



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

April 4, 2012

Gerardo Rios (R9AirPermits_sc@epa.gov)
Chief – Permit Office
U.S. EPA – Region IX – Air – 3
75 Hawthorne Street
San Francisco, CA 94105

Subject: American Airlines, Inc. (ID 800196) Title V Permit Revision

Dear Mr. Rios:

American Airlines, Inc. has proposed to revise their Title V permit by increasing throughput for Jet-A Fuel Hydrant System, devices D156 and D157.

This is a scheduled air passenger transportation facility (NAICS 481111) located at 7000 World Way West, Los Angeles, CA 90045. This proposed permit revision is considered as a “de minimus significant permit revision” to their Title V permit. Attached for your review are the evaluation and permit for the proposed revision. With your receipt of the proposed Title V permit revision today, we will note that the EPA 45-day review period will begin on April 4, 2012.

If you have any questions concerning these changes, please call the processing engineer, Mr. Thai Tran at (909) 396-2562.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brian L. Yeh', is positioned above the typed name.

Brian L. Yeh
Senior Manager
Mechanical, Chemical and Public Services
Engineering and Compliance

BLY:DR:TT
Enclosure

FACILITY PERMIT TO OPERATE AMERICAN AIRLINES INC (EIS USE)

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

Equipment	ID No.	Connected To	RECLAIM Source Type/ Monitoring Unit	Emissions* And Requirements	Conditions
Process 3: Fueling System 1: ORGANIC LIQUID FUELS, STORAGE, AND DISTRIBUTION UNDERGROUND					
BULK MATERIAL LOADING STATION, TERMINAL 4, JET FUEL (JPA), WITH 23 FUEL PITS, EACH WITH A 4" CLA-VAL VALVE, 2 ISOLATION VALVE PITS, 2 FLUSHING PITS & 1 VAULT WITH A/N:	D156				C1.13, E71.5, E71.6, K67.14, L341.1
FUGITIVE EMISSIONS, VALVES	D157				

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

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

**FACILITY PERMIT TO OPERATE
AMERICAN AIRLINES INC (EIS USE)**

SECTION H: DEVICE ID INDEX

**The following sub-section provides an index
to the devices that make up the facility
description sorted by device ID.**

**FACILITY PERMIT TO OPERATE
AMERICAN AIRLINES INC (EIS USE)**

SECTION H: DEVICE ID INDEX

Device Index For Section H			
Device ID	Section H Page No.	Process	Switch
D156	1	3	1
D157	1	3	1

FACILITY PERMIT TO OPERATE AMERICAN AIRLINES INC (EIS USE)

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

FACILITY CONDITIONS

F10.1 Material(s) that contain the following compound(s) shall not be used in this facility;

Hexavalent chromium

This condition shall only apply to spray coating applications.

[RULE 1401, 3-4-2005]

F14.1 The operator shall not use diesel fuel containing sulfur compounds in excess of 15 ppm by weight as supplied by the supplier.

[RULE 431.2, 5-4-1990; RULE 431.2, 9-15-2000]

F14.2 The operator shall not use liquid fuel containing sulfur compounds in excess of 0.5 percent by weight.

[RULE 431.2, 5-4-1990; RULE 431.2, 9-15-2000]

F48.1 The operator shall not use at this facility natural gas containing sulfur compounds calculated as H₂S in excess of 16 parts in a million by volume.

[RULE 431.1, 6-12-1998]

F58.1 For the purposes of monitoring, recording, and reporting under RECLAIM, portable internal combustion engine(s) and turbine(s) operated at this facility shall be monitored by a non-resettable timer to accurately indicate the elapsed operating time of the equipment unless monitored by a fuel meter meeting the following requirements:

FACILITY PERMIT TO OPERATE AMERICAN AIRLINES INC (EIS USE)

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

1. The devices served by the fuel meters shall be electrically wired in such a manner that its operation cannot be initiated without the fuel meters first being activated.
2. The fuel meters and temperature transducers shall be calibrated annually by the manufacturer, KRAL-USA, Inc. or its designated representatives. Dual fuel meters shall be calibrated on the same day, using the same equipment. The fuel meters shall be calibrated as specified by KRAL-USA, Inc. in the protocols submitted to the South Coast Air Quality Management District dated July 17, 2001 without deviation unless written approval is granted.
3. The calculations of electronic flow computers, for display of flow measurement results, shall be verified at time of fuel meter calibration by KRAL-USA, Inc. or its designated representatives. Calibration results shall be maintained at the facility and made available to the Executive Officer or his representatives upon demand for a minimum of three years after the date of calibration.
4. The fuel meters and its electronic components shall be sealed by the manufacturer, KRAL-USA, Inc., or its designated representatives. Such seal shall only be broken by the manufacturer or its authorized representative for purposes of testing, maintenance or repair purposes. The meter shall be re-sealed immediately after the completion of the test or repair.
5. An operation log shall be maintained to record every testing, maintenance, repair or calibration of a fuel meter. Each fuel meter log shall be positively identified for each fuel meter and the device it serves. The operation logs shall be kept at the facility for a minimum of three years after the end of each compliance year. These operation logs shall be made available to the Executive Officer or his representative upon demand.
6. The fuel meters shall not be equipped with keypad or buttons that allow changes to the programming or data contained in the units. Portable keypad may be used by the manufacturer or its representatives for testing, maintenance, or repair purposes. In addition, access to the program and data contained in the units shall be passcode protected. This passcode shall only be made available to the

FACILITY PERMIT TO OPERATE AMERICAN AIRLINES INC (EIS USE)

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

manufacturer or its designated representatives.

7. Existing timer on each of the devices shall be maintained in good operation manner for a minimum of three years initial operation of the time meter. During this period, timer readings shall be made and recorded in the maintenance log on a quarterly basis.

