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TABLE 4.1A.1
NONTAMPERED EXHAUST EMISSION RATES FOR
LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES
* BER = ZML + (DR * M)

Pol	Model Years	Zero Mile Emission Level	Deterioration Rate	50,000 Mile Emission Level	100,000 Mile Emission Level	
HC	Pre-1963	19.720	0.370	21.570	23.420	
	1963-1969	19.310	0.360	21.110	22.910	
	1970-1973	9.730	0.390	11.680	13.630	
	1974	9.610	0.260	10.910	12.210	
	1975	8.880	0.240	10.080	11.280	
	1976	8.410	0.220	9.510	10.610	
	1977-1978	7.200	0.190	8.150	9.100	
	1979	3.670	0.180	4.570	5.470	
	1980	3.450	0.170	4.300	5.150	
	1981-1983	3.270	0.160	4.070	4.870	
	1984	3.260	0.160	4.060	4.860	
	1985	2.280	0.050	2.530	2.780	
	1986	2.000	0.050	2.250	2.500	
	1987-1989	0.820	0.090	1.270	1.720	
	1990	0.820	0.090	1.270	1.720	
	1991-1997	0.820	0.090	1.270	1.720	
	1998-2000	0.810	0.090	1.260	1.710	
	2001+	0.810	0.090	1.260	1.710	
	CO	Pre-1963	240.220	5.760	269.020	297.820
		1963-1969	235.250	5.640	263.450	291.650
1970-1973		166.260	7.050	201.510	236.760	
1974		164.300	6.670	197.650	231.000	
1975		151.700	6.160	182.500	213.300	
1976		143.730	5.830	172.880	202.030	
1977-1978		123.050	4.990	148.000	172.950	
1979		57.180	4.790	81.130	105.080	
1980		53.770	4.510	76.320	98.870	
1981-1983		50.910	4.270	72.260	93.610	
1984		50.750	4.250	72.000	93.250	
1985		35.790	0.860	40.090	44.390	
1986		28.210	0.860	32.510	36.810	
1987-1989		11.170	0.640	14.370	17.570	
1990		11.150	0.640	14.350	17.550	
1991-1997		11.100	0.640	14.300	17.500	
1998-2000		11.040	0.640	14.240	17.440	
2001+		11.030	0.640	14.230	17.430	
NOx		Pre-1963	9.410	0.000	9.410	9.410
		1963-1969	9.220	0.000	9.220	9.220
	1970-1973	9.870	0.000	9.870	9.870	
	1974	7.110	0.090	7.560	8.010	
	1975	6.560	0.080	6.960	7.360	
	1976	6.220	0.070	6.570	6.920	
	1977-1978	5.320	0.060	5.620	5.920	
	1979	5.950	0.060	6.250	6.550	
	1980	5.590	0.060	5.890	6.190	
	1981-1983	5.300	0.050	5.550	5.800	
	1984	5.280	0.050	5.530	5.780	
	1985	5.210	0.030	5.360	5.510	
	1986	5.200	0.030	5.350	5.500	
	1987-1989	5.210	0.030	5.360	5.510	
	1990	4.270	0.040	4.470	4.670	
	1991-1997	3.550	0.040	3.750	3.950	
	1998-2000	2.820	0.040	3.020	3.220	
	2001+	2.820	0.040	3.020	3.220	

* WHERE : BER = Nontampered basic exhaust emission rates in grams/mile,
ZML = Zero mile level in grams/mile,
DR = Deterioration rate in grams/mile/10K miles,
M = Cumulative mileage / 10,000 miles.
DATE : JUNE 30, 1995

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 TABLE 4.1A.2
 NONTAMPERED EXHAUST EMISSION RATES FOR
 HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 * BER = ZML + (DR * M)

Pol	Model Years	Zero Mile Emission Level	Deterioration Rate	50,000 Mile Emission Level	100,000 Mile Emission Level	
HC	Pre-1963	26.870	0.370	28.720	30.570	
	1963-1969	26.320	0.360	28.120	29.920	
	1970-1973	13.250	0.390	15.200	17.150	
	1974	13.100	0.260	14.400	15.700	
	1975	12.090	0.240	13.290	14.490	
	1976	11.460	0.220	12.560	13.660	
	1977-1978	9.810	0.190	10.760	11.710	
	1979	5.000	0.180	5.900	6.800	
	1980	4.700	0.170	5.550	6.400	
	1981-1983	4.450	0.160	5.250	6.050	
	1984	4.440	0.160	5.240	6.040	
	1985	3.120	0.050	3.370	3.620	
	1986	2.730	0.050	2.980	3.230	
	1987-1989	1.400	0.090	1.850	2.300	
	1990	1.390	0.090	1.840	2.290	
	1991-1997	1.390	0.090	1.840	2.290	
	1998-2000	1.380	0.090	1.830	2.280	
	2001+	1.380	0.090	1.830	2.280	
	CO	Pre-1963	430.720	5.760	459.520	488.320
		1963-1969	421.810	5.640	450.010	478.210
1970-1973		298.100	7.050	333.350	368.600	
1974		294.580	6.670	327.930	361.280	
1975		272.000	6.160	302.800	333.600	
1976		257.710	5.830	286.860	316.010	
1977-1978		220.630	4.990	245.580	270.530	
1979		102.530	4.790	126.480	150.430	
1980		96.410	4.510	118.960	141.510	
1981-1983		91.290	4.270	112.640	133.990	
1984		90.990	4.250	112.240	133.490	
1985		64.160	0.860	68.460	72.760	
1986		50.570	0.860	54.870	59.170	
1987-1989		30.620	0.640	33.820	37.020	
1990		30.560	0.640	33.760	36.960	
1991-1997		30.440	0.640	33.640	36.840	
1998-2000		30.270	0.640	33.470	36.670	
2001+		30.240	0.640	33.440	36.640	
NOx		Pre-1963	6.270	0.000	6.270	6.270
		1963-1969	6.140	0.000	6.140	6.140
	1970-1973	6.580	0.000	6.580	6.580	
	1974	4.740	0.090	5.190	5.640	
	1975	4.370	0.080	4.770	5.170	
	1976	4.140	0.070	4.490	4.840	
	1977-1978	3.550	0.060	3.850	4.150	
	1979	3.970	0.060	4.270	4.570	
	1980	3.730	0.060	4.030	4.330	
	1981-1983	3.530	0.050	3.780	4.030	
	1984	3.520	0.050	3.770	4.020	
	1985	3.480	0.030	3.630	3.780	
	1986	3.470	0.030	3.620	3.770	
	1987-1989	3.470	0.030	3.620	3.770	
	1990	3.410	0.040	3.610	3.810	
	1991-1997	2.830	0.040	3.030	3.230	
	1998-2000	2.260	0.040	2.460	2.660	
	2001+	2.250	0.040	2.450	2.650	

* WHERE : BER = Nontampered basic exhaust emission rates in grams/mile,
 ZML = Zero mile level in grams/mile,
 DR = Deterioration rate in grams/mile/10K miles,
 M = Cumulative mileage / 10,000 miles.
 DATE : JUNE 30, 1995

TABLE 4.1B.1

DATE : JUNE 30, 1995

EXHAUST EMISSION RATES FOR
LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES
AT VARIOUS MILEAGE LEVELS
(ADJUSTED FOR INDUSTRY AVERAGE FUEL. RATES INCLUDE TAMPERING)

Pol	Model Years	Emission Rate (Grams/Mile)						
		0K	25K	50K	75K	100K	125K	150K
HC	Pre-1963	19.720	20.645	21.570	22.495	23.420	24.345	25.270
	1963-1969	19.310	20.210	21.110	22.010	22.910	23.810	24.710
	1970-1973	9.730	10.705	11.680	12.655	13.630	14.605	15.580
	1974	9.610	10.260	10.910	11.560	12.210	12.860	13.510
	1975	8.880	9.480	10.080	10.680	11.280	11.880	12.480
	1976	8.410	8.960	9.510	10.060	10.610	11.160	11.710
	1977-1978	7.200	7.675	8.150	8.625	9.100	9.575	10.050
	1979	3.670	4.120	4.570	5.020	5.470	5.920	6.370
	1980	3.450	3.875	4.300	4.725	5.150	5.575	6.000
	1981	3.270	3.670	4.070	4.470	4.870	5.270	5.670
	1982-1983	3.297	3.711	4.127	4.537	4.947	5.358	5.762
	1984	3.286	3.692	4.098	4.508	4.918	5.328	5.733
	1985	2.298	2.424	2.550	2.676	2.802	2.928	3.054
	1986	2.016	2.143	2.271	2.402	2.534	2.665	2.793
	1987	0.861	1.110	1.362	1.638	1.914	2.191	2.435
	1988-1989	0.874	1.131	1.389	1.682	1.975	2.268	2.517
	1990-1997	0.895	1.160	1.428	1.741	2.053	2.366	2.624
	1998-2008	0.884	1.150	1.417	1.730	2.043	2.355	2.614
	2009+	0.880	1.125	1.369	1.614	1.858	2.103	2.347
	CO	Pre-1963	240.220	254.620	269.020	283.420	297.820	312.220
1963-1969		235.250	249.350	263.450	277.550	291.650	305.750	319.850
1970-1973		166.260	183.885	201.510	219.135	236.760	254.385	272.010
1974		164.300	180.975	197.650	214.325	231.000	247.675	264.350
1975		151.700	167.100	182.500	197.900	213.300	228.700	244.100
1976		143.730	158.305	172.880	187.455	202.030	216.605	231.180
1977-1978		123.050	135.525	148.000	160.475	172.950	185.425	197.900
1979		57.180	69.155	81.130	93.105	105.080	117.055	129.030
1980		53.770	65.045	76.320	87.595	98.870	110.145	121.420
1981		50.910	61.585	72.260	82.935	93.610	104.285	114.960
1982-1983		51.144	61.970	72.805	83.594	94.382	105.172	115.908
1984		50.974	61.673	72.371	83.104	93.837	104.574	115.258
1985		35.946	38.105	40.264	42.424	44.583	46.742	48.902
1986		28.336	30.509	32.682	34.895	37.108	39.321	41.492
1987		11.478	13.345	15.251	17.427	19.602	21.777	23.526
1988-1989		11.583	13.499	15.456	17.771	20.085	22.399	24.187
1990		11.716	13.680	15.685	18.134	20.582	23.031	24.862
1991-1997		11.663	13.628	15.633	18.081	20.530	22.978	24.809
1998-2000		11.601	13.565	15.570	18.018	20.467	22.915	24.746
2001+		11.590	13.554	15.559	18.008	20.456	22.905	24.736
NOx	Pre-1963	9.410	9.410	9.410	9.410	9.410	9.410	9.410
	1963-1969	9.220	9.220	9.220	9.220	9.220	9.220	9.220
	1970-1973	9.870	9.870	9.870	9.870	9.870	9.870	9.870
	1974	7.110	7.335	7.560	7.785	8.010	8.235	8.460
	1975	6.560	6.760	6.960	7.160	7.360	7.560	7.760
	1976	6.220	6.395	6.570	6.745	6.920	7.095	7.270
	1977-1978	5.320	5.470	5.620	5.770	5.920	6.070	6.220
	1979	5.950	6.100	6.250	6.400	6.550	6.700	6.850
	1980	5.590	5.740	5.890	6.040	6.190	6.340	6.490
	1981-1983	5.300	5.425	5.550	5.675	5.800	5.925	6.050
	1984	5.280	5.405	5.530	5.655	5.780	5.905	6.030
	1985	5.210	5.285	5.360	5.435	5.510	5.585	5.660
	1986	5.200	5.289	5.379	5.487	5.595	5.703	5.785
	1987	5.335	5.427	5.522	5.637	5.752	5.867	5.952
	1988-1989	5.335	5.427	5.521	5.636	5.750	5.864	5.948
	1990	4.441	4.585	4.736	4.939	5.142	5.345	5.469
	1991-1997	3.693	3.836	3.987	4.190	4.393	4.596	4.720
	1998-2008	2.933	3.077	3.228	3.431	3.634	3.837	3.961
	2009+	2.933	3.037	3.141	3.245	3.349	3.453	3.557

TABLE 4.1B.2

DATE : JUNE 30, 1995

EXHAUST EMISSION RATES FOR
HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES
AT VARIOUS MILEAGE LEVELS
(ADJUSTED FOR INDUSTRY AVERAGE FUEL. RATES INCLUDE TAMPERING)

Pol	Model Years	Emission Rate (Grams/Mile)						
		0K	25K	50K	75K	100K	125K	150K
HC	Pre-1963	26.870	27.795	28.720	29.645	30.570	31.495	32.420
	1963-1969	26.320	27.220	28.120	29.020	29.920	30.820	31.720
	1970-1973	13.250	14.225	15.200	16.175	17.150	18.125	19.100
	1974	13.100	13.750	14.400	15.050	15.700	16.350	17.000
	1975	12.090	12.690	13.290	13.890	14.490	15.090	15.690
	1976	11.460	12.010	12.560	13.110	13.660	14.210	14.760
	1977-1978	9.810	10.285	10.760	11.235	11.710	12.185	12.660
	1979	5.000	5.450	5.900	6.350	6.800	7.250	7.700
	1980	4.700	5.125	5.550	5.975	6.400	6.825	7.250
	1981	4.450	4.850	5.250	5.650	6.050	6.450	6.850
	1982-1983	4.486	4.901	5.316	5.726	6.137	6.547	6.952
	1984	4.475	4.882	5.288	5.698	6.107	6.518	6.922
	1985	3.145	3.271	3.397	3.523	3.648	3.774	3.900
	1986	2.752	2.879	3.007	3.138	3.270	3.401	3.528
	1987	1.468	1.718	1.969	2.245	2.522	2.798	3.042
	1988-1989	1.491	1.748	2.006	2.299	2.591	2.884	3.134
	1990-1997	1.514	1.780	2.047	2.360	2.673	2.986	3.244
	1998-2008	1.503	1.769	2.036	2.349	2.662	2.975	3.233
	2009+	1.499	1.744	1.988	2.233	2.477	2.722	2.966
	CO	Pre-1963	430.720	445.120	459.520	473.920	488.320	502.720
1963-1969		421.810	435.910	450.010	464.110	478.210	492.310	506.410
1970-1973		298.100	315.725	333.350	350.975	368.600	386.225	403.850
1974		294.580	311.255	327.930	344.605	361.280	377.955	394.630
1975		272.000	287.400	302.800	318.200	333.600	349.000	364.400
1976		257.710	272.285	286.860	301.435	316.010	330.585	345.160
1977-1978		220.630	233.105	245.580	258.055	270.530	283.005	295.480
1979		102.530	114.505	126.480	138.455	150.430	162.405	174.380
1980		96.410	107.685	118.960	130.235	141.510	152.785	164.060
1981		91.290	101.965	112.640	123.315	133.990	144.665	155.340
1982-1983		91.700	102.526	113.361	124.149	134.938	145.728	156.463
1984		91.389	102.088	112.786	123.519	134.252	144.989	155.673
1985		64.439	66.598	68.758	70.917	73.076	75.236	77.395
1986		50.794	52.966	55.139	57.352	59.565	61.779	63.949
1987		31.436	33.302	35.209	37.384	39.559	41.735	43.483
1988-1989		31.710	33.626	35.583	37.897	40.212	42.526	44.313
1990		32.054	34.018	36.023	38.472	40.920	43.369	45.200
1991-1997		31.928	33.893	35.898	38.346	40.795	43.243	45.074
1998-2000		31.750	33.714	35.719	38.168	40.617	43.065	44.896
2001+		31.719	33.683	35.688	38.137	40.585	43.034	44.865
NOx	Pre-1963	6.270	6.270	6.270	6.270	6.270	6.270	6.270
	1963-1969	6.140	6.140	6.140	6.140	6.140	6.140	6.140
	1970-1973	6.580	6.580	6.580	6.580	6.580	6.580	6.580
	1974	4.740	4.965	5.190	5.415	5.640	5.865	6.090
	1975	4.370	4.570	4.770	4.970	5.170	5.370	5.570
	1976	4.140	4.315	4.490	4.665	4.840	5.015	5.190
	1977-1978	3.550	3.700	3.850	4.000	4.150	4.300	4.450
	1979	3.970	4.120	4.270	4.420	4.570	4.720	4.870
	1980	3.730	3.880	4.030	4.180	4.330	4.480	4.630
	1981-1983	3.530	3.655	3.780	3.905	4.030	4.155	4.280
	1984	3.520	3.645	3.770	3.895	4.020	4.145	4.270
	1985	3.480	3.555	3.630	3.705	3.780	3.855	3.930
	1986	3.470	3.559	3.649	3.757	3.865	3.973	4.055
	1987	3.554	3.646	3.740	3.855	3.970	4.086	4.170
	1988-1989	3.554	3.645	3.739	3.854	3.968	4.082	4.167
	1990	3.547	3.691	3.841	4.044	4.247	4.451	4.574
	1991-1997	2.944	3.088	3.238	3.441	3.644	3.847	3.971
1998-2000	2.351	2.495	2.645	2.848	3.051	3.255	3.378	
2001+	2.340	2.484	2.635	2.838	3.041	3.244	3.368	

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TABLE 4.2A.1

NONTAMPERED CRANKCASE EMISSIONS
FROM VEHICLES WITH OPERATING EVAPORATIVE SYSTEMS*
FOR LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Crankcase (Gm/Mile)
Pre-1968	5.70
1968+	0.00

* Vehicles with measurable purge capacity and no major vapor leaks
in their fuel systems.

