

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	PAGES 15	PAGE 1
	APPL. NO. 483995	DATE March 6, 2009
	PROCESSED BY: Connie Yee	CHECKED BY

**CHANGE OF CONDITION (PC-PO) EVALUATION**

**COMPANY NAME, LOCATION ADDRESS:**

Ultramar Inc, SCAQMD ID # 800026  
2402 E. Anaheim Street  
Wilmington CA 90744

**EQUIPMENT DESCRIPTION:**

Additions to the equipment description are underlined. Modified and additional conditions are underlined. Deletions to the equipment description and conditions are noted in strikeouts.

**Section D of Ultramar's Facility Permit, ID# 800026**

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions And Requirements	Conditions
<b>Process 14 : STORAGE TANKS</b>					P13.1
<b>System 2: EXTERNAL FLOATING ROOF TANKS</b>					S13.5
STORAGE TANK, EXTERNAL FLOATING ROOF, 94-TK-9007, CRUDE OIL, WELDED SHELL, 250,000 BBL, DIAMETER: 201 FT 6 IN, HEIGHT: 48 FEET WITH  A/N: 451566 <u>483995</u>	D261			HAP: (10) [40CFR 63 SUBPART CC, #3A, 5-25-2001]	<u>B22.9</u> , C1.40, H23.7 <u>I30.1</u>
FLOATING ROOF, PONTOON	(B482)				
PRIMARY SEAL, LIQUID MOUNTED	(B483)				
SECONDARY SEAL, RIM MOUNTED, WIPER TYPE	(B484)				
GUIDEPOLE, GASKETED COVER, WITH FLOAT, SLEEVE, WIPER, SLOTTED	(B1614)				

**CONDITIONS:**

The following permit conditions shall apply to this storage tank in order to comply with all applicable District, State, and Federal standards. Additions and deletions to the conditions are noted in underlines and strikeouts, respectively.

**PROCESS CONDITIONS**

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

Contaminant	Rule	Rule/Subpart
Benzene	40CFR61, SUBPART	FF

[Processes tied to this condition: P1, P2, P3, P4, P5, P7, P8, P9, P10, P11, P12, P14]

[40CFR 61 Subpart FF, 12-04-2003]

### SYSTEM CONDITIONS

S13.5 All devices under this system are subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	District Rule	463
VOC	District Rule	1149
VOC	District Rule	1178

[Systems tied to this condition: P14-S1, 2, 7]

[RULE 1149, 07-14-1995; RULE 463, 03-11-1994]

### DEVICE CONDITIONS

#### B. Material/Fuel Type Limits

B22.9 The operator shall not use this equipment with materials having a(n) true vapor pressure of ~~5-15~~ 7.3 psia or greater under actual operating conditions.

To verify compliance with this condition, the operator shall sample the materials stored once per month to determine the true vapor pressure. The true vapor pressure shall be determined using ASTM Method D-323 for Reid vapor pressure or other equivalent District-approved method and converted to true vapor pressure using applicable nomographs or equations in EPA AP-42 or District and EPA approved nomographs.

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

[Devices tied to this condition: D261]

#### C. Throughput or Operating Parameter Limits

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C1.40 The operator shall limit the throughput to no more than 620,000 barrels per one calendar month.

The operator shall comply with the following throughput measurement practices.

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

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

The operator shall calculate the total one-way roof movement, in feet, on a daily and monthly basis.

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

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

[RULE 1303(b)(2)-Offset, 5-10-1996; RULE 1303(b)(2)-Offset, 12-6-2002]

Devices subject to this condition: D261

**H. Applicable Rules**

H23.7 This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
VOC	40CFR60, SUBPART	K

[Devices tied to this condition: D225, D256, D261, D263]

[40CFR 60 Subpart K, 05-05-1989]

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**I. Administrative**

**I30.1 In accordance with Rule 3002(a)(3), the permit for this equipment is being issued as a non-Title V permit.**

**The facility permit holder shall file an application for a Title V permit revision for this equipment within 90 days of the issuance of the facility's initial Title V permit.**

[Devices tied to this condition: D197, D198, D199, D261, D1626, D1639]

[Rule 3002, 11-14-1997]

**COMPLIANCE RECORD REVIEW:**

A check of the AQMD Compliance Database shows that the facility has received no Notices to Comply and 15 Notices of Violation since January 1, 2007. None of the NOV's apply to the storage tank submitted for change of condition.

**BACKGROUND:**

Ultramar, Inc. is a refinery in the city of Wilmington. The facility is a NOx and SOx RECLAIM facility. The refinery submitted the following change of condition application to change the vapor pressure of the crude oil stored from 5.15 psia to 7.3 psia. The applications submitted are listed in Table 1:

**Table 1 – AQMD Applications Submitted**

<b>A/N</b>	<b>Date Submitted</b>	<b>Equipment</b>	<b>Device ID</b>	<b>Requested Action</b>	<b>Previous A/N</b>
483995	June 20, 2008	Storage Tank, 94-TK-9007 with External Floating Roof	D261	Change crude oil vapor pressure from 5.15 psia to 7.3 psia	451566/F84838
484516	June 20, 2008	Facility Permit Revision	n/a	Facility Permit Revision	n/a

**FEE EVALUTION:**

The fees paid for the applications submitted are as follows:

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**Table 2 – Application Fees Submitted**

A/N	Equipment	BCAT	Type	Status	Fee Schedule	Fees Required, \$	Fees Paid, \$
483995	Storage Tank, 94-TK-9007 with External Floating Roof	231904	50	21	C	2,949.92	2,949.92
	Expedited					1,474.96	1,474.96
484516	Facility Permit Revision	555010	80	25	n/a	843.80	843.80
<b>Total</b>						<b>\$5,191.97</b>	<b>\$5,191.97</b>

**PROCESS DESCRIPTION:**

Storage tank 94-TK-9007 is a 250,000 barrel external floating roof tank storing crude oil. Ultramar submitted the applications listed in Table 1 to:

- Change crude oil vapor pressure listed on Condition B22.9 from 5.15 psia to 7.3 psia.