[RULE 2012, 3-16-2001; RULE 2012, 5-6-2005; RULE 3004(a)(4)-Periodic Monitoring, 12-12-1997]

DEVICE CONDITIONS

C. Throughput or Operating Parameter Limits

C1.13 The operator shall limit the loading rate of JETA fuel to no more than 17,179,000 gallon(s) in any one calendar month.

For the purpose of this condition, this limit shall be defined as the total combined loading rates for devices D156 and D154 when D156 and D154 are both operated in any one month.

[RULE 1304(a)-Modeling and Offset Exemption, 6-14-1996; RULE 1401, 9-10-2010]

[Devices subject to this condition : D156]

E. Equipment Operation/Construction Requirements

E71.5 The operator shall only operate this equipment to transfer jet-A fuel.

[RULE 1304(c)-Offset Exemption, 6-14-1996; RULE 1401, 9-10-2010]

[Devices subject to this condition : D156]

E71.6 The operator shall only operate this equipment to transfer fuel to aircraft.

FACILITY PERMIT TO OPERATE AMERICAN AIRLINES INC (EIS USE)

SECTION H: PERMIT TO CONSTRUCT AND TEMPORARY PERMIT TO OPERATE

The operator shall comply with the terms and conditions set forth below:

[RULE 1303(a)(1)-BACT, 5-10-1996; RULE 1303(a)(1)-BACT, 12-6-2002]

[Devices subject to this condition : D156]

K. Record Keeping/Reporting

K67.14 The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

Monthly loading rate of jet A fuel being transferred by this equipment

Total combined monthly loading rates for this equipment and that for device D154

Records shall be kept for minimum five years and made available upon request

**[RULE 1304(c)-Offset Exemption, 6-14-1996; RULE 1401, 9-10-2010; RULE 3004(a)
(4)-Periodic Monitoring, 12-12-1997]**

[Devices subject to this condition : D156]

L. Expiration Date

L341.1 Within 90 days after start-up of this equipment, the following device(s) shall be removed from operation:

D154

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

[Devices subject to this condition : D156]

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
STATIONARY SOURCE COMPLIANCE
APPLICATION PROCESSING AND CALCULATIONS

PAGE 1 OF 4
APPL. NO. 529455
PROCESSED BY TT
CHECKED BY
DATE 4/4/2012

COMPANY NAME: AMERICAN AIRLINES, INC.

MAILING ADDRESS: P. O. BOX 92246
LOS ANGELES, CA 90009

EQUIPMENT LOCATION: 7000 WORLD WAY WEST
LOS ANGELES, CA 90045

EQUIPMENT DESCRIPTION:

Please see description for device D156 in the attached Section H for detail.

BACKGROUND:

This application was filed by American Airlines (AA) on 1/15/2012 as a Class 1 for increasing the throughput at the fuel hydrant system under device D156, which is under a permit to construct under application number 525804, at Terminal 4 in Los Angeles Airport (LAX). The throughput will increase from 11,283,333 to 17,179,000 gallons a month. As shown in the calculations below, the increase of throughput will result in 4 lb of ROG emission offset. The applicant did not file for the throughput increase at the same time they filed for the construction of device D156 because they needed the construct to start as soon as possible and it took time to purchase ERC so they decided to go for two separate filings.

Filling loss emissions are from fuel vapor being displaced from the fuel tank when the fuel is pumped into the tank. The vapor is released at the tip of the wings. To reduce fire hazard, the vapor is released at a point furthest from the tank being filled. For example, when a fuel tank in the left wing is filled, the vapor is released at the tip of the right wing and vice versa.

A permit to construct is recommended.

CALCULATIONS

Emissions from this system are from working (or loading) loss that occurs when the fuel is loaded into the air plane fuel tanks. EPA AP-42 Section 5.2 provides emission factor (EF) for loading loss emission from this operation as follows:

$$EF = 12.46 (S)(P)(M)/(T)$$

Where S: saturation factor (Table 5.2-1), =0.60, submerged loading: dedicated normal services

P: vapor pressure, psi @ 60 degree F = 0.0085

M: molecular weight, lb/lbmole = 130

T: temperature of liquid loaded, degree R = 520

$$EF = (12.46) (0.60) (0.0085) (130) / (520) \\ = 0.0158865 \text{ lb/1000gal}$$

$$\text{Working Loss} = 17,179,000 \text{ gal/mo} \times 0.0158865 \text{ lb/1000gal} = 272.91 \\ = (272.91 \text{ lb/mo}) (\text{mo}/30 \text{ dy}) = 9.10 \text{ lb/dy}$$

$$\text{Emission increase} = (17,179,000 - 11,283,333) \text{ gal/mo} \times 0.0158865 \text{ lb/1000gal} = 93.66 \\ = (93.66 \text{ lb/mo}) (\text{mo}/30 \text{ dy}) = 3.12 \text{ lb/dy}$$

$$\text{Emission Offsets} = 3.12 \times 1.2 = 3.72 \rightarrow 4.0 \text{ lb/dy}$$

RULES EVALUATION:

This increase in throughput is subject to all applicable rules and regulations including new source review, offset, modeling and risk assessment.

Rule 212: This increase of throughput is not a 'significant project' defined by this rule so public notification is not required.

Rule 401: The equipment has been operated in compliance with this rule. Continue compliance with this rule is expected.

Rule 402: The equipment has been operated in compliance with this rule. Continue compliance with this rule is expected.

Rule 462: This rule is not applicable to liquid organic with vapor pressure less than 1.5 psia.

Reg. XIII: The increase in throughput triggers NSR review.

