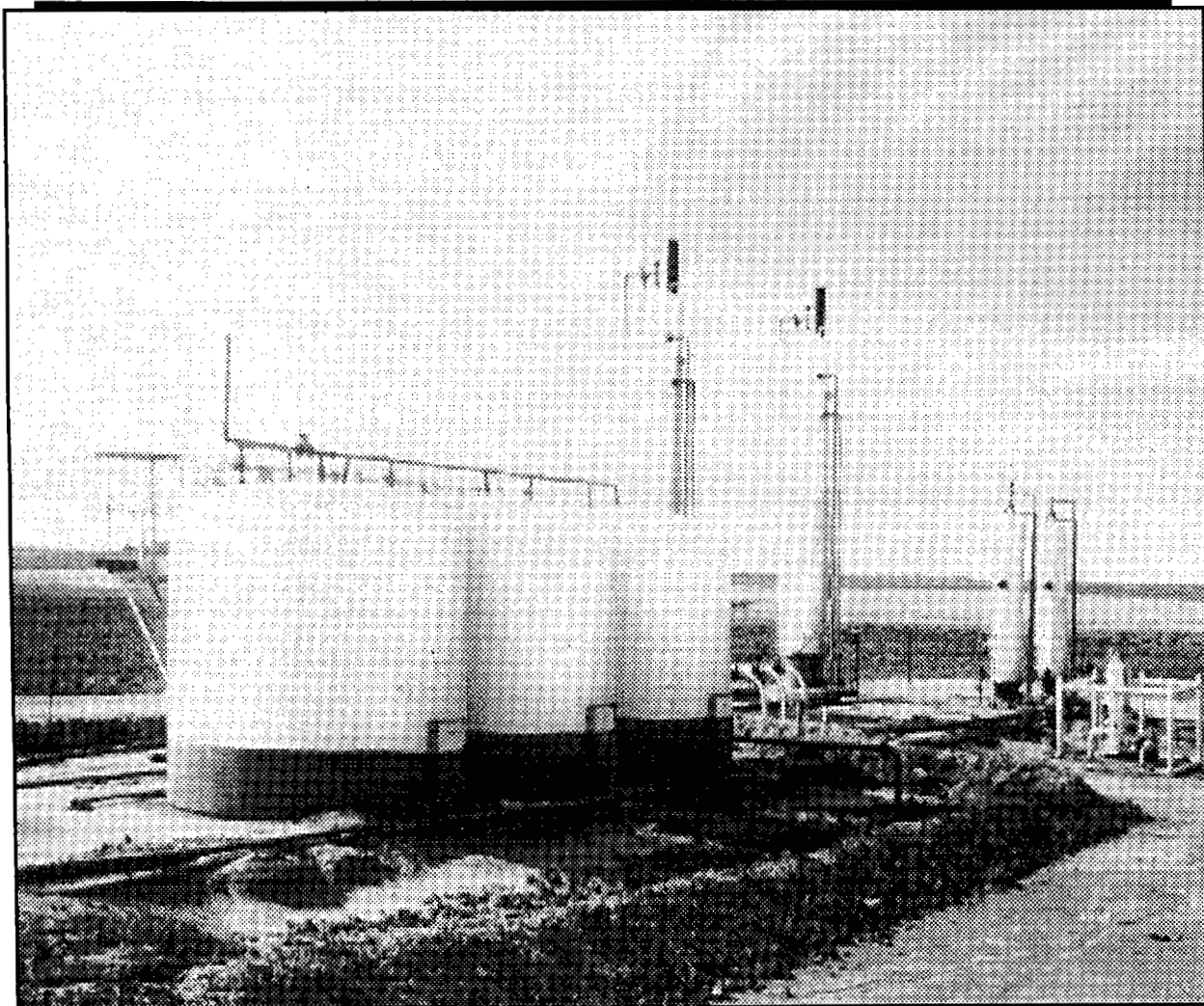


EVALUATION OF A PETROLEUM PRODUCTION TANK EMISSIONS MODEL

APPENDICES

HEALTH AND ENVIRONMENTAL SCIENCES DEPARTMENT
PUBLICATION NUMBER 4662
OCTOBER 1997





One of the most significant long-term trends affecting the future vitality of the petroleum industry is the public's concerns about the environment, health and safety. Recognizing this trend, API member companies have developed a positive, forward-looking strategy called STEP: Strategies for Today's Environmental Partnership. This initiative aims to build understanding and credibility with stakeholders by continually improving our industry's environmental, health and safety performance; documenting performance; and communicating with the public.

API ENVIRONMENTAL MISSION AND GUIDING ENVIRONMENTAL PRINCIPLES

The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. We recognize our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to the following principles using sound science to prioritize risks and to implement cost-effective management practices:

- ❖ To recognize and to respond to community concerns about our raw materials, products and operations.
- ❖ To operate our plants and facilities, and to handle our raw materials and products in a manner that protects the environment, and the safety and health of our employees and the public.
- ❖ To make safety, health and environmental considerations a priority in our planning, and our development of new products and processes.
- ❖ To advise promptly, appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- ❖ To counsel customers, transporters and others in the safe use, transportation and disposal of our raw materials, products and waste materials.
- ❖ To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- ❖ To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- ❖ To commit to reduce overall emission and waste generation.
- ❖ To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- ❖ To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- ❖ To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Evaluation of a Petroleum Production Tank Emissions Model

Appendices

Health and Environmental Sciences Department

API PUBLICATION NUMBER 4662

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Appendix A

MODEL RUNS

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 1

DESCRIPTIONS : Nominal 200 BOPD (Actual 187.9 BOPD)

API Gravity 38.57; RVP 8.03

Atmospheric Pressure 13.25 psia, 85F

Single-stage (AP-42) base case, 484 scf/day

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID MOLE %	AIR/GAS INPUT MOLE %
O2	31.999	0.0000	20.9460
CO2	44.010	0.0000	0.0330
N2	28.013	0.0098	79.0210
C1	16.043	0.4699	0.0000
C2	30.070	0.6298	0.0000
C3	44.097	3.1891	0.0000
i-C4	58.124	0.8898	0.0000
n-C4	58.124	4.7787	0.0000
i-C5	72.151	2.5032	0.0000
n-C5	72.151	3.3191	0.0000
HEXANES	84.000	2.9941	0.0000
HEPTANES	97.000	10.5171	0.0000
OCTANES	111.000	9.7873	0.0000
NONANES	123.000	5.1886	0.0000
BENZENE	78.110	0.1500	0.0000
TOLUENE	92.130	0.4798	0.0000
E-BENZENE	106.170	0.0900	0.0000
XYLENE	106.170	0.2298	0.0000
n-C6	96.178	2.2788	0.0000
C10+	228.000	52.4954	0.0000

Separator Pressure, psig	:	17.30
Separator Temperature, F	:	76.00
Tank Inlet Temperature, F	:	76.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic flash
Working and Standing Losses	:	Multi-Stage Distillation
API Gravity of Sales Oil	:	38.60
RVP of Sales Oil, psia	:	8.03
GAS/AIR INPUT	:	484.00 ft3 at STP per Day
HEAT INPUT	:	No
TOTAL HAPs	=	1.185 Tons per Year
BENZENE	=	0.050 Tons per Year
TOLUENE	=	0.053 Tons per Year
E-BENZENE	=	0.004 Tons per Year
XYLENE	=	0.008 Tons per Year
n-HEXANE	=	1.070 Tons per Year
TOTAL HC	=	100.520 Tons per Year
VOCs, C2+	=	95.951 Tons per Year
VOCs, C3+	=	85.077 Tons per Year

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK v.3.0)

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 GAS/AIR INPUT : 484.00 ft3 at STP per Day
 HEAT INPUT : No

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

SEPARATOR				OIL PHASE				VAPOR PHASE				TOTAL	
MOLE BASIS				SEPARATOR	FLASH	OIL	SALES	FLASH	GAS	STANDING	VENT		
				OIL	OIL	OIL	OIL	OIL	OIL	OIL	OIL		
				1.0000	0.9817	0.9630	0.9630	0.0183	0.0225	0.0409	0.0409		
COMPONENT	MOLE %	MOLE #	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %
O2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CO2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N2	0.0098	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C1	0.4699	0.0850	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C2	0.6298	0.3526	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345	0.0345
C3	3.1891	2.6213	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295	1.8295
i-C4	0.8898	0.8281	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458	0.7458
n-C4	4.7787	4.5711	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887	4.2887
i-C5	2.5032	2.4882	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594	2.4594
n-C5	3.3191	3.3210	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102	3.3102
HEPTANES	2.9941	3.0342	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733	3.0733
OCTANES	10.5171	10.6948	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789	10.8789
NONANES	5.1886	5.2845	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857	5.3857
BENZENE	0.1500	0.1523	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547	0.1547
TOLUENE	0.4798	0.4883	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973	0.4973
E-BENZENE	0.0900	0.0917	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934	0.0934
XYLENE	0.2298	0.2340	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385	0.2385
n-C6	2.2788	2.3120	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452	2.3452
C10+	52.4954	53.4759	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141	54.5141
MOL. WT. =	161.68	163.92	166.18	166.18	166.18	166.18	166.18	166.18	166.18	166.18	166.18	166.18	166.18
GAS GRAVITY =													
GROSS HEATING VALUE, Btu/scf =													
GAS OIL RATIO, scf/Barrel =													

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 36.34 17.59 10.05
 RVP, psia = 14.49 10.83 8.08
 SP. GR. = 0.804 0.806 0.808
 (NOTE: SP. OF SALES OIL IS 0.807)

BASED ON INPUT API GRAVITY AND ADJUSTED TO 121.3 F

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 GAS/AIR INPUT : 484.00 ft3 at STP per Day
 HEAT INPUT : No

REPORT BASIS: 187.90 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
O2	32.00	1.9700	0.357	1.562
CO2	44.01	0.0031	0.001	0.003
N2	28.01	7.6718	1.216	5.325
C1	16.04	11.4945	1.043	4.569
C2	30.07	14.5932	2.483	10.874
C3	44.10	34.9163	8.711	38.153
i-C4	58.12	4.1989	1.381	6.048
n-C4	58.12	15.8724	5.219	22.861
i-C5	72.15	3.2992	1.347	5.898
n-C5	72.15	3.2155	1.313	5.749
HEXANES	84.00	0.8458	0.402	1.761
HEPTANES	97.00	1.0056	0.552	2.417
OCTANES	111.00	0.3011	0.189	0.828
NONANES	123.00	0.0580	0.040	0.177
BENZENE	78.11	0.0257	0.011	0.050
TOLUENE	92.13	0.0232	0.012	0.053
E-BENZENE	106.17	0.0015	0.001	0.004
XYLENE	106.17	0.0032	0.002	0.008
n-C6	86.18	0.5009	0.244	1.070
C10+	228.00	0.0001	0.000	0.001

POSSIBLE VAPOR RECOVERY = 5.15 macfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

DESCRIPTIONS : Nominal 200 BOPD (Actual 187.9 BOPD)

API Gravity 38.57; RVP 8.03

Atmospheric Pressure 13.25 psia, 85F

Single-stage (AP-42) base case, 484 scf/day

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
N2	28.013	0.0098
C1	16.043	0.4699
C2	30.070	0.6298
C3	44.097	3.1891
i-C4	58.124	0.8898
n-C4	58.124	4.7787
i-C5	72.151	2.5032
n-C5	72.151	3.3191
HEXANES	84.000	2.9941
HEPTANES	97.000	10.5171
OCTANES	111.000	9.7873
NONANES	123.000	5.1886
BENZENE	78.110	0.1500
TOLUENE	92.130	0.4798
E-BENZENE	106.170	0.0900
XYLENE	106.170	0.2298
n-C6	86.178	2.2788
C10+	228.000	52.4954

Separator Pressure, psig	:	17.30
Separator Temperature, F	:	76.00
Tank Inlet Temperature, F	:	76.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic Flash
Working and Standing Losses	:	Multi-Stage Distillation
API Gravity of Sales Oil	:	38.60
RVP of Sales Oil, psia	:	8.03
GAS/AIR INPUT	:	No
HEAT INPUT	:	No
TOTAL HAPs	=	1.001 Tons per Year
BENZENE	=	0.042 Tons per Year
TOLUENE	=	0.045 Tons per Year
E-BENZENE	=	0.003 Tons per Year
XYLENE	=	0.007 Tons per Year
n-HEXANE	=	0.903 Tons per Year
TOTAL HC	=	90.726 Tons per Year
VOCs, C2+	=	86.155 Tons per Year
VOCs, C3+	=	75.323 Tons per Year

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 GAS/AIR INPUT : NO
 HEAT INPUT : NO