**EMISSIONS:**

As noted above, Ultramar submitted A/N 183995 for a change of condition the crude vapor pressure found on condition B22.9 from 5.15 psia to 7.3 psia. No other modifications or changes in throughput are proposed. Emissions from an external floating roof tank consists of evaporative losses from the rim-seal and deck-fittings (a.k.a., standing storage loss), and any exposed liquid on the tank walls (withdrawal losses). The pre-modification and post-modification emissions were estimated using EPA's Tanks 4.0.9d program and the total emissions are summarized in Table 3. The detailed Tanks 4.0.9d output is provided in Appendix A. The tank is already equipped with primary (liquid-mounted) and secondary (rim-mounted, wiper type) seals.

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**Table 3. ROG Emission Comparison**

A/N	Tank #	Device ID #	Pre-Modification			Post-Modification			Emission Change		
			Vapor Pressure Limit	ROG Emissions		Vapor Pressure Limit	ROG Emissions		ROG Emissions		
			lbs/year	lbs/day	lbs/hr	lbs/year	lbs/day	lbs/hr	lbs/year	lbs/day	lbs/hr
483995	94-TK-9007	D261	2,470.84	6.86	0.29	2,909.29	8.08	0.34	+438.45	+1.22	+0.05

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**RULES EVALUATION:**

**PART 1 SCAQMD REGULATIONS**

<b>Rule 212</b>	<b>Standards for Approving Permits</b>	<b>November 14, 1997</b>
	<p>This proposed modification meets all criteria in Rule 212 for permit approval. The modifications are designed so it can be expected to operate without emitting air contaminants in violation of Division 26 of the State Health and Safety Code or in violation of AQMD's rules and regulations.</p> <p>The modifications to this storage tank does not constitute a significant project because (1) the modified permit unit are not located within 1000 feet of a school; (2) the emissions increase does not exceed the daily maximum specified in subdivision (g) of this rule (30 lbs/day); and (3) the modified permit unit do not have an increased cancer risk greater than, or equal to, one in a million (<math>1 \times 10^{-6}</math>) during a lifetime of 70 years or pose a risk of nuisance.</p>	
<b>Rule 402</b>	<b>Nuisance</b>	<b>May 7, 1976</b>
	<p>Nuisance complaints associated with the above project are not expected under normal operating conditions.</p>	
<b>Rule 463</b>	<b>Organic Liquid Storage</b>	<b>May 6, 2005</b>
	<p>This rule applies to any above-ground tank with capacity 19,815 gallons or greater for storing organic liquids.</p>	
463(c)	<p>Tank Roof Requirements. Tank 94-TK-9007 is a 250,000 bbl tank storing crude oil (~5.15 psia). 94-TK-9007 is subject to the vapor controls requirements of Rule 463(c)(1).</p>	
463(c)(1)	<p>External Floating Roof. External floating roof tank Tank 94-TK-9007 is required to be equipped with the vapor control devices specified Rule 463(c)(1). This tank is equipped with a pontoon type cover that rests on the surface of the organic liquid stored and are equipped with both a primary and secondary seal between the tank shell and roof edge. Compliance is expected with proper inspection and maintenance practices.</p>	
463(d)	<p>Other Performance Requirements.</p>	
463(d)(1)	<p>The tank is greater than 19,815 gallons and does not store gasoline. Therefore, this paragraph does not apply.</p>	
463(d)(2)	<p>The external floating roof tank shall float on the organic liquid at all times (i.e., free of the roof leg supports) except when the tanks are being completely emptied for cleaning, or repair.</p>	

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<b>Rule 463</b>	<b>Organic Liquid Storage</b>	<b>May 6, 2005</b>
463(d)(3)	This external floating roof tank does not store gasoline. Therefore, this paragraph does not apply.	
463(d)(4)	The tank will not store organic liquids having a true vapor pressure of 11 psia (569 mm Hg) or greater under actual storage conditions. Tank 94-TK-9007 stores crude oil (~7.3 psia).	
463(d)(5)	Replacement seals on the tank will only be chosen from the current list of seals approved by District.	
463(d)(6)	The organic liquids stored in this tank should be in compliance with the appropriate vapor pressure limits provided the actual storage temperature does not exceed the corresponding maximum temperature listed in the Addendum of this rule.	
	Compliance with Rule 463 is expected with proper recordkeeping and inspections. The Rule 463 inspection and maintenance plan will be updated to reflect installation of the dome roofs.	

<b>Rule 1149</b>	<b>Storage Tank Cleaning and Degassing</b>	<b>July 14, 1995</b>
	The tank being modified will continue to be subject to the tank cleaning and degassing requirements of this rule. Compliance is expected.	

