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STATIONARY SOURCE COMPLIANCE DIVISION	APPL NO 510725	DATE 01/21/2011
PERMIT APPLICATION PROCESSING AND CALCULATIONS	PROCESSED BY TWW	CHECKED BY TGL

EVALUATION REPORT FOR PERMIT TO CONSTRUCT

APPLICANT'S NAME: **ID NO.: 800051**
ARCO TERMINAL SERVICES CORP (ATSC) EAST HYNES TERMINAL

MAILING ADDRESS
5905 PARAMONT BLVD.
LONG BEACH, CA 90805 CONTACT: STEVE COMLEY
ENVIRONMENTAL COORDINATOR, ATSC

EQUIPMENT ADDRESS
SAME

EQUIPMENT DESCRIPTION:
MODIFICATION OF THE VAPOR RECOVERY SYSTEM (SERVING BULK PETROLEUM DISTILLATE STORAGE AND LOADING TERMINAL RACK NO. 1 AND STORAGE TANKS NOS. 764, 765, AND 791-797, CONSISTING OF:

1. VAPOR BLADDER TANK (NO. 766) 70'-0" DIA. X 64'-0" H., DOME ROOF WITH RING TYPE URETHANE BLADDER.

2. THREE (3) COMPRESSION-ADSORPTION 2-STAGE VAPOR RECOVERY UNITS, 7'-6" L. X 17'-6" W. X 8'-8" H., NICHOLS, IN PARALLEL CONFIGURATION, 300 CFM (900 CFM TOTAL) CAPACITY WITH RECOVERED PRODUCT RECYCLE; 136 HP TOTAL PER UNIT. COMPRESSOR, 100 HP; ADSORBER PUMP, 25 HP; RETURN PUMP, 10 HP.

3. VAPOR COMBUSTION FLARE, ENCLOSED GROUND LEVEL TYPE, 6'-0" W. X 12' - 14' L. MAXON VEE TYPE HASTOLOV EXCESS AIR BURNERS WITH 7.5 MMBTU/HR TOTAL MAXIMUM HEAT RELEASE @ 900 CFM VAPOR FLOW; 5'-4" DIA. X 15-20' H. DISCHARGE STACK; 8 HP TOTAL (AIR BLOWER, 5 HP, AND VENT BLOWER 3 HP), WITH MAKE-UP/PROPANE/NATURAL GAS LINE CONNECTED TO THE COMBUSTION CHAMBER.

4. EQUALIZER/SATURATOR TANK, 4,500 GAL. CAPACITY.

BY THE REMOVAL OF:

1. THREE (3) COMPRESSION-ADSORPTION 2-STAGE VAPOR RECOVERY UNIT, 7'-6" L. X 17'-6" W. X 8'-8" H., NICHOLS, IN PARALLEL CONFIGURATION, 300 CFM (900 CFM TOTAL) CAPACITY WITH RECOVERED PRODUCT RECYCLE; 136 HP TOTAL PER UNIT. COMPRESSOR, 100 HP; ADSORBER PUMP, 25 HP; RETURN, 10 HP.

2. VAPOR COMBUSTION FLARE, ENCLOSED GROUND LEVEL TYPE, 6'-0" W. X 12' - 14' L. MAXON VEE TYPE HASTOLOV EXCESS AIR BURNERS WITH 7.5 MMBTU/HR TOTAL MAXIMUM HEAT RELEASE @ 900 CFM VAPOR FLOW; 5'-4" DIA. X 15-20' H. DISCHARGE STACK; 8 HP TOTAL (AIR BLOWER, 5 HP, AND VENT BLOWER 3 HP), WITH MAKE-UP/PROPANE/NATURAL GAS LINE CONNECTED TO THE COMBUSTION CHAMBER.

AND THE ADDITION OF:

1. TWO CARBON ADSORPTION VESSELS CONNECTED IN PARALLEL, EACH VESSEL 9'-6" DIA. x 20' LONG CONTAINING AT LEAST 36,700 POUNDS OF PELLETIZED ACTIVATED CARBON.

2. TWO VAPOR BLOWERS (ONE AS BACKUP), 2050 SCFM MAXIMUM FLOW RATE, EACH WITH A 20 HP MOTOR.

3. FIVE DRY VACUUM PUMPS, EACH PUMP 1,500 ACFM @ 50 mm Hg, WITH A 100 HP MOTOR.

4. ONE GASOLINE ABSORBING TOWER 4'-6" DIA. X 23'-8.4"L.

5. ONE ABSORBENT SUPPLY PUMP, 420 GPM @ 40 PSI, WITH A 25 HP MOTOR.

6. ONE CONDENSATE RETURN PUMP, 507 GPM @ 40 PSI, WITH A 25 HP MOTOR.

7. ONE CONTINUOUS MONITORING SYSTEM (CMS) WITH A FLAME IONIZATION DETECTOR (FID) AND A PAPERLESS ELECTRONIC DATA RECORDER AND STORAGE SYSTEM.