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TABLE 4.2A.2

NONTAMPERED CRANKCASE EMISSIONS
FROM VEHICLES WITH OPERATING EVAPORATIVE SYSTEMS*
FOR HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Crankcase (Gm/Mile)
Pre-1968	7.35
1968+	0.00

* Vehicles with measurable purge capacity and no major vapor leaks
in their fuel systems.

DATE : JUNE 30, 1995

TABLE 4.2B.1

TAMPERING OFFSETS FOR TOTAL CRANKCASE EMISSIONS
FOR LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES
AT VARIOUS MILEAGE INTERVALS

Model Years	Tampering Offset (Grams/Mile)*						
	0K	25K	50K	75K	100K	125K	150K
Pre-1968	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1968-1980	0.000	0.024	0.049	0.073	0.098	0.122	0.127
1981+	0.019	0.020	0.021	0.022	0.023	0.025	0.025

* Based on averages of 6.88 trips per day and 25.05 miles per day.

DATE : JUNE 30, 1995

TABLE 4.2B.2

TAMPERING OFFSETS FOR TOTAL CRANKCASE EMISSIONS
FOR HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES
AT VARIOUS MILEAGE INTERVALS

Model Years	Tampering Offset (Grams/Mile)*						
	0K	25K	50K	75K	100K	125K	150K
Pre-1968	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1968-1980	0.000	0.024	0.049	0.073	0.098	0.122	0.127
1981+	0.019	0.020	0.021	0.022	0.023	0.025	0.025

* Based on averages of 6.88 trips per day and 25.05 miles per day.

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TABLE 4.2C
 RUNNING LOSS EMISSIONS FOR
 HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Fuel RVP (psi)	Emission Rate (Grams/Mile)											
		80.0F			87.0F			95.0F			105.0F		
		7.1 mph	19.6 mph	47.9 mph	7.1 mph	19.6 mph	47.9 mph	7.1 mph	19.6 mph	47.9 mph	7.1 mph	19.6 mph	47.9 mph
VEHICLES WITH OPERATING EVAPORATIVE SYSTEMS*													
Pre-1985	7.0	0.34	0.13	0.02	0.42	0.15	0.02	0.77	0.22	0.02	1.50	0.37	0.02
	9.0	0.62	0.18	0.02	1.06	0.27	0.02	2.72	0.52	0.02	8.69	1.60	0.02
	10.4	1.23	0.31	0.02	3.02	0.58	0.02	7.77	1.44	0.02	14.43	2.64	0.03
	11.7	3.10	0.59	0.02	7.23	1.33	0.03	12.51	2.29	0.04	19.35	3.46	0.04
1985+	7.0	0.07	0.03	0.00	0.08	0.03	0.00	0.15	0.04	0.00	0.30	0.07	0.00
	9.0	0.12	0.04	0.00	0.21	0.05	0.00	0.54	0.10	0.00	1.74	0.32	0.00
	10.4	0.25	0.06	0.00	0.60	0.12	0.00	1.55	0.29	0.00	2.89	0.53	0.01
	11.7	0.62	0.12	0.00	1.45	0.27	0.01	2.50	0.46	0.01	3.87	0.69	0.01
VEHICLES FAILING EITHER PURGE OR PRESSURE TEST													
Pre-1985	7.0	1.18	0.43	0.17	2.17	0.79	0.32	5.40	1.96	0.80	10.08	3.65	1.49
	9.0	4.77	1.73	0.71	7.87	2.85	1.17	12.79	4.63	1.90	25.81	9.35	3.83
	10.4	8.56	3.10	1.27	13.36	4.84	1.98	23.71	8.59	3.51	38.29	13.87	5.67
	11.7	13.62	4.93	2.02	22.65	8.20	3.36	34.05	12.34	5.05	50.07	18.14	7.42
1985+	7.0	1.00	0.36	0.15	1.69	0.61	0.25	3.78	1.37	0.56	7.05	2.55	1.05
	9.0	4.05	1.47	0.60	6.14	2.22	0.91	8.96	3.24	1.33	18.07	6.54	2.68
	10.4	7.27	2.63	1.08	10.42	3.77	1.54	16.59	6.01	2.46	26.80	9.71	3.97
	11.7	11.58	4.19	1.72	17.67	6.40	2.62	23.84	8.63	3.53	35.05	12.70	5.20

* Vehicles with measurable purge capacity and no major vapor leaks in their fuel systems.

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TABLE 4.2D

REFUELING EMISSIONS* FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Fuel Economy (miles/gal)	Uncontrolled (grams/mile)
Pre-1970	7.76	0.496
1970-1972	7.88	0.489
1973	7.90	0.487
1974	8.06	0.478
1975	8.22	0.468
1976	8.46	0.455
1977	8.68	0.444
1978	8.87	0.434
1979	9.01	0.427
1980	9.56	0.403
1981	9.73	0.396
1982	10.07	0.382
1983	10.13	0.380
1984	10.15	0.379
1985	10.05	0.383
1986	10.22	0.377
1987	10.25	0.376
1988-1989	10.27	0.375
1990	10.20	0.377
1991	10.48	0.367
1992	10.49	0.367
1993	10.50	0.367
1994	10.51	0.366
1995-1996	10.52	0.366
1997+	10.53	0.366

* Refueling Emissions (g/mi) = [Displacement (g/gal)
+ Spillage (g/gal)] / Fuel Economy (mi/gal).

Fuel volatility of 9.0 RVP is assumed.
The algorithm for Onboard effects was taken from MOBILE5b
and reflects the phase-in included in the Final Rule.

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TABLE 4.4

REGISTRATION MIX AND
MILEAGE ACCUMULATION RATES FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Year Index**	July 1 Registration Mix*	Mileage Accumulation Rate (per vehicle*)	Jan 1 Registration Mix	Jan 1 Mileage Accumulation Rate*** (fleet)	Jan 1 Mileage Accumulation (fleet)
1	0.023	17251.	0.000	0.	0.
2	0.047	16185.	0.048	17251.	8626.
3	0.047	15185.	0.048	16185.	25344.
4	0.047	14246.	0.048	15185.	41029.
5	0.047	13365.	0.048	14246.	55744.
6	0.038	12539.	0.039	13365.	69550.
7	0.033	11764.	0.034	12539.	82501.
8	0.021	11037.	0.021	11764.	94653.
9	0.026	10355.	0.027	11037.	106053.
10	0.029	9715.	0.030	10355.	116750.
11	0.034	9114.	0.035	9715.	126785.
12	0.064	8551.	0.065	9114.	136199.
13	0.054	8022.	0.055	8551.	145032.
14	0.058	7526.	0.059	8022.	153318.
15	0.051	7061.	0.052	7526.	161092.
16	0.038	6625.	0.039	7061.	168386.
17	0.043	6215.	0.044	6625.	175229.
18	0.041	5831.	0.042	6215.	181649.
19	0.035	5471.	0.036	5831.	187672.
20	0.029	5132.	0.030	5471.	193323.
21	0.021	4815.	0.021	5132.	198624.
22	0.022	4517.	0.022	4815.	203598.
23	0.022	4238.	0.022	4517.	208264.
24	0.014	3976.	0.014	4238.	212641.
25+	0.117	3730.	0.120	3976.	216748.

* Default information that may be altered by the MOBILE5a user with information about the local area.

** The indices refer to the most recent model year vehicles in any given calendar year. Index 1 references the newest model year vehicles and index 25+ references the oldest model year vehicles.

*** Sales weighted fleet mileage accumulation adjusted to January 1, where: $JMAR(1) = 0$ and,
 $JMAR(MYI) = MAR(MYI-1)$, $MYI = 2, \dots, 25+$.

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TABLE 4.5

EXAMPLE TRAVEL WEIGHTING FRACTION CALCULATION FOR
HEAVY DUTY GASOLINE POWERED VEHICLES
JANUARY 1, 1995

Model Years	(A) HDGV Fleet Registration	(B) Sales Fraction	(C=A*B/DAF) HDGV Registration (A*B)	(D) Annual Mileage Accrual Rate	(C*D/TFNORM) Travel Fractions (C*D)
1995	0.000	1.000	0.000	0.000	0.0
1994	0.047	1.000	0.047	0.048	17251.
1993	0.047	1.000	0.047	0.048	16185.
1992	0.047	1.000	0.047	0.048	15185.
1991	0.047	1.000	0.047	0.048	14246.
1990	0.038	1.000	0.038	0.039	13365.
1989	0.033	1.000	0.033	0.034	12539.
1988	0.021	1.000	0.021	0.021	11764.
1987	0.026	1.000	0.026	0.027	11037.
1986	0.029	1.000	0.029	0.030	10355.
1985	0.034	1.000	0.034	0.035	9715.
1984	0.064	1.000	0.064	0.065	9114.
1983	0.054	1.000	0.054	0.055	8551.
1982	0.058	1.000	0.058	0.059	8022.
1981	0.051	1.000	0.051	0.052	7526.
1980	0.038	1.000	0.038	0.039	7061.
1979	0.043	1.000	0.043	0.044	6625.
1978	0.041	1.000	0.041	0.042	6215.
1977	0.035	1.000	0.035	0.036	5831.
1976	0.029	1.000	0.029	0.030	5471.
1975	0.021	1.000	0.021	0.021	5132.
1974	0.022	1.000	0.022	0.022	4815.
1973	0.022	1.000	0.022	0.022	4517.
1972	0.014	1.000	0.014	0.014	4238.
1971-	0.117	1.000	0.117	0.120	3976.
			DAF: $\overline{0.978}$		TFNORM: $\overline{9144.7}$

WHERE :

- A = July 1 registration mix from Table 4.4,
- B = Gasoline fleet sales fractions,
- D = Sales weighted fleet mileage accumulation rate from Table 4.4.

For the first model year (A*B) must be divided by 3 in order to properly adjust registration from July 1 to January 1.

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TABLE 4.6

SPEED CORRECTION FACTOR COEFFICIENTS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

$$* \text{ SCF}(s) = \text{EXP}(A + B*s + C*s**2), \text{ HC \& CO}$$

$$= A + B*s + C*s**2, \text{ NOx}$$

Pol	Model Years	Coefficients		
		A	B	C
HC	All	1.60800	-0.09700	0.00083
CO	All	1.52000	-0.09800	0.00110
NOx	All	0.82400	0.00880	0.00000

* WHERE: s = average speed (mph).

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TABLE 4.7A

LOW (< 75F) TEMPERATURE CORRECTION FACTOR COEFFICIENTS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

$$* \text{TCF} = \text{EXP} [\text{TC} * (\text{T} - 75.0)]$$

Pollutant	Model Years	TC
HC	Pre-1970	-0.58903E-02
	1970-1973	-0.73870E-02
	1974-1978	-0.49759E-02
	1979-1983	-0.28549E-02
	1984	-0.74107E-02
	1985+	-0.92859E-02
CO	Pre-1970	-0.20576E-02
	1970-1973	-0.45541E-02
	1974-1978	-0.42899E-02
	1979-1983	-0.13085E-02
	1984	-0.77117E-02
	1985+	-0.60195E-02
NOx	Pre-1970	-0.64315E-02
	1970-1973	-0.55456E-02
	1974-1978	-0.13969E-02
	1979-1983	-0.46352E-03
	1984	-0.57524E-02
	1985+	-0.19733E-02

* WHERE :

TCF = Low temperature correction factor for appropriate
pollutant, ambient temperature (< 75F), and model year,
T = Ambient temperature (Fahrenheit),
TC = Low temperature correction factor coefficient for
appropriate pollutant, and model year.

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TABLE 4.7B

HIGH (> 75F) TEMPERATURE CORRECTION FACTOR COEFFICIENTS
AND FUEL RVP CORRECTION FACTORS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

$$\begin{aligned} * \text{TCF} &= \text{EXP} [\text{TC} * (\text{T} - 75.0)], \text{ Pre-1985} \\ \text{TRCF} &= \text{EXP} [\text{RC} * (\text{RVP} - 9.0) + \text{TC} * (\text{T} - 75.0) \\ &\quad + \text{TRC} * (\text{RVP} - 9.0) * (\text{T} - 75.0)], \text{ 1985} \end{aligned}$$

Pol	Model Years	Parameter	Coefficient
HC	Pre-1970	TC	0.13458E-02
	1970-1973		0.52317E-02
	1974-1978		0.54651E-02
	1979-1983		0.10082E-01
	1984		0.20546E-01
	1985+		RC
		TC	0.48358E-02
		TRC	0.00000E+00
CO	Pre-1970	TC	0.81720E-02
	1970-1973		0.20268E-01
	1974-1978		0.24127E-01
	1979-1983		0.22061E-01
	1984		0.27019E-01
	1985+		RC
		TC	0.14943E-01
		TRC	0.00000E+00
NOx	Pre-1970	TC	-0.83986E-02
	1970-1973		-0.86880E-02
	1974-1978		-0.18079E-01
	1979-1983		-0.74889E-02
	1984		-0.21593E-01
	1985+		RC
		TC	0.00000E+00
		TRC	0.00000E+00

* WHERE :

TCF = High temperature correction factor for appropriate pollutant, ambient temperature, and model year,
T = Ambient temperature (Fahrenheit),
TC = High temperature correction factor coefficient for appropriate pollutant, temperature, and model year,
TRCF = High temperature and fuel RVP correction factor for appropriate pollutant, ambient temperature, fuel RVP, and model year,
RC = Fuel RVP correction factor coefficient for appropriate pollutant, fuel RVP, and model year,
RVP = Fuel volatility in psi,
TRC = Combined temperature and fuel RVP correction factor coefficient for appropriate pollutant, ambient temperature, fuel RVP, and model year.

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TABLE 4.9A

TAMPERING AND MISFUELING RATES FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	System	Zero Mile Level	Det. Rate 1	Det. Rate 2	50,000 Mile Level	100,000 Mile Level
NON-I/M AREA						
All	Air Pump Disablement	0.0320	0.07670	0.01693	0.416	0.500
	Catalyst Removal	0.0785	0.04440	0.04356	0.301	0.518
	EGR System Disabled	-0.2435	0.11980	0.00085	0.356	0.360
	Filler Neck Damaged	0.1519	0.02970	0.04966	0.300	0.549
	Fuel Tank Misfueled	0.0000	0.00000	0.00000	0.000	0.000
	Total Misfueled	0.1519	0.02970	0.04966	0.300	0.549
	PCV System Disabled	0.0000	0.00730	0.00730	0.036	0.073
	Cannister Disconnect	-0.0195	0.04380	0.01678	0.199	0.283
	Both Cannister & Cap	-0.1849	0.08390	0.01515	0.235	0.310
WITH I/M AREA						
All	Air Pump Disablement	0.0615	0.03040	0.02931	0.214	0.360
	Catalyst Removal	0.1037	0.02030	0.02030	0.205	0.307
	EGR System Disabled	0.0808	0.01140	0.01140	0.138	0.195
	Filler Neck Damaged	0.1376	0.02100	0.02100	0.243	0.348
	Fuel Tank Misfueled	-0.0885	0.01780	0.01780	0.000	0.089
	Total Misfueled	0.0491	0.03880	0.03880	0.243	0.437
	PCV System Disabled	-0.0156	0.00400	0.01243	0.004	0.067
	Cannister Disconnect	0.0695	0.00930	0.00930	0.116	0.162
	Both Cannister & Cap	0.0471	0.01500	0.01500	0.122	0.197

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TABLE 4.9B

EXCESS EMISSIONS
DUE TO TAMPERING AND/OR MISFUELING FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Type of Tampering	Emission Control System	Pollutant	Excess Emissions (g/mi)			
			FTP	Bag 1	Bag 2	Bag 3
Air Pump Disablement	Oxidation	HC	1.37	1.80	1.37	1.04
		CO	30.61	34.67	33.90	21.28
	3way/Oxidation 3way	HC	0.85	1.36	0.76	0.61
		CO	21.02	31.80	18.21	18.25
Catalyst Removal	Oxidation	HC	3.05	2.31	3.40	2.95
		CO	28.01	41.40	28.97	16.06
	3way/Oxidation 3way	HC	2.04	1.80	2.25	1.81
		CO	13.74	16.32	14.11	11.07
NOx		1.52	1.49	1.36	1.83	
Total Misfueled	Oxidation	HC	2.47	2.30	2.57	2.40
		CO	20.96	46.50	13.13	16.62
	3way/Oxidation 3way	HC	1.44	1.42	1.56	1.21
		CO	6.57	8.08	6.60	5.37
NOx		0.57	0.64	0.45	0.74	
EGR System Disabled		NOx				
		Pre-1990	1.21	1.40	0.96	1.54
		1990+	3.31	3.82	2.63	4.21
EGR System Disabled and Catalyst Removal		NOx	3.39	3.02	3.46	3.55
EGR System Disabled and Total Misfueled		NOx	1.99	2.12	1.85	2.16

