) Here, the project is consistent with the Contra Costa County zoning of "Heavy Industrial" (HI) and the project components will be located within the bounds of other similar equipment at the refinery; therefore the circumstances associated with replacing the coker structure and facilities are presumptively not "unusual." The modification project is consistent with Tesoro's existing land use permit and does not require a variance, permit amendment, or rezoning application.[3]

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nature of the delayed coker operation, or its environmental impacts. The potential impacts of any such projects will be appropriately evaluated through the permitting process when and if they are proposed. CEQA therefore requires the District to analyzing the upgrade from the fluid coker to a delayed coker as the "project" for purposes of CEQA, without regard to other refinery improvement projects that Tesoro may propose in the future. *See Laurel Heights Improvement Ass'n v. Regents of Univ. of California* (1988) 47 Cal.3d 376, 396; *Lucas Valley Homeowners Ass'n, Inc. v. County of Marin* (1991) 233 Cal.App.3d 130, 162 (agency must consider environmental impacts based on project as proposed, not based on "hopeful estimations" of future growth that may or may not occur).)

[3] Per the CEQA Appendix H for the CMP, Tesoro states that it will receive general building permits for this project from Contra Costa County. Also, the project does not require a variance, conditional use permit modification or rezoning application. Tesoro also states that it received a Determination of Noncoverage from Contra Costa County Community Development Department ("CCCCDD"). Due to a Hazard Score of 52, a land use permit is not required. The existing coker's Hazard Score is higher than the modified coker's. The main reduction comes from the switch from anhydrous ammonia to aqueous ammonia. Tesoro provided the District with a copy of the letter from CCCCDD dated May 19, 2006 substantiating Tesoro's statements.

If it is determined that the project involves "unusual circumstances" that are different from the typical replacement project, the second question is then whether there is a reasonable possibility of a significant effect on the environment as a result of the "unusual circumstances." (*See Banker's Hill*, *supra*, 2006 D.A.R. 5657.) Even if there are "unusual circumstances," the project can still qualify for the exemption if the unusual circumstances are not associated with a significant effect on the environment.

The District has evaluated the following potential impacts of the project both to assess whether these attributes present unusual circumstances and to assess whether the project may have significant environmental impacts:

1. Construction-Related Impacts
2. Air Emissions From Coker Operation
3. Use of a Safety Flare to Handle Process Upset Gases
4. Coke Transport and Storage
5. Use and Storage of Ammonia for Selective Catalytic Reduction
6. Potential for Industrial Accidents

As discussed in detail below, none of these attributes triggers the "significant effects due to unusual circumstances" exception, because the circumstances are not unusual compared with a typical replacement project, because the impacts associated with them are less than significant, or both.

1. Construction-Related Impacts

The project will involve a certain amount of construction activity to remove existing equipment and to install new equipment for the delayed coker. The District has determined that these activities do not trigger the exception.

A. Construction Activities Are Not "Unusual" For A Replacement Project.

Construction activities associated with the CMP are clearly not an "unusual circumstance" because the typical replacement project would involve such activities. Indeed, it would be impossible to replace a facility with a new or modified facility without having to engage in construction activities. This conclusion is also supported by the leading court case on the Replacement Project exemption, *Dehne v. County of Santa Clara* (1981) 115 Cal.App.3d 827. There, a cement plant replaced a major industrial process with a new type of process, which was a very large scale replacement project and clearly involved a very substantial amount of construction. The replacement project exemption clearly contemplates that there will be such construction activities.

Moreover, the construction activities will be no more intensive than the types of activities that regularly occur at refineries during routine maintenance work. Refineries typically schedule substantial construction and maintenance activities to occur during "major turnarounds." Major

turnarounds are periods when portions of the refinery are shut down so that equipment can be replaced or maintained. Because these turnarounds are routine, refineries such as the Golden Eagle Refinery have processes in place for addressing construction staging, parking, and peak traffic flows. The number of construction vehicles used during the construction period for the coker modification project is expected to be less than the number of vehicles typically required for major turnaround projects at the refinery. The construction traffic and activities associated with the coker modification project are consistent with normal construction and maintenance activities at the refinery. Such activities do not constitute "unusual circumstances" for a refinery project.

B. Impacts From Construction Activities Will Be Less Than Significant

In addition, the District has determined that any potential impacts due to construction activities will be less than significant.

All the construction is expected to take place within the existing footprint of the Tesoro refinery. There will be no change in setting that is environmentally significant.

Diesel particulate matter, a toxic air contaminant related to construction equipment, is expected to be insignificant because of the short-term nature of the construction activities. In addition, Tesoro will require construction contractors to use CARB ultra low sulfur diesel fuel, not to exceed 15 ppm sulfur content.

Tesoro has included as part of its project all standard dust control procedures during construction. In addition, Tesoro has included as part of its project all of the following measures: sweeping of streets using wet methods; use of sandbags or other erosion control measures to prevent silt runoff onto roadways from sites with a slope of greater than 10%; and use of wind breaks on the windward side of construction until the soil is stabilized or permanently covered in the area of excavation.

Traffic and transportation impacts during construction are not expected to be significant because of the temporary nature of construction activities and because access routes and gate procedures at the Golden Eagle Refinery have been established to accommodate the peak flow of traffic during commute hours without significant impacts to local intersections. Significant traffic noise effects will not occur because access roads from the refinery gates to major freeways do not pass through any residential areas. In addition, noise from construction equipment will be within County of Contra Costa regulatory limits, and will be attenuated due to the distance between construction areas and sensitive receptors.

Construction activities will not have a reasonable possibility of a significant effect on the environment.

2. Air Emissions from Coker Operation

Air emissions will by substantially reduced by modifying the exiting fluid coker to a delayed coker. The modifications are implemented pursuant to the abatement order issued by the Bay Area Air Quality Management District's Hearing Board on December 22, 2005 for particulate emissions from upsets at the existing Fluid Coker (S-806) and the associated Carbon Monoxide (CO) Boiler # 5 (S-903) at the refinery. The order requires reduction in particulate emissions, which has been determined can best be achieved by converting the existing fluid coker to a delayed coker, as mandated by the final order.

The overall emissions from the coker are decreased by the project due to burning cleaner fuel (refinery fuel gas (RFG) and natural gas) instead of coke. The burning of coke created particulates, which caused gray or black plumes when the No. 5 Boiler had a process upset or tube failure.

The net emissions decrease due this project is summarized in Table I:

Table I

Coker Modification Project Offset Emission Summary, tons per year (TPY)

	POC	NOx	SO2	CO	PM/PM10	Ammonia
Current	2.22	301.96	3,146.93	79.78	68.65	678.31
Future	8.613	19.191	7.741	30.658	14.139	9.173
Pre-net emissions	6.40	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)
Offsets Required	(7.36)					
Post - Net emissions	(0.96)	(282.77)	(3,139.19)	(49.12)	(54.51)	(669.14)

Where, POC = precursor organic compounds
NOx = nitrogen oxides
SO2 = sulfur dioxide
CO = carbon monoxide
PM = particulate matter

This proposed project does not require offsets for NOx, SO2 and particulates per Regulation 2-2-302 and 303 since it results in a net emission reduction. The POC emission increases of 6.40 tons/yr will be offset at a ratio of 1:15 to 1:0 by Tesoro Banking Certificate # 968.

A. Air Emissions From Replacement Facilities Is Not An "Unusual Circumstance"

The existence of air emissions from a replacement project is not an "unusual circumstance". When an industrial facility is replaced, it is typical that the replacement facility will have air emissions relatively similar to the emissions from the existing facility. (*See, e.g.*, *Dehne*, 115 Cal. App. 3d at 839-840) Furthermore, the air emissions from operation of the delayed coker

will be substantially less than emissions from the existing fluid coker. Reductions in air emissions resulting from an upgrade to more modern equipment – including state of the art emissions abatement equipment – cannot be said to be an "unusual circumstance".

B. There Will Be No Adverse Environmental Impacts From The Reduction In Air Emissions

The District completed a health risk screening analysis for the new/modified stationary sources of the CMP permit application. The analysis estimates the incremental health risk resulting from toxic air contaminant (TAC) emissions from the Coker Modification Project at this facility. Results from the health risk screening analysis indicate that the maximum cancer risk at the point of maximum impact (PMI) is estimated at 0.2 in a million. The estimated maximum chronic hazard index and acute hazard index at the PMI are both less than 1.0. In accordance with the District Regulation 2, Rule 5 "New Source Review of Toxic Air Contaminants", these risk levels are considered acceptable. See Appendix C for additional details of the analysis.

It is important to note that the HRSAs were done based on total toxic air contaminant emissions from the delayed coker, not the change in emissions resulting from switching from a fluid coker to a delayed coker. CEQA addresses the net impacts of the project compared to the existing environment, so the health risks for CEQA purposes would be even less than the HRSA results indicate due to emission decreases resulting from the shutdown of the No. 5 Boiler and Fluid Coker.

3. Use of a Safety Flare to Handle Process Upset Gases

Tesoro's existing Fluid Coker is fitted with a number of pressure relief valves. These valves are safety devices that protect process vessels and other equipment from dangerous buildups of pressure in upset or malfunction conditions. If an upset or a malfunction causes pressure to rise to dangerous levels, the pressure relief valves open and vent the gases, preventing a possible catastrophic failure of the equipment.

Currently, the pressure relief valves on Tesoro's fluid coker are vented into the atmosphere, either directly through an exhaust horn or indirectly through a blowdown system that removes liquids but does not abate air emissions in any significant way. (These pressure relief valves are called "atmospheric" because they vent directly to the atmosphere.) Tesoro's proposed Coker Modification Project would vent all pressure relief devices to a gas recovery system and safety flare instead. Where gases can be recovered and reused in the refinery, Tesoro will do so. In cases where the gases cannot be safely recovered (*e.g.*, due to a large volume of gas to be vented), they will be sent to a safety flare where they will be incinerated instead of being vented directly into the atmosphere. Incinerating the gases in the flare provides a clear environmental benefit compared with venting them directly into the atmosphere unabated.

A. Safety Flares Are Typical Refinery Air Pollution Control Equipment

Where a facility that is being replaced is equipped with safety equipment, it is typical to expect that the replacement facility will also be required to have safety equipment. It is not atypical for one type of safety equipment to be replaced with a different type of safety equipment that serves the same function. That is what Tesoro proposes to do here: replace the atmospheric pressure relief valves with valves vented to a flare. It would therefore be reasonable to conclude that such an activity is not an "unusual circumstance", especially where the change results in beneficial impacts to the environment, public health, and worker safety.

Moreover, rerouting atmospheric pressure relief devices to a safety flare, instead of venting them directly to the atmosphere, is typical for every type of refinery project. In fact, District regulations require that atmospheric pressure relief devices have to be vented to a gas recovery/safety flare system any time refinery equipment is upgraded. (*See* District Regulation 8-28-302.) It would be difficult to conclude that a circumstance that is required by District regulations for a replacement project could be anything but typical and expected for such a project.

The Court of Appeal's analysis in *Dehne v. Santa Clara County* (1987) 115 Cal. App. 3d 827, 840, further supports this conclusion. There, a replacement project at a cement manufacturing plant included substitution of the plant's high smokestacks, which had the purpose of dispersing air pollutants, with baghouses to control air emissions. The court found that use of modern pollution control equipment did not disqualify the project from the Replacement Project exemption. The court explained that the exemption could not reasonably be construed to require that, in order to qualify for the exemption, the project proponent must reproduce the former smokestacks and disperse air emissions as it had been doing for years, thereby foregoing the use of improvements in air pollution control technology. Here too, Tesoro proposes to use equipment meeting modern standards to improve safety and better control emissions from the coker. This is expected for a replacement project.

Safety flares have a high profile among the public at large, however, and have recently been the subject of considerable controversy. As such, there may be arguments that installation of a flare should be considered unusual, even though flares are commonly used to safely handle process gases when necessary to address upsets, malfunctions, or other situations. The District need not finally resolve any such concerns, however, because it is clear that use of the flare will not involve significant environmental impacts that would trigger the exception, even if the flare is considered an "unusual circumstance", as explained below.

B. Environmental Impacts From Use of the Safety Flare Will Be Less Than Significant

Impacts from the safety flare are expected to be less than significant. According to CEQA Appendix H, the flare and other replacement refinery equipment will be visually similar to the existing equipment at the refinery and will be constructed near other flares in an existing flare area at the refinery. The equipment will be more than 1.5 miles from sensitive receptors, who

are expected to perceive the equipment as part of, and consistent with, existing refinery facilities. The flare will therefore not have any significant visual impacts.

The flare is expected to be used only rarely. The delayed coker is designed for flareless startup. Normally, the delayed coker gas will be sent to the recycle compressor and will be brought back into existing fuel gas system (gas plant) instead of the flare. This flare is designed to minimize flaring and its purpose is only for emergencies (such as power outages) or scheduled shut down operations. In addition, the flare will be subject to District Regulation 12-12, which requires Tesoro to implement a flare minimization plan and ensure that the flare is not used on a routine basis. The infrequent operation of the flare will help minimize any impacts.

Furthermore, the new flare will have a beneficial impact by reducing hydrocarbon emissions from the coking operations, since process gases from all coker pressure relief valves will be redirected into the new flare instead of being vented to the atmosphere during upset conditions.

District staff have completed a Health Risk Screening Analysis (HRSA) for the acute impacts from the operation of the Coker Flare. As stated in the report, the maximum acute hazard index associated with the operation of the coker flare was estimated to be 0.4. Except for the 24-hour average PM_{10}, the maximum impact due to criteria emissions is below both the California and National Ambient Air Quality Standards. The background level of PM_{10} measured at the Treat Boulevard, Concord ground-level monitoring station is slightly over the California 24-hour average PM_{10} ambient air quality standard; however, the incremental increase in the 24-hour average PM_{10} due to emissions from the flare is close to four orders of magnitude smaller than the background level and represents a negligible increase.

The flare will not present hazards to aviation. Tesoro Golden Eagle Refinery has provided the District with a copy of a letter to Tesoro dated June 1, 2006 from the Contra Costa Airport Land Use Commission ("CCALUC"). The CCALUC determined that the project was consistent with the Contra Costa County Airport Land Use Compatibility Plan. In addition, the Federal Aviation Administration ("FAA") has performed aeronautical studies for the heater stacks, flare, coke drum structure and fractionator. FAA determined that the structures are not hazards to air navigation. For the coke drum structure and flare, lights will be installed.

4. Offsite Coke Storage and Transport

The coke produced as a byproduct of coking reaction is a valuable commodity that can be used for a number of purposes. Tesoro sells the coke to a number of end users. The coke has to be transported from Tesoro's facility to those end users, which currently involves:

a. Loading a portion of the dry fluid coke from the Coke Silos into trucks for shipment to local power plants.
b. Loading another portion of the dry fluid coke from the Coke Silos into railroad cars for shipments to customers in the Western USA.

c. Sluicing the remaining coke from the West Silo with water to the Coke Pile at the Golden Eagle Refinery.
d. Loading the relatively wet coke from the Coke Pile onto trucks which carry the coke to the Tesoro Pittsburg Terminal.
e. Loading the coke onto ships at the Pittsburg Terminal for shipment to overseas customers.

The Coker Modification Project will result in increased coke production in part because the delayed coker will operate more efficiently and reliably than the existing fluid coker and in part because coke will not be burned at the delayed coker. Tesoro states in CEQA Appendix H that unlike fluid coke, which has a very limited market, delayed coke is readily marketable both domestically and internationally. Tesoro anticipates that the delayed coke may be transported to a variety of locations, which may change over time. These locations include the following:

1. Trucking wet coke from the Coke Silo to a fully enclosed storage facility at the Pittsburg Terminal and then loading the coke onto ships.
2. Trucking wet coke from the Coke Silo to the Koch Carbon facility adjacent to Tesoro's Pittsburg Terminal. Koch Carbon would then load the coke onto ships as part of its normal facility operations.
3. Trucking wet coke from the Coke Silo to other port terminals (such as the Port of Stockton or Port of Richmond).
4. Selling the coke to a buyer who would purchase it "free on board" at the refinery (*i.e.*, the buyer takes possession and full responsibility for the coke at the refinery) and make its own arrangements to transport it by truck to a destination determined by the purchaser.

The Coker Modification Project has the potential to produce up to 3,000 tons/day of dry coke. The coke will be hauled by trucks that carry 25-26 wet tons, resulting in approximately 136 trucks/day, if the Coker Modification Project operates at its maximum permitted limit on an annual basis. This represents an increase of 10 trucks per day over the Fluid Coker's maximum permitted limits. For purposes of evaluating health risks, which are described below, the District also compared truck trips associated with the production rate for the delayed coker to truck trips associated with the rate of actual coke production from the fluid coker over the past three years, which was lower than permitted limits. The difference between annual coke production with the delayed coker and the 3-year average of coke produced by the existing fluid coker equates to an increase of approximately 66 trucks per day.

Tesoro reports that truck deliveries of fluid coke fluctuate widely because much of the fluid coke is stored in an existing coke pile at the Golden Eagle Refinery, and is shipped offsite as dictated by market conditions and shipping schedules at the Pittsburg Terminal. At times, Tesoro has delivered fluid coke to the Pittsburg Terminal at a rate of approximately 120 trucks per day. Actual deliveries of delayed coke also may fluctuate, and likely will be below maximum permitted limits.

According to Tesoro, tugs are used for maneuvering the cargo ships into the wharf, and there could be approximately 13.3 additional HandyMax shiploads per year (HandyMax ships hold up to 40,000 tons of cargo each) associated with shipping coke produced by the delayed coker.

During recent months, Tesoro has been meeting with the Regional Water Quality Control Board to discuss community concerns about the potential for dust from uncovered coke storage at the Pittsburg Terminal. Tesoro has proposed to the Regional Board a series of measures that Tesoro will take to minimize the potential for dust emissions at its existing storage area for fluid coke at the Pittsburg Terminal.

Tesoro has committed to the Regional Board that it will not store coke from the delayed coker at the Pittsburg Terminal in an uncovered pile. Tesoro and the City of Pittsburg are finalizing a Memorandum of Understanding that also provides that Tesoro will not store delayed coke at the Pittsburg Terminal in an uncovered pile.

A. Unusual Circumstances.

Where an existing facility produces a byproduct, it is not unusual that it needs to be transported off-site. Both the existing fluid coker and the delayed coker produce coke that is transported offsite by truck and loaded onto ships.

It also is not unusual that, on an annualized basis, byproduct production would be somewhat higher once older equipment is replaced with new equipment that is more reliable and efficient and therefore operates with fewer shutdowns for maintenance or repairs.

Truck trips to and from the refinery also are not unusual, and vary over time. The magnitude of the increase in potential truck trips associated with the Coker Modification Project is minor compared with the totality of existing trucks entering and leaving the refinery carrying refined product, byproducts (including coke), catalysts, supplies, and other items associated with refinery operations.

Truck trips to a terminal or end user, and ship calls at the Pittsburg Terminal also are not unusual, and would continue to occur regardless of whether the Coker Modification Project is constructed. Similarly, the nearby Koch Carbon facility currently receives coke deliveries by truck and will continue to do so in the future. The City of Pittsburg has constructed a bypass road to these facilities because it expects that truck trips will continue to increase.

These effects of replacement of older equipment with newer, more efficient, equipment are not unusual. Further, as explained below, they are not significant.

B. Environmental Impacts From Coke Storage And Transport Will Be Less Than Significant.

As a worst-case analysis, District staff has completed a Health Risk Screening Analysis (HRSA) for the tail-pipe emissions from additional diesel-fueled trucks making coke delivery from the Tesoro Golden Eagle Refinery in Martinez to the Pittsburg Terminal in Pittsburg, CA. Also, staff has completed a HRSA for additional ship and tugboat emissions at the Pittsburg Terminal. See Attachment 1 of Appendix E for additional details of the analysis.

As stated in the HRSA reports, the maximum lifetime cancer risk associated with the additional diesel truck delivery alone was estimated to be 7 in a million and the maximum chronic hazard index was estimated to be 0.004. The maximum lifetime cancer risk associated with the ship/tug boat emissions alone was estimated to be 5 in a million and the maximum chronic hazard index was estimated to be 0.003. The maximum lifetime cancer risk associated with both the trucks and the ship/tug boat emissions was estimated to be 8 in a million and the maximum chronic hazard index was estimated to be 0.005. Per the 1999 BAAQMD CEQA Guidelines, these levels of cancer and non-carcinogenic toxic health risk are considered to not have a significant air quality impact for CEQA. See Attachment 2 of Appendix E for additional details of the analysis.

The District also evaluated the potential for coke dust or other particulate matter to be emitted as a result of coke transport. Tesoro states that the trucks transporting coke from the refinery will be covered, as they are today. In addition, the project includes a truck wash, which will clean dust from trucks before they leave the refinery. Coke dust/particulate emissions are therefore expected to be less than significant. In addition, there will be a significant overall reduction in the amount of particulate emissions as a result of the switch from the fluid coker operation to the delayed coker operation.

In the CEQA Appendix H, Tesoro also states that there will not be a substantial change in existing noise or vibration levels in the vicinity. Tesoro has analyzed the traffic noise that may occur due to this project. For purposes of analyzing traffic noise, it was assumed that all coke from the project would be delivered to a covered marine terminal on 3rd Street in Pittsburg at either the Tesoro terminal (where the existing fluid coke is delivered) or to the nearby Koch Carbon property. Trucks will exit the refinery's south gate on Solano Way, left onto Arnold Industrial Way and take Highway 4 east to the Loveridge Road exit in Pittsburg. From there, the trucks will follow the truck bypass route established for traffic to the Waterfront area. This route was established by the City of Pittsburg for 11,300 total trips/day (1,300 truck trips/day) and includes a sound wall to protect the residential neighborhood between 10th and 14th Streets.

Truck deliveries will occur 16 hours per day on weekdays and Saturday; and no truck deliveries will be made in Pittsburg on Sunday nights, between 10 p.m. and midnight.

Because trucks currently travel along this route during the same time periods as would occur under the project, and because the truck route has been established by the City of Pittsburg for a substantial number of deliveries of this nature, significant increases in traffic noise at sensitive receptors along this route are not anticipated.

5. Use and Storage of Ammonia for Selective Catalytic Reduction

Tesoro will use Selective Catalytic Reduction ("SCR") to control NOx emissions from its delayed coker operation. SCR requires ammonia in order to convert NOx to elemental nitrogen and oxygen. Tesoro currently uses anhydrous ammonia for its non-selective catalyst reduction (NSCR) system. Anhydrous ammonia is highly toxic, and an accident involving a release of anhydrous ammonia, if one were to occur, could have serious consequences for the environment and public health. Tesoro proposes to use SCR to control NOx emissions from the delayed coker, but is proposing to use aqueous ammonia, which is a less hazardous form than anhydrous ammonia (although it still involves the risk of serious harm in the event of accidental releases). The project would involve the installation of one 18,000 gallon tank to store the aqueous ammonia.

A. Changing From Anhydrous To Aqueous Ammonia in an SCR System Is Not An "Unusual Circumstance"

For facilities that are required to control NOx emissions using SCR, it is fairly common for facilities to select aqueous ammonia, which is less hazardous than anhydrous ammonia for handling, transportation, and storage. There is no reason that this should be considered an "unusual circumstance".

B. Changing From Anhydrous To Aqueous Ammonia in an SCR System Would Not Involve Any Significant Negative Environmental Impacts

The CMP will remove over 18 tons of anhydrous ammonia from the inventory used to reduce NOx emissions and replace it with the much less hazardous form of ammonia, aqueous ammonia.

According to a November 2004 California Energy Commission power plant siting staff assessment, the use of aqueous ammonia is analyzed for SCR NOx control of natural gas combustion. Use of the aqueous form eliminates the high internal energy associated with the more hazardous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia can act as a driving force in an accidental release, which can rapidly introduce large quantities of the material to the ambient air and result in high downwind concentrations. Spills associated with the aqueous form are much easier to contain and any spill emissions are limited by the slow mass transfer from the surface of the spilled material. Data from the U.S. Department of Transportation show that the actual risk of a fatality over the years from 1999 to 2004 from all modes of hazardous material transportation (rail, air, boat, and truck) was approximately 0.1 in a one million. Tesoro is expected to deliver the aqueous ammonia in Department of Transportation certified vehicles and will implement all engineering controls and modern designs for the storage and transfer of aqueous ammonia.

6. Potential for Industrial Accidents

Like the existing fluid coker, the proposed CMP will be a heavy industrial process that will involve a certain level of risk of industrial accidents. This risk can never be absolutely ruled out for such processes, no matter how safely they are designed, built and operated. Such accidents are not expected to occur, but the District is addressing the issue because of the possibility that they could.

B. The Potential For Industrial Accidents Is Not An "Unusual Circumstance"

When an industrial operation involving a certain degree of risk of accidents is replaced by a new process, it would not unusual to find that the replacement project also carries a certain degree of risk of accidents. The presence of such a risk does not constitute an "unusual circumstance" for purposes of the Replacement Project exemption.

B. The Potential Environmental Impacts Involved Are Not Significant

In light of the comprehensive regulatory scheme governing worker and refinery safety that the project will be subject to, and in light of Tesoro's own efforts to design the delayed coke to minimize safety hazards, the risk of industrial accidents is expected to be less than significant.

Safe operation of refinery equipment is intensively regulated under State, Federal and local law. The centerpiece of these legal requirements is Section 112(r) of the federal Clean Air Act (42 U.S.C. § 7412(r)), which requires facilities to take steps to prevent accidents from occurring, and to minimize their impact if they do. The Clean Air Act requirements complement the requirements of Section 5(a) of the federal Occupational Safety & Health Act (29 U.S.C. § 654(a)), which imposes similar requirements aimed in particular at protecting worker safety. The Clean Air Act requirements broaden the Occupational Safety & Health Act requirements and mandate facilities like Tesoro to address risks to off-site communities in addition to risks to employees of the facility.

Clean Air Act Section 112(r) requires that Tesoro must develop a risk management program that includes (i) an assessment of all hazards associated with a facility's operations, including absolute "worst case" accidents; (ii) an integrated prevention program containing procedures to prevent accidents from occurring; (iii) an emergency response plan setting forth procedures to respond to accidents; and (iv) preparation of a Risk Management Plan ("RMP") document summarizing the program, which must be submitted to the Contra Costa County Heath Department Hazardous Materials Division for approval.

At the State level, the California Accidental Release Prevention ("CalARP") Program imposes similar requirements. The CalARP requirements, which are set forth in Health & Safety Code Sections 25531-25543.3, implement the federal program in California. The CalARP Program requires Tesoro to prepare a Risk Management Prevention Program ("RMPP") that satisfies the federal RMP requirements as well as certain additional California-specific requirements. The

Governor's Office of Emergency Services ("OES") administers the CalARP Program, and has adopted implementing regulations in Title 19, Division 2, Chapter 4.5 of the California Code of Regulations.

The RMPP process is implemented at the local level by Contra Costa County as the "Certified Unified Program Agency" for the CalARP Program. The County also imposes even more stringent safety requirements through its landmark Industrial Safety Ordinance (Contra Costa County Code, Title 4, Chapter 450-8), adopted by the County in 1998. The Ordinance requires each facility to documents its Safety Program in a Safety Plan, which is the reviewed by the County and circulated for public comment. If the facility's compliance is determined to be deficient in any way – including with respect to the requirement to use all feasible inherently safer systems – the County can require the facility to revise its Safety Program to comply. In this way, the Industrial Safety Ordinance provides yet another mechanism to ensure that Tesoro will conduct its operations in a safe manner.

In operating the delayed coker, Tesoro will be required to comply with all of these stringent and comprehensive regulatory safeguards. Tesoro has also designed the project with features intended to address safety concerns that have identified with respect to the operation of delayed cokers, as identified in a July 18, 2006, letter to the District from Alan A. Savage III, the refinery's Environmental Manager. In light of these safeguards, the potential impacts from the risk of industrial accidents are therefore expected to be less than significant.

In conclusion, District staff have determined that there is no reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances, and so the project does not trigger this exception to the "Class 2" Replacement Project exemption.

(d) Scenic Highways. The "Class 2" Replacement Project exemption is not applicable to projects that may result in damage to scenic resources within a state scenic highway. The nearest scenic highway is State Route 4, approximately 1.5 miles from the project. The site for the coker is not a scenic resource, so any visible changes as a result of the CMP (to the extent they could be visible from a state scenic highway) could not result in damage to a scenic resource. Also, per the CEQA Appendix H, Tesoro states that the CMP would involve installing refinery equipment that is visually similar to the existing equipment at the refinery. Sensitive receptors are expected to perceive the equipment as part of, and consistent with, existing refinery facilities.

(e) Hazardous Waste Sites. The "Class 2" Replacement Project exemption is not applicable to projects located on the Cortese list of hazardous waste sites. Staff have reviewed the Cortese list and have confirmed that the project location is not on the list. According to the CEQA Appendix H, the Golden Eagle Refinery is not included on any list compiled pursuant to Government Code section 65962.5.

(f) Historical Resources. The "Class 2" Replacement Project exemption is not applicable to projects that may cause a substantial adverse change in the significance of a historical resource. The coker is not a historical resource. According to the CEQA Appendix H, no examples of the major periods of California history or prehistory are known or expected to be found at the locations within the refinery where construction activities would occur, and significant cultural resources would not be adversely affected by the proposed project. Although one prehistoric shellmound CA-Cco-249 (P-07-000130) circa 1906-1908 was recorded at the refinery, it was noted, at the time that "R.R. lines cut site" and "Probably partially destroyed." In any event, the proposed replacement equipment will be more than 1,500 feet from this potential resource area. To the extent that this shellmound is an historic resource, the Coker Modification Project will not cause a substantial adverse change to it.

III. CONCLUSION

Based upon this review, Staff have determined that the project is a "replacement project" that is categorically exempt from the CEQA environmental review process under Guidelines Section 15302, the "Class 2" replacement project exemption. The District is therefore not undertaking a formal CEQA environmental review process (*i.e.*, preparation of an Initial Study and then either a Negative Declaration or Environmental Impact Report) for the project.

OFFICE MEMORANDUM

June 27, 2006

TO: THU BUI **VIA**: BRIAN BATEMAN

SCOTT LUTZ

FROM: GLEN LONG

SUBJECT: HEALTH RISK SCREENING ANALYSIS FOR DIESEL-FUELED DELIVERY TRUCKS, SHIP AND TUG EMISSIONS, COKER MODIFICATION PROJECT, TESORO GOLDEN EAGLE REFINERY, P/N 14628, A/N 14141

At your request I have completed a Health Risk Screening Analysis (HRSA) for the tail-pipe emissions from additional diesel-fueled trucks making coke delivery from the Tesoro Golden Eagle Refinery in Martinez to the Pittsburg Terminal in Pittsburg, CA. I have also completed a HRSA for additional ship and tug boat emissions at the Pittsburg Terminal.

Please find attached to this memo two HRSA summary reports. As stated in the reports, the maximum lifetime cancer risk associated with the additional diesel truck delivery alone was estimated to be 7 in a million and the maximum chronic hazard index was estimated to be 0.004. The maximum lifetime cancer risk associated with the ship/tug boat emissions alone was estimated to be 5 in a million and the maximum chronic hazard index was estimated to be 0.003. The maximum lifetime cancer risk associated with both the trucks and the ship/tug boat emissions was estimated to be 8 in a million and the maximum chronic hazard index was estimated to be 0.005.

If you have any questions, please do not hesitate to call me at ext 4659.

Attachment 1

Health Risk Screening Analysis

Tesoro Golden Eagle Refinery

Coker Modification Project

A/N 14141

Diesel-Fueled Delivery Trucks

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Toxic Evaluation Section
June 26, 2006

1. Background

The Bay Area Air Quality Management District (BAAQMD) has completed a health risk screening analysis for tail-pipe emissions from diesel-fueled trucks making coke deliveries from the Tesoro Golden Eagle Refinery to the Pittsburg Terminal in Pittsburg. . This project is associated with the Refinery's Coker Modification Project (A/N 14141). This report summarizes the methodology and results of the screening analysis.

2. Summary of Methodology

The maximum health risks were estimated using guideline procedures adopted for use in the Air Toxics Hot Spots (ATHS) Program. The general ATHS Program approach involves using air emission estimates and dispersion modeling to estimate maximum ambient air concentrations of toxic air contaminants (TACs), and then using these concentrations to estimate an individual's maximum exposure and health risk based on toxicity values adopted by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA). For diesel-fueled engines, OEHHA has adopted a chronic Reference Exposure Level (REL), and inhalation cancer risk unit factor (URF), which use diesel particulate matter (PM) as a surrogate for all emitted TACs.

2.1 Emission Rates

A running emission factor of 0.42 g/mile was used to estimate diesel-PM emissions from trucks. This is the emission factor used by CARB to estimate emissions from heavy duty diesel-fueled trucks [EMFAC2002 version 2.2 On-road Motor Vehicle Emissions Inventory model].

Vehicle activity was calculated to be an increase of 66 round trip diesel-fueled trucks per day between the Pittsburg Terminal and the Refinery. The trucks would go south on Solano Way, left onto Arnold Industrial (one street south of the highway 4), and left onto Highway 4 towards Pittsburg. The trucks would then exit Loveridge Road, left on Pittsburg- Antioch Highway, right on Truck bypass road, and right on Harbor into the Pittsburg terminal. The trucks were then assumed to re-trace their route out of the facility and back onto Highway 4 to the Refinery.

Emissions were determined only for leaving the refinery (up to entering Highway 4) and arriving at the Pittsburg terminal (from leaving Highway 4 and arriving at the Pittsburg Terminal). Emissions while traveling on Highway 4 are not expected to have a significant effect on the receptor areas within the modeling domain. The emissions from the Coker Modification Project are also included in the exposure and health risk assessment presented below for the truck analysis in the vicinity of the refinery.

2.2 Dispersion Modeling

Maximum annual average dispersion factors were generated using EPA's ISCST3 dispersion model. A series of adjacent three-dimensional area sources were established along the truck route previously described. Areas source widths were selected to approximate the width of the roadway plus a 3-foot shoulder on each side. An emission release height of three meters was assumed, along with an initial vertical dimension (SZINT) of three meters.

One year of meteorological data of on-site meteorological data (2005) was used from the Golden Eagle Refinery to model the trucks leaving the Refinery. This meteorological data was not representative of the winds in the area of the Pittsburg Terminal, so that another metrological data set, the 2001 Dow meteorological data set was used to model the trucks in Pittsburg area. Terrain elevations for sources and receptors were extracted from USGS NAD27 DEMs.

The District was provided two possible truck delivery schedules: (1) a 16 hour/day schedule from 7 am to 11 pm and (2) a 24 hour operating schedule. Both schedules were modeled.

2.3 Exposure and Health Risks

Incremental health risks were estimated based on the maximum predicted annual average diesel PM concentration using the OEHHA chronic REL and cancer URF.

3. Summary of Results

3.1 Refinery Area:

16 hour/day truck operating schedule		
	Cancer risk in a million	Chronic hazard index
Residential	2.7	0.0016
Worker	1.8	0.0013

24 hour/day truck operating schedule		
	Cancer risk in a million	Chronic hazard index
Residential	2.5	0.0015
Worker	1.4	0.0009

3.2 Pittsburg Terminal Area

16 hour/day truck operating schedule		
	Cancer risk in a million	Chronic hazard index
Residential	5.6	0.0034

Worker	2.9	0.0021

24 hour/day truck operating schedule		
	Cancer risk in a million	Chronic hazard index
Residential	7.0	0.0042
Worker	1.9	0.0014

Attachment 2

Health Risk Screening Analysis

Tesoro Golden Eagle Refinery

Coker Modification Project

A/N 14141

Ship/Tug boats

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Toxic Evaluation Section
June 26, 2006

1. Background

The Bay Area Air Quality Management District (BAAQMD) has completed a health risk screening analysis for increased ship/tug boat traffic at the Pittsburg Terminal in Pittsburg California. This project is associated with the Refinery's Coker Modification Project (A/N 14141). This report summarizes the methodology and results of the screening analysis.

2. Summary of Methodology

The maximum health risks were estimated using guideline procedures adopted for use in the Air Toxics Hot Spots (ATHS) Program. The general ATHS Program approach involves using air emission estimates and dispersion modeling to estimate maximum ambient air concentrations of toxic air contaminants (TACs), and then using these concentrations to estimate an individual's maximum exposure and health risk based on toxicity values adopted by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA). For diesel-fueled engines, OEHHA has adopted a chronic Reference Exposure Level (REL), and inhalation cancer risk unit factor (URF), which use diesel particulate matter (PM) as a surrogate for all emitted TACs.

2.1 Emission Rates

Emissions are shown in Tables 1 and 2 for the typical marine freighter HandyMax. For this class of freighter, there will be an increase of 13.3 shipments per year. All emissions were annualized.

Hotelling and maneuvering emissions were placed at the Pittsburg terminal. Tugboat emissions were divided over an area between the terminal and where New York Slough meets Suisun Bay (spread over a total length of 1730 meters). Cruising emissions were placed at where New York Slough and Suisun Bay meet.

2.4 Dispersion Modeling

Maximum annual average dispersion factors were generated using EPA's ISCST3 dispersion model. A series of adjacent three-dimensional area sources were established along the truck route previously described. Areas source widths were selected to approximate the width of the ships. The HandyMax has a stack height of 123 feet. It was assumed to have an initial vertical dimension (SZINT) of three meters.

One year of meteorological data of meteorological data (2001) was used from Dow Chemical. Terrain elevations for sources and receptors were extracted from USGS NAD27 DEMs.

2.5 Exposure and Health Risks

Incremental health risks were estimated based on the maximum predicted annual average diesel PM concentration using the OEHHA chronic REL and cancer URF.

3. Summary of Results

Ship/ tug boats only		
	Cancer risk in a million	Chronic hazard index
Residential	5.1	0.0031
Worker	0.8	0.0006

In a separate report shows the increased health risk due to the increased truck to the Pittsburg Terminal. The two tables below, show the combined impact of ship/tug emissions with the increased truck traffic (see report entitled "Health Risk Screening Analysis: Tesoro Golden Eagle Refinery Coker Modification Project Diesel Fueled Delivery Trucks- June 26, 2006)

Ship/ tug boats with delivery trucks operating 16 hour/day schedule		
	Cancer risk in a million	Chronic hazard index
Residential	6.8	0.0041
Worker	3.0	0.0021

Ship/ tug boats with delivery trucks operating 24 hour/day schedule		
	Cancer risk in a million	Chronic hazard index
Residential	8.2	0.0049
Worker	2.3	0.0016

OFFICE MEMORANDUM

June 28, 2006

TO: THU BUI **VIA**: BRIAN BATEMAN
SCOTT LUTZ

FROM: JANE LUNDQUIST

SUBJECT: HEALTH RISK SCREENING ANALYSIS FOR ACUTE IMPACTS FROM S1517 COKER FLARE, P/N 14628, A/N 14141

At your request I have completed a Health Risk Screening Analysis (HRSA) for the acute impacts from the operation of the S1517 Coker Flare. Please find attached to this memo a HRSA summary report. As stated in the report, the maximum acute hazard index associated with the operation of the coker flare was estimated to be 0.4. Except for the 24-hour average PM_{10}, the maximum impact due to criteria emissions are below both the California and National Ambient Air Quality Standards. The background level of PM_{10} measured at the Treat Boulevard, Concord ground-level monitoring station is slightly over the California 24-hour average PM_{10} ambient air quality standard; however, the incremental increase in the 24-hour average PM_{10} due to emissions from the flare is close to four orders of magnitude smaller than the background level and represents a negligible increase.

If you have any questions, please do not hesitate to call me at ext 4675.

Attachment 3
Health Risk Screening Analysis

Tesoro Golden Eagle Refinery

Coker Modification Project

A/N 14141

S1517 Coker Flare

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Toxic Evaluation Section
June 28, 2006

1. Background

The Bay Area Air Quality Management District (BAAQMD) has completed a health risk screening analysis for the acute impacts from the S1517 Coker Flare. . This project is associated with the Refinery's Coker Modification Project (A/N 14141). This report summarizes the methodology and results of the screening analysis.

2. Summary of Methodology

The maximum health risks were estimated using guideline procedures adopted for use in the Air Toxics Hot Spots (ATHS) Program. The general ATHS Program approach involves using air emission estimates and dispersion modeling to estimate maximum ambient air concentrations of toxic air contaminants (TACs), and then using these concentrations to estimate an individual's maximum exposure and health risk based on toxicity values adopted by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA).