BACKGROUND:

In 1990 ARCO Terminal Services Corporation (ATSC) submitted applications to the District to convert the East Hynes pipeline breakout station into a products terminal. The project involved construction of a product loading rack, and conversion of 7 existing fixed roof crude oil tanks into product storage tanks. Also included was the installation of a Vapor Recovery System (VRS) intended to control emissions from the storage tanks and the loading rack operations. Permits to construct for this project were issued in 1991 and the facility has been operating unchanged since this time. The East Hynes Terminal is a complex operation. Product can enter the terminal via multiple pipelines and leave via the truck loading rack or other product pipelines. Product can also be

transferred from tank to tank. All of these activities can occur simultaneously. The current VRS consists of 3 compression/adsorption type vapor recovery units (VRUs) and a thermal oxidizer (flare). In addition, a bladder tank and a saturator tank are part of the VRS and help to stabilize the flow rate and VOC concentration of the recovered vapors that are processed through the system. Application No. 510725 was submitted to modify the existing VRS. The modification will remove the VRUs and the flare and replace them with a new regenerative carbon adsorption unit. The vapor bladder tank and the saturator will be retained from the existing VRS. A spare blower will be on standby to ensure minimal downtime. All systems (storage tanks & loading racks) currently vented by the existing VRS will be vented to the new VRS. No increase in emissions will result from this modification of the existing VRS so BACT is not triggered. Emission limits on the new VRS Permit to Construct will be identical to those on the existing permit to operate. More detail regarding the project can be found in the material submitted with the application and attached to this evaluation.

The application was received on May 12, 2010 and assigned for processing on May 25, 2010. Additional information was required before the application could be accepted on Dec. 17, 2010. The applicant subsequently requested expedited processing and submitted the additional fees on Feb. 16, 2011. Because the new VRS will include components from the existing VRS, the application will be processed as a modification rather than new construction.

A review of AQMD Compliance files indicates 2 NOVs (P51960 & P51964) were issued to the facility in the past 2 years.

PROCESS DESCRIPTION

The carbon adsorption system consists of two vessels, each filled with approximately 37,000 lbs of activated carbon. Vapors recovered from truck loading and tank filling operations are directed to one vessel, while the other vessel is regenerating, alternating on 15 minute cycles. Exhaust from the active vessel is vented to atmosphere. A new continuous monitoring system (CEMS) analyzer will be installed to monitor volatile organic compound (VOC) concentration in the VRS exhaust. If the VOC concentration approaches the allowable limit, hi VOC readings are communicated to the Terminal PLC system which will automatically shut down the truck loading operation and activate an alarm in the Terminal control rooms and also at the remote pipeline pumping station to suspend tank filling permissives. If the VRS is shut down, the loading rack is automatically shut down and tank filling operations will be suspended as soon as it is safe to do so. A bladder tank with a storage capacity of over 200,000 cf is available to store tank emissions until the filling operations are suspended. In the regeneration cycle, the dry ring vacuum pumps pull adsorbed gasoline vapors out of the activated carbon in the regenerating vessel and discharge it into the absorber tower. Vapors discharged into the absorber tower are directed up through the tower packing where it is absorbed into a down-flowing stream of liquid gasoline. New supply pumps transfer absorber (sponge) gasoline to the tower from a designated storage tank. The enriched "sponge" gasoline accumulates in the bottom of the absorber and is pumped back to a transmix storage tank by the new VRS return pump. At the end of the cycle the regenerating vessel is purged with ambient air drawn through the carbon by the vacuum pumps. The purge air is directed into the vapor return line for treatment in the active adsorber.

CALCULATIONS:

Table 1. Net Change of Fugitive Emissions Due to VRS Modifications

Component Type		Service	No. of Components			Net Emissions			
			Existing to be removed	New VRS	Net Totals	Factor[1]	Lb/yr	Lb/day[2]	Lb/hr
Valves	Sealed Bellows	Gas/Vapor & Light Liquid.	0	39	39	0	0	0	0
		Gas/Vapor	36	41	5	4.55	22.7	0.063	0.0026
		Light Liquid	114	64	(50)	4.55	(227.3)	(0.632)	(0.026)
		Heavy Liquid	21	0	(21)	4.55	(95.5)	(0.265)	(0.011)
Pumps	Sealess Type	Light Liquid	0	0	0	0	0	0	0
	Double mech. seals/ equivalent	Light Liquid	6	2	(4)	46.83	(187.3)	(0.520)	(0.022)
	Single mech. seals	Heavy Liquid	0	0	0	46.83	0	0	0
Compressor		Gas/Vapor	3	7	4	9.09	36.4	0.101	0.004
Flanges		All	1,866	1,780	(86)	6.99	(601.1)	(1.670)	(0.070)
Pressure Relief Valves		All	3	13	10	9.09	0	0	0
Process Drains		All	0	0	0	9.09	0	0	0
						Totals	(1052.1)	(2.92)	(0.122)

1. SCAQMD New Fugitive Components with BACT Emission Factors from Correlation Spreadsheet (500 ppmv threshold).
2. Based on 30 day average.

The above table reflects the component counts provided by the applicant. As can be seen, there is a decrease in fugitive VOC that amounts to 2.92 lb/day so BACT is not triggered. There is no daily throughput increase associated with this application and emission limits and NSR ROG baseline will remain unchanged. The emission limits on the current operating permit will be transferred to the new permit to construct for the modified VRS.

NSR Emissions/Offsets

ROG:

The only emissions associated with the modified VRS as a control device are associated with the fugitive components. From Table 1, the required modification will result in a decrease in fugitive emissions of 2.92 lb/day. BACT is not triggered and no offset ERCs are required.