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TABLE 4.9C

EXCESS CRANKCASE EMISSIONS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Excess Crankcase (Gm/Mile)
PCV System Disabled	
1964-1980	1.34
1981+	1.29

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TABLE 4.9D

RUNNING LOSS EMISSION RATE FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

MODEL YEARS 1985-2020

Fuel RVP psi	Ambient Temp F	Trip Length (duration)					
		> 0 & ≤10min	> 10 & ≤20min	> 20 & ≤30min	> 30 & ≤40min	> 40 & ≤50min	>50min
SPEED 7.1 MPH							
7.0	80.0	0.30	0.30	0.31	0.32	0.34	0.40
	87.0	0.32	0.36	0.36	0.39	0.42	0.52
	95.0	0.34	0.44	0.54	0.71	0.83	1.14
	105.0	0.37	0.61	0.95	1.40	1.80	2.38
9.0	80.0	0.33	0.41	0.48	0.59	0.66	0.86
	87.0	0.35	0.52	0.73	0.99	1.23	1.61
	95.0	0.61	1.01	1.48	2.46	3.38	4.50
	105.0	0.83	1.93	4.58	8.60	12.07	14.73
10.4	80.0	0.36	0.56	0.81	1.14	1.44	1.91
	87.0	0.62	1.05	1.63	2.77	3.81	5.01
	95.0	0.79	1.79	4.10	7.66	10.73	13.15
	105.0	1.05	2.86	7.81	15.09	20.24	24.26
11.7	80.0	0.62	1.06	1.67	2.84	3.92	5.16
	87.0	0.77	1.70	3.81	7.07	9.91	12.24
	95.0	0.97	2.53	6.66	12.76	17.65	21.12
	105.0	1.26	3.74	10.94	20.17	27.34	32.36
SPEED 19.6 MPH							
7.0	80.0	0.09	0.11	0.12	0.12	0.13	0.15
	87.0	0.09	0.13	0.13	0.14	0.15	0.18
	95.0	0.10	0.14	0.15	0.20	0.23	0.32
	105.0	0.11	0.18	0.20	0.31	0.41	0.61
9.0	80.0	0.10	0.13	0.14	0.17	0.19	0.24
	87.0	0.10	0.16	0.17	0.23	0.29	0.41
	95.0	0.14	0.30	0.35	0.51	0.61	0.77
	105.0	0.15	0.37	0.63	1.46	2.09	2.88
10.4	80.0	0.11	0.16	0.18	0.26	0.34	0.49
	87.0	0.14	0.31	0.37	0.57	0.69	0.88
	95.0	0.15	0.36	0.59	1.32	1.87	2.56
	105.0	0.16	0.45	0.98	2.56	3.46	4.81
11.7	80.0	0.14	0.31	0.37	0.57	0.70	0.91
	87.0	0.14	0.35	0.56	1.22	1.71	2.36
	95.0	0.16	0.42	0.84	2.15	3.05	4.18
	105.0	0.18	0.53	1.33	3.26	4.55	6.35
SPEED 47.9 MPH							
7.0	80.0	0.02	0.02	0.02	0.02	0.02	0.02
	87.0	0.02	0.02	0.02	0.02	0.02	0.02
	95.0	0.02	0.02	0.02	0.02	0.02	0.02
	105.0	0.06	0.02	0.02	0.02	0.02	0.02
9.0	80.0	0.02	0.02	0.02	0.02	0.02	0.02
	87.0	0.02	0.02	0.02	0.02	0.02	0.02
	95.0	0.02	0.02	0.02	0.02	0.02	0.02
	105.0	0.09	0.02	0.02	0.02	0.02	0.02
10.4	80.0	0.02	0.02	0.02	0.02	0.02	0.02
	87.0	0.02	0.02	0.02	0.02	0.02	0.02
	95.0	0.08	0.02	0.02	0.02	0.02	0.02
	105.0	0.09	0.03	0.03	0.03	0.03	0.03
11.7	80.0	0.02	0.02	0.02	0.02	0.02	0.02
	87.0	0.05	0.03	0.03	0.03	0.03	0.03
	95.0	0.09	0.05	0.04	0.03	0.03	0.03
	105.0	0.09	0.05	0.04	0.03	0.03	0.03

TABLE 4.9E

RUNNING LOSS EMISSION RATE FOR
PRESSURE/PURGE TEST FAILED VEHICLES

Fuel RVP psi	Ambient Temp F	Trip Length (duration)					
		> 0 & ≤10min	> 10 & ≤20min	> 20 & ≤30min	> 30 & ≤40min	> 40 & ≤50min	>50min
7.0	80.0	1.08	4.91	5.20	5.20	5.20	5.20
	87.0	1.63	6.85	10.47	10.47	13.18	11.14
	95.0	2.34	9.35	17.20	27.99	36.95	47.17
	105.0	3.36	15.55	30.37	51.83	70.03	93.51
9.0	80.0	2.20	8.85	15.88	24.45	32.34	40.21
	87.0	2.88	11.24	22.32	41.86	55.05	74.61
	95.0	3.88	19.21	38.05	65.68	89.90	120.26
	105.0	6.48	34.29	72.58	134.85	188.43	251.53
10.4	80.0	3.03	11.76	23.74	45.69	60.06	82.22
	87.0	3.99	19.84	39.52	68.66	94.18	126.01
	95.0	6.05	31.82	66.96	123.65	172.52	230.39
	105.0	8.99	48.78	105.72	201.18	282.84	377.19
11.7	80.0	4.04	20.13	40.19	70.04	96.17	128.70
	87.0	5.84	30.58	64.14	118.01	164.53	219.78
	95.0	8.13	43.83	94.44	178.65	250.83	334.66
	105.0	11.38	62.53	137.11	263.89	372.01	495.78

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TABLE 4.9F

TECHNOLOGY GROUP FRACTIONS
FOR RESTING LOSS HC BY MODEL YEAR FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

MODEL YEAR	OPEN BOTTOM CANISTER	CLOSED BOTTOM CANISTER
Pre-1981	1.000	0.000
1981	1.000	0.000
1982	1.000	0.000
1983	1.000	0.000
1984	1.000	0.000
1985	0.000	1.000
1986	0.000	1.000
1987	0.000	1.000
1988	0.000	1.000
1989	0.000	1.000
1990	0.000	1.000
1991	0.000	1.000
1992+	0.000	1.000

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TABLE 4.9G.1

HOT SOAK EMISSION RATES FOR
LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

AMBIENT TEMPERATURE 82F

MODEL YEAR	AT 9.0 RVP			AT 11.5 RVP		
	PASS	FAILED PURGE	FAILED PRESSURE	PASS	FAILED PURGE	FAILED PRESSURE
Pre -1985	18.08	18.08	18.08	27.97	27.97	27.97
1985-2020	1.69	9.10	9.21	4.41	27.64	27.97

DIURNAL EMISSION RATES FOR
LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

MINIMUM TEMPERATURE 60F, MAXIMUM 84F

MODEL YEAR	AT 9.0 RVP			AT 11.5 RVP		
	PASS	FAILED PURGE	FAILED PRESSURE	PASS	FAILED PURGE	FAILED PRESSURE
Pre -1985	50.52	50.52	50.52	86.08	86.08	86.08

DATE : JUNE 30, 1995

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TABLE 4.9G.2

HOT SOAK EMISSION RATES FOR
HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

AMBIENT TEMPERATURE 82F

MODEL YEAR	AT 9.0 RVP			AT 11.5 RVP		
	PASS	FAILED PURGE	FAILED PRESSURE	PASS	FAILED PURGE	FAILED PRESSURE
Pre -1985	23.50	23.50	23.50	36.36	36.36	36.36
1985-2020	2.20	11.83	11.97	5.73	35.93	36.36

DIURNAL EMISSION RATES FOR
HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

MINIMUM TEMPERATURE 60F, MAXIMUM 84F

MODEL YEAR	AT 9.0 RVP			AT 11.5 RVP		
	PASS	FAILED PURGE	FAILED PRESSURE	PASS	FAILED PURGE	FAILED PRESSURE
Pre -1985	65.68	65.68	65.68	111.90	111.90	111.90

DATE : JUNE 30, 1995

TABLE 4.10A.1

METHANE OFFSETS*
FOR LOW ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Methane Offsets (Grams/Mile)
Pre-1979	0.600
1979-1986	0.225
1987+	0.095

* Methane offsets are used to estimate nonmethane hydrocarbon emissions (NMHC), i.e., NMHC = Total HC - Methane Offset.

VOC/TOG CORRECTION FACTOR FOR
LIGHT DUTY GASOLINE POWERED VEHICLES

VOC/TOG = (Total HC - Methane offset)*FID + Methane offset.

* FID=SHRMKT(1)*CF +
SHRMKT(2)*(CF+0.074*OXYCNT(1)*100)+
SHRMKT(3)*(CF+0.062*OXYCNT(2)*100)

Model Years	TOG	VOG
Pre-2021	1.0516	1.0497

The correction factor is the same for Gasoline, Ether blend and Alcohol blend fueled vehicles in MOBILE5a

* WHERE:

FID -FID correction factor (TOG or VOC)
SHRMKT(i)-Market share for i=1-Gasoline,i=2-Ether blend,
i=3-Alcohol blend.
CF -Coefficients from the table above (TOG or VOC)
OXYCNT(j)-Oxygen content adjustment for j=1-Ether blend,
j=2-Alcohol blend.

DATE : JUNE 30, 1995

TABLE 4.10A.2

METHANE OFFSETS*
FOR HIGH ALTITUDE
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Methane Offsets (Grams/Mile)
Pre-1979	0.816
1979-1986	0.437
1987+	0.184

* Methane offsets are used to estimate nonmethane hydrocarbon emissions (NMHC), i.e., NMHC = Total HC - Methane Offset.

VOC/TOG CORRECTION FACTOR FOR
LIGHT DUTY GASOLINE POWERED VEHICLES

VOC/TOG = (Total HC - Methane offset)*FID + Methane offset.

* FID=SHRMKT(1)*CF +
SHRMKT(2)*(CF+0.074*OXYCNT(1)*100)+
SHRMKT(3)*(CF+0.062*OXYCNT(2)*100)

Model Years	TOG	VOG
Pre-2021	1.0516	1.0497

The correction factor is the same for Gasoline, Ether blend and Alcohol blend fueled vehicles in MOBILE5a

* WHERE:

FID -FID correction factor (TOG or VOC)
SHRMKT(i)-Market share for i=1-Gasoline,i=2-Ether blend,
i=3-Alcohol blend.
CF -Coefficients from the table above (TOG or VOC)
OXYCNT(j)-Oxygen content adjustment for j=1-Ether blend,
j=2-Alcohol blend.

DATE : JUNE 30, 1995

TABLE 4.10B

CONVERSION FACTORS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Conversion Factors*
Pre-1963	1.548
1963	1.536
1964	1.536
1965	1.527
1966	1.516
1967	1.518
1968	1.497
1969	1.479
1970	1.449
1971	1.449
1972	1.437
1973	1.419
1974	1.422
1975	1.313
1976	1.244
1977	1.073
1978	1.057
1979	1.022
1980	0.961
1981	0.935
1982	0.912
1983	0.884
1984	0.907
1985	0.896
1986	0.894
1987	0.897
1988	0.895
1989	0.894
1990	0.893
1991	0.893
1992	0.892
1993	0.891
1994	0.890
1995	0.889
1996	0.887
1997	0.886
1998+	0.885

* Convert from grams/brake-horsepower/hour
to grams/mile units.

DATE : JUNE 30, 1995 (Corrected 1/15/98)

TABLE 4.10C

PERCENT TECHNOLOGY DISTRIBUTIONS
 (EXHAUST AND EVAPORATIVE EMISSION SYSTEMS)
 FOR HEAVY DUTY GASOLINE POWERED VEHICLES

Model Years	Air Pump Only	Oxidation Catalyst	3Way Catalyst	EGR System	Air Pump & Oxidation or 3Way Catalyst	EGR System & 3Way Catalyst
Pre-1982	0.0	0.0	0.0	0.0	0.0	0.0
1982-1984	0.0	5.0	0.0	0.0	0.0	0.0
1985	0.0	5.0	0.0	95.0	0.0	0.0
1986	0.0	5.0	0.0	100.0	0.0	0.0
1987	7.0	15.0	15.0	100.0	30.0	15.0
1988-1989	7.0	25.0	15.0	100.0	30.0	15.0
1990+	7.0	30.0	25.0	100.0	30.0	25.0

Model Years	Evaporative Canister	PCV System
Pre-1968	0.0	0.0
1968-1984	0.0	100.0
1985+	100.0	100.0

DATE : JUNE 30, 1995

TABLE 4.10E

EVAPORATIVE TEST PROCEDURE
PHASE-IN PERCENTAGE

MODEL YEAR	% MEETING NEW TP REQUIREMENT
-----	-----
1996	20.0
1997	40.0
1998	90.0
1999	100.0

EVAPORATIVE TEST PROCEDURE
EMISSION REDUCTION PERCENTAGE

EMISSION SOURCE	PROBLEM FREE	PURGE FAILURE	PRESSURE FAILURE
-----	-----	-----	-----
Hot soak	50.0	30.0	30.0
Diurnal			
Full	50.0	0.0	0.0
Multiple 2-3	75.0	0.0	0.0
Multiple 4	40.0	0.0	0.0
Partial	50.0	0.0	0.0
Running Loss	80.0	30.0	30.0
Resting Loss	75.0	75.0	75.0

DATE : JUNE 30, 1995

TABLE 4.11A.1
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 TOTAL NONMETHANE HC

DATE : JUNE 30, 1995

January 1 of Calendar Year

1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	38.9	1962	38.9	1963	38.2	1964	38.2	1965	38.2	1966	38.2	1967	38.2	1968	32.5	1969	32.5	1970	23.4	1971	23.4	1972	23.4
1962	38.7	1963	38.1	1964	38.1	1965	38.1	1966	38.1	1967	38.1	1968	32.4	1969	32.4	1970	23.2	1971	23.2	1972	23.2	1973	23.2
1963	37.9	1964	37.9	1965	37.9	1966	37.9	1967	37.9	1968	32.2	1969	32.2	1970	23.0	1971	23.0	1972	23.0	1973	23.0	1974	20.1
1964	37.7	1965	37.7	1966	37.7	1967	37.7	1968	32.0	1969	32.0	1970	22.8	1971	22.8	1972	22.8	1973	22.8	1974	20.0	1975	18.8
1965	37.5	1966	37.5	1967	37.5	1968	31.8	1969	31.8	1970	22.6	1971	22.6	1972	22.6	1973	22.6	1974	19.8	1975	18.7	1976	17.8
1966	37.3	1967	37.3	1968	31.6	1969	31.6	1970	22.4	1971	22.4	1972	22.4	1973	22.4	1974	19.7	1975	18.5	1976	17.6	1977	15.8
1967	37.1	1968	31.4	1969	31.4	1970	22.1	1971	22.1	1972	22.1	1973	22.1	1974	19.5	1975	18.4	1976	17.5	1977	15.7	1978	15.7
1968	31.2	1969	31.2	1970	21.9	1971	21.9	1972	21.9	1973	21.9	1974	19.3	1975	18.2	1976	17.4	1977	15.6	1978	15.6	1979	12.1
1969	30.9	1970	21.6	1971	21.6	1972	21.6	1973	21.6	1974	19.2	1975	18.1	1976	17.2	1977	15.4	1978	15.4	1979	12.0	1980	11.6
1970	21.4	1971	21.4	1972	21.4	1973	21.4	1974	19.0	1975	17.9	1976	17.1	1977	15.3	1978	15.3	1979	11.8	1980	11.4	1981	11.1
1971	21.1	1972	21.1	1973	21.1	1974	18.8	1975	17.7	1976	16.9	1977	15.2	1978	15.2	1979	11.7	1980	11.3	1981	11.0	1982	11.0
1972	20.8	1973	20.8	1974	18.6	1975	17.5	1976	16.7	1977	15.0	1978	15.0	1979	11.6	1980	11.2	1981	10.8	1982	10.9	1983	10.9
1973	20.4	1974	18.4	1975	17.3	1976	16.5	1977	14.9	1978	14.9	1979	11.4	1980	11.0	1981	10.7	1982	10.8	1983	10.8	1984	10.7
1974	18.1	1975	17.1	1976	16.3	1977	14.7	1978	14.7	1979	11.3	1980	10.9	1981	10.6	1982	10.6	1983	10.6	1984	10.6	1985	4.5
1975	16.9	1976	16.1	1977	14.5	1978	14.5	1979	11.1	1980	10.7	1981	10.4	1982	10.5	1983	10.5	1984	10.5	1985	4.4	1986	4.1
1976	15.9	1977	14.3	1978	14.3	1979	10.9	1980	10.6	1981	10.3	1982	10.3	1983	10.3	1984	10.3	1985	4.2	1986	4.0	1987	3.4
1977	14.1	1978	14.1	1979	10.7	1980	10.4	1981	10.1	1982	10.1	1983	10.1	1984	10.1	1985	4.1	1986	3.8	1987	3.2	1988	3.2
1978	13.9	1979	10.5	1980	10.2	1981	9.9	1982	10.0	1983	10.0	1984	10.0	1985	3.9	1986	3.6	1987	3.0	1988	3.0	1989	3.0
1979	10.3	1980	10.0	1981	9.7	1982	9.8	1983	9.8	1984	9.8	1985	3.7	1986	3.4	1987	2.7	1988	2.8	1989	2.8	1990	2.8
1980	9.8	1981	9.6	1982	9.6	1983	9.6	1984	9.6	1985	3.7	1986	3.2	1987	2.5	1988	2.5	1989	2.5	1990	2.6	1991	2.6
1981	9.3	1982	9.4	1983	9.4	1984	9.4	1985	3.5	1986	3.2	1987	2.2	1988	2.2	1989	2.2	1990	2.3	1991	2.3	1992	2.3
1982	9.2	1983	9.2	1984	9.1	1985	3.3	1986	3.1	1987	2.2	1988	2.1	1989	2.1	1990	2.1	1991	2.1	1992	2.1	1993	2.1
1983	8.9	1984	8.9	1985	3.3	1986	3.0	1987	2.1	1988	2.1	1989	1.9	1990	1.9	1991	1.9	1992	1.9	1993	1.9	1994	1.9
1984	8.7	1985	3.2	1986	2.9	1987	1.9	1988	1.9	1989	1.9	1990	1.8	1991	1.8	1992	1.8	1993	1.8	1994	1.8	1995	1.8
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

60 TO 84F diurnal,

75F for hot soak and running loss emissions,

9.0 psi fuel RVP,

54.57% average in-use fuel tank level, including refueling emissions.

Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

Continued on the next page.

TABLE 4.11A.1 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 TOTAL NONMETHANE HC

1997		1998		1999		2000		2003		2005		2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	23.4	1974	20.3	1975	19.2	1976	18.2	1979	12.8	1981	11.9	1984	12.0	1986	5.5	1988	5.5	1991	5.5	1994	5.5	1996	5.4
1974	20.2	1975	19.0	1976	18.1	1977	16.2	1980	12.3	1982	11.9	1985	5.7	1987	5.3	1989	5.4	1992	5.5	1995	5.5	1997	5.3
1975	18.9	1976	18.0	1977	16.1	1978	16.1	1981	11.8	1983	11.8	1986	5.4	1988	5.3	1990	5.4	1993	5.4	1996	5.3	1998	4.9
1976	17.9	1977	16.0	1978	16.0	1979	12.5	1982	11.7	1984	11.7	1987	5.2	1989	5.2	1991	5.3	1994	5.3	1997	5.1	1999	4.8
1977	15.9	1978	15.9	1979	12.4	1980	12.0	1983	11.6	1985	5.5	1988	5.1	1990	5.2	1992	5.2	1995	5.2	1998	4.7	2000	4.7
1978	15.8	1979	12.3	1980	11.9	1981	11.5	1984	11.5	1986	5.1	1989	5.0	1991	5.1	1993	5.1	1996	5.0	1999	4.6	2001	4.6
1979	12.2	1980	11.8	1981	11.4	1982	11.5	1985	5.3	1987	4.8	1990	4.9	1992	4.9	1994	4.9	1997	4.8	2000	4.5	2002	4.5
1980	11.7	1981	11.3	1982	11.4	1983	11.4	1986	5.0	1988	4.8	1991	4.8	1993	4.8	1995	4.8	1998	4.4	2001	4.3	2003	4.3
1981	11.2	1982	11.2	1983	11.2	1984	11.2	1987	4.6	1989	4.6	1992	4.7	1994	4.7	1996	4.6	1999	4.2	2002	4.2	2004	4.2
1982	11.1	1983	11.1	1984	11.1	1985	5.0	1988	4.5	1990	4.6	1993	4.6	1995	4.6	1997	4.4	2000	4.1	2003	4.1	2005	4.1
1983	11.0	1984	11.0	1985	4.9	1986	4.6	1989	4.3	1991	4.4	1994	4.4	1996	4.3	1998	4.0	2001	3.9	2004	3.9	2006	3.9
1984	10.9	1985	4.8	1986	4.5	1987	4.2	1990	4.2	1992	4.2	1995	4.2	1997	4.1	1999	3.8	2002	3.8	2005	3.8	2007	3.8
1985	4.7	1986	4.4	1987	4.0	1988	4.0	1991	4.1	1993	4.1	1996	4.0	1998	3.7	2000	3.6	2003	3.6	2006	3.6	2008	3.6
1986	4.3	1987	3.8	1988	3.8	1989	3.8	1992	3.9	1994	3.9	1997	3.7	1999	3.4	2001	3.4	2004	3.4	2007	3.4	2009	3.4
1987	3.6	1988	3.7	1989	3.7	1990	3.7	1993	3.7	1995	3.7	1998	3.3	2000	3.3	2002	3.3	2005	3.3	2008	3.3	2010	3.3
1988	3.5	1989	3.5	1990	3.5	1991	3.5	1994	3.5	1996	3.4	1999	3.1	2001	3.1	2003	3.1	2006	3.1	2009	3.1	2011	3.1
1989	3.2	1990	3.3	1991	3.3	1992	3.3	1995	3.3	1997	3.1	2000	2.8	2002	2.8	2004	2.8	2007	2.8	2010	2.8	2012	2.8
1990	3.1	1991	3.1	1992	3.1	1993	3.1	1996	3.0	1998	2.7	2001	2.6	2003	2.6	2005	2.6	2008	2.6	2011	2.6	2013	2.6
1991	2.8	1992	2.8	1993	2.8	1994	2.8	1997	2.6	1999	2.4	2002	2.4	2004	2.4	2006	2.4	2009	2.4	2012	2.4	2014	2.4
1992	2.6	1993	2.6	1994	2.6	1995	2.6	1998	2.2	2000	2.1	2003	2.1	2005	2.1	2007	2.1	2010	2.1	2013	2.1	2015	2.1
1993	2.3	1994	2.3	1995	2.3	1996	2.2	1999	1.8	2001	1.8	2004	1.8	2006	1.8	2008	1.8	2011	1.8	2014	1.8	2016	1.8
1994	2.1	1995	2.1	1996	2.0	1997	1.9	2000	1.6	2002	1.6	2005	1.6	2007	1.6	2009	1.6	2012	1.6	2015	1.6	2017	1.6
1995	1.9	1996	1.9	1997	1.8	1998	1.6	2001	1.5	2003	1.5	2006	1.5	2008	1.5	2010	1.5	2013	1.5	2016	1.5	2018	1.5
1996	1.7	1997	1.6	1998	1.4	1999	1.4	2002	1.4	2004	1.4	2007	1.4	2009	1.4	2011	1.4	2014	1.4	2017	1.4	2019	1.4
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

60 TO 84F diurnal,

75F for hot soak and running loss emissions,

9.0 psi fuel RVP,

54.57% average in-use fuel tank level, including refueling emissions.

Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

TABLE 4.11B.1
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 CO

DATE : JUNE 30, 1995

1985		1986		1987		1988		1989		January 1 of Calendar Year 1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	373.1	1962	373.1	1963	365.4	1964	365.4	1965	365.4	1966	365.4	1967	365.4	1968	365.4	1969	365.4	1970	326.1	1971	326.1	1972	326.1
1962	370.7	1963	363.0	1964	363.0	1965	363.0	1966	363.0	1967	363.0	1968	363.0	1969	363.0	1970	323.1	1971	323.1	1972	323.1	1973	323.1
1963	360.5	1964	360.5	1965	360.5	1966	360.5	1967	360.5	1968	360.5	1969	360.5	1970	320.0	1971	320.0	1972	320.0	1973	320.0	1974	309.9
1964	357.8	1965	357.8	1966	357.8	1967	357.8	1968	357.8	1969	357.8	1970	316.6	1971	316.6	1972	316.6	1973	316.6	1974	306.7	1975	283.2
1965	354.9	1966	354.9	1967	354.9	1968	354.9	1969	354.9	1970	313.0	1971	313.0	1972	313.0	1973	313.0	1974	303.3	1975	280.1	1976	265.2
1966	351.9	1967	351.9	1968	351.9	1969	351.9	1970	309.2	1971	309.2	1972	309.2	1973	309.2	1974	299.7	1975	276.7	1976	262.1	1977	224.4
1967	348.6	1968	348.6	1969	348.6	1970	305.1	1971	305.1	1972	305.1	1973	305.1	1974	295.8	1975	273.2	1976	258.7	1977	221.5	1978	221.5
1968	345.1	1969	345.1	1970	300.8	1971	300.8	1972	300.8	1973	300.8	1974	291.7	1975	269.4	1976	255.1	1977	218.4	1978	218.4	1979	147.4
1969	341.4	1970	296.2	1971	296.2	1972	296.2	1973	296.2	1974	287.4	1975	265.4	1976	251.3	1977	215.1	1978	215.1	1979	144.2	1980	135.7
1970	291.2	1971	291.2	1972	291.2	1973	291.2	1974	282.7	1975	261.0	1976	247.2	1977	211.6	1978	211.6	1979	140.9	1980	132.6	1981	125.5
1971	286.0	1972	286.0	1973	286.0	1974	277.7	1975	256.5	1976	242.9	1977	207.9	1978	207.9	1979	137.3	1980	129.2	1981	122.3	1982	122.9
1972	280.4	1973	280.4	1974	272.4	1975	251.6	1976	238.2	1977	203.9	1978	203.9	1979	133.5	1980	125.6	1981	118.9	1982	119.5	1983	119.5
1973	274.4	1974	266.8	1975	246.3	1976	233.3	1977	199.7	1978	199.7	1979	129.4	1980	121.8	1981	115.3	1982	115.8	1983	115.8	1984	115.4
1974	260.8	1975	240.8	1976	228.0	1977	195.2	1978	195.2	1979	125.1	1980	117.7	1981	111.5	1982	112.0	1983	112.0	1984	111.5	1985	48.8
1975	234.9	1976	222.4	1977	190.4	1978	190.4	1979	120.5	1980	113.4	1981	107.4	1982	107.8	1983	107.8	1984	107.4	1985	47.9	1986	40.1
1976	216.5	1977	185.3	1978	185.3	1979	115.6	1980	108.8	1981	103.0	1982	103.4	1983	103.4	1984	103.0	1985	47.0	1986	39.3	1987	19.5
1977	179.8	1978	179.8	1979	110.4	1980	103.8	1981	98.3	1982	98.7	1983	98.7	1984	98.4	1985	46.1	1986	38.3	1987	18.8	1988	19.0
1978	174.0	1979	104.8	1980	98.6	1981	93.3	1982	93.7	1983	93.7	1984	93.4	1985	45.1	1986	37.3	1987	18.1	1988	18.2	1989	18.2
1979	98.8	1980	93.0	1981	88.0	1982	88.4	1983	88.4	1984	88.1	1985	44.0	1986	36.2	1987	17.3	1988	17.4	1989	17.4	1990	17.6
1980	87.0	1981	82.4	1982	82.7	1983	82.7	1984	82.4	1985	42.9	1986	35.1	1987	16.4	1988	16.5	1989	16.5	1990	16.7	1991	16.7
1981	76.4	1982	76.7	1983	76.7	1984	76.4	1985	41.7	1986	33.9	1987	15.5	1988	15.6	1989	15.6	1990	15.8	1991	15.7	1992	15.7
1982	70.2	1983	70.2	1984	70.0	1985	40.4	1986	32.6	1987	14.5	1988	14.6	1989	14.6	1990	14.8	1991	14.7	1992	14.7	1993	14.7
1983	63.4	1984	63.1	1985	39.0	1986	31.2	1987	13.4	1988	13.5	1989	13.5	1990	13.7	1991	13.6	1992	13.6	1993	13.6	1994	13.6
1984	55.9	1985	37.5	1986	29.7	1987	12.3	1988	12.4	1989	12.4	1990	12.5	1991	12.5	1992	12.5	1993	12.5	1994	12.5	1995	12.5
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

Continued on the next page.

TABLE 4.11B.1 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 CO

1997		1998		1999		2000		2003		January 1 of 2005		Calendar Year 2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	326.1	1974	315.7	1975	291.5	1976	276.0	1979	164.5	1981	146.6	1984	146.6	1986	48.1	1988	26.5	1991	26.7	1994	26.7	1996	26.7
1974	312.9	1975	288.9	1976	273.6	1977	234.2	1980	153.0	1982	145.5	1985	55.5	1987	26.0	1989	26.2	1992	26.5	1995	26.5	1997	26.5
1975	286.2	1976	271.0	1977	232.0	1978	232.0	1981	142.9	1983	143.5	1986	47.3	1988	25.9	1990	26.2	1993	26.2	1996	26.2	1998	26.1
1976	268.2	1977	229.6	1978	229.6	1979	158.1	1982	141.5	1984	140.9	1987	25.4	1989	25.6	1991	25.8	1994	25.8	1997	25.8	1999	25.8
1977	227.1	1978	227.1	1979	155.7	1980	146.5	1983	139.3	1985	54.3	1988	25.3	1990	25.6	1992	25.5	1995	25.5	1998	25.4	2000	25.4
1978	224.4	1979	153.1	1980	144.1	1981	136.4	1984	136.4	1986	46.0	1989	24.9	1991	25.1	1993	25.1	1996	25.1	1999	25.1	2001	25.1
1979	150.3	1980	141.5	1981	133.9	1982	134.5	1985	53.3	1987	24.3	1990	24.8	1992	24.7	1994	24.7	1997	24.7	2000	24.7	2002	24.7
1980	138.7	1981	131.3	1982	131.9	1983	131.9	1986	45.0	1988	24.1	1991	24.3	1993	24.3	1995	24.3	1998	24.3	2001	24.3	2003	24.3
1981	128.5	1982	129.1	1983	129.1	1984	128.5	1987	23.5	1989	23.7	1992	23.9	1994	23.9	1996	23.9	1999	23.8	2002	23.8	2004	23.8
1982	126.1	1983	126.1	1984	125.6	1985	51.6	1988	23.2	1990	23.5	1993	23.4	1995	23.4	1997	23.4	2000	23.4	2003	23.4	2005	23.4
1983	122.9	1984	122.4	1985	51.0	1986	43.2	1989	22.7	1991	22.9	1994	22.9	1996	22.9	1998	22.9	2001	22.9	2004	22.9	2006	22.9
1984	119.0	1985	50.3	1986	42.5	1987	22.0	1990	22.4	1992	22.4	1995	22.4	1997	22.4	1999	22.3	2002	22.3	2005	22.3	2007	22.3
1985	49.5	1986	41.8	1987	21.4	1988	21.6	1991	21.8	1993	21.8	1996	21.8	1998	21.8	2000	21.8	2003	21.8	2006	21.8	2008	21.8
1986	41.0	1987	20.9	1988	21.0	1989	21.0	1992	21.2	1994	21.2	1997	21.2	1999	21.2	2001	21.1	2004	21.1	2007	21.1	2009	21.1
1987	20.2	1988	20.4	1989	20.4	1990	20.6	1993	20.6	1995	20.6	1998	20.5	2000	20.5	2002	20.5	2005	20.5	2008	20.5	2010	20.5
1988	19.7	1989	19.7	1990	19.9	1991	19.9	1994	19.9	1996	19.9	1999	19.8	2001	19.8	2003	19.8	2006	19.8	2009	19.8	2011	19.8
1989	19.0	1990	19.2	1991	19.2	1992	19.2	1995	19.2	1997	19.2	2000	19.1	2002	19.1	2004	19.1	2007	19.1	2010	19.1	2012	19.1
1990	18.4	1991	18.4	1992	18.4	1993	18.4	1996	18.4	1998	18.3	2001	18.3	2003	18.3	2005	18.3	2008	18.3	2011	18.3	2013	18.3
1991	17.5	1992	17.5	1993	17.5	1994	17.5	1997	17.5	1999	17.5	2002	17.5	2004	17.5	2006	17.5	2009	17.5	2012	17.5	2014	17.5
1992	16.7	1993	16.7	1994	16.7	1995	16.7	1998	16.6	2000	16.6	2003	16.6	2005	16.6	2007	16.6	2010	16.6	2013	16.6	2015	16.6
1993	15.7	1994	15.7	1995	15.7	1996	15.7	1999	15.6	2001	15.6	2004	15.6	2006	15.6	2008	15.6	2011	15.6	2014	15.6	2016	15.6
1994	14.7	1995	14.7	1996	14.7	1997	14.7	2000	14.6	2002	14.6	2005	14.6	2007	14.6	2009	14.6	2012	14.6	2015	14.6	2017	14.6
1995	13.6	1996	13.6	1997	13.6	1998	13.6	2001	13.5	2003	13.5	2006	13.5	2008	13.5	2010	13.5	2013	13.5	2016	13.5	2018	13.5
1996	12.5	1997	12.5	1998	12.4	1999	12.4	2002	12.4	2004	12.4	2007	12.4	2009	12.4	2011	12.4	2014	12.4	2017	12.4	2019	12.4
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