<b>Rule 1178</b>	<b>Further Reduction of VOC Emissions from Storage Tanks at Petroleum Facilities</b>	<b>April 7, 2006</b>
1178(b)	Applicability. This rule applies to all aboveground storage tanks with capacity greater than 19,818 gallons and used to store organic liquids with true vapor pressure greater than 0.1 psi and located at any petroleum facility emitting more than 20 tons per year of VOC in any emission inventory year starting with emission inventory year 2000. Tank 94-TK-9007 is a 250,000 bbl tank storing crude oil (proposed crude oil vapor pressure 7.3 psia). Therefore, this tank is subject to Rule 1178.	
1178(d)(1)	External Floating Roof Tanks. For tanks containing organic liquids less than 3 psia for the emission inventory year 2000, the tank shall be equipped with the fittings specified in this paragraph.  Tank 94-TK-9007 is a 250,000 bbl tank storing crude oil (~7.3 psia). Since the tank stores liquids greater than 3 psia (crude oil), the tank is not subject to the fittings requirements of Rule 1178(d)(1).	
1178(d)(2)	Domed External Floating Roof Tanks. For tanks containing organic liquids greater than 3 psia for the emission inventory year 2000, a dome roof is required to be installed.  Tank 94-TK-9007 stores crude oil (~7.3 psia). Rule 1178(j)(7) provides an exemption	

Rule 1178	Further Reduction of VOC Emissions from Storage Tanks at Petroleum Facilities	April 7, 2006
	from the doming requirements of paragraph (d)(2)(A) and (d)(2)(B) if the tank is permitted to contain more than 97% by volume crude oil and complies with all the remaining applicable requirements of this rule.	
1178(d)(2)(D)	The operator of a domed external floating roof tank shall equip and maintain all roof openings in accordance with the specifications listed in subparagraph (d)(1)(A):	
	Complies?	Subparagraph (d)(1)(A) Specifications:
	Yes	(i) Equip each access hatch and gauge float well with a cover that is gasketed and bolted. The cover shall be closed at all times, with no visible gaps, except when the hatch or well must be opened for access.
	Yes	(ii) Equip each gauge hatch/sample well with a cover that is gasketed. The cover shall be closed at all times, with no visible gaps, except when the hatch or well must be opened for access.
	Yes	(iii) Gasket or cover each adjustable roof leg with a VOC impervious sock at all times when the roof is floating.
	N/A; No rim vent	(iv) Gasket each rim vent. Rim vents shall be closed at all times, with no visible gaps, when the roof is floating; and shall be set to open only when the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's recommended setting
	Yes	(v) Gasket each vacuum breaker. Vacuum breakers shall be closed at all times, with no visible gaps, when the roof is floating; and shall be set to open only when the roof is being floated off or is being landed on the roof leg supports.
	N/A; No roof drain	(vi) Equip each open floating roof drain with a slotted membrane fabric cover or other device with an equivalent control efficiency that covers at least 90 percent of the area of the opening.
	N/A	(vii) Equip each unslotted guidepole well with a gasketed sliding cover and a flexible fabric sleeve or wiper
	N/A	(viii) Equip each unslotted guidepole with a gasketed cover at the end of the pole. The cover shall be closed at all times, with no visible gaps, except when gauging or sampling.
	Yes	(ix) Equip each slotted guidepole with a gasketed cover, a pole wiper and a pole sleeve. The pole sleeve shall be extended into the stored

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<b>Rule 1178</b>	<b>Further Reduction of VOC Emissions from Storage Tanks at Petroleum Facilities</b>	<b>April 7, 2006</b>
	liquid	
N/A	(x) Equip each slotted guidepole having a pole float with a gasketed cover, a pole wiper, and a pole float wiper. The wiper or seal of the pole float shall be at or above the height of the pole wiper.	
N/A	(x) Equip each slotted guidepole having a pole float with a gasketed cover, a pole wiper, and a pole float wiper. The wiper or seal of the pole float shall be at or above the height of the pole wiper.	
Yes	(xi) Cover each slotted guidepole opening with a gasketed cover at all times, with no visible gaps, except when the cover must be opened for access.	
N/A	(xii) Maintain the pole float in a condition such that it floats within the guidepole at all times except when it must be removed for sampling or when the tank is empty.	
Yes	(xiii) Except for vacuum breakers and rim vents, ensure that each opening in the external floating roof shall provide a projection below the liquid surface.	
Yes	(xiv) Except for vacuum breakers, rim vents, roof drains, and leg sleeves, equip all other openings in the roof with a gasketed cover or seal which is closed at all times, with no visible gaps, except when the cover or seal must be opened for access.	
Complies?	Subparagraph (d)(1)(B) Specifications:	
Yes, Liquid-mounted	(i) The primary seal shall be a mechanical shoe or liquid mounted.	
Yes	(ii) The secondary seal shall be rim mounted and shall not be attached to the primary seal.	
Compliance with Rule 1178 is expected.		