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

SEPARATOR OIL				OIL PHASE				VAPOR PHASE				TOTAL	
SEPARATOR OIL				FLASH				FLASH				TOTAL	
SEPARATOR OIL				OIL				GAS				VENT	
MOLE BASIS				1.0000				0.0183				0.0342	
COMPONENT				MOLE %				MOLE %				MOLE %	
N2	0.0098	0.0006	0.0000	0.0006	0.0000	0.0000	0.0000	0.5047	0.0344	0.0344	0.2869		
C1	0.4699	0.0850	0.0000	0.0850	0.0000	0.0000	0.0000	21.0755	5.2697	5.2697	13.7539		
C2	0.6298	0.3526	0.0370	0.3526	0.0370	0.0370	0.0370	15.4682	19.6142	19.6142	17.3887		
C3	3.1891	2.6213	1.9418	2.6213	1.9418	1.9418	1.9418	33.5850	44.0938	44.0938	38.4529		
i-C4	0.8898	0.8281	0.7665	0.8281	0.7665	0.7665	0.7665	4.1926	4.5847	4.5847	4.3742		
n-C4	4.7787	4.5711	4.3695	4.5711	4.3695	4.3695	4.3695	15.8899	16.8751	16.8751	16.3463		
i-C5	2.5032	2.4882	2.4733	2.4882	2.4733	2.4733	2.4733	3.3034	3.3977	3.3977	3.3471		
n-C5	3.3191	3.3210	3.3213	3.3210	3.3213	3.3213	3.3213	3.2184	3.2990	3.2990	3.2557		
HEXANES	2.9941	3.0342	3.0698	3.0342	3.0698	3.0698	3.0698	0.8457	0.8641	0.8641	0.8542		
HEPTANES	10.5171	10.6948	10.8531	10.6948	10.8531	10.8531	10.8531	1.0052	1.0293	1.0293	1.0163		
OCTANES	9.7873	9.9645	10.1227	9.9645	10.1227	10.1227	10.1227	0.3009	0.3094	0.3094	0.3048		
NONANES	5.1886	5.2845	5.3700	5.2845	5.3700	5.3700	5.3700	0.0560	0.0615	0.0615	0.0585		
BENZENE	0.1500	0.1523	0.1544	0.1523	0.1544	0.1544	0.1544	0.0257	0.0263	0.0263	0.0260		
TOLUENE	0.4798	0.4883	0.4959	0.4883	0.4959	0.4959	0.4959	0.0232	0.0239	0.0239	0.0235		
E-BENZENE	0.0900	0.0917	0.0931	0.0917	0.0931	0.0931	0.0931	0.0014	0.0015	0.0015	0.0015		
XYLENE	0.2298	0.2340	0.2378	0.2340	0.2378	0.2378	0.2378	0.0032	0.0033	0.0033	0.0033		
n-C6	2.2788	2.3120	2.3415	2.3120	2.3415	2.3415	2.3415	0.5007	0.5120	0.5120	0.5059		
C10+	52.4954	53.4759	54.3521	53.4759	54.3521	54.3521	54.3521	0.0001	0.0002	0.0002	0.0002		
MOL. WT. =	161.68	163.92	165.85	163.92	165.85	165.85	165.85	41.93	46.13	46.13	43.88		
GAS GRAVITY =								1.45	1.59	1.59	1.51		
GROSS HEATING VALUE, Btu/scf =								5265.89	5781.78	5781.78	5504.86		
GAS OIL RATIO, scf/Barrel =								22.89					

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 36.34 17.59 10.40
 RVP, psia = 14.49 10.83 8.33
 SP. GR. = 0.804 0.806 0.808

(NOTE: SP. GR. OF SALES OIL IS 0.808
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 118.7 F)

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 GAS/AIR INPUT : NO
 HEAT INPUT : NO

REPORT BASIS: 187.90 BARRELS PER DAY

COMPONENT	MOL. %	WT.	MOLE %	Lbs/Hr	Tons/Yr
N2	28.01		0.2869	0.038	0.166
C1	16.04		13.7539	1.044	4.571
C2	30.07		17.3887	2.473	10.832
C3	44.10		38.4529	8.020	35.126
i-C4	58.12		4.3742	1.202	5.267
n-C4	58.12		16.3463	4.494	19.682
i-C5	72.15		3.3471	1.142	5.003
n-C5	72.15		3.2557	1.111	4.866
HEXANES	84.00		0.8542	0.339	1.486
HEPTANES	97.00		1.0163	0.466	2.042
OCTANES	111.00		0.3048	0.160	0.701
NONANES	123.00		0.0585	0.034	0.149
BENZENE	78.11		0.0260	0.010	0.042
TOLUENE	92.13		0.0235	0.010	0.045
E-BENZENE	106.17		0.0015	0.001	0.003
XYLENE	106.17		0.0033	0.002	0.007
n-C6	86.18		0.5059	0.206	0.903
C10+	228.00		0.0002	0.000	0.001

POSSIBLE VAPOR RECOVERY =	4.30 mscfd
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PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 1

DESCRIPTIONS : Nominal 200 BOPD (Actual 187.9 BOPD)

API Gravity 38.57; RVP 8.03

Atmospheric Pressure 13.25 psia, 85F

Single-stage (AP-42) base case, 484 scf/day

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
N2	28.013	0.0098
C1	16.043	0.4699
C2	30.070	0.6298
C3	44.097	3.1891
i-C4	58.124	0.8898
n-C4	58.124	4.7787
i-C5	72.151	2.5032
n-C5	72.151	3.3191
HEXANES	84.000	2.9941
HEPTANES	97.000	10.5171
OCTANES	111.000	9.7873
NONANES	123.000	5.1886
BENZENE	78.110	0.1500
TOLUENE	92.130	0.4798
E-BENZENE	106.170	0.0900
XYLENE	106.170	0.2298
n-C6	86.178	2.2788
C10+	228.000	52.4954

Separator Pressure, psig	: 17.30
Separator Temperature, F	: 76.00
Tank Inlet Temperature, F	: 76.00
C10+ Characterization	: Mol. Weight Method
Flash Loss at Tank Inlet	: Adiabatic flash
Working and Standing Losses	: AP-42 Method
API Gravity of Sales Oil	: 38.60
RVP of Sales Oil, psia	: 8.03
TANK DIAMETER & HEIGHT, ft	: 13.5 16.1
AVG STOCK LIQUID HEIGHT, ft	: 8.0
BREATHING VENT P SETTING, psi	: 0.120
TANK SOLAR ABSORBANCE	: 0.540
SOLAR INSULATION, Btu/ft2.day	: 1437.000
DAILY AMBIENT T MIN & MAX, F	: 59.0 85.3
TANK LIQUID BULK T, F	: 76.0

TOTAL HAPS	=	0.661	Tons per Year
BENZENE	=	0.028	Tons per Year
TOLUENE	=	0.030	Tons per Year
E-BENZENE	=	0.002	Tons per Year
XYLENE	=	0.005	Tons per Year
n-HEXANE	=	0.597	Tons per Year
TOTAL HC	=	56.064	Tons per Year
VOCs, C2+	=	52.124	Tons per Year
VOCs, C3+	=	46.080	Tons per Year

RVP,psia = 14.49 10.83 9.77
 SP. GR. = 0.804 0.806 0.807
 (NOTE: SP. GR. OF SALES OIL IS 0.825
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 76.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 TANK DIAMETER & HEIGHT, ft : 13.5 16.1
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 59.0 85.3
 TANK LIQUID BULK T, F : 76.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR OIL			OIL PHASE			VAPOR PHASE			TOTAL VENT
	MOLE %	MOLE %	MOLE %	FLASH OIL	SALES OIL	FLASH GAS	WORKING & STANDING	MOLE %	MOLE %	
N2	0.0098	0.0006	0.0000	0.9817	0.9788	0.0183	0.0029	0.0002	0.4357	18.7480
C1	0.4699	0.0850	0.0147	0.0850	0.2509	21.0755	4.0714	0.0714	15.3412	34.6642
C2	0.6298	0.3526	0.2509	2.6213	2.3745	33.5850	41.4692	0.0794	5.5690	4.3810
C3	3.1891	2.6213	0.7992	4.5711	4.4701	15.8899	21.4457	0.0327	0.0271	0.0245
1-C4	0.8898	0.8281	2.4774	3.3034	4.5597	3.4754	3.3888	0.0021	0.0015	0.0034
n-C4	4.7787	4.5711	3.3165	3.2184	4.4635	3.3888	1.1840	0.0002	0.0002	0.0002
1-C5	2.5032	2.4882	3.0478	1.0052	1.4146	1.0612	0.8920	0.4253	0.3179	0.0592
n-C5	3.3191	3.3210	10.7595	0.0560	0.0794	0.0592	0.0360	0.0232	0.0245	0.0015
HEPTANES	2.9941	3.0342	9.7873	0.0917	0.0923	0.0014	0.0014	0.0014	0.0014	0.0015
OCTANES	10.5171	10.6948	9.7873	0.2340	0.2356	0.0032	0.0032	0.0032	0.0032	0.0034
NONANES	5.1886	5.2845	5.3202	0.1531	0.1531	0.0257	0.0257	0.0257	0.0257	0.0257
BENZENE	0.1500	0.1523	0.4915	0.4883	0.4915	0.0232	0.0232	0.0232	0.0232	0.0232
TOLUENE	0.4798	0.4883	0.0917	0.0917	0.0923	0.0014	0.0014	0.0014	0.0014	0.0015
E-BENZENE	0.0900	0.0917	0.0923	0.0917	0.0923	0.0014	0.0014	0.0014	0.0014	0.0015
XYLENE	0.2298	0.2340	0.2356	0.2340	0.2356	0.0032	0.0032	0.0032	0.0032	0.0034
n-C6	2.2788	2.3120	2.3236	2.3120	2.3236	0.5007	0.5007	0.5007	0.5007	0.5007
C10+	52.4954	53.4759	53.8429	53.4759	53.8429	0.0001	0.0001	0.0001	0.0001	0.0001
MOL. WT. =	161.68	163.92	164.38	163.92	164.38	41.93	49.13	42.91	42.91	42.91
GAS GRAVITY =						1.45	1.70	1.48	1.48	1.48
GROSS HEATING VALUE, Btu/scf =						5265.89	6132.25	5384.48	5384.48	5384.48
GAS OIL RATIO, scf/Barrel =	14.48									

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 36.34 17.59 13.57

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PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 1

Production Rate : 187.90 Barrels per Day

Separator Pressure, psig : 17.30
 Separator Temperature, F : 76.00
 Tank Inlet Temperature, F : 76.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 38.60
 RVP of Sales Oil, psia : 8.03
 TANK DIAMETER & HEIGHT, ft : 13.5 16.1
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 59.0 85.3
 TANK LIQUID BULK T, F : 76.0

REPORT BASIS: 187.90 BARRELS PER DAY

COMPONENT	MOL. WT.	MOL. %	Lbs/Hr	Tons/Yr
N2	28.01	0.4357	0.037	0.160
C1	16.04	18.7480	0.900	3.941
C2	30.07	15.3412	1.380	6.044
C3	44.10	34.6642	4.572	20.027
i-C4	58.12	4.3810	0.762	3.336
n-C4	58.12	16.6504	2.895	12.679
i-C5	72.15	3.4754	0.750	3.285
n-C5	72.15	3.3688	0.731	3.203
HEXANES	84.00	0.8920	0.224	0.982
HEPTANES	97.00	1.0612	0.308	1.349
OCTANES	111.00	0.3179	0.106	0.462
NONANES	123.00	0.0592	0.022	0.095
BENZENE	78.11	0.0271	0.006	0.028
TOLUENE	92.13	0.0245	0.007	0.030
E-BENZENE	106.17	0.0015	0.000	0.002
XYLENE	106.17	0.0034	0.001	0.005
n-C6	96.18	0.5283	0.136	0.597
C10+	228.00	0.0002	0.000	0.000

POSSIBLE VAPOR RECOVERY = 2.72 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 2

DESCRIPTIONS : 1600 bbl/day

Separator T-112 F P-30 psig

Reference Atmospheric Pressure = 12.45 psia

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 TANK DIAMETER & HEIGHT, ft : 21.0 16.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 56.5 74.5
 TANK LIQUID BULK T, F : 112.0

TOTAL HAPs	=	127.118	Tons per Year
BENZENE	=	12.482	Tons per Year
TOLUENE	=	4.739	Tons per Year
E-BENZENE	=	1.180	Tons per Year
XYLENE	=	6.629	Tons per Year
n-HEXANE	=	102.087	Tons per Year
TOTAL HC	=	3574.475	Tons per Year
VOCs, C2+	=	3557.747	Tons per Year
VOCs, C3+	=	3280.967	Tons per Year

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
H2S	34.076	0.0100
CO2	44.010	0.0300
N2	28.013	0.0200
C1	16.043	0.2498
C2	30.070	2.3783
C3	44.097	6.9951
i-C4	58.124	2.0686
n-C4	58.124	7.2849
i-C5	72.151	3.3776
n-C5	72.151	4.7667
HEXANES	84.000	2.9979
HEPTANES	97.000	7.4348
OCTANES	111.000	11.1322
NONANES	123.000	17.2679
BENZENE	78.110	0.4497
TOLUENE	92.130	0.4297
E-BENZENE	106.170	0.2498
XYLENE	106.170	1.5889
n-C6	86.178	3.6275
C10+	484.500	27.6406