CO, NOx, PM, SOx: When the thermal oxidizer (flare) is removed and the regenerating carbon adsorbtion system is brought on line, the combustion emissions will be eliminated.

Emissions vented through the VRS stack are associated with the basic or source equipment - storage tanks, loading racks, & etc., and are not evaluated in this evaluation.

NSR Emissions -VRS

Pollutant	**NSR Emissons (lb/hr)**			
	Current		**As Modified**	
	R1	**R2**	**R1**	**R2**
ROG	123.8	1.238	(2.92)	(2.92)
CO	.918	.918	0	0
NOx	.193	.193	0	0
PM	.198	.198	0	0
SOx	1.32	1.32	0	0

Facilitywide Fugitive ROG Emissions: 598.4lb/day

Table 2. Fugitive Emissions Due to VRS Modifications

Source Unit		Service	No. of Existing Components to be Removed (2)	No. of New Components to be Installed (3)	Correlation Equation Factor 500 ppm Screening Value	Removed Component Emissions Based on Correlation 500 ppm Screening Value (lbs/year)	New Component Emissions based on 500 ppm Correlation Equation Factor (lbs/year)
Valves	Sealed Bellows	All	0	39	0.00	-	0.00
	SCAQMD Approved LDAR Program	Gas / Vapor	36	41	4.55	163.65	186.38
		Light Liquid (4)	114	64	4.55	518.21	290.93
		Heavy Liquid (5)	21	0	4.55	95.46	0.00
		> 8 Inches				-	0.00
Pumps	Sealless Type	Light Liquid (4)	0	0	46.83	-	0.00
	Double Mechanical Seals or Equivalent Seals	Light Liquid (4)	6	2	46.83	280.95	93.65
	Single Mechanical Seals	Heavy Liquid (5)	0		46.83	-	0.00
Compressors		Gas / Vapor	3	7	9.09	27.27	63.63
Flanges (ANSI 16.5-1988)		All	1866	1780	6.99	13,043.68	12,442.53
Connectors		All	0	0	2.86	-	0.00
Pressure Relief Valves		All	3	13		-	0.00
Process Drains with P-Trap or Seal Pot		All	0	0	9.09	-	0.00
Other (including fittings, hatches, sight-glasses, and meters)		All	0	0	9.09	-	0.00
Total Emissions		lbs/year				14,129.23	13,077.11
		lbs/day	n Fugitives Increase			39.25	36.33

Toxic Compound	MW Gasoline	MW Toxic	Wt fraction in Gasoline[1] (Wt%)	Removed Component (As Is)Emiss. Rate (Lb/hr)		New Component Emission (New) Rate (Lb/hr)	
				Gasoline[2]	Toxics[3]	Gasoline[2]	Toxics[3]
Benzene	92	78	1.8	1.635	0.0253	1.514	0.0231
Ethyl benzene	92	106	1.4	1.635	0.0264	1.514	0.0244
Hexane (n-)	92	86	1.0	1.635	0.0153	1.514	0.0142
Toluene	92	92	7.0	1.635	0.1145	1.514	0.1060
Xylenes	92	106	7.0	1.635	0.1319	1.514	0.1221

1. Wt % and speciation profile from EPA Tanks 4.09d Program
2. From Table 2. Lb/day / 24hr
3. Gasoline (lb/hr) x Wt % toxic in gasoline x MWtoxic/MWgasoline

HEALTH RISK ASSESSMENT

Emissions used to calculate health risk are taken from the EPA Tanks program Gasoline profile. This profile represents average content of toxic air contaminants typically found in Gasoline.
While there is an overall emission decrease as a result of the modification, the location where the new components will be installed is closer to the facility's property line than the area where the fugitive components for the existing VRS will be removed. Risk is calculated assuming the air toxics profile of gasoline and the fugitive emissions from the total of components to be removed and the total components to be installed. For Risk from Fugitive Emissions, the receptor distance is assumed to be the centroid of the respective (old and new) VRS locations. This assumes the preponderance of components (removed and installed) are near their respective VRS.

The VRS is a control type equipment and, other than fugitives, is not an emission source. Rather, it processes emissions generated by the equipment (tanks and loading racks) that are vented to it. As can be seen in Table 2, the proposed modification to the VRS results in a net decrease in fugitive emissions. Risk from fugitive emissions must be calculated because the new components will be installed at different location from where the existing components will be removed. Therefore separate Tier 2 risk assessments will be calculated for emissions from new components and removed components. The risks will be compared and if there is an increased MICR of more than 1 in 1 million resulting from the new components, a Public Notice will be required unless the overall facility risk is less than 10 in 1 million. The mass emission rate of ROG is determined by using the emission factors for a 500 ppmv leak threshold as illustrated in Table 2. The annual emission rate is reduced to daily and hourly rate by making the appropriate divisions. The toxic components in the ROG are determined by assuming all ROG as gasoline and using the speciation profile and weight fractions provided in the EPA Tanks 4.09d program.

- Distances to receptors are measured on a Figure of the Terminal plot plan from centroids of the old and new VRS locations to closest point on property line and the closest residential receptor.
- Concentrations of Air Toxics are calculated using the gasoline "speciation profile" in the EPA Tanks 4.09d program (see Table 3).
- Emissions are assumed to be distributed evenly over 24 hours per day, 365 days per year.
- The MICR (commercial and residential) is calculated by spreadsheet using the updated risk program.

