

A P P E N D I X M

**1990 TOYOTA CELICA
VEHICLE EMISSION RESULTS**

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - AS RECD BASELINE
PROJECT 08-1815-001

TEST NO. C-0E-01 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 4/19/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-995-F
ODOMETER 145. KM(90. MILES)

BAROMETER 743.46 MM HG(29.27 IN HG)

RELATIVE HUMIDITY 58. PCT

DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)

ABS. HUMIDITY 10.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.00

BAG RESULTS

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	774.7 (30.5)	787.4 (31.0)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	774.7 (30.5)	787.4 (31.0)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	40.0 (104.0)	41.7 (107.0)
BLOWER REVOLUTIONS	11284.	69276.	40314.
TOT FLOW STD. CU. METRES(SCF)	21.0 (742.)	129.5 (4573.)	75.3 (2658.)
THC SAMPLE METER/RANGE/PPM	9.7/ 3/ 97.	11.4/ 2/ 11.	11.5/ 2/ 11.
THC BCKGRD METER/RANGE/PPM	1.2/ 3/ 12.	11.0/ 2/ 11.	10.5/ 2/ 10.
CO SAMPLE METER/RANGE/PPM	71.8/ 14/ 340.	2.6/ 12/ 2.	2.6/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	.0/ 14/ 0.	.5/ 12/ 0.	.4/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	89.4/ 14/ .8528	77.9/ 14/ .6220	89.3/ 14/ .8504
CO2 BCKGRD METER/RANGE/PCT	12.9/ 14/ .0434	12.8/ 14/ .0430	12.7/ 14/ .0426
NOX SAMPLE METER/RANGE/PPM	59.7/ 1/ 15.0	2.4/ 1/ .6	5.0/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.3/ 1/ .1	.0/ 1/ .0	.3/ 1/ .1
DILUTION FACTOR	14.97	21.50	15.73
THC CONCENTRATION PPM	86.	1.	2.
CO CONCENTRATION PPM	328.	2.	2.
CO2 CONCENTRATION PCT	.8123	.5810	.8105
NOX CONCENTRATION PPM	14.9	.6	1.2
THC MASS GRAMS	1.04	.07	.07
CO MASS GRAMS	8.01	.30	.18
CO2 MASS GRAMS	312.4	1377.6	1116.9
NOX MASS GRAMS	.60	.16	.18
THC GRAMS/MI	1.55	.02	.02
CO GRAMS/MI	12.01	.08	.05
CO2 GRAMS/MI	468.3	360.3	317.7
NOX GRAMS/MI	.89	.04	.05
FUEL ECONOMY IN MPG	18.02	24.60	27.90
RUN TIME SECONDS	141.	866.	504.
MEASURED DISTANCE MI	.67	3.82	3.52
SCF, DRY	.973	.975	.973
DFC, WET (DRY)	.923(.906)	.947(.929)	
TOT VOL (SCM) / SAM BLR (SCM)	75.5/ .00	204.8/ .00	

COMPOSITE RESULTS

TEST NUMBER C-0E-01
BAROMETER MM HG 743.5
HUMIDITY G/KG 10.7
TEMPERATURE DEG C 23.3

3-BAG
CARBON DIOXIDE G/MI 352.3
FUEL ECONOMY MPG 25.14
HYDROCARBONS (THC) G/MI .08
CARBON MONOXIDE G/MI .52
OXIDES OF NITROGEN G/MI .09

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 00-1815-001

TEST NO. C-AH-02 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 5/18/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-995-F
ODOMETER 179. KM(111. MILES)

BAROMETER 739.14 MM HG(29.10 IN HG)
RELATIVE HUMIDITY 59. PCT
BAG RESULTS

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 11.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.03