<b>REG XIII</b>	<b>New Source Review (NSR)</b>	<b>December 6, 2002</b>
		<b>Application Deem Complete Year: 2008</b>
	This tank was subject to New Source Review since it was constructed in February 1978. As noted in Table 3, there is an emission increase with tank 94-TK-9007 (D261).	
1303(a)	Best Available Control Technology (BACT). BACT is required when there is an emission increase of 1 lb/day. BACT is primary and secondary seals. The tank is	

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<b>REG XIII</b>	<b>New Source Review (NSR)</b>	<b>December 6, 2002</b>
		<b>Application Deem Complete Year: 2008</b>
	equipped with primary and secondary seals.	
1303(b)(1)	Modeling. Air quality modeling for ROG is not required.	
1303(b)(2)	<p>Emission Offsets.</p> <p>There is an emission increase of 1.22 lb/day of ROG. Therefore, offsets are required. The refinery has agreed to surrender 1 lb/day of ERC to offset the ROG emission increase using ERC # AQ006372.</p>	
1303(b)(3)	Sensitive Zone Requirements. The refinery is a zone 1 facility and may obtain ERCs originated in zone 1 only.	
1303(b)(4)	Facility Compliance. This facility complies with all applicable District rules and regulations.	
1303(b)(5)	<p>Major Polluting Facilities. A new major polluting facility or major modification at an existing major polluting facility shall comply with the requirements of this paragraph. This refinery is major polluting facility and the project is considered a major modification. Rule 1302(r) defines (in part) a major modification as any modification "... at an existing major polluting facility that will cause;</p> <p>1) an increase of one pound per day or more, of the facility's potential to emit oxides of nitrogen (NOx) or volatile organic compounds (VOCs), provided the facility is located in the South Coast Air Basin (SOCAB), ..."</p> <p>The emission increase of VOC is 1.2 lb/day for tank 94-TK-9007 (D261). Therefore, the requirements in this paragraph apply.</p>	
1303(b)(5)(A)	<p>(A) Alternative Analysis. Submit an analysis of alternative sites, sizes, production processes, and environmental control techniques for the proposed source.</p> <p>Storage tank 94-TK-9007 (D261) is an existing storage tank and has been in service since 1978. It stores crude oil. Ultramar is not increasing the size of the tank or increasing the throughput. They are simply requesting for a change of condition to change the crude vapor pressure from 5.15 psia to 7.3 psia to accommodate storing a new type of crude oil with a higher vapor pressure. The tank is equipped with primary and secondary seals. A dome is not required since the tank only stores crude oil, and Rule 1178(j)(7) exempts a storage tank permitted to contain more than 97% by volume crude oil from the doming requirements as long as the remaining applicable requirements of this rule are met.</p>	
1303(b)(5)(B)	<p>(B) Statewide Compliance. Demonstrate that all major sources in the state under control of the applicant are in compliance or on a schedule for compliance with all applicable federal emissions standards.</p> <p>Ultramar has certified that all major sources in the state under control of the applicant are in compliance with all applicable federal emissions standards. Ultramar (Valero, Inc.)</p>	

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<b>REG XIII</b>	<b>New Source Review (NSR)</b>	<b>December 6, 2002</b>																								
		<b>Application Deem Complete Year: 2008</b>																								
	currently operates 7 major facilities in the state. The status of these facilities relative to Clean Air Act requirements is summarized in the following table:																									
	Table 4. Compliance Status of Valero Facilities Located in California																									
	<table border="1"> <thead> <tr> <th>Valero California Facilities</th> <th>Facility Location</th> <th>Compliance Status</th> </tr> </thead> <tbody> <tr> <td>Benicia Refinery</td> <td>Benicia</td> <td>Currently in compliance</td> </tr> <tr> <td>Benicia Asphalt Plant</td> <td>Benicia</td> <td>Currently in compliance</td> </tr> <tr> <td>Wilmington Refinery</td> <td>Wilmington</td> <td>Currently in compliance</td> </tr> <tr> <td>Wilmington Asphalt Plant</td> <td>Wilmington</td> <td>Currently in compliance</td> </tr> <tr> <td>Wilmington Marine Terminal</td> <td>Wilmington</td> <td>Currently in compliance</td> </tr> <tr> <td>Wilmington Marine Tank Farm</td> <td>Wilmington</td> <td>Currently in compliance</td> </tr> <tr> <td>Olympic Tank Farm</td> <td>Wilmington</td> <td>Currently in compliance</td> </tr> </tbody> </table>		Valero California Facilities	Facility Location	Compliance Status	Benicia Refinery	Benicia	Currently in compliance	Benicia Asphalt Plant	Benicia	Currently in compliance	Wilmington Refinery	Wilmington	Currently in compliance	Wilmington Asphalt Plant	Wilmington	Currently in compliance	Wilmington Marine Terminal	Wilmington	Currently in compliance	Wilmington Marine Tank Farm	Wilmington	Currently in compliance	Olympic Tank Farm	Wilmington	Currently in compliance
Valero California Facilities	Facility Location	Compliance Status																								
Benicia Refinery	Benicia	Currently in compliance																								
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Wilmington Marine Tank Farm	Wilmington	Currently in compliance																								
Olympic Tank Farm	Wilmington	Currently in compliance																								
1303(b)(5)(C)	<p>(C) Protection of Visibility. Conduct a modeling analysis for plume visibility if the net emission increase from the new or modified source exceeds 15 tons/year of PM or 40 tons/year of NOx; and the location of the source is within specified distance from a Class I area.</p> <p>There are no emissions of NOx or PM from this tank. The Ultramar refinery is not within the distance specified in Table C-1 of this rule of a Class I area. The refinery is more than 32 km from any Federal Class I Area. The nearest Federal Class I Area (San Gabriel Wilderness) is more than 65 km away, while the furthest Federal Class I Area (Joshua Tree Wilderness) is more than 170 km away. Therefore, a modeling analysis for plume visibility is not required for this project.</p>																									
1303(b)(5)(D)	<p>(D) Compliance Through California Environmental Quality Act.</p> <p>No CEQA action is required as noted on Form 400-CEQA.</p>																									