The results of the RISK Spreadsheet calculations of are summarized in the following tables:

Table 4 MICR Comparison from FUGITIVES emissions from components to be removed (As Is) vs components to be installed (New).

Carcinogen	Emission Rate	MICR			
	(lb/hr)	Sensitive/Residential		Worker/Commercial	
		As Is	New	As Is	New
Benzene	7.0E-04	2.82E-06	2.90E-06	6.34E-06	6.30E-06
Ethylbenzene	5.5E-04	2.56E-07	2.67E-07	5.76E-07	5.79E-07
Totals	**n/a**	**3.08E-06**	**3.17E-06**	**6.92E-06**	**6.88E-06**

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HIA & HIC: HIA and HIC are calculated by spreadsheet using Tier 2 methods

As Is (Emissions from components to be removed)

VARIABLES			Cancer Burden	YES
Hour/Day	24	hr/day		
Day/Week	7	day/wk	X/Q for one-in-a-million:	1.48
Week/Year	52	wk/yr	Distance (meter	264.41
Units	lb/hr	lb/hr or ppm	Area (km2):	2.20E-01
Exhaust Flow Rate	N/A	scfm	Population:	1,537
Control Efficiency	0	%	**Cancer Burden:**	**1.06E-02**
Point Source?	V	p or v		
Stack Height	n/a	feet		
Area	1000	sq. ft.		
Distance-Residential	343	meters		
Distance-Commercial	83	meters		
Met. Station		Long Beach		

As Is (Emissions from components to be removed)

HIA = [Q(lb/hr) * (X/Q)max] / Acute REL	**HIA**	**HIC**
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL		
Target Organs	Acute	Chronic
Alimentary system (liver) - AL		5.85E-04
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	8.29E-03	3.62E-02
Endocrine system - END		5.85E-04
Eye	3.76E-03	
Hematopoietic system - HEM	7.01E-03	1.87E-02
Immune system - IMM	7.01E-03	
Kidney - KID		5.85E-04
Nervous system - NS	1.28E-03	4.40E-02
Reproductive system - REP	8.29E-03	
Respiratory system - RES	3.76E-03	2.52E-02

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NEW (Emissions from new components to be installed)

VARIABLES			Cancer Burden	YES
Hour/Day	24	hr/day		
Day/Week	7	day/wk	X/Q for one-in-a-million:	1.62
Week/Year	52	wk/yr	Distance (meter	252.60
Units	lb/hr	lb/hr or ppm	Area (km2):	2.00E-01
Exhaust Flow Rate	N/A	scfm	Population:	1,403
Control Efficiency	0	%	**Cancer Burden:**	**9.65E-03**
Point Source?	V	p or v		
Stack Height	n/a	feet		
Area	1000	sq. ft.		
Distance-Residential	396	meters		
Distance-Commercial	78	meters		
Met. Station		Long Beach		

NEW (Emissions from new components to be installed)

HIA = [Q(lb/hr) * (X/Q)max] / Acute REL	**HIA**	**HIC**
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL		
Target Organs	Acute	Chronic
Alimentary system (liver) - AL		5.88E-04
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	8.15E-03	3.62E-02
Endocrine system - END		5.88E-04
Eye	3.74E-03	
Hematopoietic system - HEM	6.87E-03	1.85E-02
Immune system - IMM	6.87E-03	
Kidney - KID		5.88E-04
Nervous system - NS	1.27E-03	4.41E-02
Reproductive system - REP	8.15E-03	
Respiratory system - RES	3.74E-03	2.54E-02

1401 RISK ANALYSIS FOR STACK RELOCATION

Assume:

Storage Tanks Emissions:

- All throughput as gasoline
- All throughput through storage tank 797
- Maximum T/P as specified in 1991 VRU permit application no. 299867
- 5,500 BBl/hr – 116,545 BBl/day maximium
- ROG and Toxics Emissions calculated by EPA Tanks 4.09d program

Loading Rack Emissions equivalent before and after modification.

- All throughput as Jet A (emissions from loading vents directly to VRU only when loading Jet A, Ethanol, and/or Diesel. When loading gasoline, vapor balance line is open)
- Loading Toxics emissions from Tanks 4.09d speciation profile for gasoline
- Loading rate assumes 400gpm through up to 12 loading arms (4800gpm)
- ROG and Toxics emissions assumes 0.08lb/1000 gallons loaded

Stack locations and receptor distances as specified by applicant

Table 5 STACK EMISSIONS - MICR Comparison Current Location(As-Is) v Relocated Stack (New)

Carcinogen	Emission Rate	MICR			
	(lb/hr)	Sensitive/Residential		Worker/Commercial	
		As Is	New	As Is	New
Benzene	0.13092	1.53E-05	1.58E-05	3.18E-05	2.33E-05
Ethylbenzene	0.03913	3.98E-07	4.11E-07	8.28E-07	6.06E-07
Totals	**N/A**	**1.57E-05**	**1.62E-05**	**3.27E-05**	**2.39E-05**

The Sensitive/Residential MICR increases due to the new stack location of the modified VRU however the increase is less than 1 in 1 million. (1.62 – 1.57) x E-05 = 0.5 x E-06.
The Worker/Commercial MICR decreases due to the new stack location of the modified VRU.

