Appendix C

DRIVING CYCLE TABLES

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
0	0.0						
1	0.0	51	15.0	101	54.1	151	55.0
2	0.0	52	15.4	102	54.9	152	55.0
3	0.0	53	16.2	103	55.0	153	55.0
4	0.0	54	17.4	104	55.0	154	55.0
5	0.0	55	19.0	105	55.0	155	55.0
6	0.0	56	20.4	106	55.0	156	55.7
7	0.0	57	21.8	107	55.0	157	56.8
8	0.0	58	23.1	108	55.0	158	57.9
9	0.0	59	24.5	109	55.0	159	59.1
10	0.0	60	25.9	110	55.0	160	59.9
11	0.5	61	27.3	111	55.0	161	60.0
12	2.9	62	28.5	112	55.0	162	60.0
13	5.3	63	29.4	113	55.0	163	60.0
14	7.3	64	30.0	114	55.0	164	60.0
15	8.8	65	30.0	115	55.0	165	60.0
16	9.7	66	30.0	116	55.0	166	60.0
17	10.0	67	30.0	117	55.0	167	60.0
18	10.0	68	30.0	118	55.0	168	60.0
19	10.0	69	30.0	119	55.0	169	60.0
20	10.0	70	30.0	120	55.0	170	60.0
21	10.0	71	30.0	121	55.0	171	60.0
22	10.0	72	30.0	122	55.0	172	60.0
23	10.0	73	30.0	123	55.0	173	60.0
24	10.0	74	30.7	124	55.0	174	60.0
25	10.0	75	32.0	125	55.0	175	60.0
26	10.0	76	33.6	126	55.0	176	60.0
27	10.0	77	35.0	127	55.0	177	60.0
28	10.0	78	36.4	128	55.0	178	60.0
29	10.0	79	37.9	129	55.0	179	60.0
30	9.1	80	39.2	130	55.0	180	60.0
31	6.4	81	39.9	131	55.0	181	60.0
32	5.0	82	40.0	132	55.0	182	60.0
33	5.0	83	40.0	133	55.0	183	60.0
34	5.0	84	40.0	134	55.0	184	60.0
35	5.0	85	40.0	135	55.0	185	60.0
36	5.0	86	40.0	136	55.0	186	60.0
37	5.8	87	40.0	137	55.0	187	60.0
38	7.2	88	40.0	138	55.0	188	60.0
39	8.8	89	40.0	139	55.0	189	60.0
40	10.3	90	40.0	140	55.0	190	60.0
41	11.8	91	40.3	141	55.0	191	60.0
42	13.3	92	41.1	142	55.0	192	60.0
43	14.5	93	42.4	143	55.0	193	60.0
44	15.0	94	44.1	144	55.0	194	60.0
45	15.0	95	45.6	145	55.0	195	60.0
46	15.0	96	47.1	146	55.0	196	60.0
47	15.0	97	48.6	147	55.0	197	60.0
48	15.0	98	50.0	148	55.0	198	60.0
49	15.0	99	51.6	149	55.0	199	60.0
50	15.0	100	53.0	150	55.0	200	60.0

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
201	60.0	251	60.0	301	55.0	351	60.0
202	60.0	252	60.0	302	55.0	352	60.0
203	60.0	253	60.0	303	55.0	353	60.0
204	60.0	254	60.0	304	55.0	354	60.0
205	60.0	255	60.0	305	55.0	355	60.0
206	60.0	256	60.0	306	55.0	356	60.0
207	60.0	257	60.0	307	55.0	357	60.0
208	60.0	258	60.0	308	55.0	358	60.0
209	60.0	259	60.0	309	55.0	359	60.0
210	60.0	260	60.0	310	55.0	360	60.0
211	60.0	261	60.0	311	55.0	361	60.0
212	60.0	262	60.0	312	55.0	362	60.0
213	60.0	263	60.0	313	55.0	363	60.0
214	60.0	264	60.0	314	55.0	364	60.0
215	60.0	265	60.0	315	55.0	365	60.0
216	60.0	266	60.0	316	55.0	366	60.0
217	60.0	267	60.0	317	55.0	367	60.0
218	60.0	268	60.0	318	55.0	368	60.0
219	60.0	269	59.5	319	55.0	369	60.0
220	60.0	270	58.3	320	55.0	370	60.0
221	60.0	271	56.4	321	55.0	371	60.0
222	60.0	272	55.0	322	55.0	372	60.0
223	60.0	273	55.0	323	55.0	373	60.0
224	60.0	274	55.0	324	55.0	374	60.0
225	60.0	275	55.0	325	55.0	375	60.0
226	60.0	276	55.0	326	55.0	376	60.0
227	60.0	277	55.0	327	55.0	377	60.0
228	60.0	278	55.0	328	55.0	378	60.0
229	60.0	279	55.0	329	55.0	379	60.0
230	60.0	280	55.0	330	55.0	380	60.0
231	60.0	281	55.0	331	55.0	381	60.0
232	60.0	282	55.0	332	55.0	382	60.0
233	60.0	283	55.0	333	55.0	383	60.0
234	60.0	284	55.0	334	55.0	384	60.0
235	60.0	285	55.0	335	55.0	385	60.0
236	60.0	286	55.0	336	55.0	386	60.0
237	60.0	287	55.0	337	55.0	387	60.0
238	60.0	288	55.0	338	55.0	388	60.0
239	60.0	289	55.0	339	55.0	389	59.7
240	60.0	290	55.0	340	55.0	390	59.0
241	60.0	291	55.0	341	55.0	391	57.9
242	60.0	292	55.0	342	55.4	392	56.4
243	60.0	293	55.0	343	56.2	393	55.3
244	60.0	294	55.0	344	57.0	394	55.0
245	60.0	295	55.0	345	57.8	395	55.0
246	60.0	296	55.0	346	58.6	396	55.0
247	60.0	297	55.0	347	59.5	397	55.0
248	60.0	298	55.0	348	59.9	398	55.0
249	60.0	299	55.0	349	60.0	399	55.0
250	60.0	300	55.0	350	60.0	400	55.0

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
401	55.0	451	50.0	501	55.0	551	45.5
402	55.0	452	50.0	502	55.0	552	46.6
403	55.0	453	50.0	503	55.0	553	47.6
404	55.0	454	50.0	504	55.0	554	48.6
405	55.0	455	50.0	505	55.0	555	49.6
406	55.0	456	50.0	506	55.0	556	50.0
407	55.0	457	50.0	507	55.0	557	50.0
408	55.0	458	50.0	508	55.0	558	50.0
409	55.0	459	50.0	509	55.0	559	50.0
410	55.0	460	50.0	510	55.0	560	50.0
411	55.0	461	50.7	511	55.0	561	50.0
412	55.0	462	51.8	512	55.0	562	50.0
413	55.0	463	52.9	513	55.0	563	50.0
414	55.0	464	53.9	514	55.0	564	50.0
415	55.0	465	54.8	515	55.0	565	50.0
416	55.0	466	55.0	516	55.0	566	50.0
417	55.0	467	55.0	517	55.0	567	50.0
418	55.0	468	55.0	518	55.0	568	50.0
419	55.0	469	55.0	519	54.9	569	50.0
420	55.0	470	55.0	520	54.4	570	50.0
421	55.0	471	55.0	521	53.6	571	50.0
422	55.0	472	55.0	522	52.4	572	50.0
423	55.0	473	55.0	523	51.0	573	50.0
424	55.0	474	55.0	524	49.2	574	50.0
425	55.0	475	55.0	525	47.3	575	50.0
426	55.0	476	55.0	526	45.8	576	50.0
427	55.0	477	55.0	527	45.0	577	50.0
428	55.0	478	55.0	528	45.0	578	50.0
429	55.0	479	55.0	529	45.0	579	50.1
430	55.0	480	55.0	530	45.0	580	51.0
431	55.0	481	55.0	531	45.0	581	52.2
432	55.0	482	55.0	532	45.0	582	53.4
433	55.0	483	55.0	533	45.0	583	54.5
434	55.0	484	55.0	534	45.0	584	55.0
435	55.0	485	55.0	535	45.0	585	55.0
436	55.0	486	55.0	536	45.0	586	55.0
437	55.0	487	55.0	537	45.0	587	55.0
438	55.0	488	55.0	538	45.0	588	55.0
439	55.0	489	55.0	539	45.0	589	55.0
440	55.0	490	55.0	540	45.0	590	55.0
441	55.0	491	55.0	541	45.0	591	55.0
442	55.0	492	55.0	542	45.0	592	55.0
443	55.0	493	55.0	543	45.0	593	55.0
444	55.0	494	55.0	544	45.0	594	55.0
445	55.0	495	55.0	545	45.0	595	55.0
446	55.0	496	55.0	546	45.0	596	55.0
447	54.6	497	55.0	547	45.0	597	55.0
448	52.9	498	55.0	548	45.0	598	55.0
449	50.5	499	55.0	549	45.0	599	55.0
450	50.0	500	55.0	550	45.0	600	55.0

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
601	55.0	651	60.0	701	60.0	751	55.0
602	55.0	652	60.0	702	60.0	752	55.0
603	55.0	653	60.0	703	60.0	753	55.0
604	55.0	654	60.0	704	60.0	754	54.9
605	55.9	655	60.0	705	59.8	755	53.6
606	57.5	656	60.0	706	59.0	756	51.3
607	59.1	657	60.0	707	57.6	757	50.0
608	60.0	658	60.0	708	55.9	758	50.0
609	60.0	659	60.0	709	55.0	759	50.0
610	60.0	660	60.0	710	55.0	760	50.0
611	60.0	661	60.0	711	55.0	761	50.0
612	60.0	662	60.0	712	55.0	762	50.0
613	60.0	663	60.0	713	55.0	763	50.0
614	60.0	664	60.0	714	55.0	764	50.0
615	60.0	665	60.0	715	55.0	765	50.0
616	60.0	666	60.0	716	55.0	766	50.0
617	60.0	667	60.0	717	55.0	767	50.0
618	60.0	668	60.0	718	55.0	768	50.0
619	60.0	669	60.0	719	55.0	769	50.0
620	60.0	670	60.0	720	55.0	770	50.0
621	60.0	671	60.0	721	55.0	771	50.0
622	60.0	672	60.0	722	55.0	772	50.0
623	60.0	673	60.0	723	55.0	773	50.0
624	60.0	674	60.0	724	55.0	774	50.0
625	60.0	675	60.0	725	55.0	775	50.0
626	60.0	676	60.0	726	55.0	776	50.0
627	60.0	677	60.0	727	55.0	777	50.0
628	60.0	678	60.0	728	55.0	778	50.0
629	60.0	679	60.0	729	55.0	779	50.0
630	60.0	680	60.0	730	55.0	780	50.0
631	60.0	681	60.0	731	55.0	781	50.0
632	60.0	682	60.0	732	55.0	782	50.0
633	60.0	683	60.0	733	55.0	783	50.0
634	60.0	684	60.0	734	55.0	784	50.0
635	60.0	685	60.0	735	55.0	785	50.0
636	60.0	686	60.0	736	55.0	786	50.0
637	60.0	687	60.0	737	55.0	787	50.0
638	60.0	688	60.0	738	55.0	788	50.0
639	60.0	689	60.0	739	55.0	789	50.0
640	60.0	690	60.0	740	55.0	790	50.0
641	60.0	691	60.0	741	55.0	791	50.0
642	60.0	692	60.0	742	55.0	792	50.0
643	60.0	693	60.0	743	55.0	793	50.3
644	60.0	694	60.0	744	55.0	794	51.3
645	60.0	695	60.0	745	55.0	795	52.3
646	60.0	696	60.0	746	55.0	796	53.2
647	60.0	697	60.0	747	55.0	797	54.2
648	60.0	698	60.0	748	55.0	798	54.9
649	60.0	699	60.0	749	55.0	799	55.0
650	60.0	700	60.0	750	55.0	800	55.0

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANCOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
801	55.0	851	55.0	901	50.0	951	30.0
802	55.0	852	55.0	902	50.0	952	30.0
803	55.0	853	55.0	903	49.1	953	30.0
804	55.0	854	55.0	904	46.9	954	30.0
805	55.0	855	55.0	905	45.0	955	30.0
806	55.0	856	55.0	906	45.0	956	30.0
807	55.0	857	55.0	907	45.0	957	29.9
808	55.0	858	55.0	908	45.0	958	29.4
809	55.0	859	55.0	909	45.0	959	28.5
810	55.0	860	55.0	910	45.0	960	27.2
811	55.0	861	55.0	911	45.0	961	25.7
812	55.0	862	55.0	912	45.0	962	25.0
813	55.0	863	55.0	913	45.0	963	25.0
814	55.0	864	55.0	914	45.0	964	25.0
815	55.0	865	55.0	915	45.0	965	25.0
816	55.0	866	55.0	916	45.0	966	25.0
817	55.0	867	55.0	917	45.0	967	25.1
818	55.0	868	54.9	918	45.0	968	25.7
819	55.0	869	54.6	919	45.0	969	26.5
820	55.0	870	54.1	920	45.0	970	27.6
821	55.0	871	53.3	921	45.0	971	28.9
822	55.0	872	52.3	922	45.0	972	30.4
823	55.0	873	51.2	923	45.0	973	32.1
824	55.0	874	50.3	924	45.0	974	34.1
825	55.0	875	50.0	925	45.0	975	35.9
826	55.0	876	50.0	926	45.0	976	37.5
827	55.0	877	50.0	927	45.0	977	39.1
828	55.0	878	50.0	928	45.0	978	40.7
829	55.0	879	50.0	929	45.0	979	42.4
830	55.0	880	50.0	930	45.0	980	44.0
831	55.0	881	50.0	931	44.6	981	45.6
832	55.0	882	50.0	932	43.2	982	47.2
833	55.0	883	50.0	933	40.8	983	48.8
834	55.0	884	50.0	934	40.0	984	50.4
835	55.0	885	50.0	935	40.0	985	52.2
836	55.0	886	50.0	936	40.0	986	53.9
837	55.0	887	50.0	937	40.0	987	55.4
838	55.0	888	50.0	938	40.0	988	56.8
839	55.0	889	50.0	939	40.0	989	57.9
840	55.0	890	50.0	940	40.0	990	58.8
841	55.0	891	50.0	941	40.0	991	59.6
842	55.0	892	50.0	942	39.9	992	60.0
843	55.0	893	50.0	943	39.3	993	60.0
844	55.0	894	50.0	944	38.2	994	60.0
845	55.0	895	50.0	945	36.6	995	60.0
846	55.0	896	50.0	946	34.6	996	60.0
847	55.0	897	50.0	947	32.4	997	60.0
848	55.0	898	50.0	948	30.7	998	60.0
849	55.0	899	50.0	949	30.0	999	60.0
850	55.0	900	50.0	950	30.0	1000	60.0

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1001	60.0	1051	60.0	1101	59.5	1151	55.0
1002	60.0	1052	60.0	1102	58.7	1152	55.0
1003	60.0	1053	60.0	1103	57.6	1153	55.0
1004	60.0	1054	60.0	1104	56.0	1154	55.0
1005	60.0	1055	60.0	1105	54.1	1155	55.0
1006	60.0	1056	60.0	1106	51.9	1156	55.0
1007	60.0	1057	60.0	1107	49.5	1157	55.0
1008	60.0	1058	60.0	1108	47.3	1158	55.0
1009	60.0	1059	60.0	1109	45.7	1159	55.0
1010	60.0	1060	60.0	1110	45.0	1160	55.0
1011	60.0	1061	60.0	1111	45.0	1161	55.0
1012	60.0	1062	60.0	1112	45.0	1162	55.0
1013	60.0	1063	60.0	1113	45.0	1163	55.0
1014	60.0	1064	60.0	1114	45.0	1164	55.0
1015	60.0	1065	60.0	1115	45.0	1165	55.0
1016	60.0	1066	60.0	1116	45.0	1166	55.0
1017	60.0	1067	60.0	1117	45.0	1167	55.0
1018	60.0	1068	60.0	1118	45.0	1168	55.0
1019	60.0	1069	60.0	1119	45.0	1169	55.0
1020	60.0	1070	60.0	1120	45.0	1170	55.0
1021	60.0	1071	60.0	1121	45.0	1171	55.0
1022	60.0	1072	60.0	1122	45.0	1172	55.0
1023	60.0	1073	60.0	1123	45.0	1173	55.0
1024	60.0	1074	60.0	1124	45.0	1174	55.0
1025	60.0	1075	60.0	1125	45.0	1175	55.0
1026	60.0	1076	60.0	1126	45.0	1176	55.0
1027	60.0	1077	60.0	1127	45.0	1177	55.0
1028	60.0	1078	60.0	1128	45.0	1178	55.0
1029	60.0	1079	60.0	1129	45.0	1179	55.0
1030	60.0	1080	60.0	1130	45.0	1180	55.0
1031	60.0	1081	60.0	1131	45.0	1181	55.0
1032	60.0	1082	60.0	1132	45.0	1182	55.0
1033	60.0	1083	60.0	1133	45.0	1183	55.0
1034	60.0	1084	60.0	1134	45.6	1184	55.0
1035	60.0	1085	60.0	1135	46.5	1185	55.0
1036	60.0	1086	60.0	1136	47.8	1186	55.0
1037	60.0	1087	60.0	1137	49.0	1187	55.0
1038	60.0	1088	60.0	1138	50.1	1188	55.0
1039	60.0	1089	60.0	1139	51.2	1189	55.0
1040	60.0	1090	60.0	1140	52.4	1190	55.0
1041	60.0	1091	60.0	1141	53.6	1191	55.0
1042	60.0	1092	60.0	1142	54.4	1192	55.0
1043	60.0	1093	60.0	1143	55.0	1193	55.0
1044	60.0	1094	60.0	1144	55.0	1194	55.0
1045	60.0	1095	60.0	1145	55.0	1195	55.0
1046	60.0	1096	60.0	1146	55.0	1196	55.0
1047	60.0	1097	60.0	1147	55.0	1197	54.6
1048	60.0	1098	60.0	1148	55.0	1198	53.6
1049	60.0	1099	60.0	1149	55.0	1199	52.0
1050	60.0	1100	59.9	1150	55.0	1200	50.4

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1928747119

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1201	50.4	1216	50.0	1231	46.8	1246	2.8
1202	50.0	1217	50.0	1232	45.3	1247	1.1
1203	50.0	1218	50.0	1233	43.6	1248	0.0
1204	50.0	1219	50.0	1234	41.5	1249	0.0
1205	50.0	1220	50.0	1235	39.1	1250	0.0
1206	50.0	1221	50.0	1236	36.5	1251	0.0
1207	50.0	1222	50.0	1237	33.5	1252	0.0
1208	50.0	1223	50.0	1238	30.3	1253	0.0
1209	50.0	1224	50.0	1239	26.8	1254	0.0
1210	50.0	1225	50.0	1240	23.0	1255	0.0
1211	50.0	1226	50.0	1241	19.2	1256	0.0
1212	50.0	1227	49.9	1242	15.4	1257	0.0
1213	50.0	1228	49.6	1243	11.5	1258	0.0
1214	50.0	1229	49.0	1244	8.0		
1215	50.0	1230	48.0	1245	5.1		

FREEWAY DRIVING CYCLE

AVERAGE SPEED FOR THIS CYCLE = 50.703 MPH --- CYCLE LENGTH = 17.711 MILES

KOLMOGOROV-SMIRNOV DIFFERENCES:

FREQUENCY MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0584
ACCEL	0.1601
DECEL	0.1577
MATRIX	0.0398

TIME MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0345
ACCEL	0.2228
DECEL	0.2203
MATRIX	0.0347

FIGURE OF MERIT FOR THIS CYCLE = 1.97

NUMBER OF STOPS PER MILE = 0.06

PRECEDING STATISTICS ARE FOR CYCLE 1928747119

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
1	0	0	10.42	0.0	10.42	0.0	0.0	0
2	0	10	6.33	0.010	16.74	0.010	1.58	1
3	10	10	12.38	0.034	29.12	0.045	0.0	0
4	10	5	2.55	0.006	31.68	0.050	-1.96	4
5	5	5	4.31	0.006	35.99	0.056	0.0	0
6	5	15	7.81	0.022	43.79	0.078	1.28	2
7	15	15	7.56	0.031	51.35	0.110	0.0	0
8	15	30	12.68	0.080	64.03	0.190	1.18	2
9	30	30	9.03	0.075	73.06	0.265	0.0	0
10	30	40	8.10	0.079	81.16	0.344	1.23	2
11	40	40	9.40	0.104	90.56	0.448	0.0	0
12	40	55	11.75	0.156	102.30	0.604	1.28	2
13	55	55	52.74	0.806	155.04	1.410	0.0	0
14	55	60	5.26	0.084	160.30	1.494	0.95	2
15	60	60	107.68	1.795	267.98	3.288	0.0	0
16	60	55	4.10	0.066	272.08	3.354	-1.22	4
17	55	55	69.00	1.054	341.09	4.408	0.0	0
18	55	60	7.16	0.114	348.25	4.523	0.70	2
19	60	60	39.66	0.661	387.91	5.184	0.0	0
20	60	55	5.62	0.090	393.53	5.274	-0.89	4
21	55	55	52.74	0.806	446.27	6.080	0.0	0
22	55	50	3.21	0.047	449.48	6.127	-1.56	4
23	50	50	10.45	0.145	459.93	6.272	0.0	0
24	50	55	5.58	0.082	465.51	6.354	0.90	2
25	55	55	52.74	0.806	518.25	7.160	0.0	0
26	55	45	8.88	0.125	527.13	7.285	-1.13	4
27	45	45	23.06	0.288	550.19	7.573	0.0	0
28	45	50	5.58	0.074	555.77	7.647	0.90	2
29	50	50	22.98	0.319	578.74	7.966	0.0	0
30	50	55	5.12	0.075	583.86	8.041	0.98	2
31	55	55	20.31	0.310	604.17	8.351	0.0	0
32	55	60	3.77	0.060	607.94	8.411	1.33	2
33	60	60	96.39	1.607	704.33	10.018	0.0	0
34	60	55	4.61	0.074	708.94	10.092	-1.09	4
35	55	55	44.66	0.682	753.59	10.774	0.0	0
36	55	50	3.21	0.047	756.80	10.821	-1.56	4
37	50	50	35.50	0.493	792.31	11.314	0.0	0
38	50	55	6.04	0.088	798.35	11.402	0.83	2
39	55	55	69.00	1.054	867.36	12.457	0.0	0
40	55	50	7.48	0.110	874.84	12.567	-0.67	4

FREEWAY DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
41	50	50	27.14	0.377	901.97	12.943	0.0	0
42	50	45	3.01	0.040	904.99	12.983	-1.66	4
43	45	45	25.26	0.316	930.24	13.299	0.0	0
44	45	40	3.44	0.041	933.68	13.340	-1.45	4
45	40	40	7.69	0.085	941.37	13.426	0.0	0
46	40	30	7.45	0.074	948.83	13.500	-1.34	4
47	30	30	7.64	0.064	956.47	13.563	0.0	0
48	30	25	5.54	0.043	962.01	13.606	-0.90	4
49	25	25	4.94	0.034	966.96	13.641	0.0	0
50	25	60	24.91	0.297	991.86	13.937	1.41	2
51	60	60	107.68	1.795	1099.55	15.732	0.0	0
52	60	45	10.37	0.154	1109.92	15.887	-1.45	4
53	45	45	23.06	0.288	1132.98	16.175	0.0	0
54	45	55	10.13	0.141	1143.11	16.316	0.99	2
55	55	55	52.74	0.806	1195.85	17.122	0.0	0
56	55	50	4.79	0.070	1200.64	17.192	-1.04	4
57	50	50	25.06	0.348	1225.70	17.540	0.0	0
58	50	0	21.42	0.171	1247.11	17.711	-2.33	4
59	0	0	10.42	0.0	1257.53	17.711	0.0	0

FREEWAY DRIVING CYCLE

NORMALIZED MODE FREQUENCY (PERCENT) --- CYCLE 1928747119

	0	5	10	15	20	25	30	35	40	45	50	55	60
0	3.39	0.0	1.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	1.69	0.0	1.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	1.69	1.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	1.69	0.0	0.0	1.69	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	1.69	0.0	0.0	0.0	0.0	0.0	0.0	1.69
30	0.0	0.0	0.0	0.0	0.0	1.69	3.39	0.0	1.69	0.0	0.0	0.0	0.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.0	0.0	0.0	0.0	0.0	0.0	1.69	0.0	3.39	0.0	0.0	1.69	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.69	5.08	1.69	1.69	0.0
50	1.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.69	8.47	5.08	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.69	6.78	13.56	5.08
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.69	0.0	5.08	6.78

FREEWAY DRIVING CYCLE

NORMALIZED TIME IN MODE (PERCENT) --- CYCLE 1928747119

	0	5	10	15	20	25	30	35	40	45	50	55	60
0	1.66	0.0	0.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.34	0.0	0.62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.20	0.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.60	0.0	0.0	1.01	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.39	0.0	0.0	0.0	0.0	0.0	0.0	1.98
30	0.0	0.0	0.0	0.0	0.0	0.44	1.33	0.0	0.64	0.0	0.0	0.0	0.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.0	0.0	0.0	0.0	0.0	0.0	0.59	0.0	1.36	0.0	0.0	0.93	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.27	5.68	0.44	0.81	0.0
50	1.70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.24	9.63	1.33	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.71	1.49	32.92	1.29
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.82	0.0	1.14	27.95

FREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
0	0.0						
1	0.0	51	8.6	101	35.0	151	26.5
2	0.0	52	5.6	102	35.0	152	28.1
3	0.0	53	5.0	103	35.0	153	29.6
4	0.0	54	5.0	104	35.0	154	31.0
5	0.0	55	5.0	105	35.0	155	32.3
6	0.0	56	5.0	106	35.0	156	33.5
7	0.0	57	3.1	107	34.8	157	34.6
8	0.0	58	0.0	108	33.7	158	35.6
9	0.0	59	0.0	109	31.6	159	36.6
10	0.0	60	0.0	110	28.6	160	37.4
11	0.0	61	0.0	111	24.6	161	38.1
12	0.0	62	0.0	112	19.8	162	38.7
13	0.0	63	0.0	113	14.1	163	39.2
14	0.0	64	0.0	114	8.3	164	39.6
15	0.0	65	0.0	115	3.4	165	40.0
16	0.0	66	0.0	116	0.6	166	40.0
17	-0.0	67	0.0	117	0.0	167	40.0
18	0.7	68	0.0	118	0.0	168	40.0
19	2.5	69	0.0	119	0.0	169	40.0
20	5.3	70	0.0	120	0.0	170	40.0
21	8.2	71	0.0	121	0.0	171	40.0
22	11.0	72	0.2	122	0.0	172	40.0
23	13.9	73	1.6	123	0.0	173	40.0
24	16.8	74	4.6	124	0.0	174	40.0
25	19.5	75	8.1	125	0.0	175	40.0
26	21.9	76	11.5	126	0.0	176	40.0
27	24.2	77	15.0	127	0.0	177	40.0
28	26.3	78	18.3	128	0.0	178	40.0
29	28.1	79	21.4	129	0.0	179	40.0
30	29.7	80	24.1	130	0.0	180	40.0
31	31.2	81	26.6	131	0.0	181	40.0
32	32.4	82	28.7	132	0.0	182	40.0
33	33.3	83	30.6	133	0.0	183	40.0
34	34.1	84	32.1	134	0.0	184	40.0
35	34.7	85	33.3	135	0.0	185	40.0
36	35.0	86	34.2	136	0.0	186	40.0
37	35.0	87	34.8	137	0.0	187	40.0
38	35.0	88	35.0	138	0.0	188	40.0
39	35.0	89	35.0	139	0.0	189	40.0
40	35.0	90	35.0	140	0.2	190	39.9
41	35.0	91	35.0	141	1.8	191	39.3
42	35.0	92	35.0	142	5.0	192	38.3
43	35.0	93	35.0	143	8.2	193	36.9
44	34.9	94	35.0	144	10.8	194	35.6
45	33.9	95	35.0	145	13.3	195	35.0
46	31.8	96	35.0	146	15.9	196	35.0
47	28.7	97	35.0	147	18.4	197	35.0
48	24.6	98	35.0	148	20.9	198	35.0
49	19.4	99	35.0	149	23.0	199	35.0
50	13.8	100	35.0	150	24.8	200	35.0

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
201	35.0	251	35.0	301	30.0	351	20.1
202	35.0	252	35.0	302	30.0	352	21.4
203	35.0	253	35.0	303	30.0	353	22.4
204	35.0	254	35.0	304	30.0	354	23.3
205	35.0	255	35.0	305	30.0	355	24.0
206	35.0	256	35.0	306	30.0	356	24.6
207	35.0	257	35.0	307	30.0	357	24.9
208	35.0	258	35.0	308	29.6	358	25.0
209	35.0	259	35.0	309	28.7	359	25.0
210	35.0	260	35.0	310	27.3	360	25.0
211	35.0	261	35.0	311	25.4	361	25.0
212	35.0	262	35.0	312	23.0	362	25.0
213	35.0	263	35.0	313	20.1	363	24.9
214	35.0	264	35.0	314	16.7	364	24.0
215	35.0	265	34.8	315	12.9	365	22.2
216	35.0	266	34.1	316	9.0	366	19.7
217	35.0	267	32.7	317	5.2	367	16.2
218	35.0	268	30.9	318	2.3	368	12.1
219	34.9	269	30.0	319	0.5	369	8.1
220	34.7	270	30.0	320	0.0	370	5.6
221	34.2	271	30.0	321	0.0	371	5.0
222	33.5	272	30.0	322	0.0	372	5.0
223	32.6	273	30.0	323	0.0	373	4.0
224	31.5	274	30.0	324	0.0	374	0.8
225	30.3	275	30.0	325	0.0	375	0.0
226	28.8	276	30.0	326	0.0	376	0.0
227	27.1	277	30.0	327	0.0	377	0.0
228	25.3	278	30.0	328	0.0	378	0.0
229	23.5	279	30.0	329	0.0	379	0.0
230	22.0	280	30.0	330	0.0	380	0.0
231	20.8	281	29.7	331	0.0	381	0.0
232	20.1	282	28.9	332	0.0	382	0.0
233	20.0	283	27.4	333	0.0	383	0.0
234	20.0	284	25.3	334	0.0	384	0.0
235	20.0	285	22.9	335	0.0	385	0.0
236	20.0	286	20.8	336	0.0	386	0.0
237	20.0	287	20.0	337	0.0	387	0.0
238	20.5	288	20.0	338	0.0	388	0.0
239	21.4	289	20.0	339	0.0	389	1.0
240	22.7	290	20.0	340	0.1	390	2.7
241	24.3	291	20.0	341	0.8	391	4.0
242	25.7	292	20.0	342	2.5	392	4.8
243	27.0	293	20.5	343	4.8	393	5.0
244	28.4	294	22.0	344	6.9	394	5.0
245	29.8	295	23.8	345	9.1	395	5.0
246	31.1	296	25.5	346	11.3	396	5.0
247	32.6	297	27.2	347	13.4	397	5.2
248	33.8	298	28.9	348	15.4	398	5.9
249	34.6	299	29.9	349	17.1	399	7.2
250	35.0	300	30.0	350	18.7	400	8.6