<b>Rule 1401</b>	<b>New Source Review of Toxic Air Contaminants</b>	<b>March 7, 2008</b>
	<p>A Tier 2 risk assessment was conducted to estimate the health risks associated using the <u>total</u> post-modification emissions based on permit conditions which directly limits the emissions, which in this instance is the new 7.3 psia crude oil vapor pressure.</p> <p>The MICR and HIA and HIC for both off-site worker and residential receptors are shown below in Table 5. The Tier 2 Screening Risk Assessments are shown in Appendix B. All the calculated MICR and HIs for the each target organ were below the Rule 1401 risk</p>	

<b>Rule 1401</b>	<b>New Source Review of Toxic Air Contaminants</b>	<b>March 7, 2008</b>		
	thresholds. Therefore, the proposed modifications comply with Rule 1401.			
	<b>Table 5 - Rule 1401 Emissions and Summary</b>			
	<b>Air Toxic Emissions</b>			
	<b>Toxic Air Contaminant</b>	<b>Pre Modification Emissions, lbs/year</b>	<b>Post Modification Emissions, lbs/year</b>	
	Benzene	181.91	214.25	
	Ethylbenzene	10.60	12.48	
	Naphthalene	471.73	555.63	
	n-Hexane	21.05	24.80	
	Toluene	8.83	10.40	
	Xylenes	74.09	87.26	
	<b>Risk Summary</b>			
	<b>Scenario</b>	<b>MICR</b>	<b>HI<sub>Acute</sub>, HIA</b>	<b>HI<sub>Chronic</sub>, HIC</b>
	Worker	$8.91 \times 10^{-7}$	$1.74 \times 10^{-3}$	$6.37 \times 10^{-3}$
	Residential	$3.76 \times 10^{-7}$	$1.28 \times 10^{-2}$	$2.27 \times 10^{-4}$
	<b>Maximum Risk</b>	$3.76 \times 10^{-7}$	$1.28 \times 10^{-2}$	$6.37 \times 10^{-3}$
	<b>Rule 1401 Risk Thresholds</b>	$1 \times 10^{-6}$	<b>1</b>	<b>1</b>
		<b>Pass</b>	<b>Pass</b>	<b>Pass</b>
	Federal NSR for toxics does not apply since this is not considered a reconstruction per 40CFR63, Subpart A, §63.2.			

<b>Regulation XXX</b>	<b>Title V</b>	<b>March 16, 2001</b>
	Ultramar has been designated as a Title V facility. The draft initial Title V permit was proposed on July 7, 2008. The close of the public comment period is September 5, 2008. The end of the EPA review period is scheduled for September 20, 2008. Final permit issuance is expected at the end of March 2009. Since the initial permit has not been issued yet, Condition 1.30 will be tagged to this storage tank.	

**PART 2 STATE REGULATIONS**

<b>California Environmental Quality Act (CEQA)</b>	
	This proposed modification is not a significant project.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	<b>PAGES</b> 15	<b>PAGE</b> 14
	<b>APPL. NO.</b> 483995	<b>DATE</b> March 6, 2009
	<b>PROCESSED BY:</b> Connie Yee	<b>CHECKED BY</b>

**PART 3      FEDERAL REGULATIONS**

**PART 3      FEDERAL REGULATIONS**

<b>40CFR Part 60 Subpart K</b>	<b>Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978</b>
	<p>This tank is currently subject to 40 CFR 60 Subpart K. This tank currently complies with tank design/control requirements of Subpart K.</p> <p>40CFR Part 60 Subpart Kb applies to storage vessels for which construction, reconstruction, or modification commenced after July 23, 1984. In order for a modification to occur under NSPS, there must be a pound per hour (lb/hr) increase in emissions to the atmosphere as a result of physical or operational changes. As noted in the emissions section, there is an increase of 1.22 lbs/day or 0.05 lbs/hr of ROG with proposed modification. However, the July 23, 1984 preamble to the proposed regulations for NSPS Subpart Kb discusses the modification provisions relative to storage vessels. It states:</p> <p>Section 60.14(e) of the General Provisions to Part 60 lists several changes that are not considered modifications. Among these is the use of a raw material, if prior to the date of proposal of the standard, the existing facility was designed to accommodate that alternative use. This exemption applies to changing of liquids in storage vessels. A change of liquids, therefore, does not constitute a modification.</p> <p>Since Ultramar is proposing to only change the liquid stored from crude oil with vapor pressure of 5.15 psia to crude oil with vapor pressure of 7.3 psia, this tank is not subject to Subpart Kb and remains subject to Subpart K.</p>

<b>40CFR Part 63 Subpart CC</b>	<b>National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries</b>
	<p>This tank will continue to be subject to the 40 CFR 63 Subpart CC as a Group 2 tank. This tank currently complies with tank design/control requirements of Subpart CC as a Group 2 tank.</p>

**CONCLUSION:**

Based on the above evaluation, it recommended that a Permit to Operate be issued for A/N 483995 with the conditions listed in the Conditions Section.