TABLE 4.11C.1
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 NOx

DATE : JUNE 30, 1995

January 1 of Calendar Year

1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	9.4	1962	9.4	1963	9.2	1964	9.2	1965	9.2	1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.8	1971	9.8	1972	9.8
1962	9.4	1963	9.2	1964	9.2	1965	9.2	1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.8	1971	9.8	1972	9.8	1973	9.8
1963	9.2	1964	9.2	1965	9.2	1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.2	1971	9.8	1972	9.8	1973	9.8	1974	9.0
1964	9.2	1965	9.2	1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.2	1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.2
1965	9.2	1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.2	1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.9	1976	7.6
1966	9.2	1967	9.2	1968	9.2	1969	9.2	1970	9.2	1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.8	1976	8.1	1977	6.5
1967	9.2	1968	9.2	1969	9.2	1970	9.8	1971	9.8	1972	9.8	1973	9.8	1974	8.8	1975	8.0	1976	8.0	1977	7.5	1978	6.4
1968	9.2	1969	9.2	1970	9.8	1971	9.8	1972	9.8	1973	9.8	1974	8.7	1975	8.0	1976	7.5	1977	7.5	1978	6.4	1979	7.0
1969	9.2	1970	9.8	1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.7	1976	7.9	1977	7.4	1978	7.4	1979	6.3	1980	6.6
1970	9.8	1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.6	1976	7.9	1977	7.4	1978	7.4	1979	6.3	1980	6.3	1981	6.1
1971	9.8	1972	9.8	1973	9.8	1974	9.8	1975	8.5	1976	7.8	1977	7.3	1978	6.3	1979	6.3	1980	6.9	1981	6.5	1982	6.1
1972	9.8	1973	9.8	1974	8.5	1975	7.8	1976	7.3	1977	6.2	1978	6.2	1979	6.2	1980	6.8	1981	6.8	1982	6.5	1983	6.0
1973	9.8	1974	8.4	1975	7.7	1976	7.2	1977	6.2	1978	6.2	1979	6.2	1980	6.8	1981	6.4	1982	6.0	1983	6.0	1984	6.0
1974	8.3	1975	7.6	1976	7.1	1977	6.1	1978	6.1	1979	6.1	1980	6.7	1981	6.4	1982	6.0	1983	6.0	1984	6.0	1985	5.6
1975	7.5	1976	7.1	1977	6.1	1978	6.1	1979	6.1	1980	6.7	1981	6.3	1982	5.9	1983	5.9	1984	5.9	1985	5.9	1986	5.6
1976	7.0	1977	6.0	1978	6.0	1979	6.6	1980	6.6	1981	6.3	1982	5.9	1983	5.9	1984	5.9	1985	5.8	1986	5.5	1987	5.7
1977	5.9	1978	5.9	1979	6.6	1980	6.2	1981	6.2	1982	5.8	1983	5.8	1984	5.8	1985	5.8	1986	5.5	1987	5.5	1988	5.6
1978	5.9	1979	6.5	1980	6.1	1981	5.8	1982	5.8	1983	5.8	1984	5.8	1985	5.7	1986	5.5	1987	5.5	1988	5.6	1989	5.6
1979	6.4	1980	6.1	1981	5.7	1982	5.7	1983	5.7	1984	5.7	1985	5.7	1986	5.4	1987	5.4	1988	5.6	1989	5.6	1990	4.8
1980	6.0	1981	5.6	1982	5.6	1983	5.6	1984	5.6	1985	5.6	1986	5.4	1987	5.4	1988	5.5	1989	5.5	1990	5.5	1991	4.0
1981	5.6	1982	5.6	1983	5.6	1984	5.5	1985	5.4	1986	5.4	1987	5.3	1988	5.5	1989	5.5	1990	5.5	1991	4.7	1992	3.9
1982	5.5	1983	5.5	1984	5.5	1985	5.3	1986	5.3	1987	5.3	1988	5.4	1989	5.4	1990	5.4	1991	4.6	1992	3.8	1993	3.8
1983	5.4	1984	5.4	1985	5.3	1986	5.3	1987	5.3	1988	5.4	1989	5.4	1990	5.4	1991	4.5	1992	3.8	1993	3.8	1994	3.8
1984	5.3	1985	5.2	1986	5.2	1987	5.3	1988	5.3	1989	5.3	1990	5.4	1991	5.4	1992	4.5	1993	3.8	1994	3.8	1995	3.8
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:
 19.6 MPH, TEMP=75 Degrees F,
 Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

Continued on the next page.

TABLE 4.11C.1 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR LOW ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 NOx

1997		1998		1999		2000		2003		2005		2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	9.8	1974	9.0	1975	8.3	1976	7.7	1979	7.2	1981	6.4	1984	6.3	1986	5.8	1988	6.0	1991	4.6	1994	4.6	1996	4.6
1974	9.0	1975	8.2	1976	7.7	1977	6.6	1980	6.8	1982	6.3	1985	5.8	1987	6.0	1989	6.0	1992	4.6	1995	4.6	1997	4.6
1975	8.2	1976	7.7	1977	6.5	1978	6.5	1981	6.3	1983	6.3	1986	5.8	1988	6.0	1990	5.3	1993	4.5	1996	4.5	1998	3.8
1976	7.6	1977	6.5	1978	6.5	1979	7.1	1982	6.3	1984	6.3	1987	5.9	1989	5.9	1991	4.5	1994	4.5	1997	4.5	1999	3.8
1977	6.5	1978	6.5	1979	7.1	1980	6.8	1983	6.3	1985	5.8	1988	5.9	1990	5.2	1992	4.5	1995	4.5	1998	3.7	2000	3.7
1978	6.5	1979	7.1	1980	6.7	1981	6.2	1984	6.2	1986	5.8	1989	5.9	1991	4.5	1993	4.5	1996	4.5	1999	3.7	2001	3.7
1979	7.1	1980	6.7	1981	6.2	1982	6.2	1985	5.8	1987	5.9	1990	5.2	1992	4.5	1994	4.5	1997	4.5	2000	3.7	2002	3.7
1980	6.7	1981	6.2	1982	6.2	1983	6.2	1986	5.7	1988	5.9	1991	4.4	1993	4.4	1995	4.4	1998	3.7	2001	3.7	2003	3.7
1981	6.2	1982	6.2	1983	6.2	1984	6.1	1987	5.9	1989	5.9	1992	4.4	1994	4.4	1996	4.4	1999	3.6	2002	3.6	2004	3.6
1982	6.1	1983	6.1	1984	6.1	1985	5.7	1988	5.8	1990	5.1	1993	4.4	1995	4.4	1997	4.4	2000	3.6	2003	3.6	2005	3.6
1983	6.1	1984	6.1	1985	5.7	1986	5.7	1989	5.8	1991	4.3	1994	4.3	1996	4.3	1998	3.6	2001	3.6	2004	3.6	2006	3.6
1984	6.0	1985	5.7	1986	5.6	1987	5.8	1990	5.1	1992	4.3	1995	4.3	1997	4.3	1999	3.6	2002	3.6	2005	3.6	2007	3.6
1985	5.6	1986	5.6	1987	5.8	1988	5.8	1991	4.3	1993	4.3	1996	4.3	1998	3.5	2000	3.5	2003	3.5	2006	3.5	2008	3.5
1986	5.6	1987	5.7	1988	5.7	1989	5.7	1992	4.2	1994	4.2	1997	4.2	1999	3.5	2001	3.5	2004	3.5	2007	3.5	2009	3.5
1987	5.7	1988	5.7	1989	5.7	1990	5.0	1993	4.2	1995	4.2	1998	3.4	2000	3.4	2002	3.4	2005	3.4	2008	3.4	2010	3.4
1988	5.7	1989	5.7	1990	4.9	1991	4.2	1994	4.2	1996	4.2	1999	3.4	2001	3.4	2003	3.4	2006	3.4	2009	3.4	2011	3.4
1989	5.6	1990	4.9	1991	4.1	1992	4.1	1995	4.1	1997	4.1	2000	3.4	2002	3.4	2004	3.4	2007	3.4	2010	3.4	2012	3.4
1990	4.8	1991	4.1	1992	4.1	1993	4.1	1996	4.1	1998	3.3	2001	3.3	2003	3.3	2005	3.3	2008	3.3	2011	3.3	2013	3.3
1991	4.0	1992	4.0	1993	4.0	1994	4.0	1997	4.0	1999	3.3	2002	3.3	2004	3.3	2006	3.3	2009	3.3	2012	3.3	2014	3.3
1992	4.0	1993	4.0	1994	4.0	1995	4.0	1998	3.2	2000	3.2	2003	3.2	2005	3.2	2007	3.2	2010	3.2	2013	3.2	2015	3.2
1993	3.9	1994	3.9	1995	3.9	1996	3.9	1999	3.2	2001	3.2	2004	3.2	2006	3.2	2008	3.2	2011	3.2	2014	3.2	2016	3.2
1994	3.8	1995	3.8	1996	3.8	1997	3.8	2000	3.1	2002	3.1	2005	3.1	2007	3.1	2009	3.1	2012	3.1	2015	3.1	2017	3.1
1995	3.8	1996	3.8	1997	3.8	1998	3.0	2001	3.0	2003	3.0	2006	3.0	2008	3.0	2010	3.0	2013	3.0	2016	3.0	2018	3.0
1996	3.7	1997	3.7	1998	3.0	1999	3.0	2002	3.0	2004	3.0	2007	3.0	2009	3.0	2011	3.0	2014	3.0	2017	3.0	2019	3.0
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

Emissions are based on the January 1 mileage accumulation figures given in Table 1.4.4

TABLE 4.11A.2
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 TOTAL NONMETHANE HC

DATE : JUNE 30, 1995

January 1 of Calendar Year

1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	48.7	1962	48.7	1963	47.9	1964	47.9	1965	47.9	1966	47.9	1967	47.9	1968	40.5	1969	40.5	1970	27.8	1971	27.8	1972	27.8
1962	48.5	1963	47.7	1964	47.7	1965	47.7	1966	47.7	1967	47.7	1968	40.4	1969	40.4	1970	27.6	1971	27.6	1972	27.6	1973	27.6
1963	47.5	1964	47.5	1965	47.5	1966	47.5	1967	47.5	1968	40.2	1969	40.2	1970	27.4	1971	27.4	1972	27.4	1973	27.4	1974	24.5
1964	47.4	1965	47.4	1966	47.4	1967	47.4	1968	40.0	1969	40.0	1970	27.2	1971	27.2	1972	27.2	1973	27.2	1974	24.4	1975	22.9
1965	47.2	1966	47.2	1967	47.2	1968	39.8	1969	39.8	1970	27.0	1971	27.0	1972	27.0	1973	27.0	1974	24.2	1975	22.8	1976	21.7
1966	47.0	1967	47.0	1968	39.6	1969	39.6	1970	26.8	1971	26.8	1972	26.8	1973	26.8	1974	24.1	1975	22.6	1976	21.6	1977	19.3
1967	46.8	1968	39.4	1969	39.4	1970	26.6	1971	26.6	1972	26.6	1973	26.6	1974	23.9	1975	22.5	1976	21.5	1977	19.2	1978	19.2
1968	39.2	1969	39.2	1970	26.3	1971	26.3	1972	26.3	1973	26.3	1974	23.8	1975	22.4	1976	21.3	1977	19.1	1978	19.1	1979	14.1
1969	39.0	1970	26.1	1971	26.1	1972	26.1	1973	26.1	1974	23.6	1975	22.2	1976	21.2	1977	19.0	1978	19.0	1979	14.0	1980	13.5
1970	25.8	1971	25.8	1972	25.8	1973	25.8	1974	23.4	1975	22.0	1976	21.0	1977	18.8	1978	18.8	1979	13.9	1980	13.4	1981	13.0
1971	25.5	1972	25.5	1973	25.5	1974	23.2	1975	21.9	1976	20.9	1977	18.7	1978	18.7	1979	13.7	1980	13.3	1981	12.9	1982	12.9
1972	25.2	1973	25.2	1974	23.0	1975	21.7	1976	20.7	1977	18.5	1978	18.5	1979	13.6	1980	13.2	1981	12.7	1982	12.8	1983	12.8
1973	24.9	1974	22.8	1975	21.5	1976	20.5	1977	18.4	1978	18.4	1979	13.5	1980	13.0	1981	12.6	1982	12.7	1983	12.7	1984	12.7
1974	22.6	1975	21.3	1976	20.3	1977	18.2	1978	18.2	1979	13.3	1980	12.9	1981	12.5	1982	12.6	1983	12.6	1984	12.5	1985	5.4
1975	21.0	1976	20.1	1977	18.0	1978	18.0	1979	13.2	1980	12.8	1981	12.4	1982	12.4	1983	12.4	1984	12.4	1985	5.2	1986	4.8
1976	19.9	1977	17.9	1978	17.9	1979	13.0	1980	12.6	1981	12.2	1982	12.3	1983	12.3	1984	12.3	1985	5.0	1986	4.6	1987	4.1
1977	17.7	1978	17.7	1979	12.9	1980	12.4	1981	12.1	1982	12.1	1983	12.1	1984	12.1	1985	4.9	1986	4.5	1987	3.9	1988	3.9
1978	17.5	1979	12.7	1980	12.3	1981	11.9	1982	12.0	1983	12.0	1984	12.0	1985	4.7	1986	4.3	1987	3.7	1988	3.7	1989	3.7
1979	12.5	1980	12.1	1981	11.8	1982	11.8	1983	11.8	1984	11.8	1985	4.5	1986	4.1	1987	3.4	1988	3.4	1989	3.4	1990	3.5
1980	11.9	1981	11.6	1982	11.6	1983	11.6	1984	11.6	1985	4.5	1986	3.9	1987	3.1	1988	3.2	1989	3.2	1990	3.2	1991	3.2
1981	11.4	1982	11.4	1983	11.4	1984	11.4	1985	4.3	1986	3.9	1987	2.9	1988	2.9	1989	2.9	1990	2.9	1991	2.9	1992	2.9
1982	11.2	1983	11.2	1984	11.2	1985	4.2	1986	3.8	1987	2.9	1988	2.7	1989	2.7	1990	2.8	1991	2.8	1992	2.8	1993	2.8
1983	11.0	1984	11.0	1985	4.1	1986	3.7	1987	2.8	1988	2.8	1989	2.6	1990	2.6	1991	2.6	1992	2.6	1993	2.6	1994	2.6
1984	10.8	1985	4.1	1986	3.7	1987	2.7	1988	2.7	1989	2.7	1990	2.5	1991	2.5	1992	2.5	1993	2.5	1994	2.5	1995	2.5
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

60 TO 84F diurnal,

75F for hot soak and running loss emissions,

9.0 psi fuel RVP,

54.57% average in-use fuel tank level, including refueling emissions.

Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

Continued on the next page.