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
401	9.9	451	40.0	501	10.0	551	40.0
402	11.1	452	39.8	502	10.2	552	40.0
403	12.4	453	39.4	503	11.3	553	40.0
404	13.7	454	38.9	504	13.2	554	40.0
405	14.6	455	38.2	505	15.3	555	40.0
406	15.0	456	37.4	506	17.3	556	40.0
407	15.0	457	36.4	507	19.2	557	40.0
408	15.0	458	35.2	508	21.1	558	40.0
409	15.0	459	33.9	509	23.1	559	40.0
410	14.7	460	32.4	510	24.5	560	40.0
411	12.7	461	30.7	511	25.0	561	40.0
412	10.1	462	28.9	512	25.0	562	40.0
413	10.0	463	26.9	513	25.0	563	40.0
414	10.0	464	24.8	514	25.0	564	40.0
415	11.2	465	22.4	515	25.0	565	40.0
416	13.6	466	20.0	516	25.0	566	40.0
417	15.7	467	17.4	517	25.0	567	40.1
418	18.0	468	14.9	518	24.5	568	41.1
419	19.7	469	12.3	519	22.8	569	42.4
420	20.0	470	9.7	520	20.1	570	43.6
421	20.0	471	7.2	521	16.2	571	44.7
422	20.0	472	5.1	522	11.6	572	45.0
423	20.1	473	3.3	523	7.2	573	45.0
424	20.7	474	1.9	524	5.0	574	45.0
425	21.4	475	0.8	525	5.0	575	45.0
426	22.4	476	0.1	526	5.0	576	44.9
427	23.6	477	0.0	527	5.0	577	44.7
428	25.0	478	0.0	528	5.3	578	44.2
429	26.4	479	0.0	529	6.4	579	43.7
430	27.6	480	0.0	530	8.0	580	43.0
431	28.8	481	0.0	531	10.1	581	42.1
432	30.0	482	0.0	532	12.6	582	41.0
433	31.2	483	0.0	533	15.4	583	39.8
434	32.4	484	0.0	534	17.8	584	38.5
435	33.6	485	0.0	535	20.1	585	37.0
436	34.9	486	0.0	536	22.4	586	35.3
437	36.2	487	0.0	537	24.8	587	33.4
438	37.4	488	0.0	538	27.1	588	31.5
439	38.3	489	0.0	539	29.5	589	29.3
440	39.1	490	0.0	540	32.0	590	27.0
441	39.7	491	0.0	541	34.4	591	24.5
442	40.0	492	0.0	542	36.5	592	21.9
443	40.0	493	0.0	543	38.1	593	19.2
444	40.0	494	1.0	544	39.3	594	16.6
445	40.0	495	3.7	545	40.0	595	13.9
446	40.0	496	6.3	546	40.0	596	11.2
447	40.0	497	8.2	547	40.0	597	8.5
448	40.0	498	9.4	548	40.0	598	6.3
449	40.0	499	10.0	549	40.0	599	4.3
450	40.0	500	10.0	550	40.0	600	2.7

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
601	1.4	651	40.0	701	0.0	751	35.0
602	0.5	652	40.0	702	0.0	752	35.0
603	0.0	653	40.0	703	0.0	753	35.0
604	0.0	654	40.0	704	0.0	754	35.0
605	0.0	655	40.0	705	0.0	755	35.0
606	0.0	656	40.0	706	0.0	756	35.0
607	0.0	657	40.0	707	0.0	757	35.0
608	0.0	658	40.0	708	0.0	758	35.0
609	0.0	659	40.0	709	0.0	759	34.7
610	0.0	660	40.0	710	0.0	760	34.3
611	0.0	661	40.0	711	0.0	761	33.6
612	0.0	662	40.0	712	0.0	762	32.8
613	0.0	663	40.0	713	0.0	763	31.8
614	0.2	664	40.0	714	0.0	764	30.8
615	1.4	665	40.0	715	0.0	765	30.1
616	3.6	666	40.0	716	0.0	766	30.0
617	6.2	667	40.0	717	0.0	767	30.0
618	8.5	668	40.0	718	0.0	768	30.0
619	10.6	669	39.6	719	0.0	769	30.0
620	12.5	670	38.8	720	0.0	770	30.0
621	14.5	671	37.5	721	2.0	771	30.0
622	16.4	672	35.7	722	6.5	772	30.0
623	18.4	673	33.5	723	10.4	773	30.0
624	20.3	674	31.4	724	13.9	774	30.0
625	22.2	675	30.1	725	17.5	775	30.0
626	23.6	676	30.0	726	21.0	776	30.0
627	25.0	677	30.0	727	23.8	777	30.0
628	26.3	678	30.0	728	26.2	778	30.0
629	27.6	679	30.0	729	28.5	779	30.0
630	28.8	680	30.0	730	30.5	780	30.0
631	29.9	681	30.0	731	32.3	781	29.8
632	31.0	682	30.0	732	34.0	782	29.4
633	32.0	683	30.0	733	35.5	783	28.5
634	33.0	684	30.0	734	36.7	784	27.3
635	33.9	685	30.0	735	37.8	785	26.0
636	34.7	686	30.0	736	38.7	786	25.1
637	35.5	687	30.0	737	39.3	787	25.0
638	36.2	688	30.0	738	40.0	788	25.0
639	36.9	689	30.0	739	40.0	789	25.0
640	37.5	690	30.0	740	40.0	790	25.0
641	38.0	691	29.4	741	40.0	791	25.0
642	38.5	692	28.0	742	40.0	792	25.0
643	38.9	693	25.8	743	39.7	793	25.0
644	39.3	694	22.7	744	38.9	794	25.0
645	39.6	695	18.8	745	37.7	795	25.4
646	40.0	696	14.2	746	36.3	796	26.0
647	40.0	697	9.2	747	35.2	797	26.8
648	40.0	698	4.4	748	35.0	798	27.5
649	40.0	699	1.2	749	35.0	799	28.2
650	40.0	700	0.0	750	35.0	800	28.9

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
801	29.5	851	47.9	901	40.0	951	19.4
802	29.9	852	49.2	902	40.0	952	16.0
803	30.0	853	50.0	903	40.0	953	12.6
804	30.0	854	50.0	904	40.0	954	9.1
805	30.0	855	50.0	905	40.0	955	6.2
806	30.0	856	50.0	906	40.0	956	3.7
807	30.0	857	50.0	907	40.0	957	1.9
808	30.0	858	50.0	908	40.0	958	0.6
809	30.0	859	50.0	909	40.0	959	0.0
810	30.0	860	50.0	910	40.0	960	0.0
811	30.0	861	50.0	911	40.7	961	0.0
812	30.0	862	50.0	912	42.0	962	0.0
813	30.0	863	50.0	913	43.1	963	0.0
814	30.0	864	50.0	914	44.3	964	0.0
815	30.0	865	50.0	915	45.0	965	0.0
816	29.6	866	50.0	916	45.0	966	0.0
817	27.8	867	49.8	917	45.0	967	0.0
818	24.8	868	48.8	918	45.0	968	0.0
819	21.2	869	47.0	919	45.0	969	0.0
820	20.0	870	45.2	920	45.0	970	0.0
821	20.0	871	45.0	921	45.0	971	0.0
822	20.0	872	45.0	922	45.0	972	0.0
823	20.0	873	45.0	923	45.0	973	0.0
824	20.0	874	45.0	924	45.0	974	0.0
825	20.2	875	45.0	925	45.0	975	0.0
826	20.9	876	45.0	926	45.0	976	0.0
827	21.9	877	45.0	927	45.0	977	0.0
828	22.8	878	45.0	928	45.0	978	0.0
829	23.7	879	45.0	929	45.0	979	0.0
830	24.6	880	45.0	930	45.0	980	0.7
831	25.0	881	45.0	931	45.0	981	2.5
832	25.0	882	45.0	932	45.0	982	5.4
833	25.0	883	45.0	933	45.0	983	8.2
834	25.0	884	45.0	934	45.0	984	11.1
835	25.0	885	45.0	935	45.0	985	14.0
836	25.0	886	45.0	936	45.0	986	16.8
837	25.0	887	45.0	937	45.0	987	19.5
838	25.0	888	45.0	938	44.8	988	22.0
839	25.4	889	45.0	939	44.4	989	24.3
840	26.4	890	45.0	940	43.8	990	26.3
841	28.0	891	45.0	941	42.8	991	28.1
842	29.9	892	45.0	942	41.6	992	29.8
843	32.3	893	44.9	943	40.2	993	31.2
844	34.3	894	43.6	944	38.5	994	32.4
845	36.3	895	41.2	945	36.5	995	33.4
846	38.2	896	40.0	946	34.3	996	34.1
847	40.2	897	40.0	947	31.8	997	34.7
848	42.2	898	40.0	948	29.1	998	35.0
849	44.3	899	40.0	949	26.1	999	35.0
850	46.3	900	40.0	950	22.8	1000	35.0

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1001	35.0	1051	29.9	1101	10.5	1151	40.0
1002	35.0	1052	30.0	1102	13.6	1152	40.0
1003	35.0	1053	30.0	1103	16.7	1153	40.0
1004	35.0	1054	30.0	1104	19.8	1154	40.0
1005	35.0	1055	30.0	1105	22.9	1155	40.0
1006	35.0	1056	30.0	1106	25.7	1156	39.5
1007	35.0	1057	30.0	1107	27.9	1157	38.4
1008	35.0	1058	30.0	1108	30.0	1158	36.7
1009	35.0	1059	30.0	1109	31.9	1159	35.2
1010	35.0	1060	29.7	1110	33.8	1160	35.0
1011	35.0	1061	28.9	1111	35.5	1161	35.0
1012	35.0	1062	27.5	1112	37.0	1162	35.0
1013	35.0	1063	26.0	1113	38.4	1163	35.0
1014	35.0	1064	25.0	1114	39.7	1164	35.0
1015	35.0	1065	25.0	1115	40.9	1165	35.0
1016	35.0	1066	25.0	1116	41.9	1166	34.7
1017	35.0	1067	25.0	1117	42.8	1167	34.1
1018	35.0	1068	25.0	1118	43.5	1168	33.0
1019	35.0	1069	25.0	1119	44.1	1169	31.6
1020	34.8	1070	25.0	1120	44.6	1170	30.4
1021	34.2	1071	25.0	1121	45.0	1171	30.0
1022	33.2	1072	25.0	1122	45.0	1172	30.0
1023	31.8	1073	25.0	1123	45.0	1173	30.0
1024	30.0	1074	24.5	1124	45.0	1174	30.0
1025	27.9	1075	23.6	1125	45.0	1175	30.0
1026	25.3	1076	22.0	1126	45.0	1176	30.0
1027	22.4	1077	19.9	1127	45.0	1177	30.0
1028	19.3	1078	17.3	1128	45.0	1178	29.5
1029	16.2	1079	14.0	1129	45.0	1179	28.6
1030	13.4	1080	10.4	1130	45.0	1180	27.2
1031	11.3	1081	6.6	1131	45.0	1181	25.7
1032	10.2	1082	3.2	1132	45.0	1182	25.0
1033	10.0	1083	0.9	1133	45.0	1183	25.0
1034	10.0	1084	0.0	1134	45.0	1184	25.0
1035	10.0	1085	0.0	1135	45.0	1185	25.0
1036	10.3	1086	0.0	1136	45.0	1186	25.0
1037	11.1	1087	0.0	1137	45.0	1187	25.0
1038	12.2	1088	0.0	1138	45.0	1188	25.0
1039	13.6	1089	0.0	1139	45.0	1189	25.0
1040	15.4	1090	0.0	1140	45.0	1190	25.0
1041	16.9	1091	0.0	1141	44.8	1191	25.0
1042	18.4	1092	0.0	1142	44.2	1192	25.1
1043	19.8	1093	0.0	1143	43.2	1193	25.7
1044	21.3	1094	0.0	1144	41.8	1194	26.7
1045	22.8	1095	0.0	1145	40.5	1195	28.1
1046	24.2	1096	0.0	1146	40.0	1196	29.2
1047	25.8	1097	0.0	1147	40.0	1197	30.4
1048	27.3	1098	0.3	1148	40.0	1198	31.6
1049	28.4	1099	2.8	1149	40.0	1199	32.8
1050	29.3	1100	6.8	1150	40.0	1200	33.9

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 1516946055

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1201	33.9	1213	35.0	1225	17.7	1237	0.0
1202	34.7	1214	35.0	1226	13.8	1238	0.0
1203	35.0	1215	35.0	1227	10.0	1239	0.0
1204	35.0	1216	35.0	1228	6.2	1240	0.0
1205	35.0	1217	34.8	1229	3.2	1241	0.0
1206	35.0	1218	34.1	1230	1.1	1242	0.0
1207	35.0	1219	33.0	1231	-0.0	1243	0.0
1208	35.0	1220	31.5	1232	0.0	1244	0.0
1209	35.0	1221	29.6	1233	0.0	1245	0.0
1210	35.0	1222	27.2	1234	0.0	1246	0.0
1211	35.0	1223	24.5	1235	0.0	1247	0.0
1212	35.0	1224	21.3	1236	0.0		

AVERAGE SPEED FOR THIS CYCLE = 24.483 MPH --- CYCLE LENGTH = 8.481 MILES

KOLMOGOROV-SMIRNOV DIFFERENCES:

FREQUENCY MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0726
ACCEL	0.1044
DECEL	0.0983
MATRIX	0.0459

TIME MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0492
ACCEL	0.1091
DECEL	0.1022
MATRIX	0.0253

FIGURE OF MERIT FOR THIS CYCLE = 1.60

NUMBER OF STOPS PER MILE = 1.18

PRECEDING STATISTICS ARE FOR CYCLE 1516946055

NONFREEWAY DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
1	0	0	16.98	0.0	16.98	0.0	0.0	0
2	0	35	18.84	0.107	35.82	0.107	1.86	1
3	35	35	7.86	0.076	43.68	0.183	0.0	0
4	35	5	8.74	0.054	52.42	0.237	-3.43	4
5	5	5	3.60	0.005	56.02	0.242	0.0	0
6	5	0	1.88	0.002	57.91	0.244	-2.65	4
7	0	0	13.75	0.0	71.66	0.244	0.0	0
8	0	35	15.73	0.089	87.39	0.333	2.23	1
9	35	35	19.09	0.186	106.48	0.519	0.0	0
10	35	0	9.93	0.056	116.41	0.574	-3.53	4
11	0	0	23.26	0.0	139.67	0.574	0.0	0
12	0	40	25.07	0.176	164.74	0.751	1.60	3
13	40	40	24.56	0.273	189.30	1.024	0.0	0
14	40	35	5.56	0.058	194.86	1.082	-0.90	4
15	35	35	23.58	0.229	218.44	1.311	0.0	0
16	35	20	13.92	0.111	232.36	1.422	-1.08	4
17	20	20	4.83	0.027	237.19	1.449	0.0	0
18	20	35	12.61	0.097	249.80	1.546	1.19	2
19	35	35	14.59	0.142	264.39	1.688	0.0	0
20	35	30	4.56	0.042	268.95	1.729	-1.10	4
21	30	30	11.21	0.093	280.16	1.823	0.0	0
22	30	20	6.66	0.048	286.82	1.870	-1.50	4
23	20	20	5.58	0.031	292.40	1.901	0.0	0
24	20	30	6.75	0.047	299.15	1.949	1.48	2
25	30	30	7.76	0.065	306.91	2.013	0.0	0
26	30	0	12.62	0.061	319.53	2.074	-2.38	4
27	0	0	20.21	0.0	339.74	2.074	0.0	0
28	0	25	17.58	0.071	357.32	2.145	1.42	1
29	25	25	5.27	0.037	362.59	2.182	0.0	0
30	25	5	7.90	0.036	370.49	2.218	-2.53	4
31	5	5	1.68	0.002	372.17	2.220	0.0	0
32	5	0	2.26	0.002	374.43	2.222	-2.22	4
33	0	0	13.75	0.0	388.18	2.222	0.0	0
34	0	5	4.42	0.004	392.60	2.226	1.13	1
35	5	5	4.08	0.006	396.68	2.231	0.0	0
36	5	15	9.10	0.026	405.78	2.257	1.10	2
37	15	15	3.65	0.015	409.43	2.272	0.0	0
38	15	10	2.74	0.010	412.17	2.282	-1.82	4
39	10	10	1.91	0.005	414.09	2.287	0.0	0
40	10	20	5.29	0.022	419.38	2.309	1.89	2

NONFREEWAY DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
41	20	20	3.35	0.019	422.72	2.328	0.0	0
42	20	40	19.02	0.160	441.74	2.488	1.05	2
43	40	40	9.05	0.101	450.79	2.588	0.0	0
44	40	0	25.47	0.163	476.26	2.751	-1.57	4
45	0	0	16.98	0.0	493.24	2.751	0.0	0
46	0	10	5.77	0.009	499.01	2.760	1.73	1
47	10	10	2.76	0.008	501.77	2.768	0.0	0
48	10	25	8.92	0.044	510.69	2.812	1.68	2
49	25	25	6.45	0.045	517.14	2.857	0.0	0
50	25	5	6.92	0.032	524.06	2.888	-2.89	4
51	5	5	3.60	0.005	527.67	2.893	0.0	0
52	5	40	17.17	0.109	544.83	3.003	2.04	2
53	40	40	21.99	0.244	566.82	3.247	0.0	0
54	40	45	4.66	0.055	571.48	3.302	1.07	2
55	45	45	3.93	0.049	575.40	3.351	0.0	0
56	45	0	27.44	0.197	602.85	3.548	-1.64	4
57	0	0	10.70	0.0	613.54	3.548	0.0	0
58	0	40	32.37	0.228	645.91	3.776	1.24	3
59	40	40	21.99	0.244	667.90	4.021	0.0	0
60	40	30	7.39	0.073	675.29	4.094	-1.35	4
61	30	30	14.67	0.122	689.96	4.216	0.0	0
62	30	0	9.85	0.047	699.80	4.263	-3.05	4
63	0	0	20.21	0.0	720.01	4.263	0.0	0
64	0	40	17.96	0.126	737.97	4.390	2.23	3
65	40	40	3.88	0.043	741.85	4.433	0.0	0
66	40	35	5.56	0.058	747.41	4.491	-0.90	4
67	35	35	10.11	0.098	757.51	4.590	0.0	0
68	35	30	7.99	0.073	765.50	4.663	-0.63	4
69	30	30	14.67	0.122	780.17	4.785	0.0	0
70	30	25	6.22	0.048	786.39	4.833	-0.80	4
71	25	25	7.61	0.053	794.00	4.886	0.0	0
72	25	30	8.33	0.064	802.33	4.950	0.60	2
73	30	30	12.94	0.108	815.27	5.058	0.0	0
74	30	20	4.46	0.032	819.73	5.089	-2.24	4
75	20	20	4.83	0.027	824.57	5.116	0.0	0
76	20	25	6.35	0.040	830.92	5.156	0.79	2
77	25	25	7.61	0.053	838.53	5.209	0.0	0
78	25	50	14.56	0.153	853.09	5.362	1.72	2
79	50	50	13.25	0.184	866.34	5.546	0.0	0
80	50	45	4.02	0.053	870.36	5.599	-1.24	4

NONFREEWAY DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
81	45	45	22.25	0.278	892.61	5.877	0.0	0
82	45	40	3.16	0.038	895.77	5.915	-1.58	4
83	40	40	14.23	0.158	910.00	6.073	0.0	0
84	40	45	5.04	0.060	915.04	6.133	0.99	2
85	45	45	22.25	0.278	937.29	6.411	0.0	0
86	45	0	21.46	0.154	958.75	6.565	-2.10	4
87	0	0	20.21	0.0	978.96	6.565	0.0	0
88	0	35	18.84	0.107	997.80	6.672	1.86	1
89	35	35	21.33	0.207	1019.13	6.880	0.0	0
90	35	10	13.15	0.089	1032.28	6.969	-1.90	4
91	10	10	3.19	0.009	1035.46	6.977	0.0	0
92	10	30	15.71	0.088	1051.17	7.066	1.27	2
93	30	30	7.76	0.065	1058.93	7.130	0.0	0
94	30	25	5.19	0.040	1064.12	7.171	-0.96	4
95	25	25	8.79	0.061	1072.91	7.232	0.0	0
96	25	0	10.92	0.044	1083.83	7.275	-2.29	4
97	0	0	13.75	0.0	1097.58	7.275	0.0	0
98	0	45	22.89	0.181	1120.47	7.457	1.97	3
99	45	45	19.63	0.245	1140.10	7.702	0.0	0
100	45	40	5.75	0.069	1145.85	7.770	-0.87	4
101	40	40	9.05	0.101	1154.90	7.871	0.0	0
102	40	35	4.46	0.047	1159.36	7.918	-1.12	4
103	35	35	5.62	0.055	1164.97	7.972	0.0	0
104	35	30	5.68	0.052	1170.66	8.024	-0.88	4
105	30	30	6.04	0.050	1176.69	8.075	0.0	0
106	30	25	5.19	0.040	1181.88	8.115	-0.96	4
107	25	25	9.96	0.069	1191.84	8.184	0.0	0
108	25	35	9.88	0.083	1201.73	8.267	1.01	2
109	35	35	13.47	0.131	1215.20	8.398	0.0	0
110	35	0	14.82	0.083	1230.02	8.481	-2.36	4
111	0	0	16.98	0.0	1247.00	8.481	0.0	0

NONFREEWAY DRIVING CYCLE

NORMALIZED MODE FREQUENCY (PERCENT) --- CYCLE 1516946055

	0	5	10	15	20	25	30	35	40	45	50	55	60
0	9.91	0.90	0.90	0.0	0.0	0.90	0.0	2.70	2.70	0.90	0.0	0.0	0.0
5	1.80	3.60	0.0	0.90	0.0	0.0	0.0	0.0	0.90	0.0	0.0	0.0	0.0
10	0.0	0.0	2.70	0.0	0.90	0.90	0.90	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.90	0.90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	3.60	0.90	0.90	0.90	0.90	0.0	0.0	0.0	0.0
25	0.90	1.80	0.0	0.0	0.0	5.41	0.90	0.90	0.0	0.0	0.90	0.0	0.0
30	1.80	0.0	0.0	0.0	1.80	2.70	6.31	0.0	0.0	0.0	0.0	0.0	0.0
35	1.80	0.90	0.90	0.0	0.90	0.0	2.70	7.21	0.0	0.0	0.0	0.0	0.0
40	0.90	0.0	0.0	0.0	0.0	0.0	0.90	2.70	6.31	1.80	0.0	0.0	0.0
45	1.80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.80	3.60	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.90	0.90	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NONFREEWAY DRIVING CYCLE

NORMALIZED TIME IN MODE (PERCENT) --- CYCLE 1516946055

	0	5	10	15	20	25	30	35	40	45	50	55	60
0	14.98	0.35	0.46	0.0	0.0	1.41	0.0	4.28	6.05	1.84	0.0	0.0	0.0
5	0.33	1.04	0.0	0.73	0.0	0.0	0.0	0.0	1.38	0.0	0.0	0.0	0.0
10	0.0	0.0	0.63	0.0	0.42	0.72	1.26	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.22	0.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	1.49	0.51	0.54	1.01	1.53	0.0	0.0	0.0	0.0
25	0.88	1.19	0.0	0.0	0.0	3.66	0.67	0.79	0.0	0.0	1.17	0.0	0.0
30	1.80	0.0	0.0	0.0	0.89	1.33	6.02	0.0	0.0	0.0	0.0	0.0	0.0
35	1.98	0.70	1.05	0.0	1.12	0.0	1.46	9.27	0.0	0.0	0.0	0.0	0.0
40	2.04	0.0	0.0	0.0	0.0	0.0	0.59	1.25	8.40	0.78	0.0	0.0	0.0
45	3.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.71	5.46	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.32	1.06	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NONFREEWAY DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
0	0.0						
1	0.0	51	35.0	101	28.5	151	28.6
2	0.0	52	35.0	102	30.7	152	26.8
3	0.0	53	35.0	103	32.9	153	25.2
4	0.0	54	35.0	104	35.1	154	25.0
5	0.0	55	35.0	105	37.6	155	25.0
6	0.0	56	35.0	106	39.8	156	25.0
7	0.0	57	35.0	107	41.7	157	25.0
8	0.0	58	35.0	108	43.2	158	25.0
9	0.0	59	34.7	109	44.4	159	25.0
10	0.0	60	33.9	110	45.0	160	25.0
11	0.0	61	32.6	111	45.0	161	25.0
12	0.0	62	31.0	112	45.0	162	25.0
13	0.0	63	30.0	113	45.0	163	25.0
14	0.0	64	30.0	114	45.0	164	25.0
15	0.0	65	30.0	115	45.0	165	25.2
16	0.0	66	30.0	116	45.0	166	25.8
17	0.0	67	30.0	117	45.0	167	26.8
18	0.5	68	30.0	118	45.0	168	28.0
19	1.5	69	30.0	119	45.0	169	29.1
20	3.1	70	30.0	120	45.0	170	30.2
21	5.2	71	30.0	121	45.0	171	31.2
22	7.2	72	30.0	122	45.0	172	32.3
23	9.2	73	29.9	123	45.0	173	33.4
24	11.2	74	29.7	124	45.0	174	34.3
25	13.2	75	29.3	125	45.0	175	34.9
26	15.2	76	28.7	126	45.0	176	35.0
27	17.2	77	28.0	127	45.0	177	35.0
28	19.1	78	27.0	128	45.0	178	35.0
29	20.9	79	25.9	129	45.0	179	35.0
30	22.6	80	24.6	130	44.4	180	35.0
31	24.2	81	23.1	131	43.1	181	35.0
32	25.6	82	21.4	132	41.1	182	35.0
33	27.0	83	19.6	133	38.4	183	35.0
34	28.3	84	17.7	134	35.2	184	35.0
35	29.4	85	15.8	135	32.1	185	35.0
36	30.5	86	13.9	136	30.3	186	35.0
37	31.4	87	12.3	137	30.0	187	35.0
38	32.3	88	11.1	138	30.0	188	35.0
39	33.0	89	10.3	139	30.0	189	35.0
40	33.6	90	10.0	140	30.0	190	35.0
41	34.1	91	10.0	141	30.0	191	35.0
42	34.6	92	10.2	142	30.0	192	35.0
43	34.9	93	11.2	143	30.0	193	34.8
44	35.0	94	12.7	144	30.0	194	34.3
45	35.0	95	14.5	145	30.0	195	33.6
46	35.0	96	16.6	146	30.0	196	32.6
47	35.0	97	19.4	147	30.0	197	31.4
48	35.0	98	21.8	148	30.0	198	30.4
49	35.0	99	24.0	149	30.0	199	30.0
50	35.0	100	26.2	150	29.7	200	30.0

COMPOSITE DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
201	30.0	251	16.8	301	40.0	351	8.8
202	30.0	252	19.2	302	40.0	352	11.9
203	30.0	253	21.5	303	40.0	353	14.5
204	30.0	254	23.8	304	40.0	354	16.6
205	30.0	255	25.8	305	40.0	355	18.2
206	30.0	256	27.5	306	40.0	356	19.3
207	30.0	257	29.1	307	40.0	357	19.9
208	30.0	258	30.6	308	40.0	358	20.0
209	30.0	259	32.1	309	40.0	359	20.4
210	30.0	260	33.4	310	40.0	360	21.7
211	29.6	261	34.7	311	40.0	361	23.0
212	28.8	262	36.0	312	40.0	362	24.3
213	27.5	263	37.1	313	40.0	363	25.0
214	25.8	264	38.2	314	39.6	364	25.0
215	23.6	265	39.2	315	39.0	365	25.0
216	21.0	266	40.1	316	38.0	366	25.0
217	18.0	267	40.9	317	36.7	367	25.0
218	14.9	268	41.7	318	35.1	368	25.0
219	12.2	269	42.4	319	33.1	369	25.0
220	10.5	270	43.0	320	30.9	370	24.9
221	10.0	271	43.6	321	28.3	371	24.5
222	10.0	272	44.0	322	25.4	372	23.8
223	9.9	273	44.4	323	22.1	373	22.7
224	8.6	274	44.7	324	18.6	374	21.3
225	5.8	275	45.0	325	15.0	375	19.6
226	2.1	276	45.0	326	11.4	376	17.6
227	0.0	277	45.0	327	7.8	377	15.3
228	0.0	278	45.0	328	4.8	378	12.7
229	0.0	279	45.0	329	2.5	379	10.2
230	0.0	280	45.0	330	0.8	380	7.8
231	0.0	281	45.0	331	0.0	381	6.1
232	0.0	282	45.0	332	0.0	382	5.1
233	0.0	283	45.0	333	0.0	383	5.0
234	0.0	284	45.0	334	0.0	384	5.0
235	0.0	285	45.0	335	0.0	385	5.0
236	0.0	286	45.0	336	0.0	386	5.2
237	0.0	287	45.0	337	0.0	387	7.9
238	0.0	288	45.0	338	0.0	388	12.5
239	0.0	289	45.0	339	0.0	389	16.5
240	0.0	290	45.0	340	0.0	390	20.0
241	0.0	291	45.0	341	0.0	391	23.5
242	0.0	292	44.6	342	0.0	392	27.0
243	0.0	293	43.8	343	0.0	393	30.4
244	0.1	294	42.5	344	0.0	394	32.9
245	1.3	295	41.1	345	0.0	395	35.3
246	3.9	296	40.1	346	0.0	396	37.5
247	7.0	297	40.0	347	0.0	397	39.5
248	9.8	298	40.0	348	0.2	398	41.3
249	12.2	299	40.0	349	2.3	399	43.0
250	14.5	300	40.0	350	5.6	400	44.5