BAG NUMBER DESCRIPTION	1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	764.5 (30.1)	767.1 (30.2)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	764.5 (30.1)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	42.8 (109.0)	41.1 (106.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11190.	29232.	69509.	40442.
TOT FLOW STD. CU. METRES(SCF)	20.7 (732.)	54.2 (1914.)	129.3 (4564.)	75.2 (2654.)
THC SAMPLE METER/RANGE/PPM	42.4/ 2/ 42.	14.0/ 2/ 14.	13.4/ 2/ 13.	13.9/ 2/ 14.
THC BCKGRD METER/RANGE/PPM	13.7/ 2/ 14.	13.5/ 2/ 13.	13.5/ 2/ 13.	12.9/ 2/ 13.
CO SAMPLE METER/RANGE/PPM	80.5/ 12/ 80.	1.9/ 12/ 2.	1.9/ 12/ 2.	1.7/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	1.6/ 12/ 2.	1.3/ 12/ 1.	1.0/ 12/ 1.	1.0/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	92.1/ 14/ .9193	61.4/ 1/1.1280	79.7/ 14/ .6535	90.1/ 14/ .8695
CO2 BCKGRD METER/RANGE/PCT	12.8/ 14/ .0430	2.4/ 1/ .0423	12.6/ 14/ .0422	12.6/ 14/ .0422
NOX SAMPLE METER/RANGE/PPM	43.8/ 2/ 43.8	17.2/ 1/ 4.4	2.0/ 1/ .5	8.6/ 1/ 2.2
NOX BCKGRD METER/RANGE/PPM	.5/ 2/ .5	.5/ 1/ .1	.0/ 1/ .0	.2/ 1/ .1
DILUTION FACTOR	14.39	11.86	20.46	15.38
THC CONCENTRATION PPM	29.	2.	1.	2.
CO CONCENTRATION PPM	76.	1.	1.	1.
CO2 CONCENTRATION PCT	.8793	1.0092	.6133	.8300
NOX CONCENTRATION PPM	43.3	4.3	.5	2.2
THC MASS GRAMS	.35	.05	.04	.08
CO MASS GRAMS	1.83	.04	.13	.06
CO2 MASS GRAMS	333.8	1081.1	1451.4	1142.3
NOX MASS GRAMS	1.78	.46	.13	.32
THC GRAMS/MI	.53	.02	.01	.02
CO GRAMS/MI	2.78	.01	.03	.02
CO2 GRAMS/MI	505.2	376.9	381.9	322.9
NOX GRAMS/MI	2.69	.16	.04	.09
FUEL ECONOMY IN MPG	17.35	22.05	23.52	23.21
RUN TIME SECONDS	140.	365.	869.	506.
MEASURED DISTANCE MI	.66	3.53	3.80	7.34
SCF, DRY	.972	.971	.975	.974
DFC, WET (DRY)		.920(.902)		.945(.927)
TOT VOL (SCM) / SAM BLR (SCM)		74.9/ .00		204.4/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-02
BAROMETER MM HG 739.1
HUMIDITY G/KG 11.7
TEMPERATURE DEG C 24.4

3-BAG
CARBON DIOXIDE G/MI 369.6
FUEL ECONOMY MPG 24.03
HYDROCARBONS (THC) G/MI .04
CARBON MONOXIDE G/MI .13
OXIDES OF NITROGEN G/MI .17

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TEST NO. C-VAH-03 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 6/26/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 219. KM(136. MILES)

BAROMETER 738.12 MM HG(29.06 IN HG)
RELATIVE HUMIDITY 59. PCT
BAG RESULTS

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 11.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.02