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OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)
 BP, psia = 46.35 12.19 11.58
 RVP, psia = 22.00 8.14 7.90
 SP. GR. = 0.590 0.592 0.592
 (NOTE: SP. GR. OF SALES OIL IS 0.791
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 TANK DIAMETER & HEIGHT, ft : 21.0 16.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 56.5 74.5
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR OIL			OIL PHASE			VAPOR PHASE			TOTAL		
	MOLE %	MOLE %	SALES	SEPARATOR OIL	FLASH OIL	SALES	FLASH GAS	WORKING & STANDING	VENT	MOLE %	MOLE %	MOLE %
H2S	0.0100	0.0017	0.0016	0.0016	0.0546	0.0546	0.1560	0.0016	0.1577	0.0448	0.0545	0.0545
CO2	0.0300	0.0021	0.0017	0.0017	0.0180	0.0180	0.1269	0.0182	0.1258	0.0994	0.1802	0.1802
N2	0.0200	0.0002	0.0001	0.0001	0.0129	0.0129	0.1269	0.0182	0.1258	0.0182	0.1258	0.1258
C1	0.2498	0.0074	0.0053	0.0053	1.5610	1.5610	3.7257	0.4982	1.5502	0.4982	1.5502	1.5502
C2	2.3783	0.2803	0.2423	0.2423	13.7252	13.7252	33.7257	9.7293	13.6845	9.7293	13.6845	13.6845
C3	6.9951	2.0526	1.9352	1.9352	33.7257	33.7257	7.4414	7.9483	7.4466	32.0275	33.7084	33.7084
i-C4	2.0686	1.0751	1.0485	1.0485	22.8404	22.8404	25.0711	7.0675	6.0828	25.0711	22.8631	22.8631
n-C4	7.2849	4.4087	4.3289	4.3289	6.0727	6.0727	7.1518	8.4461	7.1650	7.1518	8.4461	7.1650
i-C5	3.3776	2.8793	2.8633	2.8633	1.7612	1.7612	2.1734	2.1734	1.7654	2.1734	1.7654	1.7654
n-C5	4.7667	4.3256	4.3100	4.3100	1.7101	1.7101	2.1859	1.7150	1.7150	2.1859	1.7150	1.7150
HEXANES	2.9979	3.2266	3.2308	3.2308	0.9191	0.9191	0.5498	0.7504	0.5518	0.9191	0.9221	0.9221
HEPTANES	7.4348	8.4933	8.5180	8.5180	0.2370	0.2370	0.2924	0.2376	0.2376	0.2924	0.2376	0.2376
OCTANES	11.1322	13.0206	13.0667	13.0667	0.0763	0.0763	0.0165	0.0378	0.0765	0.0763	0.0765	0.0765
NONANES	17.2679	20.3591	20.4356	20.4356	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165	0.0165
n-C10	0.4497	0.4890	0.4898	0.4898	0.0925	0.0925	0.1230	0.0928	0.0928	0.1230	0.0928	0.0928
BENZENE	0.4297	0.4951	0.4966	0.4966	1.7568	1.7568	2.1893	1.7612	1.7612	2.1893	1.7612	1.7612
E-BENZENE	0.2498	0.2930	0.2940	0.2940	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
XYLENE	1.5889	1.8656	1.8724	1.8724	53.25	53.25	1.84	56.16	53.28	1.84	56.16	53.28
n-C6	3.6275	3.9734	3.9804	3.9804	6588.97	6588.97	1.94	6592.50	6592.50	1.94	6592.50	6592.50
C10+	27.6406	32.7514	32.8790	32.8790	87.30	87.30	0.0000	87.30	87.30	0.0000	87.30	87.30
MOL. WT. =	198.25	225.06	225.39	225.39								
GAS GRAVITY =												
GROSS HEATING VALUE, Btu/scf =												
GAS OIL RATIO, scf/Barrel =												

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Not for Resale

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 TANK DIAMETER & HEIGHT, ft : 21.0 16.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi: 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day: 1437.000
 DAILY AMBIENT T MIN & MAX, F: 56.5 74.5
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 1600.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
H2S	34.08	0.0545	0.285	1.250
CO2	44.01	0.1802	1.218	5.334
N2	28.01	0.1258	0.541	2.370
C1	16.04	1.5502	3.819	16.728
C2	30.07	13.6845	63.192	276.780
C3	44.10	33.7084	228.268	999.815
i-C4	58.12	7.4466	56.468	291.130
n-C4	58.12	22.8631	204.075	893.848
i-C5	72.15	6.0828	67.398	295.202
n-C5	72.15	7.1650	79.388	347.720
HEXANES	84.00	1.7654	22.772	99.743
HEPTANES	97.00	1.7150	25.546	111.891
OCTANES	111.00	0.9221	15.719	68.848
NONANES	123.00	0.5518	10.423	45.652
BENZENE	78.11	0.2376	2.850	12.482
TOLUENE	92.13	0.0765	1.082	4.739
E-BENZENE	106.17	0.0165	0.269	1.180
XYLENE	106.17	0.0928	1.513	6.629
n-C6	86.18	1.7612	23.308	102.087
C10+	484.50	0.0000	0.000	0.000

POSSIBLE VAPOR RECOVERY = 139.68 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 2

DESCRIPTIONS : 1600 bbl/day

Separator T-112 F P-30 psig

Reference Atmospheric Pressure = 12.45 psia

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
H2S	34.076	0.0100
CO2	44.010	0.0300
N2	28.013	0.0200
C1	16.043	0.2498
C2	30.070	2.3783
C3	44.097	6.9951
i-C4	58.124	2.0686
n-C4	58.124	7.2849
i-C5	72.151	3.3776
n-C5	72.151	4.7667
HEXANES	84.000	2.9979
HEPTANES	97.000	7.4348
OCTANES	111.000	11.1322
NONANES	123.000	17.2679
BENZENE	78.110	0.4497
TOLUENE	92.130	0.4297
E-BENZENE	106.170	0.2498
XYLENE	106.170	1.5889
n-C6	86.178	3.6275
C10+	484.500	27.6406

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 GAS/AIR INPUT : No
 HEAT INPUT : No

***** WARNING *****
 * Cannot match specified RVP. Only flash loss reported. *

TOTAL HAPS = 125.447 Tons per Year
 BENZENE = 12.321 Tons per Year
 TOLUENE = 4.675 Tons per Year
 E-BENZENE = 1.164 Tons per Year
 XYLENE = 6.537 Tons per Year
 n-HEXANE = 100.751 Tons per Year
 TOTAL HC = 3534.506 Tons per Year
 VOCs, C2+ = 3517.840 Tons per Year
 VOCs, C3+ = 3243.184 Tons per Year

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PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 GAS/AIR INPUT : NO
 HEAT INPUT : NO

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH SALES			VAPOR PHASE			TOTAL		
	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %
MOLE BASIS	1.0000	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.8440	0.1560	0.0000	0.1560	0.1560	0.1560	0.1560
H2S	0.0100	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0017	0.0546	0.0000	0.0546	0.0546	0.0546	0.0546
CO2	0.0300	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.0021	0.1810	0.0000	0.1810	0.1810	0.1810	0.1810
N2	0.0200	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.1269	0.0000	0.1269	0.1269	0.1269	0.1269
C1	0.2498	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074	1.5610	0.0000	1.5610	1.5610	1.5610	1.5610
C2	2.3783	0.2803	0.2803	0.2803	0.2803	0.2803	0.2803	0.2803	0.2803	13.7252	0.0000	13.7252	13.7252	13.7252	13.7252
C3	6.9951	2.0526	2.0526	2.0526	2.0526	2.0526	2.0526	2.0526	2.0526	33.7257	0.0000	33.7257	33.7257	33.7257	33.7257
i-C4	2.0686	1.0751	1.0751	1.0751	1.0751	1.0751	1.0751	1.0751	1.0751	7.4414	0.0000	7.4414	7.4414	7.4414	7.4414
n-C4	7.2849	4.4087	4.4087	4.4087	4.4087	4.4087	4.4087	4.4087	4.4087	22.8404	0.0000	22.8404	22.8404	22.8404	22.8404
i-C5	3.3776	2.8793	2.8793	2.8793	2.8793	2.8793	2.8793	2.8793	2.8793	6.0727	0.0000	6.0727	6.0727	6.0727	6.0727
n-C5	4.7667	4.3256	4.3256	4.3256	4.3256	4.3256	4.3256	4.3256	4.3256	7.1518	0.0000	7.1518	7.1518	7.1518	7.1518
HEXANES	2.9979	3.2266	3.2266	3.2266	3.2266	3.2266	3.2266	3.2266	3.2266	1.7612	0.0000	1.7612	1.7612	1.7612	1.7612
HEPTANES	7.4348	8.4933	8.4933	8.4933	8.4933	8.4933	8.4933	8.4933	8.4933	1.7101	0.0000	1.7101	1.7101	1.7101	1.7101
OCTANES	11.1322	13.0206	13.0206	13.0206	13.0206	13.0206	13.0206	13.0206	13.0206	0.9191	0.0000	0.9191	0.9191	0.9191	0.9191
NONANES	17.2679	20.3591	20.3591	20.3591	20.3591	20.3591	20.3591	20.3591	20.3591	0.5498	0.0000	0.5498	0.5498	0.5498	0.5498
BENZENE	0.4497	0.4890	0.4890	0.4890	0.4890	0.4890	0.4890	0.4890	0.4890	0.2370	0.0000	0.2370	0.2370	0.2370	0.2370
TOLUENE	0.4297	0.4951	0.4951	0.4951	0.4951	0.4951	0.4951	0.4951	0.4951	0.0763	0.0000	0.0763	0.0763	0.0763	0.0763
E-BENZENE	0.2498	0.2930	0.2930	0.2930	0.2930	0.2930	0.2930	0.2930	0.2930	0.0165	0.0000	0.0165	0.0165	0.0165	0.0165
XYLENE	1.5889	1.8656	1.8656	1.8656	1.8656	1.8656	1.8656	1.8656	1.8656	0.0925	0.0000	0.0925	0.0925	0.0925	0.0925
n-C6	3.6275	3.9734	3.9734	3.9734	3.9734	3.9734	3.9734	3.9734	3.9734	1.7568	0.0000	1.7568	1.7568	1.7568	1.7568
C10+	27.6406	32.7514	32.7514	32.7514	32.7514	32.7514	32.7514	32.7514	32.7514	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MOL. WT. =	198.25	225.06	225.06	225.06	225.06	225.06	225.06	225.06	225.06	53.25	0.00	53.25	53.25	53.25	53.25
GAS GRAVITY =										1.84	0.00	1.84	1.84	1.84	1.84
GROSS HEATING VALUE, Btu/scf =										6588.97	0.00	6588.97	6588.97	6588.97	6588.97
GAS OIL RATIO, scf/Barrel =										86.38					

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 46.35 12.19 12.19
 RVP, psia = 22.00 8.14 8.14
 SP. GR. = 0.590 0.592 0.592

(NOTE: SP. GR. OF SALES OIL IS 0.791
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

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PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 2

Production Rate : 1600.00 Barrels per Day

Separator Pressure, psig : 30.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 43.20
 RVP of Sales Oil, psia : 8.70
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 1600.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
H2S	34.08	0.0546	0.283	1.239
CO2	44.01	0.1810	1.210	5.301
N2	28.01	0.1269	0.540	2.366
C1	16.04	1.5610	3.805	16.666
C2	30.07	13.7252	62.707	274.656
C3	44.10	33.7257	235.961	989.709
i-C4	58.12	7.4414	65.717	287.839
n-C4	58.12	22.8404	201.707	883.479
i-C5	72.15	6.0727	66.571	291.581
n-C5	72.15	7.1518	78.401	343.396
HEXANES	84.00	1.7612	22.477	98.450
HEPTANES	97.00	1.7101	25.203	110.390
OCTANES	111.00	0.9191	15.501	67.893
NONANES	123.00	0.5498	10.274	45.000
BENZENE	78.11	0.2370	2.813	12.321
TOLUENE	92.13	0.0763	1.067	4.675
E-BENZENE	106.17	0.0165	0.266	1.164
XYLENE	106.17	0.0925	1.492	6.537
n-C6	86.18	1.7568	23.002	100.751
C10+	484.50	0.0000	0.000	0.000

POSSIBLE VAPOR RECOVERY = 138.20 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

DESCRIPTIONS : Day 1 Case

Separator pressure = 24.8 psig

Set separator temperature = 110 F

Oil into tank temperature = 87.7 F

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1300
C1	16.043	0.5698
C2	30.070	1.0696
C3	44.097	2.0792
i-C4	58.124	1.6693
n-C4	58.124	1.9092
i-C5	72.151	2.9788
n-C5	72.151	1.9692
HEXANES	84.000	4.4482
HEPTANES	97.000	10.5958
OCTANES	111.000	12.3950
NONANES	123.000	7.8769
BENZENE	78.110	2.4490
TOLUENE	92.130	5.3079
E-BENZENE	106.170	0.4598
XYLENE	106.170	4.0984
n-C6	86.178	2.6689
C10+	273.500	37.3251

