

Transportation Fuels Methodology Check

		Crude	Transp.	% yield	EIA %yield	
East Coast	1A	1,676,600	1,326,212	79%	83%	1,388,819
Appalachian No. 1	1B	95,000	59,708	63%	68%	64,136
IN, IL, KY	2A	2,354,900	1,787,481	76%	83%	1,956,070
MN, WI, ND, SD	2B	441,600	311,811	71%	84%	372,285
OK, KS, MO	2C	786,140	630,946	80%	89%	700,178
Texas Inland	3A	647,527	535,606	83%	89%	574,699
Texas Gulf Coast	3B	4,060,476	3,141,287	77%	79%	3,187,898
LA Gulf Coast	3C	3,277,763	2,583,742	79%	80%	2,614,478
N. LA, AR	3D	213,120	112,633	53%	50%	107,098
New Mexico	3E	112,600	93,877	83%	88%	99,406
Rocky Mt.	4A	595,550	451,805	76%	82%	490,506
West Coast	5A	3,182,438	2,554,562	80%	84%	2,671,593
U.S. Territories	6A	572,900	471,482	82%	82%	471,482
		18,016,614	14,061,153			14,698,648

Average Monitoring Costs				Interest	0.07
Model Plant	Size	First Yr TCI	First Yr AOC	EquipLife	10
				Capital Cost	AOC for
				for Ongoing	ongoing
Small	<75K			70300	10900
Medium				73900	18400
Large	>200K			77600	26000

From Monitoring Guidance Document_v3, Nov. 11, 2003

Model Tank Sizes

	Throughput bbl/d/tank	Assumed Turnovers/yr	Volume ft3	Diameter (ft)	Height (ft)
Crude Tanks	30000	180	341577.5401	120	30.20209
Gasoline Tanks	20000	180	227718.3601	100	28.994
Naptha/Jet Tanks	10000	180	113859.18	70	29.58572
Diesel Tanks	15000	180	170788.7701	85	30.09758

Tank Sizes	DesignThru bbl/d	Thruput gal/yr	Tank Diam ft	Height ft	Tank Vol ft3	Tank Vol gal	Turnovers	
Crude	30000	459900000	180		40	324000	2423520	189.7653
Gasoline	20000	306600000	150		40	225000	1683000	182.1747
Other light	10000	153300000	105		40	110250	824670	185.8925
Diesel #2	15000	229950000	130		40	169000	1264120	181.9052

throughput capacity utili 90%

CRF

0.1424 Option Removed...

TAC for Ongoing	Ave.Ref. TCI	Ave.Ref AOC	AveRef.TA C
20909	0	0	0
28922	0	0	0
37048	0	0	0

Source of Conc. Data: letter from Patrick Murphy (Radian) to James Durham (EPA), August 10, 1993

Average Weight Percent HAPs in Refinery Streams

US Production Capacity, OG, bbl/cd		1170470	16538540
US Production, EIA	bbl/cd	7951000	15067000
US Production, IEA	1,000 Mc	250339	767131

for 2000

HAP	<u>Gasoline</u>		<u>Alkylate</u>		<u>Crude oil</u>	
	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
2,2,4-Trimethylpentane	4.72	0.953	35.4	9.4	0.263	0.247
Benzene	1.61	0.626	0.118	0.061	0.446	0.807
Biphenyl	0.01	0	0	0	0.061	0.00002
Cresols	0.789	0.00065	0	0	0.218	0.0008
Cumene	0.849	0.01565	0.004	0.0001	0.126	0.0108
Ethylbenzene	1.605	0.0631	0.011	0.0006	0.346	0.0633
Hexane	7.138	4.428	3.22	2.63	2.46	7.11
Methyl tertiary butyl ether	3.54	3.62	0	0	0	0
Naphthalene	0.444	0.0006	0.012	0.00002	0.219	0.00125
Phenol	0.0551	0.0001	0	0	0.323	0.0031
Styrene	3.528	0.0882	0	0	0	0
Toluene	7.21	0.842	0.503	0.077	0.878	0.477
Xylene	7.17	0.235	0.0212	0.0009	1.42	0.216
	38.6681	10.8723	39.2892	12.16962	6.76	8.93627

Source of Conc. Data: letter from Patrick Murphy (Radian) to James Durham (EPA), August 10, 1993

Density	0.74	0.692	0.88
EIA Refinery Capacity Report bbl/cd			17333014
EIA Petroleum Annual 2006 (bbl/cd	7901893	1029619	15220088
EIA Refinery Capacity Report bbl/sd		1238479	18307502
	38.6681	10.8723	0.831358
		39.2892	6.76
		12.16962	8.93627
WeightingFactorUsed	0.436579	0.053196	1
	0.436579	0.053196	1
	0.455887	0.059402	1
	0.326331	0.049541	1

3559080

9207

Coburn, Calculation

<u>Reformat</u>		<u>Naphtha</u>		<u>Ave. Conc. (wt %)</u>		<u>Wtd Ave. Conc. (wt %)</u>	
Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
1.36	0.509	0.799	0.355	8.51	2.29	2.457193	0.7072693
4.61	3.32	1.244	1.06	1.61	1.17	1.211527	1.0239165
0.025	0	0	0	0.02	0.000004	0.037223	1.062E-05
0.141	0.0002	0.0191	0.00003	0.23	0.0003	0.314919	0.0005989
0.968	0.033	0.91	0.0368	0.57	0.02	0.459771	0.0166715
3.73	0.272	1.366	0.118	1.41	0.1	1.07904	0.088384
3.9	4.48	7.53	10.27	4.85	5.78	4.260314	6.4399542
0	0	0	0	0.71	0.72	0.820691	0.8392378
0.798	0.0018	0.399	0.0011	0.37	0.001	0.343011	0.0011036
0.0276	0.0001	0.066	0.0003	0.09	0.0007	0.194223	0.0017119
0.0907	0.0042	0	0	0.72	0.02	0.827023	0.0208698
14.54	3.14	5.05	1.295	5.64	1.17	4.160511	0.9065949
13.79	0.8367	5.49	0.395	5.58	0.34	4.397776	0.296106

43.9803 12.597 22.8731 13.53123 30.31 11.612 20.56322 10.342429

0.0589 0.0990

0.79

0.79

3208269

3461132

3859070

43.9803 12.597 22.8731 13.53123

0.189233 0.204148

0.189233 0.204148

0.185096 0.199684

0.172159 0.184161