BAG NUMBER	1A	1B	2	3
DESCRIPTION	COLD TRANSIENT 0-140 SEC	COLD TRANSIENT 140-505 SEC	STABILIZED	HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	42.8 (109.0)	41.7 (107.0)	41.7 (107.0)
BLOWER REVOLUTIONS	11244.	29207.	69225.	40531.
TOT FLOW STD. CU. METRES(SCF)	20.8 (734.)	54.0 (1906.)	128.2 (4527.)	75.1 (2651.)
THC SAMPLE METER/RANGE/PPM	36.0/ 2/ 36.	18.0/ 2/ 18.	13.9/ 2/ 14.	19.3/ 2/ 19.
THC BCKGRD METER/RANGE/PPM	14.1/ 2/ 14.	14.1/ 2/ 14.	13.9/ 2/ 14.	15.0/ 2/ 15.
CO SAMPLE METER/RANGE/PPM	55.5/ 12/ 55.	74.3/ 12/ 74.	2.7/ 12/ 3.	4.9/ 12/ 5.
CO BCKGRD METER/RANGE/PPM	1.4/ 12/ 1.	1.1/ 12/ 1.	.8/ 12/ 1.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	92.7/ 14/ .9349	63.1/ 1/ 1.1598	80.8/ 14/ .6735	91.7/ 14/ .9091
CO2 BCKGRD METER/RANGE/PCT	12.6/ 14/ .0422	2.6/ 1/ .0459	12.6/ 14/ .0422	12.2/ 14/ .0407
NOX SAMPLE METER/RANGE/PPM	46.9/ 2/ 46.9	19.6/ 1/ 5.0	1.8/ 1/ .5	9.8/ 1/ 2.5
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	1.1/ 1/ .3	.7/ 1/ .2	1.0/ 1/ .3
DILUTION FACTOR	14.20	11.47	19.85	14.70
THC CONCENTRATION PPM	23.	5.	1.	5.
CO CONCENTRATION PPM	52.	70.	2.	5.
CO2 CONCENTRATION PCT	.8957	1.1179	.6334	.8712
NOX CONCENTRATION PPM	46.6	4.7	.3	2.3
THC MASS GRAMS	.27	.16	.05	.23
CO MASS GRAMS	1.25	4.39	.27	.39
CO2 MASS GRAMS	340.8	1105.1	1486.5	1197.4
NOX MASS GRAMS	1.88	.50	.07	.34
THC GRAMS/MI	.41	.05	.01	.06
CO GRAMS/MI	1.87	1.50	.07	.11
CO2 GRAMS/MI	509.9	377.4	380.0	331.3
NOX GRAMS/MI	2.82	.17	.02	.09
FUEL ECONOMY IN MPG	17.25	21.90	23.33	24.85
RUN TIME SECONDS	140.	365.	868.	506.
MEASURED DISTANCE MI	.67	3.60	3.91	7.53
SCF, DRY	.972	.971	.975	.973
DFC, WET (DRY)		.917(.900)		.943(.925)
TOT VOL (SCM) / SAM BLR (SCM)		74.8/ .00		203.3/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-03
BAROMETER MM HG 738.1
HUMIDITY G/KG 11.2
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 371.2
FUEL ECONOMY MPG 23.89
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .39
OXIDES OF NITROGEN G/MI .17

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PROJECT 08-1815-001

TEST NO. C-VH-04 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 6/27/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 253. KM(157. MILES)