COMPOSITE DRIVING CYCLE

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
401	45.8	451	55.0	501	55.0	551	60.0
402	47.0	452	55.0	502	55.0	552	60.0
403	48.0	453	55.0	503	55.0	553	60.0
404	48.8	454	55.0	504	55.0	554	60.0
405	49.4	455	55.0	505	55.0	555	60.0
406	50.0	456	55.0	506	55.0	556	60.0
407	50.0	457	55.0	507	55.0	557	60.0
408	50.0	458	55.0	508	55.0	558	60.0
409	50.0	459	55.0	509	55.0	559	60.0
410	50.0	460	55.0	510	55.0	560	60.0
411	50.0	461	55.0	511	55.0	561	60.0
412	50.0	462	55.0	512	55.0	562	60.0
413	50.0	463	55.0	513	56.5	563	60.0
414	50.0	464	55.0	514	58.2	564	60.0
415	50.0	465	55.0	515	59.8	565	60.0
416	50.0	466	55.0	516	60.0	566	60.0
417	50.0	467	55.0	517	60.0	567	60.0
418	50.0	468	55.0	518	60.0	568	60.0
419	50.0	469	55.0	519	60.0	569	60.0
420	50.0	470	55.0	520	60.0	570	60.0
421	50.0	471	55.0	521	60.0	571	60.0
422	50.0	472	55.0	522	60.0	572	60.0
423	50.0	473	55.0	523	60.0	573	60.0
424	50.6	474	55.0	524	60.0	574	60.0
425	51.6	475	55.0	525	60.0	575	60.0
426	52.4	476	55.0	526	60.0	576	60.0
427	53.3	477	55.0	527	60.0	577	60.0
428	54.3	478	55.0	528	60.0	578	60.0
429	54.9	479	55.0	529	60.0	579	60.0
430	55.0	480	55.0	530	60.0	580	60.0
431	55.0	481	55.0	531	60.0	581	60.0
432	55.0	482	55.0	532	60.0	582	60.0
433	55.0	483	55.0	533	60.0	583	60.0
434	55.0	484	55.0	534	60.0	584	60.0
435	55.0	485	55.0	535	60.0	585	60.0
436	55.0	486	55.0	536	60.0	586	60.0
437	55.0	487	55.0	537	60.0	587	60.0
438	55.0	488	55.0	538	60.0	588	60.0
439	55.0	489	55.0	539	60.0	589	59.6
440	55.0	490	55.0	540	60.0	590	58.6
441	55.0	491	55.0	541	60.0	591	57.0
442	55.0	492	55.0	542	60.0	592	55.4
443	55.0	493	55.0	543	60.0	593	55.0
444	55.0	494	55.0	544	60.0	594	55.0
445	55.0	495	55.0	545	60.0	595	55.0
446	55.0	496	55.0	546	60.0	596	55.0
447	55.0	497	55.0	547	60.0	597	55.0
448	55.0	498	55.0	548	60.0	598	55.0
449	55.0	499	55.0	549	60.0	599	55.0
450	55.0	500	55.0	550	60.0	600	55.0

COMPOSITE DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
601	55.0	651	50.0	701	37.1	751	1.7
602	55.0	652	49.7	702	38.0	752	5.1
603	55.0	653	49.1	703	38.8	753	8.9
604	55.0	654	48.1	704	39.5	754	12.7
605	55.0	655	46.8	705	39.9	755	16.5
606	55.0	656	45.1	706	40.0	756	20.1
607	55.0	657	43.1	707	40.0	757	23.3
608	55.0	658	40.7	708	40.0	758	26.1
609	55.0	659	37.9	709	40.0	759	28.5
610	55.0	660	34.8	710	40.0	760	30.6
611	55.0	661	31.3	711	40.0	761	32.2
612	55.0	662	27.4	712	40.0	762	33.5
613	55.0	663	23.4	713	40.0	763	34.5
614	55.0	664	19.4	714	40.0	764	35.0
615	55.0	665	15.3	715	40.0	765	35.0
616	55.0	666	11.6	716	40.0	766	35.0
617	55.0	667	8.7	717	39.9	767	35.0
618	55.0	668	6.6	718	39.5	768	35.0
619	55.0	669	5.2	719	38.6	769	35.0
620	55.0	670	5.0	720	37.4	770	35.0
621	54.8	671	5.0	721	35.8	771	35.0
622	54.3	672	5.0	722	33.7	772	35.0
623	53.5	673	6.0	723	31.3	773	35.0
624	52.3	674	8.0	724	28.5	774	35.0
625	51.1	675	10.6	725	25.3	775	34.5
626	50.2	676	12.8	726	21.6	776	33.6
627	50.0	677	15.1	727	17.7	777	32.1
628	50.0	678	17.5	728	13.7	778	30.1
629	50.0	679	19.3	729	9.6	779	27.5
630	50.0	680	20.0	730	5.9	780	24.4
631	50.0	681	20.0	731	3.1	781	20.8
632	50.0	682	20.0	732	1.1	782	16.6
633	50.0	683	20.0	733	0.0	783	12.3
634	50.0	684	20.0	734	0.0	784	7.9
635	50.0	685	20.0	735	0.0	785	4.1
636	50.0	686	20.5	736	0.0	786	1.5
637	50.0	687	21.1	737	0.0	787	0.0
638	50.0	688	21.9	738	0.0	788	0.0
639	50.0	689	23.0	739	0.0	789	0.0
640	50.0	690	24.2	740	0.0	790	0.0
641	50.0	691	25.6	741	0.0	791	0.0
642	50.0	692	26.7	742	0.0	792	0.0
643	50.0	693	27.9	743	0.0	793	0.0
644	50.0	694	29.0	744	0.0	794	0.0
645	50.0	695	30.1	745	0.0	795	0.0
646	50.0	696	31.3	746	0.0	796	0.0
647	50.0	697	32.4	747	0.0	797	0.0
648	50.0	698	33.5	748	0.0	798	0.0
649	50.0	699	34.7	749	0.0	799	0.0
650	50.0	700	35.9	750	0.1	800	0.0

COMPOSITE DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
801	0.0	851	15.0	901	40.0	951	30.0
802	0.0	852	15.2	902	40.0	952	30.0
803	0.0	853	16.4	903	40.0	953	29.4
804	0.1	854	18.2	904	40.0	954	27.8
805	2.1	855	20.3	905	40.0	955	25.3
806	6.2	856	22.1	906	40.0	956	21.9
807	9.9	857	24.0	907	40.0	957	18.1
808	13.1	858	25.8	908	40.0	958	15.5
809	16.3	859	27.8	909	40.0	959	15.0
810	19.5	860	29.2	910	40.0	960	15.0
811	22.5	861	30.0	911	40.0	961	15.0
812	24.8	862	30.0	912	40.0	962	15.0
813	26.9	863	30.0	913	40.0	963	15.2
814	28.9	864	30.0	914	39.5	964	16.5
815	30.7	865	30.0	915	38.7	965	18.7
816	32.4	866	30.0	916	37.5	966	20.9
817	33.9	867	30.0	917	35.8	967	22.9
818	35.3	868	30.0	918	33.8	968	25.0
819	36.4	869	30.1	919	31.3	969	27.1
820	37.5	870	30.5	920	28.8	970	28.9
821	38.3	871	31.2	921	26.6	971	30.0
822	39.0	872	31.9	922	25.3	972	30.0
823	39.6	873	32.5	923	25.0	973	30.0
824	40.0	874	33.2	924	25.0	974	30.0
825	40.0	875	33.9	925	25.0	975	30.0
826	40.0	876	34.5	926	25.0	976	30.0
827	40.0	877	34.9	927	25.0	977	30.0
828	40.0	878	35.0	928	25.0	978	30.0
829	40.0	879	35.0	929	25.0	979	30.0
830	40.0	880	35.0	930	25.0	980	30.0
831	40.0	881	35.0	931	25.0	981	30.0
832	40.0	882	35.0	932	25.0	982	30.0
833	40.0	883	35.0	933	25.0	983	30.0
834	40.0	884	35.0	934	25.1	984	30.0
835	40.0	885	35.0	935	25.5	985	30.0
836	39.7	886	35.0	936	26.1	986	30.0
837	39.0	887	35.0	937	26.8	987	30.0
838	37.8	888	35.0	938	27.5	988	30.0
839	36.2	889	35.0	939	28.1	989	30.0
840	34.2	890	35.2	940	28.8	990	30.0
841	31.7	891	36.6	941	29.4	991	30.1
842	28.8	892	38.1	942	29.9	992	31.1
843	25.6	893	39.5	943	30.0	993	32.3
844	22.3	894	40.0	944	30.0	994	33.5
845	19.1	895	40.0	945	30.0	995	34.6
846	16.7	896	40.0	946	30.0	996	35.0
847	15.3	897	40.0	947	30.0	997	35.0
848	15.0	898	40.0	948	30.0	998	35.0
849	15.0	899	40.0	949	30.0	999	35.0
850	15.0	900	40.0	950	30.0	1000	35.0

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1001	35.0	1051	17.7	1101	40.0	1151	14.6
1002	35.0	1052	20.2	1102	40.0	1152	17.3
1003	35.0	1053	22.6	1103	40.0	1153	19.7
1004	35.0	1054	25.0	1104	40.0	1154	22.0
1005	35.0	1055	26.8	1105	40.0	1155	24.1
1006	35.0	1056	28.6	1106	40.0	1156	26.0
1007	35.0	1057	30.2	1107	40.0	1157	27.8
1008	35.0	1058	31.8	1108	40.0	1158	29.3
1009	35.0	1059	33.3	1109	40.0	1159	30.7
1010	35.0	1060	34.7	1110	40.0	1160	31.9
1011	35.0	1061	36.0	1111	40.0	1161	32.9
1012	35.0	1062	37.2	1112	39.8	1162	33.7
1013	34.8	1063	38.3	1113	39.0	1163	34.3
1014	34.2	1064	39.4	1114	37.6	1164	34.8
1015	33.1	1065	40.4	1115	35.5	1165	35.0
1016	31.6	1066	41.2	1116	32.7	1166	35.0
1017	29.7	1067	42.0	1117	29.3	1167	35.0
1018	27.4	1068	42.7	1118	25.2	1168	35.0
1019	24.7	1069	43.3	1119	20.5	1169	35.0
1020	21.5	1070	43.9	1120	15.4	1170	35.0
1021	17.9	1071	44.3	1121	10.2	1171	35.0
1022	14.1	1072	44.7	1122	5.5	1172	35.0
1023	10.2	1073	45.0	1123	2.1	1173	35.0
1024	6.4	1074	45.0	1124	0.2	1174	35.0
1025	3.3	1075	45.0	1125	0.0	1175	35.0
1026	1.2	1076	45.0	1126	0.0	1176	35.0
1027	0.0	1077	45.0	1127	0.0	1177	35.0
1028	0.0	1078	45.0	1128	0.0	1178	35.0
1029	0.0	1079	45.0	1129	0.0	1179	35.0
1030	0.0	1080	45.0	1130	0.0	1180	34.7
1031	0.0	1081	45.0	1131	0.0	1181	34.2
1032	0.0	1082	45.0	1132	0.0	1182	33.3
1033	0.0	1083	45.0	1133	0.0	1183	32.1
1034	0.0	1084	45.0	1134	0.0	1184	30.6
1035	0.0	1085	45.0	1135	0.0	1185	28.8
1036	0.0	1086	45.0	1136	0.0	1186	26.7
1037	0.0	1087	45.0	1137	0.0	1187	24.3
1038	0.0	1088	45.0	1138	0.0	1188	21.5
1039	0.0	1089	45.0	1139	0.0	1189	18.5
1040	0.0	1090	45.0	1140	0.0	1190	15.4
1041	0.0	1091	45.0	1141	0.0	1191	12.3
1042	0.0	1092	44.8	1142	0.0	1192	9.5
1043	0.0	1093	43.6	1143	0.0	1193	7.3
1044	0.1	1094	41.5	1144	0.0	1194	5.8
1045	1.2	1095	40.0	1145	0.4	1195	5.0
1046	4.0	1096	40.0	1146	1.7	1196	5.0
1047	7.2	1097	40.0	1147	4.0	1197	5.0
1048	10.2	1098	40.0	1148	6.7	1198	5.0
1049	12.7	1099	40.0	1149	9.4	1199	5.0
1050	15.2	1100	40.0	1150	12.0	1200	4.9

COMPOSITE DRIVING CYCLE

DRIVING SCHEDULE FOR CYCLE

USING RANDOM NUMBER 355305957

SEC	MPH	SEC	MPH	SEC	MPH	SEC	MPH
1201	4.9	1207	0.0	1213	0.0	1219	0.0
1202	3.6	1208	0.0	1214	0.0	1220	0.0
1203	1.1	1209	0.0	1215	0.0		
1204	0.0	1210	0.0	1216	0.0		
1205	0.0	1211	0.0	1217	0.0		
1206	0.0	1212	0.0	1218	0.0		

AVERAGE SPEED FOR THIS CYCLE = 30.969 MPH --- CYCLE LENGTH = 10.491 MILES

KOLMOGOROV-SMIRNOV DIFFERENCES:

FREQUENCY MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0683
ACCEL	0.1493
DECEL	0.1811
MATRIX	0.0394

TIME MATRIX:

MODE TYPE	DIFFERENCE
CRUISE	0.0416
ACCEL	0.1535
DECEL	0.1782
MATRIX	0.0311

FIGURE OF MERIT FOR THIS CYCLE = 1.83

NUMBER OF STOPS PER MILE = 0.67

PRECEDING STATISTICS ARE FOR CYCLE 355305957

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
1	0	0	16.78	0.0	16.78	0.0	0.0	0
2	0	35	26.79	0.152	43.57	0.152	1.31	1
3	35	35	14.41	0.140	57.98	0.292	0.0	0
4	35	30	5.13	0.047	63.10	0.339	-0.98	4
5	30	30	9.42	0.078	72.52	0.417	0.0	0
6	30	10	17.22	0.103	89.74	0.520	-1.16	4
7	10	10	2.02	0.006	91.75	0.526	0.0	0
8	10	45	18.09	0.140	109.85	0.666	1.93	2
9	45	45	18.98	0.237	128.82	0.903	0.0	0
10	45	30	7.50	0.080	136.32	0.984	-2.00	4
11	30	30	12.83	0.107	149.16	1.091	0.0	0
12	30	25	4.18	0.032	153.34	1.123	-1.20	4
13	25	25	11.30	0.078	164.63	1.202	0.0	0
14	25	35	10.72	0.090	175.35	1.291	0.93	2
15	35	35	16.63	0.162	191.98	1.453	0.0	0
16	35	30	6.82	0.062	198.80	1.515	-0.73	4
17	30	30	11.12	0.093	209.92	1.608	0.0	0
18	30	10	10.74	0.064	220.66	1.672	-1.86	4
19	10	10	2.02	0.006	222.67	1.678	0.0	0
20	10	0	4.29	0.007	226.96	1.684	-2.33	4
21	0	0	16.78	0.0	243.74	1.684	0.0	0
22	0	45	30.44	0.241	274.19	1.926	1.48	3
23	45	45	16.44	0.206	290.63	2.131	0.0	0
24	45	40	5.70	0.068	296.33	2.199	-0.88	4
25	40	40	16.47	0.183	312.80	2.382	0.0	0
26	40	0	18.12	0.116	330.92	2.498	-2.21	4
27	0	0	16.78	0.0	347.70	2.498	0.0	0
28	0	20	9.48	0.031	357.18	2.529	2.11	1
29	20	20	1.22	0.007	358.40	2.535	0.0	0
30	20	25	4.54	0.028	362.94	2.564	1.10	2
31	25	25	6.54	0.045	369.49	2.609	0.0	0
32	25	5	12.77	0.059	382.25	2.668	-1.57	4
33	5	5	3.47	0.005	385.73	2.673	0.0	0
34	5	50	20.11	0.187	405.84	2.860	2.24	3
35	50	50	17.07	0.237	422.91	3.097	0.0	0
36	50	55	6.47	0.094	429.38	3.191	0.77	2
37	55	55	82.56	1.261	511.94	4.453	0.0	0
38	55	60	3.38	0.054	515.32	4.507	1.48	2
39	60	60	72.63	1.210	587.95	5.717	0.0	0
40	60	55	4.61	0.074	592.55	5.791	-1.09	4

COMPOSITE DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
41	55	55	27.50	0.420	620.06	6.211	0.0	0
42	55	50	6.40	0.094	626.45	6.305	-0.78	4
43	50	50	24.64	0.342	651.10	6.648	0.0	0
44	50	5	18.24	0.157	669.34	6.804	-2.47	4
45	5	5	2.84	0.004	672.18	6.808	0.0	0
46	5	20	7.54	0.027	679.72	6.835	1.99	2
47	20	20	5.30	0.029	685.01	6.864	0.0	0
48	20	40	20.26	C.170	705.27	7.034	0.99	2
49	40	40	11.41	0.127	716.68	7.161	0.0	0
50	40	0	16.32	0.104	733.00	7.265	-2.45	4
51	0	0	16.78	0.0	749.78	7.265	0.0	0
52	0	35	14.17	0.080	763.95	7.346	2.47	1
53	35	35	9.98	0.097	773.93	7.443	0.0	0
54	35	0	13.18	0.074	787.11	7.517	-2.66	4
55	0	0	16.78	0.0	803.89	7.517	0.0	0
56	0	40	19.73	0.139	823.62	7.655	2.03	3
57	40	40	11.41	0.127	835.03	7.782	0.0	0
58	40	15	12.39	0.101	847.42	7.883	-2.02	4
59	15	15	4.27	0.018	851.69	7.901	0.0	0
60	15	30	9.29	0.059	860.98	7.960	1.61	2
61	30	30	7.70	0.064	868.68	8.024	0.0	0
62	30	35	8.76	0.079	877.44	8.103	0.57	2
63	35	35	12.20	0.119	889.64	8.222	0.0	0
64	35	40	4.05	0.042	893.69	8.264	1.23	2
65	40	40	19.01	0.211	912.70	8.475	0.0	0
66	40	25	9.77	0.091	922.47	8.566	-1.53	4
67	25	25	11.30	0.078	933.77	8.645	0.0	0
68	25	30	8.78	0.067	942.55	8.712	0.57	2
69	30	30	9.42	0.078	951.96	8.791	0.0	0
70	30	15	6.49	0.043	958.45	8.833	-2.31	4
71	15	15	4.27	0.018	962.72	8.851	0.0	0
72	15	30	8.37	0.053	971.09	8.904	1.79	2
73	30	30	19.68	0.164	990.78	9.068	0.0	0
74	30	35	4.86	0.044	995.64	9.112	1.03	2
75	35	35	16.63	0.162	1012.27	9.273	0.0	0
76	35	0	14.81	0.083	1027.08	9.356	-2.36	4
77	0	0	16.78	0.0	1043.86	9.356	0.0	0
78	0	45	28.55	0.226	1072.41	9.582	1.58	3
79	45	45	18.98	0.237	1091.39	9.820	0.0	0
80	45	40	3.65	0.043	1095.03	9.863	-1.37	4

COMPOSITE DRIVING CYCLE

MODE	INITIAL SPEED	FINAL SPEED	MODE TIME	MODE DISTANCE	TOTAL TIME	TOTAL DISTANCE	AVG. RATE (MPH/SEC)	CURVE TYPE
81	40	40	16.47	0.183	1111.50	10.046	0.0	0
82	40	0	12.73	0.081	1124.23	10.127	-3.14	4
83	0	0	19.97	0.0	1144.20	10.127	0.0	0
84	0	35	20.39	0.116	1164.59	10.243	1.72	1
85	35	35	14.41	0.140	1179.00	10.383	0.0	0
86	35	5	15.93	0.099	1194.93	10.482	-1.88	4
87	5	5	4.73	0.007	1199.67	10.488	0.0	0
88	5	0	3.04	0.002	1202.71	10.491	-1.64	4
89	0	0	16.78	0.0	1219.49	10.491	0.0	0

COMPOSITE DRIVING CYCLE

NORMALIZED MODE FREQUENCY (PERCENT) --- CYCLE 355305957

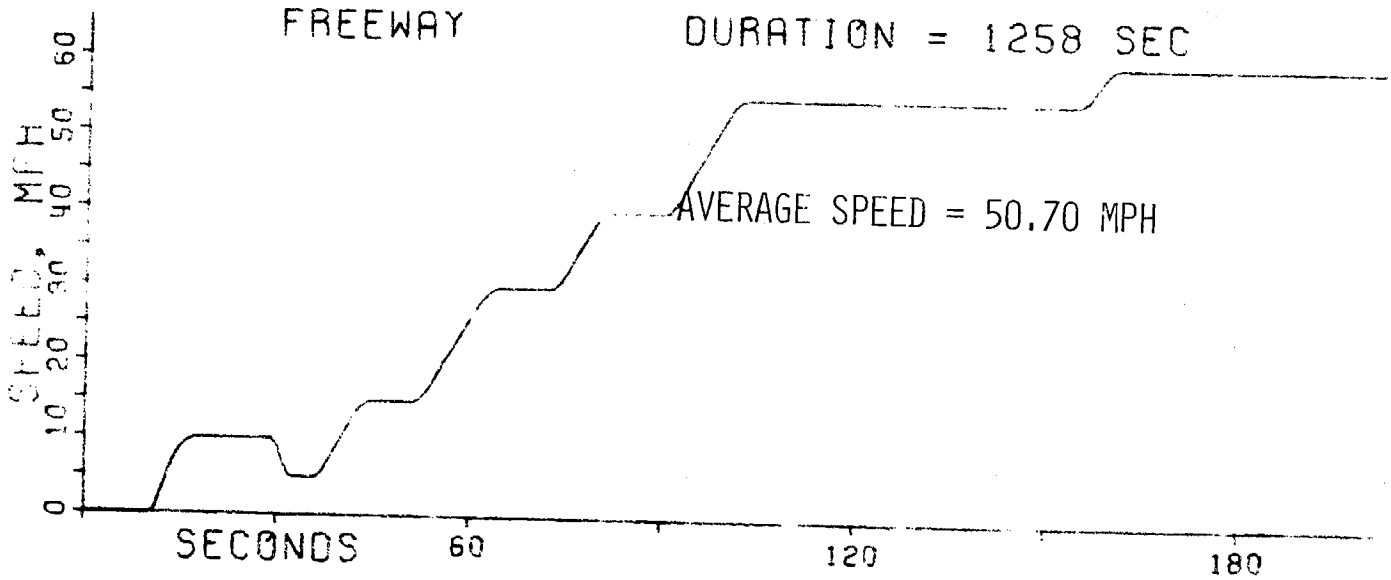
	0	5	10	15	20	25	30	35	40	45	50	55	60
0	8.99	0.0	0.0	0.0	1.12	0.0	0.0	3.37	1.12	2.25	0.0	0.0	0.0
5	1.12	3.37	0.0	0.0	1.12	0.0	0.0	0.0	0.0	0.0	1.12	0.0	0.0
10	1.12	0.0	2.25	0.0	0.0	0.0	0.0	0.0	0.0	1.12	0.0	0.0	0.0
15	0.0	0.0	0.0	2.25	0.0	0.0	2.25	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	2.25	1.12	0.0	0.0	1.12	0.0	0.0	0.0	0.0
25	0.0	1.12	0.0	0.0	0.0	3.37	1.12	1.12	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	2.25	1.12	0.0	1.12	6.74	2.25	0.0	0.0	0.0	0.0	0.0
35	2.25	1.12	0.0	0.0	0.0	0.0	2.25	6.74	1.12	0.0	0.0	0.0	0.0
40	3.37	0.0	0.0	1.12	0.0	1.12	0.0	0.0	5.62	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	1.12	0.0	2.25	3.37	0.0	0.0	0.0
50	0.0	1.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.25	1.12	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.12	2.25	1.12
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.12	1.12

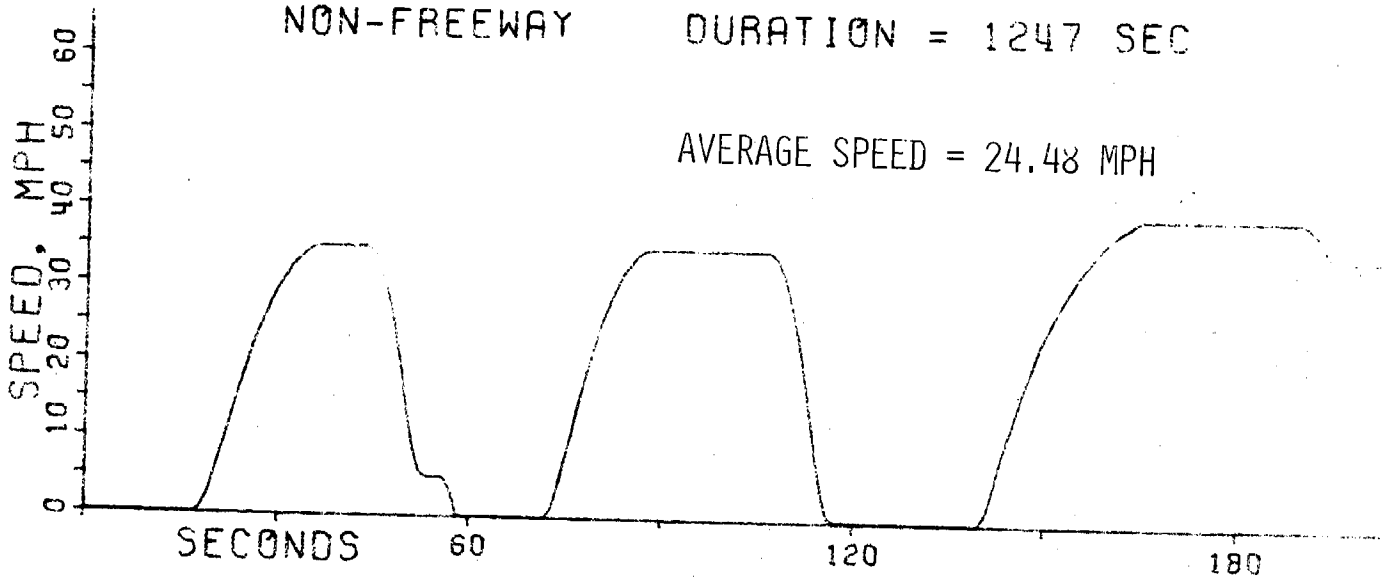
COMPOSITE DRIVING CYCLE

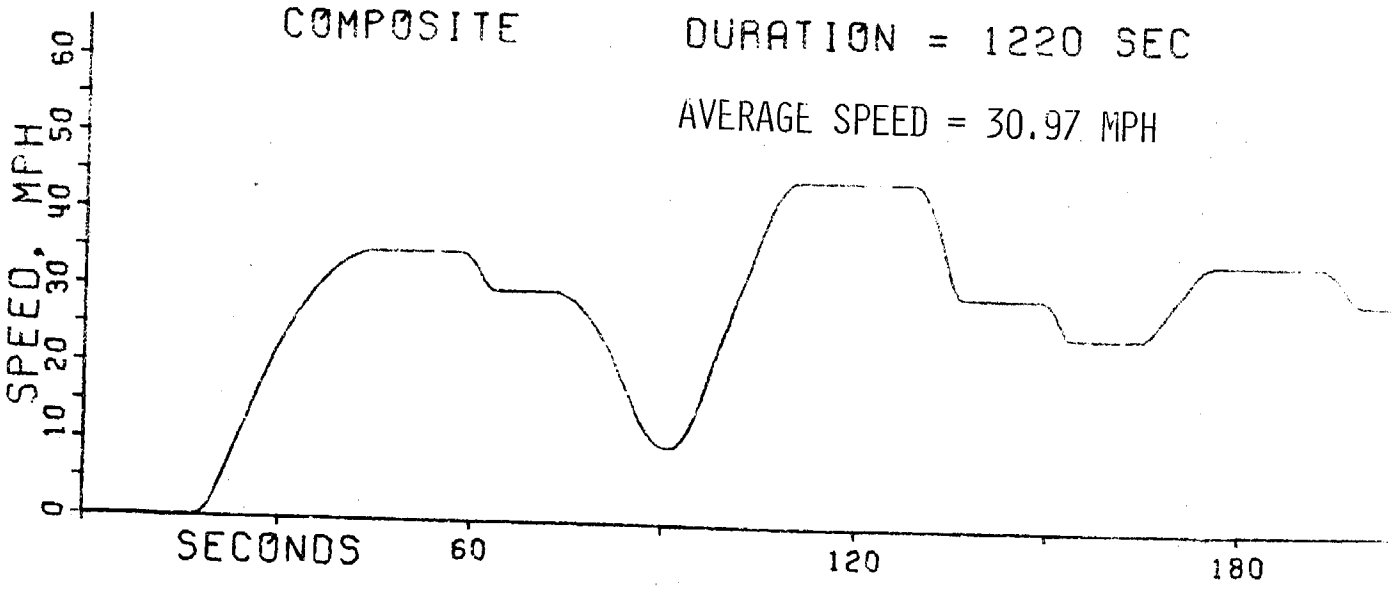
NORMALIZED TIME IN MODE (PERCENT) --- CYCLE 355305957