TABLE 4.11A.2 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 TOTAL NONMETHANE HC

1997		1998		1999		2000		2003		January 1 of Calendar Year 2005		2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	27.8	1974	24.7	1975	23.3	1976	22.2	1979	14.7	1981	13.7	1984	13.8	1986	6.2	1988	6.2	1991	6.3	1994	6.3	1996	6.2
1974	24.6	1975	23.2	1976	22.1	1977	19.7	1980	14.1	1982	13.7	1985	6.6	1987	6.1	1989	6.1	1992	6.2	1995	6.2	1997	6.0
1975	23.0	1976	22.0	1977	19.6	1978	19.6	1981	13.6	1983	13.6	1986	6.1	1988	6.0	1990	6.1	1993	6.1	1996	6.0	1998	5.6
1976	21.8	1977	19.5	1978	19.5	1979	14.5	1982	13.6	1984	13.6	1987	5.9	1989	5.9	1991	6.0	1994	6.0	1997	5.8	1999	5.4
1977	19.4	1978	19.4	1979	14.4	1980	13.9	1983	13.5	1985	6.3	1988	5.8	1990	5.9	1992	5.9	1995	5.9	1998	5.4	2000	5.3
1978	19.3	1979	14.3	1980	13.8	1981	13.3	1984	13.4	1986	5.8	1989	5.7	1991	5.8	1993	5.8	1996	5.7	1999	5.2	2001	5.2
1979	14.2	1980	13.7	1981	13.2	1982	13.3	1985	6.2	1987	5.5	1990	5.7	1992	5.7	1994	5.7	1997	5.4	2000	5.1	2002	5.1
1980	13.6	1981	13.2	1982	13.2	1983	13.2	1986	5.7	1988	5.5	1991	5.5	1993	5.5	1995	5.5	1998	5.0	2001	5.0	2003	5.0
1981	13.1	1982	13.1	1983	13.1	1984	13.1	1987	5.3	1989	5.3	1992	5.4	1994	5.4	1996	5.3	1999	4.9	2002	4.9	2004	4.9
1982	13.0	1983	13.0	1984	13.0	1985	5.9	1988	5.2	1990	5.3	1993	5.3	1995	5.3	1997	5.1	2000	4.7	2003	4.7	2005	4.7
1983	12.9	1984	12.9	1985	5.8	1986	5.3	1989	5.1	1991	5.1	1994	5.1	1996	5.0	1998	4.6	2001	4.6	2004	4.6	2006	4.6
1984	12.8	1985	5.6	1986	5.2	1987	4.9	1990	5.0	1992	5.0	1995	5.0	1997	4.7	1999	4.4	2002	4.4	2005	4.4	2007	4.4
1985	5.5	1986	5.1	1987	4.7	1988	4.7	1991	4.8	1993	4.8	1996	4.7	1998	4.3	2000	4.2	2003	4.2	2006	4.2	2008	4.2
1986	4.9	1987	4.5	1988	4.5	1989	4.5	1992	4.6	1994	4.6	1997	4.4	1999	4.1	2001	4.1	2004	4.1	2007	4.1	2009	4.1
1987	4.3	1988	4.4	1989	4.4	1990	4.4	1993	4.4	1995	4.4	1998	3.9	2000	3.9	2002	3.9	2005	3.9	2008	3.9	2010	3.9
1988	4.1	1989	4.1	1990	4.2	1991	4.2	1994	4.2	1996	4.1	1999	3.7	2001	3.7	2003	3.7	2006	3.7	2009	3.7	2011	3.7
1989	3.9	1990	4.0	1991	4.0	1992	4.0	1995	4.0	1997	3.8	2000	3.4	2002	3.4	2004	3.4	2007	3.4	2010	3.4	2012	3.4
1990	3.7	1991	3.7	1992	3.7	1993	3.7	1996	3.6	1998	3.3	2001	3.2	2003	3.2	2005	3.2	2008	3.2	2011	3.2	2013	3.2
1991	3.5	1992	3.5	1993	3.5	1994	3.5	1997	3.3	1999	3.0	2002	3.0	2004	3.0	2006	3.0	2009	3.0	2012	3.0	2014	3.0
1992	3.2	1993	3.2	1994	3.2	1995	3.2	1998	2.8	2000	2.7	2003	2.7	2005	2.7	2007	2.7	2010	2.7	2013	2.7	2015	2.7
1993	2.9	1994	2.9	1995	2.9	1996	2.8	1999	2.4	2001	2.4	2004	2.4	2006	2.4	2008	2.4	2011	2.4	2014	2.4	2016	2.4
1994	2.8	1995	2.8	1996	2.7	1997	2.6	2000	2.2	2002	2.2	2005	2.2	2007	2.2	2009	2.2	2012	2.2	2015	2.2	2017	2.2
1995	2.6	1996	2.5	1997	2.4	1998	2.2	2001	2.1	2003	2.1	2006	2.1	2008	2.1	2010	2.1	2013	2.1	2016	2.1	2018	2.1
1996	2.4	1997	2.3	1998	2.1	1999	2.0	2002	2.0	2004	2.0	2007	2.0	2009	2.0	2011	2.0	2014	2.0	2017	2.0	2019	2.0
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

60 TO 84F diurnal,

75F for hot soak and running loss emissions,

9.0 psi fuel RVP,

54.57% average in-use fuel tank level, including refueling emissions.

Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

TABLE 4.11B.2
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 CO

DATE : JUNE 30, 1995

January 1 of Calendar Year

1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	567.8	1962	567.8	1963	556.0	1964	556.0	1965	556.0	1966	556.0	1967	556.0	1968	556.0	1969	556.0	1970	460.8	1971	460.8	1972	460.8
1962	565.4	1963	553.7	1964	553.7	1965	553.7	1966	553.7	1967	553.7	1968	553.7	1969	553.7	1970	457.9	1971	457.9	1972	457.9	1973	457.9
1963	551.1	1964	551.1	1965	551.1	1966	551.1	1967	551.1	1968	551.1	1969	551.1	1970	454.7	1971	454.7	1972	454.7	1973	454.7	1974	443.0
1964	548.5	1965	548.5	1966	548.5	1967	548.5	1968	548.5	1969	548.5	1970	451.4	1971	451.4	1972	451.4	1973	451.4	1974	439.9	1975	406.2
1965	545.6	1966	545.6	1967	545.6	1968	545.6	1969	545.6	1970	447.8	1971	447.8	1972	447.8	1973	447.8	1974	436.5	1975	403.0	1976	381.7
1966	542.5	1967	542.5	1968	542.5	1969	542.5	1970	444.0	1971	444.0	1972	444.0	1973	444.0	1974	432.9	1975	399.7	1976	378.6	1977	324.1
1967	539.3	1968	539.3	1969	539.3	1970	439.9	1971	439.9	1972	439.9	1973	439.9	1974	429.0	1975	396.1	1976	375.2	1977	321.2	1978	321.2
1968	535.8	1969	535.8	1970	435.5	1971	435.5	1972	435.5	1973	435.5	1974	424.9	1975	392.3	1976	371.6	1977	318.1	1978	318.1	1979	193.7
1969	532.1	1970	430.9	1971	430.9	1972	430.9	1973	430.9	1974	420.5	1975	388.3	1976	367.8	1977	314.9	1978	314.9	1979	190.6	1980	179.3
1970	426.0	1971	426.0	1972	426.0	1973	426.0	1974	415.9	1975	384.0	1976	363.7	1977	311.4	1978	311.4	1979	187.2	1980	176.1	1981	166.8
1971	420.7	1972	420.7	1973	420.7	1974	410.9	1975	379.4	1976	359.4	1977	307.6	1978	307.6	1979	183.6	1980	172.8	1981	163.6	1982	164.3
1972	415.1	1973	415.1	1974	405.6	1975	374.5	1976	354.7	1977	303.7	1978	303.7	1979	179.8	1980	169.2	1981	160.2	1982	160.9	1983	160.9
1973	409.2	1974	399.9	1975	369.3	1976	349.8	1977	299.5	1978	299.5	1979	175.8	1980	165.4	1981	156.6	1982	157.3	1983	157.3	1984	156.7
1974	393.9	1975	363.7	1976	344.5	1977	294.9	1978	294.9	1979	171.5	1980	161.3	1981	152.7	1982	153.4	1983	153.4	1984	152.8	1985	77.9
1975	357.8	1976	338.9	1977	290.1	1978	290.1	1979	166.9	1980	157.0	1981	148.6	1982	149.3	1983	149.3	1984	148.7	1985	77.0	1986	63.1
1976	332.9	1977	285.0	1978	285.0	1979	161.9	1980	152.3	1981	144.2	1982	144.9	1983	144.9	1984	144.3	1985	76.2	1986	62.2	1987	39.9
1977	279.6	1978	279.6	1979	156.7	1980	147.4	1981	139.6	1982	140.2	1983	140.2	1984	139.7	1985	75.2	1986	61.3	1987	39.2	1988	39.6
1978	273.8	1979	151.1	1980	142.2	1981	134.6	1982	135.2	1983	135.2	1984	134.7	1985	74.2	1986	60.3	1987	38.5	1988	38.8	1989	38.8
1979	145.2	1980	136.6	1981	129.3	1982	129.9	1983	129.9	1984	129.4	1985	73.1	1986	59.2	1987	37.6	1988	38.0	1989	38.0	1990	38.4
1980	130.6	1981	123.7	1982	124.2	1983	124.2	1984	123.7	1985	72.0	1986	58.0	1987	36.8	1988	37.1	1989	37.1	1990	37.5	1991	37.4
1981	117.6	1982	118.1	1983	118.1	1984	117.7	1985	70.8	1986	56.8	1987	35.9	1988	36.2	1989	36.2	1990	36.5	1991	36.4	1992	36.4
1982	111.7	1983	111.7	1984	111.3	1985	69.5	1986	55.5	1987	34.9	1988	35.2	1989	35.2	1990	35.5	1991	35.4	1992	35.4	1993	35.4
1983	104.8	1984	104.5	1985	68.1	1986	54.1	1987	33.8	1988	34.1	1989	34.1	1990	34.5	1991	34.3	1992	34.3	1993	34.3	1994	34.3
1984	97.2	1985	66.6	1986	52.7	1987	32.7	1988	33.0	1989	33.0	1990	33.3	1991	33.2	1992	33.2	1993	33.2	1994	33.2	1995	33.2
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:
 19.6 MPH, TEMP=75 Degrees F,
 Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

Continued on the next page.

TABLE 4.11B.2 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 CO

1997		1998		1999		2000		2003		January 1 of Calendar Year 2005		2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	460.8	1974	448.8	1975	414.4	1976	392.5	1979	210.9	1981	187.9	1984	188.0	1986	71.0	1988	47.1	1991	47.5	1994	47.5	1996	47.5
1974	446.0	1975	411.9	1976	390.1	1977	333.9	1980	196.5	1982	186.9	1985	84.6	1987	46.4	1989	46.8	1992	47.2	1995	47.2	1997	47.2
1975	409.1	1976	387.5	1977	331.7	1978	331.7	1981	184.2	1983	185.0	1986	70.3	1988	46.5	1990	47.0	1993	46.9	1996	46.9	1998	46.7
1976	384.7	1977	329.3	1978	329.3	1979	204.5	1982	182.9	1984	182.2	1987	45.8	1989	46.2	1991	46.6	1994	46.6	1997	46.6	1999	46.4
1977	326.8	1978	326.8	1979	202.0	1980	190.1	1983	180.8	1985	83.4	1988	45.8	1990	46.3	1992	46.2	1995	46.2	1998	46.0	2000	46.0
1978	324.1	1979	199.4	1980	187.6	1981	177.7	1984	177.7	1986	69.0	1989	45.5	1991	45.8	1993	45.8	1996	45.8	1999	45.7	2001	45.6
1979	196.7	1980	185.0	1981	175.2	1982	176.0	1985	82.4	1987	44.7	1990	45.6	1992	45.5	1994	45.5	1997	45.5	2000	45.3	2002	45.2
1980	182.3	1981	172.6	1982	173.3	1983	173.3	1986	67.9	1988	44.7	1991	45.0	1993	45.0	1995	45.0	1998	44.9	2001	44.8	2003	44.8
1981	169.8	1982	170.5	1983	170.5	1984	169.8	1987	43.9	1989	44.2	1992	44.6	1994	44.6	1996	44.6	1999	44.4	2002	44.4	2004	44.4
1982	167.5	1983	167.5	1984	166.9	1985	80.7	1988	43.8	1990	44.3	1993	44.1	1995	44.1	1997	44.1	2000	44.0	2003	43.9	2005	43.9
1983	164.3	1984	163.7	1985	80.1	1986	66.1	1989	43.3	1991	43.6	1994	43.6	1996	43.6	1998	43.5	2001	43.4	2004	43.4	2006	43.4
1984	160.3	1985	79.4	1986	65.4	1987	42.4	1990	43.2	1992	43.1	1995	43.1	1997	43.1	1999	42.9	2002	42.9	2005	42.9	2007	42.9
1985	78.7	1986	64.7	1987	41.8	1988	42.2	1991	42.5	1993	42.5	1996	42.5	1998	42.4	2000	42.4	2003	42.3	2006	42.3	2008	42.3
1986	63.9	1987	41.3	1988	41.6	1989	41.6	1992	41.9	1994	41.9	1997	41.9	1999	41.8	2001	41.7	2004	41.7	2007	41.7	2009	41.7
1987	40.6	1988	41.0	1989	41.0	1990	41.4	1993	41.3	1995	41.3	1998	41.1	2000	41.1	2002	41.1	2005	41.1	2008	41.1	2010	41.1
1988	40.3	1989	40.3	1990	40.7	1991	40.6	1994	40.6	1996	40.6	1999	40.4	2001	40.4	2003	40.4	2006	40.4	2009	40.4	2011	40.4
1989	39.6	1990	40.0	1991	39.9	1992	39.9	1995	39.9	1997	39.9	2000	39.7	2002	39.7	2004	39.7	2007	39.7	2010	39.7	2012	39.7
1990	39.2	1991	39.1	1992	39.1	1993	39.1	1996	39.1	1998	38.9	2001	38.9	2003	38.9	2005	38.9	2008	38.9	2011	38.9	2013	38.9
1991	38.3	1992	38.3	1993	38.3	1994	38.3	1997	38.3	1999	38.1	2002	38.0	2004	38.0	2006	38.0	2009	38.0	2012	38.0	2014	38.0
1992	37.4	1993	37.4	1994	37.4	1995	37.4	1998	37.2	2000	37.2	2003	37.2	2005	37.2	2007	37.2	2010	37.2	2013	37.2	2015	37.2
1993	36.4	1994	36.4	1995	36.4	1996	36.4	1999	36.2	2001	36.2	2004	36.2	2006	36.2	2008	36.2	2011	36.2	2014	36.2	2016	36.2
1994	35.4	1995	35.4	1996	35.4	1997	35.4	2000	35.2	2002	35.2	2005	35.2	2007	35.2	2009	35.2	2012	35.2	2015	35.2	2017	35.2
1995	34.3	1996	34.3	1997	34.3	1998	34.2	2001	34.1	2003	34.1	2006	34.1	2008	34.1	2010	34.1	2013	34.1	2016	34.1	2018	34.1
1996	33.2	1997	33.2	1998	33.0	1999	33.0	2002	33.0	2004	33.0	2007	33.0	2009	33.0	2011	33.0	2014	33.0	2017	33.0	2019	33.0
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:
 19.6 MPH, TEMP=75 Degrees F,
 Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

TABLE 4.11C.2
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 NOx

DATE : JUNE 30, 1995

1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995		1996	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1961	6.2	1962	6.2	1963	6.1	1964	6.1	1965	6.1	1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6
1962	6.2	1963	6.1	1964	6.1	1965	6.1	1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6
1963	6.1	1964	6.1	1965	6.1	1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.6
1964	6.1	1965	6.1	1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.5	1975	6.0
1965	6.1	1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.5	1975	5.9	1976	5.5
1966	6.1	1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.5	1975	5.9	1976	5.5	1977	4.7
1967	6.1	1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.4	1975	5.9	1976	5.4	1977	4.7	1978	4.7
1968	6.1	1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.4	1975	5.8	1976	5.4	1977	4.6	1978	4.6	1979	5.0
1969	6.1	1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.3	1975	5.8	1976	5.3	1977	4.6	1978	4.6	1979	5.0	1980	4.8
1970	6.6	1971	6.6	1972	6.6	1973	6.6	1974	6.2	1975	5.7	1976	5.3	1977	4.5	1978	4.5	1979	5.0	1980	4.7	1981	4.4
1971	6.6	1972	6.6	1973	6.6	1974	6.2	1975	5.6	1976	5.2	1977	4.5	1978	4.5	1979	4.9	1980	4.7	1981	4.3	1982	4.3
1972	6.6	1973	6.6	1974	6.1	1975	5.6	1976	5.2	1977	4.5	1978	4.5	1979	4.9	1980	4.6	1981	4.3	1982	4.3	1983	4.3
1973	6.6	1974	6.0	1975	5.5	1976	5.1	1977	4.4	1978	4.4	1979	4.8	1980	4.6	1981	4.2	1982	4.2	1983	4.2	1984	4.2
1974	5.9	1975	5.4	1976	5.1	1977	4.4	1978	4.4	1979	4.8	1980	4.5	1981	4.2	1982	4.2	1983	4.2	1984	4.2	1985	3.9
1975	5.4	1976	5.0	1977	4.3	1978	4.3	1979	4.7	1980	4.5	1981	4.1	1982	4.1	1983	4.1	1984	4.1	1985	3.8	1986	3.8
1976	4.9	1977	4.2	1978	4.2	1979	4.7	1980	4.4	1981	4.1	1982	4.1	1983	4.1	1984	4.1	1985	3.8	1986	3.8	1987	3.9
1977	4.2	1978	4.2	1979	4.6	1980	4.4	1981	4.0	1982	4.0	1983	4.0	1984	4.0	1985	3.8	1986	3.8	1987	3.9	1988	3.9
1978	4.1	1979	4.5	1980	4.3	1981	4.0	1982	4.0	1983	4.0	1984	4.0	1985	3.8	1986	3.7	1987	3.8	1988	3.8	1989	3.8
1979	4.4	1980	4.2	1981	3.9	1982	3.9	1983	3.9	1984	3.9	1985	3.7	1986	3.7	1987	3.8	1988	3.8	1989	3.8	1990	3.9
1980	4.1	1981	3.9	1982	3.9	1983	3.9	1984	3.9	1985	3.7	1986	3.7	1987	3.7	1988	3.8	1989	3.8	1990	3.8	1991	3.2
1981	3.8	1982	3.8	1983	3.8	1984	3.8	1985	3.6	1986	3.6	1987	3.7	1988	3.7	1989	3.7	1990	3.8	1991	3.2	1992	3.2
1982	3.7	1983	3.7	1984	3.7	1985	3.6	1986	3.6	1987	3.6	1988	3.7	1989	3.7	1990	3.7	1991	3.1	1992	3.1	1993	3.1
1983	3.6	1984	3.6	1985	3.5	1986	3.5	1987	3.6	1988	3.6	1989	3.6	1990	3.6	1991	3.0	1992	3.0	1993	3.0	1994	3.0
1984	3.6	1985	3.5	1986	3.5	1987	3.6	1988	3.6	1989	3.6	1990	3.6	1991	3.0	1992	3.0	1993	3.0	1994	3.0	1995	3.0
1985	0.0	1986	0.0	1987	0.0	1988	0.0	1989	0.0	1990	0.0	1991	0.0	1992	0.0	1993	0.0	1994	0.0	1995	0.0	1996	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:
 19.6 MPH, TEMP=75 Degrees F,
 Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

Continued on the next page.