BAROMETER 737.36 MM HG(29.03 IN HG)
RELATIVE HUMIDITY 47. PCT

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 8.3 GM/KG

NOX HUMIDITY CORRECTION FACTOR .93

BAG RESULTS

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	41.7 (107.0)	42.2 (108.0)
BLOWER REVOLUTIONS	11247.	69465.	40520.
TOT FLOW STD. CU. METRES(SCF)	20.7 (733.)	128.5 (4538.)	74.9 (2644.)
THC SAMPLE METER/RANGE/PPM	10.7/ 3/ 107.	9.0/ 2/ 9.	16.8/ 2/ 17.
THC BCKGRD METER/RANGE/PPM	1.1/ 3/ 11.	10.0/ 2/ 10.	9.6/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	47.3/ 14/ 208.	.0/ 12/ 0.	7.9/ 12/ 8.
CO BCKGRD METER/RANGE/PPM	.2/ 14/ 1.	.0/ 12/ 0.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	50.3/ 1/ .9205	78.4/ 14/ .6306	91.6/ 14/ .9066
CO2 BCKGRD METER/RANGE/PCT	2.2/ 1/ .0388	11.9/ 14/ .0395	12.0/ 14/ .0399
NOX SAMPLE METER/RANGE/PPM	57.7/ 2/ 57.7	3.4/ 1/ .9	17.8/ 1/ 4.6
NOX BCKGRD METER/RANGE/PPM	.4/ 2/ .4	.2/ 1/ .1	.0/ 1/ .0
DILUTION FACTOR	14.08	21.22	14.74
THC CONCENTRATION PPM	97.	0.	8.
CO CONCENTRATION PPM	201.	0.	7.
CO2 CONCENTRATION PCT	.8845	.5929	.8694
NOX CONCENTRATION PPM	57.3	.8	4.6
THC MASS GRAMS	1.15	.00	.34
CO MASS GRAMS	4.85	.00	.64
CO2 MASS GRAMS	336.0	1395.2	1192.0
NOX MASS GRAMS	2.11	.19	.60
THC GRAMS/MI	1.72	.00	.09
CO GRAMS/MI	7.24	.00	.18
CO2 GRAMS/MI	501.0	358.8	329.5
NOX GRAMS/MI	3.14	.05	.17
FUEL ECONOMY IN MPG	17.12	24.72	26.87
RUN TIME SECONDS	140.	867.	506.
MEASURED DISTANCE MI	.67	3.89	3.62
SCF, DRY	.976	.979	.977
DFC, WET (DRY)	.918(.904)	.945(.931)	
TOT VOL (SCM) / SAM BLR (SCM)	74.8/ .00	203.4/ .00	

COMPOSITE RESULTS

TEST NUMBER C-VH-04
BAROMETER MM HG 737.4
HUMIDITY G/KG 8.3
TEMPERATURE DEG C 22.8

3-BAG
CARBON DIOXIDE G/MI 359.3
FUEL ECONOMY MPG 24.68
HYDROCARBONS (THC) G/MI .10
CARBON MONOXIDE G/MI .34
OXIDES OF NITROGEN G/MI .22

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PROJECT 08-1815-001

TEST NO. C-AH-05 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 6/29/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-995-F
ODOMETER 312. KM(194. MILES)

BAROMETER 739.14 MM HG(29.10 IN HG)
RELATIVE HUMIDITY 48. PCT
BAG RESULTS

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR .95

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	769.6 (30.3)	767.1 (30.2)	772.2 (30.4)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	41.7 (107.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11235.	29204.	69437.
TOT FLOW STD. CU. METRES(SCF)	20.9 (736.)	54.3 (1916.)	129.3 (4565.)
THC SAMPLE METER/RANGE/PPM	17.1/ 3/ 171.	11.1/ 2/ 11.	9.1/ 2/ 9.
THC BCKGRD METER/RANGE/PPM	1.1/ 3/ 11.	9.7/ 2/ 10.	9.7/ 2/ 10.
CO SAMPLE METER/RANGE/PPM	90.4/ 14/ 448.	3.1/ 12/ 3.	2.0/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	.2/ 14/ 1.	.7/ 12/ 1.	.6/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	92.1/ 14/ .9193	63.7/ 1/1.1711	82.1/ 14/ .6979
CO2 BCKGRD METER/RANGE/PCT	11.7/ 14/ .0388	2.1/ 1/ .0370	11.7/ 14/ .0388
NOX SAMPLE METER/RANGE/PPM	38.9/ 2/ 38.9	6.4/ 1/ 1.7	2.5/ 1/ .7
NOX BCKGRD METER/RANGE/PPM	.0/ 2/ .0	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	13.68	11.43	19.17
THC CONCENTRATION PPM	160.	2.	0.
CO CONCENTRATION PPM	432.	2.	1.
CO2 CONCENTRATION PCT	.8834	1.1373	.6611
NOX CONCENTRATION PPM	38.9	1.7	.7
THC MASS GRAMS	1.93	.07	.00
CO MASS GRAMS	10.49	.14	.20
CO2 MASS GRAMS	337.3	1130.0	1564.7
NOX MASS GRAMS	1.47	.16	.15
THC GRAMS/MI	2.88	.02	.00
CO GRAMS/MI	15.64	.05	.05
CO2 GRAMS/MI	503.0	390.4	407.4
NOX GRAMS/MI	2.20	.06	.04
FUEL ECONOMY IN MPG	16.52	21.21	22.71
RUN TIME SECONDS	140.	364.	868.
MEASURED DISTANCE MI	.67	3.56	2.89
SCF, DRY	.976	.974	.974
DFC, WET (DRY)		.916(.902)	.942(.927)
TOT VOL (SCM) / SAM BLR (SCM)		75.1/ .00	204.5/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-05
BAROMETER MM HG 739.1
HUMIDITY G/KG 9.1
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 390.7
FUEL ECONOMY MPG 22.65
HYDROCARBONS (THC) G/MI .14
CARBON MONOXIDE G/MI .69
OXIDES OF NITROGEN G/MI .15