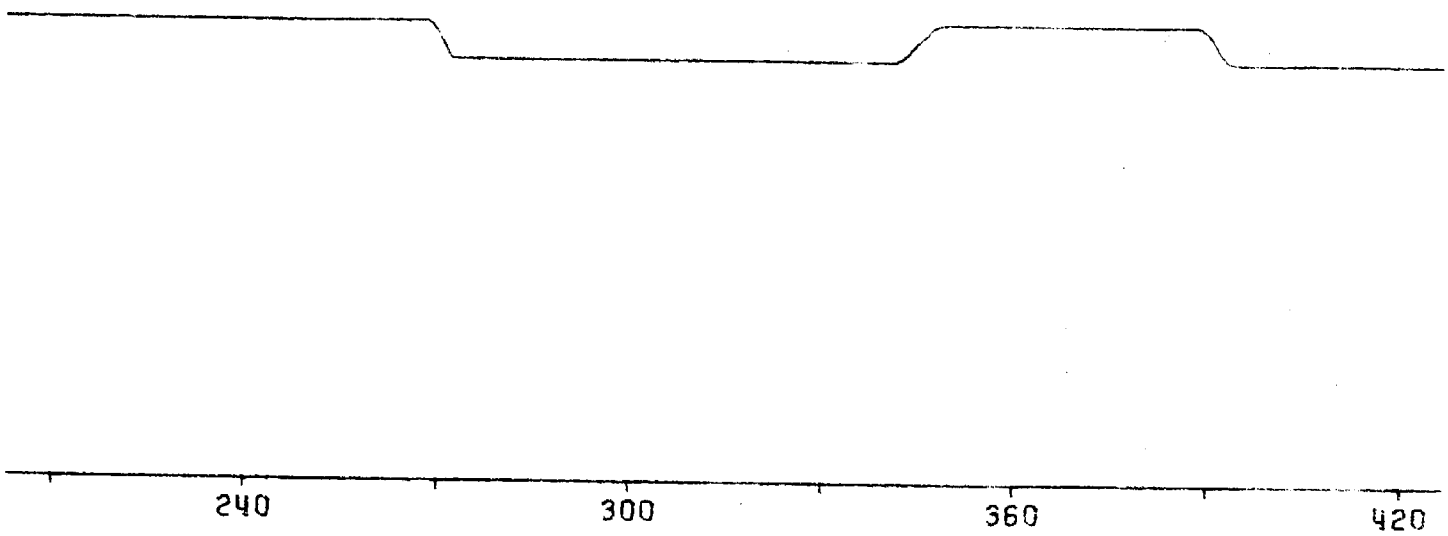
	0	5	10	15	20	25	30	35	40	45	50	55	60
0	11.27	0.0	0.0	0.0	0.78	0.0	0.0	5.03	1.62	4.84	0.0	0.0	0.0
5	0.25	0.91	0.0	0.0	0.62	0.0	0.0	0.0	0.0	0.0	1.65	0.0	0.0
10	0.35	0.0	0.33	0.0	0.0	0.0	0.0	0.0	0.0	1.48	0.0	0.0	0.0
15	0.0	0.0	0.0	0.70	0.0	0.0	1.45	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.53	0.37	0.0	0.0	1.66	0.0	0.0	0.0	0.0
25	0.0	1.05	0.0	0.0	0.0	2.39	0.72	0.88	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	2.29	0.53	0.0	0.34	5.75	1.12	0.0	0.0	0.0	0.0	0.0
35	2.29	1.31	0.0	0.0	0.0	0.0	0.98	6.91	0.33	0.0	0.0	0.0	0.0
40	3.87	0.0	0.0	1.02	0.0	0.80	0.0	0.0	6.13	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.62	0.0	0.77	4.46	0.0	0.0	0.0
50	0.0	1.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.42	0.53	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.52	9.03	0.28
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.38	5.96

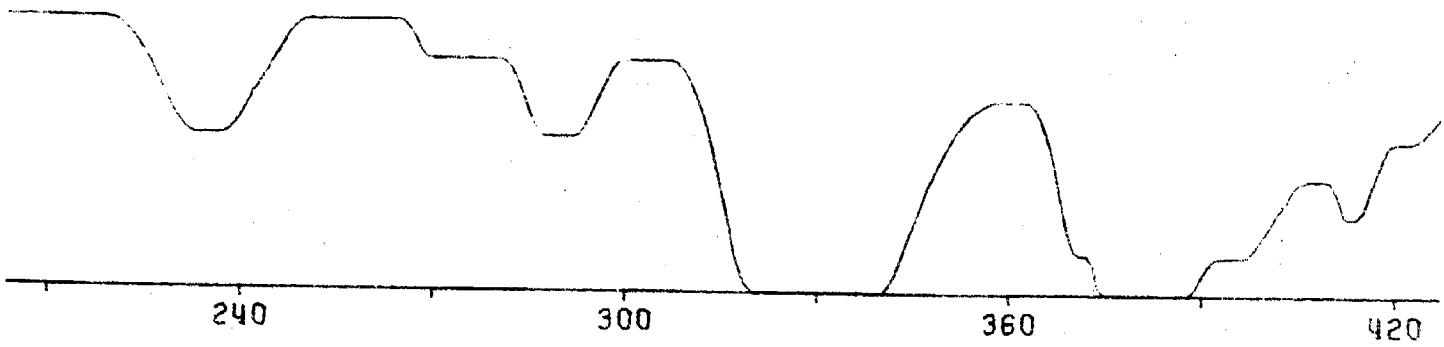
COMPOSITE DRIVING CYCLE

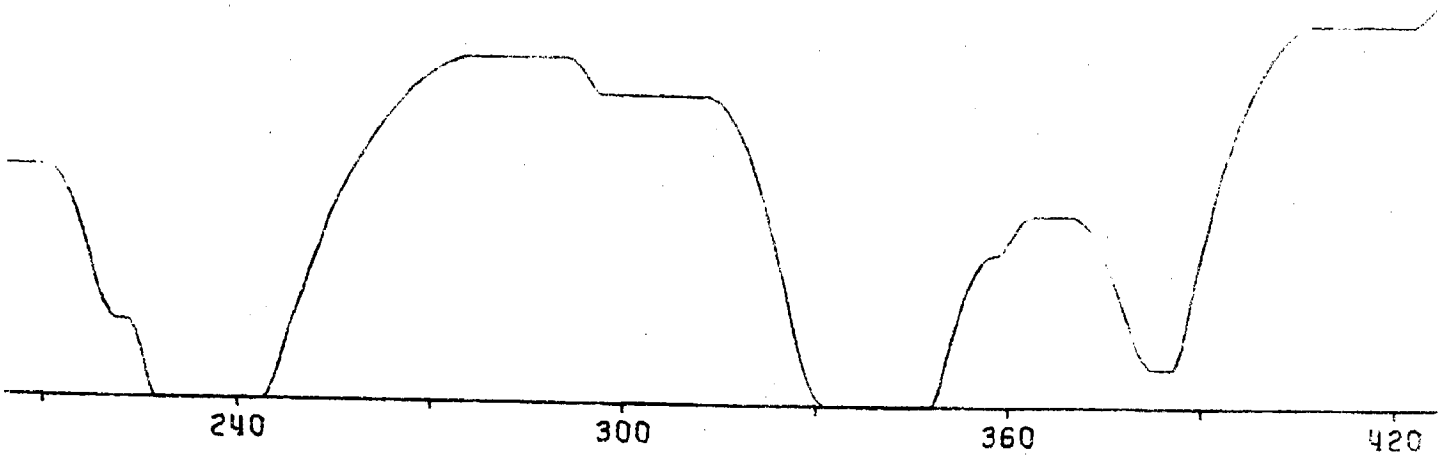

FREEWAY
DURATION = 1258 SEC
AVERAGE SPEED = 50.70 MPH
SPEED, MPH
0
10
20
30
40
50
60
SECONDS
60
120
180

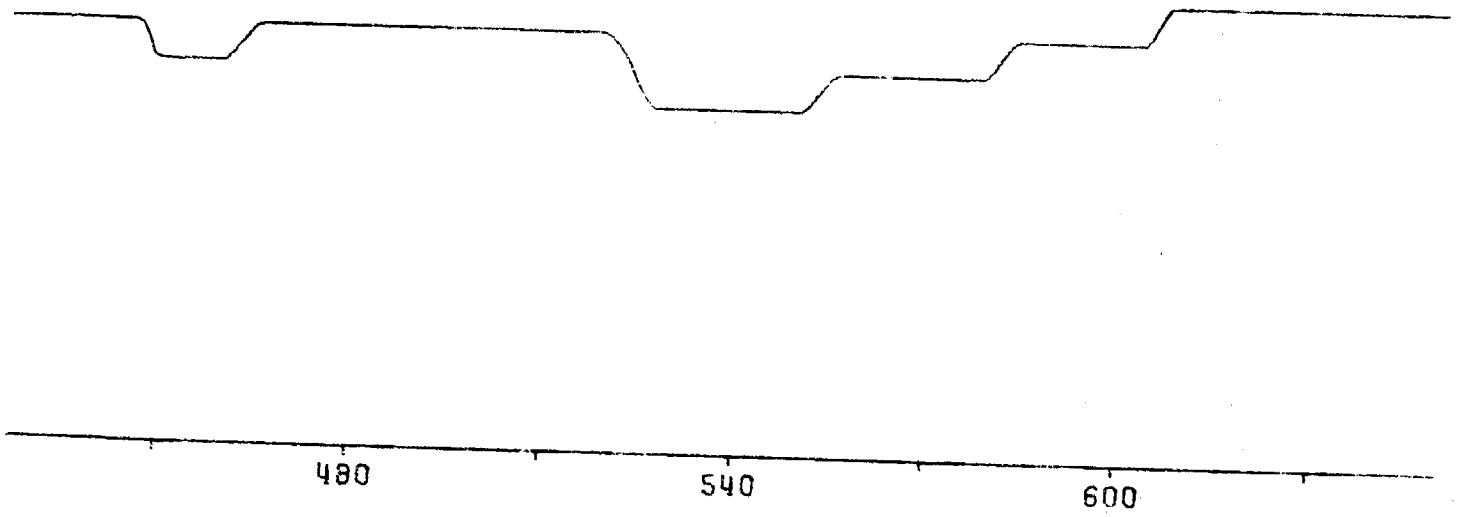

NON-FREEWAY
DURATION = 1247 SEC
AVERAGE SPEED = 24.48 MPH
SPEED, MPH
0
10
20
30
40
50
60
SECONDS
60
120
180

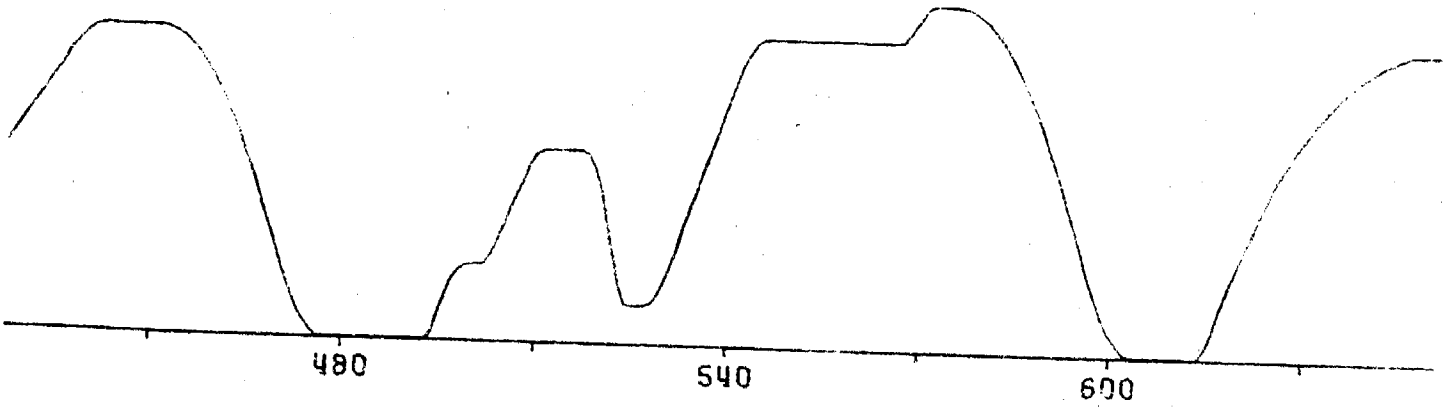

COMPOSITE
DURATION = 1220 SEC
AVERAGE SPEED = 30.97 MPH
SPEED, MPH
0
10
20
30
40
50
60
SECONDS
60
120
180


240
300
360
420


240
300
360
420


240
300
360
420


480
540
600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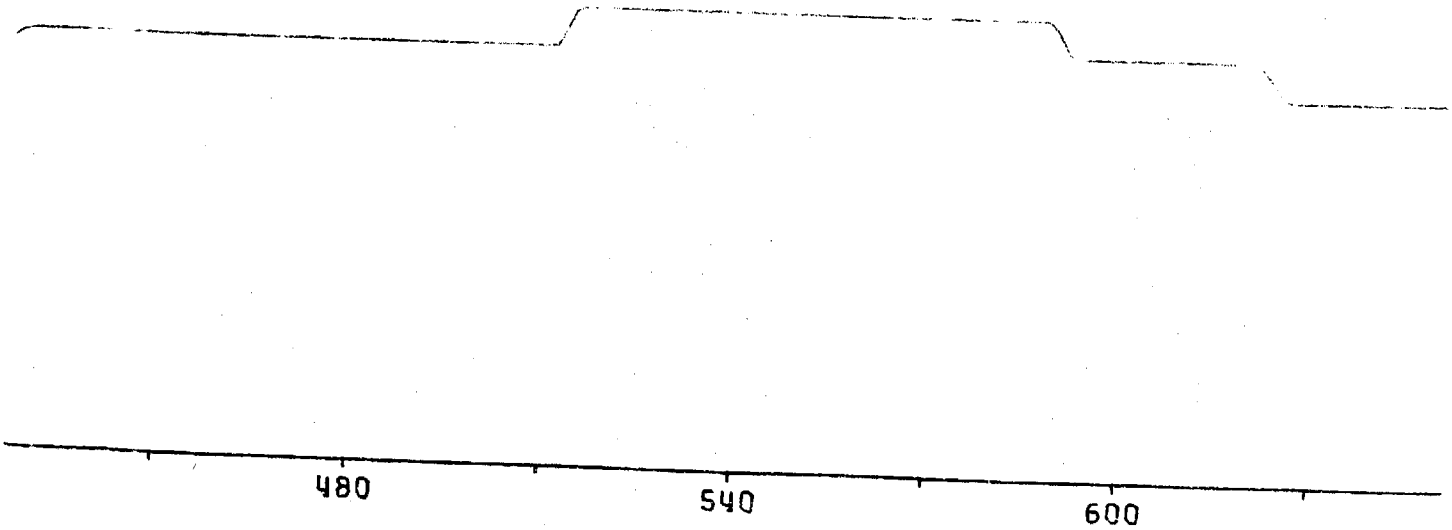
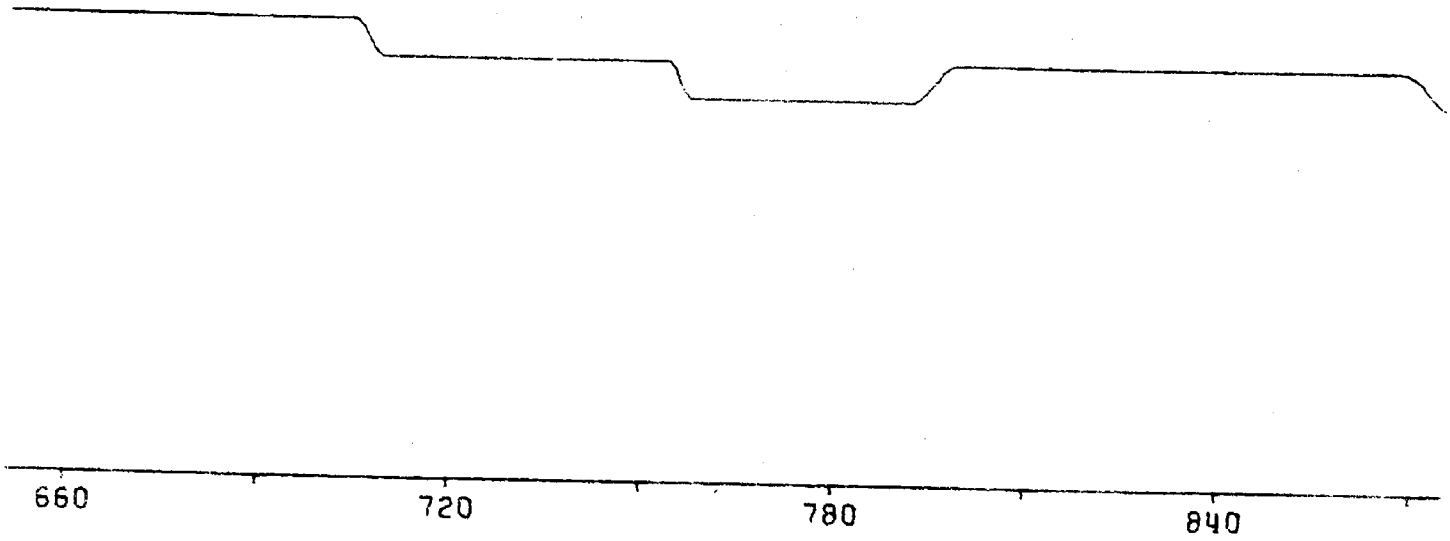
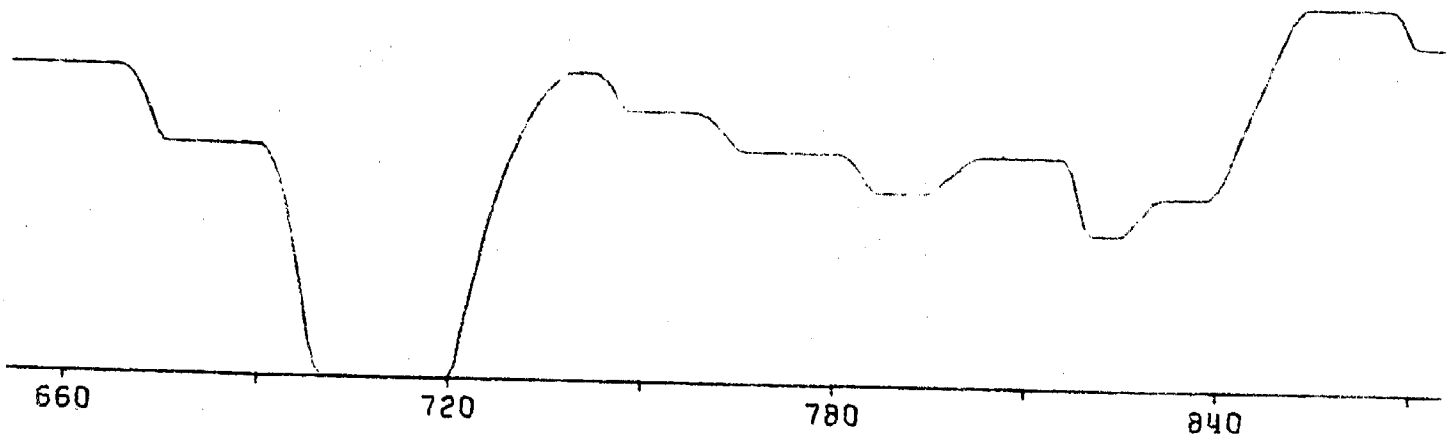
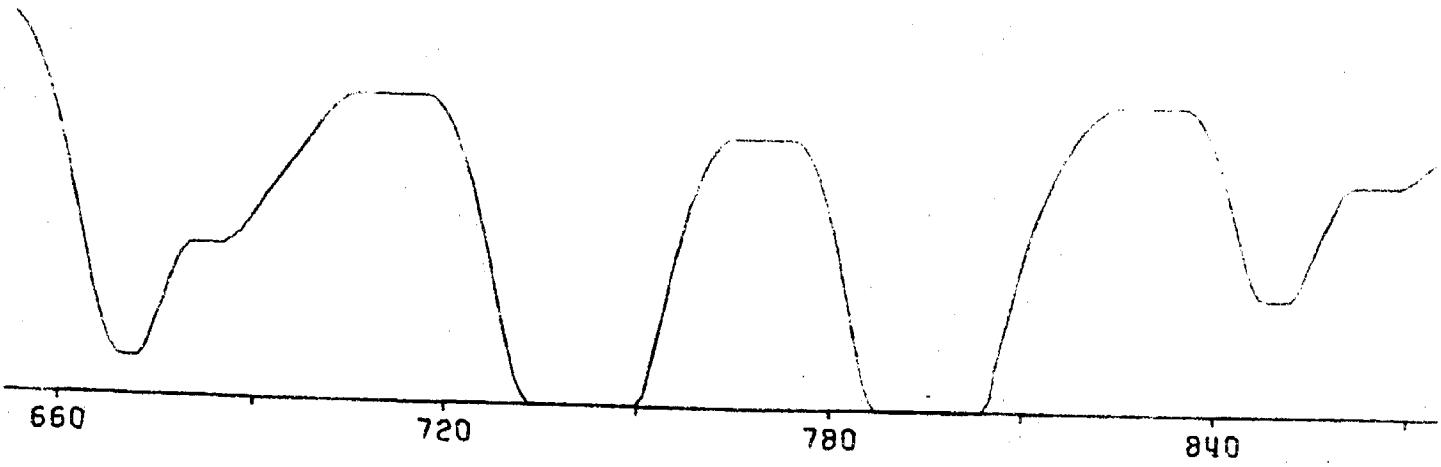
540
600


480
540
600


660
720
780
840


660
720
780
840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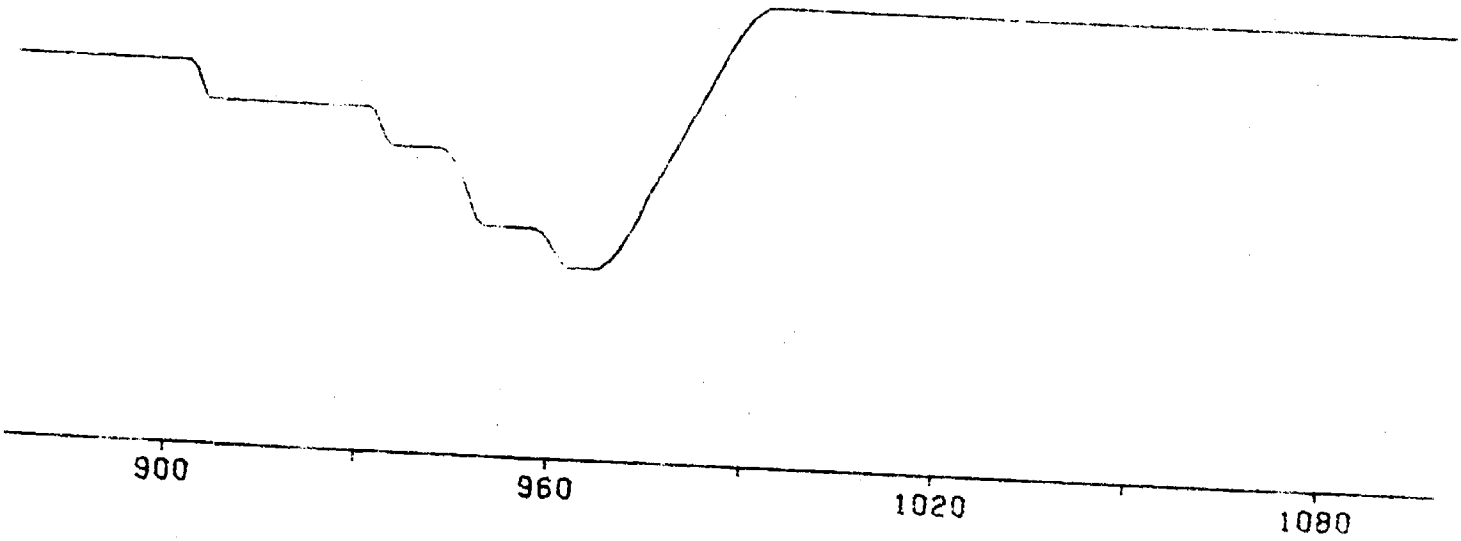
720
780
840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960
1020
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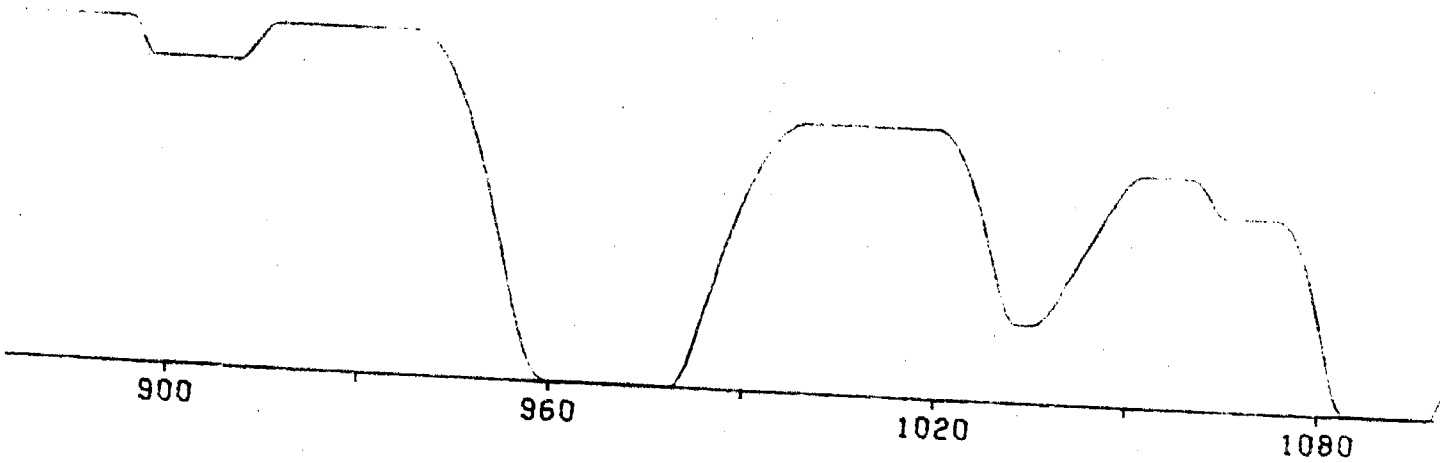
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1020
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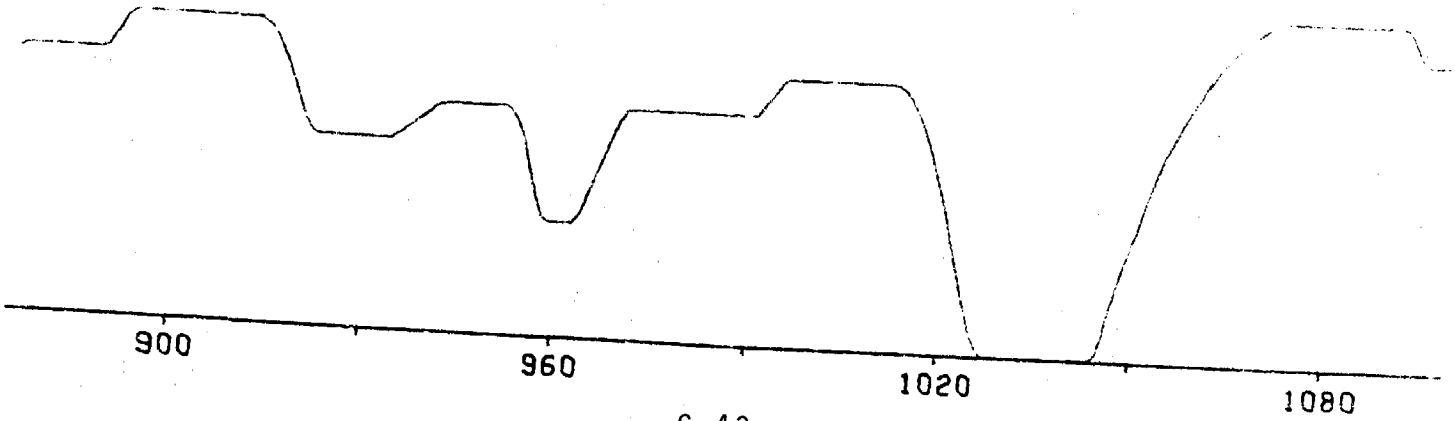
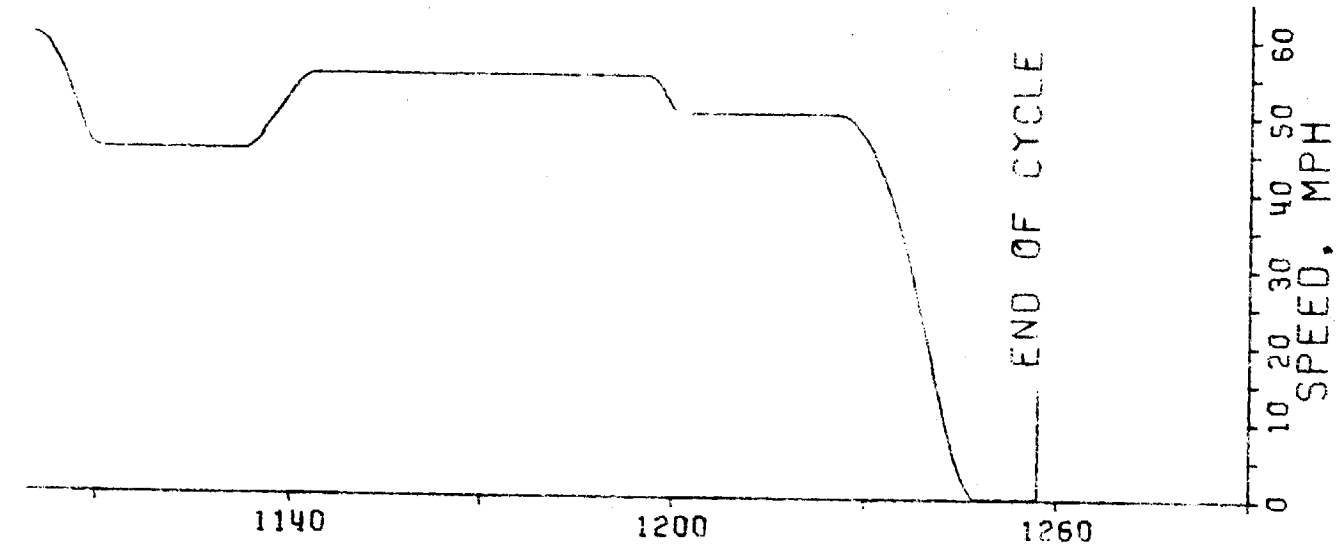