- Although AQMD does not have jurisdiction on controlling emissions from aircrafts including fueling them and that EPA does not have emission control requirement on aircraft fueling so that no BACT/LAER has been determined or required on this system, the applicant has utilized measures similar to those considered as BACT required for non-aviation operations. These measures include bottom feeding when fueling the tanks, using hoses with tie connections, and having dry-break mechanism on the hoses to prevent spillage.
- Higher throughput has triggered offset requirements. The applicant complies with the requirements by providing 4-lb ROG ERC.
- The only criteria pollutant from this equipment is VOC, but modeling for VOC is not required pursuant to Appendix A of Rule 1303.

RULE 1401: Tier 3 Risk Analysis (attached) was conducted for the throughput increase from 11,283,333 to 17,179,000 gallons/mo. based on two different heights (12 ft for small/domestic planes and 24 ft for big/international planes) to residents at 1000 meters south of the Terminal 4 and to off-site workers (assumed at point of maximum impact [PMI], 156 meter away). The results are as follows:

<u>Receptor</u>	<u>MICR</u> (10^{-06})		<u>HIC</u> (10^{-04})		<u>HIA</u> (10^{-06})	
	12'	24'	12'	24'	12'	24'
Residents	0.1	0.1	2.8	2.8	2.7	2.7
Workers	0.2	0.1	36.7	23.4	34.7	21.9

As seen above, the increases of MICR, HIC and HIA are most impact to the workers. However, they are still very well within the thresholds, i.e., one in one million for MICR and 1.0 for HIC and HIA, required by this rule.

Regulation XX:

AA is a RECLAIM facility so it is subject to the requirements of this regulation. However, because fuel hydrant emits only non-RECLAIM pollutants so the installation of the fuel hydrant is not subject to the requirements of this regulation.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
STATIONARY SOURCE COMPLIANCE
APPLICATION PROCESSING AND CALCULATIONS

PAGE 4 OF 4
APPL. NO. 529455
PROCESSED BY TT
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Regulation XXX:

Rule 3000 (b)(6):

The Title V permit revision caused by this equipment installation satisfies all the applicable conditions listed in this rule so, it constitutes a de minimis significant permit revision.

Rule 3002(a)(2):

This has been a TV facility and all of the applicable requirements for greenhouse gases have been incorporated. Increasing the throughput of this facility will not generate the greenhouse gases to the level that would trigger additional requirements. This increase of throughput complies with this section of the rule.

Rule 3003:

This permit revision is a de minimis significant permit revision and is subject to EPA review. The proposed permit will be submitted to EPA for comments. The permit will be issued once the equipment meets all applicable requirements.

RECOMMENDATIONS

FOR THIS APPLICATION THE FOLLOWING DISPOSITION IS RECOMMENDED:

Issue P/C with the throughput limit at 17,179,000 gallons/mo, and that the remaining conditions unchanged.

MICR CALCULATIONS:

MICR = CP x Qtons x X/Q x AFann x MET x DBR x EVF x 10⁻⁶ x MP

Annual conc. adj. factor AFann: 1.0
 Nearest AQMD MET Station: King Harbor
 MET Value: 1

For Off-Site Worker Receptor:

Contaminants		CP	Q (tpy)	X/Q	DBR	EVF	MP (w)	MICR
Naphthalene	91-20-3	1.20E-01	4.91E-02	1.91	149	0.38	1.00	6.38E-07
Ethylbenzene	100-41-4	8.70E-03	1.64E-02	1.91	149	0.38	1.00	1.54E-08
Benzene	71-43-2	1.00E-01	3.28E-03	1.91	149	0.38	1.00	3.54E-08
xylene	1330-20-7	NA	3.28E-02	1.91	149	0.38	NA	NA
toluene	108-88-3	NA	8.19E-03	1.91	149	0.38	NA	NA
Total MEIW								6.89E-07

For Sensitive/Res. Receptor:

X/Q	DBR	EVF	MP (r)	MICR
0.15	302	0.96	1.00E+00	2.52E-07
0.15	302	0.96	1.00E+00	6.09E-09
0.15	302	0.96	1.00E+00	1.40E-08
0.15	302	0.96	NA	NA
0.15	302	0.96	NA	NA
Total MEIR				2.72E-07

CHRONIC HAZARD INDEX (HIC) CALCULATIONS:

HIC = [Qyr x (X/Q) x MET x MP]/Chronic REL

For Off-Site Worker Receptor:

Contaminants		Q (tpy)	X/Q	MET	MP (w)	REL	HIC
Naphthalene	91-20-3	4.91E-02	1.91	1	1.00	9.00E+00	1.04E-02
Ethylbenzene	100-41-4	1.64E-02	1.91	1	1.00	2.00E+03	1.57E-05
Benzene	71-43-2	3.28E-03	1.91	1	1.00	6.00E+01	1.04E-04
xylene	1330-20-7	3.28E-02	1.91	1	1.00	7.00E+02	8.94E-05
toluene	108-88-3	8.19E-03	1.91	1	1.00	3.00E+02	5.22E-05
Total HIC							1.07E-02

**Sensitive/
Residential Receptor**

MP (r)	X/Q	HIC
1.00	0.15	8.05E-04
1.00	0.15	1.21E-06
1.00	0.15	8.05E-06
1.00	0.15	6.90E-06
1.00	0.15	4.02E-06
Total		8.25E-04

ACUTE HAZARD INDEX (HIA) CALCULATIONS:

HIA = ([Qhr x (X/Q-hr)]/Acute REL) x AF

For Off-Site Worker Receptor:

Contaminants		NSR Entry Qhr	X/Q-hr	REL	Averaging Hour	AF	HIA
Naphthalene	91-20-3	1.12E-02	104.6	NA	NA	NA	NA
Ethylbenzene	100-41-4	3.74E-03	104.6	NA	NA	NA	NA
Benzene	71-43-2	7.48E-04	104.6	1.3E+03	6.00	1	6.02E-05
xylene	1330-20-7	7.48E-03	104.6	2.2E+04	1.00	1	3.56E-05
toluene	108-88-3	1.87E-03	104.6	3.7E+04	1.00	1	5.29E-06
Total HIA							1.01E-04