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HIA & HIC (STACKS): HIA and HIC are calculated by spreadsheet using Tier 2 methods

As Is (Stack Emissions from current stack location)

VARIABLES			Cancer Burden	YES
Hour/Day	24	hr/day		
Day/Week	7	day/wk	X/Q for one-in-a-million:	0.31
Week/Year	52	wk/yr	Distance (meter	683.62
Emission Units	lb/hr	lb/hr or ppm	Area (km2):	1.47E+00
			Population:	10,272
Control Efficiency	0	%	**Cancer Burden:**	**3.26E-01**
Point Source?	P	p or v		
Stack Height	20	feet		
Area	n/a	sq. ft.		
Distance-Residential	343	meters		
Distance-Commercial	89	meters		
Met. Station		Long Beach		

As Is (HIA & HIC from Stack Emissions - current stack location)

HIA = [Q(lb/hr) * (X/Q)max] / Acute REL	HIA	HIC
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL		
Target Organs	Acute	Chronic
Alimentary system (liver) - AL		2.11E-04
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	3.56E-02	1.14E-01
Endocrine system - END		2.11E-04
Eye	2.69E-03	
Hematopoietic system - HEM	3.37E-02	9.28E-02
Immune system - IMM	3.37E-02	
Kidney - KID		2.11E-04
Nervous system - NS	1.83E-03	1.17E-01
Reproductive system - REP	3.56E-02	
Respiratory system - RES	2.69E-03	2.34E-02

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NEW (Stack Emissions from NEW stack location)

VARIABLES			Cancer Burden	YES
Hour/Day	24	hr/day		
Day/Week	7	day/wk	X/Q for one-in-a-million:	0.31
Week/Year	52	wk/yr	Distance (meter	661.02
Units	lb/hr	lb/hr or ppm	Area (km2):	1.37E+00
			Population:	9,604
Control Efficiency	0	%	**Cancer Burden:**	**2.23E-01**
Point Source?	P	p or v		
Stack Height	29.5	feet		
Area	n/a	sq. ft.		
Distance-Residential	306	meters		
Distance-Commercial	78	meters		
Met. Station		Long Beach		

NEW (HIA & HIC from Stack Emissions – New stack location.)

HIA = [Q(lb/hr) * (X/Q)max] / Acute REL	**HIA**	**HIC**
HIC = [Q(ton/yr) * (X/Q) * MET * MP] / Chronic REL		
Target Organs	Acute	Chronic
Alimentary system (liver) - AL		1.54E-04
Bones and teeth - BN		
Cardiovascular system - CV		
Developmental - DEV	3.01E-02	8.34E-02
Endocrine system - END		1.54E-04
Eye	2.28E-03	
Hematopoietic system - HEM	2.86E-02	6.80E-02
Immune system - IMM	2.86E-02	
Kidney - KID		1.54E-04
Nervous system - NS	1.55E-03	8.57E-02
Reproductive system - REP	3.01E-02	
Respiratory system - RES	2.28E-03	1.71E-02

VRU EMISSIONS:

While the modified VRU is not an emissions source (other than the fugitives described above), its stack is the discharge point for the emissions generated by the storage tanks and loading racks vented through it. The original VRU consisted of 3 compression/refrigeration units operating in parallel that condensed the entrained VOC and vented to a thermal oxidizer (flare). When East Hynes became a Bulk Loading Terminal 7 fixed roof crude storage tanks were dedicated for storage and transfer of gasoline, diesel, and Jet A kerosene. A recovery efficiency of ~90% was assumed for VOC laden vapors passing through the compression/refrigeration units and a 99% efficiency was assumed for Flare for a combined, overall VRU efficiency of 99.9%. A source test of the VRU Flare conducted in 1997 demonstrated a 99.9+% efficiency.

Emissions for the tanks and the newly constructed loading racks were calculated, and the 99.9% efficiency applied to the uncontrolled emissions to determine baseline emissions for offset and BACT determinations.

The following calculations revise the original baseline using the same commodity , throughputs, in updated methods and applying the 99.9% efficiency.
The new baseline emissions for the tanks were calculated using the following parameters:

- Commodity = RVP 15 gasoline
- Control efficiency = 99.9%
- EPA Tanks 4.09d program (Tanks) was used to calculate the emissions
- Combined tanks throughput = 132,000bbl/day
- Throughput was proportionally divided between tanks using tank capacities: 54% to 3 large (122,950bbl) tanks, 46% to 4 small tanks (78,400bbl), which equated to 23,760bbl/day (large tk) and 15,180 bbl/day (small tank)
- One Tanks run was used to calculate uncontrolled (R1) emissions for each size tank. (One tank summary for each size tank is attached.)
- Daily R1 emissions for each size tank were determined by taking the highest month's emissions and dividing by 30.
- Daily R1 emissions for all tanks were added together (3 x large tanks R1 + 4 x small tanks R1) to determine the baseline, for all emissions due to throughput through subject tanks.
- Daily controlled emissions (R2) for each all tanks was determined by applying the efficiency to the combined daily R1 (R1 x 0.001) and this is the baseline emissions for the subject storage tanks.
- The individual R2 for each tank can be determined in a similar fashion (R1 x 0.001).

The new loading rack baseline emissions were calculated using the following parameters:

- RVP 15 gasoline
- Control efficiency = 99.9%
- Avg temp = 75*F
- Throughput = 78,000 bbl/day (3,276,000 gpd).
- Loading Equation (1) pg. 5.2-4 from chapter 5 of AP-42 used to calculate gross emissions (R1) from loading.