<b>SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT</b>  <i>ENGINEERING &amp; COMPLIANCE</i>  <b>APPLICATION PROCESSING AND CALCULATIONS</b>	<b>PAGES</b> 15	<b>PAGE</b> 15
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	<b>PROCESSED BY:</b> Connie Yee	<b>CHECKED BY</b>

## Appendix

A. Tank 4.0 Output

B. Tier 2 Screening Risk Assessments

**TANKS 4.0.9d  
Emissions Report - Detail Format  
Tank Identification and Physical Characteristics**

*Appendix A*

**Identification**  
User Identification: 94-TK-9007 (Pre-Modification)  
City: Wilmington  
State: California  
Company: Ultramar  
Type of Tank: External Floating Roof Tank  
Description: External Floating Roof, A/N 483995

**Tank Dimensions**  
Diameter (ft): 201.50  
Volume (gallons): 10,500,000.00  
Turnovers: 29.76

**Paint Characteristics**  
Internal Shell Condition: Light Rust  
Shell Color/Shade: White/White  
Shell Condition: Good

**Roof Characteristics**  
Type: Pontoon  
Fitting Category: Detail

**Tank Construction and Rim-Seal System**  
Construction: Welded  
Primary Seal: Liquid-mounted  
Secondary Seal: Rim-mounted

**Deck Fitting/Status**  
Access Hatch (24-in. Diam.): Bolted Cover, Gasketed  
Gauge-Hatch/Sample Well (8-in. Diam.): Weighted Mech. Actuation, Gask.  
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock  
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock  
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve, Wiper  
Vacuum Breaker (10-in. Diam.): Weighted Mech. Actuation, Gask.

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

	Quantity
Access Hatch (24-in. Diam.): Bolted Cover, Gasketed	1
Gauge-Hatch/Sample Well (8-in. Diam.): Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	30
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	69
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve, Wiper	1
Vacuum Breaker (10-in. Diam.): Weighted Mech. Actuation, Gask.	3

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**94-TK-9007 (Pre-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min.		Max.	Avg.	Min.					
Crude Oil (TVF=5.15)	All	66.43	60.99	71.87	64.33	5.1738	N/A	N/A	50.0000	207.00	Option 4: RVP=7.05	

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**94-TK-9007 (Pre-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Annual Emission Calculations

Rim Seal Losses (lb):	565.4337
Seal Factor A (lb-mole/ft-yr):	0.3000
Seal Factor B (lb-mole/ft-yr (mph) <sup>1.75</sup> ):	0.6000
Average Wind Speed (mph):	6.3583
Seal-related Wind Speed Exponent:	0.3000
Value of Vapor Pressure Function:	0.1080
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	5.1738
Tank Diameter (ft):	201.5000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	1,483.2665
Annual Net Throughput (gal/yr.):	312,480,000.0000
Shell Clingage Factor (bb/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	201.5000
Roof Fitting Losses (lb):	402.1366
Value of Vapor Pressure Function:	0.1080
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	186.1756
Average Wind Speed (mph):	6.3583
<b>Total Losses (lb):</b>	<b>2,470.6367</b>

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	Roof Fitting Loss Factors KFc (lb-mole/(yr mpr <sup>1.75</sup> ))	m	Losses (lb)
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	3.4560
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.1950
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	30	1.20	0.14	0.65	101.7030
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	69	0.49	0.16	0.14	102.4193
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve/Wiper	1	8.30	4.40	1.60	121.5388
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	3	6.20	1.20	0.94	71.8195

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

94-TK-9007 (Pre-Modification) - External Floating Roof Tank  
 Wilmington, California

Components	Losses(lbs)			Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	
Crude Oil (TVP=5.15)	585.43	1,483.27	402.14	2,470.84

$$2,470.84 \frac{\text{lbs}}{\text{year}} \times \frac{1 \text{ year}}{12 \text{ mos}} \times \frac{1 \text{ mo}}{30 \text{ day}} = 6.86 \text{ lbs/day (30-day avg)}$$

$$2,470.84 \frac{\text{lbs}}{\text{year}} \times \frac{1 \text{ year}}{365 \text{ days}} = 6.77 \text{ lbs/day}$$

$$2,470.84 \frac{\text{lbs}}{\text{yr}} \times \frac{1 \text{ year}}{365 \text{ days}} \times \frac{1 \text{ day}}{24 \text{ hr}} = 0.28 \text{ lbs/hr}$$

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**  
 User Identification: 94-TK-9007 (Post-Modification)  
 City: Wilmington  
 State: California  
 Company: Ultramar  
 Type of Tank: External Floating Roof Tank  
 Description: External Floating Roof, A/N 483995

**Tank Dimensions**  
 Diameter (ft): 201.50  
 Volume (gallons): 10,500,000.00  
 Turnovers: 29.76

**Paint Characteristics**  
 Internal Shell Condition: Light Rust  
 Shell Color/Shade: White/White  
 Shell Condition: Good

**Roof Characteristics**  
 Type: Pontoon  
 Fitting Category: Detail

**Tank Construction and Rim-Seal System**  
 Construction: Welded  
 Primary Seal: Liquid-mounted  
 Secondary Seal: Rim-mounted