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 TANK DIAMETER & HEIGHT, ft : 38.7 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 60.8 73.9
 TANK LIQUID BULK T, F : 112.0

TOTAL HAPS : 12.517 Tons per Year
 BENZENE : 3.703 Tons per Year
 TOLUENE : 3.064 Tons per Year
 E-BENZENE : 0.113 Tons per Year
 XYLENE : 0.895 Tons per Year
 n-HEXANE : 4.742 Tons per Year
 TOTAL HC : 198.542 Tons per Year
 VOCs, C2+ : 188.146 Tons per Year
 VOCs, C3+ : 161.215 Tons per Year

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RVP,psia = 12.34 7.54 5.67
 SP. GR. = 0.694 0.695 0.696
 (NOTE: SP. GR. OF SALES OIL IS 0.764
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 TANK DIAMETER & HEIGHT, ft : 36.7 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION,Btu/ft2.day: 1437.000
 DAILY AMBIENT T MIN & MAX, F: 60.8 73.9
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH			VAPOR PHASE			TOTAL		
	MOLE %	MOLE %	SALES	SEPARATOR	FLASH	OIL	MOLE %	MOLE %	SALES	FLASH	GAS	STANDING	MOLE %	MOLE %	VENT
MOLE BASIS	1.0000	0.9716	0.9671	0.9671	0.9671	0.9671	0.0284	0.0046	0.0329	0.0284	0.0046	0.0329	0.0284	0.0046	0.0329
CO2	0.1300	0.0389	0.0069	0.0069	0.0069	0.0069	3.2481	0.9541	2.9311	3.2481	0.9541	2.9311	3.2481	0.9541	2.9311
C1	0.5698	0.0820	0.0001	0.0001	0.0001	0.0001	17.2735	0.0430	14.8919	17.2735	0.0430	14.8919	17.2735	0.0430	14.8919
C2	1.0696	0.4671	0.1733	0.1733	0.1733	0.1733	21.7031	13.5932	20.5821	21.7031	13.5932	20.5821	21.7031	13.5932	20.5821
C3	2.0792	1.4750	1.0526	1.0526	1.0526	1.0526	22.7683	27.9752	23.4880	22.7683	27.9752	23.4880	22.7683	27.9752	23.4880
i-C4	1.6693	1.4427	1.2584	1.2584	1.2584	1.2584	9.4295	14.2689	10.0964	9.4295	14.2689	10.0964	9.4295	14.2689	10.0964
n-C4	1.9092	1.7237	1.5653	1.5653	1.5653	1.5653	8.2617	13.0473	8.9232	8.2617	13.0473	8.9232	8.2617	13.0473	8.9232
i-C5	2.9788	2.8978	2.8102	2.8102	2.8102	2.8102	5.7545	9.7471	6.3064	5.7545	9.7471	6.3064	5.7545	9.7471	6.3064
n-C5	1.9692	1.9396	1.9010	1.9010	1.9010	1.9010	2.9821	5.1147	3.2769	2.9821	5.1147	3.2769	2.9821	5.1147	3.2769
HEXANES	4.4482	4.5095	4.5281	4.5281	4.5281	4.5281	2.3482	4.1408	2.5959	2.3482	4.1408	2.5959	2.3482	4.1408	2.5959
HEPTANES	10.5958	10.8434	10.9735	10.9735	10.9735	10.9735	2.1133	3.7719	2.3426	2.1133	3.7719	2.3426	2.1133	3.7719	2.3426
OCTANES	12.3950	12.7311	12.9228	12.9228	12.9228	12.9228	0.8058	1.5927	0.9835	0.8058	1.5927	0.9835	0.8058	1.5927	0.9835
NONANES	7.8769	8.1005	8.2309	8.2309	8.2309	8.2309	0.2191	0.3960	0.2435	0.2191	0.3960	0.2435	0.2191	0.3960	0.2435
BENZENE	2.4490	2.4918	2.5096	2.5096	2.5096	2.5096	0.9844	1.7437	1.0894	0.9844	1.7437	1.0894	0.9844	1.7437	1.0894
TOLUENE	5.3079	5.4428	5.5171	5.5171	5.5171	5.5171	0.6889	1.2340	0.7642	0.6889	1.2340	0.7642	0.6889	1.2340	0.7642
E-BENZENE	0.4598	0.4726	0.4800	0.4800	0.4800	0.4800	0.0221	0.0398	0.0245	0.0221	0.0398	0.0245	0.0221	0.0398	0.0245
XYLENE	4.0984	4.2129	4.2793	4.2793	4.2793	4.2793	0.1744	0.3144	0.1937	0.1744	0.3144	0.1937	0.1744	0.3144	0.1937
n-C6	2.6689	2.7135	2.7312	2.7312	2.7312	2.7312	1.1430	2.0232	1.2646	1.1430	2.0232	1.2646	1.1430	2.0232	1.2646
C10+	37.3251	38.4150	39.0595	39.0595	39.0595	39.0595	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
MOL. WT. =	160.53	163.89	165.25	165.25	165.25	165.25	45.23	57.46	46.92	45.23	57.46	46.92	45.23	57.46	46.92
GAS GRAVITY =							1.56	1.98	1.62	1.56	1.98	1.62	1.56	1.98	1.62
GROSS HEATING VALUE, Btu/scf =							5460.49	6999.38	5673.19	5460.49	6999.38	5673.19	5460.49	6999.38	5673.19
GAS OIL RATIO, scf/Barrel =	20.92														

OIL CHARACTERIZATION AT 100 F (BASED ON PENRO-ROBINSON MODEL)

BP, psia = 34.77 13.29 7.40

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Documents

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CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 TANK DIAMETER & HEIGHT, ft : 38.7 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 60.8 73.9
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 432.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	2.9311	1.282	5.613
C1	16.04	14.8919	2.374	10.396
C2	30.07	20.5821	6.149	26.931
C3	44.10	23.4880	10.290	45.070
I-C4	58.12	10.0984	5.831	25.541
N-C4	58.12	8.9232	5.153	22.569
I-C5	72.15	6.3064	4.520	19.799
N-C5	72.15	3.2769	2.349	10.288
HEXANES	84.00	2.5959	2.166	9.489
HEPTANES	97.00	2.3426	2.257	9.888
OCTANES	111.00	0.9835	1.085	4.751
NONANES	123.00	0.2435	0.298	1.303
BENZENE	78.11	1.0894	0.845	3.703
TOLUENE	92.13	0.7642	0.700	3.064
E-BENZENE	106.17	0.0245	0.026	0.113
XYLENE	106.17	0.1937	0.204	0.895
N-C6	86.18	1.2646	1.083	4.742
C10+	273.50	0.0001	0.000	0.001

POSSIBLE VAPOR RECOVERY = 9.04 mscfd

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PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 3

DESCRIPTIONS : Day 1 Case

Separator pressure = 24.8 psig
 Set separator temperature = 110 F
 Oil into tank temperature = 87.7 F

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 GAS/AIR INPUT : No
 HEAT INPUT : No

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1300
C1	16.043	0.5698
C2	30.070	1.0696
C3	44.097	2.0792
i-C4	58.124	1.6693
n-C4	58.124	1.9092
i-C5	72.151	2.9788
n-C5	72.151	1.9692
HEXANES	84.000	4.4482
HEPTANES	97.000	10.5958
OCTANES	111.000	12.3950
NONANES	123.000	7.8769
BENZENE	78.110	2.4490
TOLUENE	92.130	5.3079
E-BENZENE	106.170	0.4598
XYLENE	106.170	4.0984
n-C6	86.178	2.6689
C10+	273.500	37.3251

***** WARNING *****
 * Cannot match specified RVP. Only flash loss reported. *

TOTAL HAPs	Tons per Year
BENZENE	2.893
TOLUENE	2.388
E-BENZENE	0.088
XYLENE	0.697
n-HEXANE	3.706
TOTAL HC	164.790
VOCs, C2+	154.363
VOCs, C3+	129.807

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 GAS/AIR INPUT : NO
 HEAT INPUT : NO

REPORT BASIS: 432.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	3.2481	1.228	5.379
C1	16.04	17.2735	2.381	10.427
C2	30.07	21.7031	5.606	24.555
C3	44.10	22.7683	8.625	37.777
i-C4	58.12	9.4295	4.708	20.622
n-C4	58.12	8.2617	4.125	18.068
i-C5	72.15	5.7545	3.567	15.622
n-C5	72.15	2.9821	1.848	8.096
HEXANES	84.00	2.3482	1.694	7.422
HEPTANES	97.00	2.1133	1.761	7.713
OCTANES	111.00	0.8858	0.845	3.700
NONANES	123.00	0.2191	0.231	1.014
BENZENE	78.11	0.9844	0.661	2.893
TOLUENE	92.13	0.6889	0.545	2.388
E-BENZENE	106.17	0.0221	0.020	0.088
XYLENE	106.17	0.1744	0.159	0.697
n-C6	86.18	1.1430	0.846	3.706
C10+	273.50	0.0001	0.000	0.001

POSSIBLE VAPOR RECOVERY = 7.81 mscfd

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 432.00 Barrels per Day

Separator Pressure, psig : 24.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 GAS/AIR INPUT : NO
 HEAT INPUT : NO

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			VAPOR PHASE			TOTAL	
	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	FLASH	WORKING & STANDING	VENT	MOLE %	MOLE %
CO2	0.1300	0.0389	0.0389	0.0389	3.2481	0.0000	0.0000	0.0000	0.0284	0.0284	0.0284
C1	0.5698	0.0820	0.0820	0.0820	17.2735	0.0000	0.0000	0.0000	0.0000	17.2735	17.2735
C2	1.0696	0.4671	0.4671	0.4671	21.7031	0.0000	0.0000	0.0000	0.0000	21.7031	21.7031
C3	2.0792	1.4750	1.4750	1.4750	22.7683	0.0000	0.0000	0.0000	0.0000	22.7683	22.7683
i-C4	1.6693	1.4427	1.4427	1.4427	9.4295	0.0000	0.0000	0.0000	0.0000	9.4295	9.4295
n-C4	1.9092	1.7237	1.7237	1.7237	8.2617	0.0000	0.0000	0.0000	0.0000	8.2617	8.2617
i-C5	2.9788	2.8978	2.8978	2.8978	5.7545	0.0000	0.0000	0.0000	0.0000	5.7545	5.7545
n-C5	1.9692	1.9396	1.9396	1.9396	2.9821	0.0000	0.0000	0.0000	0.0000	2.9821	2.9821
HEXANES	4.4482	4.5095	4.5095	4.5095	2.3482	0.0000	0.0000	0.0000	0.0000	2.3482	2.3482
HEPTANES	10.5958	10.8434	10.8434	10.8434	2.1133	0.0000	0.0000	0.0000	0.0000	2.1133	2.1133
OCTANES	12.3950	12.7311	12.7311	12.7311	0.8858	0.0000	0.0000	0.0000	0.0000	0.8858	0.8858
NONANES	7.8769	8.1005	8.1005	8.1005	0.2191	0.0000	0.0000	0.0000	0.0000	0.2191	0.2191
BENZENE	2.4490	2.4918	2.4918	2.4918	0.9844	0.0000	0.0000	0.0000	0.0000	0.9844	0.9844
TOLUENE	5.3079	5.4428	5.4428	5.4428	0.6889	0.0000	0.0000	0.0000	0.0000	0.6889	0.6889
E-BENZENE	0.4598	0.4726	0.4726	0.4726	0.0221	0.0000	0.0000	0.0000	0.0000	0.0221	0.0221
XYLENE	4.0984	4.2129	4.2129	4.2129	0.1744	0.0000	0.0000	0.0000	0.0000	0.1744	0.1744
n-C6	2.6689	2.7135	2.7135	2.7135	1.1430	0.0000	0.0000	0.0000	0.0000	1.1430	1.1430
C10+	37.3251	38.4150	38.4150	38.4150	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001

MOL. WT. = 160.53 163.89 163.89 45.23
 GAS GRAVITY = 1.56 1.56 1.56 1.56
 GROSS HEATING VALUE, Btu/scf = 5460.49 5460.49 5460.49 5460.49
 GAS OIL RATIO, scf/Barrel = 18.09

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 34.77 13.29 13.29
 RVP, psia = 12.34 7.54 7.54
 SP. GR. = 0.694 0.695 0.695

(NOTE: SP. GR. OF SALES OIL IS 0.764
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