  $L = 12.46 \times (SPM/T)$ where: S=1.0, P=10.68, M=60lb/lb-mol, T = 535*R.
- R2 = R1 x 0.001 (control efficiency)

Using the parameters listed above the following baseline emissions were determined:

- Large tank baseline (R2) = 303.15 lb/mo. = 10.1 lb/day/tank = 30.3 lb/day/3 tanks
- Small tank baseline (R2) = 193.57 lb/mo. = 6.45 lb/day/tank = 25.8 lb/day/4 tanks
- Combined tanks baseline (R2) = 56.1 lb/day
- Loading Rack baseline (R2) = 48.9 ≈ 49 lb/day
- Combined baseline emissions (tanks and rack) ≈ 105 lb/day

The emissions calculated above are the new baseline emissions for the respective equipment. The East Hynes Terminal is not restricted to these emission but any operating changes that result in an increase would be require offsets and could trigger BACT considerations.

RULES EVALUATION:

CEQA: The CEQA Applicability Form (400-CEQA) indicates that the project does not have any impacts which trigger the preparation of a CEQA document. The expected impacts of the project on the environment are not significant; therefore a CEQA analysis is not required.

212: Public Notice is not required. MICR (Residential and Commercial) associated with fugitive components increase however the increase is less than 1 in 1 million. HIA, & HIC are less than 1 and Cancer Burden is less than 0.5. The ROG emissions decrease. Residential MICR due to stack emissions is increased by the stack relocation but the increase is less than 1. Commercial MICR is decreased. HIA and HIC are less than 1 and Cancer Burden is below 0.5. There is no school within 1000 feet, and there is a net decrease in fugitive emissions so the limits in part (g) are not exceed.

401: Visible emissions are not expected.

402: Compliance records indicate that there are no N/C and NOVs involving nuisance issues in the past ten years. The facility is expected to continue in compliance with the rule.

462: Organic Liquid Loading

(d)(1) Class A facility.

(A) The new VRS will require CARB certification. Permit Conditions require CARB certification within 180 days of startup.

(B) The VRS design includes a new CMS that will be installed and maintained as required by Rule 462. A revised CMS Plan is required.

(d) (6) Leak Inspection Requirements. The Terminal is already subject to Rule 1173 which has more stringent requirements. Compliance is expected.

(e)(1) Compliance Schedule: The Terminal is currently operating in compliance with this section. Conditions in the Permit to Construct the new VRS will specify the scheduling to insure the new VRS meets the compliance schedule specified by this section.

(f) Compliance Determination/Test Methods. The Operator will be required to meet the conditions of this section.

(g) Recordkeeping. The Operator currently keeps the records required by this section and will continue to do so after then new VRS is operating.

463: Storage of Organic Liquids

(3)(C) ".....The vapor recovery system shall have an efficiency of at least 95 percent by weight." The modified VRS should comply with this requirement.

1147 : NOx Reductions from Miscellaneous Sources.

When modifications to the VRS are complete and in operation, the existing flare will be taken out of service and dismantled. This rule will no longer be applicable.

1173 : Fugitive Emissions of Volatile Organic Compounds, Amended Feb 6, 2009

See BACT evaluation.

REGULATION XIII – New Source Review

1303(a): BACT. The emissions decrease as a result of the construction of the new VRS. BACT is not triggered . To ensure emissions from new fugitive components remain below 1 pound per day, a 500 ppmv leak threshold limit is imposed by permit condition and periodic monitoring is required using Rule 1173 guidelines. Applicant is required to provide an updated fugitives component count upon construction completion.

1303(b): Modeling: Not required for ROG.

Offsets: This project will result in a net decrease in ROG, NOx, and CO emissions. The fugitive ROG from the modified VRS will be lower by nearly 3 pounds per day. NOx, PM, SOx, and CO emissions will cease when the modified VRU is operational because the flare will be removed. Offsets are not required.

Facility Compliance: This facility is in compliance with the rules and regulations of the District.

Major Polluting Facility: East Hynes Terminal is a major polluting facility, however, this is not a major modification.

1313(d): Start Up: The applicant will be required to cease operation of existing VRS components including the compressors and flares when the modifications are brought on line and system debugging is completed as allowed by Rule 1313(d).

Rule 1401 New Source Review of Toxic Air Contaminants

Risk associated with Fugitive Emissions and Risk associated with stack relocation were evaluated with the following results for both cases: MICR increase for residential and commercial receptors are below one in a million. HIA and HIC are each less than one, and Cancer Burden is <0.5. Compliance is expected.

40 CFR 60, subpart XX

The requirements of AQMD Rule 462 are equivalent or more stringent than this NSPS and compliance is expected.

40 CFR 63, subpart R (Major Source)

The facility is a major source and required to comply with the Requirements of this NESHAP. Compliance is expected.

Reg. XXX

The facility is subject to Reg. XXX. The Initial Title V Permit has been issued and the new VRS will be issued as a Permit to Construct in Revision #1 of Section H. Revision 1 is considered a minor revision and is subject to EPA 45 day review.