2.1 Emission Rates

Pollutant emission rates are based on emission estimates provided by the facility and represent the worst-case emissions. These estimates include emissions from the pilot, a shutdown event and a power outage.

2.6 Dispersion Modeling

Maximum one-hour average dispersion factors were generated using EPA's SCREEN3 dispersion model with inputs for a flare source. The flare stack height was set at 83.82 meters and the total heat release was 2 MMBtu/s.

2.7 Exposure and Health Risks

Incremental acute health risks were estimated based on the maximum predicted one-hour average arsenic, benzene, copper, formaldehyde, mercury, nickel, phenol, sulfur trioxide, sulfuric acid, toluene, xylene and vanadium concentrations using the OEHHA acute REL for each toxic air contaminant.

Increase in criteria pollutant concentrations were estimated based on the maximum predicted one-hour average concentrations. Concentrations for longer averaging periods were estimated by applying the appropriate persistence factor to the one-hour average concentration. The incremental increase in criteria pollutant concentrations were then added to background concentrations measured at the Treat Boulevard, Concord ground-level monitoring station.

3. Summary of Results

3.2 Acute Hazard Index: The nearest property line to the flare sources is at a distance of 1000 meters. The point of maximum impact occurs at a distance of 2100 meters. The Acute Hazard Index at the point of maximum impact is 0.4. This value complies with the requirement of Regulation 2, Rule 5. Table 1 shows the acute hazard index by pollutant.

Table 1 - Acute Hazard Index by pollutant						
Toxic Air Contaminant (TAC)	TAC emissions, lbs	TAC emission rate, g/s	1-hr avg. conc./ unit emission rate, (ug/m^3)/(g/s)	1-hr avg. conc., ug/m^3	Acute REL, ug/m^3	Acute HI
Arsenic	3.86E-03	4.87E-04	7.06E-02	3.43E-05	1.9E-01	1.81E-04
Benzene	2.77E-01	3.49E-02	7.06E-02	2.46E-03	1.3E+03	1.89E-06
Copper	1.89E-02	2.39E-03	7.06E-02	1.68E-04	1.0E+02	1.68E-06
Formaldehyde	5.68E-01	7.16E-02	7.06E-02	5.05E-03	9.4E+01	5.38E-05
Mercury	1.10E-03	1.39E-04	7.06E-02	9.81E-06	1.8E+00	5.45E-06
Nickel	4.26E-02	5.37E-03	7.06E-02	3.79E-04	6.0E+00	6.32E-05
Phenol	2.38E-02	3.00E-03	7.06E-02	2.12E-04	5.8E+03	3.65E-08
Sulfur trioxide	2.50E+03	3.15E+02	7.06E-02	2.22E+01	1.2E+02	1.85E-01
Sulfuric acid	3.06E+03	3.85E+02	7.06E-02	2.72E+01	1.2E+02	2.27E-01
Toluene	4.53E-01	5.71E-02	7.06E-02	4.03E-03	3.7E+04	1.09E-07
Xylene (Total)	1.58E-01	1.99E-02	7.06E-02	1.40E-03	2.2E+04	6.38E-08
Vanadium	3.02E-03	3.81E-04	7.06E-02	2.69E-05	3.0E+01	8.96E-07
					Sum	4.12E-01

3.2 Ambient Air Quality Standards: The background level of PM_{10} measured at the Treat Boulevard, Concord ground-level monitoring station is slightly over the California 24-hour average PM_{10} ambient air quality standard. The incremental increase in the 24-hour average PM_{10} due to emissions from the flare is close to four orders of magnitude smaller than the background level and represents a negligible increase. The increase in the rest of the criteria pollutant emissions over background levels measured at the Treat Boulevard, Concord ground-level monitoring station are below both the California and National Ambient Air Quality Standards. Table 2 shows the comparisons between the flare impacts with the California and National standards.

Table 2 – Criteria Pollutant Impacts and Ambient Air Quality Standards							
Pollutants	TAC emissions, lbs	TAC emission rate, g/s	modeled concentration, ug/m^3	background concentration, ug/m^3	Sum concentration, ug/m^3	California Standards, ug/m^3	National Standards, ug/m^3
One-hour Average							
NOx	502.5	6.33E+01	4.47E+00	124	128	470	
SO2	1350.8	1.70E+02	1.20E+01	27	39	655	
CO	213.8	2.69E+01	1.90E+00	3711	3713	23,000 (23 mg/m^3)	40,000 (40 mg/m^3)
Eight-hour Average [1]							
CO	213.8	3.37E+00	1.66E-01	2319	2319	10,000 (10 mg/m^3)	10,000 (10 mg/m^3)
24-hour Average [2]							
SO2	1350.8	7.09E+00	2.00E-01	27	27	105	365
PM10	40.6	2.13E-01	6.02E-03	51	51	50	150
Annual Average [3]							
NOx	502.5	7.23E-03	5.10E-05	26	26		100
SO2	1350.84	1.94E-02	1.37E-04	3	3		80
PM10	40.6	5.84E-04	4.12E-06	18	18	20	50

1. 8-hr Average = (1-hr Average) * (0.7) ; 24-hr Average = (1-hr Average) * (0.4) ; Annual Average = (1-hr Average) * (0.1)

Attachment 4

APPENDIX H
CEQA ENVIRONMENTAL INFORMATION FORM
(To Be Completed By Applicant)

Date Filed: June 13, 2006

General Information

1. *Name and address of developer or project sponsor:*

   Tesoro Refining and Marketing Company
   Golden Eagle Refinery (GER)
   150 Solano Way
   Martinez, CA 94553

2. *Address of project:*

   150 Solano Way
   Martinez, CA 94553

Assessor's Block and Lot Number:

3. *Name, address, and telephone number of person to be contacted concerning this project:*

   Sharon Lim, P.E., Senior Engineer, Environmental
   Tesoro Refining and Marketing Company
   Golden Eagle Refinery
   150 Solano Way
   Martinez, CA 94553
   (925) 335-3467
   (925) 372-3179 (fax)
   slim@tsocorp.com

4. *Indicate number of the permit application for the project to which this form pertains: BAAQMD Permit Application # _____.*

   14141

5. *List and describe any other related permits and other public approvals required for this project, including those required by city, regional, state and federal agencies:*

   Tesoro will receive general building permits for the Coker Modification Project (CMP) from Contra Costa County. The CMP does not require a County Land Use Permit. Tesoro received a Determination of Noncoverage from Contra Costa County. Due to the Hazard Score of 52, a land use permit is not required. Please note that the existing coker's

Hazard Score is higher than the modified coker's. The main reduction comes from the switch from anhydrous ammonia to aqueous ammonia.

The FAA has performed aeronautical studies for the heater stacks, flare, coke drum structure and fractionator. It determined that the structures are not hazards to air navigation. For the coke drum structure and flare, lights will be installed.

The Contra Costa County Airport Land Use Commission assessed the CMP and deemed it consistent with the Contra Costa County Airport Land Use Compatibility Plan.

6. *Existing zoning district:*

Contra Costa County zoning, Heavy Industry (HI)

7. *Proposed use of site (project for which this form is filed):*

Tesoro Refining and Marketing Company (Tesoro), Golden Eagle Refinery (GER) is proposing to modify its existing fluid coker technology to a delayed coker technology. The CMP is being undertaken in response to a final Abatement Order issued by the Bay Area Air Quality Management District's (BAAQMDs) Hearing Board on December 22, 2005.

For a complete description of the CMP, please see Chapter 2 of the application for an Authority to Construct permit, the supplementary letters dated April 28, 2006 and June 1, 2006**,** and the addendum to the project description attached to this document.
The CMP is a replacement project. To modify the Fluid Coker to a delayed coking process, the reactor/scrubber, burner, and coke handling system of the fluid coking process will no longer be needed and components amenable to the delayed coking process will be used instead. The delayed coking process inherently has fewer emissions than the fluid coking process that it will replace. In the delayed coking process, heat consumed by the endothermic coking reactions is supplied from gas-fired process heaters which indirectly heat the feed to the coke drums. In the fluid coking process, this heat is supplied by combusting the coke in the burner vessel leading to emissions of SO_X. Emission sources in the modified Coker will be equipped with proven BACT to ensure the control of emissions from the new process. A new flare will be constructed for controlling relief emissions in the event of a shutdown, power failure, cooling water failure, or similar emergency situation.
Chapter 2 of the application for an Authority to Construct Permit identifies each of the components of the CMP and explains how each pertains to the coking process. All of the proposed components of the CMP are necessary to convert the GER's Coker unit from a Fluid Coker to a Delayed Coker. In addition, the CMP will continue to use significant portions of the existing Fluid Coker. Other portions of the existing Fluid Coker will be shut down or abandoned in place, including: the large Reactor, Burner, and Elutriator vessels; the Scrubber; the Main Air Blower; and the No. 5 Boiler.
The CMP will be located on the same site as the structure it replaces. The existing Fluid Coker is located inside the GER. The CMP similarly will be constructed within the perimeter of the GER. Chapter 1 of the application for an Authority to Construct Permit identifies the boundaries of the GER, the location of the existing Fluid Coker within the GER, and the location of the CMP components within the GER.

The CMP will have substantially the same purpose as the structure it replaces. The primary purpose of the GER is to refine crude into gasoline and diesel. Other fuels and products, including propane, butane, carbon dioxide, fuel oil, heavy gas oil, light cycle oil, and coke are byproducts of the gasoline and diesel refining process, and also are sold as marketable products.
The purpose of the GER will not change due to the CMP. Chapter 2 of the application for an Authority to Construct Permit summarizes both the existing fluid coking process and the delayed coking process. In both cases, heavier hydrocarbons are heated to break longer molecules into shorter chains. These shorter chains consist of lighter liquids, gas and coke. The lighter liquids and gas are used elsewhere in the refining process. The coke is collected and handled at the coker. Coke can be used to make barbecue briquettes or burned as fuel at specialized facilities.

The CMP will have substantially the same capacity as the structure it replaces. As explained in Chapter 2 of the application for an Authority to Construct permit, the modified coker will have a maximum capacity of 53.2 thousand barrels per calendar day (MBPCD), and an annual average of 49 MBPCD to match the existing feed rate for existing coker. The maximum capacity of the GER will not change due to the CMP.

Project Description

8. Site size:

The CMP involves the installation of replacement equipment completely within existing refinery boundaries. Disturbed land within the refinery boundaries will be less than 5 acres.

9. Square footage:

Not applicable.

10. Number of floors of construction:

Not applicable.

11. Amount of off-street parking provided:

No off-street parking will be provided specifically for the construction or operation of the proposed project. Construction workers and operational staff will use existing parking areas within the refinery boundaries.

12. Attach plans:

Figures 1-1 and 1-2 in the permit application submitted for the project identifies the general location of the process units that will be modified or installed for the project. Figure 1-3 has been modified and the latest version of the refinery plot plan is shown in Figure 1.

13. Proposed scheduling:

The CMP is scheduled to be fully operational by the end of the second quarter of 2008. In developing the project schedule, Tesoro consulted engineering companies and major equipment vendors for input on equipment delivery times. Currently in the United States there is heavy demand for petrochemical materials and fabrication shop time. Using available best engineering judgment, Tesoro anticipates the major milestones presented in **Table H-1** below.

Table H-1
Project Schedule

Milestone	Scheduled Completion Date
Submit permit applications	January 20, 2006
Design PFDs Issued	June 26, 2006
Receive all permits	July 3, 2006
Begin site preparation	July 3, 2006
Site preparation complete	December 1, 2006
Major equipment delivered	November 1, 2007
Major equipment erected	May 1, 2008
Mechanical completion	July 1, 2008

14. Associated project:

There are no other projects at the GER associated with the CMP.

15. Anticipated incremental development:

There will be no additional development related to the CMP.

16. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected:

The CMP involves modifications of existing refinery equipment that are constructed for industrial, not residential, application.

17. If commercial, indicate the type, whether neighborhood, city or regionally oriented, square footage of sales area, and loading facilities:

The CMP involves modifications of existing refinery equipment that are constructed for industrial, not commercial, application.

18. If industrial, indicate type, estimated employment per shift, and loading facilities:

The CMP would require the hiring of about 10 additional full-time equivalent refinery personnel for the modified coking operations and maintenance.

19. *If institutional, indicate the major function, estimated employment per shift, estimated occupancy, loading facilities, and community benefits to be derived from the project:*

The CMP involves modifications of existing refinery equipment that are constructed for industrial, not institutional, application.

20. *If the project involves a variance, conditional use or rezoning application, state this and indicate clearly why the application is required:*

The CMP does not require a variance, conditional use or rezoning application.

Are the following items applicable to the project or its effects? Discuss below all items checked yes (attach additional sheets as necessary):

21. *Change in existing features of any bays, tidelands, beaches, or hills, or substantial alteration of ground contours:*

No. There will be no changes to existing features of any bays, tidelands, beaches, or hills, nor substantial alteration of ground contours. The project will be within the perimeter of the existing refinery.

22. *Change in scenic views or vistas from existing residential areas or public lands or roads:*

No. The CMP would involve installing refinery equipment that is visually similar to the existing equipment at the refinery. The equipment will be more than 1.5 miles from sensitive visual receptors, who will perceive the equipment as part of, and consistent with, existing refinery facilities.

23. *Change in pattern, scale or character of general area of project:*

No. The CMP will not change the pattern, scale, or character of the general project area.

24. *Significant amounts of solid waste or litter:*

No. The CMP will not generate significant amounts of solid waste or litter. Minimal demolition is required. The existing Fluid Coker will be substantially abandoned in place.

25. *Change in dust, ash, smoke, fumes or odors in general vicinity:*

No. Trucks transporting coke from the refinery will be covered, as they are today. In addition, the project includes a truck wash, which will clean dust from trucks before they leave the refinery.. There will be a significant reduction in the amount of particulate emissions as a result of the operation of the proposed project.

During construction, Tesoro plans to implement all standard dust control procedures. In addition, Tesoro plans do the following: sweep streets using wet methods; use sandbags or other erosion control measures to prevent silt runoff onto roadways from sites with a slope of greater than 10%; use wind breaks on windward side of construction until the soil is stabilized or permanently covered in the area of excavation; and use CARB ultra low sulfur diesel fuel, not to exceed 15 ppm sulfur content.

26. Change in ocean, bay, lake, stream or ground water quality or quantity, or alteration of existing drainage patterns:

No. There will be no changes in ocean, bay, lake, stream or ground water quality or quantity, or alteration of existing drainage patterns as a result of the proposed project. Tesoro will be installing new pipe, built to today's engineering standards. Theoretically, the likelihood of a spill will decrease since it is a new installation with potentially improved metallurgy. Spill prevention and monitoring are in place at Tesoro to limit the potential risk of a spill. The steps are included in the Spill Prevention Control and Countermeasures Plan (SPCC). The plan includes hydrostatic tests, routine visual inspections, secondary containment, and other prevention measures. The Storm Water Pollution Prevention Plan documents the handling of storm water runoff. The majority of storm water is collected and controlled through a series of ponds and canals. Attached are copies of the latest SPCC and SWPPP plans. We are planning to update these plans in the next year.

There will be no offsite runoff from the CMP. CMP is located in the middle of the refinery and connections will be made to the existing onsite water treatment facility.

27. Substantial change in existing noise or vibration levels in the vicinity:

No. The proposed project will not generate noise levels at sensitive offsite receptors above the noise levels that existed prior to implementation of the project.
The proposed project also will not result in substantial changes in traffic noise. Coke from the CMP will be transported offsite by truck. Unlike fluid coke, which has a very limited market, delayed coke is readily marketable both domestically and internationally. Tesoro anticipates that coke may be transported to a variety of locations, which may change over time. For purposes of analyzing traffic noise, it was assumed that all coke from the CMP would be delivered to a covered marine terminal on 3rd Street in the City of Pittsburg at either the Tesoro terminal (where the existing fluid coke is delivered) or to the nearby Koch Carbon property. Trucks will exit the refinery south gate on Arnold Industrial Way and take Highway 4 east to the Loveridge Road exit in Pittsburg. From there, the trucks will follow the truck bypass route (see Figure 2) established for traffic to the Waterfront area. This route was established by the City of Pittsburg for 11,300 total trips/day (1,300 truck trips/day) and includes a sound wall to protect the residential neighborhood between 10th and 14th Streets.
The CMP has the potential to produce up to 3,000 tons/day of dry coke. The coke will be hauled by trucks that carry 22-ton loads, resulting in approximately 136 trucks/day if the CMP operates at its maximum permitted limit. This represents an increase of 10 trucks per day over the Fluid Coker's maximum permitted limits. Actual truck deliveries of fluid

coke fluctuate widely because much of the fluid coke is stored in an existing coke pile at the GER, and is shipped offsite as dictated by market conditions and shipping schedules at the Pittsburg marine terminal. At times, Tesoro has delivered fluid coke to the Pittsburg terminal at a rate of approximately 120 trucks per day. Actual deliveries of delayed coke also may fluctuate, and likely will be below maximum permitted limits. Truck deliveries will occur 16 hours a day on weekdays and Saturday; and no truck deliveries will be made in Pittsburg on Sunday nights, between 10 p.m. and midnight.
Because trucks currently travel along this route during the same time periods as would occur under the CMP, and because this truck route has been established by the City of Pittsburg for deliveries of this nature, substantial increases in traffic noise at sensitive receptors are not anticipated.

28. Site on filled land or on slope of 10 percent or more:

No. The site is not on filled land and does not slope 10 percent or more.

29. Use or disposal of potentially hazardous materials, such as toxic substances, flammables or explosives:

The CMP involves installing replacement refinery equipment that is similar to the existing refinery equipment. During construction, hazardous materials used by contractors, such as paints, lubricants, and fuel for equipment, will be reviewed by the contractor and/or Tesoro to confirm that these materials will not pose an increased risk to on site personnel. These materials will also be in much smaller quantities than would exist in the normal operations of the Coker Unit and the Refinery as a whole.

During operation, the reconfiguration of the coking operations will provide benefits to public health and safety by:

- ***Eliminating the underlying cause of excess particulate emissions by eliminating the Coker flue gas stream;***
- ***Eliminating excess emissions from startup of the Fluid Coker;***
- ***Substantially reducing daily Coker emissions of criteria pollutants; and***
- ***Reducing community chemical safety risks and visible plumes from the No. 5 Boiler.***

In addition, the CMP will also remove over 18 tons of anhydrous ammonia from inventory used to reduce NOx emissions and replace it with the much less hazardous form of ammonia, aqueous ammonia. It will also reduce carbon monoxide from the process, which occurs as a byproduct in the current coking operation. The current Fluid Coker has the potential to release hydrocarbon vapors to the atmosphere from relief valves during upset conditions. However, the Coker Modification Project will add a new emergency flare to destroy the hydrocarbons that would otherwise be emitted to the atmosphere.

The GER is not included on any list complied pursuant to Government Code section 65962.5

30. Substantial change in demand for municipal services (police, fire, water, sewage, etc.):

No. There will be no change in demand for municipal services as a result of the CMP.

31. Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.):

No. The replacement equipment is will not substantially increase fossil fuel consumption.

32. Relationship to a larger project or series of projects:

The CMP is not related to any other project at the refinery.

Environmental Setting

33. Describe the project site as it exists before the project, including information on topography, soil stability, plants and animals, and any cultural, historical or scenic aspects. Describe any existing structures on the site, and the use of the structures. Attach photographs of the site. Snapshots or Polaroid photos will be accepted:

Aesthetics **The Golden Eagle Refinery is located on a broad plain in the north central portion of Contra Costa County. The land surrounding the refinery has an urban and industrial appearance, separated by areas of open space, wetlands and shoreline. To the east; open space and the Mallard Reservoir lie between the refinery and the community of Clyde above Port Chicago. To the south are the industrial and commercial building along Arnold Industrial Way, Highway 4, Pacheco Creek is immediately adjacent to the western border of the refinery property. Further west are Interstate 680, low-lying hills, and the City of Martinez. To the north is Suisan Bay.**

Biological Resources ***The proposed project is not expected to affect wetlands, riparian areas, and rare or endangered plant or animal species or their habitats. Construction and operation activities for the proposed project would take place in areas at the Golden Eagle Refinery that already have been disturbed and do not currently support such habitats or species. The delayed coker and related process facilities will be located within paved or gravel filled industrial areas of the refinery, and the coker flare will be located within an existing flare area in a location that will not disturb nearby marsh areas.***

Cultural Resources ***No examples of the major periods of California history or prehistory are known or expected to be found at the locations within the refinery where construction activities would occur, and significant cultural resources would not be adversely affected by the proposed project. Although one prehistoric shellmound CA-CCo-249 (P-07-000130) circa 1906-1908 was recorded at the refinery, it was noted at the time that "R.R. lines cut site" and "Probably partially destroyed." In any event, the proposed replacement equipment will be more than 1,500 feet from this potential resource area.***

34. Describe the surrounding properties, including information on plants and animals and any cultural, historical or scenic aspects. Indicate the type of land use (residential, commercial, etc.), intensity of land use (one-family, apartment housed, shops, department stores, etc.), and scale of development (height, frontage, set-back, rear yard, etc.). Attach photographs of the vicinity. Snapshots or Polaroid photos will be accepted:

The refinery is a long term existing use located in an area zoned by Contra Costa County as "Heavy Industry", and buffered by open space to the north, east, and west and by commercial properties on the south. No sensitive receptors are located within 0.25 miles of the refinery. The nearest residential neighbors, the communities of Clyde and Vine Hill are more than 1.5 miles from the location of the proposed replacement facilities. Two parks are within 1.2 miles of the refinery.

Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

_____ _____

Date Signature
Alan Savage

Manager, Environmental Affairs

APPENDIX F

Supporting Documents

1. Simplified Process Flow Diagram - Coker Modification Project
2. Simplified Process Flow Diagram - Delayed Coke Handling System
3. Table A-1 Coker Maximum Annual Throughput in 1995
4. Table A-2 Coke Yields from Accounting
5. Condition # 573 (to be deleted)
6. Simplified Block Flow Diagram
7. CMP Impacts to Other Refinery Process Units
8. Table A-3 Upstream Units Data
9. Feed Pump Curves S-815 and S-816 (hard copy)
10. Process Study for S-1004 (hard copy)
11. Memo on design rate study for S-1005 (hard copy)
12. Feed Pump Curve S-1020 (hard copy)
13. PFD for S-1401 (hard copy)
14. Feed to Sulfuric Acid Plant for S-1411 (hard copy)
15. Feed Pump Curve S-1038 (hard copy)
16. Feed Pump Curve S-851 (hard copy)
17. Feed Pump Curve S-656 and S-658 (hard copy)
18. Condition # 20682 (to be deleted)

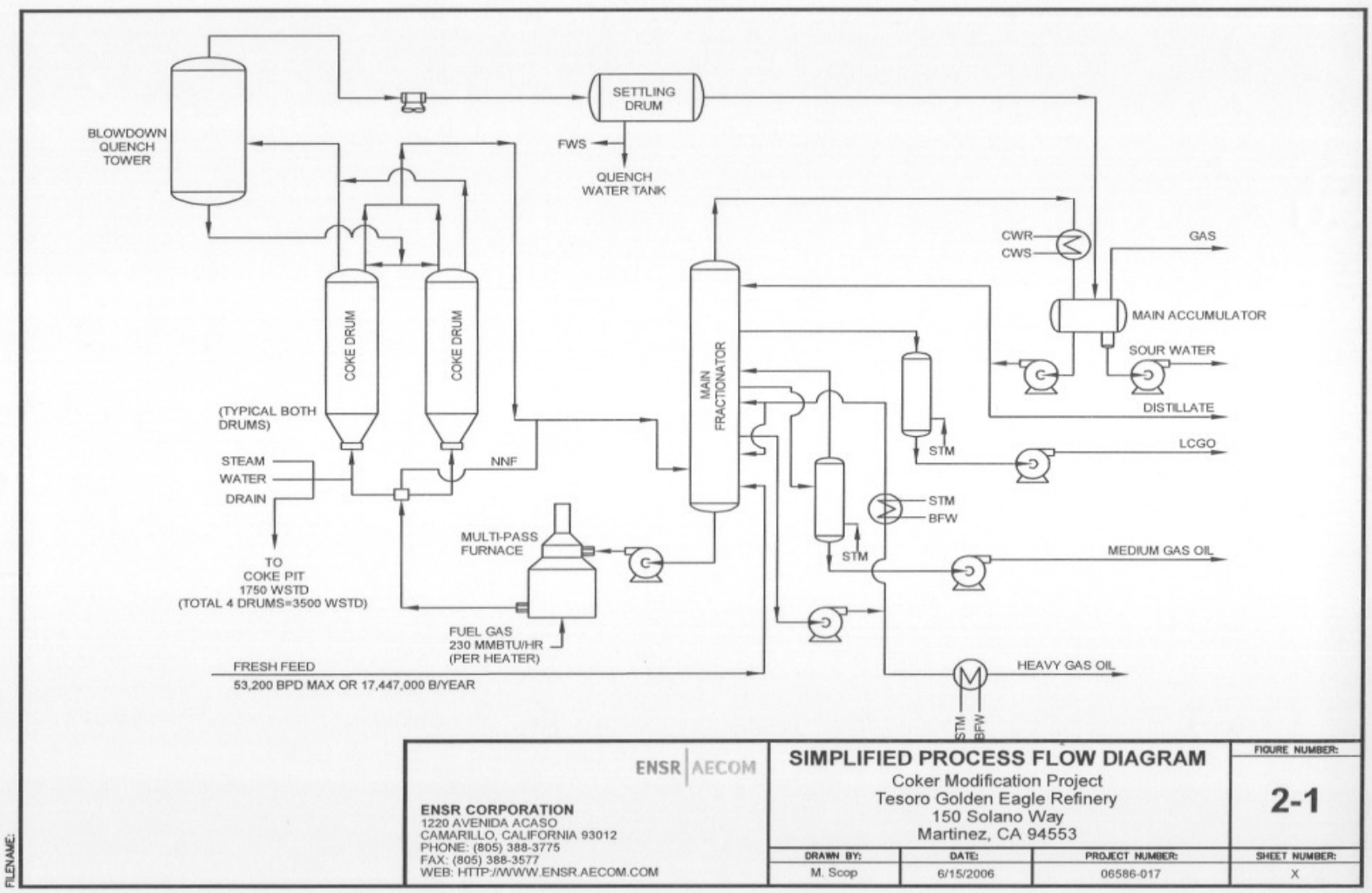
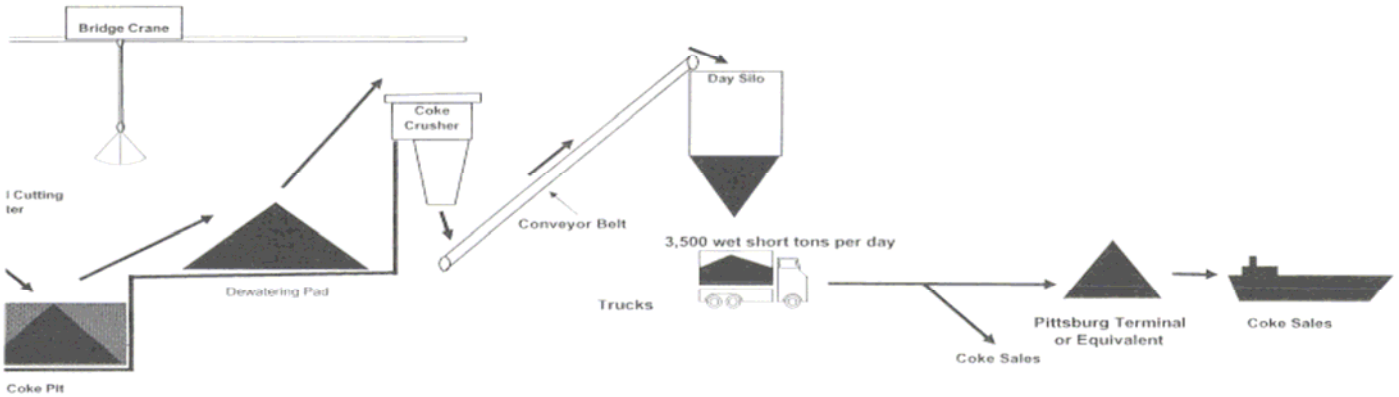

BLOWDOWN QUENCH TOWER
SETTLING DRUM
FWS
QUENCH WATER TANK
CWR
CWS
GAS
MAIN ACCUMULATOR
SOUR WATER
DISTILLATE
LCGO
COKE DRUM
COKE DRUM
(TYPICAL BOTH DRUMS)
MAIN FRACTIONATOR
STEAM
WATER
DRAIN
NNF
STM
STM
BFW
MULTI-PASS FURNACE
STM
MEDIUM GAS OIL
TO COKE PIT 1750 WSTD (TOTAL 4 DRUMS=3500 WSTD)
FUEL GAS 230 MMBTU/HR (PER HEATER)
FRESH FEED
53,200 BPD MAX OR 17,447,000 B/YEAR
HEAVY GAS OIL
STM
BFW
ENSR | AECOM
ENSR CORPORATION
1220 AVENIDA ACASO
CAMARILLO, CALIFORNIA 93012
PHONE: (805) 388-3775
FAX: (805) 388-3577
WEB: HTTP://WWW.ENSR.AECOM.COM
SIMPLIFIED PROCESS FLOW DIAGRAM
Coker Modification Project
Tesoro Golden Eagle Refinery
150 Solano Way
Martinez, CA 94553
FIGURE NUMBER:
2-1
DRAWN BY: M. Scop
DATE: 6/15/2006
PROJECT NUMBER: 06586-017
SHEET NUMBER: X
FILENAME:
J:\Projects\06586-Tesoro\017 Flex Crude Project\CAD\11-28-05\delayed coker pfd.dwg, 6/28/2006 10:06:45 AM, Acrobat PDFWriter.pc3

Figure 2-2 Process Flow Diagram - Delayed Coke Handling System



ıtting water exit the
l travel down a sloped
nto the coke pit. Coke
rred to the dewatering
amshell type crane.

2. Once the coke has been dewatered, it is transferred by crane to the coke crusher. The coke crusher reduces the larger chunks of coke to a size suitable for transportation and sales. Coke from the coke crusher is transferred to the coke day silo by a covered conveyor belt.

3.Coke from the day silo is then loaded onto trucks and sent to the Pittsburg coke terminal, or an equivalent terminal in Northern CA, where it is stored and loaded onto ships for sales.

June 2006

ATTACHMENT A
Coker Modification Project – Application No. 14141
Tesoro Response to March 1, 2006 BAAQMD Deficiency Questions

Table A-1
Coker Max Annual Throughput

Month-Year	Daily Average bbl/day	Annual Average bbl/day
Sep-94	46802	
Oct-94	38054	
Nov-94	45987	**47,797**
Dec-94	46398	
Jan-95	47108	
Feb-95	48749	
Mar-95	48826	
Apr-95	48023	
May-95	49219	
Jun-95	50137	
Jul-95	48949	
Aug-95	47899	
Sep-95	44468	
Oct-95	47803	
Nov-95	43235	
Dec-95	47837	
Jan-96	42513	

Annual Throughput = 47,800 x 365 days
= 17,447,000 bbl/year

Maximum Daily Throughput
6/19/1995 **53,298 B/D**

ATTACHMENT A
Coker Modification Project – Application No. 14141
Tesoro Response to March 1, 2006 BAAQMD Deficiency Questions

Table A-2
Coke Yields from Accounting

Month-Year	Coke Yields short tons	Month-Year	Coke Yields short tons	Month-Year	Coke Yields short tons	Month-Year	Coke Yields short tons
Jan-06	33,957	Jan-05	38,711	Jan-04	45,715	Jan-03	37,771
Feb-06	42,003	Feb-05	39,673	Feb-04	39,262	Feb-03	33,840
		Mar-05	42,897	Mar-04	40,433	Mar-03	40,161
		Apr-05	45,632	Apr-04	38,261	Apr-03	40,756
		May-05	47,729	May-04	45,836	May-03	42,289
		Jun-05	47,225	Jun-04	36,840	Jun-03	32,939
		Jul-05	49,219	Jul-04	34,576	Jul-03	42,422
		Aug-05	48,049	Aug-04	36,383	Aug-03	50,519
		Sep-05	45,322	Sep-04	8,046	Sep-03	46,333
		Oct-05	52,476	Oct-04	0	Oct-03	46,034
		Nov-05	52,254	Nov-04	44,622	Nov-03	42,690
		Dec-05	53,822	Dec-04	42,718	Dec-03	35,437

Total Coke Yield from March 2003 - February 2006	1,471,243	short tons
Average Daily Coke Yield from March 2003 - February 2006	1,344	short tons/day

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

S903 No. 5 Boiler

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)

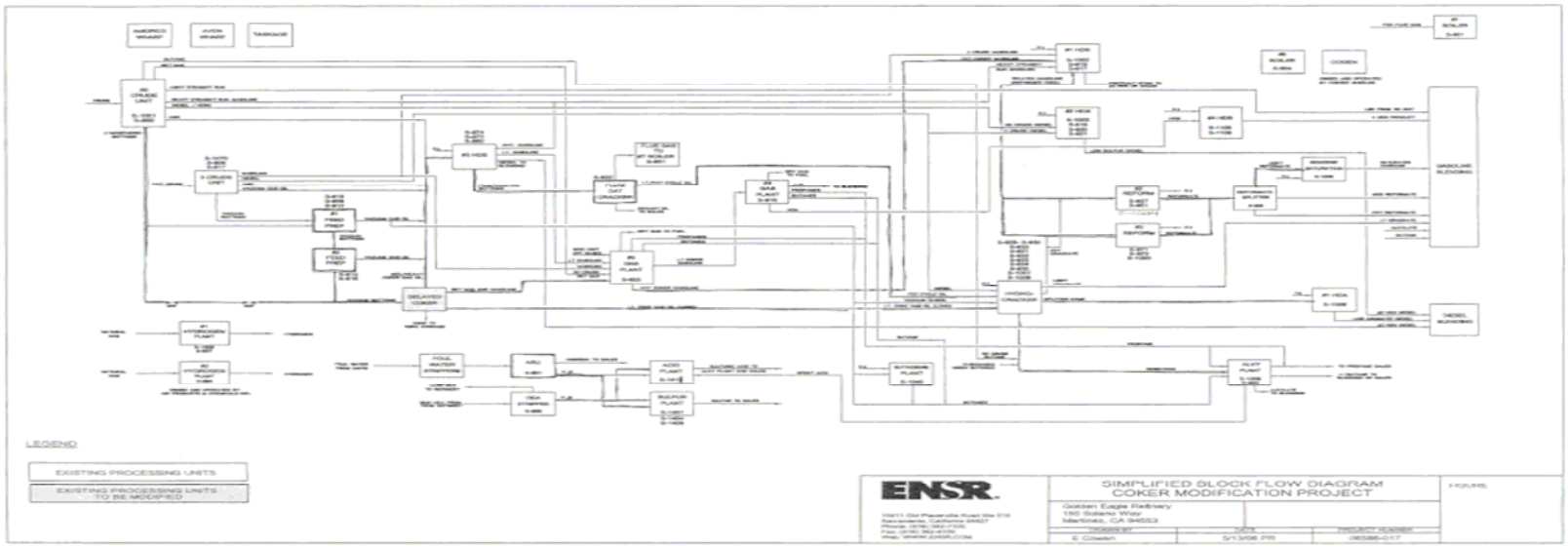
10. Permittee/Owner/Operator shall inform the District when any additional tests are performed to evaluate the ammonia injection system. (basis: cumulative increase)

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)

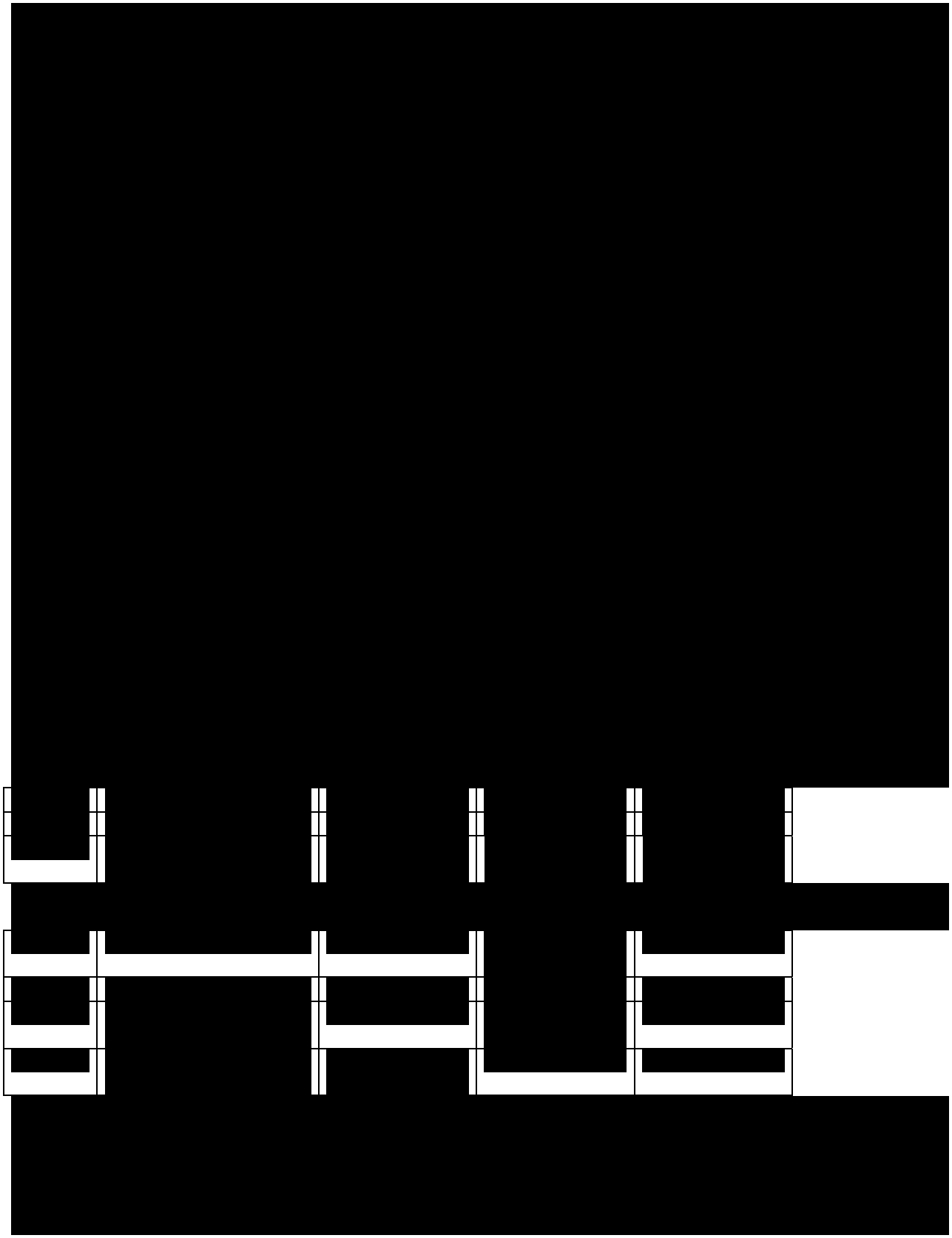
12. Permittee/Owner/Operator shall ensure that the total amount of Nuodex Solution injected at S-903 does not exceed 1000 gallons in any consecutive 24 hour period. (basis: cumulative increase)