900
960
1020
1080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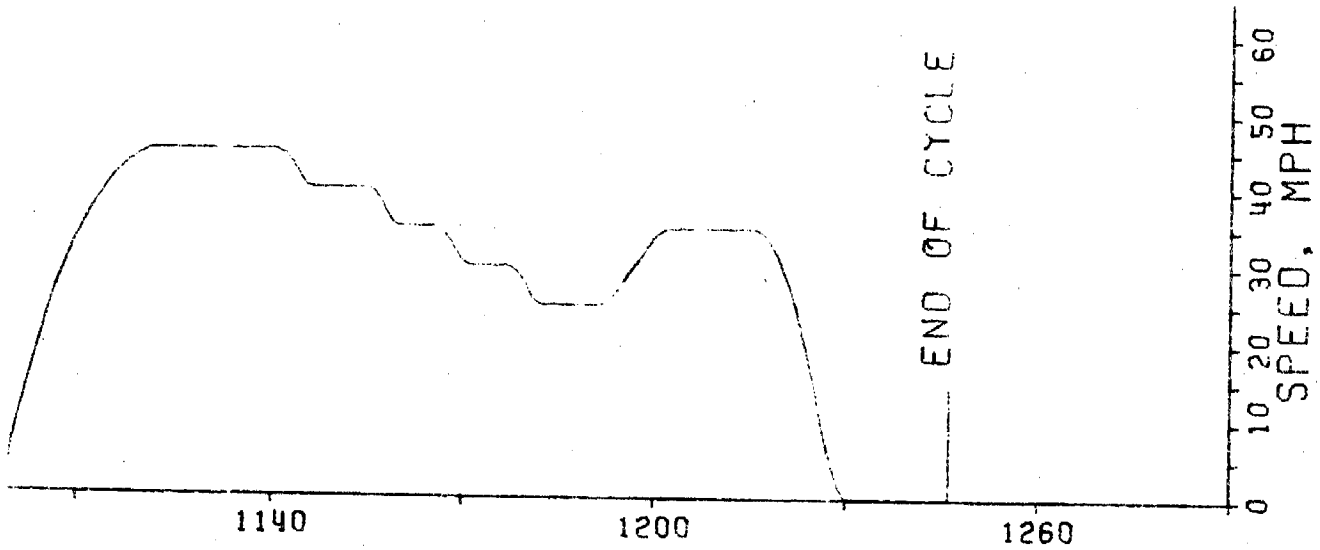
SPEED, MPH
0
10
20
30
40
50
60
1140
1200
1260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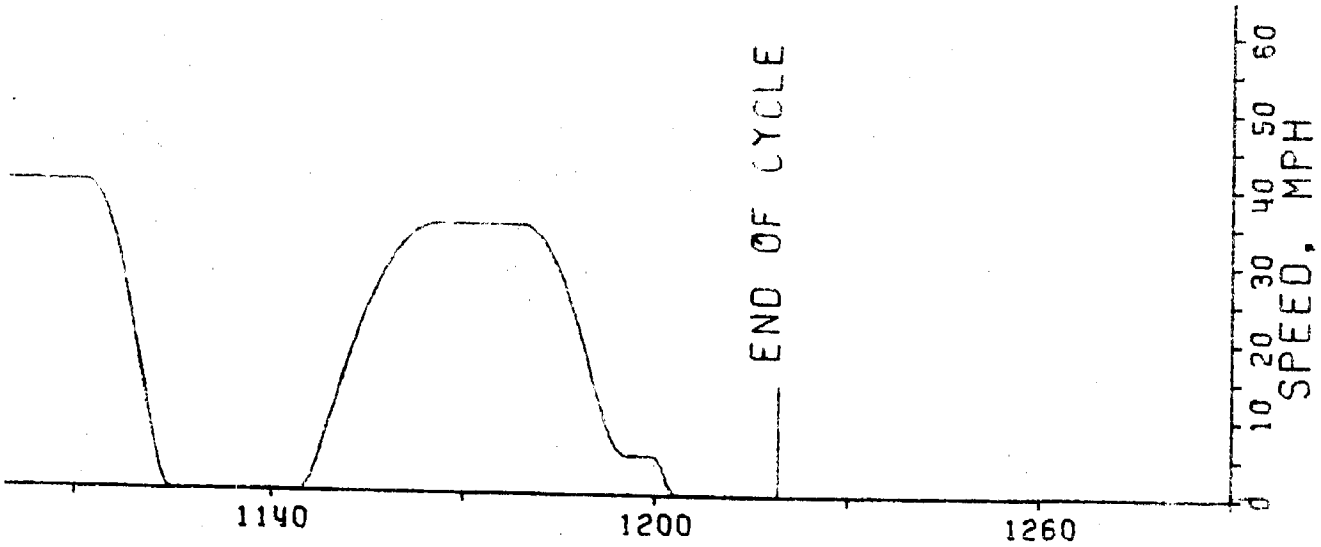
SPEED, MPH
0
10
20
30
40
50
60
1140
1200
1260


END OF CYCLE
SPEED, MPH
0
10
20
30
40
50
60
1140
1200
1260

Appendix D

RAW EMISSION DATA FOR C_1 to C_{10} HYDROCARBONS

Table D-1

TEST VEHICLE DESCRIPTION

Vehicle Description						Test Numbers	
Year	Make	Cylinders	Weight	CID	Air	EPA Surveillance Cycle	SCAB Composite Driving Cycle
72	Mustang	8	3,000	351	Yes	1	-
72	Pontiac	8	4,000	400	Yes	2	24
73	Buick	8	5,500	350	Yes	3	11
72	Hornet	8	3,000	304	Yes	4	22
73	Ford	8	4,000	351	Yes	5	25
72	Pinto	4	2,250	122	No	6	-
73	Pinto	4	2,750	122	No	7	12
72	Chevrolet	8	4,000	350	Yes	8	-
73	Comet	6	3,000	200	Yes	9	20
74	Duster	6	3,500	225	Yes	10	17
72	Vega	4	2,750	140	No	-	13
73	Vega	4	2,750	140	No	-	14
65	Mustang	6	2,750	200	No	0	15
72	Toyota	4	2,750	120	Yes	-	16
73	Mercury	8	5,000	400	Yes	-	18
74	Buick	8	4,000	350	Yes	-	19
72	Pontiac	8	4,500	400	Yes	-	23
73	Pinto	4	2,750	122	No	-	21

ANALYTICAL RESEARCH LABORATORIES INC

160 TAYLOR STREET, P.O. BOX 369, MONROVIA, CALIFORNIA 91016 • (213) 357-3247

Lab/Shipper Log Number 36081

Material/Sample Identity			Date Received
Olson Labs, Inc. /25 exhaust samples			3/23/76
P.O. or R.P. Number 53574	Requested By Mr. R. Herling		
Work Order 69-57-01	Sample Disposition ☐ Retain ☐ Return ☐ Destroy	Nature of Hazard	Due Date

Ship To:

Olson Laboratories, Inc.
2130 S. Dupont Drive
Anaheim, CA 92806

Nature of Work and Information Desired

C_1 - C_{10} hydrocarbons in Automobile Exhaust

Summary of Laboratory Report

Q.C. Level

See Attached Report

Note: This is a preliminary report under this P. O. of the first ten samples received. Fifteen more are still to be received for analysis by ARLI.

As a mutual protection to clients, this report is submitted for the exclusive use of the client to whom it is addressed. This report applies only to the sample(s) tested and is not necessarily indicative of the qualities of apparently similar or identical products. Use of this report, whether in whole or in part, or of any seals or insignia connected therewith, in any advertising or quantity matter, without prior written authorization is prohibited.

Analyst	Date	Approved By	Book Page
CD	5/27/76	[signature]	

Research and Development

Testing

Table D-2

COMPOSITION OF DILUTE AUTO EXHAUST (mg/m^3)
EPA SURVEILLANCE DRIVING CYCLE

Hydrocarbon Species	1009-1	1009-2	1009-3	1009-4	1009-5	1009-6	1009-7	1009-8	1009-9*	1009-10*
Methane	.288	.314	.194	.387	.307	.511	.208	.312	.008	.028
Ethylene-acetylene	1.112	1.311	.838	1.974	1.015	1.407	.680	1.485	.156	.005
Propylene	.722	.973	.522	1.143	.692	1.031	.372	.665	.053	.004
Isobutene	-	-	.013	-	-	-	.018	.051	.041	.007
Isobutane	.525	.169	.093	.067	.016	.874	.241	.244	-	.011
Butene 1	.205	.047	.008	.025	.009	.455	.019	.027	.012	-
Butane	-	-	-	.011	.125	.107	-	-	.006	-
Butene 2	.336	.136	.002	.132	.042	.172	.091	.276	.057	-
C_5 alkene	.002	.002	.112	-	-	.119	-	-	.015	-
C_5 alkene	.112	.052	.048	.075	-	-	.036	.091	.097	-
Isopentane	.500	.352	.256	.588	.225	.840	.114	.364	-	.025
C_5 alkene	-	.149	.231	-	.183	-	-	-	-	-
C_5 alkene	.179	.286	.104	.124	.084	.177	.176	.320	.078	-
C_5 alkene	.587	.067	.040	.403	.018	.176	-	-	-	-
C_5 alkene	-	-	-	.076	-	-	-	-	-	-
n Pentane	-	.002	.013	.014	-	.116	-	-	.002	-
C_5 alkene	.160	-	-	.019	.047	-	.040	.085	-	-
C_5 alkane	.011	.006	.020	.048	.012	-	.040	.013	-	-
C_5 alkene	-	.064	-	-	.011	.210	-	-	-	-
C_5 alkene	-	-	.023	.008	-	.195	-	.029	-	-
C_6 alkene	.013	.403	.144	.416	.068	-	-	-	-	-
C_6 alkene	-	-	-	.200	.011	-	.011	-	-	.003
C_6 alkene	-	-	.075	-	.223	-	.108	-	-	-
C_6 alkane	.013	.203	.107	.325	.072	.112	-	.029	-	-
n Hexane	.084	.198	.079	.251	.108	.123	-	.031	-	.014

Table D-2
COMPOSITION OF DILUTE AUTO EXHAUST (mg/m^3)
EPA SURVEILLANCE DRIVING CYCLE

Hydrocarbon Species	1009-1	1009-2	1009-3	1009-4	1009-5	1009-6	1009-7	1009-8	1009-9*	1009-10*
C_6 alkene	-	-	.057	-	-	-	.055	-	.007	-
C_6 alkane	.388	.058	-	.028	.058	.061	-	.028	.011	-
C_6 alkene	.342	-	-	.048	.091	-	.197	.315	-	-
C_6 alkene	-	-	-	-	.117	-	-	-	-	-
C_6 alkane	-	-	-	-	-	-	.011	-	.094	-
C_6 alkene	.338	.098	.003	.026	.086	.079	-	-	-	-
C_6 alkene	-	-	.073	.117	.110	-	.025	-	.029	-
C_6 alkene	-	-	-	-	.091	-	-	.121	.035	-
C_6 alkene	-	-	-	-	-	-	-	-	.079	-
C_6 alkane	-	-	-	-	-	-	-	-	.005	-
C_7 alkene	.194	.090	.044	.147	-	.162	.051	-	.006	-
C_7 alkene	.031	-	.207	.497	.038	.110	-	.267	-	-
C_7 alkane	-	.354	-	-	-	-	-	-	-	-
C_7 alkene	-	-	.054	-	-	-	-	-	-	-
C_7 alkene	.089	-	-	.189	-	-	.084	-	-	.004
C_7 alkene	-	.144	-	-	-	-	-	-	-	-
C_7 alkene	.192	-	-	-	-	.016	-	-	-	-
C_7 alkane	-	-	-	-	-	-	.041	-	-	-
C_7 alkene	.281	-	.217	.090	.085	.044	.165	.008	-	.005
C_7 alkene	-	.097	-	-	-	-	-	.061	-	.003
C_7 alkene	-	-	-	-	-	-	-	-	.029	-
C_7 alkane	.250	-	-	-	-	-	.018	-	-	-
C_7 alkane	.216	-	.002	.044	-	.046	.008	.101	.035	-
C_7 alkane	-	.097	-	-	.038	-	.036	.233	-	-
C_7 alkene	.014	.018	.160	.146	.025	.061	-	.087	.026	-
C_7 alkene	-	-	-	-	-	-	-	-	.050	-
C_8 alkene	.016	-	-	.003	-	-	.026	-	-	-
	.018	.163	.039	.045	.036	.062	.037	.150	.029	-

Table D-2
COMPOSITION OF DILUTE AUTO EXHAUST (mg/m^3)
EPA SURVEILLANCE DRIVING CYCLE

Hydrocarbon Species	1009-1	1009-2	1009-3	1009-4	1009-5	1009-6	1009-7	1009-8	1009-9*	1009-10*
Benzene	.855	1.180	.608	1.694	.988	1.509	.335	.082	.040	.046
C_8 alkene	-	-	-	-	-	-	-	-	.023	-
C_8 alkane	.022	-	-	-	-	-	.137	.026	-	-
C_8 alkene	-	-	.010	.126	-	-	-	-	-	-
C_8 alkane	-	.076	-	-	.025	.101	-	-	-	.003
C_8 alkene	-	-	-	-	-	-	.003	-	.026	-
C_8 alkene	-	-	-	-	-	-	-	.117	-	-
C_8 alkane	-	-	.020	-	-	-	-	-	-	-
C_8 alkene	-	.018	-	.045	-	-	-	-	-	.018
C_8 alkene	-	-	-	-	-	-	.012	-	-	-
C_8 alkene	-	-	-	-	-	-	-	-	.013	-
C_8 alkene	-	-	-	-	-	-	-	1.00	-	-
C_8 alkene	-	-	-	.056	-	-	-	-	-	-
C_8 alkene	-	.023	-	-	-	-	-	-	.028	-
C_8 alkane	-	-	.146	-	-	-	-	-	-	-
C_8 alkene	-	-	-	.129	-	-	-	.117	.259	-
C_8 alkene	-	.065	-	-	-	.156	-	-	-	-
C_8 alkene	-	-	-	-	.107	-	-	-	-	-
C_8 alkane	-	-	-	-	-	-	.467	-	-	-
C_8 alkane	.075	.148	-	-	-	-	-	.006	-	-
C_8 alkene	-	-	-	-	-	.106	-	-	.028	-
C_8 alkene	-	-	.089	-	-	-	-	-	-	-
Toluene	.807	1.302	.747	1.507	-	1.607	.215	.081	.005	-
C_9 alkene	-	.006	-	-	-	-	-	.068	-	-
Xylene	.004	.056	.103	.084	.058	.085	.068	.027	.004	.012
Xylene	.041	.035	.057	.041	-	.008	-	-	-	.006

Table D-2

COMPOSITION OF DILUTE AUTO EXHAUST (mg/m^3)
EPA SURVEILLANCE DRIVING CYCLE

Hydrocarbon Species	1009-1	1009-2	1009-3	1009-4	1009-5	1009-6	1009-7	1009-8	1009-9*	1009-10*
Xylene	.003	-	-	.025	-	-	-	-	-	-
Ethylbenzene	-	-	.176	-	2.332	-	-	1.040	.268	.144
C_9 aromatic	.087	-	-	-	-	-	-	-	-	-
C_9 aromatic	-	-	-	-	-	-	.068	-	-	-
C_9 aromatic	-	-	-	-	-	.049	-	-	-	-
C_9 aromatic	-	.056	-	-	-	-	-	-	-	.005
C_9 aromatic	-	-	-	.241	.013	-	-	-	-	-
C_9 aromatic	-	-	-	-	-	-	.238	-	-	-
C_9 aromatic	.388	-	-	-	.214	-	-	-	.005	-
C_9 aromatic	-	-	-	-	-	.202	.236	-	-	-
C_9 aromatic	-	-	.324	-	-	-	-	-	-	-
C_9 aromatic	-	.035	-	-	-	-	-	-	-	-
C_9 aromatic	-	-	-	-	-	-	-	-	.059	-
C_9 aromatic	.115	-	-	-	-	-	-	-	-	-
C_9 aromatic	-	-	-	.761	.824	-	-	-	-	-
C_{10}^+ probable aromatic	-	-	-	-	-	.664	-	-	.144	-
C_{10}^+ probable aromatic	-	.219	.071	-	-	.186	-	.225	-	-
C_{10}^+ probable aromatic	-	-	-	.255	.292	-	.051	-	-	-
C_{10}^+ probable aromatic	-	-	-	-	-	-	-	.524	-	.041
C_{10}^+ probable aromatic	-	-	-	-	-	-	-	.167	-	-
C_{10}^+ probable aromatic	-	.606	.003	-	-	-	.042	-	-	-
C_{10}^+ probable aromatic	-	-	-	-	-	-	-	-	.052	.092
C_{10}^+ probable aromatic	-	-	-	.027	-	-	-	-	-	-
C_{10}^+ probable aromatic	-	-	-	-	-	-	-	.021	-	-
C_{10}^+ probable aromatic	.035	-	-	-	-	-	-	-	-	-
C_{10}^+ probable aromatic	-	.197	-	-	-	.046	-	-	.055	.022

Table D-2

COMPOSITION OF DILUTE AUTO EXHAUST (mg/m^3)
EPA SURVEILLANCE DRIVING CYCLE

Hydrocarbon Species	1009-1	1009-2	1009-3	1009-4	1009-5	1009-6	1009-7	1009-8	1009-9*	1009-10*
C_{10}+ probable aromatic	-	-	-	-	-	-	-	.066	-	-
C_{10}+ probable aromatic	-	-	.041	-	.026	-	.077	-	-	-
C_{10}+ probable aromatic	.119	-	-	.064	-	.064	-	-	.046	-
C_{10}+ probable aromatic	-	.015	.058	-	-	-	-	.003	.009	-
C_{10}+ probable aromatic	.023	-	-	.050	.057	.161	.131	-	.010	-
C_{10}+ probable aromatic	.014	.036	.109	-	-	-	-	-	-	.043
C_{10}+ probable aromatic	.075	-	-	.280	.153	.023	-	-	-	-
C_{10}+ probable aromatic	-	.027	.022	-	-	-	-	-	-	-
C_{10}+ probable aromatic	-	.204	.078	.056	.052	.076	-	-	-	.098
C_{10}+ probable aromatic	-	.043	.077	.117	.100	.003	-	-	-	-
Totals	9.881	10.200	6.517	13.218	9.284	12.312	5.164	8.986	2.034	.636

* These samples were taken in Tedlar bags. All remaining samples taken in stainless steel cans.

ANALYTICAL RESEARCH LABORATORIES, INC.
160 TAYLOR STREET, P.O. BOX 369, MONROVIA, CALIFORNIA 91016 • (213) 357-3247

Lab/Shipper Log Number 96085

Client	Work Order	P. O. Number
Olson Laboratories, Inc.	5523-01	53574

Material/Sample Identity	Rec'd	Due
15 Auto Exhaust Samples	by 10/15/76	10 days ARS

Requested By

Name: Mr. Bob Herling Phone: (714) 956-5450

Sample Disposition: discard gas

Report/Ship To:

Olson Laboratories, Inc.
421 E. Cerritos Avenue
Anaheim, CA 92805

Nature of Work and Information Desired

1) Prepare 15 S.S. Sample Bombs for pick up during week of 4 OCT 1976

2) Run GC analysis as per LL 36081

Summary of Laboratory Report

Q. C. Level

See Attached Report

As a mutual protection to clients, this report is submitted for the exclusive use of the client to whom it is addresed. This report applies only to the sample(s) tested and is not necessarily indicative of the qualities of apparently similar or identical products. Use of this report, whether in whole or in part, or of any seals or insignia connected therewith, in any advertising or publicity matter, without prior written authorization is prohibited.

Analyst	Book - Page	Approved By	Date
NWH	57 75		11/9/76

Research and Development Testing

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-11
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
200.	14.	19.	ETHYLENE; ACETYLENE
290.	2.4	3.3	PROPYLENE
371.	6.8	9.5	BUTENE
381.	0.64	0.89	ISOBUTANE
400.	2.8	3.8	BUTANE
485.	6.7	9.3	ISOPENTANE
500.	4.0	5.6	PENTANE
513.	0.53	0.74	C-5 ALKENE
581.	1.2	1.7	C-6 ALKENE
600.	2.0	2.8	HEXANE
662.	0.70	0.97	C-7 ALKENE
672.	0.48	0.66	C-7 ALKENE
679.	4.0	5.5	C-7 ALKANE
700.	1.0	1.4	HEPTANE
724.	0.65	0.91	C-8 ALKANE
787.	12.	17.	BENZENE
800.	0.43	0.59	OCTANE
817.	0.58	0.81	C-9 ALKENE
862.	0.98	1.4	C-9 ALKENE
893.	8.3	12.	TOLUENE
1000.	0.39	0.55	ETHYL BENZENE
1032.	0.71	0.98	XYLENE
1100.	0.49	0.69	UNDECANE

RECOVERED = 72. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-12
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
203.	5.1	17.	ETHYLENE;ACETYLENE
290.	1.1	3.7	PROPYLENE
370.	3.0	9.9	BUTENE
382.	0.24	0.78	ISOBUTANE
400.	1.3	4.2	BUTANE
485.	2.2	7.4	ISOPENTANE
500.	2.1	6.8	PENTANE
564.	0.14	0.46	C-6 ALKENE
566.	0.54	1.8	C-6 ALKENE
581.	0.51	1.7	C-6 ALKENE
600.	1.2	3.8	HEXANE
629.	0.40	1.3	HEXANE
637.	0.11	0.35	C-7 ALKENE
660.	0.53	1.7	C-7 ALKENE
679.	1.0	3.3	C-7 ALKANE
687.	0.11	0.37	C-7 ALKANE
700.	0.60	2.0	HEPTANE
787.	5.3	17.	BENZENE
856.	1.2	4.0	C-9 ALKENE
893.	2.6	8.5	TOLUENE
1103.	1.2	3.8	UNDECANE

RECOVERED = 30. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-13
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
184.	0.36	8.4	ETHYLENE;ACETYLENE
199.	0.41	9.5	ETHYLENE;ACETYLENE
290.	0.20	4.7	PROPYLENE
371.	0.15	3.5	BUTENE
382.	0.037	0.85	ISOBUTANE
400.	0.13	3.0	BUTANE
485.	0.26	5.9	ISOPENTANE
500.	0.14	3.2	PENTANE
602.	0.79	18.	HEXANE
787.	0.89	20.	BENZENE
854.	0.33	7.6	C-9 ALKENE
893.	0.33	7.6	TOLUENE
1076.	0.32	7.3	UNDECANE

RECOVERED = 4.3 MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-14
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
178.	6.5	5.0	ETHYLENE; ACETYLENE
290.	3.7	2.8	PROPYLENE
371.	1.9	1.5	BUTENE
382.	9.8	7.6	ISOBUTANE
400.	32.	25.	BUTANE
447.	0.48	0.37	ISOPENTANE
485.	24.	19.	ISOPENTANE
500.	18.	14.	PENTANE
513.	1.4	1.1	C-5 ALKENE
557.	0.52	0.40	C-6 ALKENE
575.	0.47	0.37	C-6 ALKENE
581.	2.6	2.0	C-6 ALKENE
590.	2.9	2.2	C-6 ALKENE
600.	3.0	2.4	HEXANE
662.	3.0	2.3	C-7 ALKENE
684.	4.6	3.6	C-7 ALKANE
700.	1.0	0.81	HEPTANE
724.	0.95	0.73	C-8 ALKANE
761.	1.1	0.83	C-8 ALKANE
787.	4.7	3.6	BENZENE
844.	0.27	0.21	C-9 ALKENE
853.	1.5	1.2	C-9 ALKENE
893.	4.1	3.2	TOLUENE

RECOVERED = 130. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-15
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
223.	42.	32.	ETHYLENE;ACETYLENE
290.	7.9	6.0	PROPYLENE
371.	13.	10.	BUTENE
400.	4.5	3.4	BUTANE
485.	10.	7.8	ISOPENTANE
500.	3.7	2.9	PENTANE
512.	0.64	0.48	C-5 ALKENE
575.	1.2	0.89	C-6 ALKENE
581.	1.6	1.2	C-6 ALKENE
590.	0.60	0.46	C-6 ALKENE
600.	2.0	1.5	HEXANE
643.	1.4	1.0	C-7 ALKENE
659.	1.3	0.99	C-7 ALKENE
670.	1.3	0.98	C-7 ALKENE
677.	3.7	2.8	C-7 ALKANE
700.	0.69	0.53	HEPTANE
726.	8.6	6.5	C-8 ALKANE
763.	8.3	6.3	C-8 ALKANE
787.	11.	8.2	BENZENE
822.	0.31	0.62	C-9 ALKENE
893.	7.0	5.3	TOLUENE

RECOVERED = 130. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-1o
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
204.	13.	35.	ETHYLENE;ACETYLEN
290.	4.5	12.	PROPYLENE
371.	6.4	17.	BUTENE
400.	1.2	3.2	BUTANE
485.	2.5	6.5	ISOPENTANE
500.	1.0	2.7	PENTANE
724.	1.4	3.7	C-8 ALKANE
759.	1.2	3.1	C-8 ALKANE
787.	2.9	7.7	BENZENE
893.	3.7	9.8	TOLUENE

RECOVERED = 3o. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-17
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% OC ELUATE	ASSIGNMENT
195.	22.	26.	ETHYLENE;ACETYLENE
290.	7.8	10.	PROPYLENE
372.	8.4	11.	BUTENE
400.	1.9	2.4	BUTANE
480.	4.3	5.4	ISOPENTANE
491.	2.5	3.2	ISOPENTANE
500.	0.44	0.56	PENTANE
569.	0.35	0.45	C-6 ALKENE
577.	0.83	1.1	C-6 ALKENE
600.	0.78	1.00	HEXANE
649.	0.38	0.49	C-7 ALKENE
663.	0.48	0.62	C-7 ALKENE
673.	0.55	0.71	C-7 ALKENE
679.	1.3	1.7	C-7 ALKANE
724.	2.2	2.9	C-8 ALKANE
761.	1.7	2.2	C-8 ALKANE
787.	8.5	11.	BENZENE
838.	0.39	0.50	C-9 ALKENE
852.	1.6	2.0	C-9 ALKENE
893.	8.6	11.	TOLUENE
976.	0.52	0.67	UNKNOWN
1000.	0.39	0.50	ETHYL BENZENE
1033.	0.98	1.3	XYLENE
1052.	0.27	0.34	XYLENE
1087.	1.00	1.3	UNKNOWN

RECOVERED = 78. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-1c
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
145.	0.81	2.6	UNKNOWN
166.	2.0	8.5	ETHYLENE;ACETYLENE
290.	1.5	5.0	PROPYLENE
372.	3.6	12.	BUTENE
400.	1.0	5.3	BUTANE
485.	3.0	9.8	ISOPENTANE
500.	0.75	2.4	PENTANE
722.	2.1	6.9	C-8 ALKANE
758.	1.5	5.0	C-8 ALKANE
787.	7.1	23.	BENZENE
893.	5.1	17.	TOLUENE
1000.	0.31	1.0	ETHYL BENZENE
1033.	0.75	2.4	XYLENE

RECOVERED = 31. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-19
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
196.	1.2	15.	ETHYLENE;ACETYLENE
290.	0.43	5.4	PROPYLENE
371.	0.36	4.5	BUTENE
382.	0.034	0.44	ISOBUTANE
400.	0.18	2.2	BUTANE
485.	0.43	5.4	ISOPENTANE
500.	0.28	3.5	PENTANE
513.	0.032	0.41	C-5 ALKENE
581.	0.10	1.3	C-6 ALKENE
590.	0.073	0.92	C-6 ALKENE
600.	1.2	16.	HEXANE
663.	0.074	0.94	C-7 ALKENE
679.	0.22	2.8	C-7 ALKANE
700.	0.067	0.86	HEPTANE
787.	1.4	17.	BENZENE
854.	0.16	2.0	C-9 ALKENE
893.	0.76	9.6	TOLUENE
951.	0.052	0.66	UNKNOWN
1000.	0.12	1.6	ETHYL BENZENE
1037.	0.048	0.61	XYLENE
1100.	0.55	6.9	UNDECANE
1135.	0.045	0.57	UNKNOWN
1203.	0.056	0.72	UNKNOWN

RECOVERED = 7.9 MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-20
DESCRIPTION=
DATE=

NOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
202.	6.6	14.	ETHYLENE;ACETYLENE
290.	2.5	5.1	PROPYLENE
369.	5.1	10.	BUTENE
382.	0.42	0.85	ISOBUTANE
400.	1.5	3.0	BUTANE
485.	4.4	9.0	ISOPENTANE
500.	3.2	6.5	PENTANE
581.	0.98	2.0	C-6 ALKENE
600.	1.7	3.5	HEXANE
659.	0.99	2.0	C-7 ALKENE
678.	2.7	5.5	C-7 ALKANE
700.	1.4	2.9	HEPTANE
726.	0.32	0.66	C-8 ALKANE
761.	0.52	1.1	C-8 ALKANE
772.	0.22	0.45	C-8 ALKANE
787.	9.1	19.	BENZENE
805.	0.53	1.1	OCTANE
893.	6.8	14.	TOLUENE

RECOVERED = 49. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-21
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
203.	12.	32.	ETHYLENE;ACETYLENE
290.	2.6	6.9	PROPYLENE
370.	3.0	8.0	BUTENE
382.	0.38	1.0	ISOBUTANE
400.	1.3	3.5	BUTANE
485.	2.6	6.9	ISOPENTANE
500.	2.0	5.4	PENTANE
581.	0.48	1.3	C-6 ALKENE
600.	1.4	3.6	HEXANE
660.	0.56	1.5	C-7 ALKENE
678.	1.1	3.0	C-7 ALKANE
700.	0.61	1.6	HEPTANE
787.	4.2	11.	BENZENE
865.	1.7	4.5	C-9 ALKENE
893.	3.6	9.5	TOLUENE

RECOVERED = 38. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-22
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
202.	9.1	17.	ETHYLENE;ACETYLENE
290.	1.3	2.4	PROPYLENE
338.	0.37	0.68	BUTENE
343.	0.050	0.092	BUTENE
370.	4.0	7.5	BUTENE
382.	0.41	0.76	ISOBUTANE
400.	2.1	3.8	BUTANE
485.	4.5	8.3	ISOPENTANE
500.	4.2	7.7	PENTANE
513.	0.53	0.97	C-5 ALKENE
581.	0.97	1.8	C-6 ALKENE
590.	0.74	1.4	C-6 ALKENE
600.	3.8	7.0	HEXANE
644.	0.72	1.3	C-7 ALKENE
661.	1.5	2.8	C-7 ALKENE
679.	3.0	5.6	C-7 ALKANE
700.	1.6	2.9	HEPTANE
709.	0.64	1.2	HEPTANE
787.	9.4	17.	BENZENE
799.	0.49	0.92	OCTANE
824.	0.61	1.1	C-9 ALKENE
858.	1.3	2.3	C-9 ALKENE
893.	2.4	4.5	TOLUENE
1069.	0.35	0.65	UNDECANE

RECOVERED = 54. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST
SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-23
DESCRIPTION=
DATE=

XOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
199.	6.9	30.	ETHYLENE;ACETYLENE
290.	1.3	5.4	PROPYLENE
309.	2.9	13.	BUTENE
400.	0.06	2.9	BUTANE
485.	1.3	5.5	ISOPENTANE
500.	0.99	4.3	PENTANE
581.	0.32	1.4	C-6 ALKENE
600.	0.69	3.0	HEXANE
661.	0.27	1.2	C-7 ALKENE
679.	0.56	2.4	C-7 ALKANE
699.	0.39	1.7	HEPTANE
787.	3.9	17.	BENZENE
893.	3.0	13.	TOLUENE

RECOVERED = 23. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-24
DESCRIPTION= 72 PONTIAC
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
200.	3.9	24.	ETHYLENE;ACETYLENE
290.	1.6	10.0	PROPYLENE
370.	1.1	6.7	BUTENE
400.	0.40	2.5	BUTANE
485.	0.85	5.3	ISOPENTANE
500.	0.17	1.1	PENTANE
600.	3.4	21.	HEXANE
724.	0.51	3.1	C-8 ALKANE
787.	3.4	21.	BENZENE
893.	0.89	5.5	TOLUENE

RECOVERED = 16. MG/M3

COMPOSITION OF DILUTE AUTO EXHAUST

SCAB COMPOSITE DRIVING CYCLE

ANALYTICAL RESEARCH LABORATORIES, INC.