DISCUSSION:

The combined VOC recovery/destruction efficiency of the currently configured VRU is considered to be 99.9%. Baseline emissions for the equipment vented to the VRU were recalculated to be 105 lb/day (combined tanks and racks total). The currently operating VRU permit has a condition that requires the operating temperature of the flare to be 1400*F. We believe this condition was meant to insure that the baseline emissions for the VRU are not exceeded, since the flare efficiency was demonstrated by source testing. After modification, a regenerating carbon adsorption system will replace the compression/refrigeration condensation units and the flare. The control efficiency of the newly modified VRU will be unknown, so a permit condition that limits daily VOC emission to the pre-modification baseline will be included in the modified VRU permit to construct, to insure that offset requirements of Rule 1303 are met. The modified VRU will be source tested to determine whether additional BACT or offsets are required and the combined daily emission limit may be removed from the VRU permit, and/or transferred to the operating permits of the basic equipment (tanks and rack) vented to it.

CONCLUSION:

This project will meet all District Rules and Regulations. It is recommended that the Permit to Construct be granted subject to the attached conditions.

CONDITIONS:

1) OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW. [RULE 204]

2) THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES. [RULE 204]

3) THIS EQUIPMENT SHALL BE OPERATING IN COMPLIANCE WITH A VALID AQMD PERMIT WHENEVER THE EQUIPMENT IT VENTS IS IN OPERATION. [RULE 462, RULE 463, 40CFR 60 SUBPART XX]

4) THE FOLLOWING REQUIREMENTS SHALL APPLY TO VOC SERVICE FUGITIVE COMPONENTS ASSOCIATED WITH DEVICES COVERED BY THIS APPLICATION.

   A. ALL NEW FUGITIVE COMPONENTS IN VOC SERVICE, EXCEPT VALVES AND FLANGES SHALL BE INSPECTED QUARTERLY USING EPA REFERENCE METHOD 21. ALL NEW VALVES AND FLANGES IN VOC SERVICE SHALL BE INSPECTED MONTHLY USING EPA METHOD 21.

B. FOR ALL NEW FUGITIVE COMPONENTS IN VOC SERVICE, ANY LEAK GREATER THAN 500 PPM ABOVE BACKGROUND, MEASURED AS METHANE USING EPA METHOD 21, SHALL BE REPAIRED WITHIN 14 DAYS OF DETECTION. COMPONENTS SHALL BE DEFINED AS ANY VALVE, FITTING, PUMP, COMPRESSOR, PRESSURE RELIEF VALVE, DIAPHRAGM, HATCH, SIGHT-GLASS, AND METER.

C. IF 98.0 PERCENT OR MORE OF THE NEW FLANGES AND (NON-BELLOWS-SEALED) VALVES ARE FOUND TO LEAK GASEOUS OR LIQUID VOLATILE ORGANIC COMPOUNDS AT A RATE LOWER THAN 500 PPM FOR TWO CONSECUTIVE MONTHS, THEN THE OPERATOR MAY REVERT TO A QUARTERLY INSPECTION PROGRAM WITH THE APPROVAL OF THE DISTRICT.

D. THE OPERATOR SHALL KEEP RECORDS OF THE MONTHLY INSPECTION (AND QUARTERLY INSPECTION, WHERE APPLICABLE), SUBSEQUENT REPAIR, AND REINSPECTION, IN A MANNER APPROVED BY THE DISTRICT.

[RULE 1303(b)(2) OFFSETS]

5) WITHIN 30 DAYS AFTER CONSTRUCTION IS COMPLETED A WRITTEN REQUEST SHALL BE SUBMITTED TO CARB FOR CERTIFICATION OF THE VAPOR RECOVERY SYSTEM.

6) THE OPERATOR SHALL CONDUCT SOURCE TEST(S) AS FOLLOWS:

A. A TEST SHALL BE CONDUCTED TO DETERMINE THE VOLATILE ORGANIC COMPOUNDS (VOC) REMOVAL EFFICIENCY AND VOC MASS EMISSION RATE FOR FIXED ROOF STORAGE TANK OPERATING EMISSIONS. FOR THE TANKER TRUCK LOADING RACK.

THE TEST SHALL BE CONDUCTED TO DEMONSTRATE THAT TANKER TRUCK LOADING EMISSIONS DO NOT EXCEED 0.08 POUNDS OF VOC PER 1000 GALLONS LOADED.

THE TANKER TRUCK BULK LOADING RATE IN GALLONS PER HOUR DURING THE SOURCE TEST SHALL BE RECORDED.

THE BACK PRESSURE IN THE VAPOR RECOVERY SYSTEM SHALL BE MONITORED WHILE ALL LOADING RACKS ARE OPERATING SIMULTANEOUSLY.

B. A TEST SHALL BE CONDUCTED TO DETERMINE THE VOLATILE ORGANIC COMPOUNDS (VOC) REMOVAL EFFICIENCY AND VOC MASS EMISSION RATE FOR FIXED ROOF STORAGE TANK OPERATING EMISSIONS.

THE TEST SHALL BE CONDUCTED TO DEMONSTRATE THAT THE VOC REMOVAL/RECOVERY EFFICIENCY FOR STORAGE TANK EMISSIONS IS AT LEAST 95 PERCENT.

THE VOC REMOVAL EFFICIENCY SHALL BE DETERMINED DURING ONGOING TANK(S) FILLING OPERATIONS OVER AT LEAST A FOUR-HOUR PERIOD.