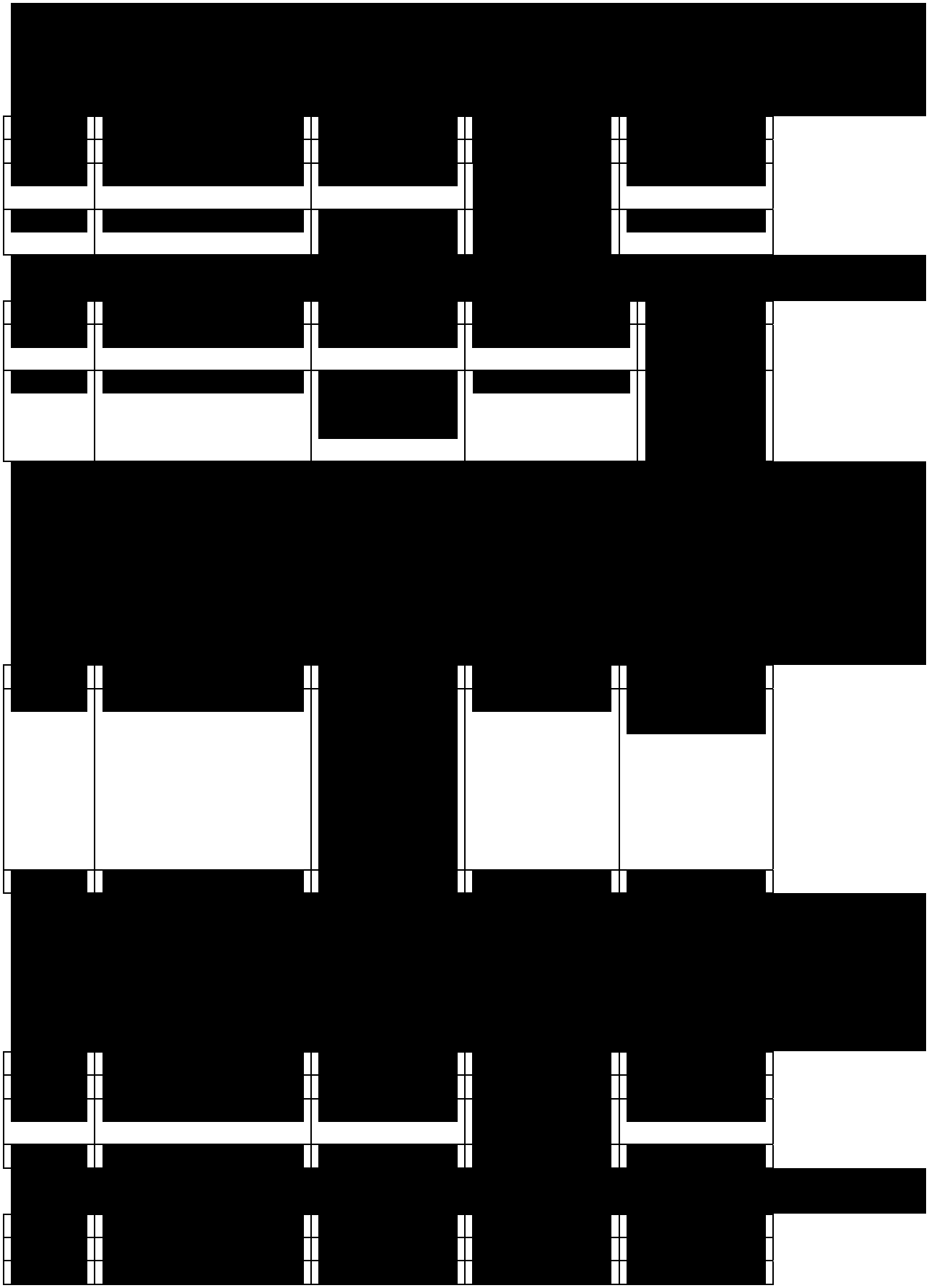
13. In order to demonstrate compliance with condition #12, Permittee/Owner/Operator shall maintain daily records in a District approved log to indicate the total number of gallons of Nuodex Solution (or chemical equivalent) injected. These records shall be kept on site and be available for inspection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

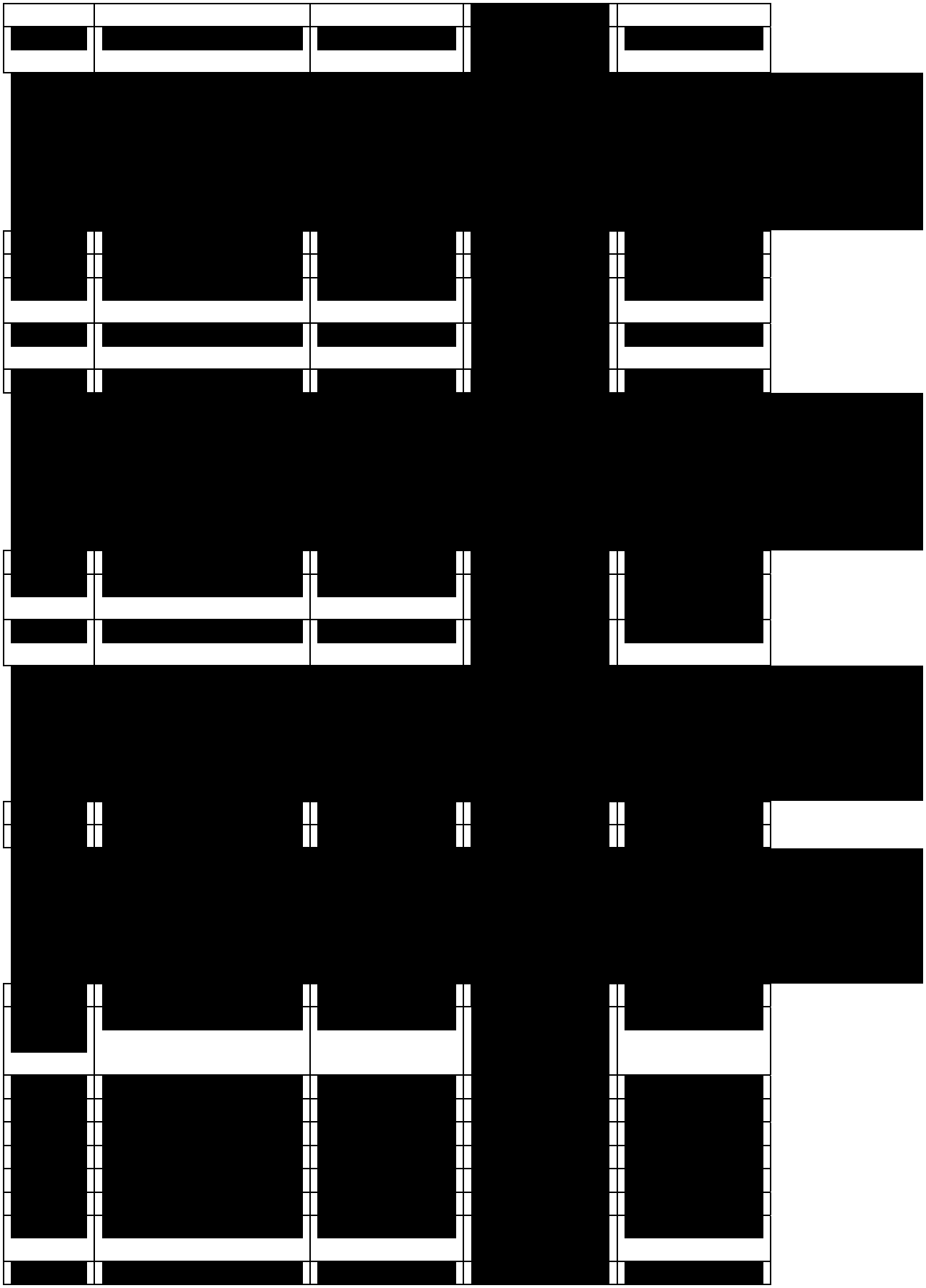
14. S-903, boiler #5 shall burn only gaseous fuels. (basis: cumulative increase)

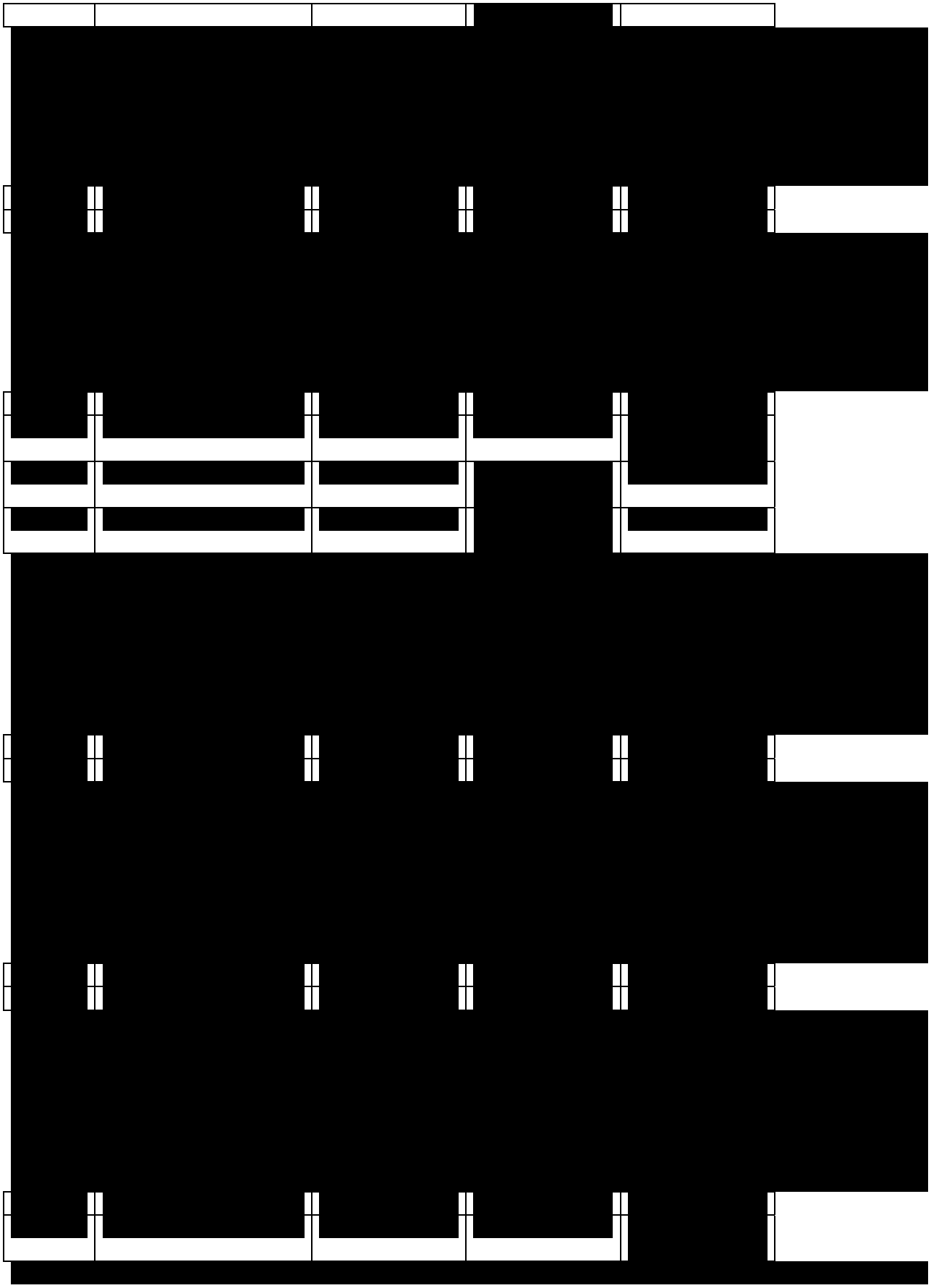

LEGEND
EXISTING PROCESSING UNITS
EXISTING PROCESSING UNITS TO BE MODIFIED
ENSR
SIMPLIFIED BLOCK FLOW DIAGRAM
COKER MODIFICATION PROJECT
Golden Eagle Refinery
Martinez, CA 94553

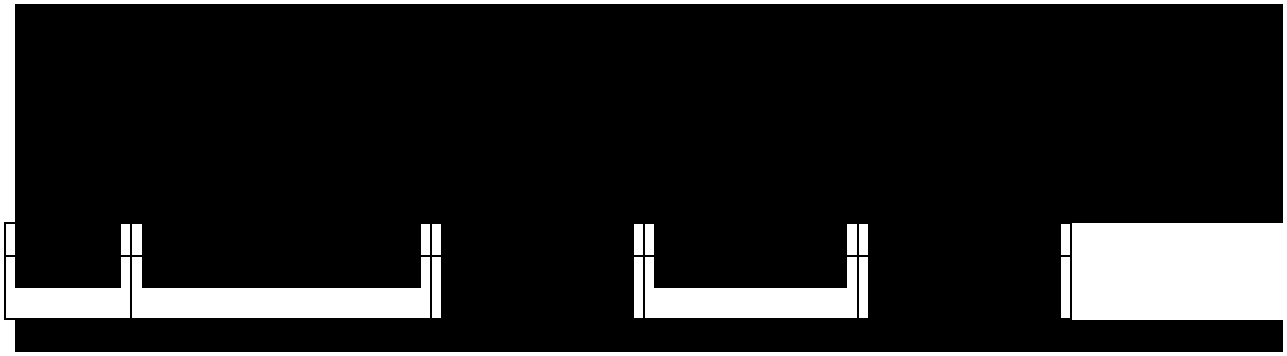
CMP Impacts to Other Refinery Process Units











13. Boilers

No. 6 Boiler currently has a hard limit listed below. No.7 Boiler is sharing the same emission limits with the Fluidized Catalyst Cracker (FCC) unit. Tesoro will monitor and will not exceed the condition limit through the use of Continuous Emission Monitor System (CEMS).

Boilers

Source	*Description*	*Annual Limit*	*Maximum Limit*	*Condition No.*
S-904	*No. 6 Boiler*		*20,352MMBtu/day ; 848 MMBtu/hr*	*#16685, Part 1; 17322, Part 1*
S-901	*No.7 Boiler*	*PM10 = 151.5 ton per year (tpy)* *POC = 5.8 tpy* *NOx = 354.4 tpy* *SO2 = 1335.5 tpy* *CO = 121.9 tpy*		*#11433, Part 2, (CEMS)*

14. Foul Water Stripper Unit

Tesoro provided the grandfathered throughput limit for the Foul Water Stripper Unit, particularly Foul Water tanks (S-656 and S-658) using Tesoro's maximum design feed pump curve that shows throughput of 1,150 GPM each (see attachment Appendix F, Feed Pump Curve S-656 and S-658). The CMP project will use less water than the existing process, so this unit will remain below the existing throughput level; therefore, no emission increase is expected.

Foul Water Stripper Unit

Source	*Description*	*Annual Limit*	*Maximum Limit*	*Condition No.*
S-655	*Foul Water Tank*	*N/A*	*N/A*	*N/A*
S-656	*Foul Water Tank*	*14,400,000 BPY*		*Feed Pump Curve*
S-657	*Foul Water Tank*	*N/A*	*N/A*	*N/A*
S-658	*Foul Water Tank*	*14,400,000 BPY*		*Feed Pump Curve*

Table A-3
Upstream Units
(Confidential information)

Pump Curves
(Confidential information)

COND# 20682 ----------

S-659 Coke Storage Tank (Silo) A-659 abated by A-9 Coke Silo Electrostatic Precipitator

S-660 Coke Storage Tank (Silo) A-660 abated by A-9 Coke Silo Electrostatic Precipitator

1. Permittee/Owner/Operator shall ensure that S-659 and S-660 are abated by A-9 at all times that petroleum coke transfer operations occur at/to/from S-659 and/or S-660 and at all times that there is air flow from S-659 and/or S-660 to A-9. (basis: cumulative increase)

2. Permittee/Owner/Operator shall ensure that the total throughput of petroleum coke to S-659 and S-660 does not exceed 1,016,160 tons during each rolling consecutive 12 month period. (basis: cumulative increase)

3. In a District approved log, Permittee/Owner/Operator shall record the amount of petroleum coke transferred to S-659 and S-660 during each month and during each rolling 12 consecutive month period. The District approved log shall be retained on site for at least 5 years from date of last entry and shall be made available to the District staff upon request. (basis: cumulative increase)

Public Copy
EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #14325 - Plant #14628

APPLICATION 14325, NO. 1 HDS UNIT THOUGHPUT INCREASE

150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for a change of condition to the Permit to Operate for the following equipment:

S-1002 No. 1 HDS Unit.

Tesoro requested a change of permit Condition 8350, Part A1 to increase the permitted throughput of source S-1002, No. 1 Hydodesulfurization (HDS) Unit, from 25,000 barrels per day (BPD) to 28,000 BPD, and from 9,125,000 barrels per year (BPY) to 10,220,000 BPY, so that it will be consistent with its Title V Permit. Tesoro's Title V permit currently lists 28,000 BPD as the maximum design capacity in Table II-Permitted Sources, while its condition lists 25,000 BPD.

Although the No. 1 HDS Unit has a specific explicit lower throughput limits, the District recognized that many throughput limits reported during initial permitting were mistaken or not carefully researched. As a result, we have allowed facility operators to supply documentation demonstrating an appropriate higher capacity; either contemporary design information or historical data showing higher achieved throughputs.

Tesoro indicated that the implementation of the higher throughput (28,000 BPD) may increase (or decrease) throughput of process units upstream and downstream of the No. 1 HDS Unit resulting in emission increases (or decreases) from existing equipment. However, the higher throughput will not cause any of the upstream or downstream sources to exceed the permitted limit. Therefore, no physical modification is required at all upstream and downstream units and no emission increase is associated with this change. There will be no physical modifications to existing heaters that serve these units. The blending tanks and gasoline tanks will potential increase, but not above currently permitted limits. The numbers of valves, flanges, pumps and compressors remain the same.

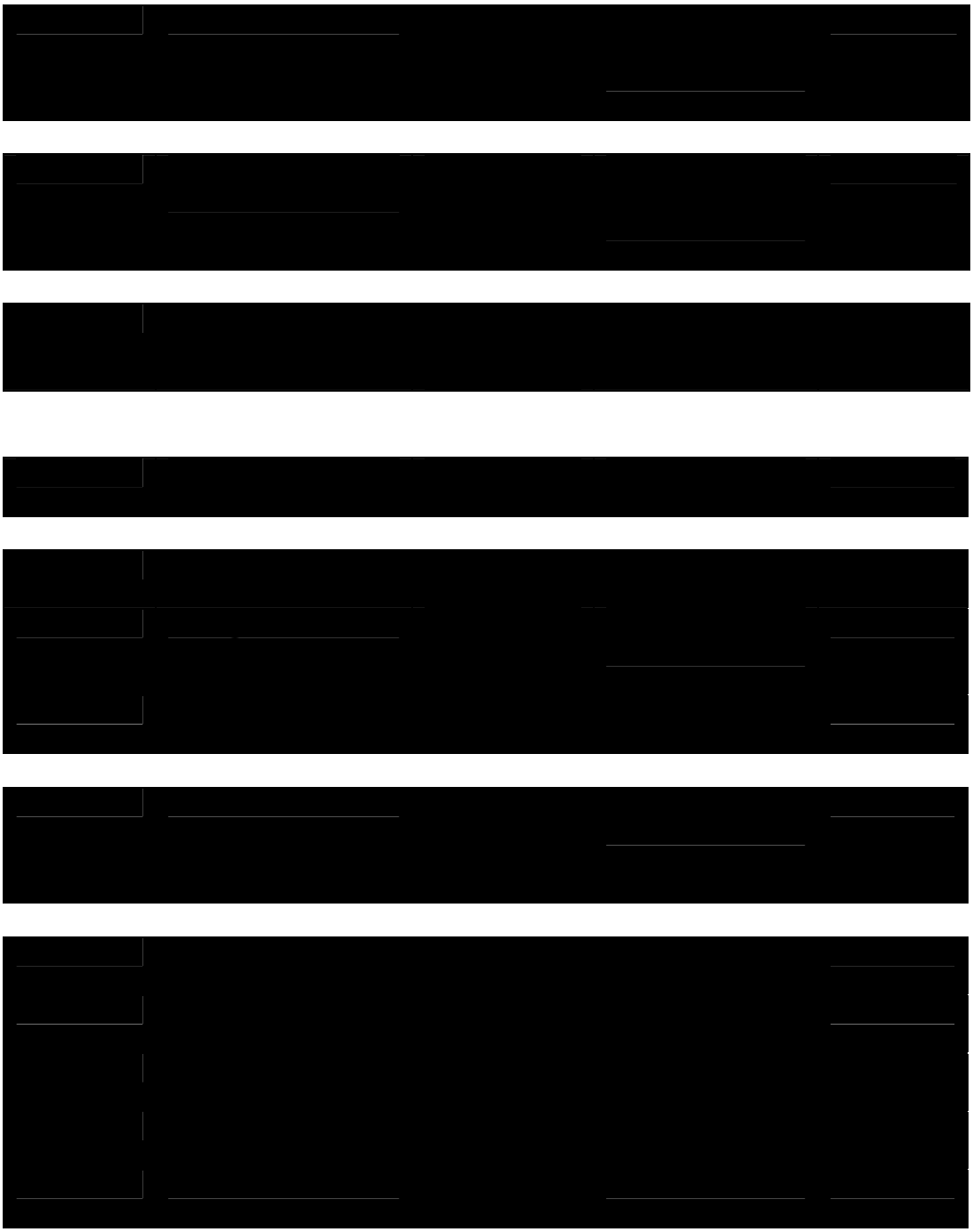
No. 1 HDS and Associated Process Units:
The No. 1 HDS Unit receives naphtha from the No. 50 Crude Unit (S-1001). It uses a hydrotreating process that removes impurities (sulfur and nitrogen compounds) from naphtha streams to other process units. Hydrogen and feed are heated and flow through a catalyst reactor, where sulfur is converted to hydrogen sulfide (H2S) and nitrogen is converted to ammonia. The converted H2S is sent to the Sulfur Recovery Unit (S-1401) to be processed into sulfur. The ammonia is recovered at the Ammonia Recovery Unit (S-851) for other uses. The hydrotreated product is then sent to intermittent storage tanks (S-638 and S-641), which is then sent to either No. 2 or No.3 Reformer Units (S-1004 or S-1020). From the Reformer Units, the reformate is sent to the Reformate Splitter (S-926) and then to the Benzene Saturation Unit (S-1038) before sending to gasoline blending and storage tanks. The benzene is removed from the gasoline by converting benzene into cyclohexane with addition of hydrogen.

The following Table I summarizes the current and proposed throughput limits for the units. Some of these units are grandfathered because of their date of construction and the fact that there have been no physical modifications to these units. These units will not increase emissions or throughput so that they are not modified sources and are not subject to BACT or offsets Per Regulation 2-2-301 and Regulation 2-2-303, respectively.

Table I - Current and Proposed Throughput Limits of Associated Process Units

BDP = barrels per day
BPY = barrels per year
TPY = tons per year

Application Sources	Description	Current Throughput Limits	Regulatory Limits	Changes
S-1002	No.1 HDS	25,000 BPD	# 8350, Part A1	28,000 BPD
S-916	HDS Furnace 16	1,320 MMBtu/day	# 16685, Part 1	No
S-917	HDS Furnace 17	432 MMBtu/day	# 16685, Part 1	No



II. EMISSION INCREASES

The proposed project will not increase emissions of criteria pollutants or toxic air contaminants above the currently permitted limits at Tesoro Refinery.

Fugitive Emissions
The only potential emissions from No. 1 HDS (S-1002) and other process units (S-1001, S-1004, S-1202, and S-1038) are fugitive VOC emissions from equipment leaks. The numbers of valves, flanges, pumps, and compressors remain the same and no physical modifications to the process units or process piping; thus,

increasing the throughput from 25,000 BPD to 28,000 BPD will not result in an increase in fugitive VOC emissions.

Heater Emissions
The heaters from No. 1 HDS (S-916 and S-917) and heaters from other process units (S-950, S-927, S-951, S-971, S-972, S-926, and S-904) will not require any modification and will continue to operate within existing, permitted limits. Therefore, there will be no increase of either daily or annual firing rates or emission levels above the levels contained in the current District's permit to operate or Title V permits.

Storage Tank Emissions
The storage tanks receiving naphtha, intermediates, blend stocks, and gasoline or heavy oil products (S-318, S-631, S-637, S-638, S-641, S-658, S-710, S-876, S-S-1485, S-1496) will not require an increase in the annual throughput rates or emission levels above levels contained in the Title V permit. Some of the tanks have grandfathered limits and no physical modification is required. Tesoro does not wish to change the permitted annual throughput for any of these tanks.

~~III.~~STATEMENT OF COMPLIANCE

- Source S-1002 is subject to and expected to comply with the requirement of Regulation 6 – Particulate Matter and Visible Emissions. Visible particulate emissions are limited by section 6-301 which prohibits visible emissions greater than or equal to Ringelmann No. 1, and 302 limits the source to less than 20% opacity. Section 305 prohibits fallout of visible particles onto neighboring properties in sufficient quantities to cause annoyance to any other person.

- Source S-1002, No.1 HDS Unit (fugitive emissions) is subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The leak standards for valves, pumps and flanges will be 100 ppm, 100 ppm and 100 ppm, respectively.

- Source S-1002, No.1 HDS Unit (fugitive emissions) is subject to Regulation 8, Rule 28- Episodic Releases from Pressure Release Devices at Petroleum Refinery and Chemical Plants. Tesoro will continue to comply with this rule.

- Source S-1510 is subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart GGG Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

- Source S-1510 is subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 63, Subpart CC

Tesoro is not located within 1,000 feet of any school. The public notification requirements of Regulation 2-1-412 are not required.

This permit application is not subject to CEQA because the evaluation is a ministerial action conducted using fixed standards and objective measurements. This project is categorically exempt from CEQA per Regulation 2-1-312.1 for permit modifications for existing or permitted sources or facilities, which do not have any increase in emissions or physical modification.

NSR, BACT, Offsets, and PSD are not applicable.

~~IV.~~CONDITIONS

Condition # 8350 for Source 1002, No. 1HDS Unit, Application #6468, amended by application #14325, Plant # 14628 – Tesoro Refinery.

S1002 No. 1 HDS Unit
S1003 No. 2 HDS Unit
S1006 No. 1 HDA Unit

Application #6468, amended by Application # 14325
Diesel Fuel Modification Project Permit Condition 8350
Permit Conditions for S-1002, No. 1 HDS Unit:

A1. Permittee/Owner/Operator shall ensure that the No. 1 HDS Unit (S-1002) does not process more than ~~25~~28,000 barrels of naphtha per day, based on a rolling 365-day average and that not more than ~~9,125~~10,220,000 barrels of feed is processed at S-1002 during each 12 consecutive month period. (basis: cumulative increase)

A2. Total fugitive POC emissions from all new and modified equipment associated with S-1002, No. 1 HDS Unit, shall not exceed 5.04 lb/day, based on a 365 day average emission rate, as calculated in accordance with District procedures. The owner/operator of S-1002, Permittee/Owner/Operator, shall submit a final process flow diagram and a revised pump, compressor, valve, and flange count within 15 days of the start up of S-1002 in order to confirm compliance with this permit condition. If fugitive emissions from this source exceed 5.04 lb/day, then the District may recalculate the cumulative emissions increase attributed to this permit application, and adjust accordingly the refinery emissions cap limits specified in Condition No. 4357-2, before the issuance of the permit to operate. (basis: cumulative increase)

A3. All new hydrocarbon vapor pressure relief valves associated with this project shall be vented to the refinery flare gas recovery system. (basis: cumulative increase, BACT)

A4. Permittee/Owner/Operator shall maintain a District- approved file containing all measurements, and other data required to demonstrate compliance with the above conditions. This file shall include, but is not limited to, the daily throughput of naphtha processed by S-1002 summarized on a monthly basis. This material shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: cumulative increase)

Permit Conditions for S-1003, No. 2 HDS Unit:

B1. Permittee/Owner/Operator shall ensure that the No. 2 HDS Unit (S-1003) does not process more than 40,000 barrels of diesel per day, based on a rolling 365-day average and that not more than 14,600,000 barrels of feed is processed at S-1003 during each 12 consecutive month period. (basis: cumulative increase)

B2. Total fugitive POC emissions from all new and modified equipment associated with S-1003, No. 2 HDS Unit, shall not exceed 4.04 lb/day, based on a 365 day average emission rate, as calculated in accordance with District procedures. The owner/operator of S-1003, Permittee/Owner/Operator, shall submit a final process flow diagram and a revised pump, compressor, valve, and flange count within 15 days of the start up of S-1003 in order to confirm compliance with this permit condition. If fugitive emissions from this source exceed 4.04 lb/day, then the District may recalculate the cumulative emissions increase attributed to this permit application, and adjust accordingly the refinery emissions cap limits specified in Condition No. 4357-2 before the issuance of the permit to operate. (basis: cumulative increase)

B3. All new hydrocarbon vapor pressure relief valves associated with this project shall be vented to the refinery flare gas recovery system. (basis: cumulative increase, BACT)

B4. Permittee/Owner/Operator shall maintain a District- approved file containing all measurements and other data required to demonstrate compliance with the above conditions. This file shall include, but is not limited to, the daily throughput of diesel processed by S-1003, summarized on a monthly basis. This material shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: cumulative increase)

Permit Conditions for S-1006,
No. 1 Reformer Unit to be converted to No. 1 HDA Unit:

C1. Permittee/Owner/Operator shall ensure that the No. 1 HAD Unit (S-1006) throughput rate does not exceed 20,000 barrels per day, based on a rolling 365- day average and that not more than 7,300,000 barrels of feed is processed at S-1006 during each 12 consecutive month period. (basis: cumulative increase)

C2. There will be no new additional fugitive POC sources associated with the conversion of S-1006 from the No. 1 Reformer Unit to the No. HDA Unit. The owner/operator of S-1006, Permittee/Owner/Operator, shall submit a final process flow diagram and a revised pump, compressor, valve, and flange count within 15 days of the start up of S-1006 in order to confirm compliance with this permit condition. If there are new additional fugitive POC sources, then the District shall recalculate the cumulative emissions increase attributed to this permit application, and adjust accordingly the

refinery emissions cap limits specified in Condition ID 4357, part 2, before the issuance of the permit to operate. (basis: cumulative increase)

C3. Permittee/Owner/Operator shall ensure that all new hydrocarbon vapor pressure relief valves associated with this project shall be vented to the refinery flare gas recovery system. (basis: cumulative increase, BACT)

C4. Permittee/Owner/Operator shall maintain a District-approved file containing all measurements and other data required to demonstrate compliance with the above conditions. This file shall include, but is not limited to, the No. 1 HDA Unit (S-9006) throughput rate, summarized on a monthly basis. This material shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: cumulative increase)

~~V.~~RECOMMENDATION

Issue a conditional change of Permit Condition # 8350 for Tesoro for the following equipment:

S-1002 No. 1 HDS Unit.

_____
Thu H. Bui
Air Quality Engineer II
Permit Services Division

Date: _____

THB:Disk-t\Tesoro\14325\14325e

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #14374 - Plant #14628
APPLICATION 14374, SULFUR COLLECTION PIT VENT (CONSENT DECREE)
150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for the modification to the Permit to Operate for the following equipment:

S-1405 Sulfur Collection Pit abated by A-1420 Venturi Scrubber

To be modified to:

S-1405 Sulfur Collection Pit abated by either:

S-1411 Sulfuric Acid Manufacturing Plant abated by A-1403 Brink Mist Eliminator, A-1417 Final Converter/Absorber, Dual Absorber, and A-1421 Final Mist Eliminator, H2SO4 Manufacture, Mist Eliminator.

Or

S-1401 Sulfur Recovery Unit abated by S-1420 Tail Gas In-Line Burner and A-1402 Scot Tail Gas Unit Incinerator.

Tesoro requests to reroute an existing sulfur collection pit (S-1405) that is currently vented to the venturi scrubber (A-1420). Instead of venting through the scrubber and then to the atmosphere, piping will be added to route to the exhaust gas to either the Sulfur Recovery Unit (SRU) (S-1401) or the Sulfuric Acid Manufacturer Plant (SAP) (S-1411). The acid plant (SAP) combustion chamber will serve as the primary destination, but if it is shut down for any reason, the sulfur pit gas will be route to the SRU. This reroute will result in recovery of the element sulfur, hydrogen sulfide (H2S), and sulfur dioxide (SO2) in the sulfur pit.

This reroute project is required by the EPA under a consent decree. The consent decree requires that all sulfur collection pit emission be eliminated or included with the emissions subject to the New Source Performance Standard (NSPS), Subpart J SO2 limit. This limit required in 40 CFR 60.104 (a)(2) is 250 ppmv dry basis SO2 at zero percent oxygen as a 12-hour rolling average.

Impact of this project on SAP (S-1411)

In the acid plant, the gas from the Sulfur Collection Pit S-1405 is introduced into the combustion chamber where sulfur is oxidized (burned) to SO2. The gases are cooled by passing through a wasted heat boiler and then into a catalyst converter, which converts 95 to 98 percent of the SO2 to SO3. The gases enter the Mist Eliminator (A-1403), then to an absorption tower (A-1417), which is packed column where acid is sprayed in the top and SO3 enters from the bottom. The SO3 is absorbed in the 98 to 99 percent sulfuric acid. The SO3 combines with water in the acid to form more sulfuric acid (H2SO4). After the absorber, the gases, which contain SO2 and H2SO4, pass through the final Mist Eliminator (A-1421), and send to Akylation plant.

The grandfathered throughput limit of the SAP as listed on the Title V permit is 480 tons/day. In the future, 0.136 ton/day of sulfur (SO2) (0.177 lbmol/hr X 64 lb/mole X 24 hr/day/ 2000 lb/ton) into the SAP when Tesoro reroutes the sulfur pit. This is a 0.028 percent increase of the current feed rate to the SAP. The District agreed with Tesoro that this small increase would not affect the control performance of the abatement device or the combustion operation at the SAP (S-1411).

Impact of this project on SRU (S-1401)

The Sulfur Collection Pit (S-1405) is downstream of the SRU (S-1401). Therefore, the SRU controls the amount of gas from the Sulfur Collection Pit. If the Sulfur Collection Pit gases are vented to the SRU, the gases will react in the 3-stages Clause catalytic reactor, then further burned in the Tail gas In-Line Burner (S-1420). In this process, the H2S reacts with Oxygen or SO2 to form elementary sulfur. The overall recovery for a three stages Clause reactor is from 96 to 97.5 percent. The tail gas from the Clause reactor contains H2S, SO2, sulfur vapor, traces of other sulfur compounds formed in the combustion section and inert gases. The gases then pass to the Scot Tail Gas Unit Incinerator (A-1402), where sulfur compounds are oxidized to form SO2.

The grandfathered throughput limit of the SRU as listed on the Title V permit is 200 tons/day. Tesoro will recycle 0.136 ton/day of sulfur into the SRU. Again, the District agreed with Tesoro that this small increase would not change the control performance of the abatement device or increase the heater load of the Tail Gas In-line Burner (S-1420).

Condition # 267, Part 2 and Condition # 4357, Part 9A limit the SO2 emission rate from S-1401 and S-1420 (Tail Gas In-line Burner) to 4 lb/ton of sulfur processed. Tesoro submitted 12-month In Stack Monitoring Report in 2005 that shows the SO2 emissions from the SRU is maintained at 0.36 lb/ton SO2 on a monthly average, which is way below the 4 lb/ton limit. Thus, the addition of the gases from the Sulfur Collection Pit will not exceed the SO2 limit in the SRU.

Tesoro indicated that the implementation of the routing of the sulfur pit vapors to the S-1411 SAP or S-1401 SRU rather than to the Venturi Scrubber A-1420 will slightly increase the throughput of process units downstream (S-1411 and S-1401). However, the higher throughput will not cause any of the upstream or downstream sources to exceed the current

permitted limit. Therefore, no physical modification is required at all upstream and downstream units and no emission increase is associated with this change. There will be no physical modifications to the existing combustion chamber, absorber, reactor and incinerator that serve these units. The numbers of valves, flanges, pumps and compressors that will be added to this project will not contribute to the POC emissions since the gases are mostly inorganic compounds. The proposed project will decrease the sulfur compounds emissions since the SAP and the SRU have higher control efficiencies.

II. EMISSION CALCULATIONS

Current S-1405 emissions abated by Venturi Scrubber A-1420:
The Venturi Scrubber was installed to collect sulfur (SO2 and SO3) particulate emissions. Only water is used in the scrubber. The design for the scrubber did not address H2S removal. However, based on the DOE /ORP Bulk Vitrification Test Facility Report, February 2005 provided by Tesoro, the estimated Venturi Scrubber efficiency is approximately 25% (see attachment). The current and future emissions and the composition of sulfur collection pit are as follows:

	Pit Vent Plus Steam	
Components	**Lbmol/hr**	**Mole percent**
O2	6.12	9.7
N2	23.08	36.6
H2S	0.15	0.2
H2O	33.65	53.4
S-vapor as S1	0.027	0.04
Total	63.03	99.94

Note: The sulfur collection pit vent is from 600 lb/hr of 250 psig ejector motive steam.

Basis:
- Total Sulfur = 0.15 lbmol/hr + 0.027 lbmol/hr = 0.177 lbmol/hr
- MW of SO2 = 64 lb/lbmol
- Control Efficiency = 25%
- Hourly Sulfur emissions = 0.177 lbmol/hr X 64 lb/lbmol X (1-0.25) = 8.5 lbs/hr
- Annual Sulfur emissions = 8.5 lbs/hr X 24 hr/day X 365 day/yr = 74,425 lb/yr or 37.212 tpy

Future S-1405 emissions abated by Sulfuric Acid Manufacturing Plant (SAP) S-1411:
The SAP control efficiency was based on 9/14/04 source test performed by the District (see attachment). The calculated result was 99.7 %
Basis:
- Total Sulfur = 0.15 lbmol/hr + 0.027 lbmol/hr = 0.177 lbmol/hr
- Assume SO2 Molecular Weight = 64 lb/lbmol
- Control Efficiency = 99.7%
- Hourly Sulfur emissions = 0.177 lbmol/hr X 64 lb/lbmol X (1-0.997) = 0.034 lbs/hr
- Annual Sulfur emissions = 0.034 lbs/hr X 24 hr/day X 365 day/yr = 297.7 lb/yr or 0.149 tpy

Or

Future S-1405 emissions abated by Sulfuric Recovery Unit (SRU) S-1401:
The SAP control efficiency was based on 11/24/04 source test performed by Best Environmental (see attachment). The calculated result was 99.99 %.
Basis:

- Total Sulfur = 0.15 lbmol/hr + 0.027 lbmol/hr = 0.177 lbmol/hr
- Assume SO2 Molecular Weight = 64 lb/lbmol
- Control Efficiency = 99.99%
- Hourly Sulfur emissions = 0.177 lbmol/hr X 64 lb/lbmol X (1-0.9999) = 0.0011 lbs/hr
- Annual Sulfur emissions = 0.0011 lbs/hr X 24 hr/day X 365 day/yr = 9.92 lb/yr or 0.005 tpy

Total emission decreases:
Total Sulfur = 74,425 lb/yr – 297.7 lb/yr = (74,127 lbs/yr) or (37.06 tpy)

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

	Current Ton/yr	New Ton/yr	New Total tons/yr
POC =	0	0	0
NO_x =	0	0	0
SO_2 =	0	(37.06)	(37.06)
CO =	0	0	0
NPOC =	0	0	0
TSP =	0	0	0
PM_{10} =	0	0	0

IV. TOXIC SCREENING ANALYSIS

A "Risk Screening Analysis Questionnaire" form was not required with this application since none of the toxic trigger levels was exceeded Per Regulation 2-5. The future vent gas from the SAP and SRU contains 0.2 mol percent of the H2S as listed in the table above. The maximum rate 1.0 lb/yr of H2S emission will come from the SAP. See attached calculation for detail.

Toxic Pollutant Emissions Emitted	Hourly Trigger Level (lb/hr)	Acute Emissions (lb/hr)	Annual Trigger Level (lb/yr)	Chronic (lb/yr)
Hydrogen Sulfide	0.0029	0.093	1.044	390

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application does not require BACT since the emissions are inorganic compounds, and the total sulfur emissions from source S-1405 are much less than 10 pounds per highest day threshold limit per Regulation 2-2-301.

VI. OFFSETS

This application results in emission decreases. Therefore, offsets are not needed.

VII. STATEMENT OF COMPLIANCE

The Sulfur Collection Pit (S-1405), the SAP (S-1411) and the SRU (S-1401) are expected to be in compliance with all requirements of Regulation 1 (General Provision), Regulation 6 (Particulate Matter and Visible Emissions), and Regulation 9-1 (Inorganic Gaseous Pollutants-Sulfur Dioxide). The SAP met 300 ppmv SO2 calculate at 12% O2 per Regulation 9-1-309. The SRU met 250 ppmv dry SO2 calculated at zero percent O2 per Regulation 9-1-307. Both the SAP, and the SRU are equipped with SO2 continuous emission monitoring systems.