Current time: 01/10/97 09:50

File time stamp: 01/10/97 09:11

File: c:\api\site3\day1\S3SEP.REP

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

DESCRIPTIONS : Day 3 Case: AP42 Case

Separator pressure = 21.8 psig

Set separator temperature = 112 F

Oil into tank temperature = 57.6 F

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1699
C1	16.043	0.4997
C2	30.070	1.4092
C3	44.097	2.3486
i-C4	58.124	1.7290
n-C4	58.124	1.9588
i-C5	72.151	3.0182
n-C5	72.151	1.9588
HEXANES	84.000	4.3574
HEPTANES	97.000	10.0040
OCTANES	111.000	12.9322
NONANES	123.000	7.4555
BENZENE	78.110	2.4385
TOLUENE	92.130	5.3368
E-BENZENE	106.170	0.4397
XYLENE	106.170	4.0076
n-C6	86.178	2.6584
C10+	275.500	37.2776

Separator Pressure, psig	:	21.80
Separator Temperature, F	:	112.00
Tank Inlet Temperature, F	:	112.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic flash
Working and Standing Losses	:	AP-42 Method
API Gravity of Sales Oil	:	48.80
RVP of Sales Oil, psia	:	8.07
TANK DIAMETER & HEIGHT, ft	:	38.7 24.0
AVG STOCK LIQUID HEIGHT, ft	:	8.0
BREATHING VENT P SETTING, psi	:	0.120
TANK SOLAR ABSORBANCE	:	0.540
SOLAR INSULATION, Btu/ft2.day	:	1437.000
DAILY AMBIENT T MIN & MAX, F	:	32.8 38.6
TANK LIQUID BULK T, F	:	112.0

TOTAL HAPs	=	14.325	Tons per Year
BENZENE	=	4.237	Tons per Year
TOLUENE	=	3.538	Tons per Year
E-BENZENE	=	0.124	Tons per Year
XYLENE	=	1.004	Tons per Year
n-HEXANE	=	5.422	Tons per Year
TOTAL HC	=	241.057	Tons per Year
VOCs, C2+	=	231.215	Tons per Year
VOCs, C3+	=	191.471	Tons per Year

RVP,psia = 13.62 7.82 6.59
 SP. GR. = 0.693 0.695 0.696
 (NOTE: SP. GR. OF SALES OIL IS 0.764
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

Separator Pressure, psig : 21.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 TANK DIAMETER & HEIGHT, ft : 38.7 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 32.8 38.6
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH			VAPOR PHASE		
	MOLE %	MOLE \$	MOLE %	MOLE \$	MOLE %	MOLE \$	MOLE %	MOLE \$	MOLE %	MOLE \$	MOLE %	MOLE \$
CO2	0.1699	0.0436	0.0185	3.6276	2.1948	3.4761	12.5461	2.4817	11.4818	0.0352	0.0042	0.0394
C1	0.4997	0.0597	0.0074	12.5461	2.4817	11.4818	25.1333	21.3910	24.7375	0.0352	0.0042	0.0394
C2	1.4092	0.5427	0.0326	25.1333	21.3910	24.7375	23.9640	27.7763	24.3671	0.0352	0.0042	0.0394
C3	2.3486	1.5591	1.3249	23.9640	27.7763	24.3671	9.4154	12.0156	9.6904	0.0352	0.0042	0.0394
1-C4	1.7290	1.4482	1.3576	9.4154	12.0156	9.6904	8.2424	10.7354	8.5060	0.0352	0.0042	0.0394
n-C4	1.9588	1.7293	1.6530	8.2424	10.7354	8.5060	5.7554	7.7597	5.9674	0.0352	0.0042	0.0394
1-C5	3.0182	2.9182	2.8794	5.7554	7.7597	5.9674	2.9355	3.9860	3.0465	0.0352	0.0042	0.0394
n-C5	1.9588	1.9231	1.9072	2.9355	3.9860	3.0465	2.2852	3.1562	2.3773	0.0352	0.0042	0.0394
HEXANES	4.3574	4.4331	4.4479	2.2852	3.1562	2.3773	1.9839	2.7677	2.0668	0.0352	0.0042	0.0394
HEPTANES	10.0040	10.2970	10.3701	1.9839	2.7677	2.0668	0.9183	1.2918	0.9578	0.0352	0.0042	0.0394
OCTANES	12.9322	13.3710	13.4855	0.9183	1.2918	0.9578	0.2058	0.2915	0.2149	0.0352	0.0042	0.0394
NONANES	7.4555	7.7203	7.7903	0.2058	0.2915	0.2149	0.9755	1.3511	1.0152	0.0352	0.0042	0.0394
BENZENE	2.4385	2.4919	2.5038	0.9755	1.3511	1.0152	0.6896	0.9649	0.7187	0.0352	0.0042	0.0394
TOLUENE	5.3368	5.5065	5.5500	0.6896	0.9649	0.7187	0.0210	0.0296	0.0219	0.0352	0.0042	0.0394
E-BENZENE	0.4397	0.4550	0.4590	0.0210	0.0296	0.0219	4.1847	4.1847	4.1847	0.0352	0.0042	0.0394
XYLENE	4.0076	4.1478	4.1847	4.1847	4.1847	4.1847	1.1314	1.5674	1.1775	0.0352	0.0042	0.0394
n-C6	2.6584	2.7142	2.7263	1.1314	1.5674	1.1775	0.0000	0.0000	0.0001	0.0352	0.0042	0.0394
C10+	37.2776	38.6392	39.0017	0.0000	0.0000	0.0001	45.96	52.45	46.65	0.0352	0.0042	0.0394
MOL. WT. =	160.77	164.97	165.55	45.96	52.45	46.65	1.59	1.81	1.61	0.0352	0.0042	0.0394
GAS GRAVITY =				1.59	1.81	1.61	5527.47	6357.34	5615.23	0.0352	0.0042	0.0394
GROSS HEATING VALUE, Btu/scf =				5527.47	6357.34	5615.23				0.0352	0.0042	0.0394
GAS OIL RATIO, scf/Barrel =	25.16									0.0352	0.0042	0.0394

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 35.95 13.33 9.48

File: c:\api\site3\day3\3SEP-AP.REP

File time stamp: 01/10/97 10:15

Current time: 01/10/97 10:34

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CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK v.3.0)

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

Separator Pressure, psig : 21.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic Flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 TANK DIAMETER & HEIGHT, ft : 38.7 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi: 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day: 1437.000
 DAILY AMBIENT T MIN & MAX, F: 32.8 38.6
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 441.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	3.4761	1.866	8.174
C1	16.04	11.4818	2.247	9.842
C2	30.07	24.7375	9.074	39.745
C3	44.10	24.3671	13.108	57.412
i-C4	58.12	9.6904	6.871	30.094
n-C4	58.12	8.5060	6.031	26.416
i-C5	72.15	5.9674	5.252	23.004
n-C5	72.15	3.0465	2.681	11.745
HEXANES	84.00	2.3773	2.436	10.670
HEPTANES	97.00	2.0668	2.446	10.712
OCTANES	111.00	0.9578	1.297	5.681
NONANES	123.00	0.2149	0.322	1.412
BENZENE	78.11	1.0152	0.967	4.237
TOLUENE	92.13	0.7187	0.808	3.538
E-BENZENE	106.17	0.0219	0.028	0.124
XYLENE	106.17	0.1769	0.229	1.004
n-C6	86.18	1.1775	1.238	5.422
C10+	275.50	0.0001	0.000	0.001

POSSIBLE VAPOR RECOVERY = 11.10 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

DESCRIPTIONS : Day 3 Case: AP42 Case

Separator pressure = 21.8 psig

Set separator temperature = 112 F

Oil into tank temperature = 57.6 F

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1699
C1	16.043	0.4997
C2	30.070	1.4092
C3	44.097	2.3486
i-C4	58.124	1.7290
n-C4	58.124	1.9588
i-C5	72.151	3.0182
n-C5	72.151	1.9588
HEXANES	84.000	4.3574
HEPTANES	97.000	10.0040
OCTANES	111.000	12.9322
NONANES	123.000	7.4555
BENZENE	78.110	2.4385
TOLUENE	92.130	5.3368
E-BENZENE	106.170	0.4397
XYLENE	106.170	4.0076
n-C6	86.178	2.6584
C10+	275.500	37.2776

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

Separator Pressure, psig	:	21.80
Separator Temperature, F	:	112.00
Tank Inlet Temperature, F	:	112.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic flash
Working and Standing Losses	:	Multi-Stage Distillation
API Gravity of Sales Oil	:	48.80
RVP of Sales Oil, psia	:	8.07
GAS/AIR INPUT	:	No
HEAT INPUT	:	No

***** WARNING *****
 * Cannot match specified RVP. Only flash loss reported. *

TOTAL HAPS	=	12.291	Tons per Year
BENZENE	=	3.638	Tons per Year
TOLUENE	=	3.033	Tons per Year
E-BENZENE	=	0.106	Tons per Year
XYLENE	=	0.859	Tons per Year
n-HEXANE	=	4.655	Tons per Year
TOTAL HC	=	211.786	Tons per Year
VOCs, C2+	=	202.177	Tons per Year
VOCs, C3+	=	166.098	Tons per Year

File: c:\api\site3\day3\S3SEP.REP File time stamp: 01/10/97 09:12

Current time: 01/10/97 09:50

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CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

Separator Pressure, psig : 21.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

OIL PHASE				VAPOR PHASE			
SEPARATOR	FLASH	OIL	SALES	FLASH	WORKING &	TOTAL	
MOLE BASIS	1.0000	0.9648	0.9648	0.0352	0.0000	0.0352	
COMPONENT	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	MOLE %	
CO2	0.1599	0.0436	0.0436	3.6276	0.0000	3.6276	
C1	0.4997	0.0597	0.0597	12.5461	0.0000	12.5461	
C2	1.4092	0.5427	0.5427	25.1333	0.0000	25.1333	
C3	2.3486	1.5591	1.5591	23.9640	0.0000	23.9640	
i-C4	1.7290	1.4482	1.4482	9.4154	0.0000	9.4154	
n-C4	1.9588	1.7293	1.7293	8.2424	0.0000	8.2424	
i-C5	3.0182	2.9182	2.9182	5.7554	0.0000	5.7554	
n-C5	1.9588	1.9231	1.9231	2.9355	0.0000	2.9355	
HEXANES	4.3574	4.4331	4.4331	2.2852	0.0000	2.2852	
HEPTANES	10.0040	10.2970	10.2970	1.9839	0.0000	1.9839	
OCTANES	12.9322	13.3710	13.3710	0.9183	0.0000	0.9183	
NONANES	7.4555	7.7203	7.7203	0.2058	0.0000	0.2058	
BENZENE	2.4385	2.4919	2.4919	0.9755	0.0000	0.9755	
TOLUENE	5.3368	5.5065	5.5065	0.6896	0.0000	0.6896	
E-BENZENE	0.4397	0.4550	0.4550	0.0210	0.0000	0.0210	
XYLENE	4.0076	4.1478	4.1478	0.1696	0.0000	0.1696	
n-C6	2.6584	2.7142	2.7142	1.1314	0.0000	1.1314	
C10+	37.2776	38.6392	38.6392	0.0000	0.0000	0.0000	
MOL. WT. =	160.77	164.97	164.97	45.96	0.00	45.96	
GAS GRAVITY =				1.59	0.00	1.59	
GROSS HEATING VALUE, Btu/scf =				5527.47	0.00	5527.47	
GAS OIL RATIO, scf/Barrel =			22.48				

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 35.95 13.33 13.33
 RVP, psia = 13.62 7.82 7.82
 SP. GR. = 0.693 0.695 0.695

(NOTE: SP. GR. OF SALES OIL IS 0.764)

BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 3

Production Rate : 441.00 Barrels per Day

Separator Pressure, psig : 21.80
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 8.07
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 441.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	3.6276	1.740	7.622
C1	16.04	12.5461	2.194	9.609
C2	30.07	25.1333	8.237	36.079
C3	44.10	23.9640	11.518	50.448
i-C4	58.12	9.4154	5.965	26.126
n-C4	58.12	8.2424	5.222	22.871
i-C5	72.15	5.7554	4.526	19.824
n-C5	72.15	2.9355	2.308	10.111
HEXANES	84.00	2.2852	2.092	9.164
HEPTANES	97.00	1.9839	2.097	9.187
OCTANES	111.00	0.9183	1.111	4.866
NONANES	123.00	0.2058	0.276	1.208
BENZENE	78.11	0.9755	0.692	3.033
E-BENZENE	106.17	0.0210	0.024	0.106
XYLENE	106.17	0.1696	0.196	0.859
n-C6	86.18	1.1314	1.063	4.655
C10+	275.50	0.0000	0.000	0.001

POSSIBLE VAPOR RECOVERY = 9.91 mscfd

Current time: 01/10/97 09:50 Page 2

File time stamp: 01/10/97 09:12

File: c:\api\site3\day3\SISEP.REP

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

DESCRIPTIONS : Production = 259 bbl/day
 Heater Treater Pressure = 46.6 psig
 Oil Into Tank Temperature = 115.1
 Sales Oil API Gravity = 36.8 RVP = 5.5 psi