**Deck Fitting/Status**

Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	30
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	69
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sleeve,Wiper	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	3

Meteorological Data used in Emissions Calculations: Long Beach, California (Avg Atmospheric Pressure = 14.7 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

**94-TK-9007 (Post-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Avg.	Min.	Max.		Avg.	Min.	Max.					
Crude Oil (TVP=7.3)	All	66.43	60.89	71.87	84.33	6.8639	N/A	N/A	50.0000	240.00	Option 4: RVP=8.7	

**TANKS 4.0.9d**  
**Emissions Report - Summary Format**  
**Liquid Contents of Storage Tank**

**94-TK-9007 (Post-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Mixture/Component	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
	Month	Avg.	Min.		Max.	Avg.	Min.					
Crude Oil (TVP=7.3)	Jan	61.79	56.79	66.79	64.33	6.3467	N/A	50.0000	64.33	6.3467	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Feb	62.76	57.67	67.86	64.33	6.4540	N/A	50.0000	64.33	6.4540	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Mar	63.78	58.57	68.99	64.33	6.5647	N/A	50.0000	64.33	6.5647	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Apr	66.70	59.89	71.51	64.33	6.7808	N/A	50.0000	64.33	6.7808	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	May	67.27	61.79	72.76	64.33	6.9614	N/A	50.0000	64.33	6.9614	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Jun	68.88	63.35	74.61	64.33	7.1613	N/A	50.0000	64.33	7.1613	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Jul	71.26	65.04	77.47	64.33	7.4358	N/A	50.0000	64.33	7.4358	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Aug	71.80	65.63	77.58	64.33	7.4780	N/A	50.0000	64.33	7.4780	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Sep	70.17	64.65	75.68	64.33	7.3033	N/A	50.0000	64.33	7.3033	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Oct	67.76	62.48	73.04	64.33	7.0180	N/A	50.0000	64.33	7.0180	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Nov	64.31	59.22	69.40	64.33	6.6235	N/A	50.0000	64.33	6.6235	240.00	Option 4: RVP=8.7
Crude Oil (TVP=7.3)	Dec	61.76	56.83	66.70	64.33	6.3441	N/A	50.0000	64.33	6.3441	240.00	Option 4: RVP=8.7

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**94-TK-9007 (Post-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Annual Emission Calculations

Rim Seal Losses (lb):	845.3496
Seal Factor A (lb-mole/lb-yr):	0.3000
Seal Factor B (lb-mole/lb-yr)(mph) <sup>n</sup> :	0.6000
Average Wind Speed (mph):	6.3583
Seal-related Wind Speed Exponent:	0.3000
Value of Vapor Pressure Function:	0.1559
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.8639
Tank Diameter (ft):	201.5000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	1,483.2655
Annual Net Throughput (gal/yr.):	312,480,000.0000
Shell Clingage Factor (bb/1000 sqft):	0.0060
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	201.5000
Roof Fitting Losses (lb):	560.6739
Value of Vapor Pressure Function:	0.1559
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact (lb-mole/yr):	196.1756
Average Wind Speed (mph):	6.3583
<b>Total Losses (lb):</b>	<b>2,909.2899</b>

Roof Fitting/Status	Quantity	KFa (lb-mole/yr)	KFb (lb-mole/(yr mph <sup>n</sup> ))	m	Losses (lb)
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.9903
Gauge-Hatch/Sample Well (6-in. Diam./Weighted Mech. Actuation, Gask.	1	0.47	0.02	0.97	1.7314
Roof Leg (3-in. Diameter/Adjustable, Pontoon Area, Sock	30	1.20	0.14	0.65	146.8562
Roof Leg (3-in. Diameter/Adjustable, Center Area, Sock	69	0.49	0.16	0.14	147.8905
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Pole Sieve/Wapor	1	6.30	4.40	1.60	175.6000
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	3	6.20	1.20	0.94	103.7553

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

**94-TK-9007 (Post-Modification) - External Floating Roof Tank**  
**Wilmington, California**

Components	Losses(lbs)			Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	
Crude Oil (TVP=7.3)	845.35	1,483.27	580.67	2,909.29

$$2,909.29 \frac{\text{lbs}}{\text{yr}} \times \frac{1 \text{ yr}}{12 \text{ mos}} \times \frac{1 \text{ mo}}{30 \text{ day}} = 8.08 \frac{\text{lbs}}{\text{day}} \quad (30 \text{ day avg})$$

$$2,909.29 \frac{\text{lbs}}{\text{yr}} \times \frac{1 \text{ yr}}{365 \text{ days}} = 7.97 \frac{\text{lbs}}{\text{day}}$$

$$2,909.29 \frac{\text{lbs}}{\text{yr}} \times \frac{1 \text{ yr}}{365 \text{ days}} = 0.33 \frac{\text{lb}}{\text{hr}}$$

# TIER 2 SCREENING RISK ASSESSMENT

Application deemed complete date: 07/10/08

A/N: 483895  
Fac: 800026

**Tier 2 Data**

ET Factor	0.99
r	0.92
17 hrs	0.87

Person Factors	3A & 3B For Chronic X/Q
5	
7	For Acute X/Q

Exposure Factors (ug/m <sup>3</sup> )(tons/yr)	X/Q	X/Qmax
Residential	0.12	7.3
Commercial	1.4556	53.924