GAS CHROMATOGRAPHIC RESULTS

ARLI ID= 1009-25
DESCRIPTION=
DATE=

KOVATS ID	MG/M3	WT% GC ELUATE	ASSIGNMENT
130.	0.060	0.18	UNKNOWN
200.	4.1	13.	ETHYLENE;ACETYLENE
290.	1.4	4.4	PROPYLENE
371.	1.7	5.2	BUTENE
363.	0.23	0.72	ISOBUTANE
400.	1.3	4.0	BUTANE
485.	4.2	13.	ISOPENTANE
500.	2.2	6.7	PENTANE
512.	0.20	0.62	C-5 ALKENE
581.	0.90	2.8	C-6 ALKENE
600.	1.1	3.2	HEXANE
660.	0.72	2.2	C-7 ALKENE
787.	9.4	29.	BENZENE
800.	0.69	2.1	OCTANE
861.	0.79	2.4	C-9 ALKENE
893.	3.5	11.	TOLUENE

RECOVERED = 32. MG/M3

Appendix E

ESTIMATED EMISSIONS AS A FUNCTION OF AVERAGE SPEED AND ROUTE TYPE

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 1

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.79	5.54	57.09	4.40	17.18	8.47	87.73	4.08
32.86	5.09	51.98	4.55	18.41	8.21	84.19	4.09
35.30	4.95	50.23	4.65	20.07	7.57	77.89	4.02
38.04	4.76	48.97	4.55	21.47	6.97	7[illegible].56	3.86
40.70	4.47	46.04	4.70	22.86	6.86	7[illegible].72	4.03
43.53	4.29	43.72	4.69	24.27	6.49	66.54	4.00
45.92	4.28	43.47	5.01	25.71	5.92	6[illegible].63	3.77
48.86	4.21	43.21	5.06	27.11	5.83	59.66	3.86
51.58	4.06	41.82	5.08	28.43	5.49	56.15	3.80
54.35	3.98	40.97	5.23	30.04	5.15	53.22	3.80

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.27	5.63	57.78	4.67	17.80	8.06	82.69	3.83
32.16	5.28	54.15	4.69	19.15	7.80	8[illegible].64	4.02
34.80	4.92	50.64	4.46	19.97	7.77	8[illegible].31	4.08
37.48	4.73	48.40	4.77	21.04	7.19	7[illegible].61	3.94
40.45	4.54	46.48	4.83	22.09	6.60	67.81	3.71
43.18	4.33	44.36	4.76	23.18	6.49	66.81	3.74
46.08	4.24	43.72	4.83	24.26	6.52	67.77	4.06
48.86	4.01	4[illegible].63	4.83	25.33	6.00	61.82	3.71
51.62	3.90	39.45	4.91	26.38	5.94	61.46	3.91
54.44	3.91	39.56	5.18	27.48	6.12	63.28	4.05

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 2

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.13	5.40	55.25	4.31
32.59	5.02	51.18	4.18
35.23	4.94	49.93	4.68
37.66	4.77	49.15	4.58
40.19	4.60	47.39	4.69
42.77	4.37	44.35	4.66
45.21	4.40	45.00	5.01
47.71	4.23	43.38	4.93
50.16	3.99	40.38	4.84
52.70	4.01	41.24	5.04

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.60	8.44	86.44	3.96
18.77	7.63	77.80	3.67
19.99	7.37	74.85	3.74
21.17	7.01	71.98	3.81
22.46	7.07	73.43	4.03
23.55	6.45	66.29	3.85
24.74	6.82	7[illegible].53	4.33
25.93	6.11	63.16	4.00
27.09	6.03	62.71	4.16
28.33	5.75	59.09	4.07

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
12.36	10.25	104.76	2.90
15.17	8.81	90.37	3.62
21.17	6.50	66.63	3.26
25.63	5.77	59.65	3.68
30.09	5.28	54.28	4.26
34.60	4.88	50.05	4.36
39.04	4.49	45.85	4.32
43.47	4.30	43.56	4.78
47.91	3.92	39.91	4.60
52.38	3.91	39.43	5.00

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.11	8.51	87.34	3.96
18.13	7.98	81.77	3.80
19.15	7.98	82.02	4.12
20.16	7.36	75.53	3.76
21.18	7.24	74.59	4.05
22.19	6.80	69.60	3.75
23.20	6.56	67.21	3.83
24.22	6.26	64.11	3.58
25.16	6.07	62.29	3.75
26.25	5.85	6[illegible].27	3.75

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 3

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.97	5.22	53.64	4.23
35.47	4.50	45.81	4.03
38.20	4.30	44.00	4.05
40.87	4.43	45.52	4.66
43.60	4.21	42.98	4.64
44.50	4.17	42.27	4.73
46.54	4.14	41.83	4.92
49.06	4.07	41.61	5.01
51.91	4.02	41.35	5.10
54.62	3.99	41.03	5.28

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.34	8.34	86.09	3.98
19.47	7.54	77.04	3.96
21.63	6.78	69.59	3.72
23.82	6.28	64.59	3.84
25.97	6.14	63.05	4.09
28.08	5.62	57.96	4.12
30.13	5.42	55.91	4.13
30.82	5.33	54.66	4.15
31.27	5.17	53.49	4.13
36.77	4.93	5[illegible].68	4.70

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
19.22	7.15	72.62	3.10
23.06	6.05	61.88	3.30
26.70	5.63	57.08	3.55
3[illegible].42	5.18	53.35	3.88
34.19	4.61	47.13	3.92
37.99	4.51	45.66	4.36
41.70	4.19	42.92	4.35
45.43	4.07	41.33	4.62
49.18	3.91	39.80	4.69
52.95	3.92	39.87	5.05

NON-FREEWAY

AVG SPD	HC	CO	NOX
18.06	8.01	81.98	3.79
19.30	7.99	8[illegible].03	4.09
20.79	7.27	7[illegible].01	3.80
22.17	6.84	7[illegible].34	3.88
23.54	6.39	65.38	3.62
24.91	5.95	6[illegible].90	3.61
26.24	6.05	62.17	4.03
27.61	5.75	59.73	3.89
29.52	5.32	55.07	3.90
30.39	5.36	55.43	4.02

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 4

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
37.47	5.06	51.88	5.03	16.90	8.28	84.87	3.64
40.46	4.70	48.26	4.99	18.02	8.18	83.56	3.88
40.90	4.65	48.12	4.94	19.50	7.89	81.05	4.08
43.29	4.49	46.28	4.91	20.78	7.16	73.20	3.74
45.02	4.32	43.98	4.95	22.06	6.63	67.65	3.61
46.68	4.32	44.31	5.16	23.35	6.80	7 .09	4.00
48.73	4.11	41.89	4.98	24.64	6.24	63.45	3.75
50.58	4.16	42.70	5.16	25.93	5.82	59.81	3.66
52.22	4.04	41.17	5.16	27.25	5.40	55.47	3.40
54.38	3.98	40.42	5.35	28.59	5.17	53.12	3.44

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
24.19	5.92	60.30	3.52	18.99	7.94	81.50	4.11
27.65	5.78	59.32	4.27	19.97	7.43	76.15	3.81
31.26	5.29	53.67	4.41	20.90	7.18	73.92	3.90
34.73	4.83	48.89	4.41	21.95	7.25	75.08	4.16
37.99	4.79	48.69	4.77	22.92	6.96	71.31	4.09
41.49	4.54	46.03	4.88	23.90	6.33	64.62	3.59
44.94	4.17	42.24	4.73	24.88	5.96	61.33	3.68
48.36	4.01	40.35	4.76	25.86	5.93	61.17	3.75
51.81	3.92	39.69	4.92	26.85	6.07	63.18	3.96
55.27	3.92	39.45	5.23	27.83	5.54	57.08	3.73

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 5

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.34	5.07	52.05	4.54	18.95	8.01	81.75	4.04
37.79	4.43	45.59	4.29	20.49	7.49	76.39	4.01
38.98	4.63	46.92	4.73	21.36	6.66	67.79	3.53
40.84	4.60	47.57	4.80	22.65	6.69	68.73	3.85
43.13	4.33	44.29	4.78	23.87	6.63	68.13	3.96
45.15	4.36	44.98	4.98	25.10	6.25	64.09	3.88
47.26	4.16	42.93	4.89	26.33	5.88	6[illegible].25	3.82
49.59	4.06	41.77	5.05	27.57	5.59	56.83	3.75
51.52	4.06	41.66	5.16	28.77	5.43	55.85	3.75
53.65	4.01	41.21	5.30	30.08	5.05	51.67	3.57

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.78	5.45	55.84	4.35	18.74	7.99	82.12	3.93
32.63	5.05	51.62	4.33	20.39	7.14	73.02	3.60
35.13	4.96	51.43	4.51	21.28	7.49	77.40	4.19
37.83	4.55	46.46	4.56	23.20	6.74	69.58	3.94
40.53	4.29	43.68	4.42	23.29	6.63	68.64	3.83
43.20	4.20	42.75	4.58	25.66	6.35	66.5[illegible]	4.02
45.88	4.19	42.88	4.86	25.80	5.84	59.97	3.69
48.57	4.07	41.61	4.91	27.92	5.90	6[illegible].86	4.07
51.26	3.95	40.09	4.98	28.28	5.57	57.66	3.81
53.94	3.94	39.99	5.2[illegible]	28.95	5.30	54.5[illegible]	3.67

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 6

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.44	5.29	54.38	3.87
33.14	5.42	55.71	4.70
35.87	5.14	52.92	4.82
38.48	4.95	51.13	4.95
41.11	4.58	46.86	4.89
43.89	4.40	44.55	4.94
46.58	4.16	42.38	4.93
49.28	3.97	40.17	4.87
51.77	4.08	41.90	5.19
54.51	4.01	41.01	5.36

NON-FREEWAY

AVG SPD	HC	CO	NOX
16.66	8.73	89.49	4.03
18.00	7.95	81.38	3.77
18.86	7.66	78.65	3.84
19.98	7.41	75.63	3.83
21.06	7.04	71.82	3.81
22.16	6.75	69.06	3.87
23.25	6.46	66.40	3.80
24.39	6.37	65.23	3.87
25.46	6.27	64.37	3.98
26.57	5.51	56.56	3.56

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
41.90	4.56	47.17	4.85
42.62	4.58	47.46	5.02
42.93	4.41	45.19	4.77
44.26	4.33	44.05	4.98
44.41	4.26	43.88	4.70
48.68	4.11	42.21	4.97
48.81	4.08	41.73	4.95
52.13	3.98	40.41	5.09
53.41	3.95	40.09	5.18
54.99	3.96	39.99	5.33

NON-FREEWAY

AVG SPD	HC	CO	NOX
16.26	8.33	85.69	4.11
18.35	8.38	86.47	4.17
19.79	7.52	77.38	3.90
21.44	7.24	74.40	3.95
21.48	6.97	71.90	3.78
23.55	6.60	68.30	4.00
24.11	6.48	67.05	3.91
26.14	6.05	62.37	3.84
26.68	5.83	6 .34	3.76
27.10	5.88	6 .12	4.[illegible]8

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	4.93	50.08	4.43	18.96	7.75	79.59	3.78
36.75	4.68	47.13	4.46	20.68	7.17	73.41	3.83
38.92	4.62	47.08	4.61	22.48	6.69	68.2[illegible]	3.87
40.99	4.42	45.13	4.48	24.30	6.41	65.64	3.89
43.26	4.24	43.44	4.54	26.08	5.72	58.61	3.59
45.57	4.22	43.22	4.73	27.84	5.74	59.[illegible]1	3.95
47.75	4.13	42.26	4.84	29.64	5.66	57.78	4.32
49.95	4.08	41.95	4.96	31.43	5.21	53.[illegible]5	4.04
52.37	4.11	41.79	5.28	32.98	5.11	52.19	4.20
54.38	3.99	40.57	5.28	35.01	5.08	52.19	4.69

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	7.10	72.69	4.07	19.43	7.61	77.64	3.90
22.03	6.74	69.61	4.23	19.63	7.58	77.18	3.74
22.37	6.30	64.91	3.61	21.83	6.93	7[illegible].76	3.73
32.70	4.92	50.69	4.28	22.02	6.68	68.85	3.57
33.83	4.99	50.80	4.60	26.51	5.96	61.18	3.73
40.73	4.64	47.79	4.86	27.46	5.95	6[illegible].90	4.21
41.52	4.36	44.45	4.72	28.30	5.82	6[illegible].04	4.17
47.14	4.21	42.56	5.03	29.58	5.50	56.56	4.10
50.43	4.07	41.56	5.02	30.46	5.39	54.99	4.17
54.67	3.91	39.33	5.21	31.19	5.36	55.33	4.19

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 8

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.02	5.34	54.23	4.20	15.79	8.81	89.51	3.44
32.53	4.77	49.25	3.80	18.69	7.95	81.11	3.77
35.07	4.47	45.50	3.92	19.86	7.29	74.77	3.66
37.69	4.32	44.00	4.02	20.35	7.29	74.85	3.76
40.13	4.26	43.36	4.33	21.29	7.01	72.00	3.71
42.55	4.44	45.59	4.78	23.40	6.98	72.07	3.96
45.02	4.24	43.57	4.84	23.82	6.72	69.13	4.15
47.70	3.99	40.55	4.69	23.85	6.35	64.82	3.64
50.25	3.90	39.52	4.84	24.19	6.44	66.13	4.10
52.54	3.90	39.58	5.04	26.02	6.09	63.02	4.09

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
23.07	6.35	64.79	3.72	15.48	9.16	94.09	3.78
25.22	5.93	60.43	3.86	16.40	8.84	90.42	3.79
29.69	5.25	53.78	3.98	18.80	7.61	78.13	3.69
32.48	5.12	52.24	4.34	19.42	7.66	78.67	3.76
34.79	4.85	49.02	4.45	20.08	7.35	74.87	3.58
40.72	4.41	44.95	4.55	21.64	7.21	73.57	4.17
45.05	4.17	42.19	4.79	22.67	6.64	68.06	3.75
46.21	4.00	40.69	4.54	25.50	6.22	63.59	3.91
51.69	3.90	39.43	4.92	26.34	5.89	6[illegible].21	3.96
53.76	3.90	39.24	5.10	26.55	6.08	62.59	4.01

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 2
ROUTE 9

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
32.97	4.76	48.99	3.94	15.58	9.00	91.99	3.66
34.93	4.56	46.79	4.12	17.48	8.25	84.54	3.76
38.56	4.64	47.08	4.80	18.28	7.97	81.49	3.59
40.63	4.39	44.71	4.68	19.76	7.92	81.41	4.10
41.98	4.36	44.86	4.78	20.44	7.38	75.33	3.65
42.19	4.20	42.67	4.59	21.37	7.06	72.17	3.71
47.23	4.22	42.88	5.13	21.86	6.73	68.77	3.56
47.80	3.99	40.22	4.81	24.71	6.05	61.75	3.58
50.43	3.98	41.00	4.93	25.47	5.92	60.78	3.86
51.86	3.93	40.37	4.97	28.16	5.68	58.61	3.79

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
8.74	13.22	137.05	2.04	14.75	9.60	98.54	3.78
12.52	9.71	100.13	2.56	15.60	9.09	92.74	3.79
17.42	7.41	76.54	3.08	17.12	8.30	84.16	3.41
23.07	6.14	63.81	3.77	18.68	7.84	80.21	3.76
24.80	5.64	58.28	3.52	19.35	7.57	77.71	3.69
29.37	5.06	51.91	4.01	19.56	7.39	75.53	3.58
32.63	4.86	49.73	4.24	21.72	7.00	71.65	3.65
39.29	4.33	44.10	4.51	22.13	6.62	68.15	3.68
41.57	4.28	43.72	4.55	23.64	6.47	66.54	3.81
51.79	3.96	40.07	5.06	26.16	5.86	61.14	3.65

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 1

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.79	3.92	35.94	4.08	17.18	6.03	55.64	3.88
32.86	3.65	33.58	4.19	18.41	5.76	52.58	3.89
35.30	3.52	32.23	4.29	20.07	5.37	48.48	3.83
38.04	3.39	30.64	4.26	21.47	5.02	44.79	3.64
40.70	3.21	29.50	4.33	22.86	4.91	43.51	3.86
43.53	3.06	27.93	4.33	24.27	4.66	41.04	3.80
45.92	3.00	28.24	4.61	25.71	4.36	37.82	3.53
48.86	2.93	27.64	4.69	27.11	4.26	36.72	3.65
51.58	2.83	26.81	4.70	28.43	4.06	34.79	3.54
54.35	2.75	26.57	4.83	30.04	3.87	33.19	3.54

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.27	3.91	37.16	4.31	17.80	5.76	52.56	3.59
32.16	3.70	34.77	4.34	19.15	5.57	50.55	3.84
34.80	3.55	32.04	4.13	19.97	5.47	49.35	3.96
37.48	3.32	31.29	4.37	21.04	5.12	45.99	3.72
40.45	3.21	30.01	4.46	22.09	4.82	42.86	3.46
43.18	3.09	28.45	4.38	23.18	4.73	41.54	3.55
46.08	3.01	27.69	4.46	24.26	4.70	41.71	3.91
48.86	2.85	26.28	4.44	25.33	4.41	38.30	3.49
51.62	2.77	25.67	4.51	26.38	4.35	37.96	3.69
54.44	2.71	25.99	4.76	27.48	4.35	37.81	3.92

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 2

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.13	3.81	34.91	3.97
32.59	3.62	32.30	3.84
35.23	3.43	32.22	4.29
37.66	3.40	30.85	4.24
40.19	3.25	29.85	4.33
42.77	3.11	28.17	4.29
45.21	3.05	28.76	4.64
47.71	2.97	27.50	4.56
50.16	2.83	25.99	4.47
52.70	2.81	26.30	4.66

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.60	5.97	54.15	3.76
18.77	5.47	49.32	3.38
19.99	5.25	47.00	3.48
21.17	5.08	45.16	3.58
22.46	5.03	44.67	3.88
23.55	4.71	41.32	3.63
24.74	4.76	42.49	4.17
25.93	4.44	38.97	3.77
27.09	4.36	38.41	3.97
28.33	4.16	36.31	3.84

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
12.36	7.16	68.05	2.56
15.17	6.11	58.66	3.29
21.17	4.78	42.27	2.97
25.63	4.23	37.39	3.38
30.09	3.77	34.71	3.91
34.60	3.51	31.71	4.01
39.04	3.27	28.78	4.00
43.47	3.05	28.17	4.40
47.91	2.85	25.73	4.22
52.38	2.75	25.78	4.59

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.11	6.03	55.31	3.73
18.13	5.72	51.73	3.59
19.15	5.63	51.05	3.96
20.16	5.28	47.08	3.58
21.18	5.17	46.41	3.86
22.19	4.91	43.20	3.53
23.20	4.74	41.80	3.61
24.22	4.58	39.40	3.39
25.16	4.45	38.65	3.54
26.25	4.32	37.31	3.53

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 3

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.97	3.79	34.66	3.88	17.34	5.94	54.59	3.75
35.47	3.36	29.34	3.67	19.47	5.39	48.90	3.70
38.20	3.24	27.95	3.71	21.63	4.94	43.77	3.48
40.87	3.16	29.18	4.29	23.82	4.59	4[illegible].61	3.59
43.60	3.02	27.66	4.26	25.97	4.41	39.05	3.86
44.50	2.99	27.50	4.33	28.08	4.07	36.50	3.83
46.54	2.91	27.42	4.51	30.13	3.95	34.64	3.87
49.06	2.86	27.09	4.61	30.82	3.88	34.04	3.88
51.91	2.81	26.71	4.70	31.27	3.77	33.58	3.82
54.62	2.74	26.70	4.88	36.77	3.49	31.88	4.37

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
19.22	5.20	45.76	2.81	18.06	5.71	51.84	3.55
23.06	4.51	39.29	2.98	19.30	5.58	5[illegible].38	3.87
26.70	4.14	35.53	3.26	20.79	5.16	45.92	3.60
30.42	3.82	33.30	3.59	22.17	4.94	43.82	3.67
34.19	3.44	29.99	3.57	23.54	4.65	4[illegible].47	3.42
37.99	3.27	29.27	4.00	24.91	4.40	38.13	3.36
41.70	3.09	27.42	3.99	26.24	4.36	38.54	3.80
45.43	2.94	26.72	4.23	27.61	4.20	36.63	3.68
49.18	2.82	25.70	4.31	29.52	3.94	34.31	3.64
52.95	2.74	26.00	4.64	30.39	3.91	34.15	3.78

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 4

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
37.47	3.49	32.88	4.69	16.90	5.92	54.15	3.37
40.46	3.29	30.86	4.63	18.02	5.79	52.53	3.67
40.90	3.28	30.55	4.59	19.50	5.56	50.16	3.93
43.29	3.16	29.30	4.55	20.78	5.14	45.68	3.52
45.02	3.04	28.32	4.55	22.06	4.83	42.47	3.37
46.68	2.99	28.71	4.76	23.35	4.84	42.74	3.85
48.73	2.89	27.08	4.58	24.64	4.51	39.25	3.52
50.58	2.87	27.42	4.77	25.93	4.31	37.18	3.42
52.22	2.80	26.70	4.76	27.25	4.08	34.43	3.17
54.38	2.72	26.74	4.91	28.59	3.93	33.06	3.19

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
24.19	4.32	38.23	3.18	18.99	5.67	51.57	3.95
27.65	4.07	37.53	3.94	19.97	5.33	47.65	3.60
31.26	3.72	34.35	4.05	20.90	5.17	46.24	3.69
34.73	3.47	31.51	4.03	21.95	5.12	45.90	4.03
37.99	3.36	31.14	4.41	22.92	4.92	43.73	3.92
41.49	3.17	29.68	4.50	23.90	4.61	39.79	3.39
44.94	2.97	27.34	4.34	24.88	4.43	38.56	3.44
48.36	2.85	26.14	4.38	25.86	4.37	37.83	3.53
51.81	2.78	25.74	4.52	26.85	4.39	38.18	3.80
55.27	2.69	25.92	4.81	27.83	4.10	35.32	3.49

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 5

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
34.34	3.63	32.71	4.24
37.79	3.31	29.14	3.93
38.98	3.25	30.23	4.34
40.84	3.26	30.03	4.47
43.13	3.09	28.48	4.49
45.15	3.06	28.76	4.61
47.26	2.95	27.49	4.51
49.59	2.85	27.17	4.64
51.52	2.82	27.02	4.76
53.65	2.75	26.98	4.88

NON-FREEWAY

AVG SPD	HC	CO	NOX
18.95	5.58	5[illegible].91	3.83
20.49	5.26	47.39	3.80
21.36	4.87	43.07	3.23
22.65	4.86	42.85	3.63
23.87	4.75	4[illegible].79	3.76
25.10	4.51	39.39	3.66
26.33	4.31	37.35	3.58
27.57	4.13	35.43	3.48
28.77	4.03	34.43	3.51
30.08	3.81	32.13	3.30

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.78	3.89	35.53	4.04
32.63	3.62	32.93	3.97
35.13	3.55	32.26	4.29
37.83	3.25	30.11	4.16
40.53	3.13	28.11	4.04
43.20	3.04	27.55	4.21
45.88	2.96	27.70	4.48
48.57	2.87	26.88	4.51
51.26	2.77	26.17	4.58
53.94	2.72	26.26	4.78

NON-FREEWAY

AVG SPD	HC	CO	NOX
18.74	5.67	51.23	3.74
20.39	5.16	45.71	3.37
21.28	5.25	47.29	4.06
23.20	4.84	42.73	3.77
23.29	4.81	42.14	3.66
25.66	4.58	4[illegible].11	3.89
25.80	4.33	37.43	3.44
27.92	4.25	37.09	3.87
28.28	4.13	35.43	3.60
28.95	3.97	35.83	3.42

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 6

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.44	3.89	33.30	3.63	16.66	6.14	56.72	3.82
33.14	3.78	34.66	4.43	18.00	5.67	51.66	3.53
35.87	3.58	33.24	4.51	18.86	5.51	49.93	3.60
38.48	3.43	32.14	4.64	19.98	5.29	47.5[illegible]	3.61
41.11	3.22	30.11	4.53	21.06	5.[illegible]4	45.17	3.55
43.89	3.08	28.77	4.57	22.16	4.88	43.39	3.61
46.58	2.94	27.60	4.53	23.25	4.69	41.49	3.58
49.28	2.82	26.24	4.47	24.39	4.60	4[illegible].27	3.66
51.77	2.82	27.14	4.79	25.46	4.52	39.44	3.79
54.51	2.73	26.94	4.94	26.57	4.16	35.64	3.28

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
41.90	3.22	29.77	4.53	18.26	5.84	53.24	3.96
42.62	3.22	30.16	4.68	18.35	5.86	53.46	4.05
42.93	3.13	28.78	4.43	19.79	5.39	48.48	3.71
44.26	3.05	28.71	4.59	21.44	5.15	45.75	3.79
44.41	3.06	27.83	4.35	21.48	5.06	44.74	3.59
48.68	2.90	27.22	4.59	23.55	4.76	42.28	3.80
48.81	2.88	26.97	4.56	24.11	4.68	41.16	3.73
52.13	2.77	26.35	4.68	26.14	4.39	38.12	3.67
53.41	2.74	26.30	4.76	26.68	4.29	37.01	3.55
54.99	2.70	26.44	4.90	27.10	4.24	37.52	3.82

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	3.51	31.79	4.07	18.96	5.53	49.79	3.58
36.75	3.34	30.29	4.08	20.68	5.12	46.11	3.59
38.92	3.30	29.99	4.25	22.48	4.80	42.86	3.62
40.99	3.20	28.40	4.14	24.30	4.62	4 .55	3.68
43.26	3.08	27.53	4.19	26.08	4.26	36.56	3.33
45.57	3.00	27.45	4.37	27.84	4.19	36.37	3.75
47.75	2.92	27.01	4.47	29.64	4.03	35.89	4.03
49.95	2.88	26.78	4.58	31.43	3.81	33.95	3.76
52.37	2.81	27.17	4.86	32.98	3.71	32.44	3.92
54.38	2.73	26.54	4.86	35.01	3.60	32.98	4.37

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	4.93	47.05	3.70	19.43	5.38	48.89	3.62
22.03	4.70	44.76	3.88	19.63	5.39	48.06	3.53
22.37	4.58	41.46	3.31	21.83	4.96	43.80	3.51
32.70	3.55	32.54	3.91	22.02	4.88	42.83	3.36
33.83	3.53	32.88	4.23	26.51	4.35	37.24	3.55
40.73	3.23	30.28	4.50	27.46	4.27	37.84	3.95
41.52	3.11	28.90	4.33	28.30	4.17	36.93	3.93
47.14	2.92	27.74	4.63	29.58	3.98	35.08	3.83
50.43	2.85	26.77	4.63	30.46	3.90	34.33	3.89
54.67	2.70	25.95	4.78	31.19	3.88	34.17	3.94