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.0300
C1	16.043	1.2098
C2	30.070	0.9768
C3	44.097	3.0395
i-C4	58.124	2.0896
n-C4	58.124	3.0495
i-C5	72.151	2.7095
n-C5	72.151	2.0496
HEXANES	84.000	2.2396
HEPTANES	97.000	9.4884
OCTANES	111.000	9.1584
NONANES	123.000	4.7892
BENZENE	78.110	0.2200
TOLUENE	92.130	0.8798
E-BENZENE	106.170	0.4099
XYLENE	106.170	0.8499
n-C6	86.178	1.7197
C10+	323.000	55.0906

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig	:	46.60
Separator Temperature, F	:	145.00
Tank Inlet Temperature, F	:	145.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic flash
Working and Standing Losses	:	AP-42 Method
API Gravity of Sales Oil	:	36.80
RVP of Sales Oil, psia	:	5.50
TANK DIAMETER @ HEIGHT, ft	:	12.0
AVG STOCK LIQUID HEIGHT, ft	:	8.0
BREATHING VENT P SETTING, psi	:	0.120
TANK SOLAR ABSORBANCE	:	0.540
SOLAR INSULATION, Btu/ft2.day	:	1437.000
DAILY AMBIENT T MIN & MAX, F	:	34.9
TANK LIQUID BULK T, F	:	145.0

TOTAL HAPS	=	8.269	Tons per Year
BENZENE	=	0.623	Tons per Year
TOLUENE	=	1.071	Tons per Year
E-BENZENE	=	0.233	Tons per Year
XYLENE	=	0.434	Tons per Year
n-HEXANE	=	5.908	Tons per Year
TOTAL HC	=	258.932	Tons per Year
VOCs, C2+	=	247.158	Tons per Year
VOCs, C3+	=	231.318	Tons per Year

RVP,psia = 14.60 5.52 5.09
 SP. GR. = 0.724 0.727 0.727
 (NOTE: SP. GR. OF SALES OIL IS 0.810
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 145.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig : 46.60
 Separator Temperature, F : 145.00
 Tank Inlet Temperature, F : 145.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 36.80
 RVP of Sales Oil, psia : 5.50
 TANK DIAMETER & HEIGHT, ft : 12.0 21.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 34.9 90.8
 TANK LIQUID BULK T, F : 145.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH			VAPOR PHASE			TOTAL	
	MOLE %	MOLE #	SALES	OIL	FLASH	SALES	GAS	STANDING	VENT	MOLE %	MOLE #	MOLE %	MOLE #	MOLE #
CO2	0.0300	0.0034	0.0022	0.0022	0.3400	0.0022	0.3400	0.2338	0.3375	0.3375	0.3375	0.3375	0.3375	0.3375
C1	1.2098	0.0608	0.0279	0.0279	14.5826	0.0279	14.5826	5.8461	14.3751	14.3751	14.3751	14.3751	14.3751	14.3751
C2	0.9768	0.1709	0.1315	0.1315	10.3568	0.1315	10.3568	8.7133	10.3177	10.3177	10.3177	10.3177	10.3177	10.3177
C3	3.0395	1.1328	1.0225	1.0225	25.2304	1.0225	25.2304	26.5116	25.2608	25.2608	25.2608	25.2608	25.2608	25.2608
i-C4	2.0896	1.2114	1.1569	1.1569	12.3107	1.1569	12.3107	14.0366	12.3517	12.3517	12.3517	12.3517	12.3517	12.3517
n-C4	3.0495	1.9987	1.9320	1.9320	15.2795	1.9320	15.2795	17.7577	15.3384	15.3384	15.3384	15.3384	15.3384	15.3384
i-C5	2.7095	2.2833	2.2544	2.2544	7.6698	2.2544	7.6698	9.2356	7.7070	7.7070	7.7070	7.7070	7.7070	7.7070
n-C5	2.0496	1.8103	1.7936	1.7936	4.8348	1.7936	4.8348	5.8677	4.8594	4.8594	4.8594	4.8594	4.8594	4.8594
HEXANES	2.2396	2.2539	2.2529	2.2529	2.0739	2.2529	2.0739	2.5730	2.0858	2.0858	2.0858	2.0858	2.0858	2.0858
HEPTANES	9.4884	9.9828	10.0069	10.0069	3.7338	10.0069	3.7338	4.6960	3.7566	3.7566	3.7566	3.7566	3.7566	3.7566
OCTANES	9.1584	9.8224	9.8578	9.8578	1.4308	9.8578	1.4308	1.8213	1.4401	1.4401	1.4401	1.4401	1.4401	1.4401
NONANES	4.7892	5.1734	5.1943	5.1943	0.3181	5.1943	0.3181	0.4092	0.3202	0.3202	0.3202	0.3202	0.3202	0.3202
BENZENE	0.2200	0.2255	0.2257	0.2257	0.1553	0.2257	0.1553	0.1934	0.1562	0.1562	0.1562	0.1562	0.1562	0.1562
TOLUENE	0.8798	0.9360	0.9389	0.9389	0.2263	0.9389	0.2263	0.2858	0.2278	0.2278	0.2278	0.2278	0.2278	0.2278
E-BENZENE	0.4099	0.4415	0.4432	0.4432	0.0426	0.4432	0.0426	0.0544	0.0429	0.0429	0.0429	0.0429	0.0429	0.0429
XYLENE	0.8499	0.9160	0.9196	0.9196	0.0795	0.9196	0.0795	0.1017	0.0801	0.0801	0.0801	0.0801	0.0801	0.0801
n-C6	1.7197	1.7528	1.7535	1.7535	1.3350	1.7535	1.3350	1.6628	1.3427	1.3427	1.3427	1.3427	1.3427	1.3427
C10+	55.0906	59.8241	60.0863	60.0863	0.0000	60.0863	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MOL. WT. =	217.15	231.45	231.85	231.85	50.74	231.85	50.74	55.98	50.87	50.87	50.87	50.87	50.87	50.87
GAS GRAVITY =					1.75		1.75	1.93	1.76	1.76	1.76	1.76	1.76	1.76
GROSS HEATING VALUE, Btu/scf =					6284.30		6284.30	6902.38	6298.98	6298.98	6298.98	6298.98	6298.98	6298.98
GAS OIL RATIO, scf/Barrel =					40.94		40.94							

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)
 BP, psia = 58.89 9.68 7.98

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CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig : 46.60
 Separator Temperature, F : 145.00
 Tank Inlet Temperature, F : 145.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 36.80
 RVP of Sales Oil, psia : 5.50
 TANK DIAMETER & HEIGHT, ft : 12.0 21.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSOLATION, Btu/ft².day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 34.9 90.8
 TANK LIQUID BULK T, F : 145.0

REPORT BASIS: 259.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	0.3375	0.173	0.758
C1	16.04	14.3751	2.688	11.774
C2	30.07	10.3177	3.616	15.840
C3	44.10	25.2608	12.984	56.870
i-C4	58.12	12.3517	8.368	36.653
n-C4	58.12	15.3384	10.392	45.516
i-C5	72.15	7.7070	6.482	28.389
n-C5	72.15	4.8594	4.087	17.900
HEPTANES	84.00	2.0858	2.042	8.945
OCTANES	97.00	3.7566	4.247	18.604
NONANES	111.00	1.4401	1.863	8.161
BENZENE	123.00	0.3202	0.459	2.011
TOLUENE	78.11	0.1562	0.142	0.623
E-BENZENE	92.13	0.2278	0.245	1.071
XYLENE	106.17	0.0429	0.053	0.233
n-C6	106.17	0.0801	0.099	0.434
C10+	86.18	1.3427	1.349	5.908
	323.00	0.0000	0.000	0.000

POSSIBLE VAPOR RECOVERY = 10.60 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Failure in COLUMN calculations. Please try SINGLE-STAGE option

DESCRIPTIONS : Production = 259 bbl/day
 Heater Treater Pressure = 46.6 psig
 Oil into Tank Temperature = 115.1
 Sales Oil API Gravity = 36.8 RVP = 5.5 psi

@ 145°F Separator Temp.

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.0300
C1	16.043	1.2098
C2	30.070	0.9768
C3	44.097	3.0395
i-C4	58.124	2.0896
n-C4	58.124	3.0495
i-C5	72.151	2.7095
n-C5	72.151	2.0496
HEXANES	84.000	2.2396
HEPTANES	97.000	9.4884
OCTANES	111.000	9.1584
NONANES	123.000	4.7892
BENZENE	78.110	0.2200
TOLUENE	92.130	0.8798
E-BENZENE	106.170	0.4099
XYLENE	106.170	0.8499
n-C6	86.178	1.7197
C10+	323.000	55.0906

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 4

DESCRIPTIONS : Production = 259 bbl/day
 Heater Treater Pressure = 46.6 psig
 Oil into Tank Temperature = 115.1
 Sales Oil API Gravity = 36.8 RVP = 5.5 psi

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.0300
C1	16.043	1.2098
C2	30.070	0.9768
C3	44.097	3.0395
i-C4	58.124	2.0896
n-C4	58.124	3.0495
i-C5	72.151	2.7095
n-C5	72.151	2.0496
HEXANES	84.000	2.2396
HEPTANES	97.000	9.4884
OCTANES	111.000	9.1584
NONANES	123.000	4.7892
BENZENE	78.110	0.2200
TOLUENE	92.130	0.8798
E-BENZENE	106.170	0.4099
XYLENE	106.170	0.8499
n-C6	86.178	1.7197
C10+	323.000	55.0906

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig : 80.00
 Separator Temperature, F : 145.00
 Tank Inlet Temperature, F : 141.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 36.80
 RVP of Sales Oil, psia : 5.50
 GAS/AIR INPUT : NO
 HEAT INPUT : NO
 TOTAL HAPs : 7.303 Tons per Year
 BENZENE : 0.553 Tons per Year
 TOLUENE : 0.936 Tons per Year
 E-BENZENE : 0.201 Tons per Year
 XYLENE : 0.375 Tons per Year
 n-HEXANE : 5.238 Tons per Year
 TOTAL HC : 242.337 Tons per Year
 VOCs, C3+ : 230.482 Tons per Year
 VOCs, C3+ : 214.843 Tons per Year

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig : 80.00
 Separator Temperature, F : 145.00
 Tank Inlet Temperature, F : 141.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 36.80
 RVP of Sales Oil, psia : 5.50
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 259.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	0.3529	0.172	0.755
C1	16.04	15.2016	2.707	11.855
C2	30.07	10.6987	3.571	15.639
C3	44.10	25.6247	12.541	54.930
i-C4	58.12	12.2557	7.906	34.628
n-C4	58.12	15.0877	9.733	42.630
i-C5	72.15	7.4095	5.933	25.988
n-C5	72.15	4.6415	3.717	16.279
HEXANES	84.00	1.9500	1.818	7.963
HEPTANES	97.00	3.4620	3.727	16.325
OCTANES	111.00	1.3105	1.614	7.071
NONANES	123.00	0.2886	0.394	1.725
BENZENE	78.11	0.1456	0.126	0.553
TOLUENE	92.13	0.2091	0.214	0.936
E-BENZENE	106.17	0.0390	0.046	0.201
XYLENE	106.17	0.0726	0.086	0.375
n-C6	86.18	1.2503	1.196	5.238
C10+	323.00	0.0000	0.000	0.000

POSSIBLE VAPOR RECOVERY = 10.10 mecf

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 4

Production Rate : 259.00 Barrels per Day

Separator Pressure, psig : 80.00
 Separator Temperature, F : 145.00
 Tank Inlet Temperature, F : 141.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 36.80
 RVP of Sales Oil, psia : 5.50
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