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TEST NO. C-AH-06 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 6/30/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-995-F
ODOMETER 335. KM(208. MILES)

BAROMETER 743.46 MM HG(29.27 IN HG)
RELATIVE HUMIDITY 61. PCT
BAG RESULTS

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 10.4 GM/KG

NOX HUMIDITY CORRECTION FACTOR .99

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	769.6 (30.3)	774.7 (30.5)	772.2 (30.4)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	769.6 (30.3)	764.5 (30.1)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.2 (108.0)	41.1 (106.0)	40.0 (104.0)
BLOWER REVOLUTIONS	11227.	29224.	69423.
TOT FLOW STD. CU. METRES(SCF)	21.0 (741.)	54.7 (1930.)	130.2 (4597.)
THC SAMPLE METER/RANGE/PPM	52.7/ 2/ 52.	12.2/ 2/ 12.	10.7/ 2/ 11.
THC BCKGRD METER/RANGE/PPM	12.5/ 2/ 12.	13.2/ 2/ 13.	12.8/ 2/ 13.
CO SAMPLE METER/RANGE/PPM	61.6/ 13/ 146.	54.2/ 12/ 53.	1.4/ 12/ 1.
CO BCKGRD METER/RANGE/PPM	.4/ 13/ 1.	.7/ 12/ 1.	.8/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	92.7/ 14/ .9349	63.4/ 1/1.1654	81.0/ 14/ .6772
CO2 BCKGRD METER/RANGE/PCT	12.4/ 14/ .0415	2.4/ 1/ .0423	12.3/ 14/ .0411
NOX SAMPLE METER/RANGE/PPM	44.9/ 2/ 44.9	35.3/ 1/ 8.9	2.6/ 1/ .7
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	.6/ 1/ .2	.8/ 1/ .2
DILUTION FACTOR	14.04	11.44	19.75
THC CONCENTRATION PPM	41.	0.	0.
CO CONCENTRATION PPM	140.	51.	1.
CO2 CONCENTRATION PCT	.8964	1.1268	.6382
NOX CONCENTRATION PPM	44.6	8.7	.5
THC MASS GRAMS	.49	.00	.00
CO MASS GRAMS	3.41	3.22	.09
CO2 MASS GRAMS	344.2	1127.5	1521.1
NOX MASS GRAMS	1.77	.91	.12
THC GRAMS/MI	.74	.00	.00
CO GRAMS/MI	5.12	1.12	.02
CO2 GRAMS/MI	516.3	393.0	397.8
NOX GRAMS/MI	2.66	.32	.03
FUEL ECONOMY IN MPG	16.84	21.13	22.29
RUN TIME SECONDS	140.	365.	867.
MEASURED DISTANCE MI	.67	3.54	2.87
SCF, DRY	.972	.970	.974
DFC, WET (DRY)	.917(.899)		.942(.924)
TOT VOL (SCM) / SAM BLR (SCM)	75.6/ .00		205.9/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-06
BAROMETER MM HG 743.5
HUMIDITY G/KG 10.4
TEMPERATURE DEG C 22.2