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 8

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.02	3.79	34.49	3.85
32.53	3.58	30.89	3.48
35.07	3.35	29.10	3.57
37.69	3.24	27.97	3.67
40.13	3.13	27.90	3.96
42.55	3.14	29.00	4.42
45.02	3.00	28.04	4.45
47.70	2.88	26.19	4.31
50.25	2.79	25.82	4.43
52.54	2.74	25.97	4.62

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.79	6.24	56.92	3.14
18.69	5.66	5[illegible].58	3.57
19.86	5.30	47.19	3.41
20.35	5.26	46.78	3.54
21.29	5.09	44.80	3.52
23.40	4.91	43.04	3.87
23.82	4.81	42.62	3.97
23.85	4.61	40.01	3.40
24.19	4.63	41.45	3.83
26.02	4.37	39.18	3.81

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
23.07	4.56	41.00	3.39
25.22	4.27	38.40	3.53
29.69	3.84	34.08	3.66
32.48	3.67	33.16	4.00
34.79	3.45	31.60	4.07
40.72	3.16	28.72	4.18
45.05	2.96	27.50	4.39
46.21	2.91	26.14	4.17
51.69	2.76	25.71	4.52
53.76	2.71	25.79	4.69

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.48	6.49	59.77	3.55
16.40	6.22	56.85	3.58
18.80	5.50	49.58	3.43
19.42	5.44	48.81	3.58
20.08	5.24	46.46	3.37
21.64	5.05	45.86	3.93
22.67	4.81	42.38	3.53
25.50	4.44	38.96	3.69
26.34	4.29	37.76	3.67
26.55	4.36	38.23	3.78

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 3
ROUTE 9

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
32.97	3.56	30.98	3.62
34.93	3.36	30.12	3.77
38.56	3.24	30.70	4.41
40.63	3.12	29.16	4.29
41.98	3.09	29.05	4.40
42.19	3.03	27.92	4.20
47.23	2.90	28.19	4.71
47.80	2.83	26.45	4.40
50.43	2.82	26.52	4.55
51.86	2.77	26.18	4.58

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.58	6.32	58.40	3.40
17.48	5.84	53.27	3.53
18.28	5.67	5[illegible].74	3.39
19.76	5.53	49.91	3.96
20.44	5.22	46.22	3.48
21.37	5.04	44.58	3.49
21.86	4.88	42.84	3.33
24.71	4.43	38.39	3.35
25.47	4.37	38.35	3.57
28.16	4.15	35.55	3.61

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
8.74	9.20	90.85	1.75
12.52	6.96	65.50	2.25
17.42	5.39	49.41	2.79
23.07	4.43	41.03	3.43
24.80	4.18	37.32	3.22
29.37	3.72	33.85	3.64
32.63	3.53	32.27	3.88
39.29	3.13	28.89	4.11
41.57	3.09	28.18	4.18
51.79	2.77	26.26	4.65

NON-FREEWAY

AVG SPD	HC	CO	NOX
14.75	6.75	62.54	3.57
15.60	6.37	59.02	3.51
17.12	5.87	5[illegible].80	3.17
18.68	5.57	5[illegible].29	3.55
19.35	5.43	48.62	3.48
19.56	5.31	47.36	3.35
21.72	5.01	43.96	3.47
22.13	4.86	42.87	3.44
23.64	4.66	41.22	3.60
26.16	4.29	37.02	3.43

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 1

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.79	3.52	45.84	5.06
32.86	3.15	41.13	5.16
35.30	3.04	39.21	5.29
38.04	2.92	38.14	5.20
40.70	2.69	35.91	5.29
43.53	2.55	33.47	5.29
45.92	2.50	33.13	5.60
48.86	2.45	32.85	5.67
51.58	2.34	31.75	5.67
54.35	2.26	30.98	5.81

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.18	5.75	7[illegible].69	4.99
18.41	5.53	69.31	5.00
20.07	5.08	63.73	4.90
21.47	4.66	58.44	4.68
22.86	4.56	57.25	4.92
24.27	4.29	53.5[illegible]	4.85
25.71	3.89	48.80	4.52
27.11	3.82	47.64	4.66
28.43	3.56	44.83	4.53
30.04	3.32	42.50	4.48

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.27	3.55	46.12	5.26
32.16	3.29	42.75	5.32
34.80	3.06	39.93	5.10
37.48	2.86	37.92	5.33
40.45	2.72	35.95	5.42
43.18	2.58	34.24	5.35
46.08	2.51	33.59	5.44
48.86	2.32	30.63	5.40
51.62	2.23	29.54	5.47
54.44	2.20	29.47	5.75

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.80	5.45	68.54	4.66
19.15	5.25	66.36	4.89
19.97	5.23	65.48	5.03
21.04	4.80	6[illegible].09	4.78
22.09	4.39	55.57	4.45
23.18	4.32	54.26	4.54
24.26	4.31	54.75	4.91
25.33	3.95	5[illegible].01	4.46
26.38	3.89	49.57	4.69
27.48	4.01	5[illegible].37	4.93

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 2

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.13	3.41	44.17	4.89
32.59	3.16	40.64	4.77
35.23	3.01	39.13	5.22
37.66	2.93	38.62	5.20
40.19	2.79	37.08	5.29
42.77	2.61	34.06	5.26
45.21	2.59	34.44	5.62
47.71	2.49	33.08	5.55
50.16	2.30	30.34	5.42
52.70	2.30	31.24	5.63

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.60	5.70	71.45	4.89
18.77	5.13	64.61	4.45
19.99	4.93	61.58	4.54
21.17	4.70	58.99	4.63
22.46	4.71	59.86	4.94
23.55	4.28	53.68	4.67
24.74	4.50	56.89	5.28
25.93	4.01	51.11	4.80
27.09	3.95	50.32	5.01
28.33	3.73	47.07	4.85

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
12.36	7.12	89.85	3.38
15.17	6.01	76.08	4.14
21.17	4.36	55.27	3.86
25.63	3.79	48.77	4.31
30.09	3.34	43.54	4.82
34.60	3.03	39.70	4.97
39.04	2.75	35.60	4.96
43.47	2.54	33.21	5.36
47.91	2.28	30.36	5.14
52.38	2.22	29.44	5.56

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.11	5.76	72.64	4.84
18.13	5.40	67.49	4.67
19.15	5.36	67.12	5.07
20.16	4.95	61.77	4.62
21.18	4.84	60.77	4.93
22.19	4.52	56.75	4.57
23.20	4.34	54.56	4.62
24.22	4.15	51.89	4.37
25.16	4.00	5 .27	4.52
26.25	3.84	48.55	4.51

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 3

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.97	3.29	43.03	4.79	17.34	5.66	71.43	4.85
35.47	2.79	35.99	4.59	19.47	5.06	63.23	4.80
38.20	2.65	34.47	4.62	21.63	4.52	56.92	4.50
40.87	2.66	35.41	5.24	23.82	4.15	52.38	4.59
43.60	2.49	33.06	5.20	25.97	4.01	5[illegible].64	4.89
44.50	2.45	32.34	5.29	28.08	3.62	46.65	4.81
46.54	2.40	31.70	5.48	30.13	3.49	44.49	4.89
49.06	2.35	31.57	5.58	30.82	3.41	43.30	4.88
51.91	2.30	31.43	5.68	31.27	3.29	42.94	4.79
54.62	2.25	30.97	5.86	36.77	3.03	39.66	5.39

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
19.22	4.82	60.69	3.74	18.06	5.41	67.97	4.60
23.06	4.01	51.28	3.89	19.30	5.37	67.03	4.94
26.70	3.67	46.28	4.23	20.79	4.86	6[illegible].36	4.65
30.42	3.32	42.92	4.52	22.17	4.55	57.33	4.69
34.19	2.88	37.51	4.49	23.54	4.23	53.11	4.39
37.99	2.74	35.52	4.94	24.91	3.92	49.37	4.33
41.70	2.52	33.40	4.92	26.24	3.94	5[illegible].00	4.80
45.43	2.39	31.55	5.18	27.61	3.75	48.23	4.64
49.18	2.27	30.14	5.24	29.52	3.43	44.29	4.59
52.95	2.22	29.99	5.61	30.39	3.44	44.25	4.74

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 4

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
37.47	3.09	40.39	5.73	16.90	5.61	7[illegible].95	4.39
40.46	2.83	37.32	5.64	18.02	5.51	69.09	4.73
40.90	2.82	37.32	5.61	19.50	5.31	66.20	5.04
43.29	2.69	35.76	5.56	20.78	4.79	59.98	4.55
45.02	2.55	33.58	5.57	22.06	4.41	55.23	4.36
46.68	2.52	33.86	5.77	23.35	4.52	56.57	4.90
48.73	2.38	31.81	5.57	24.64	4.10	51.17	4.52
50.58	2.40	32.45	5.77	25.93	3.82	46.43	4.38
52.22	2.31	30.87	5.75	27.25	3.54	44.79	4.06
54.38	2.23	30.33	5.92	28.59	3.37	42.75	4.09

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
24.19	3.89	49.54	4.07	18.99	5.35	67.95	5.02
27.65	3.69	47.98	4.88	19.97	4.99	62.56	4.66
31.26	3.30	42.69	5.01	20.90	4.80	6[illegible].59	4.72
34.73	2.97	38.36	4.99	21.95	4.84	6[illegible].78	5.09
37.99	2.90	37.79	5.38	22.92	4.60	57.61	4.98
41.49	2.70	35.36	5.48	23.90	4.19	52.30	4.38
44.94	2.45	32.19	5.29	24.88	3.93	49.83	4.40
48.36	2.33	30.36	5.32	25.86	3.90	49.45	4.51
51.81	2.25	29.75	5.49	26.85	3.98	5[illegible].96	4.79
55.27	2.19	29.21	5.80	27.83	3.61	45.89	4.43

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 5

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.34	3.18	40.68	5.25	18.95	5.37	67.12	4.90
37.79	2.73	35.71	4.90	20.49	5.00	62.23	4.69
38.98	2.79	36.37	5.33	21.36	4.45	55.86	4.23
40.84	2.78	36.89	5.46	22.65	4.45	55.93	4.66
43.13	2.58	34.00	5.39	23.87	4.39	55.15	4.83
45.15	2.58	34.64	5.61	25.10	4.12	51.71	4.70
47.26	2.44	33.03	5.49	26.33	3.85	48.46	4.58
49.59	2.34	31.94	5.62	27.57	3.63	45.52	4.47
51.52	2.33	31.56	5.75	28.77	3.53	44.73	4.49
53.65	2.26	31.19	5.87	30.08	3.26	41.31	4.23

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.78	3.46	44.46	4.99	18.74	5.38	67.79	4.83
32.63	3.15	41.06	4.93	20.39	4.78	6[illegible].03	4.37
35.13	3.09	40.66	5.17	21.28	5.01	62.85	5.13
37.83	2.75	36.43	5.09	23.20	4.47	56.52	4.80
40.53	2.58	33.87	4.97	23.29	4.41	55.81	4.66
43.20	2.50	32.82	5.15	25.66	4.20	53.81	4.91
45.88	2.45	32.81	5.43	25.80	3.83	48.52	4.40
48.57	2.36	31.74	5.47	27.92	3.84	48.70	4.90
51.26	2.25	30.18	5.53	28.28	3.63	46.28	4.57
53.94	2.22	29.91	5.76	28.95	3.44	45.79	4.36

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 6

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
3[illegible].44	3.42	43.21	4.63	16.66	5.93	74.07	4.94
33.14	3.40	43.73	5.46	18.00	5.38	67.31	4.58
35.87	3.17	41.54	5.55	18.86	5.16	64.85	4.65
38.48	3.02	39.71	5.65	19.98	4.97	62.03	4.67
41.11	2.74	36.21	5.52	21.06	4.69	58.84	4.59
43.89	2.60	33.84	5.57	22.16	4.49	56.23	4.67
46.58	2.42	32.28	5.50	23.25	4.28	53.91	4.57
49.28	2.28	30.26	5.42	24.39	4.20	52.57	4.69
51.77	2.34	31.73	5.78	25.46	4.12	51.60	4.82
54.51	2.26	30.90	5.94	26.57	3.61	45.78	4.22

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
41.90	2.75	36.40	5.52	18.26	5.62	7[illegible].43	5.08
42.62	2.75	36.65	5.68	18.35	5.66	7[illegible].85	5.16
42.93	2.64	34.68	5.41	19.79	5.06	63.51	4.77
44.26	2.55	33.55	5.57	21.44	4.83	6[illegible].62	4.85
44.41	2.54	33.73	5.32	21.48	4.66	53.84	4.61
48.68	2.39	32.17	5.56	23.55	4.37	5[illegible].47	4.82
48.81	2.37	31.70	5.52	24.11	4.29	54.27	4.74
52.13	2.27	30.35	5.66	26.14	3.97	5[illegible].11	4.64
53.41	2.23	29.98	5.74	26.68	3.83	48.66	4.53
54.99	2.21	29.71	5.90	27.10	3.81	46.09	4.83

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	3.05	39.34	5.06	18.96	5.22	65.63	4.61
36.75	2.86	36.67	5.06	20.68	4.79	6[illegible].25	4.61
38.92	2.81	36.59	5.24	22.48	4.43	55.48	4.63
40.99	2.69	34.87	5.12	24.30	4.23	53.00	4.70
43.26	2.54	33.41	5.14	26.08	3.75	47.38	4.29
45.57	2.50	33.23	5.33	27.84	3.73	46.98	4.71
47.75	2.41	32.21	5.43	29.64	3.63	45.93	5.08
49.95	2.37	31.91	5.56	31.43	3.31	41.91	4.75
52.37	2.34	31.50	5.88	32.98	3.23	41.00	4.92
54.38	2.25	30.32	5.85	35.01	3.14	4[illegible].91	5.38

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	4.69	60.10	4.59	19.43	5.09	64.18	4.67
22.03	4.41	57.48	4.78	19.63	5.09	63.39	4.59
22.37	4.18	53.35	4.17	21.83	4.61	57.90	4.52
32.70	3.07	40.57	4.81	22.02	4.46	56.59	4.33
33.83	3.07	39.87	5.18	26.51	3.91	49.15	4.54
40.73	2.79	37.20	5.48	27.46	3.85	48.78	4.99
41.52	2.59	34.35	5.28	28.30	3.76	48.19	4.94
47.14	2.44	32.17	5.60	29.58	3.52	45.29	4.81
50.43	2.35	31.43	5.61	30.46	3.44	43.49	4.88
54.67	2.19	29.15	5.77	31.19	3.42	44.00	4.91

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 8

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.02	3.37	43.31	4.79	15.79	5.98	75.61	4.16
32.53	3.04	39.48	4.39	18.69	5.35	66.96	4.65
35.07	2.78	35.89	4.45	19.86	4.89	61.98	4.44
37.69	2.66	34.43	4.58	20.35	4.88	61.69	4.57
40.13	2.57	33.64	4.89	21.29	4.68	58.90	4.52
42.55	2.66	35.27	5.39	23.40	4.64	58.24	4.90
45.02	2.50	33.66	5.42	23.82	4.43	55.81	5.03
47.70	2.33	30.79	5.25	23.85	4.21	51.71	4.42
50.25	2.24	29.81	5.39	24.19	4.21	53.72	4.87
52.54	2.21	29.80	5.59	26.02	3.96	51.49	4.81

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
23.07	4.17	53.33	4.31	15.48	6.24	79.07	4.62
25.22	3.85	49.15	4.44	16.40	5.99	75.42	4.64
29.69	3.34	43.26	4.58	18.80	5.11	64.96	4.44
32.48	3.20	41.48	4.97	19.42	5.16	64.72	4.61
34.79	2.97	38.53	5.01	20.08	4.93	61.59	4.37
40.72	2.65	34.78	5.13	21.64	4.76	59.94	4.97
45.05	2.44	32.12	5.35	22.67	4.40	55.57	4.52
46.21	2.35	31.08	5.10	25.50	4.07	51.23	4.68
51.69	2.22	29.55	5.48	26.34	3.83	48.64	4.68
53.76	2.19	29.15	5.66	26.55	3.97	51.48	4.80

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 4
ROUTE 9

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
32.97	3.01	38.90	4.53
34.93	2.82	36.96	4.63
38.56	2.78	36.51	5.35
40.63	2.61	34.61	5.22
41.98	2.59	34.76	5.33
42.19	2.49	32.82	5.12
47.23	2.43	32.62	5.68
47.80	2.29	30.40	5.34
50.43	2.29	31.26	5.50
51.86	2.24	30.67	5.52

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.58	6.14	77.10	4.44
17.48	5.58	7[illegible].27	4.56
18.28	5.39	67.57	4.41
19.76	5.31	66.54	5.04
20.44	4.94	6[illegible].67	4.47
21.37	4.71	59.22	4.51
21.86	4.49	56.43	4.30
24.71	3.98	5[illegible].05	4.28
25.47	3.88	49.24	4.57
28.16	3.71	46.86	4.56

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
8.74	9.51	119.09	2.29
12.52	6.82	85.97	3.0[illegible]
17.42	5.07	64.28	3.57
23.07	4.04	52.80	4.26
24.80	3.71	47.65	4.05
29.37	3.22	41.56	4.52
32.63	3.03	39.48	4.79
39.29	2.60	34.19	5.03
41.57	2.56	33.75	5.10
51.79	2.25	30.05	5.62

NON-FREEWAY

AVG SPD	HC	CO	NOX
14.75	6.55	82.92	4.62
15.60	6.17	77.80	4.59
17.12	5.61	7[illegible].15	4.18
18.68	5.28	66.18	4.58
19.35	5.09	64.21	4.48
19.56	4.96	62.33	4.34
21.72	4.66	58.65	4.47
22.13	4.41	55.95	4.42
23.64	4.27	54.15	4.57
26.16	3.85	48.59	4.38

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 1

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.79	3.33	33.62	6.62
32.86	2.97	29.45	6.71
35.30	2.88	27.49	6.88
38.04	2.79	25.53	6.79
40.70	2.57	23.79	6.86
43.53	2.47	21.60	6.87
45.92	2.41	21.31	7.27
48.86	2.39	20.54	7.37
51.58	2.29	19.44	7.36
54.35	2.23	18.77	7.53

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.18	5.24	6[illegible].17	6.66
18.41	5.07	56.54	6.69
20.07	4.67	5[illegible].86	6.53
21.47	4.29	4[illegible].95	6.23
22.86	4.22	43.99	6.55
24.27	3.97	4[illegible].6[illegible]	6.45
25.71	3.60	36.37	5.99
27.11	3.55	34.80	6.18
28.43	3.32	32.33	5.99
30.04	3.10	3[illegible].22	5.90

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.27	3.37	34.90	6.83
32.16	3.13	31.23	6.91
34.80	2.90	27.69	6.66
37.48	2.75	26.38	6.91
40.45	2.62	24.19	7.04
43.18	2.48	22.26	6.94
46.08	2.44	21.24	7.07
48.86	2.26	18.96	6.99
51.62	2.18	17.91	7.07
54.44	2.16	17.85	7.44

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.80	4.98	56.57	6.23
19.15	4.80	53.42	6.51
19.97	4.82	52.00	6.71
21.04	4.43	47.54	6.37
22.09	4.05	43.43	5.91
23.18	3.98	4[illegible].48	6.04
24.26	3.99	41.22	6.52
25.33	3.66	37.15	5.93
26.38	3.62	36.45	6.22
27.46	3.76	36.35	6.55

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 2

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.13	3.25	32.65	6.36	17.60	5.20	58.49	6.58
32.59	2.99	28.92	6.22	18.77	4.71	52.68	5.96
35.23	2.88	28.01	6.76	19.99	4.54	49.56	6.07
37.66	2.80	26.22	6.77	21.17	4.30	46.39	6.17
40.19	2.69	24.72	6.88	22.46	4.36	45.82	6.61
42.77	2.52	22.20	6.83	23.55	3.95	41.03	6.21
45.21	2.52	22.32	7.29	24.74	4.20	42.72	7.03
47.71	2.42	20.78	7.20	25.93	3.72	37.85	6.37
50.16	2.24	18.55	7.02	27.09	3.68	36.76	6.63
52.70	2.26	18.89	7.29	28.33	3.48	34.15	6.41

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
12.36	6.56	81.72	4.48	17.11	5.25	6[illegible].18	6.49
15.17	5.58	67.44	5.40	18.13	4.93	55.23	6.26
21.17	4.04	44.02	5.12	19.15	4.92	54.00	6.77
25.63	3.55	36.73	5.69	20.16	4.55	49.11	6.18
30.09	3.17	32.12	6.27	21.18	4.45	47.76	6.57
34.60	2.88	27.63	6.48	22.19	4.17	45.93	6.11
39.04	2.63	23.36	6.48	23.20	4.01	41.94	6.13
43.47	2.45	21.70	6.94	24.22	3.84	38.89	5.83
47.91	2.21	18.59	6.66	25.16	3.70	37.49	6.00
52.38	2.17	17.89	7.19	26.25	3.56	35.70	5.99

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 3

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.97	3.10	31.57	6.25	17.34	5.18	59.22	6.48
35.47	2.64	24.46	5.99	19.47	4.65	51.39	6.41
38.20	2.51	22.54	6.01	21.63	4.16	44.68	5.99
40.87	2.57	23.36	6.81	23.82	3.83	4[illegible].2[illegible]	6.[illegible]7
43.60	2.41	21.26	6.74	25.97	3.74	37.89	6.48
44.50	2.37	20.87	6.85	28.08	3.40	34.35	6.33
46.54	2.33	20.28	7.10	30.13	3.27	31.72	6.44
49.06	2.29	19.74	7.23	30.82	3.19	3[illegible].76	6.41
51.91	2.26	19.24	7.36	31.27	3.10	3[illegible].35	6.30
54.62	2.23	18.78	7.60	36.77	2.89	27.16	7.04

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
19.22	4.44	49.21	5.02	18.06	4.94	55.83	6.16
23.06	3.70	39.59	5.16	19.30	4.96	53.75	6.62
26.70	3.42	34.05	5.61	20.79	4.48	47.77	6.22
30.42	3.12	30.37	5.96	22.17	4.19	44.48	6.24
34.19	2.73	25.67	5.88	23.54	3.91	4[illegible].38	5.85
37.99	2.62	23.81	6.44	24.91	3.63	37.06	5.75
41.70	2.42	21.36	6.42	26.24	3.68	37.2[illegible]	6.35
45.43	2.31	19.88	6.71	27.61	3.50	34.86	6.15
49.18	2.20	18.31	6.79	29.52	3.20	31.59	6.[illegible]4
52.95	2.19	18.19	7.27	30.39	3.23	3[illegible].27	6.24

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 4

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
37.47	2.96	27.96	7.47
40.46	2.72	25.12	7.34
40.90	2.70	24.82	7.31
43.29	2.60	23.32	7.23
45.02	2.47	21.71	7.23
46.68	2.46	21.82	7.49
48.73	2.32	19.91	7.22
50.58	2.36	20.26	7.49
52.22	2.26	18.99	7.45
54.38	2.20	18.66	7.67

NON-FREEWAY

AVG SPD	HC	CO	NOX
16.90	5.13	59.38	5.86
18.02	5.03	56.57	6.33
19.50	4.88	52.99	6.74
20.78	4.40	47.40	6.08
22.06	4.07	43.14	5.81
23.35	4.19	43.08	6.53
24.64	3.81	38.64	6.01
25.93	3.54	35.78	5.80
27.25	3.28	32.35	5.37
28.59	3.13	30.41	5.41

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
24.19	3.63	38.46	5.34
27.65	3.49	36.12	6.39
31.26	3.14	31.07	6.56
34.73	2.82	26.86	6.52
37.99	2.77	26.02	6.98
41.49	2.60	23.63	7.12
44.94	2.37	20.58	6.86
48.36	2.26	18.90	6.88
51.81	2.19	18.02	7.11
55.27	2.16	17.64	7.51

NON-FREEWAY

AVG SPD	HC	CO	NOX
18.99	4.88	54.53	6.70
19.97	4.57	49.85	6.24
20.90	4.40	47.76	6.28
21.95	4.47	47.12	6.77
22.92	4.26	44.31	6.62
23.90	3.88	39.48	5.84
24.88	3.62	37.40	5.82
25.86	3.61	36.48	5.98
26.85	3.71	36.86	6.37
27.83	3.36	33.17	5.86

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 6

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.44	3.21	30.41	6.08	16.66	5.42	62.03	6.62
33.14	3.23	30.88	7.17	18.00	4.93	55.62	6.11
35.87	3.03	28.60	7.28	18.86	4.72	52.83	6.20
38.48	2.91	26.99	7.38	19.98	4.57	49.72	6.23
41.11	2.63	24.01	7.20	21.06	4.33	46.74	6.11
43.89	2.51	22.09	7.24	22.16	4.14	43.98	6.23
46.58	2.35	20.52	7.14	23.25	3.96	41.59	6.06
49.28	2.22	18.72	7.02	24.39	3.90	39.66	6.25
51.77	2.30	19.58	7.50	25.46	3.82	38.42	6.40
54.51	2.23	18.95	7.70	26.57	3.34	33.69	5.58

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
41.90	2.65	23.87	7.18	18.26	5.16	57.18	6.81
42.62	2.64	24.11	7.39	18.35	5.20	57.37	6.91
42.93	2.54	22.42	7.05	19.79	4.63	5 .71	6.36
44.26	2.46	21.90	7.23	21.44	4.45	47.16	6.49
44.41	2.46	21.41	6.92	21.48	4.28	45.81	6.14
48.68	2.33	20.06	7.22	23.55	4.03	42.26	6.40
48.81	2.31	19.76	7.16	24.11	3.98	4 .91	6.31
52.13	2.22	18.61	7.33	26.14	3.69	36.82	6.15
53.41	2.20	18.33	7.44	26.68	3.57	35.51	6.02
54.99	2.19	18.18	7.64	27.10	3.55	35.59	6.38

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	2.91	27.57	6.61	18.96	4.79	53.01	6.17
36.75	2.73	25.19	6.61	20.68	4.42	48.09	6.12
38.92	2.68	24.57	6.83	22.48	4.10	43.39	6.15
40.99	2.58	22.63	6.68	24.30	3.91	4[illegible].05	6.26
43.26	2.44	21.29	6.68	26.08	3.48	34.97	5.69
45.57	2.42	21.01	6.92	27.84	3.47	34.02	6.22
47.75	2.35	20.05	7.05	29.64	3.41	33.31	6.69
49.95	2.32	19.62	7.22	31.43	3.11	29.49	6.24
52.37	2.30	19.60	7.62	32.98	3.04	28.48	6.46
54.38	2.22	18.48	7.58	35.01	2.98	28.43	7.04

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	4.40	50.25	5.98	19.43	4.69	52.22	6.22
22.03	4.14	46.73	6.22	19.63	4.68	5[illegible].76	6.15
22.37	3.89	42.54	5.46	21.83	4.25	45.05	6.04
32.70	2.93	29.09	6.24	22.02	4.11	43.75	5.78
33.83	2.93	28.65	6.72	26.51	3.63	35.73	6.05
40.73	2.71	24.95	7.13	27.46	3.58	35.91	6.59
41.52	2.50	22.75	6.85	28.30	3.53	35.10	6.51
47.14	2.38	20.68	7.25	29.58	3.31	32.58	6.33
50.43	2.30	19.39	7.27	30.46	3.22	31.14	6.41
54.67	2.16	17.69	7.47	31.19	3.21	3[illegible].98	6.46

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 8

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
30.02	3.20	31.83	6.25
32.53	2.86	27.31	5.74
35.07	2.64	24.56	5.79
37.69	2.53	22.73	5.96
40.13	2.46	22.06	6.35
42.55	2.57	23.04	7.01
45.02	2.43	21.59	7.04
47.70	2.26	19.00	6.81
50.25	2.18	18.19	6.98
52.54	2.16	18.08	7.23

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.79	5.45	63.93	5.60
18.69	4.88	55.93	6.25
19.86	4.46	49.42	5.93
20.35	4.46	48.74	6.11
21.29	4.28	45.90	6.04
23.40	4.32	43.89	6.55
23.82	4.08	42.41	6.67
23.85	3.91	39.99	5.90
24.19	3.90	41.05	6.44
26.02	3.69	38.46	6.35

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
23.07	3.88	41.92	5.67
25.22	3.60	37.75	5.83
29.69	3.14	31.38	6.00
32.48	3.03	29.55	6.49
34.79	2.83	27.20	6.52
40.72	2.55	22.88	6.68
45.05	2.36	20.65	6.93
46.21	2.27	19.27	6.61
51.69	2.17	17.93	7.08
53.76	2.16	17.65	7.33

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.48	5.66	65.69	6.20
16.40	5.47	62.96	6.23
18.80	4.67	52.78	5.92
19.42	4.75	51.88	6.17
20.08	4.54	49.04	5.85
21.64	4.40	47.42	6.59
22.67	4.06	42.83	6.02
25.50	3.81	38.38	6.21
26.34	3.55	36.35	6.17
26.55	3.71	37.37	6.34

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 5
ROUTE 9

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
32.97	2.84	27.06	5.91	15.58	5.62	65.76	5.94
34.93	2.69	25.59	6.00	17.48	5.11	58.18	6.09
38.56	2.68	25.24	6.93	18.28	4.94	54.96	5.91
40.63	2.52	23.06	6.79	19.76	4.90	52.94	6.74
41.98	2.51	22.98	6.91	20.44	4.57	48.80	5.98
42.19	2.40	21.43	6.65	21.37	4.35	46.39	6.03
47.23	2.38	21.02	7.36	21.86	4.14	44.03	5.72
47.80	2.24	19.09	6.91	24.71	3.69	37.70	5.67
50.43	2.24	19.04	7.14	25.47	3.58	37.04	6.04
51.86	2.20	18.54	7.16	28.16	3.47	33.58	6.04