SEPARATOR			OIL PHASE			FLASH			VAPOR PHASE			TOTAL		
MOLE BASIS	MOLE %	MOLE \$	SEPARATOR OIL	FLASH OIL	SALES OIL	FLASH GAS	STANDING	VENT	MOLE %	MOLE \$	MOLE %	MOLE \$	MOLE %	MOLE \$
CO2	0.0300	0.0036	0.0029	0.0029	0.0029	0.3528	0.3537	0.3529	0.3528	0.3537	0.3529	0.3528	0.3537	0.3529
C1	1.2098	0.0640	0.0379	0.0379	0.0379	15.1697	15.1697	15.2016	15.2022	15.1697	15.2016	15.2016	15.1697	15.2016
C2	0.9768	0.1807	0.1626	0.1626	0.1626	10.6985	10.7097	10.6987	10.6985	10.7097	10.6987	10.6987	10.7097	10.6987
C3	3.0395	1.1900	1.1479	1.1479	1.1479	25.6246	25.6296	25.6247	25.6246	25.6296	25.6247	25.6247	25.6296	25.6247
i-C4	2.0896	1.2572	1.2382	1.2382	1.2382	12.2557	12.2564	12.2557	12.2557	12.2564	12.2557	12.2557	12.2564	12.2557
n-C4	3.0495	2.0637	2.0412	2.0412	2.0412	15.0876	15.0886	15.0877	15.0876	15.0886	15.0877	15.0877	15.0886	15.0877
i-C5	2.7095	2.3247	2.3159	2.3159	2.3159	7.4095	7.4098	7.4095	7.4095	7.4098	7.4095	7.4095	7.4098	7.4095
n-C5	2.0496	1.8374	1.8326	1.8326	1.8326	4.6415	4.6417	4.6415	4.6415	4.6417	4.6415	4.6415	4.6417	4.6415
HEXANES	2.2396	2.2633	2.2639	2.2639	2.2639	1.9500	1.9502	1.9500	1.9500	1.9502	1.9500	1.9500	1.9502	1.9500
HEPTANES	9.4884	9.9819	9.9931	9.9931	9.9931	3.4620	3.4623	3.4620	3.4620	3.4623	3.4620	3.4620	3.4623	3.4620
OCTANES	9.1584	9.8011	9.8157	9.8157	9.8157	1.3105	1.3107	1.3105	1.3105	1.3107	1.3105	1.3105	1.3107	1.3105
NONANES	4.7892	5.1578	5.1661	5.1661	5.1661	0.2883	0.2886	0.2883	0.2883	0.2886	0.2883	0.2883	0.2886	0.2883
BENZENE	0.2200	0.2260	0.2262	0.2262	0.2262	0.1456	0.1456	0.1456	0.1456	0.1456	0.1456	0.1456	0.1456	0.1456
TOLUENE	0.8798	0.9348	0.9360	0.9360	0.9360	0.2091	0.2091	0.2091	0.2091	0.2091	0.2091	0.2091	0.2091	0.2091
E-BENZENE	0.4099	0.4403	0.4410	0.4410	0.4410	0.0390	0.0390	0.0390	0.0390	0.0390	0.0390	0.0390	0.0390	0.0390
XYLENE	0.8499	0.9135	0.9150	0.9150	0.9150	0.0726	0.0726	0.0726	0.0726	0.0726	0.0726	0.0726	0.0726	0.0726
n-C6	1.7197	1.7581	1.7590	1.7590	1.7590	1.2503	1.2504	1.2503	1.2503	1.2504	1.2503	1.2503	1.2504	1.2503
C10+	55.0906	59.6020	59.7048	59.7048	59.7048	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MOL. WT. =	217.15	230.84	231.15	231.15	231.15	50.01	50.02	50.01	50.01	50.02	50.01	50.01	50.02	50.01
GAS GRAVITY =						1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73
GROSS HEATING VALUE, Btu/scf =						6198.55	6200.63	6198.59	6198.55	6200.63	6198.59	6198.55	6200.63	6198.59
GAS OIL RATIO, scf/Barrel =						38.98								

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 58.89 10.08 8.97
 RVP, psia = 14.60 5.71 5.42
 SP. GR. = 0.724 0.727 0.727

(NOTE: SP. GR. OF SALES OIL IS 0.810
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 145.7 F)

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 5

DESCRIPTIONS : 451 bbl/day

Separator T-112 F P=29 psig

Actual T=88.1F

API Gravity=48.8 RVP=7.40

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
C02	44.010	0.3200
N2	28.013	0.0100
C1	16.043	0.6199
C2	30.070	1.4398
C3	44.097	2.7597
i-C4	58.124	2.2898
n-C4	58.124	2.1798
i-C5	72.151	3.5496
n-C5	72.151	1.9898
HEXANES	84.000	3.8796
HEPTANES	97.000	6.8902
OCTANES	111.000	10.1289
NONANES	123.000	13.6885
BENZENE	78.110	1.7298
TOLUENE	92.130	3.4296
E-BENZENE	106.170	0.4999
XYLENE	106.170	6.0493
n-C6	86.178	2.3697
C10+	265.000	36.1760

Separator Pressure, psig : 29.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 7.40
 TANK DIAMETER & HEIGHT, ft : 38.6 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 44.7 79.5
 TANK LIQUID BULK T, F : 112.0

TOTAL HAPs : 16.520 Tons per Year
 BENZENE : 4.176 Tons per Year
 TOLUENE : 3.155 Tons per Year
 E-BENZENE : 0.196 Tons per Year
 XYLENE : 2.098 Tons per Year
 n-HEXANE : 6.895 Tons per Year
 TOTAL HC : 341.263 Tons per Year
 VOCs, C2+ : 328.277 Tons per Year
 VOCs, C3+ : 282.729 Tons per Year

BP, psia = 44.56 13.56 7.59
RVP, psia = 15.89 8.19 5.91
SP. GR. = 0.707 0.710 0.711
(NOTE: SP. GR. OF SALES OIL IS 0.764
BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

Separator Pressure, psig : 29.00
Separator Temperature, F : 112.00
Tank Inlet Temperature, F : 112.00
C10+ Characterization : Mol. Weight Method
Flash Loss at Tank Inlet : Adiabatic flash
Working and Standing Losses : AP-42 Method
API Gravity of Sales Oil : 48.80
RVP of Sales Oil, psia : 7.40
TANK DIAMETER & HEIGHT, ft : 38.6 24.0
AVG STOCK LIQUID HEIGHT, ft : 8.0
BREATHING VENT P SETTING, psi : 0.120
TANK SOLAR ABSORBANCE : 0.540
SOLAR INSULATION, Btu/ft².day : 1437.000
DAILY AMBIENT T MIN & MAX, F : 44.7 79.5
TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH			VAPOR PHASE			TOTAL
	MOLE BASIS	MOLE %	MOLE \$	OIL	FLASH	SALES	OIL	FLASH	GAS	STANDING	VENT	VENT	
CO2	0.3200	0.0651	0.0079	0.0000	0.9524	0.9473	0.0476	0.0051	0.0527				0.0527
N2	0.0100	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C1	0.6199	0.0559	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C2	1.4398	0.4580	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419	0.1419
C3	2.7597	1.6498	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154	1.1154
i-C4	2.2898	1.8227	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568	1.5568
n-C4	2.1798	1.8569	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229	1.6229
i-C5	3.5496	3.4002	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846	3.2846
n-C5	1.9898	1.9452	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024	1.9024
HEXANES	3.8796	3.9739	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959	3.9959
HEPTANES	6.8902	7.1677	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726	7.2726
OCTANES	10.1289	10.6001	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928	10.7928
NONANES	13.6885	14.3544	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327	14.6327
BENZENE	1.7298	1.7833	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000	1.8000
TOLUENE	3.4296	3.5800	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397	3.6397
E-BENZENE	0.4999	0.5238	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336	0.5336
XYLENE	6.0493	6.3396	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602	6.4602
n-C6	2.3697	2.4388	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591	2.4591
C10+	36.1760	37.9845	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506	38.7506
MOL. WT. =	155.88	161.35	162.95	162.95	162.95	162.95	162.95	162.95	162.95	162.95	162.95	162.95	162.95
GAS GRAVITY =													
GROSS HEATING VALUE, Btu/scf =													
GAS OIL RATIO, scf/Barrel =													

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

Separator Pressure, psig : 29.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 7.40
 TANK DIAMETER & HEIGHT, ft : 38.6 24.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHING VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 44.7 79.5
 TANK LIQUID BULK T, F : 112.0

REPORT BASIS: 451.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	5.0020	3.786	16.581
N2	28.01	0.1839	0.089	0.388
C1	16.04	10.7466	2.965	12.985
C2	30.07	20.1112	10.399	45.548
C3	44.10	25.3560	19.227	84.215
i-C4	58.12	12.1754	12.169	53.301
n-C4	58.12	9.1050	9.100	39.860
i-C5	72.15	6.9764	8.656	37.912
n-C5	72.15	3.0825	3.824	16.751
HEXANES	84.00	2.1433	3.096	13.560
OCTANES	97.00	1.4442	2.409	10.551
NONANES	111.00	0.7606	1.452	6.359
BENZENE	123.00	0.3992	0.844	3.698
TOLUENE	78.11	0.7098	0.953	4.176
E-BENZENE	92.13	0.4547	0.720	3.155
XYLENE	106.17	0.0245	0.045	0.196
n-C6	86.18	1.0623	1.574	6.895
C10+	265.00	0.0001	0.000	0.002

POSSIBLE VAPOR RECOVERY = 15.64 macfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

DESCRIPTIONS : 451 bbl/day
Separator T-112 F P-29 psig
Actual T-88.1F
API Gravity=48.8 RVP=7.40

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.3200
N2	28.013	0.0100
C1	16.043	0.6199
C2	30.070	1.4398
C3	44.097	2.7597
i-C4	58.124	2.2898
n-C4	58.124	2.1798
i-C5	72.151	3.5496
n-C5	72.151	1.9898
HEXANES	84.000	3.8796
HEPTANES	97.000	6.8902
OCTANES	111.000	10.1289
NONANES	123.000	13.6885
BENZENE	78.110	1.7298
TOLUENE	92.130	3.4296
E-BENZENE	106.170	0.4999
XYLENE	106.170	6.0493
n-C6	86.178	2.3697
C10+	265.000	36.1760

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

Separator Pressure, psig : 29.00
Separator Temperature, F : 112.00
Tank Inlet Temperature, F : 112.00
C10+ Characterization : Mol. Weight Method
Flash Loss at Tank Inlet : Adiabatic flash
Working and Standing Losses : Multi-Stage Distillation
API Gravity of Sales Oil : 48.80
RVP of Sales Oil, psia : 7.40
GAS/AIR INPUT : NO
HEAT INPUT : NO

***** WARNING *****
* Cannot match specified RVP. Only flash loss reported. *

TOTAL HAPs	=	15.362	Tons per Year
BENZENE	=	3.893	Tons per Year
TOLUENE	=	2.934	Tons per Year
E-BENZENE	=	0.182	Tons per Year
XYLENE	=	1.947	Tons per Year
n-HEXANE	=	6.428	Tons per Year
TOTAL HC	=	333.360	Tons per Year
VOCs, C2+	=	319.287	Tons per Year
VOCs, C3+	=	271.003	Tons per Year



Not for Resale

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

Separator Pressure, psig : 29.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 7.40
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

SEPARATOR				OIL PHASE				VAPOR PHASE			
				OIL				FLASH			
				OIL				STANDING			
				OIL				VENT			
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CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 5

Production Rate : 451.00 Barrels per Day

Separator Pressure, psig : 29.00
 Separator Temperature, F : 112.00
 Tank Inlet Temperature, F : 112.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 48.80
 RVP of Sales Oil, psia : 7.40
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 451.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	5.4874	4.166	18.247
N2	28.01	0.1883	0.091	0.399
C1	16.04	11.6099	3.213	14.073
C2	30.07	21.2519	11.024	48.285
C3	44.10	25.0112	19.026	83.334
i-C4	58.12	11.6428	11.674	51.132
n-C4	58.12	8.6437	8.667	37.961
i-C5	72.15	6.5407	8.141	35.657
n-C5	72.15	2.8830	3.588	15.717
HEXANES	84.00	1.9934	2.889	12.652
HEPTANES	97.00	1.3394	2.241	9.816
OCTANES	111.00	0.7040	1.348	5.905
NONANES	123.00	0.3708	0.787	3.446
BENZENE	78.11	0.6596	0.889	3.893
TOLUENE	92.13	0.4214	0.670	2.934
E-BENZENE	106.17	0.0226	0.041	0.182
XYLENE	106.17	0.2427	0.444	1.947
n-C6	86.18	0.9872	1.468	6.428
C10+	265.00	0.0001	0.000	0.002

POSSIBLE VAPOR RECOVERY = 15.69 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

DESCRIPTIONS : 12 bbl/day

Separator T-90 P P=570 psig

API Gravity=55.5 RVP=11.1

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1737
N2	28.013	0.1022
C1	16.043	10.4741
C2	30.070	8.1341
C3	44.097	10.6274
I-C4	58.124	3.7605
N-C4	58.124	6.3765
I-C5	72.151	4.4553
N-C5	72.151	3.2802
HEXANES	84.000	3.8422
HEPTANES	97.000	9.2377
OCTANES	111.000	9.4012
NONANES	123.000	4.7006
BENZENE	78.110	0.7051
TOLUENE	92.130	2.1153
E-BENZENE	106.170	0.4701
XYLENE	106.170	4.5167
N-C6	86.178	2.5547
C10+	145.000	15.0725

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10
 TANK DIAMETER & HEIGHT, ft : 12.0 15.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 35.4 63.2
 TANK LIQUID BULK T, F : 86.0

***** WARNING *****

* AP-42 failed for this case. Only flash loss reported. *

TOTAL HAPs	=	1.060	Tons per Year
BENZENE	=	0.140	Tons per Year
TOLUENE	=	0.126	Tons per Year
E-BENZENE	=	0.010	Tons per Year
XYLENE	=	0.080	Tons per Year
n-HEXANE	=	0.704	Tons per Year
TOTAL HC	=	95.348	Tons per Year
VOCs, C2+	=	81.602	Tons per Year
VOCs, C3+	=	62.918	Tons per Year