In addition, the SAP is expected to be in compliance with all requirements of Regulation 12-6 (Acid Mist from Sulfuric Acid Plants). The SAP met the H2SO4 requirement of 0.3 lb of H2SO4 per ton of acid produced per Regulation 12-6-301.

This permit application is not subject to CEQA because the evaluation is a ministerial action conducted using fixed standards and objective measurements. This project is categorically exempt from CEQA per Regulation 2-1-312.3 for permit application for project undertaken the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the federal agency, and/or Regulation 2-1-312.5 for permit application submitted pursuant to the requirement of an order for abatement issued by the District's Hearing Board or of a judicial enforcement order (EPA decree consent).

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

- Source S-1401 (SRU) will be subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60) by December 31, 2006.

- 40 CFR, Part 60, Subpart J Standards of Performance for Petroleum Refineries.

- Source S-401 (SRU) is subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 63, Subpart UUU

PSD is not triggered.

VIII. CONDITIONS

Permit condition # 267 for S-1405, Sulfur Pit Collection, Tesoro Refining & Marketing Company, Application # 14374, Plant # 14628.

S1401 Sulfur Recovery Unit
S1405 Sulfur Collection Pit

S1420 Tail Gas In-Line Burner

1. Permittee/Owner/Operator shall ensure that the SCOT unit is scheduled for maintenance to coincide with the turnaround of either the Coker or the FCCU. (basis: cumulative increase)

2. Permittee/Owner/Operator shall ensure that the sulfur dioxide (SO2) emission rate does not exceed 4 lb/ton of sulfur processed. (basis: cumulative increase)

3. In a District approved log, Permittee/Owner/Operator shall record daily SO2 emissions and sulfur production on a monthly basis. 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: cumulative increase)

4. Permittee/Owner/Operator shall abate the Sulfur Collection Pit (S-1405) by either the Sulfuric Acid Plant (SAP) (S-1411) or the Sulfur Recovery Unit (SRU) (S-1401) when ever S-1405 is being filled with sulfur or when S-1401 is in operation. (basis: cumulative increase)

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Tesoro Refining & Marketing Company for the following equipment:

S-1505 Sulfur Collection Pit abated by either:

S-1411 Sulfuric Acid Manufacturing Plant abated by A-1403 Brink Mist Eliminator, A-1417 Final Converter/Absorber, Dual Absorber, and A-1421 Final Mist Eliminator, H2SO4 Manufacture, Mist Eliminator.

Or

S-1401 Sulfur Recovery Unit abated by S-1420 Tail Gas In-Line Burner and A-1402 Scot Tail Gas Unit Incinerator.

Thu H. Bui
Air Quality Engineer II
Engineering Division
Date:

THB:disk-T\Tesoro\14374\14374e\

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #14894 - Plant #14628
APPLICATION 14894, BENZENE SATURATION UNIT THROUGHPUT INCREASE
150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for a change of condition to the Permit to Operate for the following equipment:

S-1038 Benzene Saturation Unit.

Tesoro requested for the throughput increase at the Benzene Saturation Unit (BSU) S-1038). The BSU is a process that uses a solid catalyst to saturate the benzene molecules with hydrogen to form cyclohexane. The BSU currently has a grandfathered limit of 10,400 barrels/day (bbls/day) and 3,796,000 barrels/yr of feed material. This application proposes to increase the limit to 15,000 bbls/day and 5,475,000 bbls/yr of feed material. Tesoro decides to divert up to maximum 7,000 bbls/day of Light Hydrocrackate from the Hydrocracker (S-1007 and S-1008) to the Reformate Splitter (S-926) then to the BSU for Benzene removal instead of sending it directly into the blending Akylate tank S-710. From the BSU, the treated material will be sent to Naphtha tank A-637 (S-637).

There will not be any throughput increase from the Hydrocracker (S-1007 and S-1008) and the Reformate Splitter (S-926), which are upstream units. Tesoro likes to make more of the better quality gasoline product by diverting the light Hydrocrackate to BSU. Tesoro will install one new pump, associated valves and flanges, which will be the only sources of fugitive emissions in this project. The throughput of the downstream blending Akylate tank S-710 will decrease, and Naphtha tank S-637 will increase, but not above the current grandfathered limits.

The following Table I summarizes the current and proposed throughput limits for the units. Some of these units are grandfathered because of their date of construction and the fact that there have been no physical modifications to these units. These units will not increase emissions or throughput so that they are not modified sources and are not subject to BACT or offsets Per Regulation 2-2-301 and Regulation 2-2-303, respectively.

Table I - Current and Proposed Throughput Limits of Associated Process Units

Upstream Sources	Description	Current Throughput Limits	Condition No.	Changes
S-1007	Hydrocracker Unit (1st stage)	37,000 bbl/day; 12,775,000 bbl/day	# 8077, Part 1	No
S-1008	Hydrocracker Unit (2nd stage)	37,000 bbl/day; 12,775,000 bbl/day	# 8077, Part 1	No
S-926	No. 2 Reformate Splitter	38,400 bbl/day; 14,016,000 bbl/day	Grandfathered Limit	No
S-926	No. 2 Reformate Splitter's Reboiler (F26)	145MMBtu/hr; 1270,200 MMBtu/yr	Condition 16685, Part 1 Condition 18372, Part 3	No

			and 25	
S-904	No 6 Boiler	775MMBtu/hr; 6,789,000 MMBtu/yr	Condition 16685, Part 1 Condition 17322, Part 1	No

Application Source	Description	Current Throughput Limits	Regulatory Limits	Changes
S-1038	Benzene Saturation Unit	10,400 bbl/day; 3,796,000 bbl/day	Grandfathered Limit	15,000 bbl/day, 5,475,000 bbl/day

Downstream Sources	Description	Current Throughput Limits	Regulatory Limits	Changes
S-637	Storage Tank, Naphtha	7,300,000 bbl/day	Grandfathered Limit	No
S-710	Storage Tank, Alkylate, gasoline	12,800,000 bbl/day	Grandfathered Limit	No

II. EMISSION INCREASES

Fugitive Emissions
The only potential emissions from this project are the fugitive VOC emissions from equipment leaks. The numbers of valves, pump, and connectors are shown below. The emission factors are from Tesoro CARB III Project, application 2508, approved by District from Tesoro's Actual Monitoring Data.

Component	Emission Factor (lbs/day/source)	# Added	Emission, lb/day	Emission, lb/yr
Valves in Liquid Service	0.0014736	22	0.0324	11.833
Pumps	0.028872	1	0.0288	10.538
PRV in Liquid Service	0.006312	10[a]	0.00	0.00
Connectors	0.004	22	0.0880	32.120
TOTAL			0.1492	54.491
Total, Tons/year				0.0272

[a] PRV's at the BSU will be tied into a closed system, so that there will be no leaks to atmosphere.

Heater Emissions
The boiler from No. 2 Reformer Splitter (S-926) and No. 6 Boiler (S-904) may have increased firing because this project will require more steam. The permitted fired duty limit of these heaters provides sufficient capacity that Tesoro is not requesting an increase in firing limits. The two boilers (S-926, and S-904) will not require any modification and will continue to operate within existing, permitted limits. Therefore, there will be no increase of either daily or annual firing rates or emission levels above the levels contained in the current District's permit to operate or Title V permits.

Storage Tank Emissions

The storage tanks receiving naphtha, and blend stocks products (S-637, and S-710) will not require an increase in the annual throughput rates or emission levels above levels contained in the Title V permit. These tanks have grandfathered limits and no physical modification is required. Tesoro does not wish to change the permitted annual throughput for any of these tanks.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

	Current Ton/yr	New Ton/yr	New Total tons/yr
POC =	0	0.0272	0.0272
NO_x =	0	0	0
SO_2 =	0	0	0
CO =	0	0	0
NPOC =	0	0	0
TSP =	0	0	0
PM_{10} =	0	0	0

IV. TOXIC SCREENING ANALYSIS

A "Risk Screening Analysis Questionnaire" form was not required with this application since none of the toxic trigger levels was exceeded per Regulation 2-5. The TAC emissions are from fugitive emissions. See attached calculation for detail.

Toxic Pollutant Emissions Emitted	Hourly Trigger Level (lb/hr)	Acute Emissions (lb/hr)	Annual Trigger Level (lb/yr)	Chronic (lb/yr)
Benzene	4.49 E-7	2.9	3.93 E-3	6.4
Ethylbenzene	8.44 E-8	N/A	7.39 E-4	77,000
H-Hexane	5.07 E-7	N/A	4.44 E-3	270,000
Toluene	6.46 E-6	82	5.65 E-2	12,000
Xylene, -m	1.07 E-7	49	9.35 E-4	27,000
Xylene, -o	3.79 E-8	49	3.32 E-4	27,000
Xylene, -p	4.72 E-8	49	4.13 E-4	27,000

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application requires BACT since the emissions are from fugitive sources and are more than 10 pounds per highest day threshold limit per Regulation 2-2-301. The new and existing fugitive components will comply with the BACT requirement, which are 100 ppm for pump seals, 100 ppm for valves and 100 ppm for connectors.

VI. OFFSETS

Offsets are required for this project pursuant to Regulation 2, Rule 2, Section 302. Tesoro has enough contemporaneous emission reduction credits to fully offset the POC emission increases. The company will use the Certificate of Deposit # 968 to provide the needed offsets at a ratio of 1.15:1 per Regulation 2-2-302.2.

Available offsets = 21.042 ton/yr (Certificate of Deposit # 968)
Emissions from this application = 0.0272 TPY POC
POC Offset provided = 0.0272 tons/yr X 1.15 = 0.031 tons/yr

The total POC emissions may change based on the actual final fugitive component count consisting of valves, pumps and flanges/connectors. Since Tesoro's offset obligation for POC may increase or decrease at that time, the District will make adjustments to reflect the actual fugitive components count in accordance with Part 3 of Condition number 23258. The balance of Banking Certificate No. 968 will then be reissued to Tesoro in the amount determined.

VII. STATEMENT OF COMPLIANCE

- Source S-1038, BSU is subject to Regulation 8, Rule 2- Equipment Leaks.

- Source S-1038, BSU (fugitive emissions) is subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The leak standards for valves, pumps and connectors will be 100 ppm, 100 ppm and 100 ppm, respectively.

- Source S-1038, BSU (fugitive emissions) is subject to Regulation 8, Rule 28- Episodic Releases from Pressure Release Devices at Petroleum Refinery and Chemical Plants. Tesoro will continue to comply with this rule.

- Source S-1038 is subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Part 60)

- 40 CFR, Part 60, Subpart GGG Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

- Source S-1038 is subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

- 40 CFR Part 63, Subpart CC

Tesoro is not located within 1,000 feet of any school. The public notification requirements of Regulation 2-1-412 are not required.

This permit application is not subject to CEQA because the evaluation is a ministerial action conducted using fixed standards and objective measurements. This project is categorically exempt from CEQA per Regulation 2-1-312.11 for permit modifications for existing or permitted sources or facilities, which will satisfy the "No Net Emission Increase" provisions of District Regulation 2-2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than air quality. Tesoro has completed an Appendix H form. The form indicates that there are no significant impacts due to this project.

NSR, BACT, and PSD are not applicable.

VIII. CONDITIONS

Conditions for Source S-1038, Benzene Saturation Unit, Application #14894, Plant # 14628 – Tesoro Refinery.

S-1038 Benzene Saturation Unit

1. The Owner/Operator shall ensure that the Benzene Saturation Unit (S-1038) does not process more than 5,475,000 barrels of feed at S-1038 during any 12 consecutive month period. (basis: cumulative increase)

2. The owner/operator of all new and modified equipment associated with S-1038, shall inspect and maintain all new valves, pumps and flanges/connectors associated with this project according to District Regulation 8-18. (basis: Regulation 8-18)

3. The Owner/Operator of all new and modified equipment associated with S-1038, Benzene Saturation Unit, shall ensure the POC emissions do not exceed 0.149 lb/day, based on a 365 day average emission rate, as calculated in accordance with District procedures. The owner/operator of S-1038, shall submit a final process flow diagram and a revised pump, compressor, valve, and flange count within 60 days of the start up of S-1038 in order to confirm compliance with this permit condition. If fugitive emissions from this source exceed 0.149 lb/day, then the District may recalculate the cumulative emissions increase attributed to this permit application, and adjust accordingly the refinery emissions cap limits specified in this Condition, before the issuance of the permit to operate. (basis: cumulative increase)

4. The Owner/Operator of all new hydrocarbon vapor pressure relief valves installed in hydrocarbon service shall vent POC emissions to the refinery flare gas recovery system or an abatement device with a capture/destruction efficiency of 98 wt% POC, or more, approved for this use in advance by the District. (basis: Regulation 8-28)

5. The Owner/Operator shall maintain a District- approved file containing all measurements, and other data required to demonstrate compliance with the above conditions. This file shall include, but is not limited to, the daily throughput of feed processed by S-1038 summarized on a monthly basis. This material shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded. (basis: cumulative increase)

IX. RECOMMENDATION

Issue a conditional Authority to Construct for Tesoro for the following equipment:

S-1038 Benzene Saturation Unit.

_____

Thu H. Bui
Air Quality Engineer II
Engineering Division

Date: _____

THB:Disk-t\Tesoro\14894\14894e

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 14752

APPLICATION 14752, NO. 2 FEFORMER REACTOR FEED PREHEATER F-27

BACKGROUND

The Tesoro Refining and Marketing Company (Tesoro) is applying for a modification or clarification to the permit conditions for the Permit to Operate the following equipment:

S-927 No. 2 Reformer Reactor Feed Preheater F-27; Lummus Multicell Cabin; Maximum Firing Rate: 280 MMBtu/hr abated by A-1431 Technip Selective Catalytic Reduction System w/ Hitachi Catalyst or equivalent

Tesoro has been operating S-927 since 1927. The owner/operator of source S-927 is subject to Regulation 9, Rule 10: Inorganic Gaseous Pollutants, Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. Regulation 9-10-301 limits the NOx emissions from refinery heaters and provides a method of calculating emissions during unusual circumstances, such as startup and shutdown (Regulation 9-10.301.1). Regulation 9-10-218 defines 'startup' and 'shutdown'. During startup, fuel is fired at the source, but ammonia is not injected into A-1431 SCR until the exhaust temperature reaches 530 degrees F. At shutdown, ammonia is no longer injected into A-1431 SCR when the exhaust temperature falls below 530 degrees F. The injection of ammonia into A-1431 SCR at temperatures less than 530 degrees F would result in the formation of ammonia salts and plugging of the SCR bed and flue gas stack. During startup the heater cannot be fired up to temperature quickly and during shutdown the heater cannot be cooled down abruptly. Any rapid changes in temperature may thermally stress the heater causing tube failures and safety hazards. In addition, Tesoro must also periodically regenerate the catalyst in the No. 2 Catalytic Reformer (S-1004). Catalyst at S-1004 No. 2 Catalytic Reformer must be regenerated every one to two years. During reformer catalyst regeneration, the exhaust temperature of S-927 and A-1341 is less than 530 degrees F and ammonia cannot be injected into the A-1431 SCR. During regeneration at S-1004, the coke and sulfate is burned off of the catalyst in the S-1004 No. 2 Catalytic Reformer and the catalyst is reduced. The steps and time required to regenerate the catalyst are as follows:

Step	Average Time	Maximum Time
primary and secondary burn (of coke from the catalyst)	3 –4 days	6 days
sulfate strip (if needed):	24-36 hours	72 hours
final oxidation reduction	48 hours	72 hours
TOTAL	144 to 180 hours	288 hours

The owner/operator is subject to condition 18372, part 18 for S-927. Currently, the condition requires the owner/operator to continuously abate (inject ammonia) into the A-1431 SCR whenever the heater is fired.

Condition 18372:

18.) Combustion exhaust from S-927 shall be ducted to and continuously abated by A-1431 whenever a fuel is fired at S-927 and the exhaust gasses from A-1431 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

The owner/operator is requesting a modification to condition 18372, part 18 that will allow the SCR to be bypassed (halt ammonia injection) during startup and shutdown. The owner/operator is also requesting a modification to condition 18372 parts 18 that will allow the SCR to be bypassed (halt ammonia injection) during catalyst regeneration at S-1004 No. 2 Catalytic Reformer.

The owner/operator of S-927 is also subject to condition 4357, part 7A. Condition 4357, part A, limits the NOx emissions from S-927 abated by A-1431. The limit is in effect except for periods of startup and shutdown. The owner/operator is requesting a modification to condition 4357, part 7A to also allow for deviation from the limit during catalyst regeneration for the S-1004 Reformer.

Condition 4357:

7. Combustion Controls.

A. Except during periods of startup or shutdown, emissions of nitrogen oxides (calculated as NO2) and carbon monoxide shall not exceed the following limits,. Except for S-908, these limits shall be based on an 8 hour average and corrected to 3% excess oxygen on a dry basis. For S-908, the limit shall be based on a 3 (three) hour average and corrected to 3% excess oxygen.

NOx (ppmvd)	CO (ppmvd)	Unit(s)
10	50	S-908
40		S-973, S-974 and S-991
60		S-917, S-919, S-922, S-927, S-934 and S-935
75		S-971 and S-972

(basis: cumulative increase, BACT, offsets)

Regulation 9-10-301.1 provides for a method of determining compliance with the refinery-wide emission limit of 0.033 lb NOx/MMBtu of Regulation 9-10-301 with units in startup or shutdown. During catalyst regeneration, the owner/operator will still be required to meet the NOx limit of Regulation 9-10-301 of 0.033 lb NOx per MMBtu of heat input.

9-10-218 **Start-up or Shutdown:** Start-up is that period of time, not to exceed twelve (12) hours unless specifically extended by a permit condition, during which a unit is brought up to its normal operating temperature from a cold start, initially at zero fuel flow, by following a prescribed series of separate steps or operations. Shutdown is that period of time, not to exceed nine (9) hours unless specifically extended by a permit condition, during which a unit is taken out of service from a normal operating mode to an inactive status following a prescribed series of separate steps or operations.

9-10-301 **Emission Limit For Facility, NO_x:** Except as provided in Section 9-10-403, effective July 1, 1997, a person shall not exceed a refinery-wide emission rate from affected units, excluding CO boilers, of 0.033 pounds NO_x per million BTU of heat input, based on an operating-day average. Affected units that are undergoing start-up or shutdown and affected units that are out of service are included in the refinery-wide emission rate as follows:

301.1 Units in Start-up or Shutdown: For the purposes of determining compliance with the emission limit of Section 9-10-301, the contribution of each affected unit that is in a start-up or shutdown period shall be calculated from the unit's NO_x emission rate, as measured by the initial source test required by Section 9-10-501 or a more recent compliance source test, for that unit at the capacity during the source test.

Emissions from Tesoro will not change as a result of the modifications made to the permit conditions. Tesoro has always regenerated the catalyst at S-1004 Reformer every one to two years. The condition modifications will clarify the practice of halting ammonia injection during startup, shutdown, and catalyst regeneration. Tesoro will continue to limited to the NOx limit of 0.033 lb per MMBtu of heat input as per Regulation 9-10-301.

EMISSIONS SUMMARY

Annual Emissions:
This application will clarify the conditions to explicitly allow the owner/operator to bypass (halt ammonia injection) A-1431 SCR during startup, shutdown, and reformer catalyst regeneration. There will be no associated increase in emissions with this clarification.

Plant Cumulative Increase:
There will be no increase in emissions and the cumulative increase for this application is ZERO for all pollutants.

Toxic Risk Screening:
Toxic emissions will not increase as a result of this application. Therefore, a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-927 No. 2 Reformer Reactor Feed Preheater F-27 abated by A-1431 SCR shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). The owner/operator is expected to comply with Regulation 6 since the unit is fueled with natural gas and/or refinery fuel gas. Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-301) and no visible emission to exceed 20% opacity (Regulation 6-302). The owner/operator is subject to Regulation 9 Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. The owner/operator is subject to the facility wide emission limit for NOx of 0.033 lb NOx per million Btu of heat input based on an operating-day average as per Regulation 9-10-301. The owner/operator is also subject to the emission limit for CO of 400 ppmvd at 3% O2 based on an operating-day average as per Regulation 9-10-305. The owner/operator is subject to the record keeping requirements of Regulation 9-10-504 and the reporting requirements of Regulation 9-10-505. The owner/operator is subject to 9-10-301.1 when units are in startup or shutdown. Startup and shutdown are defined in Regulation 9-10-218.

The 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 emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.4)

The project is over 1000 feet from the nearest school and therefore not subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Emissions will not increase as a result of this application.

Offsets: There is no emission increase with this application and offsets do not apply.

PSD, NSPS, and NESHAPS:
PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS
The owner/operator is subject to permit condition 18372, part 18. Only part 18 will be shown. The complete text of the condition is found in Appendix A. Changes are in strikeout/underline format.

Condition 18372:

Permit Application 14752, part 18: Clarify conditions to allow owner/operator to bypass (halt ammonia injection) A-1431 SCR during startup, shutdown, and reformer catalyst regeneration.

18.) Combustion exhaust from S-927 shall be ducted to and continuously abated by A-1431 whenever a fuel is fired at S-927, except during startup and shutdown as defined by Regulation 9-10-218 and on a temporary basis for catalyst regeneration at S-1004 No. 2 Catalytic Reformer. ~~t~~The exhaust gasses from S-927 and A-1431 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses, including periods when S-927 operates without abatement. Regulation 9-10-301 emission limits shall remain in effect whether or not S-927 is operated with SCR abatement. (basis: Regulation 9, Rule 10)

The owner/operator is subject to permit condition 4357, part 7A for S-927. Only part 7A will be shown. The complete text of the condition is found in Appendix A. Changes are in strikeout/underline format.

Condition 4357:

7. Combustion Controls.

A. Except during periods of startup or shutdown as defined by Regulation 9-10-218 and on a temporary basis for catalyst regeneration at S-1004 No. 2 Catalytic Reformer, emissions of nitrogen oxides (calculated as NO2) and carbon monoxide shall not exceed the following limits. Except for S-908, these limits shall be based on an 8 hour average and corrected to 3% excess oxygen on a

dry basis. For S-908, the limit shall be based on a 3 (three) hour average and corrected to 3% excess oxygen.

NOx (ppmvd)	CO (ppmvd)	Unit(s)
10	50	S-908
40		S-973, S-974 and S-991
60		S-917, S-919, S-922, S-927, S-934 and S-935
75		S-971 and S-972

(basis: cumulative increase, BACT, offsets)

RECOMMENDATION

Issue a condition change to Tesoro Refining and Marketing Company for the Permit to Operate the following source:

S-927 No. 2 Reformer Reactor Feed Preheater F-27; Lummus Multicell Cabin; Maximum Firing Rate: 280 MMBtu/hr abated by A-1431 Technip Selective Catalytic Reduction System w/ Hitachi Catalyst or equivalent

EXEMPTIONS

none

By:_____

Pamela J. Leong
Air Quality Engineer II
January 11, 2007

Appendix A

Condition # 4357

S848 FCCU Merox Unit
S850 No. 3 HDS Unit
S901 No. 7 Boiler
S904 No. 6 Boiler
S908 No. 3 Crude Heater (F8)
S909 No. 1 Feed Prep Heater
S915 Platformer Intermediate Heater
S917 No. 1 HDS Prefract Reboiler
S923 Coker Auxiliary Startup Burner
S924 Coker Anti-Cook Superheater
S925 Coker Attriting Superheater
S928 No. 2 Reformer Heat/Reheating
S929 HDN Reactor B Heater
S930 HDN Reactor C Heater
S931 Hydrocracker Reactor 1 Heater
S932 Hydrocracker Reactor 2 Heater
S933 Hydrocracker Reactor 3 Heater
S934 Hydrocracker Stabilizer Reboiler
S935 Hydrocracker Splitter Reboiler
S936 Regeneration Gas Heater
S937 Hydrogen Plant Heater
S938 HDN Prefractionator Heater
S952 Internal Combustion Engine
S953 Internal Combustion Engine
S954 Internal Combustion Engine
S955 Internal Combustion Engine
S956 Internal Combustion Engine
S957 Internal Combustion Engine
S958 Internal Combustion Engine
S959 Internal Combustion Engine
S960 Internal Combustion Engine
S963 Gas Turbine 177
S971 No. 3 Reformer UOP Furnace
S972 No. 3 Reformer Debut Reboiler
S973 No. 3 HDS Recycle Gas Heater
S991 FCCU Preheat Furnace
S1020 No. 3 UOP Reformer

PERMIT CONDITION 4357 APPLICATION NO. 27769 PLANT NO. 13 EMISSION CAPS FOR ALL CRITERIA POLLUTANTS

1. Definitions.
   a. "Permitted annual emissions" shall mean the allowable emissions for a calendar year authorized by these conditions.
   b. "Total annual emissions" shall mean the actual emissions which occur in any calendar year.
   c. "Total monthly emissions" shall mean the actual emissions which occur in any calendar month.
   d. "Calendar day" (CD) or "calendar day basis" shall mean an average value determined by dividing the yearly total by 365.
   e. "Stream day" (SD) or "stream day basis" shall mean the total value occurring on any one 24-hour day, from midnight to midnight, and is the actual daily rate.
   f. "Calendar month" shall mean any month of the year measured from 12:01 A.M. on the first day of that month to midnight on the last day of that month.
   g. "Calendar year" of "year" shall mean the year measured from 12:01 A.M., January 1 to midnight, December 31.
   h. "Permitted Monthly Maximum Emissions" shall mean the maximum allowable emissions for any calendar month authorized by these conditions.
   i. "Permitted Monthly Compensatory Emissions" shall mean the allowable emissions in a calendar month before compensatory emission reductions are required.
   j. "Start-up" shall mean that period of time during which the piece of equipment in question is put into normal operation from an inactive status by following a prescribed series of separate steps or operations.
   k. "Shutdown" shall mean that period of time during which the piece of equipment in question is taken out of service from a normal operating mode to an inactive status following a prescribed series of separate steps or operations.
   l. "Light hydrocarbon service" shall mean the handling or service of liquid or gas-liquid streams with a true vapor pressure greater than 0.5 psia.

2. Emissions.

   The specific emission points covered by the various limitations listed in A-D below are set forth in Table A of the Appendix to these conditions. A summary of revisions to the limitations listed in A through D below are documented in Table A-1. Table A-2 provides a summary of the emission limits in this condition. Tables A, A-1 and A-2 are located in the Appendix to these conditions.

   A. Listed below are the permitted annual emission limits for the emission points covered by this permit that the Permittee/Owner/Operator shall ensure are met. If the permitted annual emission limit for any pollutant is exceeded, Permittee/Owner/Operator shall ensure that the applicable provisions of Section 3A are complied with by emission points covered by this permit.

Particulates (PM-10)	443.0 tons/yr
Hydrocarbons (POC)	221.7 tons/yr
NOx	2867.7 tons/yr
SO2	4580.0 tons/yr
CO	573.0 tons/yr

   (basis: cumulative increase, bubble, BACT)

   B. Listed below are the permitted monthly maximum emission limits for the emission points covered by this permit and Permittee/Owner/Operator shall ensure that these limits are met. If the permitted monthly maximum emission limit for any pollutant is exceeded, Permittee/Owner/Operator shall ensure that the applicable provisions of Section 3B are complied with by emission points covered by this permit.

Particulates (PM-10)	46.0 tons/mo
Hydrocarbons (POC)	77.0 tons/mo

NOx	346.0 tons/mo
SO2	684.0 tons/mo
CO	57.0 tons/mo

(basis: cumulative increase, bubble, BACT)

C. Listed below are the permitted monthly compensatory emission limits applicable to the emission points covered by this permit and Permittee/Owner/Operator shall ensure that the emission limits are met. If the permitted monthly compensatory emission limit for any pollutant is exceeded, Permittee/Owner/Operator shall ensure that the applicable provisions of Section 3C are complied with by emission points covered by this permit.

Particulates (PM-10)	42.0 tons/mo
CO	49.1 tons/mo

(basis: cumulative increase, bubble, BACT)

D. If, at the end of any calendar month, the total emissions accumulated so far in that calendar year exceed the permitted annual emissions prorated to the number of months elapsed so far that year plus the amounts set forth below, Permittee/Owner/Operator shall ensure that the informational requirements of Section 3D are met.

Particulates (PM-10)	9.0 tons
Hydrocarbons (POC)	35.0 tons
NOx	69.0 tons
SO2	258.0 tons
CO	9.3 tons

(basis: cumulative increase, bubble, BACT)

E. The limits set forth in A & B above are legal limits that Permittee/Owner/Operator shall ensure are not exceeded. Accordingly, in the event that any such limit ever is exceeded, Permittee/Owner/Operator will be immediately subject to the applicable sanctions in Section 3 below and Permittee/Owner/Operator shall comply with the sanctions in Section 3 below.
(basis: cumulative increase, bubble, BACT)

3. Emission Reductions. The following conditions will apply as appropriate, when any of the various permitted emission limits set forth in Section 2 above are exceeded.

A. If any of the permitted annual emission limits of 2A are exceeded, the following conditions shall apply:

i. Permittee/Owner/Operator shall install and maintain on a permanent basis abatement equipment as specified in the Environmental Management Plan (or such other abatement measures approved by the Air Pollution Control Officer which will achieve equivalent emission reductions), to control emissions of the pollutant of concern so as to offset the excess at a ratio of 2:1 (i.e. for every ton per year by which the applicable limit is exceeded, the hardware to be installed or other measures to be taken shall achieve a permanent mission reduction of 2 tons per year);

ii. Permittee/Owner/Operator shall not process more than 108,000 barrels of crude oil per stream day or more than 97,000 barrels of crude oil per day averaged over any one calendar month until the emission reductions required under subsection A.i. are achieved; and iii. The permitted annual emissions limit for the pollutant of concern shall be reduced by the amount by which said limit was exceeded on a prorated calendar monthly basis, until the emission reductions required under subsection A.i. above are achieved.

(basis: cumulative increase, offsets, bubble)

B. If any of the permitted monthly maximum emission limits of 2B are exceeded, the following conditions shall apply:

i. The excess shall be charged against the permitted annual limit in 2A above which is applicable to that pollutant by twice the amount by which the limit in 2B is exceeded; provided, however, that if such monthly excess occurs during December, then, to the

extent that such excess cannot be charged as provided above without causing the annual limit to be exceeded, it will be charged once against the current calendar year and once against the following calendar year;

ii. Permittee/Owner/Operator shall either (a) install and maintain on a permanent basis abatement equipment or take measures which will achieve equivalent emission reductions as specified in the Environmental Management Plan to control emissions of the pollutant of concern so as to offset the excess at a ratio of 2:1 (i.e. for every ton per month by which the applicable limit is exceeded, the hardware to be installed or other measures to be taken shall achieve a permanent emission reduction of 2 tons per month); or (b) take such other abatement measures approved by the Air Pollution Control Officer which will prevent a recurrence of the type of incident which caused the excess; and

iii. Permittee/Owner/Operator shall not process more than 108,000 barrels of crude oil per stream day or more than 97,000 barrels of crude oil per day averaged over any one calendar month until the emission reductions or other measures required under subsection B.ii. above are achieved.

(basis: cumulative increase, bubble)

C. If any of the permitted monthly compensatory emission limits of 2C are exceeded, then the excess shall be charged against the permitted annual limit in 2A above which is applicable to that pollutant by twice the amount by which the limit in 2C is exceeded; provided, however, that if such monthly excess occurs during December, then, to the extent that such excess cannot be charged as provided above, without causing the annual limit to be exceeded, it will be charged once against the current calendar year and once against the following calendar year. However, this provision shall only apply when the sanctions set forth in subsection B above are not triggered. (basis: cumulative increase, bubble)

D. If any of the limits of 2D are exceeded, Permittee/Owner/Operator shall submit to the District within 30 days of the end of that calendar month a revised Environmental Management Plan in accordance with Section 14 below, which shall indicate the steps to be taken to assure that the permitted annual emission limits in 2A will be met for that calendar year. (basis: cumulative increase, bubble)

E. Reductions of hydrocarbons may be used to offset increases in NOx at a ratio of 1:1, provided that Permittee/Owner/Operator demonstrates to the satisfaction of the Air Pollution Control Officer that the increased NOx emissions will not cause or contribute to an excess of any ambient air quality standard for NO2 at the point of maximum ground level impact, as defined in Section 2-2-206 of the District's Rules and Regulations. (basis: cumulative increase, offsets, bubble)

F. In the event that Permittee/Owner/Operator installs abatement equipment to achieve 2:1 offsets on a permanent basis (or takes measures which will achieve equivalent permanent emission reductions) pursuant to subsection Bii (a) above, any such emission reductions will be credited towards emission reductions which may be required under subsection A.i. above for that same calendar year, provided the generation of offsets complies with applicable requirements of the SIP adopted version of Regulation 2, Rule 2. (basis: cumulative increase, offsets, bubble)

4. Monitoring and Source Testing. Permittee/Owner/Operator shall ensure that the following monitoring instruments listed are installed, calibrated, maintained and operated by Permittee/Owner/Operator:

A. An instrument to continuously monitor and record the H2S concentrations in fuel gas. (basis: toxics, NSPS)

B. An instrument to continuously monitor oxygen and nitrogen oxides concentrations in the flue gas from the following units:

S-937 No. 1 Hydrogen Plant - steam-methane reformer
S-973 No. 3 HDS recycle gas heater
S-974 No. 3 HDS fractionator feed heater
S-991 FCCU preheat furnace
A-908 SCR unit on S-908, Furnace No. 8, at No. 3 Crude Unit

(basis: cumulative increase, offsets, BACT)

C. An instrument to continuously or sequentially monitor stack oxygen concentrations on each of, and an instrument to monitor fuel usage by, the following units:

S-909	#1 feed prep. - furnace #9
S-912	#1 feed prep. - furnace #12
S-913	#2 feed prep. - furnace #13
S-916	#1 HDS - #16 heater
S-920	#2 HDS - #20 charge heater
S-921	#2 HDS - #21 charge heater
S-928	HDN reactor - #28 furnace
S-929	HDN reactor - #29 furnace
S-930	HDN reactor - #30 furnace
S-931	Hydrocracker - #31 furnace
S-932	Hydrocracker - #32 furnace
S-933	Hydrocracker - #33 furnace
S-938	HDN prefractionator, #38 furnace

Permittee/Owner/Operator shall ensure that each and all of the required stack oxygen concentration monitors are equipped with oxygen analyzers controlled by feedback systems set at oxygen levels which will yield the minimum amount of nitrogen oxides while still achieving complete combustion.
(basis: cumulative increase, offsets, bubble, BACT)

D. All other instruments listed on Table D of the Appendix to these Conditions, which are not specifically referred to in A-C above. (basis: cumulative increase, offsets)

E. Annual source testing shall be completed on S-908, S- 917, S-919, S-934 and S-935 to demonstrate compliance with the NOx, CO and NH3 emission limits in condition 7. Source tests shall be performed when firing refinery fuel gas at, or as nearly as practicable to, the maximum daily firing rates which occurred during the previous six months. Permittee/Owner/Operator shall provide to the District's Source Test Section, in writing and at least two weeks prior to testing, the proposed testing procedures, date and time. Source test procedures are subject to APCO approval. (Permittee/Owner/Operator may submit CEM data in lieu of source test data to demonstrate compliance with NOx emissions from S-908, since a CEM is required for that source.) (basis: cumulative increase, offsets, BACT)

F. An instrument to continuously monitor and record nitrogen oxides concentration in the flue gas of furnace S-922, S-927, S-934 and/or S-935 shall be installed if a District source test indicates NOx emissions (calculated as NO2) from that furnace exceed 66 ppmv, (60 ppmv limit plus 10%). This limit shall be based on an 8 hour average and corrected to 3% excess oxygen on a dry basis. (basis: cumulative, offsets, BACT)

5. Reporting and Record Keeping. The following conditions will document Permittee's/Owner's/Operator's emissions on a monthly basis, in addition to satisfying the requirements of Regulation 10-1-402 of District regulations.

A. Permittee/Owner/Operator shall maintain a file containing all measurements, records, charts and other data which are required to be collected pursuant to the various provisions of this Conditional Permit, as well as all other data and calculations necessary to determine actual emissions from all emission points covered by this permit. This file, which may contain confidential or proprietary data, shall include, but not be limited to: the data collected from all in- stack monitoring instruments, the records on fuel input rates and relevant records of crude oil and other hydrocarbons processed. Estimates of emissions from all units covered by this permit which are included under the limits set forth in Section 2 above shall be calculated in accordance

with Tables B & C of the Appendix to these Conditions. This material shall be kept available for District inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded.
(basis: cumulative increase, offsets, BACT, bubble)

B. Permittee/Owner/Operator shall make a monthly report to the District, within 30 days after the end of each month, which shall specify the emissions from all operations covered by this permit during the previous month, and shall state in detail the basis therefore. The reporting format for such reports shall be structured so as to enable the Air Pollution Control Officer to readily determine compliance with the provisions of this Conditional Permit, and shall be subject to the approval of the APCO. Any computer programs utilized by Permittee/Owner/Operator to calculate emissions from any operations covered by this permit shall also be subject to the approval of the APCO.
(basis: cumulative increase, offsets, BACT, bubble)

C. Permittee/Owner/Operator shall conduct monthly audits of all emission and fuel rate monitoring systems required under Section 4 above to insure that instrument accuracy is maintained. Permittee/Owner/Operator shall promptly repair all malfunctioning systems and replace any system that has a chronic problem. A record of the results of all such audits shall be maintained as part of the file required under A. above
(basis: cumulative increase, offsets, BACT, bubble)

6. Process Unit Design.

A. The No. 3 HDS Unit (S-850) shall not process more than 70,000 barrels per stream day. (basis: cumulative increase, toxics, offsets, bubble)

B. B. The FCCU Merox Unit (S-848) shall not process more than 55,000 barrels per stream day. (basis: cumulative increase, offsets, toxics, bubble)

7. Combustion Controls.

A. Except during periods of startup or shutdown as defined by Regulation 9-10-218 and on a temporary basis for catalyst regeneration at S-1004 No. 2 Catalytic Reformer, emissions of nitrogen oxides (calculated as NO2) and carbon monoxide shall not exceed the following limits,. Except for S-908, these limits shall be based on an 8 hour average and corrected to 3% excess oxygen on a dry basis. For S-908, the limit shall be based on a 3 (three) hour average and corrected to 3% excess oxygen.

NOx (ppmvd)	CO (ppmvd)	Unit(s)
10	50	S-908
40		S-973, S-974 and S-991
60		S-917, S-919, S-922, S-927, S-934 and S-935
75		S-971 and S-972

(basis: cumulative increase, BACT, offsets)

B. The sum of the maximum firing rates of S-973, S-974 and S-991, described in 4B above, shall not exceed 159 x 10^6 BTU/hr.

(basis: cumulative increase, offsets)

C. For the furnaces listed in 4C above, Permittee/Owner/Operator shall demonstrate by source tests and calculations that, in the aggregate, NOx emissions do not exceed 160 lb. NOx per billion BTUs heat input when firing refinery fuel gas at, or as nearly as practicable to the maximum daily firing rates which occurred during the previous 6 months. Such demonstration shall be made annually. If aggregate emissions from these units exceed 160 lb. NOx per billion BTU heat input, Permittee/Owner/Operator will install additional controls on other units at the Avon

Refinery so as to achieve the same amount of control that would be obtained if all of the units listed in 4C did achieve, in the aggregate, an emission rate of 160 lb. NOx/billion BTU heat input.

(basis: cumulative increase)

D. The mass emissions of nitrogen oxides, calculated as NO2, from furnace S-937 shall not exceed either 1430 pounds per stream day or 1089 pounds per calendar day.

(basis: cumulative increase)

E. Ammonia emissions slip from SCR unit A-908, abating NOx emissions from S-908, shall not exceed 20 ppmvd. This limit shall be based on a 3 hour average and corrected to 3% excess oxygen on a dry basis.

(basis: BACT)

F. For the purpose of determining compliance with the emission limits in this permit, Permittee/Owner/Operator shall ensure that startup and shutdown operations, as defined in condition 1, do not exceed 8 hours in duration, unless the APCO approves in writing specific startup and shutdown times to be used in lieu of the 8 hour period. Specifically, the startup and shutdown periods for the following sources shall be limited to the hours as updated in Application # 2327 and # 2813.