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
8.74	8.77	116.01	2.92	14.75	5.95	7[illegible].73	6.20
12.52	6.26	78.29	3.95	15.60	5.64	66.21	6.15
17.42	4.70	54.79	4.67	17.12	5.15	58.18	5.64
23.07	3.79	41.97	5.55	18.68	4.85	53.91	6.11
24.80	3.47	36.72	5.28	19.35	4.66	51.54	5.98
29.37	3.04	30.94	5.87	19.56	4.56	5[illegible].17	5.79
32.63	2.88	28.25	6.23	21.72	4.30	45.36	5.98
39.29	2.50	23.12	6.51	22.13	4.04	43.39	5.88
41.57	2.47	22.07	6.62	23.64	3.96	41.31	6.06
51.79	2.21	18.41	7.29	26.16	3.58	35.76	5.82

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 1

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.79	2.62	27.31	6.37	17.18	3.90	49.30	6.09
32.86	2.41	23.36	6.53	18.41	3.77	46.47	6.11
35.30	2.35	21.86	6.71	20.07	3.50	41.70	6.02
38.04	2.28	20.48	6.62	21.47	3.24	37.46	5.76
40.70	2.16	19.01	6.74	22.86	3.20	36.23	6.07
43.53	2.07	17.06	6.76	24.27	3.03	33.26	6.00
45.92	2.07	16.84	7.18	25.71	2.77	29.33	5.59
48.86	2.05	16.45	7.28	27.11	2.74	28.29	5.77
51.58	1.99	15.57	7.30	28.43	2.59	26.09	5.62
54.35	1.95	14.94	7.49	30.04	2.45	24.06	5.58

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.27	2.63	27.92	6.69	17.80	3.69	45.98	5.67
32.16	2.50	25.00	6.77	19.15	3.60	43.67	6.00
34.80	2.36	22.30	6.46	19.97	3.59	42.87	6.18
37.48	2.26	20.97	6.81	21.04	3.32	38.80	5.87
40.45	2.18	19.17	6.94	22.09	3.06	35.04	5.47
43.18	2.09	17.70	6.83	23.18	3.02	33.64	5.59
46.08	2.07	17.13	6.96	24.26	3.06	33.81	6.10
48.86	1.94	14.73	6.92	25.33	2.81	3[illegible].05	5.51
51.62	1.89	13.81	7.03	26.38	2.80	29.75	5.81
54.44	1.9[illegible]	13.82	7.41	27.48	2.88	3[illegible].05	6.13

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 2

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.13	2.53	26.09	6.19	17.60	3.87	48.[illegible]	5.93
32.59	2.38	23.05	6.02	18.77	3.50	42.79	5.39
35.23	2.32	22.02	6.67	19.99	3.38	4[illegible].32	5.53
37.66	2.29	21.24	6.61	21.17	3.26	37.84	5.67
40.19	2.22	19.99	6.74	22.46	3.30	38.07	6.08
42.77	2.10	17.64	6.71	23.55	3.[illegible]1	33.45	5.75
45.21	2.12	17.84	7.21	24.74	3.21	35.96	6.54
47.71	2.06	16.72	7.11	25.93	2.88	31.15	5.94
50.16	1.93	14.43	6.96	27.09	2.87	3[illegible].45	6.23
52.70	1.96	15.12	7.23	28.33	2.71	27.90	6.04

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
12.36	4.51	64.97	4.01	17.11	3.90	49.21	5.87
15.17	3.93	53.71	5.11	18.13	3.66	44.93	5.68
21.17	2.99	35.02	4.72	19.15	3.68	44.39	6.21
25.63	2.70	29.61	5.34	20.16	3.39	39.99	5.65
30.09	2.48	25.48	6.10	21.18	3.36	39.20	6.07
34.60	2.33	22.19	6.28	22.19	3.15	35.81	5.59
39.04	2.16	18.65	6.28	23.20	3.05	34.01	5.69
43.47	2.06	16.96	6.86	24.22	2.91	31.45	5.36
47.91	1.90	14.34	6.58	25.16	2.84	3[illegible].30	5.58
52.38	1.89	13.80	7.15	26.25	2.75	28.90	5.58

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 3

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
29.97	2.45	24.87	6.05
35.47	2.14	19.04	5.79
38.20	2.07	17.64	5.84
40.87	2.13	18.51	6.69
43.60	2.03	16.63	6.65
44.50	2.01	16.30	6.77
46.54	1.99	15.71	7.04
49.06	1.98	15.49	7.18
51.91	1.97	15.34	7.31
54.62	1.95	14.94	7.57

NON-FREEWAY

AVG SPD	HC	CO	NOX
17.34	3.84	48.48	5.91
19.47	3.48	41.94	5.88
21.63	3.14	36.17	5.51
23.82	2.93	32.47	5.67
25.97	2.88	31.03	6.08
28.08	2.65	27.78	6.02
30.13	2.58	25.99	6.11
30.82	2.53	24.91	6.11
31.27	2.47	24.59	6.01
36.77	2.37	22.14	6.83

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
19.22	3.25	39.33	4.49
23.06	2.80	31.42	4.74
26.70	2.63	27.34	5.20
30.42	2.45	24.41	5.64
34.19	2.19	20.22	5.64
37.99	2.14	18.61	6.27
41.70	2.03	16.84	6.26
45.43	1.97	15.42	6.62
49.18	1.90	14.14	6.72
52.95	1.91	14.20	7.22

NON-FREEWAY

AVG SPD	HC	CO	NOX
18.06	3.66	45.34	5.60
19.30	3.67	44.21	6.06
20.79	3.34	38.89	5.69
22.17	3.18	36.20	5.77
23.54	2.96	32.58	5.39
24.91	2.78	29.74	5.33
26.24	2.63	3[illegible].26	5.96
27.61	2.72	28.47	5.77
29.52	2.53	25.52	5.71
30.39	2.54	25.39	5.93

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 4

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
37.47	2.42	22.82	7.30	16.90	3.76	47.95	5.31
40.46	2.26	20.31	7.21	18.02	3.74	46.05	5.75
40.90	2.26	20.31	7.16	19.50	3.64	43.66	6.17
43.29	2.18	19.02	7.10	20.78	3.30	38.48	5.56
45.02	2.09	17.38	7.12	22.06	3.06	34.73	5.34
46.68	2.10	17.49	7.41	23.35	3.17	35.54	6.05
48.73	2.00	15.81	7.14	24.64	2.89	31.23	5.57
50.58	2.03	16.33	7.42	25.93	2.73	28.82	5.40
52.22	1.97	14.98	7.41	27.25	2.53	25.64	5.01
54.38	1.94	14.68	7.64	28.59	2.44	24.10	5.05

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
24.19	2.73	30.48	5.03	18.99	3.68	44.84	6.16
27.65	2.70	28.99	6.14	19.97	3.43	40.67	5.69
31.26	2.47	24.68	6.34	20.90	3.32	38.89	5.79
34.73	2.28	21.10	6.33	21.95	3.37	38.92	6.29
37.99	2.28	20.66	6.86	22.92	3.23	36.40	6.14
41.49	2.16	18.63	7.02	23.90	2.93	31.90	5.37
44.94	2.00	15.97	6.77	24.88	2.79	30.06	5.43
48.36	1.93	14.55	6.83	25.86	2.78	29.59	5.57
51.81	1.91	14.01	7.05	26.85	2.87	30.45	5.94
55.27	1.90	13.63	7.48	27.83	2.61	26.67	5.50

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 5

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.34	2.43	23.00	6.64	18.95	3.66	44.68	6.01
37.79	2.15	18.94	6.19	20.49	3.44	40.76	6.00
38.98	2.21	19.66	6.80	21.36	3.27	35.58	5.15
40.84	2.22	19.75	6.96	22.65	3.12	35.14	5.73
43.13	2.09	17.62	6.88	23.87	3.10	34.46	5.94
45.15	2.12	18.05	7.19	25.10	2.93	31.75	5.79
47.26	2.04	16.71	7.03	26.33	2.76	29.02	5.66
49.59	1.99	15.88	7.23	27.57	2.62	26.67	5.52
51.52	1.98	15.54	7.40	28.77	2.57	25.85	5.56
53.65	1.96	15.18	7.58	30.08	2.39	23.00	5.24

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.78	2.56	26.09	6.30	18.74	3.68	44.87	5.88
32.63	2.39	23.29	6.22	20.39	3.28	38.57	5.33
35.13	2.38	22.80	6.55	21.28	3.48	43.72	6.34
37.83	2.17	19.63	6.49	23.20	3.15	35.32	5.91
40.53	2.06	17.32	6.33	23.29	3.09	34.62	5.73
43.20	2.02	16.43	6.57	25.66	3.01	32.81	6.08
45.88	2.02	16.46	6.97	25.80	2.74	28.90	5.43
48.57	1.98	15.64	7.02	27.92	2.79	28.98	6.08
51.26	1.91	14.32	7.12	28.28	2.64	26.87	5.67
53.94	1.91	14.20	7.44	28.95	2.51	24.98	5.41

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 6

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.44	2.51	24.71	5.73	16.66	3.99	50.69	6.02
33.14	2.58	25.32	6.91	18.00	3.63	45.09	5.58
35.87	2.46	23.44	7.04	18.86	3.52	42.84	5.69
38.48	2.38	22.01	7.22	19.98	3.41	40.45	5.71
41.11	2.20	19.19	7.06	21.06	3.24	37.91	5.62
43.89	2.11	17.45	7.13	22.16	3.13	35.82	5.74
46.58	2.01	16.10	7.06	23.25	3.00	33.59	5.64
49.28	1.92	14.42	6.97	24.39	2.97	32.30	5.78
51.77	1.99	15.59	7.44	25.46	2.93	31.43	5.96
54.51	1.96	15.05	7.67	26.57	2.59	26.84	5.21

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
41.90	2.21	19.36	7.05	18.26	3.83	47.16	6.21
42.62	2.23	19.62	7.27	18.35	3.86	47.36	6.33
42.93	2.13	17.90	6.91	19.79	3.48	41.41	5.84
44.26	2.09	17.23	7.15	21.44	3.36	38.81	5.95
44.41	2.07	17.13	6.79	21.48	3.24	37.33	5.65
48.68	2.00	15.96	7.14	23.55	3.09	34.63	5.96
48.81	1.98	15.58	7.09	24.11	3.03	33.52	5.86
52.13	1.93	14.57	7.29	26.14	2.83	29.91	5.75
53.41	1.92	14.29	7.41	26.68	2.75	28.96	5.61
54.99	1.92	14.14	7.63	27.10	2.76	29.80	6.02

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	2.34	22.06	6.40	18.96	3.56	43.16	5.63
36.75	2.22	19.89	6.43	20.68	3.30	39.01	5.66
38.92	2.21	19.63	6.66	22.48	3.09	35.07	5.71
40.99	2.14	18.16	6.50	24.30	2.99	32.65	5.80
43.26	2.05	16.87	6.55	26.08	2.67	27.99	5.28
45.57	2.05	16.76	6.81	27.84	2.69	27.40	5.87
47.75	2.00	15.88	6.96	29.64	2.68	27.30	6.35
49.95	2.00	15.73	7.13	31.43	2.46	23.72	5.93
52.37	2.00	15.64	7.57	32.98	2.43	23.00	6.17
54.38	1.94	14.47	7.56	35.01	2.42	23.05	6.82

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	3.22	39.97	5.76	19.43	3.49	42.54	5.71
22.03	3.10	37.52	6.01	19.63	3.48	41.36	5.58
22.37	2.90	33.67	5.19	21.83	3.20	36.63	5.53
32.70	2.34	23.06	6.10	22.02	3.10	35.45	5.29
33.83	2.35	22.56	6.60	26.51	2.79	29.09	5.60
40.73	2.23	20.21	7.01	27.46	2.80	29.31	6.20
41.52	2.09	17.81	6.75	28.30	2.75	28.81	6.16
47.14	2.02	16.12	7.21	29.58	2.60	26.46	6.01
50.43	1.98	15.34	7.21	30.46	2.54	25.05	6.12
54.67	1.89	13.63	7.45	31.19	2.54	25.15	6.15

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 8

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.02	2.49	25.21	6.04	15.79	3.97	51.62	4.95
32.53	2.28	21.76	5.49	18.69	3.64	44.01	5.63
35.07	2.13	19.08	5.62	19.86	3.36	4[illegible].1[illegible]	5.38
37.69	2.07	17.74	5.79	20.35	3.37	39.67	5.56
40.13	2.04	17.20	6.22	21.29	3.24	37.19	5.52
42.55	2.15	18.48	6.88	23.40	3.25	36.44	6.04
45.02	2.06	17.23	6.94	23.82	3.14	34.86	6.21
47.70	1.94	14.77	6.73	23.85	2.96	32.58	5.41
50.25	1.89	14.05	6.92	24.19	3.00	33.41	6.02
52.54	1.90	14.04	7.19	26.02	2.86	31.55	5.96

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
23.07	2.92	33.54	5.33	15.48	4.16	54.30	5.55
25.22	2.74	29.91	5.54	16.40	4.01	51.27	5.60
29.69	2.47	24.95	5.74	18.80	3.49	42.65	5.39
32.48	2.42	23.65	6.26	19.42	3.52	42.34	5.63
34.79	2.28	21.34	6.36	20.08	3.36	39.70	5.32
40.72	2.11	18.00	6.54	21.64	3.32	38.66	6.14
45.05	2.00	15.99	6.85	22.67	3.08	34.71	5.55
46.21	1.94	14.96	6.51	25.50	2.89	31.23	5.80
51.69	1.89	13.81	7.04	26.34	2.76	29.43	5.80
53.76	1.89	13.58	7.30	26.55	2.86	3[illegible].76	5.94

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 6
ROUTE 9

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
32.97	2.27	21.40	5.69	15.58	4.07	53.36	5.36
34.93	2.16	19.79	5.88	17.48	3.76	47.28	5.54
38.56	2.19	19.65	6.85	18.28	3.64	44.67	5.34
40.63	2.09	17.89	6.69	19.76	3.65	41.67	6.18
41.98	2.10	18.07	6.84	20.44	3.37	39.65	5.46
42.19	2.01	16.44	6.56	21.37	3.25	37.86	5.51
47.23	2.03	16.36	7.32	21.86	3.10	35.50	5.25
47.80	1.91	14.52	6.86	24.71	2.80	32.10	5.28
50.43	1.95	15.01	7.07	25.47	2.78	29.93	5.65
51.86	1.92	14.53	7.11	28.16	2.68	27.34	5.67

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
8.74	5.71	91.28	2.68	14.75	4.34	57.52	5.55
12.52	4.29	61.79	3.55	15.60	4.11	53.81	5.53
17.42	3.34	43.14	4.38	17.12	3.74	46.94	5.01
23.07	2.84	33.27	5.34	18.68	3.58	43.76	5.58
24.80	2.62	28.78	5.06	19.35	3.47	41.78	5.46
29.37	2.37	24.05	5.72	19.56	3.38	40.50	5.28
32.63	2.29	22.09	6.07	21.72	3.22	36.92	5.45
39.29	2.06	17.81	6.43	22.13	3.08	35.04	5.42
41.57	2.05	17.18	6.52	23.64	3.00	33.46	5.64
51.79	1.92	14.30	7.24	26.16	2.74	28.84	5.41

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 1

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.79	2.19	28.07	5.83	17.18	3.33	5[illegible].01	5.57
32.86	2.00	23.93	5.96	18.41	3.21	47.03	5.60
35.30	1.94	22.35	6.13	20.07	2.98	42.59	5.51
38.04	1.89	21.75	6.05	21.47	2.75	38.26	5.27
40.70	1.78	19.99	6.15	22.86	2.72	37.44	5.56
43.53	1.69	17.74	6.17	24.27	2.57	34.29	5.50
45.92	1.69	17.43	6.54	25.71	2.34	30.23	5.11
48.86	1.67	17.38	6.64	27.11	2.31	29.37	5.28
51.58	1.62	16.53	6.65	28.43	2.18	27.00	5.14
54.35	1.58	15.78	6.82	30.04	2.06	25.27	5.10

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.27	2.19	28.26	6.14	17.80	3.14	46.18	5.18
32.16	2.07	25.47	6.19	19.15	3.07	44.81	5.49
34.80	1.96	23.26	5.90	19.97	3.07	44.20	5.67
37.48	1.86	21.45	6.22	21.04	2.82	39.38	5.37
40.45	1.79	19.80	6.33	22.09	2.59	35.69	4.99
43.18	1.72	18.54	6.24	23.18	2.56	34.76	5.11
46.08	1.70	18.13	6.35	24.26	2.60	35.56	5.58
48.86	1.58	15.36	6.32	25.33	2.38	31.23	5.03
51.62	1.53	14.40	6.41	26.38	2.37	31.11	5.31
54.44	1.53	14.27	6.75	27.48	2.44	31.89	5.62

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 2

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.13	2.11	26.57	5.68	17.60	3.30	48.55	5.42
32.59	1.98	23.69	5.52	18.77	2.97	4[illegible].74	4.92
35.23	1.91	22.22	6.11	19.99	2.87	4[illegible].37	5.07
37.66	1.90	22.34	6.04	21.17	2.77	3[illegible].64	5.18
40.19	1.83	20.96	6.16	22.46	2.82	3[illegible].69	5.56
42.77	1.73	18.33	6.13	23.55	2.55	34.35	5.25
45.21	1.74	18.66	6.58	24.74	2.73	37.56	5.99
47.71	1.69	17.67	6.49	25.93	2.44	32.46	5.42
50.16	1.57	15.16	6.35	27.09	2.43	3[illegible].08	5.69
52.70	1.60	16.19	6.60	28.33	2.29	29.11	5.53

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
12.36	3.86	62.92	3.76	17.11	3.32	49.56	5.36
15.17	3.34	52.36	4.77	18.13	3.12	45.32	5.19
21.17	2.53	35.18	4.33	19.15	3.13	45.3[illegible]	5.68
25.63	2.28	3[illegible].27	4.89	20.16	2.88	4[illegible].74	5.17
30.09	2.06	25.94	5.59	21.18	2.86	4[illegible].25	5.55
34.60	1.93	22.95	5.74	22.19	2.67	36.56	5.11
39.04	1.78	19.52	5.74	23.20	2.58	34.9[illegible]	5.21
43.47	1.68	17.45	6.27	24.22	2.46	3[illegible].54	4.90
47.91	1.55	15.12	6.00	25.16	2.40	31.41	5.10
52.38	1.53	14.28	6.52	26.25	2.32	3[illegible].07	5.09

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 3

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.97	2.04	25.38	5.53	17.34	3.27	48.93	5.41
35.47	1.77	19.58	5.28	19.47	2.95	42.02	5.38
38.20	1.71	18.62	5.32	21.63	2.66	36.78	5.04
40.87	1.75	19.30	6.10	23.82	2.47	33.19	5.18
43.60	1.66	17.36	6.06	25.97	2.43	31.95	5.56
44.50	1.64	16.80	6.18	28.08	2.22	28.57	5.50
46.54	1.61	16.05	6.42	30.13	2.17	27.13	5.58
49.06	1.61	16.16	6.54	30.82	2.12	25.93	5.58
51.91	1.60	16.22	6.65	31.27	2.06	25.60	5.48
54.62	1.58	15.73	6.89	36.77	1.96	23.05	6.24

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
19.22	2.76	39.15	4.12	18.06	3.12	45.63	5.12
23.06	2.36	31.75	4.32	19.30	3.13	45.16	5.56
26.70	2.21	27.82	4.75	20.79	2.84	39.40	5.21
30.42	2.06	25.41	5.15	22.17	2.70	37.26	5.28
34.19	1.82	20.82	5.14	23.54	2.51	35.55	4.93
37.99	1.76	19.10	5.72	24.91	2.34	3[illegible].50	4.86
41.70	1.67	17.68	5.70	26.24	2.39	31.30	5.46
45.43	1.60	16.03	6.03	27.61	2.30	3[illegible].05	5.27
49.18	1.55	14.93	6.13	29.52	2.12	26.78	5.22
52.95	1.55	14.81	6.58	30.39	2.14	26.77	5.42

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 4

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
37.47	2.01	23.63	6.66	16.90	3.21	47.93	4.86
40.46	1.87	21.12	6.58	18.02	3.19	46.56	5.27
40.90	1.87	21.36	6.53	19.50	3.10	44.61	5.66
43.29	1.80	20.00	6.48	20.78	2.80	39.15	5.09
45.02	1.71	17.98	6.50	22.06	2.59	35.17	4.89
46.68	1.71	18.15	6.75	23.35	2.70	36.93	5.55
48.73	1.63	16.45	6.51	24.64	2.44	31.97	5.10
50.58	1.66	17.09	6.76	25.93	2.30	29.90	4.93
52.22	1.60	15.63	6.75	27.25	2.13	26.78	4.57
54.38	1.56	15.04	6.95	28.59	2.05	25.13	4.61

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
24.19	2.30	30.59	4.62	18.99	3.15	46.33	5.63
27.65	2.26	29.49	5.63	19.97	2.92	41.37	5.20
31.26	2.05	24.86	5.79	20.90	2.83	39.92	5.29
34.73	1.88	21.37	5.77	21.95	2.87	40.50	5.77
37.99	1.88	21.28	6.27	22.92	2.74	37.57	5.63
41.49	1.77	19.11	6.40	23.90	2.48	32.86	4.91
44.94	1.63	16.47	6.18	24.88	2.36	31.12	4.95
48.36	1.57	15.06	6.23	25.86	2.35	30.85	5.08
51.81	1.55	14.64	6.43	26.85	2.44	32.45	5.43
55.27	1.53	14.02	6.82	27.83	2.20	27.89	5.03

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 5

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.34	2.02	23.94	6.07	18.95	3.12	45.07	5.52
37.79	1.78	19.79	5.64	20.49	2.93	41.15	5.51
38.98	1.81	20.01	6.21	21.36	2.60	35.64	4.71
40.84	1.84	20.88	6.35	22.65	2.64	36.11	5.24
43.13	1.72	18.28	6.28	23.87	2.63	35.61	5.44
45.15	1.74	18.93	6.55	25.10	2.48	32.70	5.30
47.26	1.67	17.65	6.41	26.33	2.33	29.96	5.17
49.59	1.62	16.61	6.58	27.57	2.20	27.34	5.05
51.52	1.61	16.30	6.74	28.77	2.16	27.02	5.08
53.65	1.59	15.89	6.89	30.08	2.00	23.92	4.79

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
29.78	2.14	26.72	5.77	18.74	3.14	45.72	5.37
32.63	1.98	23.80	5.68	20.39	2.79	39.05	4.88
35.13	1.98	23.99	5.98	21.28	2.96	42.22	5.82
37.83	1.78	20.03	5.93	23.20	2.67	36.74	5.40
40.53	1.69	17.95	5.77	23.29	2.63	36.12	5.24
43.20	1.66	17.15	5.99	25.66	2.56	35.04	5.55
45.88	1.65	17.17	6.35	25.80	2.31	29.95	4.96
48.57	1.61	16.35	6.40	27.92	2.36	3[illegible].47	5.56
51.26	1.55	14.90	6.49	28.28	2.23	28.42	5.17
53.94	1.55	14.66	6.78	28.95	2.11	26.14	4.93

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 6

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.44	2.11	25.87	5.25	16.66	3.40	5[illegible].82	5.52
33.14	2.15	26.33	6.32	18.00	3.09	45.19	5.12
35.87	2.04	24.46	6.42	18.86	2.99	43.23	5.20
38.48	1.97	23.11	6.59	19.98	2.90	4[illegible].88	5.22
41.11	1.81	19.93	6.43	21.06	2.75	38.23	5.15
43.89	1.73	17.95	6.51	22.16	2.65	36.23	5.25
46.58	1.64	16.66	6.43	23.25	2.54	34.44	5.16
49.28	1.56	14.94	6.35	24.39	2.51	33.23	5.29
51.77	1.62	16.35	6.78	25.46	2.48	3[illegible].65	5.46
54.51	1.58	15.60	6.98	26.57	2.18	27.65	4.75

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
41.90	1.83	20.52	6.43	18.26	3.27	48.07	5.69
42.62	1.84	20.83	6.63	18.35	3.30	48.54	5.80
42.93	1.75	18.78	6.30	19.79	2.96	42.38	5.34
44.26	1.70	17.77	6.52	21.44	2.86	4[illegible].02	5.45
44.41	1.70	18.16	6.20	21.48	2.75	38.55	5.16
48.68	1.64	16.79	6.51	23.55	2.62	36.03	5.45
48.81	1.62	16.33	6.47	24.11	2.57	34.95	5.36
52.13	1.57	15.12	6.64	26.14	2.40	31.41	5.26
53.41	1.55	14.77	6.75	26.68	2.33	3[illegible].32	5.12
54.99	1.55	14.46	6.95	27.10	2.32	29.63	5.50

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 7

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
34.54	1.94	22.45	5.85	18.96	3.03	43.84	5.15
36.75	1.83	20.10	5.87	20.68	2.80	39.53	5.19
38.92	1.83	20.29	6.08	22.48	2.62	35.54	5.23
40.99	1.76	19.02	5.93	24.30	2.53	33.71	5.31
43.26	1.69	17.83	5.98	26.08	2.25	28.82	4.82
45.57	1.68	17.69	6.21	27.84	2.27	28.80	5.37
47.75	1.64	16.76	6.35	29.64	2.25	28.10	5.81
49.95	1.63	16.70	6.50	31.43	2.06	24.60	5.43
52.37	1.62	16.15	6.90	32.98	2.03	23.99	5.64
54.38	1.57	15.00	6.88	35.01	2.02	24.00	6.23

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
20.18	2.71	39.29	5.32	19.43	2.96	42.66	5.24
22.03	2.61	37.53	5.53	19.63	2.96	41.85	5.11
22.37	2.44	33.91	4.78	21.83	2.71	37.40	5.06
32.70	1.94	23.65	5.57	22.02	2.63	36.45	4.83
33.83	1.94	22.88	6.03	26.51	2.36	30.47	5.11
40.73	1.84	21.05	6.40	27.46	2.36	30.32	5.67
41.52	1.71	18.31	6.16	28.30	2.32	30.05	5.63
47.14	1.64	16.51	6.58	29.58	2.18	27.49	5.49
50.43	1.61	16.09	6.57	30.46	2.13	25.96	5.59
54.67	1.52	13.93	6.79	31.19	2.13	26.51	5.62

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 8

WINTER OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
30.02	2.07	25.47	5.53	15.79	3.39	51.19	4.53
32.53	1.91	22.80	5.02	18.69	3.11	44.73	5.14
35.07	1.76	19.68	5.14	19.86	2.86	40.80	4.91
37.69	1.71	18.50	5.28	20.35	2.87	40.59	5.08
40.13	1.68	17.81	5.67	21.29	2.75	38.31	5.05
42.55	1.77	19.36	6.28	23.40	2.77	38.26	5.54
45.02	1.69	17.99	6.32	23.82	2.67	36.29	5.68
47.70	1.58	15.48	6.13	23.85	2.50	33.29	4.95
50.25	1.54	14.61	6.30	24.19	2.54	34.22	5.50
52.54	1.53	14.59	6.55	26.02	2.42	32.65	5.45

SPRING OPERATION

FREEWAY				NON-FREEWAY			
AVG SPD	HC	CO	NOX	AVG SPD	HC	CO	NOX
23.07	2.46	33.71	4.89	15.48	3.56	54.64	5.07
25.22	2.30	30.17	5.08	16.40	3.43	51.56	5.14
29.69	2.06	25.64	5.24	18.80	2.97	43.18	4.93
32.48	2.02	24.25	5.72	19.42	3.00	43.16	5.16
34.79	1.88	21.59	5.81	20.08	2.86	40.25	4.88
40.72	1.74	18.65	5.96	21.64	2.81	39.25	5.63
45.05	1.63	16.41	6.25	22.67	2.61	35.63	5.07
46.21	1.58	15.72	5.94	25.50	2.44	32.17	5.32
51.69	1.53	14.39	6.42	26.34	2.33	30.20	5.30
53.76	1.52	13.97	6.66	26.55	2.42	31.94	5.45

APPENDIX E

ESTIMATED EMISSIONS FOR GROUP 7
ROUTE 9

WINTER OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
32.97	1.89	22.31	5.21
34.93	1.79	20.48	5.37
38.56	1.80	19.92	6.26
40.63	1.71	18.34	6.10
41.98	1.72	18.79	6.23
42.19	1.64	16.86	5.98
47.23	1.64	16.72	6.07
47.80	1.55	14.86	6.25
50.43	1.58	15.92	6.43
51.86	1.56	15.40	6.47

NON-FREEWAY

AVG SPD	HC	CO	NOX
15.58	3.48	53.06	4.93
17.48	3.21	47.64	5.09
18.28	3.10	45.24	4.89
19.76	3.11	44.92	5.68
20.44	2.87	4[illegible].43	5.02
21.37	2.77	38.54	5.05
21.86	2.63	36.20	4.81
24.71	2.37	3[illegible].98	4.83
25.47	2.34	3[illegible].71	5.16
28.16	2.26	28.90	5.19

SPRING OPERATION

FREEWAY

AVG SPD	HC	CO	NOX
8.74	4.91	87.42	2.67
12.52	3.67	60.12	3.34
17.42	2.84	42.74	4.07
23.07	2.39	33.57	4.91
24.80	2.20	29.23	4.64
29.37	1.97	24.20	5.24
32.63	1.90	22.45	5.54
39.29	1.69	18.10	5.87
41.57	1.68	17.84	5.95
51.79	1.55	14.77	6.59

NON-FREEWAY

AVG SPD	HC	CO	NOX
14.75	3.72	57.78	5.09
15.60	3.51	53.42	5.07
17.12	3.19	46.75	4.60
18.68	3.05	44.20	5.12
19.35	2.96	42.60	4.99
19.56	2.87	4[illegible].91	4.84
21.72	2.74	37.98	4.99
22.13	2.61	35.97	4.94
23.64	2.54	34.57	5.17
26.16	2.31	29.95	4.95