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BP, psia = 462.23 27.89 27.89
 RVP, psia = 129.84 18.10 18.10
 SP. GR. = 0.688 0.738 0.738
 (NOTE: SP. GR. OF SALES OIL IS 0.744
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 86.0 F)

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10 15.0
 TANK DIAMETER & HEIGHT, ft : 12.0 8.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day : 1437.000
 DAILY AMBIENT T MIN & MAX, F : 35.4 63.2
 TANK LIQUID BULK T, F : 86.0

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			VAPOR PHASE		
	MOLE %	MOLE %	MOLE %	OIL	FLASH	SALES	FLASH	WORKING & STANDING	TOTAL
CO2	0.1737	0.0097	0.0097	0.0000	0.6751	0.6751	0.3249	0.0000	0.3249
N2	0.1022	0.0004	0.0004	0.0000	0.0004	0.0004	0.3137	0.0000	0.3137
C1	10.4741	0.1782	0.1782	0.1782	0.1782	0.1782	31.8686	0.0000	31.8686
C2	8.1341	0.9276	0.9276	0.9276	0.9276	0.9276	23.1086	0.0000	23.1086
C3	10.6274	3.9861	3.9861	3.9861	3.9861	3.9861	24.4277	0.0000	24.4277
i-C4	3.7605	2.7200	2.7200	2.7200	2.7200	2.7200	5.9225	0.0000	5.9225
n-C4	6.3765	5.5996	5.5996	5.5996	5.5996	5.5996	7.9907	0.0000	7.9907
i-C5	4.4553	5.2958	5.2958	5.2958	5.2958	5.2958	2.7089	0.0000	2.7089
n-C5	3.2802	4.1474	4.1474	4.1474	4.1474	4.1474	1.4782	0.0000	1.4782
HEPTANES	3.8432	5.4019	5.4019	5.4019	5.4019	5.4019	0.6014	0.0000	0.6014
OCTANES	9.2377	13.4660	13.4660	13.4660	13.4660	13.4660	0.4516	0.0000	0.4516
NONANES	4.7006	6.9527	6.9527	6.9527	6.9527	6.9527	0.0208	0.0000	0.0208
BENZENE	4.7051	1.0123	1.0123	1.0123	1.0123	1.0123	0.0667	0.0000	0.0667
TOLUENE	2.1153	3.1087	3.1087	3.1087	3.1087	3.1087	0.0509	0.0000	0.0509
E-BENZENE	0.4701	0.6946	0.6946	0.6946	0.6946	0.6946	0.0034	0.0000	0.0034
XYLENE	4.5167	6.6768	6.6768	6.6768	6.6768	6.6768	0.0279	0.0000	0.0279
n-C6	2.5547	3.6379	3.6379	3.6379	3.6379	3.6379	0.3038	0.0000	0.3038
C10+	15.0725	22.3226	22.3226	22.3226	22.3226	22.3226	0.0074	0.0000	0.0074
MOL. WT. =	80.65	102.24	102.24				35.78	0.00	35.78
GAS GRAVITY =							1.23	0.00	1.23
GROSS HEATING VALUE, Btu/scf =							4519.20	0.00	4519.20
GAS OIL RATIO, scf/Barrel =							465.31		

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

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CALCULATION DETAILS PAGE 2 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : AP-42 Method
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10
 TANK DIAMETER & HEIGHT, ft : 12.0 15.0
 AVG STOCK LIQUID HEIGHT, ft : 8.0
 BREATHER VENT P SETTING, psi : 0.120
 TANK SOLAR ABSORBANCE : 0.540
 SOLAR INSULATION, Btu/ft2.day: 1437.000
 DAILY AMBIENT T MIN & MAX, F : 35.4 63.2
 TANK LIQUID BULK T, F : 86.0

REPORT BASIS: 12.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	0.5145	0.139	0.609
N2	28.01	0.3137	0.054	0.236
C1	16.04	31.8686	3.138	13.747
C2	30.07	23.1086	4.266	18.683
C3	44.10	24.4277	6.613	28.963
i-C4	58.12	5.9225	2.113	9.256
n-C4	58.12	7.9907	2.851	12.488
i-C5	72.15	2.7089	1.200	5.255
n-C5	72.15	1.4782	0.655	2.868
HEXANES	84.00	0.6014	0.310	1.358
HEPTANES	97.00	0.4516	0.269	1.178
OCTANES	111.00	0.1327	0.090	0.396
NONANES	123.00	0.0208	0.016	0.069
BENZENE	78.11	0.0667	0.032	0.140
TOLUENE	92.13	0.0509	0.029	0.126
E-BENZENE	106.17	0.0034	0.002	0.010
XYLENE	106.17	0.0279	0.018	0.080
n-C6	86.18	0.3038	0.161	0.704
C10+	145.00	0.0074	0.007	0.029

POSSIBLE VAPOR RECOVERY = 5.58 mscfd

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

DESCRIPTORS : 12 bbl/day

Separator T-90 P P-570 psig

API Gravity=55.5 RVP=11.1

SUMMARY

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

SAMPLE IDENTIFICATION:

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
CO2	44.010	0.1737
N2	28.013	0.1022
C1	16.043	10.4741
C2	30.070	8.1341
C3	44.097	10.6274
i-C4	58.124	3.7605
n-C4	58.124	6.3765
i-C5	72.151	4.4553
n-C5	72.151	3.2802
HEXANES	84.000	3.8422
HEPTANES	97.000	9.2377
OCTANES	111.000	9.4012
NONANES	123.000	4.7006
BENZENE	78.110	0.7051
TOLUENE	92.130	2.1153
E-BENZENE	106.170	0.4701
XYLENE	106.170	4.5167
n-C6	86.178	2.5547
C10+	145.000	15.0725

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10
 GAS/AIR INPUT : No
 HEAT INPUT : No

***** WARNING *****
 * Cannot match specified RVP. Only flash loss reported. *

TOTAL HAPs = 1.168 Tons per Year
 BENZENE = 0.154 Tons per Year
 TOLUENE = 0.140 Tons per Year
 E-BENZENE = 0.011 Tons per Year
 XYLENE = 0.088 Tons per Year
 n-HEXANE = 0.775 Tons per Year
 TOTAL HC = 105.203 Tons per Year
 VOCs, C2+ = 91.288 Tons per Year
 VOCs, C3+ = 71.058 Tons per Year

CALCULATION DETAILS PAGE 1 of 2

PRODUCTION TANK EMISSIONS MODEL [EPTANK v.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10
 GAS/AIR INPUT : No.
 HEAT INPUT : No.

REPORT BASIS: 1 MOLE SEPARATOR OIL INPUT

COMPONENT	SEPARATOR			OIL PHASE			FLASH SALES			VAPOR PHASE			TOTAL		
	MOLE %	MOLE %	MOLE %	OIL	FLASH	OIL	OIL	FLASH	OIL	GAS	STANDING	VENT	MOLE %	MOLE %	MOLE %
CO2	0.1737	0.0097	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N2	0.1022	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C1	10.4741	0.1782	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C2	8.1341	0.1276	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146	0.0146
C3	10.6274	3.9861	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169	2.2169
i-C4	3.7605	2.7200	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047	2.5047
n-C4	6.3765	5.5996	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163	5.4163
i-C5	4.4553	5.2958	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808	5.3808
n-C5	3.2802	4.1474	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453	4.2453
HEXANES	3.8422	5.4019	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939	5.5939
HEPTANES	9.2377	13.4660	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964	13.9964
OCTANES	9.4012	13.8616	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245	14.4245
NONANES	4.7006	6.9527	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373	7.2373
BENZENE	0.7051	1.0123	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505	1.0505
TOLUENE	2.1153	3.1087	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338	3.2338
E-BENZENE	0.4701	0.6946	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230
XYLENE	4.5167	6.6768	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498	6.9498
n-C6	2.5547	3.6379	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722	3.7722
C10+	15.0725	22.3226	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399	23.2399
MOL. WT. =	80.65	102.24	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61	104.61
GAS GRAVITY =															
GROSS HEATING VALUE, Btu/scf =															
GAS OIL RATIO, scf/Barrel =															

OIL CHARACTERIZATION AT 100 F (BASED ON PENG-ROBINSON MODEL)

BP, psia = 462.23 27.89 12.41
 RVP, psia = 129.04 18.10 11.08
 SP. GR. = 0.688 0.738 0.743

(NOTE: SP. GR. OF SALES OIL IS 0.732
 BASED ON INPUT API GRAVITY AND ADJUSTED TO 112.3 F)

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PRODUCTION TANK EMISSIONS MODEL [EPTANK V.3.0]

CASE TITLE : API Tanks Site 6a (NDR)

Production Rate : 12.00 Barrels per Day

Separator Pressure, psig : 570.00
 Separator Temperature, F : 86.00
 Tank Inlet Temperature, F : 86.00
 C10+ Characterization : Mol. Weight Method
 Flash Loss at Tank Inlet : Adiabatic flash
 Working and Standing Losses : Multi-Stage Distillation
 API Gravity of Sales Oil : 55.50
 RVP of Sales Oil, psia : 11.10
 GAS/AIR INPUT : No
 HEAT INPUT : No

REPORT BASIS: 12.00 BARRELS PER DAY

COMPONENT	MOL. WT.	MOLE %	Lbs/Hr	Tons/Yr
CO2	44.01	0.4941	0.145	0.633
N2	28.01	0.2907	0.054	0.237
C1	16.04	29.7940	3.177	13.914
C2	30.07	23.1104	4.619	20.230
C3	44.10	26.1411	7.661	33.557
i-C4	58.12	6.0768	2.348	10.282
n-C4	58.12	8.1475	3.147	13.786
i-C5	72.15	2.7484	1.318	5.773
n-C5	72.15	1.5001	0.719	3.151
HEXANES	84.00	0.6111	0.341	1.494
HEPTANES	97.00	0.4601	0.297	1.299
OCETANES	111.00	0.1356	0.100	0.438
NONANES	123.00	0.0215	0.018	0.077
BENZENE	78.11	0.0679	0.035	0.154
TOLUENE	92.13	0.0520	0.032	0.140
E-BENZENE	106.17	0.0035	0.002	0.011
XYLENE	106.17	0.0286	0.020	0.088
n-C6	86.18	0.3090	0.177	0.775
C10+	145.00	0.0077	0.007	0.032

POSSIBLE VAPOR RECOVERY = 6.05 mscfd

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 6b (COUNTY)

DESCRIPTIONS : 60 bbl/day

Separator T-80 P P-510 psig

API Gravity=58.4 RVP=15.0

SUMMARY

PRODUCTION TANK EMISSIONS MODEL (EPTANK V.3.0)

CASE TITLE : API Tanks Site 6b (COUNTY)

Production Rate : 60.00 Barrels per Day

Separator Pressure, psig	:	510.00
Separator Temperature, F	:	72.00
Tank Inlet Temperature, F	:	72.00
C10+ Characterization	:	Mol. Weight Method
Flash Loss at Tank Inlet	:	Adiabatic flash
Working and Standing Losses	:	AP-42 Method
API Gravity of Sales Oil	:	58.40
RVP of Sales Oil, psia	:	15.00
TANK DIAMETER & HEIGHT, ft	:	12.0 15.0
AVG STOCK LIQUID HEIGHT, ft	:	8.0
BREATHING VENT P SETTING, psi	:	0.120
TANK SOLAR ABSORBANCE	:	0.540
SOLAR INSULATION, Btu/ft2.day	:	1437.000
DAILY AMBIENT T MIN & MAX, F	:	26.8 43.4
TANK LIQUID BULK T, F	:	72.0

***** WARNING *****

* AP-42 failed for this case. Only flash loss reported. *

TOTAL HAPS	=	3.326	Tons per Year
BENZENE	=	0.492	Tons per Year
TOLUENE	=	0.403	Tons per Year
E-BENZENE	=	0.028	Tons per Year
XYLENE	=	0.221	Tons per Year
n-HEXANE	=	2.181	Tons per Year
TOTAL HC	=	478.154	Tons per Year
VOCs, C2+	=	400.701	Tons per Year
VOCs, C3+	=	295.263	Tons per Year

COMPONENT	MOL. WT.	SEPARATOR LIQUID, MOLE %
C02	44.010	0.1500
N2	28.013	0.0900
C1	16.043	11.3511
C2	30.070	8.9609
C3	44.097	10.9611
i-C4	58.124	4.1904
n-C4	58.124	7.0307
i-C5	72.151	4.9705
n-C5	72.151	3.7404
HEXANES	84.000	3.8504
HEPTANES	97.000	8.9909
OCTANES	111.000	8.6909
NONANES	123.000	4.7105
BENZENE	78.110	0.7201
TOLUENE	92.130	2.1202
E-BENZENE	106.170	0.4600
XYLENE	106.170	4.2404
n-C6	86.178	2.3602
C10+	144.000	12.4112