**Sensitive/
Residential Receptor**

X/Q-hr	HIA	
8.07	NA	
8.07	NA	
8.07	4.64E-06	
8.07	2.74E-06	
8.07	4.08E-07	
Total HIA		7.79E-06

Note: AF value was set to 1.0 for all averaging hours to be conservative

Rule 1401 Analysis - Tier 3 (Release height of 12 ft, high emission rate)

EMISSION SOURCE DETAILS

Source Description:	All Area		
Location:			
Operating Schedule:	24	hours/day	
Type of Source	Area		
Source Height	12 ft	3.658 m	
Source Area	360 ft X 600 ft	110 m X 183 m	
Unit Rate	1 ton/year	1.429E-06	g/s m2

RECEPTOR DISTANCES:

Receptor type	Distance	
Nearest Sensitive/Residential:	1000 meters	Residents
Nearest Off-Site Worker:	PMI (126 m)	Maximum impacted loc

SCREEN3 Results 1-hr (Unit dispersion factor)

Cancer and Chronic	At sensitive/Res Receptor - max. h	1.842 (ug/m3)/(ton/yr)
	At Offsite Worker Receptor - max.	23.39 (ug/m3)/(ton/yr)

Note: The SCREEN3 modeling was performed based on unit emission factors of 1 ton/year for cancer risk analysis.

X/Q Value in Risk Calculation:

Risk Type	Receptor Type	X/Q	Unit
Cancer and Chronic	Sensitive/Res. Receptor:	0.1474	(ug/m3)/(ton/yr)
	At Off-Site Worker Receptor:	1.9112	(ug/m3)/(ton/yr)
Acute	Sensitive/Res. Receptor:	8.0680	(ug/m3)/(lb/hr)
	At Off-Site Worker Receptor:	104.6382	(ug/m3)/(lb/hr)

Note: A factor of 0.08 was used to convert the maximum hourly concentration to annual average concentration.

MICR CALCULATIONS:

$$\text{MICR} = \text{CP} \times \text{Q}(\text{tons}) \times \text{X/Q} \times \text{AFann} \times \text{MET} \times \text{DBR} \times \text{EVF} \times 10^{-6} \times \text{MP}$$

Annual conc. adj. factor AFann: 1.0
 Nearest AQMD MET Station: King Harbor
 MET Value: 1

For Off-Site Worker Receptor:

Contaminants		CP	Q (tpy)	X/Q	DBR	EVF	MP (w)	MICR
Naphthalene	91-20-3	1.20E-01	1.69E-02	1.91	149	0.38	1.00	2.19E-07
Ethylbenzene	100-41-4	8.70E-03	5.62E-03	1.91	149	0.38	1.00	5.29E-09
Benzene	71-43-2	1.00E-01	1.12E-03	1.91	149	0.38	1.00	1.22E-08
xylene	1330-20-7	NA	1.12E-02	1.91	149	0.38	NA	NA
toluene	108-88-3	NA	2.81E-03	1.91	149	0.38	NA	NA
Total MEIW								2.36E-07

For Sensitive/Res. Receptor:

X/Q	DBR	EVF	MP (r)	MICR
0.15	302	0.96	1.00E+00	8.65E-08
0.15	302	0.96	1.00E+00	2.09E-09
0.15	302	0.96	1.00E+00	4.80E-09
0.15	302	0.96	NA	NA
0.15	302	0.96	NA	NA
Total MEIR				9.33E-08

CHRONIC HAZARD INDEX (HIC) CALCULATIONS:

$$\text{HIC} = [\text{Qyr} \times (\text{X/Q}) \times \text{MET} \times \text{MP}] / \text{Chronic REL}$$

For Off-Site Worker Receptor:

Contaminants		Q (tpy)	X/Q	MET	MP (w)	REL	HIC
Naphthalene	91-20-3	1.69E-02	1.91	1	1.00	9.00E+00	3.58E-03
Ethylbenzene	100-41-4	5.62E-03	1.91	1	1.00	2.00E+03	5.37E-06
Benzene	71-43-2	1.12E-03	1.91	1	1.00	6.00E+01	3.58E-05
xylene	1330-20-7	1.12E-02	1.91	1	1.00	7.00E+02	3.07E-05
toluene	108-88-3	2.81E-03	1.91	1	1.00	3.00E+02	1.79E-05
Total HIC							3.67E-03

**Sensitive/
Residential Receptor**

MP (r)	X/Q	HIC
1.00	0.15	2.76E-04
1.00	0.15	4.14E-07
1.00	0.15	2.76E-06
1.00	0.15	2.37E-06
1.00	0.15	1.38E-06
Total		2.83E-04

ACUTE HAZARD INDEX (HIA) CALCULATIONS:

$$\text{HIA} = \{[\text{Qhr} \times (\text{X/Q-hr})] / \text{Acute REL}\} \times \text{AF}$$

For Off-Site Worker Receptor:

Contaminants		Qhr	X/Q-hr	REL	Averaging Hour	AF	HIA
Naphthalene	91-20-3	3.85E-03	104.6	NA	NA	NA	NA
Ethylbenzene	100-41-4	1.28E-03	104.6	NA	NA	NA	NA
Benzene	71-43-2	2.57E-04	104.6	1.3E+03	6.00	1	2.07E-05
xylene	1330-20-7	2.57E-03	104.6	2.2E+04	1.00	1	1.22E-05
toluene	108-88-3	6.42E-04	104.6	3.7E+04	1.00	1	1.81E-06
Total HIA							3.47E-05