TABLE 4.11C.2 (continued)
 BY-MODEL-YEAR EMISSION LEVELS FOR HIGH ALTITUDE
 HEAVY DUTY GASOLINE POWERED VEHICLES
 NOx

1997		1998		1999		2000		2003		2005		2008		2010		2012		2015		2018		2020	
MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**	MY*	E**
1973	6.6	1974	6.7	1975	6.1	1976	5.6	1979	5.3	1981	4.6	1984	4.6	1986	4.1	1988	4.2	1991	3.8	1994	3.8	1996	3.8
1974	6.6	1975	6.0	1976	5.6	1977	4.8	1980	5.0	1982	4.6	1985	4.1	1987	4.2	1989	4.2	1992	3.8	1995	3.8	1997	3.8
1975	6.0	1976	5.6	1977	4.8	1978	4.8	1981	4.6	1983	4.6	1986	4.1	1988	4.2	1990	4.4	1993	3.8	1996	3.8	1998	3.2
1976	5.5	1977	4.8	1978	4.8	1979	5.2	1982	4.5	1984	4.5	1987	4.2	1989	4.2	1991	3.8	1994	3.8	1997	3.8	1999	3.2
1977	4.7	1978	4.7	1979	5.1	1980	4.9	1983	4.5	1985	4.1	1988	4.1	1990	4.4	1992	3.8	1995	3.8	1998	3.2	2000	3.2
1978	4.7	1979	5.1	1980	4.9	1981	4.5	1984	4.5	1986	4.0	1989	4.1	1991	3.7	1993	3.7	1996	3.7	1999	3.1	2001	3.1
1979	5.1	1980	4.8	1981	4.5	1982	4.5	1985	4.0	1987	4.1	1990	4.3	1992	3.7	1994	3.7	1997	3.7	2000	3.1	2002	3.1
1980	4.8	1981	4.4	1982	4.4	1983	4.4	1986	4.0	1988	4.1	1991	3.7	1993	3.7	1995	3.7	1998	3.1	2001	3.1	2003	3.1
1981	4.4	1982	4.4	1983	4.4	1984	4.4	1987	4.1	1989	4.1	1992	3.7	1994	3.7	1996	3.7	1999	3.1	2002	3.1	2004	3.1
1982	4.4	1983	4.4	1984	4.3	1985	4.0	1988	4.1	1990	4.2	1993	3.6	1995	3.6	1997	3.6	2000	3.0	2003	3.0	2005	3.0
1983	4.3	1984	4.3	1985	3.9	1986	3.9	1989	4.0	1991	3.6	1994	3.6	1996	3.6	1998	3.0	2001	3.0	2004	3.0	2006	3.0
1984	4.3	1985	3.9	1986	3.9	1987	4.0	1990	4.2	1992	3.6	1995	3.6	1997	3.6	1999	3.0	2002	3.0	2005	3.0	2007	3.0
1985	3.9	1986	3.9	1987	4.0	1988	4.0	1991	3.5	1993	3.5	1996	3.5	1998	2.9	2000	2.9	2003	2.9	2006	2.9	2008	2.9
1986	3.9	1987	4.0	1988	4.0	1989	4.0	1992	3.5	1994	3.5	1997	3.5	1999	2.9	2001	2.9	2004	2.9	2007	2.9	2009	2.9
1987	3.9	1988	3.9	1989	3.9	1990	4.1	1993	3.5	1995	3.5	1998	2.9	2000	2.9	2002	2.9	2005	2.9	2008	2.9	2010	2.9
1988	3.9	1989	3.9	1990	4.0	1991	3.4	1994	3.4	1996	3.4	1999	2.8	2001	2.8	2003	2.8	2006	2.8	2009	2.8	2011	2.8
1989	3.9	1990	4.0	1991	3.4	1992	3.4	1995	3.4	1997	3.4	2000	2.8	2002	2.8	2004	2.8	2007	2.8	2010	2.8	2012	2.8
1990	3.9	1991	3.3	1992	3.3	1993	3.3	1996	3.3	1998	2.7	2001	2.7	2003	2.7	2005	2.7	2008	2.7	2011	2.7	2013	2.7
1991	3.3	1992	3.3	1993	3.3	1994	3.3	1997	3.3	1999	2.7	2002	2.7	2004	2.7	2006	2.7	2009	2.7	2012	2.7	2014	2.7
1992	3.2	1993	3.2	1994	3.2	1995	3.2	1998	2.6	2000	2.6	2003	2.6	2005	2.6	2007	2.6	2010	2.6	2013	2.6	2015	2.6
1993	3.2	1994	3.2	1995	3.2	1996	3.2	1999	2.6	2001	2.6	2004	2.6	2006	2.6	2008	2.6	2011	2.6	2014	2.6	2016	2.6
1994	3.1	1995	3.1	1996	3.1	1997	3.1	2000	2.5	2002	2.5	2005	2.5	2007	2.5	2009	2.5	2012	2.5	2015	2.5	2017	2.5
1995	3.0	1996	3.0	1997	3.0	1998	2.4	2001	2.4	2003	2.4	2006	2.4	2008	2.4	2010	2.4	2013	2.4	2016	2.4	2018	2.4
1996	3.0	1997	3.0	1998	2.4	1999	2.4	2002	2.4	2004	2.4	2007	2.4	2009	2.4	2011	2.4	2014	2.4	2017	2.4	2019	2.4
1997	0.0	1998	0.0	1999	0.0	2000	0.0	2003	0.0	2005	0.0	2008	0.0	2010	0.0	2012	0.0	2015	0.0	2018	0.0	2020	0.0

*MY -- Indicates the model year.

**E -- Indicates the average grams/mile emission level for model year "MY" on January 1 of the given calendar year. These emission levels are calculated for the FTP test conditions:

19.6 MPH, TEMP=75 Degrees F,

Emissions are based on the January 1 mileage accumulation figures given in Table 2.4.4

TABLE 4.12A

THE IMPACT OF OXYGENATED FUELS ON EMISSIONS
BY MODEL YEAR HC AVERAGE EMISSION LEVELS WITHOUT OXYGENATED FUEL AND BENEFIT FACTORS

NUM	1981		1982		1983		1984		1985		1986		1987		1988		1989	
	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**
1	0.38	5.40	0.39	5.11	0.33	4.99	0.32	4.97	0.33	4.77	0.33	4.52	0.33	4.29	0.33	3.97	0.33	4.15
2	0.52	5.36	0.53	5.09	0.44	5.04	0.41	5.09	0.43	4.90	0.42	4.70	0.42	4.49	0.42	4.19	0.43	4.36
3	0.68	5.34	0.69	5.10	0.59	5.10	0.53	5.22	0.55	5.05	0.53	4.91	0.52	4.71	0.53	4.45	0.54	4.61
4	0.86	5.34	0.88	5.11	0.75	5.17	0.65	5.36	0.68	5.21	0.64	5.13	0.64	4.94	0.64	4.72	0.66	4.87
5	1.08	5.45	1.09	5.23	0.96	5.35	0.87	5.60	0.89	5.47	0.86	5.45	0.85	5.30	0.84	5.14	0.87	5.25
6	1.32	5.55	1.33	5.35	1.20	5.49	1.10	5.77	1.13	5.67	1.10	5.68	1.08	5.56	1.07	5.43	1.10	5.52
7	1.58	5.65	1.57	5.46	1.45	5.61	1.36	5.90	1.39	5.82	1.35	5.86	1.32	5.76	1.31	5.66	1.36	5.74
8	1.85	5.73	1.82	5.55	1.70	5.72	1.63	6.02	1.66	5.96	1.62	6.02	1.58	5.93	1.56	5.86	1.62	5.93
9	2.13	5.80	2.09	5.63	1.97	5.81	1.91	6.12	1.94	6.08	1.90	6.16	1.85	6.08	1.82	6.03	1.89	6.10
10	2.48	5.91	2.41	5.75	2.33	5.94	2.33	6.24	2.36	6.22	2.34	6.30	2.27	6.24	2.24	6.21	2.32	6.27
11	2.76	5.96	2.67	5.81	2.59	6.00	2.61	6.30	2.63	6.28	2.61	6.37	2.53	6.32	2.49	6.30	2.59	6.35
12	3.02	6.00	2.91	5.85	2.84	6.04	2.87	6.35	2.90	6.33	2.88	6.42	2.78	6.38	2.73	6.36	2.85	6.41
13	3.28	6.02	3.15	5.88	3.08	6.08	3.12	6.39	3.16	6.36	3.14	6.46	3.03	6.42	2.98	6.42	3.11	6.45
14	3.51	6.04	3.37	5.90	3.30	6.09	3.36	6.41	3.40	6.38	3.38	6.49	3.27	6.45	3.22	6.45	3.36	6.48
15	3.66	6.04	3.52	5.91	3.47	6.10	3.53	6.42	3.60	6.40	3.59	6.51	3.47	6.47	3.44	6.48	3.60	6.50
16	3.81	6.05	3.67	5.92	3.63	6.11	3.69	6.43	3.79	6.41	3.80	6.52	3.68	6.49	3.66	6.50	3.83	6.52
17	3.95	6.05	3.81	5.92	3.77	6.11	3.84	6.43	3.95	6.42	3.97	6.53	3.85	6.51	3.85	6.52	4.02	6.54
18	4.08	6.04	3.94	5.92	3.91	6.11	3.98	6.44	4.08	6.42	4.10	6.54	3.98	6.51	3.98	6.52	4.15	6.54
19	4.21	6.04	4.07	5.92	4.04	6.11	4.11	6.44	4.21	6.42	4.23	6.54	4.11	6.52	4.11	6.53	4.27	6.55
20	4.33	6.04	4.19	5.92	4.16	6.11	4.23	6.45	4.33	6.43	4.35	6.55	4.24	6.53	4.23	6.54	4.39	6.55
21	4.44	6.04	4.30	5.92	4.28	6.11	4.35	6.45	4.44	6.43	4.46	6.55	4.35	6.53	4.35	6.55	4.50	6.56
22	4.54	6.03	4.41	5.92	4.39	6.11	4.46	6.46	4.55	6.43	4.57	6.56	4.47	6.54	4.46	6.55	4.61	6.56
23	4.65	6.03	4.52	5.92	4.50	6.11	4.57	6.46	4.65	6.43	4.68	6.56	4.58	6.54	4.57	6.56	4.71	6.56
24	4.74	6.03	4.61	5.92	4.60	6.11	4.67	6.46	4.75	6.43	4.78	6.56	4.68	6.55	4.68	6.56	4.81	6.57
25	4.83	6.03	4.71	5.92	4.70	6.11	4.77	6.47	4.85	6.44	4.87	6.57	4.78	6.55	4.77	6.57	4.90	6.57

Continued on the next page

HC* Indicates the average emission levels without oxygenated fuels
B** Indicate the benefit factors

To interpolate the benefit factor the following formula should be used:

$$\text{BENFAC} = (\text{BEFADJ} * (\text{Y2} - \text{Y1}) + \text{X2} * \text{Y1} - \text{X1} * \text{Y2}) / (\text{X2} - \text{X1})$$

where: BEFADJ-basic emission factor

Y1,Y2 -lower and upper benefit factor

X1,X2 -lower and upper interpolation values

For Pre-1981 LDGV or

Pre-1991 LDGT1+2 or

HDGV or MC

: BENFAC=NOCAT* 1.57+CAT* 4.46

where: NOCAT-fraction of vehicles that are not catalyst equipped

CAT -fraction of vehicles that are catalyst equipped

There is no effect on NOx.

For additional information see Table 4.13

"Exhaust Effects of Oxygenated Fuel Blends Percent of Change in Emissions"

TABLE 4.12A (continued)

THE IMPACT OF OXYGENATED FUELS ON EMISSIONS
 BY MODEL YEAR HC AVERAGE EMISSION LEVELS WITHOUT OXYGENATED FUEL AND BENEFIT FACTORS

NUM	1990		1991		1992		1993		1994		1995		1996		1997		1998	
	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**	HC*	B**
1	0.34	4.01	0.34	4.00	0.34	4.01	0.34	4.01	0.32	4.01	0.31	4.00	0.28	4.01	0.27	4.01	0.26	4.02
2	0.44	4.24	0.44	4.23	0.44	4.25	0.44	4.25	0.42	4.24	0.40	4.23	0.38	4.23	0.36	4.23	0.35	4.24
3	0.55	4.51	0.55	4.50	0.55	4.52	0.55	4.52	0.53	4.49	0.51	4.47	0.49	4.47	0.47	4.47	0.46	4.48
4	0.67	4.78	0.67	4.78	0.67	4.79	0.67	4.79	0.65	4.76	0.63	4.73	0.60	4.72	0.59	4.72	0.58	4.72
5	0.88	5.18	0.89	5.18	0.89	5.19	0.89	5.19	0.87	5.17	0.84	5.14	0.81	5.12	0.80	5.12	0.79	5.12
6	1.12	5.48	1.13	5.48	1.13	5.48	1.13	5.48	1.10	5.46	1.07	5.43	1.04	5.42	1.03	5.42	1.02	5.42
7	1.38	5.71	1.38	5.72	1.39	5.72	1.39	5.72	1.36	5.70	1.32	5.67	1.29	5.65	1.27	5.65	1.26	5.65
8	1.64	5.92	1.65	5.92	1.66	5.93	1.66	5.93	1.62	5.90	1.58	5.87	1.55	5.85	1.53	5.85	1.52	5.85
9	1.91	6.10	1.92	6.10	1.93	6.11	1.93	6.11	1.89	6.08	1.85	6.05	1.82	6.03	1.80	6.02	1.79	6.02
10	2.35	6.28	2.36	6.29	2.37	6.30	2.37	6.30	2.33	6.27	2.29	6.24	2.25	6.22	2.24	6.21	2.23	6.21
11	2.61	6.36	2.63	6.37	2.64	6.38	2.64	6.38	2.59	6.36	2.55	6.35	2.51	6.34	2.49	6.34	2.49	6.33
12	2.88	6.42	2.89	6.42	2.91	6.43	2.91	6.43	2.86	6.43	2.81	6.43	2.77	6.43	2.75	6.44	2.75	6.44
13	3.14	6.46	3.16	6.46	3.18	6.47	3.18	6.47	3.13	6.47	3.08	6.47	3.03	6.47	3.02	6.47	3.01	6.47
14	3.41	6.49	3.43	6.49	3.45	6.50	3.45	6.50	3.39	6.50	3.34	6.50	3.29	6.50	3.28	6.50	3.27	6.50
15	3.66	6.52	3.69	6.52	3.71	6.52	3.71	6.52	3.65	6.52	3.60	6.52	3.55	6.52	3.54	6.52	3.53	6.53
16	3.92	6.54	3.95	6.54	3.97	6.55	3.97	6.55	3.91	6.55	3.85	6.55	3.81	6.55	3.79	6.55	3.78	6.55
17	4.12	6.55	4.15	6.56	4.17	6.56	4.17	6.56	4.11	6.56	4.06	6.56	4.01	6.56	3.99	6.56	3.98	6.56
18	4.24	6.56	4.28	6.56	4.30	6.56	4.30	6.56	4.24	6.56	4.18	6.56	4.13	6.56	4.12	6.56	4.11	6.56
19	4.36	6.56	4.39	6.56	4.42	6.57	4.42	6.57	4.36	6.57	4.30	6.57	4.26	6.57	4.24	6.57	4.23	6.57
20	4.48	6.56	4.51	6.57	4.53	6.57	4.53	6.57	4.47	6.57	4.41	6.57	4.37	6.57	4.35	6.57	4.34	6.57
21	4.59	6.57	4.62	6.57	4.64	6.57	4.64	6.57	4.58	6.57	4.52	6.57	4.48	6.57	4.46	6.57	4.45	6.57
22	4.69	6.57	4.72	6.57	4.74	6.57	4.74	6.57	4.68	6.57	4.63	6.57	4.58	6.57	4.57	6.57	4.56	6.57
23	4.79	6.57	4.82	6.57	4.84	6.58	4.84	6.58	4.78	6.58	4.73	6.58	4.68	6.58	4.66	6.58	4.66	6.58
24	4.88	6.57	4.91	6.58	4.93	6.58	4.93	6.58	4.87	6.58	4.82	6.58	4.77	6.58	4.76	6.58	4.75	6.58
25	4.97	6.58	5.00	6.58	5.02	6.58	5.02	6.58	4.96	6.58	4.91	6.58	4.86	6.58	4.85	6.58	4.84	6.58

HC* Indicates the average emission levels without oxygenated fuels
 B** Indicate the benefit factors

To interpolate the benefit factor the following formula should be used:

$$\text{BENFAC} = (\text{BEFADJ} * (\text{Y2} - \text{Y1}) + \text{X2} * \text{Y1} - \text{X1} * \text{Y2}) / (\text{X2} - \text{X1})$$

where: BEFADJ - basic emission factor

Y1, Y2 - lower and upper benefit factor

X1, X2 - lower and upper interpolation values

For Pre-1981 LDGV or

Pre-1991 LDGT1+2 or

HDGV or MC

$$\text{BENFAC} = \text{NOCAT} * 1.57 + \text{CAT} * 4.46$$

where: NOCAT - fraction of vehicles that are not catalyst equipped

CAT - fraction of vehicles that are catalyst equipped

There is no effect on NOx.