**Adjustment and Intake Factors**

Adjustment Factor	A <sub>fact</sub>	DBR	EVF
Residential	1	302	0.96
Commercial	1	149	0.38

*Appendix B  
Tier 2 Screening*





**TIER 2 RESULTS**

5a. MICR  
 MICR = CP (mg/(kg-day))<sup>n-1</sup> \* Q (ton/yr) \* (X/Q) \* Atann \* Met \* DBH \* EVF \* 1.E-6 \* MP

Compound	Residential	Commercial
Benzene (including benzene from gasoline)	3.76E-07	8.91E-07
Ethyl benzene		
Hexane (n-)		
Toluene (methyl benzene)		
Xylenes (isomers and mixtures)		
Hydrogen sulfide		
<b>Total</b>	<b>3.76E-07</b>	<b>8.91E-07</b>
	<b>PASS</b>	<b>PASS</b>

No Cancer Burden, MICR < 1.0E-6

<b>5b. Cancer Burden</b>	no
X/Q for one-in-a-million:	
Distance (meter)	no data
Area (km2):	
Population:	
Cancer Burden:	

**Hazard Index**

$A = [Q(\text{lb/hr}) * (X/Q)\text{max}] * AF / \text{Acute REL}$

$C = [Q(\text{ton/yr}) * (X/Q) * \text{MET} * \text{MP}] / \text{Chronic REL}$

Target Organs	Acute	Chronic	Acute Pass/Fail	Chronic Pass/Fail
imentary system (liver) - AL		3.15E-06	Pass	Pass
mes and teeth - BN			Pass	Pass
rdiovascular system - CV			Pass	Pass
velopmental - DEV	9.07E-04	2.69E-03	Pass	Pass
ndocrine system - END		3.15E-06	Pass	Pass
e	7.31E-06		Pass	Pass
matopoietic system - HEM	9.02E-04	2.62E-03	Pass	Pass
immune system - IMM	9.02E-04		Pass	Pass
dney - KID		3.15E-06	Pass	Pass
rvous system - NS	1.28E-02	2.75E-03	Pass	Pass
roductive system - REP	9.07E-04		Pass	Pass
spiratory system - RES	7.31E-06	6.37E-03	Pass	Pass
in			Pass	Pass

A/N:

483995

Application deemed complete date:

07/10/08

6a. Hazard Index Acute

$$HIA = [Q(\text{lb/hr}) * (X/Q)\text{max}] * \text{AF/ Acute REL}$$

Compound	AL	CV	DEV	EYE	HEM	JMM	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)			1.22E-04		1.22E-04	1.22E-04		1.23E-04		
Ethyl benzene										
Hexane (n-)			5.92E-07	5.92E-07			5.92E-07	5.92E-07	5.92E-07	
Toluene (methyl benzene)			3.98E-07	3.98E-07			1.74E-03		3.98E-07	
Xylenes (isomers and mixtures)										
Hydrogen sulfide										
<b>Total</b>			1.23E-04	9.90E-07	1.22E-04	1.22E-04	1.74E-03	1.23E-04	9.90E-07	



HIA - Commercial										
Compound	AL	CV	DEV	EYE	HEM	IMM	NS	REP	RESP	SKIN
benzene (including benzene from gasoline)			9.02E-04		9.02E-04	9.02E-04		9.02E-04		
ethyl benzene										
hexane (n-)										
toluene (methyl benzene)			4.37E-06	4.37E-06			4.37E-06	4.37E-06	4.37E-06	
xylenes (isomers and mixtures)				2.94E-06					2.94E-06	
hydrogen sulfide							1.28E-02			
<b>total</b>			9.07E-04	7.31E-06	9.02E-04	9.02E-04	1.28E-02	9.07E-04	7.31E-06	



6b. Hazard Index Chronic

$$HIC = [I(\text{ton/yr}) \cdot (C/Q)] \cdot MET \cdot MPI / \text{Chronic REL}$$

Compound	HIC - Residential												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
Benzene (including benzene from gasoline)	2.59E-07			2.16E-04	2.59E-07		2.16E-04		2.59E-07	2.16E-04			
Ethyl benzene				2.59E-07						4.74E-06		5.19E-06	
Hexane (n-)				5.19E-06						5.19E-06		8.90E-07	
Toluene (methyl benzene)										8.90E-07		5.19E-04	
Xylenes (isomers and mixtures)													
Hydrogen sulfide													
<b>Total</b>	2.59E-07			2.22E-04	2.59E-07		2.16E-04		2.59E-07	2.27E-04		5.25E-04	



b. Hazard Index Chronic (cont.)

A/N:

486955

Application deemed complete date:

07/10/08

Compound	HIC - Commercial												
	AL	BN	CV	DEV	END	EYE	HEM	IMM	KID	NS	REP	RESP	SKIN
benzene (including benzene from gasoline)				2.62E-03			2.62E-03			2.62E-03			
ethyl benzene				3.15E-06	3.15E-06				3.15E-06				
hexane (n-)				6.29E-05						5.75E-05		6.29E-05	
toluene (methyl benzene)										6.29E-05		1.08E-05	
xylene (isomers and mixtures)										1.08E-05		6.29E-03	
hydrogen sulfide													
<b>total</b>	3.15E-06			2.69E-03	3.15E-06		2.62E-03		3.15E-06	2.75E-03		6.37E-03	