THE TANK(S) LOADING RATE(S) SHALL BE RECORDED DURING THE TEST.

C. A TEST SHALL BE CONDUCTED TO DETERMINE THE VOC EMISSIONS FROM THE VAPOR RECOVERY SYSTEM. THE TEST SHALL BE CONDUCTED AT MAXIMUM ACHIEVABLE LOADING RATES.

D. THE TESTS SHALL BE CONDUCTED NO LATER THAN 180 DAYS AFTER INITIAL STARTUP.

E. THE OPERATOR SHALL SUBMIT THE SOURCE TEST(S) PROTOCOL(S) NO MORE THAN 90 DAYS AFTER COMPLETION OF CONSTRUCTION AND OBTAIN AQMD REVIEW AND APPROVAL OF SAID PROTOCOL(S) PRIOR TO CONDUCTING THE SOURCE TEST.

F. THE DISTRICT SHALL BE NOTIFIED OF THE DATE AND TIME OF THE TEST(S) AT LEAST 10 DAYS PRIOR TO THE TEST.

G. SOURCE TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT NO LATER THAN 60 DAYS AFTER THE SOURCE TEST IS CONDUCTED.

[RULE 462, RULE 463, 1303(a)(1) BACT]

7) THE OPERATOR SHALL INSTALL AND MAINTAIN A CONTINUOUS EMISSIONS MONITORING DEVICE TO ACCURATELY INDICATE THE VOLATILE ORGANIC COMPOUND (VOC) CONCENTRATION AT THE OUTLET OF THE CARBON ADSORBERS IN PPMV. THE EMISSIONS MONITORING DEVICE SHALL BE CALIBRATED DAILY.
[RULE 462, RULE 1303(a)(1) BACT, RULE 1303(b)(2) OFFSETS]

8) VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS MEASURED AT THE OUTLET OF THE VRU SHALL NOT EXCEED 105 POUNDS PER DAY.
[RULE 1303(b)(2) OFFSETS]

9) A TABLE OR GRAPH SHALL BE DEVELOPED TO CORRELATE THE HYDROCARBON MONITOR CONCENTRATION READINGS IN PERCENT (%) OR PARTS PER MILLION BY VOLUME (PPMV) WITH THE EMISSIONS RATE IN LBS PER 1000 GALLONS LOADED.
[RULE 462]

10) WHEN THE HYDROCARBON (HC) MONITORING SYSTEM MEASURES A VOLATILE ORGANIC COMPOUND (VOC) CONCENTRATION THAT APPROACHES THE PPMV OR PERCENT (%) CONCENTRATION EQUIVALENT TO 0.08 POUNDS PER 1000 GALLONS LOADED, THE SYSTEM SHALL AUTOMATICALLY:

A. ALERT THE OPERATOR BOTH AUDIBLY AND VISUALLY TO PREVENT HYDROCARBON BREAKTHROUGH AND,

B. SHUT OFF OR REDUCE THE RATE OF LOADING RACK AND/OR TANK FILLING VAPORS TO THE VAPOR RECOVERY SYSTEM UNTIL THE VOC CONCENTRATION DROPS BELOW THE EQUIVALENT OF 0.08 POUNDS PER 1000 GALLONS LOADED.

C. SHUT DOWN LOADING RACK OPERATIONS AND NOTIFY THE CONTROL ROOM TO SUSPEND TANK FILLING PERMISSIVES.

[RULE 462, RULE 1303(a)(1) BACT]

11) ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE MAINTAINED FOR A FIVE YEAR PERIOD AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.
[RULE 204, RULE 462]

12) WITHIN 30 DAYS FROM INITIAL START-UP OF THE ADSORPTION/ABSORPTION VAPOR RECOVERY UNIT, ALL COMPONENTS OF THE AIR POLLUTION CONTROL SYSTEM CURRENTLY OPERATING UNDER PERMIT NO. F12395 (A/N 333960) AND NOT INCLUDED IN THE ADSORPTION/ABSORPTION VAPOR RECOVERY UNIT DESCRIPTION, SHALL BE TAKEN OUT OF SERVICE AND RENDERED INOPERABLE.
[RULE 204, RULE 1303(b)(2) OFFSETS]

Periodic Monitoring:

13) THE OPERATOR SHALL MONITOR LEAKS FROM THIS EQUIPMENT ACCORDING TO RULE 1173.
[RULE 463, 1173, 3004(a)(4)-PERIODIC MONITORING]

14) THE OPERATOR SHALL CONDUCT PERFORMANCE TESTING OF THE CONTROL EQUIPMENT EVERY FIVE (5) YEARS TO DETERMINE THE VOLATILE ORGANIC COMPOUNDS (VOC) EMISSION RATE (IN POUNDS PER 1000 GALLONS LOADED) POUNDS OF VOC EMISSIONS PER DAY, AND THE VOC CONTROL EFFICIENCY.
[RULE 463, 1303(a)(1)-BACT, 3004(a)(4)-PERIODIC MONITORING]

Emissions and Requirements:

15) THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

VOC:	0.08 LB/1000 GALLONS, RULE 462, 1303
VOC:	$\geq$95% CONTROL EFFICIENCY, RULE 463
TOC/VOC:	35 MG/L, 40 CFR 60 SUBPART XX
HAP/TOC:	10 MG/L, 40 CFR 63 SUBPART R