**Sensitive/
Residential Receptor**

X/Q-hr	HIA
8.07	NA
8.07	NA
8.07	1.59E-06
8.07	9.41E-07
8.07	1.40E-07
Total HIA	2.67E-06

Note: AF value was set to 1.0 for all averaging hours to be conservative

Emission rates

Contaminants	% compound
Naphthalene	3
Ethylbenzene	1
Benzene	0.2
Xylene	2
Toluene	0.5
Existing Throughput (gallons/month)	11,283,333
Modified Throughput (gallons/month)	17,179,000
Throughput increase (gallons/month)	5,895,667
Throughput increase (gallons/year)	70,748,004
VOC emission factor (lb/1000 gallon)	0.01589
VOC Emissions: (lb/year)	1,124.19

Rule 1401 Analysis - Tier 3 (Release height of 12 ft, low emission rate)

EMISSION SOURCE DETAILS

Source Description:	All Area	
Location:		
Operating Schedule:	24	hours/day
Type of Source	Area	
Source Height	12 ft	3.658 m
Source Area	360 ft X 600 ft	110 m X 183 m
Unit Rate	1 ton/year	1.429E-06 g/s m ²

RECEPTOR DISTANCES:

Receptor type	Distance	
Nearest Sensitive/Residential:	1000 meters	Residents
Nearest Off-Site Worker:	PMI (126 m)	Maximum impacted loc

SCREEN3 Results 1-hr (Unit dispersion factor)

Cancer and Chronic	At sensitive/Res Receptor - max.	1.842 (ug/m ³)/(ton/yr)
	At Offsite Worker Receptor - ma	23.89 (ug/m ³)/(ton/yr)

Note: The SCREEN3 modeling was preformed based on unit emission factors of 1 ton/year for cancer risk analysis.

X/Q Value in Risk Calculation:

Risk Type	Receptor Type	X/Q	Unit
Cancer and Chronic	Sensitive/Res. Receptor:	0.1474	(ug/m ³)/(ton/yr)
	At Off-Site Worker Receptor:	1.9112	(ug/m ³)/(ton/yr)
Acute	Sensitive/Res. Receptor:	8.0680	(ug/m ³)/(lb/hr)
	At Off-Site Worker Receptor:	104.6382	(ug/m ³)/(lb/hr)

Note: A factor of 0.08 was used to convert the maximum hourly concentration to annual average concentration.

MICR CALCULATIONS:

$$\text{MICR} = \text{CP} \times \text{Qtons} \times \text{X/Q} \times \text{AFann} \times \text{MET} \times \text{DBR} \times \text{EVF} \times 10^{-6} \times \text{MP}$$

Annual conc. adj. factor AFann: 1.0
 Nearest AQMD MET Station: King Harbor
 MET Value: 1

For Off-Site Worker Receptor:

Contaminants		CP	Q (tpy)	X/Q	DBR	EVF	MP (w)	MICR
Naphthalene	91-20-3	1.20E-01	2.81E-03	1.91	149	0.38	1.00	3.65E-08
Ethylbenzene	100-41-4	8.70E-03	2.81E-03	1.91	149	0.38	1.00	2.65E-09
Benzene	71-43-2	1.00E-01	5.62E-04	1.91	149	0.38	1.00	6.08E-09
xylene	1330-20-7	NA	5.62E-04	1.91	149	0.38	NA	NA
toluene	108-88-3	NA	0.00E+00	1.91	149	0.38	NA	NA
Total MEIW								4.52E-08

For Sensitive/Res. Receptor:

X/Q	DBR	EVF	MP (r)	MICR
0.15	302	0.96	1.00E+00	1.44E-08
0.15	302	0.96	1.00E+00	1.04E-09
0.15	302	0.96	1.00E+00	2.40E-09
0.15	302	0.96	NA	NA
0.15	302	0.96	NA	NA
Total MEIR				1.79E-08

CHRONIC HAZARD INDEX (HIC) CALCULATIONS:

$$\text{HIC} = [\text{Qyr} \times (\text{X/Q}) \times \text{MET} \times \text{MP}] / \text{Chronic REL}$$

For Off-Site Worker Receptor:

Contaminants		Q (tpy)	X/Q	MET	MP (w)	REL	HIC
Naphthalene	91-20-3	2.81E-03	1.91	1	1.00	9.00E+00	5.97E-04
Ethylbenzene	100-41-4	2.81E-03	1.91	1	1.00	2.00E+03	2.69E-06
Benzene	71-43-2	5.62E-04	1.91	1	1.00	6.00E+01	1.79E-05
xylene	1330-20-7	5.62E-04	1.91	1	1.00	7.00E+02	1.53E-06
toluene	108-88-3	0.00E+00	1.91	1	1.00	3.00E+02	0.00E+00
Total HIC							6.19E-04

**Sensitive/
Residential Receptor**

MP (r)	X/Q	HIC
1.00	0.15	4.60E-05
1.00	0.15	2.07E-07
1.00	0.15	1.38E-06
1.00	0.15	1.18E-07
1.00	0.15	0.00E+00
Total		4.77E-05

ACUTE HAZARD INDEX (HIA) CALCULATIONS:

$$\text{HIA} = \{[\text{Qhr} \times (\text{X/Q-hr})] / \text{Acute REL}\} \times \text{AF}$$

For Off-Site Worker Receptor:

Contaminants		Qhr	X/Q-hr	REL	Averagin g Hour	AF	HIA
Naphthalene	91-20-3	6.42E-04	104.6	NA	NA	NA	NA
Ethylbenzene	100-41-4	6.42E-04	104.6	NA	NA	NA	NA
Benzene	71-43-2	1.28E-04	104.6	1.3E+03	6.00	1	1.03E-05
xylene	1330-20-7	1.28E-04	104.6	2.2E+04	1.00	1	6.10E-07
toluene	108-88-3	0.00E+00	104.6	3.7E+04	1.00	1	0.00E+00
Total HIA							1.09E-05