S-908 No. 3 Crude Unit furnace F-8

S-973 No. 3 HDS Unit furnace F-55

S-974 No. 3 HDS Unit furnace F-56

(basis: cumulative increase, offsets)

G. Permittee/Owner/Operator shall ensure that the maximum firing rate of S917 does not exceed the 157,680 MMBtu/yr, based on the HHV of each fuel fired, during every 365 consecutive day period:

(basis: cumulative increase)

H. Permittee/Owner/Operator shall ensure that the maximum firing rate of S917 does not exceed the 432 MMBtu/day, based on the HHV of each fuel fired, during every 365 consecutive day period:

(basis: cumulative increase)

8. Hydrocarbon Controls.

A. All new compressor seals in hydrocarbon service associated with this project shall be vented to a closed gas system, except for two high purity hydrogen make-up compressors at the new No. 3 HDS Unit. The vapors from the seals on the three (3) existing compressors S-952, S-953, and S-954 shall be collected and vented directly to the compressor inlets, or a closed gas system.

(basis: BACT, cumulative increase)

B. Hydrocarbon vapors associated with the new 80,000- bbl cone roof tank, S-1022 and existing tank S-57 shall be controlled by venting to the vapor recovery system. Tank

S-57 may only store or contain materials which have a vapor pressure of 1.5 psia or less. This condition assures that offsets provided as part of Application No. 27769 are permanent.

(basis: BACT, cumulative increase)

C. In the event that No. 4 Gas Plant modifications are not constructed, Permittee/Owner/Operator shall retrofit eight (8) pumps in light hydrocarbon service with double mechanical seals or equivalent. In the event that the Hydrogen Recovery Unit is not completed, Permittee/Owner/Operator shall receive a credit of three (3) lb per calendar day against the total fugitive hydrocarbon emissions as listed in Table E of the Appendix to this Conditional Permit. (basis: cumulative increase)

9. Sulfur Recovery Facilities.

A. The Claus Unit at the Sulfur Recovery Facility shall achieve a sulfur removal efficiency that will result in emissions of no more than 4 pounds of SO2 per ton of sulfur processed. (basis: cumulative increase, offsets)

B. In emergency situations where the entire sulfur removal capability of the Sulfur Recovery Facility is not operating, the refinery shall take immediate actions to assure that total SO2 emissions from both the refinery and the Sulfur Recovery Facility will not exceed 29 tons/stream day. These actions shall include, but need not be limited to, the following.

i. Condense and store foul water stripper overhead.
ii. Discontinue burning of coke at No. 6 Boiler.
iii. Reduce Hydrocracker-HDN feed rate to 12,000 bbl/stream day.
iv. Discontinue burning of fuel oil, except as required to maintain combustion stability and operating safety of the #5 and #6 boilers.
v. Reduce feed rate to the Coker and to the FCCU, and use all available de-sulfurized feed-stock at FCCU feed.
vi. Shut off feed to No. 1, No. 2, and No. 3 HDS Units and "hot sweep" the reactors.
vii. If any emission monitor for SO2 is not operating properly, conduct a daily source test for the source in question. Such source tests shall consist of three continuous 30 minutes measurements, taken at least 30 minutes apart, of the SO2 concentration and stack gas flow rates. The average of these three measurements shall be used as the basis for establishing SO2 emissions for purposes of calculation.
viii. Calculate the emissions of SO2 from all flares at the refinery, and report same to the District as part of the next monthly report required under 5B above.
ix. Report this event to the BAAQMD by telephone as soon as possible with due regard to safety, and submit a written follow-up, detailing the specific measures taken by Permittee/Owner/Operator to control SO2 emissions during the event, as part of the next monthly report required under 5B above.

Measures other than those referred to in i.-vi. above, may be substituted for any of said measures, if Permittee/Owner/Operator can satisfy the Air Pollution Control Officer that total sulfur dioxide emissions from both the refinery and the sulfur recovery facilities will not exceed 29 tons/stream day.

(basis: cumulative increase, offsets)

C. When the Sulfur Plant is shutdown and Acid Plant is operating, the refinery will immediately take the following actions to insure the H2S going to the Sulfur Recovery Facility is within the capacity of the Acid Plant under then-current operating conditions, and will not result in the emissions of more than 23 tons/stream day of SO2 from both the refinery and the Sulfur Recovery Facility.

i. Condense and store sufficient foul water stripper overhead, and/or
ii. Reduce feed rate to the Hydrocracker-HDN, and/or
iii. Reduce feed rate to the Coker, and/or
iv. Reduce feed rate to the No. 1 HDS Unit, and/or
v. Reduce feed rate to the No. 2 HDS Unit, and/or
vi. Reduce feed rate to the No. 3 HDS Unit.

vii. Calculate the emissions of SO2 from all flares at the refinery, and report same to the District as part of the next monthly report required under 5B above.

viii. Report this event to the BAAQMD by telephone, within one (1) working day, and submit a written follow-up, detailing the measures taken to control SO2 emissions during the event, as part of the next monthly report required under 5B above. Measures other than those referred to in i.-vi. above may be substituted for any of said measures, if Permittee/Owner/Operator can satisfy the Air Pollution Control Officer that total sulfur dioxide emissions from both the refinery and the sulfur recovery facilities will not exceed 23 tons/stream day.

(basis: cumulative increase, offsets)

10. Access.

A. The APCO or his/her representatives and the U.S. Environmental Protection Agency shall have access to appropriate portions of the refinery and wharf, to conduct source tests or inspections in accordance with Section 1-440 of the District's Rules and Regulations, and the provisions of the Clean Air Act.

B. The APCO or his representatives and the U.S. Environmental Protection Agency shall have the right to inspect and audit all records which are required to be maintained by Section 5 above, and any other records in Permittee/Owner/Operator's possession which will disclose the nature or quantity of emissions from refinery and marine operations.

(basis: cumulative increase, offsets, BACT)

11. Enforcement. Violation by Permittee/Owner/Operator of any of the conditions set forth in this Conditional Permit shall subject Permittee/Owner/Operator to enforcement action under Chapter 4 of Part 4 of Division 26 of the California Health and Safety Code, and to enforcement action by the U.S. Environmental Protection Agency pursuant to the Clean Air Act (42 U.S.C. S7401, et seq.). As appropriate, each and every such violation shall be deemed to be a discrete and separate violation with respect to which the District will be entitled to take legal action.
(basis: cumulative increase, offsets, BACT)

12. Miscellaneous.

A. No. 1 Isomerization Unit shall be dismantled within ninety (90) days after start-up of the #3 HDS Unit.

B. Tanks A-142 and A-319 shall be dismantled within ninety (90) days prior to start-up of the #3 HDS Unit.

C. All equipment, facilities, and systems installed or used pursuant to, or to achieve compliance with the terms and conditions of, this Conditional Permit shall at all times be maintained in good working order and be operated with due regard for the goal of complying with the terms and conditions of this permit and with all applicable District regulations.

D. Nothing in these conditions shall be construed to allow the violation of any law or of any rule or regulation of the Bay Area Air Quality Management District, the State of California or the United States Environmental Protection Agency.

E. Any emission reductions which Permittee/Owner/Operator may be required to undertake in accordance with Section 3 above shall not be eligible to be credited as emission reductions against any subsequent projects for purposes of calculating "cumulative increases", nor shall they be eligible to be "banked" in accordance with the District's New Source Review Rule. However, any emission reductions which Permittee/Owner/Operator achieves in accordance with the Rules and Regulations of the District, above and beyond those reductions required pursuant to this Conditional Permit, may be so credited or "banked."

F. In the event of changes in District regulations which will require actual reductions in the amount of emissions from existing sources which would otherwise be allowed under the terms of this Conditional Permit, the annual limits set forth in Section 2 above shall be reduced by the APCO by an amount equivalent to what would be required under any such rule change.

G. The baseline emissions for purposes of the permit analysis of any proposed new or modified units, which may in the future be proposed to be built by Permittee/Owner/Operator within the boundaries of the Avon Refinery, will be the limits set forth in Section 2A above, as may be amended to reflect subsequent revisions to District rules pursuant to Section 12F or subsequent deposits to or withdrawals from the District's emissions bank, rather than actual emissions after the baseline period of 1977- 1979 (which was used as the basis for issuance of this permit), if doing so is allowed pursuant to the SIP adopted version Section 604.2 of Regulation 2, Rule 2.

H. In the course of constructing the project covered by this Conditional Permit, Permittee/Owner/Operator shall install no more valves, pumps, flanges, process drains and compressors for this project than are listed in Table E of the Appendix to this Permit, unless the emissions associated therewith are accompanied by intra-source emission reductions on a 1:1 basis. Permittee/Owner/Operator shall provide written confirmation of compliance with this condition within 90 days after the start-up of the new #3 HDS Unit.

I. Permittee/Owner/Operator shall apply for a permit when any tanks presently out of service or presently in exempt service are proposed to be placed in nonexempt service. The emissions from any such tanks shall be calculated and, if applicable, shall be subject to the requirements of G. above.

J. Instrument downtime (including, but not limited to, in-stack monitors and other instruments whose readings are used to calculate emissions) caused by malfunction, upset, breakdown, repair, maintenance or failure where such instrument down-time exceeds a continuous 24-hour period shall be handled as follows for purposes of calculating emissions: Emissions shall be determined by reference to the recorded value for that instrument from the last calendar day (or other relevant period) immediately preceding the day on which the instrument in question became inoperable, for which there was a valid reading, unless the Air Pollution Control Officer determines on the basis of other evidence (such as, but not limited to, the results of source tests conducted during the period in which the instrument is not operating, or changes in operating conditions of the unit in question) that some other value more reasonably reflects the actual emissions during the period in question.

K. Emissions in excess of applicable emission limitations resulting from breakdowns, malfunctions or other causes for which a variance, an interim variance, or an emergency variance is granted by the Hearing Board, or for which the Air Pollution Control Officer grants relief in accordance with Section 1-112 of the District's Rules and Regulations, may be excluded by the Hearing Board or Air Pollution Control Officer, as appropriate, from those emission totals which are counted towards compliance with the limits set forth in Section 2 above; provided, however, that this provision shall not excuse Permittee/Owner/Operator from the obligation to report to the District pursuant to 5B above the actual emissions from the emission points covered by this permit during the period covered by any such relief. This part (part K) of this condition is not federally enforceable.

L. If Permittee/Owner/Operator can demonstrate by modeling to the satisfaction of the Air Pollution Control Officer, consistent with the requirements of the SIP adopted version of Regulation 2, Rule 2 and applicable provisions of the federal Code of Regulations, that increased emissions of carbon monoxide from all emission points covered by this permit will not interfere with the attainment or maintenance of all applicable air quality standards for CO within the District, then the various limits for carbon monoxide set forth in Section 2 of this permit shall be adjusted accordingly.

(basis: cumulative increase, offsets)

13. Severability. The provisions of this Conditional Permit are intended to be severable, and, if any individual condition or provision hereof is held to be invalid by order of any court of competent jurisdiction, or for any other reason, the remainder of this Conditional Permit shall not be affected thereby.
(basis: cumulative increase, offsets, BACT)

14. Environmental Management Plan.

Sixty days prior to start-up of the No. 2 Hydrogen Plant (S-994), an initial Environmental Management Plan (EMP) shall be submitted to the District for review by the Air Pollution Control Officer. This plan shall specify how Permittee/Owner/Operator will assure that the permitted annual and monthly maximum emission limits set forth in Sections 2A & 2B above will not be exceeded, and also shall describe feasible options for providing emissions reductions which would be required under Section 3 above, if any of the emissions limits of Sections 2A & 2B were exceeded. The options to be described shall include the installation of various types of abatement equipment which would achieve permanent offsets, and the adoption by Permittee/Owner/Operator of various operational limitations and other short-term control measures which would limit emissions. Both long-term and short-term control options shall be discussed. The purpose of this plan is to provide assurance that Permittee/Owner/Operator is capable of taking all reasonable steps to assure that the various limits established by this Conditional Permit will be complied with, and to expedite any installation of abatement equipment if it is ever required.

The EMP shall be updated and resubmitted to the District for review by the APCO, whenever any of the limits set forth in Section 2D above are exceeded, or within 1 year after the most recent EMP submittal, whichever comes first. However, in the event that EMP resubmittal is triggered by an excess of any of the limits of Section 2D, that resubmittal shall also describe in detail the means by which Permittee/Owner/Operator will assure that the permitted annual emissions limit of Section 2A will not be exceeded for that calendar year, and shall describe in detail specific control techniques available, and the sources to which they would be most applicable, in the event that permanent offsets were needed. To the extent that any EMP submittal contains confidential information, such information shall be afforded the protection provided by applicable laws, rules and regulations.

Once the APCO has reviewed an EMP submittal, the District staff's comments and recommendations on it shall be forwarded to Permittee/Owner/Operator as expeditiously as practicable. Within 30 days after its receipt of such comments and recommendations, Permittee/Owner/Operator shall either (1) revise the EMP to reflect such comments and recommendations; or (2) attach as an Appendix to the EMP all comments and recommendations which Permittee/Owner/Operator did not include in its EMP revision together with a detailed explanation as to why each comment and recommendation was not adopted or included in the EMP itself.
(basis: cumulative increase, offsets, BACT)

Condition # 18372
Application #2209 and 16484
Plant #12758

Parts 5 through 17 and part 24 are effective until January 1, 2005 Parts 27 through 36 are effective January 1, 2005

S-912 No. 12 Furnace F-12; Born, Maximum Firing Rate: 135 MMBtu/hr, No. 1 Feed Prep Unit Vacuum Residuum Feed Heater with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-913 No. 13 Furnace F-13; Petrochem, Vertical Cylindrical, Maximum Firing Rate: 59 MMBtu/hr, No. 2 Feed Prep Unit Vacuum Residuum Feed Heater with Callidus Technologies Inc. LE-CSG Low NOx Burners or equivalent

S-916 No. 1 HDS Charge Heater F-16; Braun, Cabin; Maximum Firing Rate: 55 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-919 No. 2 HDS Charge Heater, No. 19 Furnace, Foster Wheeler, Maximum Firing Rate: 65 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-920 No. 2 HDS Charge Heater, No. 20 Furnace, Foster Wheeler, Maximum Firing Rate: 63 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-921 No. 2 HDS Charge Heater F-21; Foster Wheeler, Cabin; Maximum Firing Rate: 63 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-922 No. 5 Gas Plant Debutanizer Reboiler F-22; Petrochem, Vertical Cylindrical; Maximum Firing Rate: 130 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-926 No. 2 Reformer Splitter Reboiler, No. 26 Furnace, Petrochem, Maximum Firing Rate: 145 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-927 No. 2 Reformer Reactor Feed Preheater F-27; Lummus Multicell Cabin; Maximum Firing Rate: 280 MMBtu/hr abated by A-1431 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-950 No. 50 Unit Crude Feed Heater F-50; Alcorn, Box; 440 MMBtu/hr abated by A-1432 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-971 No. 3 Reformer Feed Preheater F-53; KTI, Multicell Box; Maximum Firing Rate: 300 MMBtu/hr abated by A-1433 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-972 No. 3 Reformer Debutanizer Reboiler F-54; KTI, Vertical Cylindrical; Maximum Firing Rate: 45 MMBtu/hr abated by A-1433 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

1.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is equipped with a District approved dedicated fuel flow meter consistent with Regulation 9, Rule 10, Section 502.2. (basis: Regulation 9, Rule 10, Section 502.2)

2.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is fired exclusively on natural gas and/or refinery fuel gas. (basis: Regulation 9, Rule10)

3.) Permittee/Owner/Operator shall ensure that the maximum firing rate of each source listed does not exceed the corresponding HHV maximum firing rate, based on an operating day average (the amount of fuel fired over each 24 hour day divided by 24:

Source (#)	**Maximum Firing Rate (HHV) (mmBtu/hr)**	**Maximum Firiing Rate (HHV) (mmBtu/yr)**
S-912	135	1,182,600
S-913	59	516,840
S-916	55	481,800
S-919	65	569,400
S-920	63	551,880
S-921	63	551,880
S-922	130	1,138,800
S-926	145	1,270,200
S-927	280	2,452,800
S-950	440	3,854,400
S-971	300	2,628,000
S-972	45	394,200

(basis: Regulation 9, Rule 10)

4.) Permittee/Owner/Operator shall ensure that S-912 and S-926 are modified through the installation of ultra low NOx burners to achieve the NOx emission limit in the most recent NOx Compliance Plan that has been approved in writing by the District. The following limits shall be achieved on an operating day average:

Source (#)	**Applicable NOx Limit (lb/mmbtu)**
S-912	0.031
S-926	0.031

(basis: Regulation 9, Rule 10)

Parts 5 through 17 effective until December 1, 2004

5.) Within 45 days after the start-up of ultra low NOx burners at each of S-912 S-926 Permittee/Owner/Operator shall conduct a District approved source test measuring NOx, CO, and O2 from each of S-912, S-913, S-916, S-919, S-920,
S-921, S-922, and S-926 while the source is operated under each of the following four operating conditions, (1) low firing rate and low O2, (2) low firing rate and high O2, (3) high firing rate and low O2, and (4) high firing rate and high O2. District approved source testing under these four operating scenarios will establish the "box" for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926. (basis: Regulation 9, Rule 10)

6.) Based on the results of the District approved source testing defining the "box" for S-912, except for during periods of start-up or shutdown, the allowable operating range for S-912 is as follows:
   A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
   B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
   C. The maximum O2 concentration is XXX percent, by volume.
   D. The minimum O2 concentration is XXX percent, by volume.
   E. Each and all of part 6 of these conditions (including part 6A, 6B, 6C, and 6D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

7.) Based on the results of the District approved source testing defining the "box" for S-913, except for during periods of start-up or shutdown, the allowable operating range for S-913 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 7 of these conditions (including part 7A, 7B, 7C, and 7D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

8.) Based on the results of the District approved source testing defining the "box" for S-916, except for during periods of start-up or shutdown, the allowable operating range for S-916 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 8 of these conditions (including part 8A, 8B, 8C, and 8D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

9.) Based on the results of the District approved source testing defining the "box" for S-919, except for during periods of start-up or shutdown, the allowable operating range for S-919 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 9 of these conditions (including part 9A, 9B, 9C, and 9D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

10.) Based on the results of the District approved source testing defining the "box" for S-920, except for during periods of start-up or shutdown, the allowable operating range for S-920 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 10 of these conditions (including part 10A, 10B, 10C, and 10D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

11.) Based on the results of the District approved source testing defining the "box" for S-921, except for during periods of start-up or shutdown, the allowable operating range for S-921 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 11 of these conditions (including part 11A, 11B, 11C, and 11D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

12.) Based on the results of the District approved source testing defining the "box" for S-922, except for during periods of start-up or shutdown, the allowable operating range for S-922 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 12 of these conditions (including part 12A, 12B, 12C, and 12D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

13.) Based on the results of the District approved source testing defining the "box" for S-926, except for during periods of start-up or shutdown, theallowable operating range for S-926 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 13 of these conditions (including part 13A, 13B, 13C, and 13D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

14.) After the completion of the initial source testing used to determine the "box" for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, two District approved source tests shall be conducted for each of S-912, S-913, S-916, S-919, S-920S-922, and S-926 each calendar year. The source tests shall measure NOx, CO, and O2. For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, the time interval between each of the two tests shall not be longer than 8 months. For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, the source test shall be conducted at the as-found firing rate, within 20% of the permitted O2 conditions likely to maximize NOx emissions.
(basis: Regulation 9, Rule 10)

15.) Not more than 30 days after the date upon which each source test is completed, two identical copies of the results of the source test shall be received by the District with one copy addressed to the District's Source Test Manager and the other addressed to the District's Engineering Division. (basis: Regulation 9, Rule 10)

16.) For each of S-912, S-913, S-916, S-919, S-920, S-921 , S-922, and S-926, if the results of any District approved source test indicates CO emissions greater than or equal to 200 ppmv, dry, corrected to 3 percent oxygen, then Permittee/Owner/Operator shall ensure that the subsequent two source tests conducted on that source are conducted at the as-found firing rate under conditions likely to maximize CO emissions. (basis: Regulation 9, Rule 10)

17.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, if the results of two or more of the District approved source tests for the source conducted over any 5 year period demonstrates that CO emissions from the source are greater than 200 ppmv, dry, corrected to at 3% oxygen, then Permittee/Owner/Operator shall install and continuously operate a District approved CO CEM on that source. The Permittee/Owner/Operator shall install and continuously operate the District approved CO CEM within the time allowed as set forth in the District's Manual of Procedures. (basis: Regulation 9, Rule 10)

18.) Combustion exhaust from S-927 shall be ducted to and continuously abated by A-1431 whenever a fuel is fired at S-927, except during startup and shutdown as defined by Regulation 9-10-218 and on a temporary basis for catalyst regeneration at S-1004 No. 2 Catalytic Reformer. ~~t~~The exhaust gasses from S-927 and A-1431 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses, including periods when S-927 operates without abatement. Regulation 9-10-301 emission limits shall remain in effect whether or not S-927 is operated with SCR abatement. (basis: Regulation 9, Rule 10)

19.) Combustion exhaust from S-950 shall be ducted to and continuously abated by A-1432 whenever a fuel is fired at S-950 and the exhaust gasses from A-1432 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

20.) Combustion exhaust from S-971 shall be ducted to and continuously abated by A-1433 whenever a fuel is fired at S-971the exhaust gasses from A-1433 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

21.) Combustion exhaust from S-972 shall be ducted to and continuously abated by A-1433 whenever a fuel is fired at S-972 and the exhaust gasses from A-1433 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. Part 21 of these conditions shall not take effect until Permittee/Owner/Operator exersizes the portion of Authority to Construct #2209 authorizing the abatement of S-972 with A-1433. (basis: Regulation 9, Rule 10)

22.) For each of S-927, S-950, S-971, and S-927, ammonia slip from the SCR system abating the source shall not exceed 20 ppmv, dry, corrected to 3% oxygen. (basis: toxics)

23.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972, records shall be kept as required by Regulation 9, Rule 10, Section 504, except that the records shall be retained on site and be made available to the District staff for a period of at least 5 years from date of last entry. (basis: Regulation 9, Rule 10)

Part 24 effective until January 1, 2005

24.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, Permittee/Owner/Operator shall record in a District approved log, the time and date of each District approved source test conducted for each source. The log shall be maintained on site and be made available to the District staff on request for at least 5 years from date of last entry. (basis: Regulation 9, Rule 10)

25.) In a District approved log (or logs), for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, Permittee/Owner/Operator shall record the fuel use during each day at each source based on the fuel's (HHV). Permittee/Owner/Operator shall ensure that the log(s) is(are) maintained on site for at least 5 years from date of last entry and that the log(s) is (are) made available to the District staff upon request.
(basis: cumulative increase)

26.) The No. 6 Boiler (S904) serves as the emergency backup to No. 5 Boiler (S903). During this unusual mode of operation, the No. 6 Boiler is subject to the limits specified in Regulation 9-10-304 for CO Boilers and is considered "out of service" since it acting as the No. 5 Boiler. The historic average, described in Regulation 9-10-301.2 for No. 6 Boiler, will be used for compliance with the 0.033 lb/MMBTU refinery-wide average standard while No. 6 Boiler is operated in CO Boiler mode. (basis: cumulative increase)

Parts 27 through 36 are effective January 1, 2005

*27. The following sources are subject to the refinery-wide NOx emission rate and CO concentration limits in Regulation 9-10: (Regulation 9-10-301 & 305)

S#	Description	CEM (Y/N)
S908	No. 3 Crude Heater	Y
S909	No. 1 Feed Prep Heater (F9)	N
S912	No. 1 Feed Prep Heater (F12)	N
S913	No. 2 Feed Prep Heater (F13)	N
S915	Platformer Intermediate Heater (F15)	N
S916	No. 1 HDS Heater (F16)	N
S917	No. 1 HDS Prefract Reboiler (F17)	N
S919	No. 2 HDS Heater (F19)	N
S920	No. 2 HDS Heater (F20)	N

S921	No. 2 HDS Heater (F21)	N
S922	No. 5 Gas Plant Debutanizer Reboiler	N
S924	Coker Anit-Coking Superheater (F24)	N
S926	No.2 Reformer Splitter Reboiler (F26)	N
S927	No. 2 Reformer Feed Preheater (F27) & A1431	Y
S928	HDN Reactor A Heater (F28)	N
S929	HDN Reactor B Heater (F29)	N
S930	HDN Reacator C Heater (F30)	N
S931	Hydrocracker Reactor 1 Heater (F31)	N
S932	Hydrocracker Reactor 2 Heater (F32)	N
S933	Hydrocracker Reactor 3 Heater (F33)	N
S934	Hydrocracker Stabilizer Reboiler (F34)	N
S935	Hydrocracker Splitter Reboiler (F35)	N
S937	Hydrogen Plant Heater (F37)	Y
S950	No. 50 Unit Curde Feed Heater (F50) & A1432	Y
S951	No. 2 Reformer Aux Reheater (F51)	N
S971	No. 3 Reformer Feed Preheater (F53) & A1433	Y
S972	No. 3 Reformer Dubtanizer Reboiler (F54) & A1433	Y
S973	No. 3 HDS Recycle Gas Heater (F55)	Y
S974	No. 3 HDS Fract Feed Heater (F56)	Y

*28. The owner/operator of each source with a maximum firing rate greater than 25 MMBtu/hr listed in Part 27 shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This Part shall be effective September 1, 2004. (Regulation 9-10-502)

*29. The owner/operator shall operate each source listed in Part 27, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 31. The ranges shall be established by utilizing data from district-approved source tests. (Reg. 9-10-502)

A. The NOx Box for units with a maximum firing rate of 25 MMBtu/hr or more shall be established using the procedures in Part 30.

B. The NOx Box for units with a maximum firing rate less than 25MMBtu/hr shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O_2.

*30. The owner/operator shall establish the initial NOx box for each source subject to Part 29 by Janaury 1, 2005 . The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. (Regulation 9-10-502) The procedure for establishing the NOx box is

A. Conduct district approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;

B. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.

C. Determine the highest NOx emission factor (lb/Mmbtu) over the preferred operating ranges while maintaining CO concentration below 200 ppm; the owner/operator may choose to use a higher NOx emission factor than tested.

D. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 31a is deemed to be valid.
    1) The NOx Box can represent/utilize either one or two emission factors.
    2) The NOx Box for each emission factor can be represented either as a 4- or 5-sided polygon The NOx box is the area within the 4- or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 31.

E. Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

*31. Except as provided in part 31B & C, the owner/operator shall operate each source within the NOx Box ranges listed below at all times of operation. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (Regulation 9-10-502)

A. NOx Box ranges

Source No.	|Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
909	tbd	tbd	tbd	tbd	tbd	tbd
912	tbd	tbd	tbd	tbd	tbd	tbd
913	tbd	tbd	tbd	tbd	tbd	tbd
915	tbd	tbd	tbd	tbd	tbd	tbd
916	tbd	tbd	tbd	tbd	tbd	tbd
917	tbd	tbd	tbd	tbd	tbd	tbd
919	tbd	tbd	tbd	tbd	tbd	tbd
920	tbd	tbd	tbd	tbd	tbd	tbd
921	tbd	tbd	tbd	tbd	tbd	tbd
922	tbd	tbd	tbd	tbd	tbd	tbd
924	tbd	tbd	tbd	tbd	tbd	tbd
926	tbd	tbd	tbd	tbd	tbd	tbd
928	tbd	tbd	tbd	tbd	tbd	tbd
929	tbd	tbd	tbd	tbd	tbd	tbd
930	tbd	tbd	tbd	tbd	tbd	tbd
931	tbd	tbd	tbd	tbd	tbd	tbd
932	tbd	tbd	tbd	tbd	tbd	tbd
933	tbd	tbd	tbd	tbd	tbd	tbd
934	tbd	tbd	tbd	tbd	tbd	tbd
935	tbd	tbd	tbd	tbd	tbd	tbd
951	tbd	tbd	tbd	tbd	tbd	tbd

The limits listed above are based on a calendar day averaging period for both firing rate and O2%.

B. Part 31A. does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity), during startup or shutdown periods, or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.2 (i.e. units out of service & 30-day averaging data).

C. Part 31A. does not apply during any source test required or permitted by this condition. (Reg. 9-10-502). See Part 33 for the consequences of source test results that exceed the emission factors in Part 31.

*32. NOx Box Deviations (Regulation 9-10-502)

B. <u>The owner/operator may deviate from the NOx Box (either the firing rate or oxygen limit) provided that the owner/operator conducts a district approved source test which reasonably represents the past operation outside of the established ranges. The source test representing the new conditions shall be conducted no later than the next regularly scheduled source test period, or within eight months, whichever is sooner. The source test results will establish whether the source was operating outside of the emission factor utilized for the source. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. As necessary, a permit amendment shall be submitted.</u>

1) Source Test <= Emission Factor

If the results of this source test do not exceed the higher NOx emission factor in Part 31, or the CO limit in Part 35, the unit will not be considered to be in violation during this period for operating out of the "box."

a. The facility may submit an accelerated permit program permit application to request an administrative change of the permit condition to adjust the NOx Box operating range(s), based on the new test data.

2) Source Test > Emission Factor

If the results of this source test exceed the permitted emission concentrations or emission rates then the actions described below must be followed:

a. Utilizing measured emission concentration or rate, the owner/operator shall perform an assessment, retroactive to the date of the previous source test, of compliance with Section 9-10-301. The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit.

b. The facility may submit a permit application to request an alteration of the permit condition to change the NOx emission factor and/or adjust the operating range, based on the new test data.

C. <u>Reporting - The owner/operator must report conditions outside of box within 96 hours of occurrence.</u>

*33. For each source subject to Part 29, the owner/operator shall conduct source tests on the schedule listed below. The source tests are performed in order to measure NOx, CO, and O2 at the as-found firing rate, or at conditions reasonably specified by the APCO. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. (Reg.9-10-502)

A. <u>Source Testing Schedule</u>

1. Heater < 25 MMBtu/hr

   One source test per consecutive 12 month period. The time interval between source tests shall not exceed 16 months.

2. Heaters ≥ 25 MMBtu/hr

   Two source tests per consecutive 12 month period. The time interval between source tests shall not exceed 8 months and not be less than 5 months apart. The source test results shall be submitted to the district source test manager within 45 days of the test. (Reg.9-10-502)

3. If a source has been shutdown longer than the period allowed between source testing periods (e.g. <25 MMBtu/hr-> 12 mos or > 25 MMBtu/hr - > 8 mos), the owner/operator shall conduct the required semi-annual source test within 30 days of start up of the source.

B. <u>Source Test Results > NOx Box Emission Factor</u>

If the results of any source test under this part exceed the permitted concentrations or emission rates the owner/operator shall follow the requirements of Part 32A2 If the owner/operator chooses not to submit an application to revise the emission factor, the

owner/operator shall conduct another Part 33 source test, at the same conditions, within 90 days of the initial test.

*34. For each source listed in Part 27 with a NOx CEM installed, the owner/operator shall conduct semi-annual district approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests. (Regulation 9-10-502, 1-522)

*35. For any source listed in Part 27 with a maximum firing limit greater than 25 MMBtu/hr for which any two source test results over any consecutive five year period are greater than or equal to 200 ppmv CO at 3% O2, the owner/operator shall properly install, properly maintain, and properly operate a CEM to continuously measure CO and O2. The owner/operator shall install the CEM within the time period allowed in the District's Manual of Procedures. (Regulation 9-10-502, 1-522)

*36. In addition to records required by 9-10-504, the facility must maintain records of all source tests conducted to demonstrate compliance with Parts number 27 and 31. These records shall be kept on site for at least five years from the date of entry in a District approved log and be made available to District staff upon request. (Recordkeeping, Regulation 9-10-504)

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #14917 - Plant #14628

APPLICATION 14917, NEW FIREWATER PUMPS

150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for an Authority to Construct/Permit to Operate for the following equipment:

S-1518 Emergency Diesel Fire Water Pump, Cummins Model CFP11E-F20, 360 BHP capacity.

S-1519 Emergency Diesel Fire Water Pump, Cummins Model CFP11E-F20, 360 BHP capacity.

II. EMISSION CALCULATIONS

Sources S-1518 and S-1519 have been certified by CARB to be cleaner burning engines. Except for SO2, the emission factors for these engines are from the CARB Certification (CARB Executive Order # U-R-002-0214-2). The SO2 emissions were calculated based on the maximum allowable sulfur content (0.05 wt% S) of the diesel fuel with the assumption that all of the sulfur present will be converted to SO2 during the combustion process. The POC emission factor is assumed to be 3% of the total CARB's certified NOx and POC factor. This was based on the data from AP-42, Table 3.4-1 for Large IC Engine. These engines passed the toxic screening analysis at 50 hr/yr with 0.26 in a million risk. The emission calculations are as follows:

Hours of Operation = 50 hr/yr
Fuel Consumption = 17.4 gal/hr
Estimated Fuel Usage = 17.4 gal/hr X 50 hr/yr = 870 gal/yr.
Engine power = 360 BHP

NOx = 3.83 gm/hp-hr (360 hp)(1 lb/453.6 gm)(50 hr/yr) = 151.98 lb/yr or 0.076 TPY
CO = 0.75 gm/hp-hr (360 hp)(1 lb/453.6 gm)(50 hr/yr) = 29.76 lb/yr or 0.015 TPY
POC = 0.12 gm/hp-hr (360 hp)(1 lb/453.6 gm)(50 hr/yr) = 4.76 lb/yr or 0.0024 TPY
PM10 = 0.10 gm/hp-hr (360 hp)(1 lb/453.6 gm)(50 hr/yr) = 3.97 lb/yr or 0.0020 TPY
SO2 = (17.4 gal/hr)(7.1 lb/gal)(0.0005 S)(64 lb SO2/32 lb S)(50 hr/yr) = 6.177 lb/yr or 0.0031 TPY

Summary of S-1518 and S-1519 Emergency Diesel Fire Water Pump Emissions

Pollutant	Emission Factor (gm/hp-hr)	Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Cumulative Increase (Ton/yr)
Nitrogen Oxides	3.83	145.9	303.97	0.152
Carbon Monoxide	0.75	28.6	59.52	0.030

POC	0.12	4.6	9.52	0.005
PM-10	0.10	3.8	7.94	0.004
Sulfur Dioxide	0.16	6.1	12.35	0.006

Daily emissions = EF * 360 HP * 24 hr/day / 453.6 gm/lb. Annual emissions based on 50 hrs/yr.

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

	Current Ton/yr	New Ton/yr	New Total tons/yr
POC =	0	0.005	0.005
NO_x =	0	0.152	0.152
SO_2 =	0	0.006	0.006
CO =	0	0.030	0.030
PM_{10} =	0	0.004	0.004

IV. OFFSETS

Offsets are required for this project because Tesoro is a major facility with POC emissions greater than 100 ton/yr. SO2 and PM10 offsets are required only if the emission increase exceeds 1.0 ton. The IC engine's SO2 and PM10 emissions are below this threshold per Regulation 2-2-303. Only the NOx and POC emissions will be required offsets. The company will use the Certificate of Deposit # 968, which was submitted to the District on June 6, 2006 for Application # 14141, to provide POC offsets with 1.15 to 1 ratio. Tesoro is using Certificate of Deposit # 915 for to provide NOx offsets with 1.15 to 1 ratio.

POC

Available offsets = 21.047 ton/yr after the authority to construct of A/N 14141 CMP (Certificate of Deposit # 968)

Emissions from this application = 9.524 lb/yr or 0.0048 TPY POC

POC Offset provided = 0.0048 tons/yr X 1.15 = 0.0055 tons/yr

Thus, the Banking Certificate No. 968 will be reissued to Tesoro in the amount of 21.042 tons POC/yr.

NOx

Available offsets = 9.671 ton/yr (Certificate of Deposit # 915)

Emissions from this application = 303.97 lb/yr or 0.152 TPY NOx

NOx Offset provided = 0.152 tons/yr X 1.15 = 0.175 tons/yr

Thus, the Banking Certificate No. 915 will be reissued to Tesoro in the amount of 9.496 tons NOx/yr.

V. TOXIC SCREENING ANALYSIS

Toxic Pollutant Emitted	Emission Rate for S-1518 and S-1519 (lb/yr)	Risk Screening Trigger (lb/yr)
PM 10 (Diesel Particulate)	7.94	0.58

S-1518 and S-1519 meet Best Available Control Technology requirement for toxics (TBACT) since the Diesel particulate emissions are less than 0.15 gm/hp-hr. For an engine that meets the TBACT requirement, it must also pass the toxic risk screening level of less than ten in a million. The cancer risk is conservative. It assumes a constant exposure of the ultra sensitive population (young people, the elderly, and the infirm, etc.) at 24 hours for a 70 years life.

This emergency generator passed the Health Risk Screening Analysis (HRA) conducted on August 29, 2006 by the District's Toxic Evaluation Section. The source poses no significant toxic risk, since the risks to the maximally exposed receptors are 0.26 in a million. Thus, in accordance with the District's Regulation 2-5, the risk screen passes.

VI. BEST AVAILABLE CONTROL TECHNOLOGY

BACT is triggered for any single pollutant that exceeds 10 pounds per highest day per Regulation 2-2-301. For this proposed project, BACT is triggered for NOx since the highest day emissions are 73 pounds for each engine. As shown in the table below, Sources S-1518 and S-1519, Emergency Diesel Engines, meet the BACT1 limit for NOx for diesel engines more than 175 hp (Reference: BACT/TBACT Handbook, IC Engine-Compression Ignition, Document #96.1.1).

	Certified CARB g/bhp-hr	BACT g/bhp-hr
POC	0.12	1.5
NOx	3.83	6.9
CO	0.75	2.75
PM10	0.10	0.15

CARB Stationary Diesel Engine ATCM

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines greater than 50 bhp unless the following operating requirements and emission standards are met:

"Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations.

Diesel PM – General Requirements

1. Meet 0.15 g/bhp-hr PM standard
2. Operate 50 hours per year, or less, for maintenance and testing (except emergency use and emissions testing)

HC,NOx, NMHC+NOx, CO

1. Meet standards for off-road engines of the same model year and horsepower rating As specified in the OFF-Road Compression Ignition Engine Standards; Or if no standards have been established

    2. Meet the Tier 2 standards in Title 13, CCR, Section 2423 for off-road engines of the same horsepower rating, irrespective of the new engine's model year

These emergency standby diesel engines (S-1518 and S-1519) complies with the above ATCM requirements. The diesel engine will operate for no more than 50 hours per year for maintenance and reliability testing. This engine is subject to the EPA Tier 2 requirements for HC, NOx, NMHC+NOx and CO. As shown in the table below, the engine meets these requirements.

	CARB g/bhp-hr	ATCM Tier 2 g/bhp-hr
HC (POC)	0.12	N/A
NOx	3.83	N/A
HC+NOx	3.95	4.8
CO	0.75	2.6
PM	0.10	0.15

VII. STATEMENT OF COMPLIANCE

Sources S-1518 and S-1519 are subject to and expected to be in compliance with the requirements of District Regulation 1-301 "Public Nuisance", District Regulation 6 "Particulate Matter and Visible Emissions", Regulation 9-8 "NOx and CO from Stationary Internal Combustion Engines" and Regulation 9-1 "Sulfur Dioxide". In order to ensure compliance with the requirements of these regulations, the facility will be conditionally permitted to meet the requirements.

- Source S-1401 (SRU) will be subject to and expected to comply with the following Regulation 10: New Source Performance Standards (NSPS), (40 CFR, Parts 60, 85, 89, 94, 1039, 1065, and 1068) by September 11, 2006.

- 40 CFR, Parts 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

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 in accordance with Permit Handbook Chapter 2.3.

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

PSD, and NESHAPS are not triggered.

VIII. CONDITIONS

Condition # 22850 for Emergency Diesel Engines, S-1518 and S-1519, at Plant #14628, Tesoro Refining & Marketing Company, Application # 14917.

1. Operating for reliability-related activities is limited to 50 hours per year per engine.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or Regulation 2-6-501)]

5. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

   The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

   a. Whenever there is a school sponsored activity (if the engine is located on school grounds).
   b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.

   [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

IX. RECOMMENDATION

Issue a conditional Authority to Construct to Tesoro Refining & Marketing Company for the following equipment:

S-1518 Emergency Diesel Fire Water Pump, Cummins Model CFP11E-F20, 360 BHP capacity.

S-1519 Emergency Diesel Fire Water Pump, Cummins Model CFP11E-F20, 360 BHP capacity.