For additional information see Table 4.13

"Exhaust Effects of Oxygenated Fuel Blends Percent of Change in Emissions"

DATE : JUNE 30, 1995

TABLE 4.12B

THE IMPACT OF OXYGENATED FUELS ON EMISSIONS
BY MODEL YEAR CO AVERAGE EMISSION LEVELS WITHOUT OXYGENATED FUEL AND BENEFIT FACTORS

NUM	1981		1982		1983		1984		1985		1986		1987		1988		1989	
	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**
1	4.96	8.42	5.08	8.39	5.05	7.97	4.59	7.17	4.52	6.98	4.27	6.39	4.24	6.30	4.12	5.92	4.11	5.93
2	7.13	8.87	7.34	8.84	7.08	8.48	6.16	7.77	6.27	7.61	5.91	7.08	5.88	7.01	5.83	6.70	5.89	6.72
3	9.46	9.17	9.74	9.15	9.23	8.83	7.80	8.23	8.09	8.10	7.58	7.65	7.55	7.59	7.54	7.33	7.68	7.36
4	11.91	9.37	12.25	9.35	11.38	9.09	9.37	8.59	9.75	8.50	9.01	8.12	8.95	8.06	8.90	7.84	9.11	7.88
5	15.02	9.62	15.12	9.58	14.26	9.42	12.42	9.14	12.77	9.07	12.03	8.84	11.85	8.78	11.71	8.63	12.04	8.67
6	18.26	9.79	18.09	9.75	17.27	9.64	15.64	9.49	15.96	9.43	15.22	9.30	14.91	9.24	14.67	9.13	15.13	9.17
7	21.59	9.93	21.15	9.88	20.36	9.81	18.98	9.73	19.26	9.69	18.53	9.60	18.08	9.55	17.75	9.47	18.34	9.51
8	24.97	10.03	24.27	9.98	23.51	9.94	22.38	9.90	22.63	9.88	21.92	9.82	21.33	9.78	20.90	9.71	21.63	9.75
9	28.39	10.12	27.40	10.06	26.68	10.04	25.83	10.04	26.04	10.02	25.36	9.99	24.61	9.95	24.09	9.90	24.96	9.94
10	32.96	10.27	31.52	10.21	31.13	10.22	31.22	10.25	31.24	10.23	30.81	10.23	29.88	10.19	29.23	10.16	30.22	10.19
11	36.15	10.31	34.44	10.25	34.08	10.27	34.42	10.31	34.42	10.30	34.01	10.30	32.93	10.27	32.19	10.25	33.32	10.27
12	39.12	10.35	37.19	10.30	36.92	10.31	37.49	10.37	37.50	10.36	37.13	10.37	35.92	10.34	35.12	10.32	36.39	10.35
13	42.03	10.39	39.87	10.34	39.68	10.36	40.49	10.42	40.52	10.41	40.18	10.43	38.83	10.40	37.96	10.38	39.40	10.41
14	44.46	10.42	42.13	10.37	42.02	10.39	42.99	10.46	43.16	10.46	42.90	10.47	41.42	10.45	40.59	10.43	42.21	10.46
15	45.81	10.44	43.53	10.38	43.55	10.41	44.57	10.48	45.11	10.49	45.06	10.51	43.59	10.49	43.02	10.48	44.78	10.51
16	47.11	10.45	44.87	10.40	45.03	10.43	46.10	10.51	47.01	10.52	47.17	10.55	45.71	10.52	45.41	10.52	47.30	10.55
17	48.31	10.46	46.12	10.41	46.38	10.45	47.49	10.53	48.58	10.54	48.87	10.57	47.44	10.55	47.31	10.55	49.24	10.58
18	49.41	10.47	47.27	10.42	47.57	10.46	48.70	10.55	49.75	10.56	50.06	10.59	48.70	10.57	48.59	10.58	50.43	10.60
19	50.46	10.48	48.38	10.43	48.72	10.47	49.86	10.57	50.86	10.58	51.20	10.61	49.91	10.59	49.83	10.60	51.58	10.62
20	51.45	10.49	49.43	10.44	49.82	10.49	50.98	10.58	51.93	10.59	52.29	10.63	51.07	10.61	51.02	10.62	52.67	10.64
21	52.40	10.50	50.44	10.45	50.87	10.50	52.05	10.60	52.95	10.61	53.34	10.65	52.18	10.63	52.17	10.64	53.72	10.65
22	53.31	10.51	51.40	10.46	51.88	10.51	53.07	10.62	53.93	10.62	54.34	10.66	53.25	10.65	53.27	10.65	54.72	10.67
23	54.16	10.52	52.32	10.47	52.85	10.52	54.05	10.63	54.86	10.64	55.29	10.68	54.28	10.66	54.32	10.67	55.68	10.69
24	54.98	10.53	53.20	10.48	53.77	10.53	54.98	10.64	55.74	10.65	56.20	10.69	55.26	10.68	55.33	10.69	56.60	10.70
25	55.76	10.54	54.04	10.48	54.64	10.54	55.88	10.66	56.59	10.66	57.07	10.70	56.20	10.69	56.30	10.70	57.48	10.71

Continued on the next page

CO* Indicates the average emission levels without oxygenated fuels
B** Indicate the benefit factors

To interpolate the benefit factor the following formula should be used:

$$\text{BENFAC} = (\text{BEFADJ} * (\text{Y2} - \text{Y1}) + \text{X2} * \text{Y1} - \text{X1} * \text{Y2}) / (\text{X2} - \text{X1})$$

where: BEFADJ-basic emission factor

Y1,Y2 -lower and upper benefit factor

X1,X2 -lower and upper interpolation values

For Pre-1981 LDGV or

Pre-1991 LDGT1+2 or

HDGV or MC

: BENFAC=NOCAT* 7.00+CAT* 9.97

where: NOCAT-fraction of vehicles that are not catalyst equipped

CAT -fraction of vehicles that are catalyst equipped

There is no effect on NOx.

For additional information see Table 4.13

"Exhaust Effects of Oxygenated Fuel Blends Percent of Change in Emissions"

TABLE 4.12B (continued)

THE IMPACT OF OXYGENATED FUELS ON EMISSIONS
 BY MODEL YEAR CO AVERAGE EMISSION LEVELS WITHOUT OXYGENATED FUEL AND BENEFIT FACTORS

NUM	1990		1991		1992		1993		1994		1995		1996		1997		1998	
	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**	CO*	B**
1	4.01	5.63	4.00	5.58	3.99	5.56	3.99	5.56	3.99	5.56	3.99	5.56	3.99	5.56	3.99	5.56	3.99	5.56
2	5.90	6.50	5.91	6.46	5.91	6.45	5.91	6.45	5.91	6.45	5.91	6.45	5.91	6.45	5.91	6.45	5.91	6.45
3	7.78	7.20	7.81	7.17	7.83	7.16	7.83	7.16	7.83	7.16	7.83	7.16	7.83	7.16	7.83	7.16	7.83	7.16
4	9.24	7.75	9.27	7.73	9.30	7.73	9.30	7.73	9.30	7.73	9.30	7.73	9.30	7.73	9.30	7.73	9.30	7.73
5	12.16	8.59	12.21	8.57	12.25	8.57	12.25	8.57	12.25	8.57	12.25	8.57	12.25	8.57	12.25	8.57	12.25	8.57
6	15.25	9.11	15.31	9.11	15.37	9.11	15.37	9.11	15.37	9.11	15.37	9.11	15.37	9.11	15.37	9.11	15.37	9.11
7	18.46	9.47	18.54	9.47	18.60	9.47	18.60	9.47	18.60	9.47	18.60	9.47	18.60	9.47	18.60	9.47	18.60	9.47
8	21.75	9.73	21.84	9.73	21.92	9.73	21.92	9.73	21.92	9.73	21.92	9.73	21.92	9.73	21.92	9.73	21.92	9.73
9	25.08	9.92	25.19	9.92	25.29	9.93	25.29	9.93	25.29	9.93	25.29	9.93	25.29	9.93	25.29	9.93	25.29	9.93
10	30.29	10.18	30.40	10.18	30.51	10.18	30.51	10.18	30.51	10.18	30.51	10.18	30.51	10.18	30.51	10.18	30.51	10.18
11	33.40	10.27	33.53	10.27	33.66	10.28	33.66	10.28	33.66	10.28	33.66	10.28	33.66	10.28	33.66	10.28	33.66	10.28
12	36.51	10.35	36.65	10.35	36.80	10.35	36.80	10.35	36.80	10.35	36.80	10.35	36.80	10.35	36.80	10.35	36.80	10.35
13	39.56	10.41	39.73	10.42	39.90	10.42	39.90	10.42	39.90	10.42	39.90	10.42	39.90	10.42	39.90	10.42	39.90	10.42
14	42.50	10.47	42.71	10.47	42.91	10.48	42.91	10.48	42.91	10.48	42.91	10.48	42.91	10.48	42.91	10.48	42.91	10.48
15	45.38	10.52	45.65	10.53	45.87	10.53	45.87	10.53	45.87	10.53	45.87	10.53	45.87	10.53	45.87	10.53	45.87	10.53
16	48.20	10.57	48.53	10.57	48.79	10.57	48.79	10.57	48.79	10.57	48.79	10.57	48.79	10.57	48.79	10.57	48.79	10.57
17	50.29	10.60	50.65	10.60	50.92	10.61	50.92	10.61	50.92	10.61	50.92	10.61	50.92	10.61	50.92	10.61	50.92	10.61
18	51.45	10.62	51.79	10.62	52.05	10.62	52.05	10.62	52.05	10.62	52.05	10.62	52.05	10.62	52.05	10.62	52.05	10.62
19	52.55	10.64	52.89	10.64	53.13	10.64	53.13	10.64	53.13	10.64	53.13	10.64	53.13	10.64	53.13	10.64	53.13	10.64
20	53.60	10.65	53.93	10.66	54.16	10.66	54.16	10.66	54.16	10.66	54.16	10.66	54.16	10.66	54.16	10.66	54.16	10.66
21	54.61	10.67	54.93	10.67	55.14	10.68	55.14	10.68	55.14	10.68	55.14	10.68	55.14	10.68	55.14	10.68	55.14	10.68
22	55.57	10.68	55.88	10.69	56.08	10.69	56.08	10.69	56.08	10.69	56.08	10.69	56.08	10.69	56.08	10.69	56.08	10.69
23	56.49	10.70	56.78	10.70	56.98	10.71	56.98	10.71	56.98	10.71	56.98	10.71	56.98	10.71	56.98	10.71	56.98	10.71
24	57.37	10.71	57.65	10.72	57.83	10.72	57.83	10.72	57.83	10.72	57.83	10.72	57.83	10.72	57.83	10.72	57.83	10.72
25	58.20	10.73	58.47	10.73	58.64	10.73	58.64	10.73	58.64	10.73	58.64	10.73	58.64	10.73	58.64	10.73	58.64	10.73

CO* Indicates the average emission levels without oxygenated fuels
 B** Indicate the benefit factors

To interpolate the benefit factor the following formula should be used:

$$\text{BENFAC} = (\text{BEFADJ} * (\text{Y2} - \text{Y1}) + \text{X2} * \text{Y1} - \text{X1} * \text{Y2}) / (\text{X2} - \text{X1})$$

where: BEFADJ - basic emission factor

Y1, Y2 - lower and upper benefit factor

X1, X2 - lower and upper interpolation values

For Pre-1981 LDGV or

Pre-1991 LDGT1+2 or

HDGV or MC

$$\text{BENFAC} = \text{NOCAT} * 7.00 + \text{CAT} * 9.97$$

where: NOCAT - fraction of vehicles that are not catalyst equipped

CAT - fraction of vehicles that are catalyst equipped

There is no effect on NOx.

For additional information see Table 4.13

"Exhaust Effects of Oxygenated Fuel Blends Percent of Change in Emissions"

DATE : JUNE 30, 1995

TABLE 4.13

REID VAPOR PRESSURE OF SUMMER TIME REFORMULATED GASOLINE

REGION	PHASE 1 (1995)	PHASE 1 (Complex Model 1997)	PHASE 2 (2000)
1	7.1	7.1	6.8
2	8.0	8.0	7.5

EXHAUST EFFECTS OF OXYGENATED FUEL BLENDS
PERCENT CHANGE IN EMISSIONS FOR
HEAVY DUTY GASOLINE POWERED VEHICLES

VEHICLE	HC	CO	NOx
Non catalyst	-1.57%	-7.00%	-0.00%
Open loop	-4.46%	-9.97%	-0.00%

ADDITIONAL EXHAUST HC REDUCTION FOR REFORMULATED GASOLINE FOR
HEAVY DUTY GASOLINE POWERED VEHICLES
(APPLIED AFTER ADJUSTMENTS FOR RVP AND OXYGENATED FUEL EFFECTS)

REGION	PHASE1	PHASE2
1	1.051	1.720
2	1.044	1.693

PERCENT CHANGE IN EXHAUST EMISSIONS FROM INDUSTRY AVERAGE FUEL
WHEN USING EPA CERTIFICATION TEST FUEL

HC	CO	NOx
-13.6%	-8.0%	-13.8%

Continued on the next page

TABLE 4.13 (continued)

SEASONAL VARIATION IN REFORMULATED GASOLINE

Month	SUMMER*	WINTER**
	7	1
Ethanol Market Share	0.0%	30.0%
Ethanol Oxygen Content (by weight)	N/A	3.5%
Ether Blend Market Share	100.0%	70.0%
Ether Blend Oxygen Content	2.1%	1.5%
RVP Waiver	N/A	Yes
Fuel RVP	Fixed	User supplied

- * User supplied RVP and oxygenated fuel program parameters are ignored in summer when Reformulated Gasoline is specified.
- ** Default oxygenated fuel program parameters can be overridden by the user in winter if the market share for oxygenated fuels is 100% and the combined oxygen content is at least 2.1%

REFORMULATED GASOLINE
ASSUMED COMPLEX MODEL PARAMETERS

	BASELINE	-----PHASE 1-----		-----PHASE 2-----	
	INDUSTRY AVERAGE	REGION 1	REGION 2	REGION 1	REGION 2
MTBE*	0.00	2.10	2.10	2.10	2.10
ETBE*	0.00	0.00	0.00	0.00	0.00
Ethanol*	0.00	0.00	0.00	0.00	0.00
TAME*	0.00	0.00	0.00	0.00	0.00
SULFUR (ppm)	339.00	339.00	339.00	134.00	134.00
RVP (psi)	8.70	7.10	8.00	6.70	6.70
E200 (%)	41.00	41.00	41.00	44.44	44.44
E300 (%)	83.00	83.00	83.00	84.91	84.91
Aromatics**	32.00	27.20	25.50	24.79	24.79
Olefins**	9.20	9.20	9.20	12.56	12.56
Benzene**	1.53	0.95	0.95	0.95	0.95

- * Percent fuel oxygen content by weight.
- ** Percent fuel content by volume.

DATE : JUNE 30, 1995