**Sensitive/
Residential Receptor**

X/Q-hr	HIA	
8.07	NA	
8.07	NA	
8.07	7.96E-07	
8.07	4.71E-08	
8.07	0.00E+00	
Total HIA		8.44E-07

Note: AF value was set to 1.0 for all averaging hours to be conservative

Emission rates

<i>Contaminants</i>	<i>% compound</i>
Naphthalene	0.5
Ethylbenzene	0.5
Benzene	0.1
Xylene	0.1
Toluene	0
Existing Throughput (gallons/month)	11,283,333
Modified Throughput (gallons/month)	17,179,000
Throughput increase (gallons/month)	5,895,667
Throughput increase (gallons/year)	70,748,004
VOC emission factor (lb/1000 gallon)	0.01589
VOC Emissions: (lb/year)	1,124.19

Rule 1401 Analysis - Tier 3 (Release height of 24 ft, high emission rate)

EMISSION SOURCE DETAILS:

Source Description:	All Area		
Location:			
Operating Schedule:	24	hours/day	
Type of Source	Area		
Source Height	24 ft	7.315 m	
Source Area	360 ft x 600 ft	110 m x 183 m	
Unit Rate	1 ton/year	1.43E-06	g/s m ²

RECEPTOR DISTANCES:

Receptor type	Distance	
Nearest Sensitive/Residential:	1000 m	Resident
Nearest Off-Site Worker:	156 m	Maximum impacted location

SCREEN3 Results 1-hr (Unit dispersion factor)

	At sensitive/Res Receptor - max. hou	1.828	(ug/m ³)/(ton/yr)
Cancer and Chronic	At Offsite Worker Receptor - max. ho	15.08	(ug/m ³)/(ton/yr)

Note: The SCREEN3 modeling was performed based on unit emission factors of 1 ton/year for cancer risk analysis.

X/Q Value in Risk Calculation:

Risk Type	Receptor Type	X/Q	Unit
Cancer and Chronic	Sensitive/Res. Receptor:	0.1462	(ug/m ³)/(ton/yr)
	At Off-Site Worker Receptor:	1.2064	(ug/m ³)/(ton/yr)
Acute	Sensitive/Res. Receptor:	8.0066	(ug/m ³)/(lb/hr)
	At Off-Site Worker Receptor:	66.0504	(ug/m ³)/(lb/hr)

Note: A factor of 0.08 was used to convert the maximum hourly concentration to annual average concentration.

MICR CALCULATIONS:

$$\text{MICR} = \text{CP} \times \text{Qtons} \times \text{X/Q} \times \text{AFann} \times \text{MET} \times \text{DBR} \times \text{EVF} \times 10^{-6} \times \text{MP}$$

Annual conc. adj. factor AFann: 1.0
 Nearest AQMD MET Station: King Harbor
 MET Value: 1

For Off-Site Worker Receptor:

Contaminants		CP	Q (tpy)	X/Q	DBR	EVF	MP (w)	MICR
Naphthalene	91-20-3	1.20E-01	1.69E-02	1.21	149	0.38	1.00	1.38E-07
Ethylbenzene	100-41-4	8.70E-03	5.62E-03	1.21	149	0.38	1.00	3.34E-09
Benzene	71-43-2	1.00E-01	1.12E-03	1.21	149	0.38	1.00	7.68E-09
xylene	1330-20-7	NA	1.12E-02	1.21	149	0.38	NA	NA
toluene	108-88-3	NA	2.81E-03	1.21	149	0.38	NA	NA
Total MEIW								1.49E-07

For Sensitive/Res. Receptor:

X/Q	DBR	EVF	MP (r)	MICR
0.15	302	0.96	1.00E+00	8.58E-08
0.15	302	0.96	1.00E+00	2.07E-09
0.15	302	0.96	1.00E+00	4.77E-09
0.15	302	0.96	NA	NA
0.15	302	0.96	NA	NA
Total MEIR				9.26E-08

CHRONIC HAZARD INDEX (HIC) CALCULATIONS:

$$\text{HIC} = \{\text{Qyr} \times (\text{X/Q}) \times \text{MET} \times \text{MP}\} / \text{Chronic REL}$$

For Off-Site Worker Receptor:

Contaminants		Q (tpy)	X/Q	MET	MP (w)	REL	HIC
Naphthalene	91-20-3	1.69E-02	1.21	1	1.00	9.00E+00	2.26E-03
Ethylbenzene	100-41-4	5.62E-03	1.21	1	1.00	2.00E+03	3.39E-06
Benzene	71-43-2	1.12E-03	1.21	1	1.00	6.00E+01	2.26E-05
xylene	1330-20-7	1.12E-02	1.21	1	1.00	7.00E+02	1.94E-05
toluene	108-88-3	2.81E-03	1.21	1	1.00	3.00E+02	1.13E-05
Total HIC							2.32E-03

**Sensitive/
Residential Receptor**

MP (r)	X/Q	HIC
1.00	0.15	2.74E-04
1.00	0.15	4.11E-07
1.00	0.15	2.74E-06
1.00	0.15	2.35E-06
1.00	0.15	1.37E-06
Total		2.81E-04

ACUTE HAZARD INDEX (HIA) CALCULATIONS:

$$\text{HIA} = \{[\text{Qhr} \times (\text{X/Q-hr})] / \text{Acute REL}\} \times \text{AF}$$

For Off-Site Worker Receptor:

Contaminants		Qhr	X/Q-hr	REL	Averaging Hour	AF	HIA
Naphthalene	91-20-3	3.85E-03	66.1	NA	NA	NA	NA
Ethylbenzene	100-41-4	1.28E-03	66.1	NA	NA	NA	NA
Benzene	71-43-2	2.57E-04	66.1	1.3E+03	6.00	1	1.30E-05
xylene	1330-20-7	2.57E-03	66.1	2.2E+04	1.00	1	7.71E-06
toluene	108-88-3	6.42E-04	66.1	3.7E+04	1.00	1	1.15E-06
Total HIA							2.19E-05

**Sensitive/
Residential Receptor**

X/Q-hr	HIA	
8.01	NA	
8.01	NA	
8.01	1.58E-06	
8.01	9.34E-07	
8.01	1.39E-07	
Total HIA		2.65E-06

Note: AF value was set to 1.0 for all averaging hours to be conservative

Emission rates

Contaminants	% compound
Naphthalene	3
Ethylbenzene	1
Benzene	0.2
Xylene	2
Toluene	0.5
Existing Throughput (gallons/month)	11,283,333
Modified Throughput (gallons/month)	17,179,000
Throughput increase (gallons/month)	5,895,667
Throughput increase (gallons/year)	70,748,004
VOC emission factor (lb/1000 gallon)	0.01589
VOC Emissions: (lb/year)	1,124.19 lb/year

Rule 1401 Analysis - Tier 3 (Release height of 24 ft, low emission rate)

EMISSION SOURCE DETAILS

Source Description:	All Area		
Location:			
Operating Schedule:	24	hours/day	
Type of Source	Area		
Source Height	24 ft	7.315 m	
Source Area	360 ft X 600 ft	110 m X 183 m	
Unit Rate	1 ton/year	1.43E-06	g/s m ²

RECEPTOR DISTANCES:

Receptor type	Distance	
Nearest Sensitive/Residential:	3000 m	resident
Nearest Off-Site Worker:	PMI (156 m)	Maximum impacted location

SCREEN3 Results 1-hr (Unit dispersion factor)

Cancer and Chronic	At sensitive/Res Receptor - max. hq	1.828	(ug/m ³)/(ton/yr)
	At Offsite Worker Receptor - max. hq	15.08	(ug/m ³)/(ton/yr)

Note: The SCREEN3 modeling was performed based on unit emission factors of 1 ton/year for cancer risk analysis.

X/Q Value in Risk Calculation:

Risk Type	Receptor Type	X/Q	Unit
Cancer and Chronic	Sensitive/Res. Receptor:	0.1462	(ug/m ³)/(ton/yr)
	At Off-Site Worker Receptor:	1.2064	(ug/m ³)/(ton/yr)
Acute	Sensitive/Res. Receptor:	8.0066	(ug/m ³)/(lb/hr)
	At Off-Site Worker Receptor:	66.0504	(ug/m ³)/(lb/hr)

Note: A factor of 0.08 was used to convert the maximum hourly concentration to annual average concentration.

MICR CALCULATIONS:

$$\text{MICR} = \text{CP} \times \text{Qtons} \times \text{X/Q} \times \text{AFann} \times \text{MET} \times \text{DBR} \times \text{EVF} \times 10^{-6} \times \text{MP}$$

Annual conc. adj. factor AFann: 1.0
 Nearest AQMD MET Station: King Harbor
 MET Value: 1

For Off-Site Worker Receptor:

Contaminants		CP	Q (tpy)	X/Q	DBR	EVF	MP (w)	MICR
Naphthalene	91-20-3	1.20E-01	2.81E-03	1.21	149	0.38	1.00	2.30E-08
Ethylbenzene	100-41-4	8.70E-03	2.81E-03	1.21	149	0.38	1.00	1.67E-09
Benzene	71-43-2	1.00E-01	5.62E-04	1.21	149	0.38	1.00	3.84E-09
xylene	1330-20-7	NA	5.62E-04	1.21	149	0.38	NA	NA
toluene	108-88-3	NA	0.00E+00	1.21	149	0.38	NA	NA
Total MEIW								2.85E-08

For Sensitive/Res. Receptor:

X/Q	DBR	EVF	MP (r)
0.15	302	0.96	1.00E+00
0.15	302	0.96	1.00E+00
0.15	302	0.96	1.00E+00
0.15	302	0.96	NA
0.15	302	0.96	NA
Total MEIR			

CHRONIC HAZARD INDEX (HIC) CALCULATIONS:

$$\text{HIC} = \{\text{Qyr} \times (\text{X/Q}) \times \text{MET} \times \text{MP}\} / \text{Chronic REL}$$

For Off-Site Worker Receptor:

Contaminants		Q (tpy)	X/Q	MET	MP (w)	REL	HIC
Naphthalene	91-20-3	2.81E-03	1.21	1	1.00	9.00E+00	3.77E-04
Ethylbenzene	100-41-4	2.81E-03	1.21	1	1.00	2.00E+03	1.70E-06
Benzene	71-43-2	5.62E-04	1.21	1	1.00	6.00E+01	1.13E-05
xylene	1330-20-7	5.62E-04	1.21	1	1.00	7.00E+02	9.69E-07
toluene	108-88-3	0.00E+00	1.21	1	1.00	3.00E+02	0.00E+00
Total HIC							3.91E-04

**Sensitive/
Residential Receptor**

MP (r)	X/Q	HIC
1.00	0.15	4.57E-05
1.00	0.15	2.06E-07
1.00	0.15	1.37E-06
1.00	0.15	1.17E-07
1.00	0.15	0.00E+00
Total		4.74E-05

ACUTE HAZARD INDEX (HIA) CALCULATIONS:

$$\text{HIA} = \{[\text{Qhr} \times (\text{X/Q-hr})] / \text{Acute REL}\} \times \text{AF}$$

For Off-Site Worker Receptor:

Contaminants		Qhr	X/Q-hr	REL	Averaging Hour	AF	HIA
Naphthalene	91-20-3	6.42E-04	66.1	NA	NA	NA	NA
Ethylbenzene	100-41-4	6.42E-04	66.1	NA	NA	NA	NA
Benzene	71-43-2	1.28E-04	66.1	1.3E+03	6.00	1	6.52E-06
xylene	1330-20-7	1.28E-04	66.1	2.2E+04	1.00	1	3.85E-07
toluene	108-88-3	0.00E+00	66.1	3.7E+04	1.00	1	0.00E+00
Total HIA							6.91E-06

**Sensitive/
Residential Receptor**

X/Q-hr	HIA	
8.01	NA	
8.01	NA	
8.01	7.90E-07	
8.01	4.67E-08	
8.01	0.00E+00	
Total HIA		8.37E-07

Note: AF value was set to 1.0 for all averaging hours to be conservative

Emission rates

Contaminants	% compound
Naphthalene	0.5
Ethylbenzene	0.5
Benzene	0.1
Xylene	0.1
Toluene	0
Existing Throughput (gallons/month)	11,283,333
Modified Throughput (gallons/month)	17,179,000
Throughput increase (gallons/month)	5,895,667
Throughput increase (gallons/year)	70,748,004
VOC emission factor (lb/1000 gallon)	0.01589
VOC Emissions: (lb/year)	1,124.19 lb/year

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

American Airlines 529455 at 24-ft height

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA

EMISSION RATE (G/(S-M**2)) = .142900E-05

SOURCE HEIGHT (M) = 7.3150

LENGTH OF LARGER SIDE (M) = 183.0000

LENGTH OF SMALLER SIDE (M) = 110.0000

RECEPTOR HEIGHT (M) = .0000

URBAN/RURAL OPTION = URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.

THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTRK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	6.121	4	1.0	1.0	320.0	7.32	24.
100.	12.47	5	1.0	1.0	10000.0	7.32	19.
200.	13.43	5	1.0	1.0	10000.0	7.32	24.
300.	9.209	5	1.0	1.0	10000.0	7.32	7.
400.	6.622	5	1.0	1.0	10000.0	7.32	0.
500.	4.942	5	1.0	1.0	10000.0	7.32	0.
600.	3.833	5	1.0	1.0	10000.0	7.32	0.
700.	3.072	5	1.0	1.0	10000.0	7.32	0.
800.	2.531	5	1.0	1.0	10000.0	7.32	0.
900.	2.131	5	1.0	1.0	10000.0	7.32	0.
1000.	1.828	5	1.0	1.0	10000.0	7.32	2.
1100.	1.591	5	1.0	1.0	10000.0	7.32	0.
1200.	1.403	5	1.0	1.0	10000.0	7.32	0.
1300.	1.250	5	1.0	1.0	10000.0	7.32	0.
1400.	1.124	5	1.0	1.0	10000.0	7.32	3.
1500.	1.020	5	1.0	1.0	10000.0	7.32	1.
1600.	.9314	5	1.0	1.0	10000.0	7.32	1.
1700.	.8552	5	1.0	1.0	10000.0	7.32	1.
1800.	.7894	5	1.0	1.0	10000.0	7.32	3.
1900.	.7324	5	1.0	1.0	10000.0	7.32	4.
2000.	.6825	5	1.0	1.0	10000.0	7.32	4.
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:	15.08	5	1.0	1.0	10000.0	7.32	28.

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 15.08	----- 156.	----- 0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

03/08/12

14:46:47

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

American Airlines 529455

SIMPLE TERRAIN INPUTS:

SOURCE TYPE =

EMISSION RATE (G/(S-M**2)) =

.142900E-05

SOURCE HEIGHT (M) =

3.6580

LENGTH OF LARGER SIDE (M) =

183.0000

LENGTH OF SMALLER SIDE (M) =

110.0000

RECEPTOR HEIGHT (M) =

.0000

URBAN/RURAL OPTION =

URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.

THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = .000 M**4/S**3; MOM. FLUX = .000 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	U5TK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	12.88	5	1.0	1.0	10000.0	3.66	27.
100.	22.52	5	1.0	1.0	10000.0	3.66	20.
200.	15.60	5	1.0	1.0	10000.0	3.66	24.
300.	9.760	5	1.0	1.0	10000.0	3.66	10.
400.	6.850	5	1.0	1.0	10000.0	3.66	0.
500.	5.057	5	1.0	1.0	10000.0	3.66	0.
600.	3.899	5	1.0	1.0	10000.0	3.66	0.
700.	3.114	5	1.0	1.0	10000.0	3.66	0.
800.	2.558	5	1.0	1.0	10000.0	3.66	0.
900.	2.151	5	1.0	1.0	10000.0	3.66	0.
1000.	1.842	5	1.0	1.0	10000.0	3.66	2.
1100.	1.602	5	1.0	1.0	10000.0	3.66	0.
1200.	1.412	5	1.0	1.0	10000.0	3.66	0.
1300.	1.257	5	1.0	1.0	10000.0	3.66	0.
1400.	1.130	5	1.0	1.0	10000.0	3.66	3.
1500.	1.024	5	1.0	1.0	10000.0	3.66	1.
1600.	.9353	5	1.0	1.0	10000.0	3.66	1.
1700.	.8585	5	1.0	1.0	10000.0	3.66	1.
1800.	.7923	5	1.0	1.0	10000.0	3.66	3.
1900.	.7348	5	1.0	1.0	10000.0	3.66	4.
2000.	.6846	5	1.0	1.0	10000.0	3.66	4.
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:	23.89	5	1.0	1.0	10000.0	3.66	29.

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
----- SIMPLE TERRAIN	----- 23.89	----- 126.	----- 0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