Thu H. Bui
Air Quality Engineer II
Engineering Division
Date:

THB:disk-T\Tesoro\14374\14374e\

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #14919 - Plant #14628

APPLICATION 14919, NEW TANK S-896

150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for an Authority to Construct/Permit to Operate for the following equipment:

S-896 Fixed Roof Tank A-896, 80 ft. Dia. X 48 ft. H, 43,000 barrels capacity, abated by A-14 Vapor Recovery System.

This new fixed roof tank will replace the existing External Floating Roof Tank S-428, which has 22,000 barrels capacity. Tank S-428 was originally permitted to store gasoline, gas oil, recover oil and slop oil. Tank S-428 is a grandfathered source without explicit permit conditions or a true vapor pressure limit. In the past three years, S-428 has been storing recovered oil/slope oil. S-428 tank's grandfathered throughput limit, established in accordance with Regulation 2-1-234, in the Title V permit is 25,029,000 barrels per year.

The new tank S-896 will be used for similar service. However, Tesoro seeks authorization to store many other materials with a wide range of vapor pressures in the new tank, including Gasoline, Petroleum Products, General Refinery Oils, Diesel, Jet Fuels, and Naphtha. The proposed throughput of the new tank (S-896) is 2,500,000 bbls per year, which is much lower than the current permitted level at existing tank (S-428). Tank S-896 will be abated by the No.1 Gas Plant (A-14), which will then be sent to the No. 3 Crude Unit Furnace (S-908). The vapor recovery with a capture and destruction efficiency at the No. 1 Gas Plant for POC is at least 99.5 % by weight. The number of valves and flanges remain the same; therefore, there will not be emission increases from fugitive sources for this project. This application will result in POC emission increase because Tesoro has been storing recovered oil/slop oils at the old tank (S-428) in the past three years, while the new tank (S-896) will be permitted to store gasoline and other higher vapor pressure materials.

II. EMISSION INCREASES

Current Baseline Emissions:
For determining emissions increases, the baseline period is the 3 years (2003, 2004 and 2005) period immediately proceeding the date that a permit application is deemed complete per Regulation 2-2-605.

In May 2003, Tesoro tested the Recovered Oil/Slop Oil (include a range of product from heavy gas oil through gasoline) to determine the true vapor pressure. The test results show that the true vapor pressure from recovered oil is typically from 1.5 psia to 1.9 psia at 70^{o}F. Tanks 4.09d was run using the Jet Naphtha, which correlates well to that vapor pressure.

	S-428 Annual Throughput (bbls/yr)
2003	234,728
2004	351,124
2005	302,719
Three year average	296,190

Emission Comparison Between Future and Past 3-Year Annual Average:
The emissions from these tanks are calculated by EPA Tank 4.09d program using gasoline with Reid Vapor Pressure (RVP) of 13, Heavy Straight

Run Naphtha, Jet Naphtha and General Refinery Fuel Oils. As shown below, the new tank S-896 will emit maximum 4,336 lbs/yr storing gasoline RVP 13, while the annual average of past 3-yr emissions at S-428 was 1,518 lbs/yr storing slop oils with vapor pressure equivalent to Jet Naphtha. (See attached EPA Tank 4.09d calculations)

Basis:
S-428 Throughput = 296,190 bbls/yr or 12,439,980 gals/yr
S-896 Throughput = 2,500,000 bbls/yr or 105,000,000 gals/yr at 99.5 % control efficiency.

Tank Contents	Vapor Pressure at Ambient Temperature (psia)	Vapor Molecular Weight	S-428 3-yr Annual Average Emissions (lbs/yr)	**S-896 Potential Emissions (lbs/yr)**
Gasoline RVP 13	7.3	62	7,957	**4,336**
Heavy Straight Run Naphtha	3.8	68	3,909	2,467
Jet Naphtha (JP-4)	1.4	80	**1,518**	1,054
General Refinery Fuel Oils	0.006	130	48	7.9

Total POC emission increase = new tank – baseline tanks
= 4,336 lbs/yr – 1,518 lbs/yr = 2,818 lbs/yr (1.409 tons/yr)

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

	Current Ton/yr	New Ton/yr	New Total tons/yr
POC =	0	1.409	1.409
NO_x =	0	0	0
SO_2 =	0	0	0
CO =	0	0	0
NPOC =	0	0	0
TSP =	0	0	0
PM_{10} =	0	0	0

IV. TOXIC SCREENING ANALYSIS

A "Risk Screening Analysis Questionnaire" form was not required with this application since none of the toxic trigger levels was exceeded per Regulation 2-5. The Toxic Air Contaminant (TAC) emissions are based on the highest potential vapor fraction determined from the liquid speciation of gasoline, heavy straight run gasoline, jet naphtha and general fuel oil. See attached calculation for detail.

Toxic Pollutant Emissions Emitted	**Hourly Trigger Level (lb/hr)**	**Acute Emissions (lb/hr)**	**Annual Trigger Level (lb/yr)**	**Chronic (lb/yr)**
Benzene	2.98 E-4	2.9	2.90	6.4
Ethylbenzene	1.71 E-6	N/A	1.49 E-2	77,000

Naphthalene	9.48 E-8	N/A	8.3 E-4	5.3
H-Hexane	3.34 E-4	N/A	2.93	270,000
Toluene	4.12 E-5	82	3.60 E-1	12,000
Xylene, -m	9.26 E-6	49	8.14 E-2	27,000
Xylene, -o	5.74 E-6	49	49.0	27,000
Xylene, -p	5.62 E-6	49	4.92 E-2	27,000

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application requires BACT since the POC emissions are more than 10 pounds per highest day threshold limit per Regulation 2-2-301. Source S-896 is abated by a vapor recovery system with an overall system efficiency greater than or equal to 98 %. Source S-896 met BACT(1) level by sending its vapor emissions to the No. 1 Gas Plant (A-14) with 99.5 % control efficiency.

VI. OFFSETS

Offsets are required for this project pursuant to Regulation 2, Rule 2, Section 302. Tesoro has enough contemporaneous emission reduction credits to fully offset the POC emission increases. The company will use the Certificate of Deposit # 968 to provide the needed offsets at a ratio of 1.15:1 per Regulation 2-2-302.2.

Available offsets = 21.011 ton/yr (Certificate of Deposit # 968)
Emissions from this application = 1.409 TPY POC
POC Offset provided = 1.409 tons/yr X 1.15 = 1.620 tons/yr

Thus, the Banking Certificate No. 968 will be reissued to Tesoro in the amount of 19.391 tons POC/yr.

VII. STATEMENT OF COMPLIANCE

- Source S-896 Fixed Roof Storage Tank of this application is subject and expected to comply with Regulation 8, Rule 5-306, which requires that loading of gasoline into this tank must have a abatement device with at least 95% control efficiency.

- Source S-896 is subject to Regulation 8, Rule 18- Equipment Leaks. The equipment should comply with the Standards of Regulation 8, Rule 18 for Valves, Compressors and Flanges. The leak standards for valves, pumps and connectors will be 100 ppm, 100 ppm and 100 ppm, respectively.

-

- Source S-896 is subject and expected to comply with Regulation 10 - Standard of Performance for New Stationary, 40 CFR 60, Subpart Kb Section 60.112b(a)(3) - Volatile Organic Liquid Storage Vessels. The fixed roof tank will be abated by a vapor recovery system with the controlled VOC emissions greater than or equal to 95%.

- Source S-1038 is subject to and expected to comply with the following Section 112 of the Clean Air Act, National Emission Standards for Hazardous Air Pollutants (NESHAP)

40 CFR Part 63, Subpart CC

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 in accordance with Permit Handbook Chapter 4.1.

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

PSD is not applicable.

VIII. CONDITIONS

Conditions for Source S-896, Fixed Roof Tank A-896, Application #14919, Plant # 14628 – Tesoro Refinery.

S-896 Fixed Roof Tank A-896

1. The owner/operator of S-896 shall not exceed 2,500,000 barrels of materials, including Gasoline, Heavy Straight Run Naphtha, Jet Naphtha, Reformate, General Refinery Oils, and Slop Oils, during any consecutive twelve-month period. (Basis: Cumulative Increase)

2. The owner/operator of S-896 shall abate the source with A-14, No.1 Gas Plant (vapor recovery system), with an overall collection and destruction efficiency of at least 99.5 %, by weight. (basis: BACT, Offsets)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

   a. Quantities of each type of liquid stored at this source on a monthly basis.
   b. Monthly throughput shall be totaled for each consecutive twelve-month period.

   All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase; Toxics)

IX. RECOMMENDATION

Issue a conditional Authority to Construct for Tesoro for the following equipment:

S-896 Fixed Roof Tank A-896, 80 ft. Dia. X 48 ft. H, 43,000 barrels capacity, abated by A-14 Vapor Recovery System.

_____

Thu H. Bui
Air Quality Engineer II
Engineering Division
Date: _____

THB:Disk-t\Tesoro\14919\14919e

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 15429

APPLICATION 15429, REPLACE AVON WHARF SLOP TANKS

BACKGROUND

Tesoro Refining and Marketing Company is applying for an Authority to Construct and/or Permit to Operate the following source:

S-1508 Tank 906 and Tank 907, Avon Wharf Slop Oil Tanks: Each tank: 4' W X 12' L X 3.5', 1,250 gallon capacity

S-1508 will be replacing the existing Avon Wharf recovered oil/slop oil tank:

S-739 Avon Wharf Slop Tank, Horizontal vessel, 1500 gallons, contents: crude oil

Tesoro will replace the old single walled slop tank, S-739, with two new double walled tanks, S-1508. The service of the new tanks at S-1508 will continue to be used in the same service as S-739 and no modifications are being made that would impact throughput. The existing tank S-739 is centrally located on the Avon Wharf, while Tank 906 and Tank 907 of S-1508 will be located at opposite ends of the wharf. Tesoro will also be replacing piping and equipment that is nearing the end of its useful life. Tesoro will improve the slop collection system and upgrade containment of potential leaks. The current system is located below deck at the Avon Wharf. The existing tank is single walled with no secondary containment. The Wharf operations are regulated by the California State Lands Commission (SLC). The SLC recently published the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS). This project will upgrade this portion of the Avon Wharf to comply with the MOTEMS. This project will also reduce the number of fugitive components at the Avon Wharf by eliminating numerous flanged connections in the existing slops system.

The existing tank S-739 has a 1,500 gallon capacity and has a grandfathered limit of 1,689,000 barrels/year. S-739 is used as a recovered oil/slop oil tank and can receive a wide variety of recovered materials from sources at the Avon Wharf. Like S-739, S-1508 will receive water and other materials from various drip pans used on the wharf to ensure that hydrocarbon material does not enter the bay. These pans receive primarily water and storm water, although small amounts of hydrocarbon liquids can be present. The material collected in S-1508 will be sent directly to the slops recycle system (S-601 Tank A-601) for processing. From S-601 Tank A-601, the collected material will be recycled to the S-802 FCCU Fluid Catalytic Cracker for reprocessing with the rest of the refinery slops. S-1508 shall not be used for long-term storage, but for collection of the drips, water, and storm water to be sent to the refinery slops system. S-1508 will be considered a process tank. Tank 906 will catch material from Berth 1. Berth 1 tanks store light hydrocarbon materials such as gasoline, while Tank 907 will catch material from Berths 5 and 6, which store heavier hydrocarbon materials such as diesel or heavier material, which are exempt from permitting as per Regulation 2-1-123.3.2 and 2-1-123.3.3. The tanks at Berth 1 are serviced by A-14 Vapor Recovery, while the tanks at Berth 5 and 6 do not have vapor recovery for marine loading and

therefore are only used for loading heavy product. The owner/operator expects to transfer only 38,100 barrels per year at Tank 906, which is much less than the permitted limit for both Tanks 906 and 907 of 1,689,000 barrels/year.

This project will also reduce the number of fugitive components at the Avon Wharf by eliminating numerous flanged connections in the existing slops system.

The replacement of S-739 with S-1508 Tank 906 and Tank 907, will not result in a change or increase in emissions. The owner/operator of S-1508 will be subject to the same throughput limit of S-739 of 1,689,000 barrels per year. Emissions should actually decrease with the reduction of fugitive components of the slop system at the Avon Wharf.

EMISSIONS SUMMARY

Annual Emissions:

The replacement of S-739 Avon Wharf Slop Tank with S-1508 Tank 905 and Tank 906 will not result in an increase or change in emissions. Tank 976 will only be used to collect drips, water, and storm water from Berths 5 and 6, which are used for loading heavy product. Tank 906 would actually be exempt from permitting as per Regulations 2-1-123.3.2 and 2-1-123.3.3. Tank 907 will be used to collect drips, water, and storm water from Berth 1, which handles lighter material such as gasoline. The volume of Tank 905 is less than the existing tank, which is being replaced. The owner/operator shall be subject to the same overall throughput limit at S-1508 Tank 906 and Tank 907 as the existing tank T-739 and emissions will not change. Emissions should actually decrease with the reduction of fugitive components of the slops system at the Avon Wharf.

Source	***Current Count***	***Future Count***	***Change***
Fugitive Components			
Valves	***81***	***60***	***-21***
Flanges	***108***	***92***	***-16***
Connectors	***2***	***7***	***+5***
Pumps	***1***	***2***	***+1***
Process Safety Valves	***3***	***6***	***+3***
Drains			
Area Drains	***13***	***7***	***-6***
Funnel Drains	***71***	***20***	***-51***

Fugitive Component	Emission Factor (lb/day/source)	Net Change in component	Increase in POC emissions (lb/day)	Increase in POC emissions (lb/yr)
Valves in gas service	0.0015288	0	0	0
Valves in liquid	0.0014736	-21	-0.0309	-11.30

service				
Pumps	0.028872	1	0.028872	10.54
Compressors	0.00804	0	0	0
PRV's in gas service	0.00972	0	0	0
PRV's in liquid service	0.006312	3	0.0189	9.91
Connectors & flanges	0.004	-11	-0.044	-16.06
Total Emissions from Fugitives			**-0.0271**	**-9.90**

The number of drains is also decreasing and additional emissions reductions in organics are expected.

Plant Cumulative Increase:
There will be no increase in emissions at S-1508 and the cumulative increase for this application is ZERO for all pollutants.

Toxic Risk Screening:
There will be no change in emissions from S-1508 and a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-1508 Tank 906 and Tank 907 shall comply with Regulation 8, Rule 2: Organic Compounds, Miscellaneous Operations. The owner/operator shall not emit from S-1508 more than 6.8 kg (15 lbs.) per day and containing a concentration of more than 300 ppm total carbon on a dry basis. The S-1508 Tanks 906 and 907 collect process drips, water, and storm water at the wharf. The tanks are not used for long term storage. The collected material is sent to S-601 Tank A-601 for storage before recycling back into the refinery.

The 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 emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 11.9)

The project is over 1000 feet from the nearest school and therefore not subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Emissions from S-1508 Tank 906 and Tank 907 will not increase as a result of this application and BACT is not triggered.

Offsets: There is no emission increase with this application and offsets do not apply.

PSD does not apply.

NSPS:

The replacement tanks of S-1508, Tanks 906 and 907, are each only 1,250 gallons and are therefore not subject to NSPS Subpart Kb since the volumes are less than 75 cubic meters (19,812 gallons).

The current collection system is not subject to NSPS QQQ due to the date of construction. The current system has been in operation prior to the May 4, 1987 construction, modification, or reconstruction date for applicability. The new collection system will decrease the number the drains in system and fugitive emissions will not increase. With no increase in emissions, the replacement of the collection system piping
is not considered a modification and the owner/operator is not subject to NSPS QQQ. In addition, the costs for upgrading the piping and system do not meet the threshold for reconstruction.

The owner/operator of S-1508 Tanks 906 and 907 are not subject to NSPS QQQ since the tanks are not "oil-water separators" as per the Definitions in 60.691. The definition states that "slop oil facilities, including tanks, are included in this term along with storage vessels and auxiliary equipment located between individual drain systems and the oil-water separator". The tanks of S-1508 will drain directly into S-601 Tank 601 Slops Tank. The drained material will then recycled directly back to the S-802 FCCU Fluid Catalytic Cracker for reprocessing back into the refinery. The S-1508 Tanks do not feed a drain system nor an oil-water separator and are not considered an affected unit.

NESHAPS:
The owner/operator of S-1508 and the associated drain systems is subject to Subpart FF: Benzene Waste Operations. The owner/operator complies by treating wastes to less than or equal to 6.0 Mg/yr as per 61.342(e)(2)(i).

The owner/operator is not subject to Subpart CC for S-1508 Tanks 906 and 907 since the tanks do not meet the definition of a storage vessel in 63.641. A storage vessel as defined by Subpart CC is a vessel with a capacity greater than 40 cubic meters (10,566 gallons). The individual drain components associated with the system are subject to 63.640(o)(2)(ii)(B), which subjects wastewater benzene emissions to be controlled through the use of one or more treatment processes or waste management units under 40 CFR Part 61, Subpart FF. The owner/operator will comply with 40 CFR Part 61, Subpart FF via 61.342(e)(2)(i) by treating waste to less than or equal to 6.0 Mg/yr.

PERMIT CONDITIONS

The current tank, S-739, is not subject to any existing permit conditions. The owner/operator of S-1508 shall be subject to permit condition 23486.

Application 15429 (April, 2007)

S-1508 Tank 906 and Tank 907, Avon Wharf Slop Oil Tanks: Each tank: 4' W X 12' L X 3.5', 1,250 gallon capacity

1) The total combined net throughput of Tank 906 and Tank 907 of S-1508 shall not exceed 1,689,000 barrels in any consecutive 12-month period. The owner/operator shall use a radar-monitoring device to measure the height of the tank. The owner/operator shall use the change in height of liquid in the tank to calculate throughput. (basis: Cumulative Increase)

2) Materials collected in S-1508 shall be limited to the following:
   a. Water runoff, slop oil, or recovered oil with a true vapor pressure less than 11 psia
   b. A liquid other than those specified above may be collected in S-1508, provided that both of the following criteria are met:
      1. true vapor pressure must be less than 11 psia
      2. toxic emissions in lbs/year, based on the maximum throughput in part 1, do not exceed any risk screening trigger level.

(basis: Cumulative Increase)

3) Not more than 30 days after the start-up of S-1508 and the associated drain system, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components:

-21 valves is liquid service
1 pump
3 PRVs in liquid service
5 connectors
-16 flanges
-6 area drains
-51 funnel drains

If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count.
(basis: Cumulative Increase)

4) To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:
   a. On a monthly basis, type and amount of liquids collected and true vapor pressure ranges of such liquids. These records shall be kept for at least 5 years.
   All records shall be recorded in a District-approved log and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.

(basis: Cumulative Increase, Regulation 1-441)

RECOMMENDATION

Issue an Authority to Construct and/or Permit to Operate to Tesoro Refining and Marketing Company for the following source:

S-1508 Tank 906 and Tank 907, Avon Wharf Slop Oil Tanks: Each tank: 4' W X 12' L X 3.5', 1,250 gallon capacity

EXEMPTIONS
none

By:_____
Pamela J. Leong
Air Quality Engineer II
March 27, 2007

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 15212

APPLICATION 15212, FCCU CHANGE IN CONDITIONS (CONSENT DECREE)

BACKGROUND

Tesoro Refining and Marketing Company is applying for an alteration or condition change to the following existing sources:

S-802 Fluid Catalytic Cracker Unit (FCCU) abated by S-901 No. 7 Boiler, 668 MMBtu/hr, fired on refinery fuel gas and FCCU flue gas and A-30 Electrostatic Precipitator

Tesoro is required by a Consent Decree with the United States Environmental Protection Agency (EPA) to submit an application for emission limits of NOx at the FCCU to be submitted by September 30, 2006 (paragraph 36 of the Consent Decree). The text of the Consent Decree may be found at the following web address: http://www.epa.gov/compliance/resources/decrees/civil/caa/valero-cd.pdf. The application was dated September 29, 2006 and was received by the District on October 3, 2006. The application also requests imposition of emission limits for CO, SO2 and opacity and particulates at the S-802 FCCU as required by the Consent Decree.

Additional limitations are being imposed and emissions will not increase at the FCCU. The new emission limits will be added to permit condition 11433 for S-802 and S-901. Because emissions will not increase at Tesoro, the changes to S-802 and S-901 are considered alterations.

The limits imposed by the US EPA are summarized below.

Consent Decree Reference (paragraph #)	Pollutant	Limit	Monitoring Method	Location of Monitoring Point
35	NOx	20 ppmvd at 0% O2, measured as a 356-calendar day rolling average	NOx and O2 CEMS (paragraph 61)	FCCU Regenerator prior to commingling with other streams
35	NOx	40 ppmvd at 0% O2, measured as a 7-calendar day rolling average	NOx and O2 CEMS (paragraph 61)	FCCU Regenerator prior to commingling with other streams
82	SO2	25 ppmvd at 0% O2, measured as a 356-calendar day rolling average	SO2 and O2 CEMS (paragraph 91)	S-901 exhaust stack
82	SO2	50 ppmvd at 0% O2, measured as a 7-calendar day rolling average	SO2 and O2 CEMS (paragraph 91)	S-901 exhaust stack
94	CO	500 ppmvd at 0% O2, measured as a 1-hour block	CO CEMS (required by paragraph 101)	S-901 exhaust stack

		average		
95	PM	1 pound per 1,000 pounds of coke burned, measured as a 1-hour average over 3 performance test runs	Measure front half only according to Method 5B or 5F as appropriate	S-901 exhaust stack

In paragraph 110 for S02 and paragraph 102 for CO, opacity and particulate, the Consent Decree states that "The…..limits……shall not apply during periods of startup, shutdown or malfunction of the FCCUs and hydrotreaters or the malfunction of …control equipment, if any, provided that during startup, shutdown or malfunction, Tesoro, ….to the extent practicable, maintain and operate the relevant affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions."

Consent Decree paragraph 85 provides that "Any short term emission limits established pursuant to this Consent Decree shall not apply during periods of hydrotreater outage, provided that Tesoro is in compliance with any plan submitted…….under this paragraph for the respective FCCU and is maintaining and operating the FCCU in a manner consistent with good air pollution control practices. In order for the relief for short-term emission limits afforded by this paragraph to apply to a period of hydrotreater outage, Tesoro…shall comply with the relevant refinery-specific plan approved by EPA under this paragraph at all times, including periods of startup, shutdown or malfunction of the hydrotreater." Tesoro has submitted their FCCU Feed Hydrotreater Outage Plan to EPA on December 28, 2005.

Paragraph 103 of the Consent Decree, requires that a Continuous Opacity Monitoring System (COMS) or an approved AMP be used to demonstrate compliance with the respective opacity limits established pursuant to Part VII of the Consent Decree. This requirement has already been met. Existing BAAQMD permit condition 11433 part 2B, requires 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 our when the boiler is burning CO gas from the FCCU.

Paragraph 107A of the Consent Decree, states that "Tesoro's FCCU Regenerator at the Golden Eagle Refinery shall be considered an "affected facility" pursuant to 40 CFR Part 60, Subpart J, and shall comply with all requirements of 40 CFR Part 60, Subparts A and J, as such provisions relate to SO2 emissions from FCCU Regenerators, by September 30, 2006". Paragraph 99 of the Consent Decree requires that "by no later than September 20, 2006, Tesoro shall ensure that the FCCU located at the Golden Eagle Refinery complies with…..all applicable requirements of 40 CFR 60 Subpart A and J, as such requirements apply to CO, opacity and particulate emissions from FCCU regenerators".

"Lodging of this Consent Decree shall satisfy any obligation otherwise applicable to Tesoro to provide notification in accordance with 40 CFR Part 60, Subparts A and J, including without limitation 40 CFR 60.7, with respect to the provisions of 40 CFR Part 60, Subparts A and J, as such requirements relate to SO2" (paragraph 108), "CO, opacity and particulate emissions" (paragraph 100) "from FCCU Regenerators". Therefore, further notification is not required.

EMISSIONS

As described in the "Background" above, the Consent Decree with EPA requires Tesoro to submit an application for additional emission limits to their permits. There will be no increase in emissions.

PLANT CUMULATIVE INCREASE

The cumulative increase for this application is ZERO for all pollutants.

TOXIC RISK SCREEN ANALYSIS

Toxic emissions will not increase as a result of this application. Therefore, a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-802 FCCU abated by S-901 Boiler and A-30 Electrostatic Precipitator shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-301) and no visible emission to exceed 20% opacity (Regulation 6-302). The owner/operator is subject to Regulation 9 Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. The owner/operator of S-901 CO Boiler is subject to one of the following (except during startup and shutdown): 1) emissions of NOx not to exceed 150 ppmvd at 3% O2 based on an operating-day average as per Regulation 9-10-304.1 or 2) emissions of NOx to be controlled by an emission control system with an efficiency of at least 50% by weight as per Regulation 9-10-304.2. The owner/operator is also subject to the emission limit for CO of 400 ppmvd at 3% O2 based on an operating-day average as per Regulation 9-10-305. The owner/operator is subject to the record keeping requirements of Regulation 9-10-504 and the reporting requirements of Regulation 9-10-505.

The owner/operator is also subject to the National Emission Standards for Hazardous Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (4/11/02), 40 CFR 63 Subpart UUU for S-801.

BACT and PSD do not apply.

NESHAPS:

The owner/operator is also subject to the National Emission Standards for Hazardous Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (4/11/02), 40 CFR 63 Subpart UUU for S-801.

NSPS:

As described in the “Background” above, Tesoro is subject to 40 CFR, Part 60, Subparts A and J.

OFFSETS are not triggered.

PERMIT CONDITIONS

The new limits imposed by the Consent Decree with EPA will be added to existing permit condition 11433. Changes are in strikeout/underline format.

COND# 11433 ----------

S802 FCCU Fluid Catalytic Cracker
S901 No. 7 Boiler
Permit Condition ID 11433 Plant 13 S-802 and S-901, the FCCU/CO Boiler Plant:

1. The FCCU/CO Boiler Plant, Sources S-802/S-901, shall be abated at all times of operation by the electrostatic precipitator A-30 operating properly as designed.
(Basis: cumulative increase, BACT, offsets)

2. Total emissions to the atmosphere from the FCCU/CO Boiler Plant, Sources S-802/S-901, shall not exceed the following limits in any calendar year.

PM/PM10	151.5	ton/year
POC	5.8	ton/year
NOx	354.4	ton/year
SO2	1335.5	ton/year
CO	121.9	ton/year

(Basis: cumulative increase, BACT, offsets)

3. All new hydrocarbon vapor pressure relief valves associated with this project shall be vented to the refinery flare gas recovery system.
(Basis: cumulative increase, BACT, offsets)

4. To demonstrate compliance with the emission limits of part 2 above and Condition ID 4357, part 2, the owner/operator shall monitor and calculate all emissions, in lb/day, of NOx, CO, POC, PM/PM10, and SO2, associated with the FCCU/CO Boiler Plant, S-802 and S-901, and summarize and report these emissions to the District on a monthly basis, in accordance with the procedures and requirements specified in Condition ID 4357, part 5.
(Basis: cumulative increase, BACT, offsets)

5. The owner/operator may submit for District review approved source test data to develop new emission factors for CO and precursor organic compounds, POC, to be used as alternatives to the emission factors specified in Permit No. 22769 (the No. 3 HDS Permit), if it can be shown that the new data are more representative of actual emissions.
(Basis: cumulative increase, offsets)

6. The owner/operator shall maintain a District approved file containing all measurements, records, charts, and other data which are required to be collected pursuant to the various provisions of this conditional permit, as well as all other data and calculations necessary to determine the emissions from the emission points covered by this permit, according to the procedures specified in Tosco's Permit No. 22769 (the No. 3 HDS Permit). This material shall be kept available for District staff inspection for a period of at least 5 years following the date on which such measurements, records or data are made or recorded.
(Basis: cumulative increase, BACT, offsets)

7. NOx concentration emission limits from the FCCU Regenerator shall not exceed 20 ppmvd at 0% O2, measured as a 365-calendar day rolling average, and 40 ppmvd at 0% O2, measured as a 7-calendar day rolling average, as determined prior to commingling with other streams.
(basis: EPA Consent Decree Paragraph 35)

8) SO2 concentration emission limits from the FCCU shall not exceed 25 ppmvd at 0% O2, measured as a 365-calendar day rolling average, and 50 ppmvd at 0% O2, measured as a 7-calendar day rolling average.
(basis: EPA Consent Decree Paragraph 82)

9. CO emissions from the FCCU shall not exceed 500 ppmvd at 0% O2, measured as a one-hour block average.
(basis: EPA Consent Decree Paragraph 94, 40 CFR Part 60, Subpart J)

10) Particulate concentration emissions limits from the FCCU shall not exceed 1 pound per 1000 pounds of coke burned (front half only according to Method 5B or 5F, as appropriate), measured as a one-hour average over three performance test runs.
(basis: EPA Consent Decree Paragraph 95, 40 CFR Part 60, Subpart J)

11) The NOx, SO2, CO, opacity, and particulate limits in parts 7-10, shall not apply during periods of startup, shutdown or malfunction of the FCCU or malfunction of the applicable control equipment, if any.
(basis: EPA Consent Decree Paragraphs 102 and 110)

12) FCCU short term limits in parts 7-10 shall not apply during periods of hydrotreater outage, including startup, shutdown or malfunction of the hydrotreater. During hydrotreater outages, startup, shutdown or malfunction, Tesoro shall comply with the FCCU Feed Hydrotreater Outage Plan.
(basis: EPA Consent Decree Paragraph 85)

RECOMMENDATION
Issue a condition change to Tesoro Refining and Marketing Company for the following sources:

S-802 Fluid Catalytic Cracker Unit (FCCU) abated by S-901 No. 7 Boiler, 668 MMBtu/hr, fired on refinery fuel gas and FCCU flue gas and A-30 Electrostatic Precipitator

EXEMPTIONS
None.

By:_____
Pamela Leong
Air Quality Engineer II
March 1, 2007

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 15682

APPLICATION 15682, NOx BOX

BACKGROUND

Tesoro Refining and Marketing Company is applying for a permit condition change for the following exiting sources:

S909 No. 1 Feed Prep Heater (F9)
S912 No. 1 Feed Prep Heater (F12)
S913 No. 2 Feed Prep Heater (F13)
S915 Platformer Intermediate Heater (F15)
S916 No. 1 HDS Heater (F16)
S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Heater (F19)
S920 No. 2 HDS Heater (F20)
S924 Coker Anti-Coking Superheater (F24)
S926 No.2 Reformer Splitter Reboiler (F26)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S951 No. 2 Reformer Aux Reheater (F51)

Tesoro is required by permit condition 18372, part 30 to establish the NOx boxes for each source subject to Regulation 9-10-301 and 305, which do not have NOx CEM's. This application establishes the initial NOx box parameters or ranges within which the owner/operator shall operate each source. The owner/operator has conducted District approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnaces. The highest NOx emission factor in lb/MMBtu over the preferred operating ranges were determined, while maintaining CO concentration below 200 ppm. Two NOx boxes with different emission factors may be determined and each emission factor can be represented with either a 4 or 5-sided polygon. The owner/operator has prepared graphical representations of the boxes for each source (see Appendix A). These representations are available on-site at Tesoro and shall be submitted to the District with permit amendments. Note that NOx boxes for units with maximum firing rates less than 25 MMBtu/hr shall be established with the high-fire at the maximum rated capacity and the low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O2.

In the original permit condition, S921 No. 2 HDS Heater (F21) was listed as being subject to the NOx box. The heater has since been taken out of service and is not being used. In the original permit condition, S922 No. 5 Gas Plant Debutanizer Reboiler, S-934 Hydrocracker Stabilizer Reboiler (F34), and -S935 Hydrocracker Splitter Reboiler (F35) were subject to the NOx box. S-922, S-934, and S-935 have since been retrofitted with CEMs for NOx. These furnaces are no longer subject to the NOx Box requirements.

In addition, permit condition 18372 part 4 will be deleted. Currently part 4 requires the owner/operator to meet the limit of 0.031 lb NOx/MMBtu for S-912 and S-926. The basis for part 4 is "Regulation 9, Rule 10". The previous basis was not justified or applied correctly. As per Regulation 9-10-301, the owner/operator "shall not exceed a refinery-wide emission rate from affected units, excluding CO boilers, of 0.033 lb NOx/MMBtu of heat input, based on an operating-day average." Both S-912 and S-926 are subject to Regulation 9-10-301 and the NOx box conditions.

This application establishes the initial NOx box parameters within which the owner/operator must operate each source. There are no emission increases associated with the update in the permit condition. The application is considered an alteration.

EMISSIONS SUMMARY

Annual Emissions:
The establishment of the NOx box parameters will not result in an increase in emissions of any pollutants.

Plant Cumulative Increase:
The establishment of the NOx box parameters will not result in an increase in emissions of any pollutants and the cumulative increase for this application is ZERO for all pollutants.

Toxic Risk Screening:
Toxic emissions will not increase as a result of this application. Therefore, a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-909, S-912, S-913, S-915, S-916, S-917, S-919, S-920, S-924, S-926, S-928, S-929, S-930, S-931, S-932, S-933, and S-951 shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). The owner/operator is expected to comply with Regulation 6 since the unit is fueled with natural gas and/or refinery fuel gas. Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-301) and no visible emission to exceed 20% opacity (Regulation 6-302). The owner/operator is subject to Regulation 9 Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. The owner/operator is subject to the facility wide emission limit for NOx of 0.033 lb NOx per million Btu of heat input based on an operating-day average as per Regulation 9-10-301. The owner/operator is also subject to the emission limit for CO of 400 ppmvd at 3% O2 based on an operating-day average as per Regulation 9-10-305. The owner/operator is subject to the record keeping requirements of Regulation 9-10-504 and the reporting requirements of Regulation 9-10-505. The owner/operator is subject to 9-10-301.1 when units are in startup or shutdown. Startup and shutdown are defined in Regulation 9-10-218. The owner/operator is subject to the NOx box condition #18372.

The 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 emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.1)

The project is over 1000 feet from the nearest school and therefore not subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Emissions from the heaters will not increase as a result of this application and BACT is not triggered.

Offsets: There is no emission increase with this application and offsets do not apply.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS

Permit condition 18372 will be updated with the NOx box parameters. Changes are in strikeout/underline format. Only the pertinent portions of condition 18372 that are to be updated will be shown here. The full text of condition 18372 may be found in Appendix B.

Condition # 18372
Application #2209 and 16484
Plant #12758
Application 15682 (April, 2007) Initial establishment of NOx box parameters. Delete part 4.

1.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is equipped with a District approved dedicated fuel flow meter consistent with Regulation 9, Rule 10, Section 502.2. (basis: Regulation 9, Rule 10, Section 502.2)

2.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is fired exclusively on natural gas and/or refinery fuel gas. (basis: Regulation 9, Rule10)

3.) Permittee/Owner/Operator shall ensure that the maximum firing rate of each source listed does not exceed the corresponding HHV maximum firing rate, based on an operating day average (the amount of fuel fired over each 24 hour day divided by 24:

Source (#)	**Maximum Firing Rate (HHV) (mmBtu/hr)**	**Maximum Firiing Rate (HHV) (mmBtu/yr)**
S-912	135	1,182,600
S-913	59	516,840
S-916	55	481,800
S-919	65	569,400
S-920	63	551,880
S-921	63	551,880
S-922	130	1,138,800
S-926	145	1,270,200
S-927	280	2,452,800

S-950	440	3,854,400
S-971	300	2,628,000
S-972	45	394,200

(basis: Regulation 9, Rule 10)

4.) (Deleted: Specific NOx limits should not have been applied to S-912 and S-926, since they are both regulated under Regulation 9-10-301.) Basis: Regulation 9-10-301. ~~Permittee/Owner/Operator shall ensure that S-912 and S-926 are modified through the installation of ultra low NOx burners to achieve the NOx emission limit in the most recent NOx Compliance Plan that has been approved in writing by the District. The following limits shall be achieved on an operating day average:~~

~~Source (#)~~	~~Applicable NOx Limit (lb/mmbtu)~~
~~S-912~~	~~0.031~~
~~S-926~~	~~0.031~~

~~(basis: Regulation 9, Rule 10)~~

Parts 27 through 36 are effective January 1, 2005

*27. The following sources are subject to the refinery-wide NOx emission rate and CO concentration limits in Regulation 9-10: (Regulation 9-10-301 & 305)

S#	Description	CEM (Y/N)
S908	No. 3 Crude Heater	Y
S909	No. 1 Feed Prep Heater (F9)	N
S912	No. 1 Feed Prep Heater (F12)	N
S913	No. 2 Feed Prep Heater (F13)	N
S915	Platformer Intermediate Heater (F15)	N
S916	No. 1 HDS Heater (F16)	N
S917	No. 1 HDS Prefract Reboiler (F17)	N
S919	No. 2 HDS Heater (F19)	N
S920	No. 2 HDS Heater (F20)	N
S921	No. 2 HDS Heater (F21) (out of service)	N
S922	No. 5 Gas Plant Debutanizer Reboiler	Y~~N~~
S924	Coker Anit-Coking Superheater (F24)	N
S926	No.2 Reformer Splitter Reboiler (F26)	N
S927	No. 2 Reformer Feed Preheater (F27) & A1431	Y
S928	HDN Reactor A Heater (F28)	N
S929	HDN Reactor B Heater (F29)	N
S930	HDN Reacator C Heater (F30)	N
S931	Hydrocracker Reactor 1 Heater (F31)	N
S932	Hydrocracker Reactor 2 Heater (F32)	N
S933	Hydrocracker Reactor 3 Heater (F33)	N
S934	Hydrocracker Stabilizer Reboiler (F34)	Y~~N~~
S935	Hydrocracker Splitter Reboiler (F35)	Y~~N~~
S937	Hydrogen Plant Heater (F37)	Y
S950	No. 50 Unit Curde Feed Heater (F50) & A1432	Y
S951	No. 2 Reformer Aux Reheater (F51)	N
S971	No. 3 Reformer Feed Preheater (F53) & A1433	Y
S972	No. 3 Reformer Dubtanizer Reboiler (F54) & A1433	Y
S973	No. 3 HDS Recycle Gas Heater (F55)	Y
S974	No. 3 HDS Fract Feed Heater (F56)	Y

*28. The owner/operator of each source with a maximum firing rate greater than 25 MMBtu/hr listed in Part 27 shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This Part shall be effective September 1, 2004. (Regulation 9-10-502)

*29. The owner/operator shall operate each source listed in Part 27, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 31. The ranges shall be established by utilizing data from district-approved source tests. (Reg. 9-10-502)

B. The NOx Box for units with a maximum firing rate of 25 MMBtu/hr or more shall be established using the procedures in Part 30.

C. The NOx Box for units with a maximum firing rate less than 25MMBtu/hr shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O_2.

*30. The owner/operator shall establish the initial NOx box for each source subject to Part 29 by Janaury 1, 2005 . The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. (Regulation 9-10-502) The procedure for establishing the NOx box is

A. Conduct district approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;

B. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.

C. Determine the highest NOx emission factor (lb/Mmbtu) over the preferred operating ranges while maintaining CO concentration below 200 ppm; the owner/operator may choose to use a higher NOx emission factor than tested.

F. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 31a is deemed to be valid.

1) The NOx Box can represent/utilize either one or two emission factors.
2) The NOx Box for each emission factor can be represented either as a 4- or 5-sided polygon The NOx box is the area within the 4- or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 31.

G. Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

*31. Except as provided in part 31B & C, the owner/operator shall operate each source within the NOx Box ranges listed below at all times of operation. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (Regulation 9-10-502)

A. NOx Box ranges

Source No.	|Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
909	0.146	5.6, 53.71	9.6, 41.41	2.1, 83.60	3.1, 67.35	5.7, 76.49
	0.148	9.6, 41.41	11.2, 61.81	2.1, 83.60	5.7, 76.49	7.3, 79.58
912	0.027	2.1, 60.50	3.4, 70.10	1.9, 101.51	4.0, 104.13	5.4, 100.24
	0.034	2.1, 60.50	7.0, 57.57	5.4, 100.24	3.4, 70.10	6.5, 99.68
913	0.027	1.2, 19.89	3.0, 14.80	1.3, 30.33	2.1, 15.53	4.1, 25.71
915	0.143	0, 3.85	8.0, 3.85	0, 20.00	N/A	8.0, 20.00
	0.098	8.0, 3.85	>8.0, 3.85	8.0, 20.00	N/A	>8.0, 20.00
916	0.088	5.7, 9.53	9.3, 9.17	5.4, 30.00	N/A	9.1, 34.05
	0.099	9.3, 9.17	10.6, 24.64	9.1, 34.05	N/A	10.4, 33.11
917	0.061	0, 3.60	-, 3.6	0, 18.00	N/A	-, 18.00
919	0.047	3.9, 23.30	8.3, 22.06	5.8, 48.20	9.2, 39.12	10.1, 47.20
	0.056	8.3, 22.06	9.5, 21.10	9.2, 39.12	N/A	10.1, 47.20
920	0.046	5.0, 24.84	7.7, 17.86	5.8, 40.77	7.1, 15.34	7.3, 42.64
	0.055	7.7, 17.86	10.8, 27.53	7.3, 42.64	N/A	10.0, 45.15
~~921~~						
~~922~~						
924	0.106	0.0, 3.20	-, 3.20	0.0, 16.00	N/A	-, 16.00
926	0.032	1.8, 32.81	6.0, 40.89	2.9, 126.72	4.4, 32.81	3.9, 131.59
	0.037	5.0, 40.89	7.0, 77.89	3.9, 131.59	N/A	4.2, 122.33
928	0.044	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.073	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
929	0.024	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.087	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
930	0.033	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.077	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
931	0.034	0.0, 4.00	< 9.0, 4.00	0.0, 20.00	N/A	< 9.0, 20.00
	0.073	9.0, 4.00	> 9.0, 4.00	9.0, 20.00	N/A	> 9.0, 20.00
932	0.037	0.0, 4.00	< 4.0, 4.00	0.0, 20.00	N/A	< 4.0, 20.00
	0.053	4.0, 4.00	> 4.0, 4.00	4.0, 20.00	N/A	> 4.0, 20.00
933	0.035	0.0, 4.00	< 5.0, 4.00	0.0, 20.00	N/A	< 5.0, 20.00
	0.050	5.0, 4.00	>5.0, 4.00	5.0, 20.00	N/A	> 5.0, 20.00
~~934~~						
~~935~~						
951	0.111	5.2, 2.68	12.1, 0.78	5.0, 10.42	4.2, 7.78	10.4, 10.19
	0.175	12.1, 0.78	13.6, 1.73	10.4, 10.19	N/A	13.5, 2.61

The limits listed above are based on a calendar day averaging period for both firing rate and O2%.

D. Part 31A. does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity), during startup or shutdown periods, or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.2 (i.e. units out of service & 30-day averaging data).

E. Part 31A. does not apply during any source test required or permitted by this condition. (Reg. 9-10-502). See Part 33 for the consequences of source test results that exceed the emission factors in Part 31.

*32. NOx Box Deviations (Regulation 9-10-502)

A. The owner/operator may deviate from the NOx Box (either the firing rate or oxygen limit) provided that the owner/operator conducts a district approved source test which reasonably represents the past operation outside of the established ranges. The source test representing the new conditions shall be conducted no later than the next regularly scheduled source test period, or within eight months, whichever is sooner. The source test results will establish whether the source was operating outside of the emission factor utilized for the source. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. As necessary, a permit amendment shall be submitted.

3) Source Test <= Emission Factor

If the results of this source test do not exceed the higher NOx emission factor in Part 31, or the CO limit in Part 35, the unit will not be considered to be in violation during this period for operating out of the "box."

a. The facility may submit an accelerated permit program permit application to request an administrative change of the permit condition to adjust the NOx Box operating range(s), based on the new test data.

4) Source Test > Emission Factor

If the results of this source test exceed the permitted emission concentrations or emission rates then the actions described below must be followed:

a. Utilizing measured emission concentration or rate, the owner/operator shall perform an assessment, retroactive to the date of the previous source test, of compliance with Section 9-10-301. The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit.

b. The facility may submit a permit application to request an alteration of the permit condition to change the NOx emission factor and/or adjust the operating range, based on the new test data.

B. Reporting - The owner/operator must report conditions outside of box within 96 hours of occurrence.

*33. For each source subject to Part 29, the owner/operator shall conduct source tests on the schedule listed below. The source tests are performed in order to measure NOx, CO, and O2 at the as-found firing rate, or at conditions reasonably specified by the APCO. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. (Reg.9-10-502)

D. <u>Source Testing Schedule</u>

4. Heater < 25 MMBtu/hr

One source test per consecutive 12 month period. The time interval between source tests shall not exceed 16 months.

5. Heaters ≥ 25 MMBtu/hr

Two source tests per consecutive 12 month period. The time interval between source tests shall not exceed 8 months and not be less than 5 months apart. The source test results shall be submitted to the district source test manager within 45 days of the test. (Reg.9-10-502)

6. If a source has been shutdown longer than the period allowed between source testing periods (e.g. <25 MMBtu/hr-> 12 mos or > 25 MMBtu/hr - > 8 mos), the owner/operator shall conduct the required semi-annual source test within 30 days of start up of the source.

B. Source Test Results > NOx Box Emission Factor

If the results of any source test under this part exceed the permitted concentrations or emission rates the owner/operator shall follow the requirements of Part 32A2 If the owner/operator chooses not to submit an application to revise the emission factor, the owner/operator shall conduct another Part 33 source test, at the same conditions, within 90 days of the initial test.

*34. For each source listed in Part 27 with a NOx CEM installed, the owner/operator shall conduct semi-annual district approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests. (Regulation 9-10-502, 1-522)

*35. For any source listed in Part 27 with a maximum firing limit greater than 25 MMBtu/hr for which any two source test results over any consecutive five year period are greater than or equal to 200 ppmv CO at 3% O2, the owner/operator shall properly install, properly maintain, and properly operate a CEM to continuously measure CO and O2. The owner/operator shall install the CEM within the time period allowed in the District's Manual of Procedures. (Regulation 9-10-502, 1-522)

*36. In addition to records required by 9-10-504, the facility must maintain records of all source tests conducted to demonstrate compliance with Parts number 27 and 31. These records shall be kept on site for at least five years from the date of entry in a District approved log and be made available to District staff upon request. (Recordkeeping, Regulation 9-10-504)

RECOMMENDATION

Issue a change in permit conditions to Tesoro Refining and Marketing Company for the following sources:

S909 No. 1 Feed Prep Heater (F9)
S912 No. 1 Feed Prep Heater (F12)
S913 No. 2 Feed Prep Heater (F13)
S915 Platformer Intermediate Heater (F15)
S916 No. 1 HDS Heater (F16)
S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Heater (F19)
S920 No. 2 HDS Heater (F20)
S924 Coker Anti-Coking Superheater (F24)
S926 No.2 Reformer Splitter Reboiler (F26)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S951 No. 2 Reformer Aux Reheater (F51)

EXEMPTIONS
none

By:_____
Pamela J. Leong
Air Quality Engineer II
April 12, 2007

Appendix A

NOx Boxes

Appendix B

Condition 18372

Condition # 18372
Application #2209 and 16484
Plant #12758
Application 15682 (April, 2007) Initial establishment of NOx box parameters. Delete part 4.

Parts 5 through 17 and part 24 are effective until January 1, 2005 Parts 27 through 36 are effective January 1, 2005

S-912 No. 12 Furnace F-12; Born, Maximum Firing Rate: 135 MMBtu/hr, No. 1 Feed Prep Unit Vacuum Residuum Feed Heater with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-913 No. 13 Furnace F-13; Petrochem, Vertical Cylindrical, Maximum Firing Rate: 59 MMBtu/hr, No. 2 Feed Prep Unit Vacuum Residuum Feed Heater with Callidus Technologies Inc. LE-CSG Low NOx Burners or equivalent

S-916 No. 1 HDS Charge Heater F-16; Braun, Cabin; Maximum Firing Rate: 55 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-919 No. 2 HDS Charge Heater, No. 19 Furnace, Foster Wheeler, Maximum Firing Rate: 65 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-920 No. 2 HDS Charge Heater, No. 20 Furnace, Foster Wheeler, Maximum Firing Rate: 63 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-921 No. 2 HDS Charge Heater F-21; Foster Wheeler, Cabin; Maximum Firing Rate: 63 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-922 No. 5 Gas Plant Debutanizer Reboiler F-22; Petrochem, Vertical Cylindrical; Maximum Firing Rate: 130 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-926 No. 2 Reformer Splitter Reboiler, No. 26 Furnace, Petrochem, Maximum Firing Rate: 145 MMBtu/hr with Callidus Technologies Inc. LE-CSG-W Low NOx Burners or equivalent

S-927 No. 2 Reformer Reactor Feed Preheater F-27; Lummus Multicell Cabin; Maximum Firing Rate: 280 MMBtu/hr abated by A-1431 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-950 No. 50 Unit Crude Feed Heater F-50; Alcorn, Box; 440 MMBtu/hr abated by A-1432 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-971 No. 3 Reformer Feed Preheater F-53; KTI, Multicell Box; Maximum Firing Rate: 300 MMBtu/hr abated by A-1433 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

S-972 No. 3 Reformer Debutanizer Reboiler F-54; KTI, Vertical Cylindrical; Maximum Firing Rate: 45 MMBtu/hr abated by A-1433 Technip Selective Catalytic Reduction System w Hitachi Catalyst or equivalent

1.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is equipped with a District approved dedicated fuel flow meter consistent with Regulation 9, Rule 10, Section 502.2. (basis: Regulation 9, Rule 10, Section 502.2)

2.) Permittee/Owner/Operator shall ensure that each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972 is fired exclusively on natural gas and/or refinery fuel gas. (basis: Regulation 9, Rule10)

3.) Permittee/Owner/Operator shall ensure that the maximum firing rate of each source listed does not exceed the corresponding HHV maximum firing rate, based on an operating day average (the amount of fuel fired over each 24 hour day divided by 24:

Source (#)	**Maximum Firing Rate (HHV) (mmBtu/hr)**	**Maximum Firiing Rate (HHV) (mmBtu/yr)**
S-912	135	1,182,600
S-913	59	516,840
S-916	55	481,800
S-919	65	569,400
S-920	63	551,880
S-921	63	551,880
S-922	130	1,138,800
S-926	145	1,270,200
S-927	280	2,452,800
S-950	440	3,854,400
S-971	300	2,628,000
S-972	45	394,200

(basis: Regulation 9, Rule 10)

4.) (Deleted: Specific NOx limits should not have been applied to S-912 and S-926, since they are both regulated under Regulation 9-10-301.) Basis: Regulation 9-10-301. ~~Permittee/Owner/Operator shall ensure that S-912 and S-926 are modified through the installation of ultra low NOx burners to achieve the NOx emission limit in the most recent NOx Compliance Plan that has been approved in writing by the District. The following limits shall be achieved on an operating day average:~~

~~**Source Applicable NOx Limit**~~

~~(#) (lb/mmbtu)~~
~~S-912 0.031~~
~~S-926 0.031~~
~~(basis: Regulation 9, Rule 10)~~

Parts 5 through 17 effective until December 1, 2004

5.) Within 45 days after the start-up of ultra low NOx burners at each of S-912 S-926 Permittee/Owner/Operator shall conduct a District approved source test measuring NOx, CO, and O2 from each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926 while the source is operated under each of the following four operating conditions, (1) low firing rate and low O2, (2) low firing rate and high O2, (3) high firing rate and low O2, and (4) high firing rate and high O2. District approved source testing under these four operating scenarios will establish the "box" for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926. (basis: Regulation 9, Rule 10)

6.) Based on the results of the District approved source testing defining the "box" for S-912, except for during periods of start-up or shutdown, the allowable operating range for S-912 is as follows:
- A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
- B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
- C. The maximum O2 concentration is XXX percent, by volume.
- D. The minimum O2 concentration is XXX percent, by volume.
- E. Each and all of part 6 of these conditions (including part 6A, 6B, 6C, and 6D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

7.) Based on the results of the District approved source testing defining the "box" for S-913, except for during periods of start-up or shutdown, the allowable operating range for S-913 is as follows:
- A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
- B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
- C. The maximum O2 concentration is XXX percent, by volume.
- D. The minimum O2 concentration is XXX percent, by volume.
- E. Each and all of part 7 of these conditions (including part 7A, 7B, 7C, and 7D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

8.) Based on the results of the District approved source testing defining the "box" for S-916, except for during periods of start-up or shutdown, the allowable operating range for S-916 is as follows:
- A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
- B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
- C. The maximum O2 concentration is XXX percent, by volume.
- D. The minimum O2 concentration is XXX percent, by volume.
- E. Each and all of part 8 of these conditions (including part 8A, 8B, 8C, and 8D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

9.) Based on the results of the District approved source testing defining the "box" for S-919, except for during periods of start-up or shutdown, the allowable operating range for S-919 is as follows:
- A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
- B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
- C. The maximum O2 concentration is XXX percent, by volume.
- D. The minimum O2 concentration is XXX percent, by volume.
- E. Each and all of part 9 of these conditions (including part 9A, 9B, 9C, and 9D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

10.) Based on the results of the District approved source testing defining the "box" for S-920, except for during periods of start-up or shutdown, the allowable operating range for S-920 is as follows:
- A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
- B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.

C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 10 of these conditions (including part 10A, 10B, 10C, and 10D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

11.) Based on the results of the District approved source testing defining the "box" for S-921, except for during periods of start-up or shutdown, the allowable operating range for S-921 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 11 of these conditions (including part 11A, 11B, 11C, and 11D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

12.) Based on the results of the District approved source testing defining the "box" for S-922, except for during periods of start-up or shutdown, the allowable operating range for S-922 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 12 of these conditions (including part 12A, 12B, 12C, and 12D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

13.) Based on the results of the District approved source testing defining the "box" for S-926, except for during periods of start-up or shutdown, theallowable operating range for S-926 is as follows:
A. The maximum firing rate (daily average, HHV) is XXX MMBtu/hr.
B. The minimum firing rate (daily average, HHV) is XXX MMBtu/hr.
C. The maximum O2 concentration is XXX percent, by volume.
D. The minimum O2 concentration is XXX percent, by volume.
E. Each and all of part 13 of these conditions (including part 13A, 13B, 13C, and 13D) shall become effective June 1, 2004. (basis: Regulation 9, Rule 10)

14.) After the completion of the initial source testing used to determine the "box" for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, two District approved source tests shall be conducted for each of S-912, S-913, S-916, S-919, S-920S-922, and S-926 each calendar year. The source tests shall measure NOx, CO, and O2. For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, the time interval between each of the two tests shall not be longer than 8 months. For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, the source test shall be conducted at the as-found firing rate, within 20% of the permitted O2 conditions likely to maximize NOx emissions.
(basis: Regulation 9, Rule 10)

15.) Not more than 30 days after the date upon which each source test is completed, two identical copies of the results of the source test shall be received by the District with one copy addressed to the District's Source Test Manager and the other addressed to the District's Engineering Division. (basis: Regulation 9, Rule 10)

16.) For each of S-912, S-913, S-916, S-919, S-920, S-921 , S-922, and S-926, if the results of any District approved source test indicates CO emissions greater than or equal to 200 ppmv, dry, corrected to 3 percent oxygen, then Permittee/Owner/Operator shall ensure that the subsequent two source tests conducted on that source are conducted at the as-found firing rate under conditions likely to maximize CO emissions. (basis: Regulation 9, Rule 10)

17.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, if the results of two or more of the District approved source tests for the source conducted over any 5 year period

demonstrates that CO emissions from the source are greater than 200 ppmv, dry, corrected to at 3% oxygen, then Permittee/Owner/Operator shall install and continuously operate a District approved CO CEM on that source. The Permittee/Owner/Operator shall install and continuously operate the District approved CO CEM within the time allowed as set forth in the District's Manual of Procedures. (basis: Regulation 9, Rule 10)

18.) Combustion exhaust from S-927 shall be ducted to and continuously abated by A-1431 whenever a fuel is fired at S-927 and the exhaust gasses from A-1431 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

19.) Combustion exhaust from S-950 shall be ducted to and continuously abated by A-1432 whenever a fuel is fired at S-950 and the exhaust gasses from A-1432 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

20.) Combustion exhaust from S-971 shall be ducted to and continuously abated by A-1433 whenever a fuel is fired at S-971 and the exhaust gasses from A-1433 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. (basis: Regulation 9, Rule 10)

21.) Combustion exhaust from S-972 shall be ducted to and continuously abated by A-1433 whenever a fuel is fired at S-972 and the exhaust gasses from A-1433 shall be measured by a District approved CEM that continuously monitors and records the emission rate of NOx, CO, and O2 in the exhaust gasses. Part 21 of these conditions shall not take effect until Permittee/Owner/Operator exersizes the portion of Authority to Construct #2209 authorizing the abatement of S-972 with A-1433. (basis: Regulation 9, Rule 10)

22.) For each of S-927, S-950, S-971, and S-927, ammonia slip from the SCR system abating the source shall not exceed 20 ppmv, dry, corrected to 3% oxygen. (basis: toxics)

23.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, S-926, S-927, S-950, S-971, and S-972, records shall be kept as required by Regulation 9, Rule 10, Section 504, except that the records shall be retained on site and be made available to the District staff for a period of at least 5 years from date of last entry. (basis: Regulation 9, Rule 10)

Part 24 effective until January 1, 2005

24.) For each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, Permittee/Owner/Operator shall record in a District approved log, the time and date of each District approved source test conducted for each source. The log shall be maintained on site and be made available to the District staff on request for at least 5 years from date of last entry. (basis: Regulation 9, Rule 10)

25.) In a District approved log (or logs), for each of S-912, S-913, S-916, S-919, S-920, S-921, S-922, and S-926, Permittee/Owner/Operator shall record the fuel use during each day at each source based on the fuel's (HHV). Permittee/Owner/Operator shall ensure that the log(s) is(are) maintained on site for at least 5 years from date of last entry and that the log(s) is (are) made available to the District staff upon request.
(basis: cumulative increase)

26.) The No. 6 Boiler (S904) serves as the emergency backup to No. 5 Boiler (S903). During this unusual mode of operation, the No. 6 Boiler is subject to the limits specified in Regulation 9-10-304 for CO Boilers and is considered "out of service" since it acting as the No. 5 Boiler. The historic average, described in Regulation 9-10-301.2 for No. 6 Boiler, will be used for compliance with the 0.033 lb/MMBTU refinery-wide average standard while No. 6 Boiler is operated in CO Boiler mode. (basis: cumulative increase)

Parts 27 through 36 are effective January 1, 2005

*27. The following sources are subject to the refinery-wide NOx emission rate and CO concentration limits in Regulation 9-10: (Regulation 9-10-301 & 305)

S#	Description	CEM (Y/N)
S908	No. 3 Crude Heater	Y
S909	No. 1 Feed Prep Heater (F9)	N
S912	No. 1 Feed Prep Heater (F12)	N
S913	No. 2 Feed Prep Heater (F13)	N
S915	Platformer Intermediate Heater (F15)	N
S916	No. 1 HDS Heater (F16)	N
S917	No. 1 HDS Prefract Reboiler (F17)	N
S919	No. 2 HDS Heater (F19)	N
S920	No. 2 HDS Heater (F20)	N
S921	No. 2 HDS Heater (F21) (out of service)	N
S922	No. 5 Gas Plant Debutanizer Reboiler	Y~~N~~
S924	Coker Anit-Coking Superheater (F24)	N
S926	No.2 Reformer Splitter Reboiler (F26)	N
S927	No. 2 Reformer Feed Preheater (F27) & A1431	Y
S928	HDN Reactor A Heater (F28)	N
S929	HDN Reactor B Heater (F29)	N
S930	HDN Reacator C Heater (F30)	N
S931	Hydrocracker Reactor 1 Heater (F31)	N
S932	Hydrocracker Reactor 2 Heater (F32)	N
S933	Hydrocracker Reactor 3 Heater (F33)	N
S934	Hydrocracker Stabilizer Reboiler (F34)	Y~~N~~
S935	Hydrocracker Splitter Reboiler (F35)	Y~~N~~
S937	Hydrogen Plant Heater (F37)	Y
S950	No. 50 Unit Curde Feed Heater (F50) & A1432	Y
S951	No. 2 Reformer Aux Reheater (F51)	N
S971	No. 3 Reformer Feed Preheater (F53) & A1433	Y
S972	No. 3 Reformer Dubtanizer Reboiler (F54) & A1433	Y
S973	No. 3 HDS Recycle Gas Heater (F55)	Y
S974	No. 3 HDS Fract Feed Heater (F56)	Y

*28. The owner/operator of each source with a maximum firing rate greater than 25 MMBtu/hr listed in Part 27 shall properly install, properly maintain, and properly operate an O2 monitor and recorder. This Part shall be effective September 1, 2004. (Regulation 9-10-502)

*29. The owner/operator shall operate each source listed in Part 27, which does not have a NOx CEM within specified ranges of operating conditions (firing rate and oxygen content) as detailed in Part 31. The ranges shall be established by utilizing data from district-approved source tests. (Reg. 9-10-502)

E. The NOx Box for units with a maximum firing rate of 25 MMBtu/hr or more shall be established using the procedures in Part 30.

F. The NOx Box for units with a maximum firing rate less than 25MMBtu/hr shall be established as follows: High-fire shall be the maximum rated capacity. Low-fire shall be 20% of the maximum rated capacity. There shall be no maximum or minimum O_2.

*30. The owner/operator shall establish the initial NOx box for each source subject to Part 29 by Janaury 1, 2005 . The NOx Box may consist of two operating ranges in order to allow for operating flexibility and to encourage emission minimization during standard operation. (Regulation 9-10-502) The procedure for establishing the NOx box is

A. Conduct district approved source tests for NOx and CO, while varying the oxygen concentration and firing rate over the desired operating ranges for the furnace;

B. Determine the minimum and maximum oxygen concentrations and firing rates for the desired operating ranges (Note that the minimum O2 at low-fire may be different than the minimum O2 at high-fire. The same is true for the maximum O2). The owner/operator shall also verify the accuracy of the O2 monitor on an annual basis.

C. Determine the highest NOx emission factor (lb/Mmbtu) over the preferred operating ranges while maintaining CO concentration below 200 ppm; the owner/operator may choose to use a higher NOx emission factor than tested.

H. Plot the points representing the desired operating ranges on a graph. The resulting polygon(s) are the NOx Box, which represents the allowable operating range(s) for the furnace under which the NOx emission factor from part 31a is deemed to be valid.

1) The NOx Box can represent/utilize either one or two emission factors.
2) The NOx Box for each emission factor can be represented either as a 4- or 5-sided polygon The NOx box is the area within the 4- or 5-sided polygon formed by connecting the source test parameters that lie about the perimeter of successful approved source tests. The source test parameters forming the corners of the NOx box are listed in Part 31.

I. Upon establishment of each NOx Box, the owner/operator shall prepare a graphical representation of the box. The representation shall be made available on-site for APCO review upon request. The box shall also be submitted to the BAAQMD with permit amendments.

*31. Except as provided in part 31B & C, the owner/operator shall operate each source within the NOx Box ranges listed below at all times of operation. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (Regulation 9-10-502)

A. NOx Box ranges

Source No.	|Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
909	0.146	5.6, 53.71	9.6, 41.41	2.1, 83.60	3.1, 67.35	5.7, 76.49
	0.148	9.6, 41.41	11.2, 61.81	2.1, 83.60	5.7, 76.49	7.3, 79.58
912	0.027	2.1, 60.50	3.4, 70.10	1.9, 101.51	4.0, 104.13	5.4, 100.24
	0.034	2.1, 60.50	7.0, 57.57	5.4, 100.24	3.4, 70.10	6.5, 99.68
913	0.027	1.2, 19.89	3.0, 14.80	1.3, 30.33	2.1, 15.53	4.1, 25.71
915	0.143	0, 3.85	8.0, 3.85	0, 20.00	N/A	8.0, 20.00
	0.098	8.0, 3.85	>8.0, 3.85	8.0, 20.00	N/A	>8.0, 20.00
916	0.088	5.7, 9.53	9.3, 9.17	5.4, 30.00	N/A	9.1, 34.05
	0.099	9.3, 9.17	10.6, 24.64	9.1, 34.05	N/A	10.4, 33.11
917	0.061	0, 3.60	-, 3.6	0, 18.00	N/A	-, 18.00
919	0.047	3.9, 23.30	8.3, 22.06	5.8, 48.20	9.2, 39.12	10.1, 47.20

Source No.	|Emission Factor (lb/MMBtu)	Min O2 at Low Firing (O2% , MMBtu/hr)	Max O2 at Low Firing (O2% , MMBtu/hr)	Min O2 at High Firing (O2% , MMBtu/hr)	Mid O2 at Mid/High Firing (polygon) (O2% , MMBtu/hr)	Max O2 at High Firing (O2% , MMBtu/hr)
	0.056	8.3, 22.06	9.5, 21.10	9.2, 39.12	N/A	10.1, 47.20
920	0.046	5.0, 24.84	7.7, 17.86	5.8, 40.77	7.1, 15.34	7.3, 42.64
	0.055	7.7, 17.86	10.8, 27.53	7.3, 42.64	N/A	10.0, 45.15
~~921~~						
~~922~~						
924	0.106	0.0, 3.20	-, 3.20	0.0, 16.00	N/A	-, 16.00
926	0.032	1.8, 32.81	6.0, 40.89	2.9, 126.72	4.4, 32.81	3.9, 131.59
	0.037	5.0, 40.89	7.0, 77.89	3.9, 131.59	N/A	4.2, 122.33
928	0.044	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.073	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
929	0.024	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.087	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
930	0.033	0.0, 4.00	< 6.0, 4.00	0.0, 20.00	N/A	< 6.0, 20.00
	0.077	6.0, 4.00	> 6.0, 4.00	6.0, 20.00	N/A	> 6.0, 20.00
931	0.034	0.0, 4.00	< 9.0, 4.00	0.0, 20.00	N/A	< 9.0, 20.00
	0.073	9.0, 4.00	> 9.0, 4.00	9.0, 20.00	N/A	> 9.0, 20.00
932	0.037	0.0, 4.00	< 4.0, 4.00	0.0, 20.00	N/A	< 4.0, 20.00
	0.053	4.0, 4.00	> 4.0, 4.00	4.0, 20.00	N/A	> 4.0, 20.00
933	0.035	0.0, 4.00	< 5.0, 4.00	0.0, 20.00	N/A	< 5.0, 20.00
	0.050	5.0, 4.00	>5.0, 4.00	5.0, 20.00	N/A	> 5.0, 20.00
~~934~~						
~~935~~						
951	0.111	5.2, 2.68	12.1, 0.78	5.0, 10.42	4.2, 7.78	10.4, 10.19
	0.175	12.1, 0.78	13.6, 1.73	10.4, 10.19	N/A	13.5, 2.61

The limits listed above are based on a calendar day averaging period for both firing rate and O2%.

F. Part 31A. does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity), during startup or shutdown periods, or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.2 (i.e. units out of service & 30-day averaging data).

G. Part 31A. does not apply during any source test required or permitted by this condition. (Reg. 9-10-502). See Part 33 for the consequences of source test results that exceed the emission factors in Part 31.

*32. NOx Box Deviations (Regulation 9-10-502)

A. The owner/operator may deviate from the NOx Box (either the firing rate or oxygen limit) provided that the owner/operator conducts a district approved source test which reasonably represents the past operation outside of the established ranges. The source test representing the new conditions shall be conducted no later than the next regularly scheduled source test period, or within eight months, whichever is sooner. The source test results will establish whether the source was operating outside of the emission factor utilized for the source. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and

the APCO may grant, an extension of 15 days for submittal of results. As necessary, a permit amendment shall be submitted.

5) Source Test <= Emission Factor

If the results of this source test do not exceed the higher NOx emission factor in Part 31, or the CO limit in Part 35, the unit will not be considered to be in violation during this period for operating out of the "box."

a. The facility may submit an accelerated permit program permit application to request an administrative change of the permit condition to adjust the NOx Box operating range(s), based on the new test data.

6) Source Test > Emission Factor

If the results of this source test exceed the permitted emission concentrations or emission rates then the actions described below must be followed:

a. Utilizing measured emission concentration or rate, the owner/operator shall perform an assessment, retroactive to the date of the previous source test, of compliance with Section 9-10-301. The unit will be considered to have been in violation of 9-10-301 for each day the facility was operated in excess of the refinery wide limit.

b. The facility may submit a permit application to request an alteration of the permit condition to change the NOx emission factor and/or adjust the operating range, based on the new test data.

B. Reporting - The owner/operator must report conditions outside of box within 96 hours of occurrence.

*33. For each source subject to Part 29, the owner/operator shall conduct source tests on the schedule listed below. The source tests are performed in order to measure NOx, CO, and O2 at the as-found firing rate, or at conditions reasonably specified by the APCO. The source test results shall be submitted to the district source test manager within 45 days of the test. The owner/operator may request, and the APCO may grant, an extension of 15 days for submittal of results. (Reg.9-10-502)

G. <u>Source Testing Schedule</u>

7. Heater < 25 MMBtu/hr

One source test per consecutive 12 month period. The time interval between source tests shall not exceed 16 months.

8. Heaters ≥ 25 MMBtu/hr

Two source tests per consecutive 12 month period. The time interval between source tests shall not exceed 8 months and not be less than 5 months apart. The source test results shall be submitted to the district source test manager within 45 days of the test. (Reg.9-10-502)

9. If a source has been shutdown longer than the period allowed between source testing periods (e.g. <25 MMBtu/hr-> 12 mos or > 25 MMBtu/hr - > 8 mos), the owner/operator shall conduct the required semi-annual source test within 30 days of start up of the source.

<u>B. Source Test Results > NOx Box Emission Factor</u>

If the results of any source test under this part exceed the permitted concentrations or emission rates the owner/operator shall follow the requirements of Part 32A2 If the owner/operator chooses not to submit an application to revise the emission factor, the

owner/operator shall conduct another Part 33 source test, at the same conditions, within 90 days of the initial test.

*34. For each source listed in Part 27 with a NOx CEM installed, the owner/operator shall conduct semi-annual district approved CO source tests at as-found conditions. The time interval between source tests shall not exceed 8 months. District conducted CO emission tests associated with District-conducted NOx CEM field accuracy tests may be substituted for the CO semi-annual source tests. (Regulation 9-10-502, 1-522)

*35. For any source listed in Part 27 with a maximum firing limit greater than 25 MMBtu/hr for which any two source test results over any consecutive five year period are greater than or equal to 200 ppmv CO at 3% O2, the owner/operator shall properly install, properly maintain, and properly operate a CEM to continuously measure CO and O2. The owner/operator shall install the CEM within the time period allowed in the District's Manual of Procedures. (Regulation 9-10-502, 1-522)

*36. In addition to records required by 9-10-504, the facility must maintain records of all source tests conducted to demonstrate compliance with Parts number 27 and 31. These records shall be kept on site for at least five years from the date of entry in a District approved log and be made available to District staff upon request. (Recordkeeping, Regulation 9-10-504)

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 15949

APPLICATION 15949, SULFUR RECOVERY UNIT (CONSENT DECREE)

BACKGROUND

Tesoro Refining and Marketing Company is applying for an alteration or condition change to the following existing sources:

S1401	**Sulfur Recovery Unit**
S904	**No. 6 Boiler**
S905	**No. 6 Boiler Startup Heater**
S915	**Platformer Intermediate Heater (F15)**
S916	**No. 1 HDS Heater (F16)**
S917	**No. 1 HDS Prefract Reboiler (F17)**
S919	**No. 2 HDS Heater (F19)**
S920	**No. 2 HDS Heater (F20)**
S921	**No. 2 HDS Heater (F21)**
S922	**No. 5 Gas Plant Debutanizer Reboiler**
S923	**Coker Auxiliary Startup Burner**
S924	**Coker Anti-Coking Superheater (F24)**
S925	**Coker Attriting Superheater (F25)**
S926	**No.2 Reformer Splitter Reboiler (F26)**
S927	**No. 2 Reformer Heat/Reheating (F27)**
S928	**HDN Reactor A Heater (F28)**
S929	**HDN Reactor B Heater (F29)**
S930	**HDN Reactor C Heater (F30)**
S931	**Hydrocracker Reactor 1 Heater (F31)**
S932	**Hydrocracker Reactor 2 Heater (F32)**
S933	**Hydrocracker Reactor 3 Heater (F33)**
S934	**Hydrocracker Stabilizer Reboiler (F34)**
S935	**Hydrocracker Splitter Reboiler (F35)**
S937	**Hydrogen Plant Heater (F37)**
S938	**HDN Prefractionator Heater (F38)**
S939	**Propane Product Heater (F50)**
S950	**50 Crude Heater (F50)**
S1412	**Sulfuric Acid Plant Startup Heater**
S1470	**No. 3 Crude Vacuum Distillation Heater (F71)**

In a Consent Decree with the United States Environmental Protection Agency (EPA), Tesoro is subject to several emission limits and standards as well as requirements for compliance monitoring effective December 31, 2006. The text of the Consent Decree may be found at the following web address: http://www.epa.gov/compliance/resources/decrees/civil/caa/valero-cd.pdf. The consent decree imposes NSPS Subparts A and J Applicability on the S-1401 Sulfur Recovery Unit and the heaters and boilers listed above. The limits ard requirements became effective on December 31, 2006 and were achieved without any additional alterations or physical modifications to the affected sources.

Consent Decree Emission Limits and Standards for the S-1401 Sulfur Recovery Unit

Section XII B of the consent decree imposes NSPS Subparts A and J Applicability on the S-1401 SRU. Paragraph 221 designates the SRU as an "affected facility" pursuant to 40 CFR Part 60, Subpart J, and requires that the owner/operator of S-1401 "comply with the applicable requirements of 40 CFR Part 60, Subparts A and J, as such requirements apply to SRP's" (Sulfur Recovery Plants).

Paragraph 222 defines the Golden Eagle SRP to be the Sulfur Recovery Unit (S-1401) and lists the applicability date of December 31, 2006.

Paragraph 224 requires that by December 31, 2006, "all emission points (stacks) to the atmosphere for tail gas emissions from each of its SRPs will be monitored and reported upon in accordance with 40 CFR 60.7(c), 60.13, and 60.105." The S-1401 stack is the only emission point for the tail gas emissions from S-1401 SRU abated by A-1402 SCOT Tail Gas Unit/Incinerator and S-1420 Tail Gas In-Line Burner. Tesoro meets the consent decree requirement with existing SO2 and O2 CEMs that were installed on the S-1401 SRU stack in accordance with NSPS requirements for 40 CFR 63 Subpart UUU compliance as reported in the September 2, 2005 Notice of Compliance Status, and calibrated, maintained, and operated to monitor compliance with 40 CFR 63 Subpart UUU and BAAQMD emission limits for SO2 from SRUs (BAAQMD Regulation 9-1-307).

Paragraph 226 required Tesoro to "re-route any SRP sulfur pit emissions from the refineries subject to this Consent Decree such that all sulfur pit emissions to the atmosphere are either eliminated or included as part of the applicable SRP's emissions subject to NSPS Subpart J limit for SO2." Tesoro has met this requirement prior to the December 231, 2006 deadline. Emissions from the S-1405 Sulfur Collection Pit were rerouted to the S-1411 Sulfuric Acid Plant (SAP) and/or the S-1401 Sulfur Recovery Unit (SRU) (BAAQMD application 14374). New permit condition 267, part 4 was imposed as a condition of the Authority to Construct that was issued on September 7, 2006.

Paragraph 227 requires Tesoro to determine "compliance with the SRP emission limits" by applying "the 'startup' and 'shutdown' provisions set forth in the NSPS Subpart A to the SRP but not to the independent startup or shutdown of its corresponding control device(s) (e.g., Tail Gas Treatment Unit (TGTU)). However, the malfunction exemption set forth in NSPS Subpart A shall apply to both the SRP and its control device(s) (e.g., TGTU)."

Consent Decree Emission Limits and Standards for Heaters and Boilers

Section IX of the consent decree imposes NSPS Subparts A and J Requirements on the heaters and boilers listed on page 1 of this engineering evaluation.

Paragraph 117 requires that by "no later than December 31, 2006….all heaters and boilers located at the Golden Eagle Refinery are "affected facilities" as fuel gas combustion devices, for purposes of 40 CFR Part 60, Subpart J, and shall comply with all requirements of 40 CFR Pat 60, Subparts A and J as such requirements apply to fuel gas combustion devices."

"All" heaters and boilers in paragraph 117 are defined in paragraph IV (12) of the consent decree and limits the applicability of paragraph 117 by excluding "any turbine, internal combustion engine, duct burner, CO boiler, incinerator or incinerator waste heat boiler". The requirements of Section IX do not apply to heaters and boilers that were subject to NSPS Subpart J prior to the consent decree due to construction or modification dates.

Two existing permit conditions at Tesoro identify heaters and boilers that were subject to NSPS Subpart J prior to the consent decree. See appendix A for the text of the permit conditions that subject Tesoro to NSPS Subpart J. Condition 12016 subjects Tesoro for NSPS Subpart J for all Clean Fuels Project combustion sources. No Clean Fuels Project Combustion sources were ever constructed, therefore no combustion sources are subject to Condition 12016. Condition 8077, part B4A requires Tesoro to install, calibrate, maintain, and operate an instrument to "continuously monitor and record the H2S concentrations in fuel gas being fed to the new or modified units, which will be required to comply with the New Source Performance Standard for the burning of fuel gas (0.23 g of H2S/dry standard M3 on a 3-hour average basis)". The listed heaters and boilers are: S-951, S-971, S-972, S-973, S-974, and S-991.

Paragraph 118 exempts heaters and boilers listed in Appendix O of the consent decree from the December 31, 2006 effective date. The decree requires these heaters and boilers to become affected facilities to be subject to and comply with NSPS Subparts A and J by December 31, 2010. Tesoro will submit another permit application to incorporate the applicable consent decree limits for these sources (F-8, F-9, F-12, F-13, and the FCC Startup Heater) at a later date as required by the consent decree.

Paragraph 120 states that "lodging of this Consent Decree shall satisfy any obligation otherwise applicable to …..Tesoro to provide notification in accordance with 40 CFR Part 60, Subparts A and J, including without limitation

of 40 CFR 60.7, with respect to the provisions of 40 CFR Part 60, Subparts A and J, as such requirements apply to fuel gas combustion devices.

Paragraph 121 requires CEMs or approved AMP's to be "used to demonstrate compliance with the respective H2S/SO2 concentration emission limits established pursuant to Part IX." Tesoro meets this requirement for all affected heaters and boilers subject to the December 31, 2006 effective date with the existing H2S CEMS on the 100# fuel gas system. The 100# fuel gas H2S CEMS was installed prior to the consent decree to monitor compliance with NSPS Subpart J for sources S-951, S-972, S-973, S-974, and S-991 (permit condition 8077, part B4A).

Paragraph 121 also requires Tesoro to "install, certify, calibrate, maintain and operate all CEMS required by this paragraph in accordance with the provisions of 40 CFR 60.13 that are applicable to CEMS…and Part 60, Appendices A and F, and the applicable performance specification test of 40 CFR Part 60, Appendix B. With respect to 40 CFR Part 60 Appendix F, in lieu of the requirements of 40 CFR Part 60, Appendix F 5.1.1, 5.1.3, and 5.1.4, …Tesoro, must conduct either a RAA or a RATA on each CEMS at least once every three (3) years. Tesoro, must also conduct a CGA each calendar quarter during which a RAA or a RATA is performed." At Golden Eagle, Tesoro "may conduct a FAT, as defined in BAAQMD regulations or procedures, in lieu of the required RAA or CGA."

The exceptions to 40 CFR 60 Appendix F that are allowed in paragraph 121 are not applicable for the existing 100# fuel gas H2S CEMS since this CEMS was not installed for compliance only with the consent decree and is otherwise subject to NSPS Subpart J. See BAAQMD permit condition 8077 part B4A. The allowable exceptions may apply to other CEMS used to comply with Section IX of the consent decree, provided that the CEMS are not otherwise subject to NSPS Subpart J.

Paragraph 122 requires that the "SO2 limits established pursuant to this Part shall not apply during periods of startup, shutdown or malfunction of the heaters and boilers or the malfunction of SO2 control equipment, if any, provided that during startup, shutdown or malfunction", Tesoro "shall, to the extent practicable, maintain and operate the relevant affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions."

EMISSIONS

As described in the "Background" above, the Consent Decree with EPA requires Tesoro to submit an application for additional emission limits and requirements to their permits. There will be no increase in emissions.

PLANT CUMULATIVE INCREASE

The cumulative increase for this application is ZERO for all pollutants.

TOXIC RISK SCREEN ANALYSIS

Toxic emissions will not increase as a result of this application. Therefore, a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-1401 Sulfur Recovery Unit and the heaters and boilers listed in the "Background" section shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Thus for any period aggregating more than three minutes in any hour, there should be no visible emission as dark or darker than No. 1 on the Ringlemann Chart (Regulation 6-301) and no visible emission to exceed 20% opacity (Regulation 6-302).

For S-1401 SRU, the owner/operator is also subject to Reg. 9-1-307 Emission Limitations for Sulfur Recovery Plants, Reg. 9-1-313 Sulfur Removal Operations at Petroleum Refineries, and 9-1-502 Emission Monitoring Requirements. The owner/operator is also subject to Reg. 9-2-301 Limitations on Hydrogen Sulfide and Reg. 9-2-501 Area Monitoring Requirements of H2S.

The owner/operator of the heaters and boilers is subject to Regulation 9 Rule 10: Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries. The owner/operator is subject to the NOx and CO limits of Reg. 9-10-301 and 9-10-305. The owner/operator is also subject to the monitoring requirements of Reg. 9-10-502 and the recordkeeping and reporting requirements of Regs. 9-10-504 and 9-10-505.

The owner/operator is also subject to the National Emission Standards for Hazardous Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (4/11/02), 40 CFR 63 Subpart UUU for S-1401.

BACT and PSD do not apply.

NESHAPS:
The owner/operator is also subject to the National Emission Standards for Hazardous Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units (4/11/02), 40 CFR 63 Subpart UUU for S-1401.

NSPS:
As described in the "Background" above, Tesoro is subject to 40 CFR, Part 60, Subparts A and J.

OFFSETS are not triggered.

PERMIT CONDITIONS
The new limits and requirements imposed by the Consent Decree with EPA will be added to existing permit condition 267 for S-1401 Sulfur Recovery Unit. For the heaters and boilers, a new permit condition will be created to impose the new limits and requirements of the Consent Decree with EPA. Condition 8077 Part B4A will be modified to correct the names and source numbers of the affected sources. Changes are in strikeout/underline format.

COND# 267 ----------
Application 15949 (May 2007): Add EPA Consent Decree requirements (Case No. SA-05-CA-0569-RF: United States of America v. Valero Refining Company – California, et. al.).

S1401 Sulfur Recovery Unit
S1405 Sulfur Collection Pit
S1420 Tail Gas In-Line Burner

1. Permittee/Owner/Operator shall ensure that the SCOT unit is scheduled for maintenance to coincide with the turnaround of either the Coker or the FCCU.
(Basis: cumulative increase)

2. Permittee/Owner/Operator shall ensure that the sulfur dioxide (SO2) emission rate does not exceed 4 lb/ton of sulfur processed.
(Basis: cumulative increase)

3. In a District approved log, Permittee/Owner/Operator shall record daily SO2 emissions and sulfur production on a monthly basis. 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: cumulative increase)

4. Permittee/Owner/Operator shall abate the Sulfur Collection Pit (S-1405) by either the Sulfuric Acid Plant (SAP) (S-1411) or the Sulfur Recovery Unit (SRU) (S-1401) whenever S-1405 is being filled with sulfur or when S-1401 is in operation.
(Basis: cumulative increase

5. The S-1401 Sulfur Recovery Unit is an "affected facility" under 40 CFR 60 Subpart J. The owner/operator shall comply with all applicable provisions of 40 CFR Subparts A and J for Sulfur Recovery Units and shall monitor and report in accordance with 40 CFR 60.7, 60.13, and 60.105 for all emission points (stacks) to the atmosphere for tail gas emissions except during periods of startup, shutdown, or malfunction of S-1401 Sulfur Recovery Unit or during malfunction of the A-1402 SCOT tail gas unit/incinerator.
(Basis: NSPS Subparts A and J, EPA Consent Decree paragraphs 221, 222, 224, 225, and 227)

NEW CONDITION FOR HEATERS and BOILERS
Application 15949 (May 2007): Add EPA Consent Decree requirements (Case No. SA-05-CA-0569-RF: United States of America v. Valero Refining Company – California, et. al.).

S904 No. 6 Boiler
S905 No. 6 Boiler Startup Heater
S915 Platformer Intermediate Heater (F15)
S916 No. 1 HDS Heater (F16)
S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Heater (F19)
S920 No. 2 HDS Heater (F20)
S921 No. 2 HDS Heater (F21)
S922 No. 5 Gas Plant Debutanizer Reboiler
S923 Coker Auxiliary Startup Burner
S924 Coker Anti-Coking Superheater (F24)
S925 Coker Attriting Superheater (F25)
S926 No.2 Reformer Splitter Reboiler (F26)
S927 No. 2 Reformer Heat/Reheating (F27)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S934 Hydrocracker Stabilizer Reboiler (F34)
S935 Hydrocracker Splitter Reboiler (F35)
S937 Hydrogen Plant Heater (F37)
S938 HDN Prefractionator Heater (F38)
S939 Propane Product Heater (F50)

S950 50 Crude Heater (F50)
S1412 Sulfuric Acid Plant Startup Heater
S1470 No. 3 Crude Vacuum Distillation Heater (F71)

1. The heaters and boilers listed above shall be "affected facilities" under 40 CFR 60 Subpart J as fuel gas combustion devices. Except as allowed in this permit condition, the owner/operator shall comply with all applicable provisions of 40 CFR 60 Subparts A and J for these fuel gas combustion devices, except during periods of startup, shutdown, or malfunction of the affected facilities or the malfunction of the associated control equipment, if any, provided that during startup, shutdown, or malfunction, the owner/operator shall, to the extent practicable, maintain, and operate the affected facilities including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions.
(Basis: NSPS Subparts A and J, EPA Consent Decree paragraphs 12, 117, 118 and 122.)

2. The owner/operator is exempt from notification requirements in accordance with 40 CFR Part 60, Subparts A and J, including without limitation 40 CFR 60.7, with respect to the provisions of 40 CFR, Subparts A and J, as such requirements apply to the fuel gas combustion devices listed in this permit condition.
(Basis: EPA Consent Decree paragraph 120.)

3. The owner/operator shall use either continuous emissions monitoring systems (CEMS) or an approved alternative monitoring plan (AMP) to demonstrate compliance with the NSPS Subpart J emission limits for the fuel gas combustion devices listed in this permit condition.
(Basis: NSPS Subparts A and J, EPA Consent Decree paragraph 121.)

4. The owner/operator shall conduct the accuracy tests listed below on the CEMS used to comply with Part 3 unless that CEMS is otherwise subject to the requirements of NSPS Subparts A and J. These accuracy tests are allowed in lieu of the requirements of Part 60, Appendix F 5.1.1, 5.1.3, and 5.1.4.

a. Conduct either a RAA or RATA on each CEMS at least once every three years.
b. Conduct a CGA on each CEMS each calendar quarter during which a RAA or a RATA is not performed.
c. Conduct a FAT, as defined in the BAAQMD regulations or procedures, if desired, in lieu of any required RAA or CGA.

(Basis: EPA Consent Decree paragraph 121.)

COND# 8077 ----------

S57 Tank A-57
S323 Tank A-323
S848 FCCU Merox Unit
S850 No. 3 HDS Unit
S908 No. 3 Crude Heater (F8)
S909 No. 1 Feed Prep Heater (F9)
S912 No. 1 Feed Prep Heater (F12)
S913 No. 2 Feed Prep Heater (F13)
S916 No. 1 HDS Heater (F16)

S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Depent Reboiler (F19)
S920 No. 2 HDS Charge Heater (F20)
S921 No. 2 HDS Charge Heater (F21)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S934 Hydrocracker Stabilizer Reboiler (F34)
S935 Hydrocracker Splitter Reboiler (F35)
S937 Hydrogen Plant Heater (F37)
S938 HDN Prefractionator Heater (F38)
S951 No. 2 Reformer Aux Reheater (F51)
S952 Internal Combustion Engine
S953 Internal Combustion Engine
S954 Internal Combustion Engine
S971 No. 3 Reformer UOP Furnace (F53)
S972 No. 3 Reformer Debutanizer Reboiler (F54)
S973 No. 3 HDS Recycle Gas Heater (F~~55~~56)
S974 No. 3 HDS Fract Feed Heater (F~~56~~55)
S991 FCCU Preheat Furnace H-57
S1009 Alkylation Unit
~~S1020 No. 3 UOP Reformer~~

PERMIT NO. 3318: REFINERY MODERNIZATION PROJECT PERMIT CONDITIONS NEW PERMIT CONDITIONS FOR PERMIT NO. 3318
Permit Application 14047: Clarify conditions to allow owner/operator to shutdown ammonia injection to A-31 SCR during both startup and shutdown of S-974 (Part A2A).

B4. Monitoring. The following monitoring instruments listed shall be installed, calibrated, maintained and operated by Permittee/Owner/Operator:

A. An instrument to continuously monitor and record the H2S concentrations in fuel gas. being fed to the following new or modified units, which will be required to comply with the New Source Performance Standard for the burning of fuel gas (0.23 grams of H2S/dry standard m3 on a 3-hour average basis):
No. 3 HDS Recycle Gas Heater, S-973
No. 3 HDS Fractionator Feed Heater, S-974
FCCU Preheat Furnace, S-991
Nos. 51, 53, and 54 Furnaces (S-951, S-~~1020~~971, and S-~~1021~~972, respectively)
(basis: NSPS)

RECOMMENDATION
Issue a condition change to Tesoro Refining and Marketing Company for the following sources:

S1401 Sulfur Recovery Unit
S904 No. 6 Boiler
S905 No. 6 Boiler Startup Heater
S915 Platformer Intermediate Heater (F15)
S916 No. 1 HDS Heater (F16)
S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Heater (F19)
S920 No. 2 HDS Heater (F20)
S921 No. 2 HDS Heater (F21)
S922 No. 5 Gas Plant Debutanizer Reboiler
S923 Coker Auxiliary Startup Burner
S924 Coker Anti-Coking Superheater (F24)
S925 Coker Attriting Superheater (F25)
S926 No.2 Reformer Splitter Reboiler (F26)
S927 No. 2 Reformer Heat/Reheating (F27)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S934 Hydrocracker Stabilizer Reboiler (F34)
S935 Hydrocracker Splitter Reboiler (F35)
S937 Hydrogen Plant Heater (F37)
S938 HDN Prefractionator Heater (F38)
S939 Propane Product Heater (F50)
S950 50 Crude Heater (F50)
S1412 Sulfuric Acid Plant Startup Heater
S1470 No. 3 Crude Vacuum Distillation Heater (F71)

EXEMPTIONS
None.

By:_____
Pamela Leong
Air Quality Engineer II
May 18, 2007

Appendix A

Heaters and Boilers Subject to NSPS Subpart J prior to Consent Decree

(Excerpts from conditions subject to Subpart J are listed.)

Condition ID #12016
Application 10912

Clean Fuels Project
Permit Conditions

Unless specified otherwise, the following permit conditions apply only to sources installed or modified as part of the Clean Fuels Project.

9.5 Fuel Gas System

1. The refinery fuel gas burned in any Clean Fuels Project combustion source shall be limited to all of the following:
a. 0.1 grain/dscf (163 ppm) H2S averaged over 3 hours (basis: NSPS: 40 CFR 60 Subpart J),
b. 100 ppmv H2S averaged over any consecutive 24-hour period
(basis: BACT)
c. 50 ppmv H2S averaged over any consecutive 12-month period; and,
(basis: BACT)
d. 100 ppmv total reduced sulfur (hydrogen sulfide, methyl mercaptan, carbon disulfide, dimethyl sulfide, dimethyl disulfide, and carbonyl sulfide), expressed as H2S equivalent, averaged over any consecutive 12-month period.
(basis: BACT)

2. Permittee/Owner/Operator shall install a continuous gaseous fuel monitor/recorder to determine the H2S content of the refinery fuel gas prior to combustion in all Clean Fuels Project combustion sources. Permittee/Owner/Operator shall also, prior to combustion in all Clean Fuels Project combustion sources, install a continuous monitor/recorder, or an alternate monitoring method approved by the District, to measure total reduced sulfur compounds in the refinery fuel gas expressed as H2S equivalent.
(basis: BACT, NSPS: 40 CFR 60 Subpart J)

COND# 8077 ----------
NOTE: Before Corrections are made (see "Conditions" section in Engineering Evaluation).

S57 Tank A-57
S323 Tank A-323

S848 FCCU Merox Unit
S850 No. 3 HDS Unit
S908 No. 3 Crude Heater (F8)
S909 No. 1 Feed Prep Heater (F9)
S912 No. 1 Feed Prep Heater (F12)
S913 No. 2 Feed Prep Heater (F13)
S916 No. 1 HDS Heater (F16)
S917 No. 1 HDS Prefract Reboiler (F17)
S919 No. 2 HDS Depent Reboiler (F19)
S920 No. 2 HDS Charge Heater (F20)
S921 No. 2 HDS Charge Heater (F21)
S928 HDN Reactor A Heater (F28)
S929 HDN Reactor B Heater (F29)
S930 HDN Reactor C Heater (F30)
S931 Hydrocracker Reactor 1 Heater (F31)
S932 Hydrocracker Reactor 2 Heater (F32)
S933 Hydrocracker Reactor 3 Heater (F33)
S934 Hydrocracker Stabilizer Reboiler (F34)
S935 Hydrocracker Splitter Reboiler (F35)
S937 Hydrogen Plant Heater (F37)
S938 HDN Prefractionator Heater (F38)
S951 No. 2 Reformer Aux Reheater (F51)
S952 Internal Combustion Engine
S953 Internal Combustion Engine
S954 Internal Combustion Engine
S973 No. 3 HDS Recycle Gas Heater (F55)
S974 No. 3 HDS Fract Feed Heater (F56)
S991 FCCU Preheat Furnace H-57
S1009 Alkylation Unit
S1020 No. 3 UOP Reformer

PERMIT NO. 3318: REFINERY MODERNIZATION PROJECT PERMIT CONDITIONS NEW PERMIT CONDITIONS FOR PERMIT NO. 3318
Permit Application 14047: Clarify conditions to allow owner/operator to shutdown ammonia injection to A-31 SCR during both startup and shutdown of S-974 (Part A2A).

B4. Monitoring. The following monitoring instruments listed shall be installed, calibrated, maintained and operated by Permittee/Owner/Operator:

A. An instrument to continuously monitor and record the H2S concentrations in fuel gas. being fed to the following new or modified units, which will be required to comply with the New Source Performance Standard for the burning of fuel gas (0.23 grams of H2S/dry standard m3 on a 3-hour average basis):
No. 3 HDS Recycle Gas Heater, S-973
No. 3 HDS Fractionator Feed Heater, S-974
FCCU Preheat Furnace, S-991
Nos. 51, 53, and 54 Furnaces (S-951, S-1020, and S-1021, respectively)
(basis: NSPS)

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #16125 - Plant #14628
APPLICATION 16125, NEW GASOLINE TANK
150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for an Authority to Construct/Permit to Operate for the following equipment:

S-1521 Gasoline Tank 131-A-904, External Floating Roof, 5,502,000 gallons

This new fixed roof tank will replace the existing Riveted Internal Floating Roof Tank S-314, which has a capacity of 3,331,000 Gallons (79,300 barrels). Tank S-314 was originally permitted to store gasoline and ethers. However, Tank S-314 is a grandfathered source without explicit permit conditions or a true vapor pressure limit. In the past three years, S-314 has been storing naphtha and alkylate. S-314 tank's grandfathered throughput limit, established in accordance with Regulation 2-1-234, in the Title V permit is 7,700,000 barrels per year.

The new tank S-1521 will be used for storing gasoline or gasoline components sometimes referred to as gasoline blend stock, with a Reid Vapor Pressure no greater than 13 psia (TVP = 7.3 psia). The proposed throughput of the new tank (S-1521) is 10,000,000 bbls per year. This application will result in POC emission increase that will be the difference between the emissions of the new tank and the three-year baseline emissions of old tank S-314.

II. EMISSION INCREASES

Current Baseline Emissions:
For determining emissions increases, the baseline period is the 3 years period immediately proceeding the date that a permit application is deemed complete per Regulation 2-2-605. This period is from April 1, 2004 to April 1, 2007. Based on the throughput information provided by Tesoro, the average material throughput for this period is 642,151 Bbl/yr:

	S-314 Annual Throughput (bbls/yr)
Year 1	636,658
Year 2	941,657
Year 3	348,136
Three year average	642,151

Emission Comparison Between Future and Past 3-Year Annual Average:
The emissions from the new tank are calculated by EPA Tank 4.0.9d program using gasoline with Reid Vapor Pressure (RVP) of 13 psia. The emissions from the existing tank are calculated by EPA Tank 4.0.9d program using Alkylate with Reid Vapor Pressure (RVP) of 7.4. As shown below, the new tank S-1521 will emit maximum 7,505 lbs/yr storing gasoline RVP 13, while the annual average of past 3-yr emissions at S-314 was 5,396 lbs/yr (See attached EPA Tank 4.09d calculations).

Basis:

S-314 Throughput = 642,151 bbls/yr or 26,970,342 gals/yr
S-1521 Throughput = 10,000,000 bbls/yr or 420,000,000 gals/yr.

Tank Contents	Vapor Pressure at Ambient Temperature (psia)	Vapor Molecular Weight (from TANKS 4.0.9d)	S-428 3-yr Annual Average Emissions (lbs/yr)	**S-896 Potential Emissions (lbs/yr)**
Gasoline RVP 13	7.3	62		**7,505**
Alkylate RVP 7.4	3.9	68	5,396	

Total POC emission increase = new tank – baseline tank
= 7,505 lbs/yr – 5,396 lbs/yr = 2,109 lbs/yr (1.055 tons/yr)

Daily emissions are 7505/365 = 20.56 lb/day
Hourly emissions are 7505/365/24 = 0.857 lb/hr

Using the TANKS vapor MW of 62 lb/lb-mole, the total volume of the emissions is:
7505 lb/yr / 62 lb/lb-mole = 121 lb-mole/yr X 382 SCF/lb-mole = 46,240 SCFY

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

(All previous increases have been offset)

	Current Ton/yr	**New Ton/yr**	**New Total tons/yr**
POC =	0	1.055	1.055
NO_x =	0	0	0
SO_2 =	0	0	0
CO =	0	0	0
NPOC =	0	0	0
TSP =	0	0	0
PM_{10} =	0	0	0

IV. TOXIC SCREENING ANALYSIS

The following table summarized the properties and concentration of the toxic materials contained in the gasoline material:

Material	TVP, psia	MW	Density lb/gal	Liquid Volume Fraction from MSDS
Benzene	1.5	78	7.33	0.05
Ethylbenzene	0.1	107	7.22	0.04
Naphthalene	0.01	128	8.54	0.011
N-Hexane	2.4	86	5.50	0.08
Toluene	0.425	92	7.25	0.35
Xylene	0.2	106	7.16	0.25
Styrene	.00087	104	7.55	0.04
Gasoline	7.3	92	6.24	1.00

The associated weight and molal fractions:

Material	Liquid Volume Fraction (MSDS)	Liquid Weight Fraction	Liquid Molal Fraction
Benzene	0.05	0.0587	0.0692
Ethylbenzene	0.04	0.0463	0.0398
Naphthalene	0.011	0.0151	0.0108
N-Hexane	0.08	0.0705	0.0754
Toluene	0.35	0.4067	0.4067
Xylene	0.25	0.0459	0.0398
Styrene	0.04	0.0484	0.0428
Gasoline	1.00	1.0000	1.0000

Wt Fract = Vol Fract X (density of component) / (density of gasoline)
Molal Fract = Wt Fract X (MW of gasoline) / (MW of component)

Using Raoult's Law:

Partial pressure of component = Vapor Pressure of component x Liquid Molal Fraction

Material	Liquid Molal Fraction	TVP, psia	Partial Pressure, psia
Benzene	0.0692	1.5	0.10378
Ethylbenzene	0.0398	0.1	0.00398
Naphthalene	0.0108	0.01	0.00011
N-Hexane	0.0754	2.4	0.18104
Toluene	0.4067	0.425	0.17283
Xylene	0.0398	0.2	0.00797
Styrene	0.0428	.00087	0.00004
Gasoline	1.0	7.3	7.3

The TAC compositions are as follows:

Material	Partial Pressure, psia	Vapor Volume Fraction	MW	Vapor Weight Fraction
Benzene	0.10378	1.422E-02	78	1.7908E-02
Ethylbenzene	0.00398	5.446E-04	107	9.4078E-04
Naphthalene	0.00011	1.482E-05	128	3.0601E-05
N-Hexane	0.18104	2.480E-02	86	3.4400E-02
Toluene	0.17283	2.367E-02	92	3.5130E-02
Xylene	0.00797	1.091E-03	106	1.8659E-03

Styrene	0.00004	5.102E-06	104	8.5588E-06
Gasoline	7.3		62	

Volume Fraction = Partial Pressure of Component / Gasoline Partial Pressure
Weight Fraction = Volume Fraction X (MW component) / (Total Vapor MW)

And the total TAC emissions are as follows:

Material	Vapor Weight Fraction	S-1521 Emissions, lb/yr	Chronic Toxic Trigger, lb/yr	S-1521 Emissions, lb/hr	Acute Toxic Trigger, lb/hr
Benzene	1.7908E-02	134.402	6.40E+00	1.535E-02	2.90E+00
Ethylbenzene	9.4078E-04	7.061	7.70E+04	8.062E-04	NA
Naphthalene	3.0601E-05	0.230	5.30E+00	2.623E-05	NA
N-Hexane	3.4400E-02	258.169	2.70E+05	2.948E-02	NA
Toluene	3.5130E-02	263.654	1.20E+04	3.011E-02	8.20E+01
Xylene	1.8659E-03	14.004	2.70E+04	1.599E-03	4.90E+01
Styrene	8.5588E-06	0.064	3.50E+04	7.335E-06	4.60E+01
Total Emissions		7505		0.857	

Since the annual emissions of Benzene exceed the Chronic Toxic Trigger level, a Health Risk Screen is required. This new external floating roof tank passed the Health Risk Screening Analysis (HRA) conducted on September 24, 2007. The source poses no significant toxic risk, since the risks to the maximally exposed receptors is 0.80 in a million. In addition, the chronic hazard index is 0.0008 and the acute hazard index is 0.001.

V. BEST AVAILABLE CONTROL TECHNOLOGY

This application requires BACT since the POC emissions are more than 10 pounds per highest day threshold limit per Regulation 2-2-301. Source S-1521 complies with BACT by installing a liquid mounted primary seal and a zero gap secondary seal, no ungasketed roof penetrations, no slotted pipe guide without float and wiper seals (except the radar level gauge, which is installed in accordance with BAAQMD guidelines), and no adjustable roof legs without vapor seal boots.

VI. OFFSETS

Offsets are required for this project pursuant to Regulation 2, Rule 2, Section 302. Tesoro has enough contemporaneous emission reduction credits to fully offset the POC emission increases. The company will use the Certificate of Deposits # 902 and # 968 to provide the needed offsets at a ratio of 1.15:1 per Regulation 2-2-302.2.

Available offsets = 0.008 and 26.674 ton/yr (Certificate of Deposit # 902 & 968)
Emissions from this application = 1.055 TPY POC
POC Offset provided = 1.055 tons/yr X 1.15 = 1.213 tons/yr

Thus, the Banking Certificate No. 902 will be exhausted and Banking Certificate No. 968 will be reissued to Tesoro in the amount of 25.469 tons POC/yr.

VII. STATEMENT OF COMPLIANCE

Source S-1521 External Floating Roof Storage Tank of this application is subject and expected to comply with Regulation 8, Rule 5, including

8-5-301 Storage Tanks Control Requirements,

8-5-304 Requirements for External Floating Roof Tanks,

8-5-320 Floating Roof Tank Fitting Requirements,

8-5-321 Primary Seal Requirements,

8-5-322 Secondary Seal Requirements,

8-5-328 Tank Degassing Requirements,

8-5-331 Tank Cleaning Requirements, and

8-5-332 Sludge Handling Requirements.

Source S-1521 is subject and expected to comply with Regulation 10 - Standard of Performance for New Stationary Sources, Part 17, otherwise known as 40 CFR 60, Subpart Kb - Volatile Organic Liquid Storage Vessels. Compliance is expected with Section 60.112b(a)(2) for external floating roof tanks.

Source S-1521 is subject to and expected to comply with National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63, Subpart CC, Section 63.640(n).

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 in accordance with Permit Handbook, Source-Specific Guidance Chapter 4.0, Organic Liquid Storage Tank.

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

PSD is not applicable.

VIII. CONDITIONS

Proposed Conditions for Source S-1521:

Application # 16125
Source S-1521 External Floating Roof Tank A-904
Gasoline and Gasoline Blend Stock

1. The total net throughput at Tank 904 (S-1521) shall not exceed 10,000,000 barrels of gasoline and gasoline blendstocks in any consecutive 12-month period. (Basis: Cumulative Increase, Toxics)

2. Only materials with a true vapor pressure less than 7.3 psia shall be stored in S-1521. (Basis: Cumulative Increase, Toxics)

3. In order to demonstrate compliance with the above conditions, the Permittee/Owner/Operator of tank S-1521 shall maintain the following records in a District approved log. These records shall be kept on site and made available for District inspection for a period of five years from the date that the record was made.
   a) Identification of all materials stored and the dates that the materials were stored.
   b) True Vapor Pressure of each material stored.
   c) The total daily throughput of each material stored, summarized on a monthly basis.
   d) The rolling 12-month throughput for all materials stored in S-1521.

   (basis: cumulative increase, toxics)

IX. RECOMMENDATION

It is recommended that a conditional Authority to Construct be granted to Tesoro for the following equipment:

(ii) S-1521 Gasoline Tank 131-A-904, External Floating Roof, 5,502,000 gallons

Arthur Valla **1Oct07**
Senior Air Quality Engineer

ENGINEERING EVALUATION

Tesoro Refining and Marketing Company
PLANT NO. 14628
APPLICATION NO. 15944

APPLICATION 15944, ISOCRACKER COMPRESSOR LEAK CONTROL MEASURE

BACKGROUND

Tesoro Refining and Marketing Company is applying for a modification to the Permit to Operate the following source:

S-1007 Isocracker Unit: IIR Compressor Leak Control Measure to install a shroud/clamp to capture compressor leaks and route gases to the flare gas recovery header

During a fugitive emission inspection at the refinery hydrocracker, leaks were discovered at the S-1007 Isocracker Unit hydrogen recycle compressor (Isocracker Ingersoll Rand (IIR) Compressor). As part of the recent hydrocracker turnaround, a new seal was installed on this compressor. The seal and the connection adjacent to the seal were leaking. The initial reading on one of the fugitive leaks was greater than 100,000 ppm VOC. Maintenance was immediately contacted, and Operations personnel placed steam lances around the leaking area to heat up the metal to expand it to minimize the leak. The Maintenance department contacted a vendor to measure the area for an enclosure to provide a permanent fix for the leak until it can be repaired during the next turnaround. Efforts to minimize emissions included tightening of all bolts, installing steam lances around compressor seal area, and installation of the shroud/clamp at the leaking connector. Three different shroud/clamp configurations were installed before a design was finally chosen. The shroud or enclosure consists of an annular metal band with a hollow channel that is used to collect leaking gas. The collected gas is then routed to the flare gas recovery header. Epoxy was injected around the annular metal band to minimize leaks. Approximately $200,000 was spent to minimize the leaks. Despite the minimization efforts, excess emissions are still not below 100 ppm. Emissions are less than 10,000 ppm, which allows Tesoro to place the leaking connector on the "Non-repairable Equipment" list waiting for repair as per Regulation 8-18-306.2 and 8-18-306.3. Tesoro inspects the shroud/clamp for leaks on a monthly basis to ensure that the emissions remain below 10,000 ppm to prevent the need for immediate shutdown of the hydrocracker to eliminate the compressor connector leak. Regulation 8-18-401.9 requires valves and connectors (as allowed by Regulation 8-18-306.3), to be inspected at least once per quarter. Tesoro meets this requirement since the shroud/clamp is inspected monthly.

The cause of the failure is unknown and will likely not be determined until the next turnaround occurs or when the hydrocracker is brought down from operations. Proper start-up procedures and new equipment conditioning specifications were followed and used in the turnaround work at this connection.

Tesoro applied for a variance from Regulation 8-18-304 due to the connection leak exceeding 10,000 ppm for more than 7 days, while the compressor leak control measures were being implemented. Until the leak was mitigated to below 10,000 ppm, the connector could not be placed on the "Non-repairable Equipment" turnaround repair list. Tesoro demonstrated to the Hearing Board that they could not curtail or terminate operations in lieu of obtaining a variance and the Hearing Board granted the variance on April 26, 2007.

EMISSIONS SUMMARY

Annual Emissions:

Annual emissions from the S-1007 Isocracker Unit Compressor Leak Control Measure will be determined by calculating the difference between the fugitive leak rate for connectors at Tesoro [4] during standard operation and the actual leak rate with a 98% POC destruction efficiency from the flare. This assumes the worst case scenario in which the leaked gases are sent to the flare header and are unable to be recovered and burned as refinery fuel gas and must be flared to the atmosphere. Tesoro has estimated the leak from the compressor prior to installing the shroud by applying a soapy solution and measuring the diameter and rate of the bubbles emanating from the leak. This information was used in conjunction with HYSIS, a process simulation program, to estimate the total leak at 2.4 lb/day. The composition of the leak is 82% hydrogen, 14% methane, and 1% nitrogen with the balance consisting of light hydrocarbons (ethane, propane, i-butane, n-butane, and i-pentane). For a conservative estimate, assume the total leak is 2.4 lb/day of POC emissions. See application folder for emission estimate and calculations by Tesoro.

Fugitive Component	Emission Factor (lb/day/source)
Valves in gas service	0.0015288
Valves in liquid service	0.0014736
Pumps	0.028872
Compressors	0.00804
PRV's in gas service	0.00972
PRV's in liquid service	0.006312
Connectors & flanges	0.004

POC emissions from connector under standard operating conditions (no leak) = (0.004 lb/day)(365 day/yr)
= 1.46 lb/yr POC emissions

POC emissions from connector and flare = (2.4 lb/day)(365 days/yr)(1-0.98 POC destruction by flare)

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[4] The fugitive component emission factors were developed by Tesoro based on screening value data collected throughout the Tesoro Refinery by their fugitive component contractors pursuant to US EPA Reference Method 21 (40 CFR 60, Appendix A). Tesoro developed the fugitive component toxic emission factors for the original CARB Phase 3 Clean Fuels Project (Application Number 2508). The fugitive component emission factors are based on refinery wide fugitive component screening data applied to the US EPA Correlation Equations. The District reviewed and approved the emissions factors developed for the original Phase 3 Clean Fuels Project.

= 17.52 lb/yr POC emissions

POC emission increase from leak and shroud and flare = 17.52 lb/yr – 1.46 lb/yr = 16.06 lb/yr = 0.008 tpy

Maximum Daily Emissions:

A conservative estimate of the maximum daily emission from the leak assumes that the recovered gases from the connector leak are not recycled at the flare gas header but are flared to the atmosphere.

Maximum daily POC emissions = (2.4 lb/day)(1-0.98 POC destruction by flare) = 0.048 lb/day

Toxic Risk Screening:

There are no emissions of toxic air contaminants that exceed the District Trigger Levels in Table 2-5-1 and a risk screening analysis is not required.

STATEMENT OF COMPLIANCE

The owner/operator of S-1007 Isocracker Unit and IIR Compressor Leak Control Measure shall comply with Regulation 8 Rule 18: Organic Compounds: Equipment Leaks. After the hydrocracker turnaround, Tesoro met the requirements of Regulation 8-18-401.1 and inspected the connections that were opened during a turnaround within 90 days of start-up. The seal and connector were found to leak. Tesoro applied and received a variance from the Hearing Board from Regulation 8-18-304 because they were unable to get the leak below 10,000 ppm VOC while efforts were made to find a permanent solution to minimize the leak until the next hydrocracker turnaround. Tesoro has contained the leak to between 100 and 10,000 ppm with the Leak Control Measure. Tesoro has expoxied a large annular band with a hollow channel around the leak. The leaking gases are collected in the hollow channel and are routed to the flare gas recovery system. With the leak between 100 and 10,000 ppm, Tesoro is allowed to put the connector on the "Non-repairable Equipment" turnaround list as per Regulation 8-18-306.2 and 8-18-306.3. Tesoro meets the inspection requirements of Regulation 8-18-401.9, which requires valves (and connectors meeting Regulation 8-18-306.2) to be inspected at least once per quarter. Tesoro is inspecting the shroud/clamp for leaks on a monthly basis.

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Emissions from the S-1007 S-1007 Isocracker Unit with IIR Compressor Leak Control Measure do not exceed 10 lb/day and BACT is not triggered.

Offsets: Offsets are required because Tesoro emits more than 35 tpy of POC emissions. Regulation 2-2-302 requires that offsets for POC be provided at a ratio of 1.15 to 1.0. The required offsets are:

POC offsets = 16.06 lb/yr (1.15) = 18.469 lb/yr = 0.009 tpy

Banking Certificates 902 and 932 will be used to supply the required offsets. (See Appendix A.)

Banking Certificate #	POC Banking Credits	Credits Used for this Application (AN 15944)
902	0.008 tpy	0.008 tpy
932	0.007 tpy	0.001 tpy

Balance of Banking Certificate #902 = 0.008 – 0.008 = 0 .000 tpy
Balance of Banking Certificate # 932 = 0.007 – 0.001 = 0.006 tpy

NSPS:
Tesoro is subject to the NSPS Subpart GGG: Standards of Performance for Equipment Leaks for VOC in Petroleum Refineries.

NESHAPS:
Tesoro is subject to the NESHAP Subpart V: National Emission Standard for Equipment Leaks (Fugitive Emission Sources) for any volatile hazardous air pollutant, although none should be present in the leaking gases from the IIR Compressor.

PSD does not apply.

PERMIT CONDITIONS
The owner/operator of the hydrocracker is subject to permit condition 1910. Monitoring for shroud/clamp leaks will be added to the permit condition. Changes are in strikeout/underline format.

COND# 1910 ----------
Application 15944 (May 2007): S-1007 Isocraker Unit: IIR Compressor Leak Control Measure to install a shroud/clamp to capture compressor leaks and route gases to the flare gas recovery header. Add inspection requirements for the shroud/clamp.

S1007 Hydrocracker Unit 2nd Stage
S1008 Hydrocracker Unit 1st Stage

Permit Condition 1910
Application #548
Hydrocracker Expansion Project Permit Conditions
(S-1007) And (S-1008)

1. Permittee/Owner/Operator shall ensure that no pressure relief valve on a new vessel in hydrocarbon service, associated with this project, shall vent to atmosphere. (basis: cumulative increase, BACT)

2. Permittee/Owner/Operator shall ensure that each and all pumps and compressors, installed pursuant to permit application #548 associated with this project, have double mechanical seals with a barrier fluid, or equivalent, to ensure leakage in rather than out, or shall have seals vented to a closed system. All new compressors must meet applicable New Source Performance Standards.
(basis: cumulative increase, NSPS)

3. Owner/operator shall inspect the IIR Compressor Leak Control Measure shroud/clamp for leaks on a monthly basis. (Regulation 8-18-401.9)

RECOMMENDATION

Issue a Permit to Operate to Tesoro Refining and Marketing Company for the modification of the following source:

S-1007 Isocracker Unit: IIR Compressor Leak Control Measure to install a shroud/clamp to capture compressor leaks and route gases to the flare gas recovery header

EXEMPTIONS

none

By:_____

Pamela J. Leong
Air Quality Engineer II
May 16, 2007

Appendix A

Banking Certificate: 902
Application no: 7768
Final Disposition: Certificate Issued 10/27/03
Reduction Location: Ford Motor Co [San Jose]
Certificate owner: Tesoro Refining and Marketing Company [plant 14628]
Transfer from #: 890
Original cert.#: 26

tons per year	PM	POC	NOX	SO2	CO	NPOC	PM10
Requested	.000	.000	.000	.000	.000	.000	.000
Approved	.000	4.829	.000	.000	.000	.000	.000
Applic: 8002 Withdrawal	.000	3.859	.000	.000	.000	.000	.000
Applic: 9129 Withdrawal	.000	.962	.000	.000	.000	.000	.000
Balance	.000	.008	.000	.000	.000	.000	.000

Banking Certificate: 932
Application no: 8002
Final Disposition: Certificate Issued 07/06/04
Reduction Location: Lesaffre Yeast Corporation [Oakland]
Certificate owner: Tesoro Refining & Marketing Company
Contact: Sharon Lim, tel: (925) 335-3467
Mailing address: 150 Solano Way, Martinez, CA 94553

Transfer from #: 916
Original cert.#: 898

tons per year	PM	POC	NOX	SO2	CO	NPOC	PM10
Requested	.000	.000	.000	.000	.000	.000	.000
Approved	.000	35.039	.000	.000	.000	.000	.000
Applic: 9788 Withdrawal	.000	.030	.000	.000	.000	.000	.000
Applic: 9788 To B#: 936	.000	35.002	.000	.000	.000	.000	.000
Balance	.000	.007	.000	.000	.000	.000	.000

EVALUATION REPORT
TESORO - GOLDEN EAGLE REFINRY
Application #16018 - Plant #14628
APPLICATION 16018, S-822 BLOWDOWN TOWER REMOVAL
150 Solano Way
Martinez, CA 94553

I. BACKGROUND

Tesoro has applied for a modification to their Permit to Operate for the following equipment:

S-815 No 1 Feed Preparation Unit
S-816 No 2 Feed Preparation Unit
S-817 No 3 Crude Unit
S-822 Cracker Area Blowdown with Quench System
A-23 Cracking Plant Quench Tower

The modification is to remove S-822 from service and line up the feed to S-822 to two new KO Drums to be added to the flare system. One of the new KO Drums would service S-815 and S-816 and the other KO Drum would service S-817. Currently the S-822 blowdown drum is used infrequently, but when used, the effluent gas discharges to atmosphere.

This application qualified for the Regulation 2-1-106 Limited Exemption, Accelerated Permitting Program and was granted a temporary Permit to Operate August 7, 2007.

II. EMISSION CALCULATIONS

The impacts of emissions due to this modification are unquantifiable. Directionally, POC emissions will go down since fewer hydrocarbons are vented to the atmosphere. However, the reduction cannot be determined so there is no emission change associated with this modification.

Due to the infrequent use of S-822, Tesoro does not know the composition of the vapor effluent from S-822. Therefore, existing emissions are not quantifiable. The modified system will discharge gas to the flare system, which, in most cases, will be recovered by the flare gas recovery compressors and used as fuel gas. The net impact will be to reduce the amount of purchased natural gas used in the fuel gas system.

There would be a combustion emissions impact since the blowdown gas would have a different composition than natural gas. However, it is expected that this emissions impact would be negligible. Moreover, since the composition of the blowdown gas is unknown, this difference is not quantifiable.

For simplification, it is assumed that any increase in fugitive components will be insignificant compared to the mitigated blowdown tower venting (intuitively, this assumption is valid for flare system components in low pressure gas service).

III. PLANT CUMULATIVE INCREASE SINCE 4/5/1991

There are no emission increases associated with this application.

IV. TOXIC SCREENING ANALYSIS

There are no toxic emission increases associated with this application.

V. BEST AVAILABLE CONTROL TECHNOLOGY

Since there are no emission increases associated with this application, BACT does not apply.

VI. OFFSETS

Since there are no emission increases associated with this application, Offsets do not apply.

VII. STATEMENT OF COMPLIANCE

Compliance for S-815, S-816 and S-817 will remain unaffected by this application.

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 applicant has provided Form Appendix H.

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

BACT, Toxics, NESHAPS, NSPS, Offsets and PSD are not applicable.

VIII. CONDITIONS

There are no conditions associated with this application.

IX. RECOMMENDATION

It is recommended that the modification requested by Tesoro for:

S-815 No 1 Feed Preparation Unit
S-816 No 2 Feed Preparation Unit
S-817 No 3 Crude Unit

Be approved including the removal of the following equipment:

S-822 Cracker Area Blowdown with Quench System
A-23 Cracking Plant Quench Tower

Arthur P. Valla — 19Sep07
Air Quality Engineer II