3-BAG
CARBON DIOXIDE G/MI 389.1
FUEL ECONOMY MPG 22.78
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .43
OXIDES OF NITROGEN G/MI .20

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TEST NO. C-H-07 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 7/ 1/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 352. KM(219. MILES)

BAROMETER 743.46 MM HG(29.27 IN HG)
RELATIVE HUMIDITY 65. PCT
BAG RESULTS

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 11.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

BAG NUMBER
DESCRIPTION

1A	1B	2	3
COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
0-140 SEC	140-505 SEC		

BLOWER DIF P MM. H2O(IN. H2O)	807.7 (31.8)	792.5 (31.2)	787.4 (31.0)	787.4 (31.0)
BLOWER INLET P MM. H2O(IN. H2O)	764.5 (30.1)	774.7 (30.5)	774.7 (30.5)	777.2 (30.6)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	40.0 (104.0)	43.9 (111.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11239.	29525.	69406.	40558.
TOT FLOW STD. CU. METRES(SCF)	20.9 (740.)	55.3 (1952.)	129.0 (4556.)	75.8 (2678.)
THC SAMPLE METER/RANGE/PPM	78.3/ 2/ 77.	15.2/ 2/ 15.	10.7/ 2/ 11.	15.4/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	11.0/ 2/ 11.	11.2/ 2/ 11.	10.6/ 2/ 10.	10.0/ 2/ 10.
CO SAMPLE METER/RANGE/PPM	57.8/ 14/ 263.	45.9/ 13/ 107.	4.8/ 12/ 5.	4.2/ 12/ 4.
CO BCKGRD METER/RANGE/PPM	.0/ 14/ 0.	.0/ 13/ 0.	.1/ 12/ 0.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	93.2/ 14/ .9482	64.6/ 1/1.1879	80.6/ 14/ .6698	92.9/ 14/ .9402
CO2 BCKGRD METER/RANGE/PCT	12.0/ 14/ .0399	2.2/ 1/ .0388	11.9/ 14/ .0395	11.8/ 14/ .0391
NOX SAMPLE METER/RANGE/PPM	34.6/ 2/ 34.6	6.3/ 1/ 1.6	3.3/ 1/ .9	6.8/ 1/ 1.8
NOX BCKGRD METER/RANGE/PPM	.1/ 2/ .1	.0/ 1/ .0	.0/ 1/ .0	.1/ 1/ .0
DILUTION FACTOR	13.66	11.17	19.96	14.22
THC CONCENTRATION PPM	67.	5.	1.	6.
CO CONCENTRATION PPM	252.	102.	4.	4.
CO2 CONCENTRATION PCT	.9112	1.1526	.6323	.9038
NOX CONCENTRATION PPM	34.5	1.6	.9	1.8
THC MASS GRAMS	.81	.16	.05	.26
CO MASS GRAMS	6.15	6.58	.65	.34
CO2 MASS GRAMS	349.4	1166.4	1493.6	1254.8
NOX MASS GRAMS	1.40	.18	.22	.26
THC GRAMS/MI	1.21	.05	.01	.07
CO GRAMS/MI	9.12	2.26	.17	.09
CO2 GRAMS/MI	518.1	400.6	382.0	347.3
NOX GRAMS/MI	2.08	.06	.06	.07
FUEL ECONOMY IN MPG	16.54	20.67	23.19	24.25
RUN TIME SECONDS	140.	368.	866.	506.
MEASURED DISTANCE MI	.67	3.59	3.91	7.52
SCF, DRY	.970	.969	.973	.970
DFC, WET (DRY)		.915(.896)		.942(.923)
TOT VOL (SCM) / SAM BLR (SCM)		76.2/ .00		204.9/ .00

COMPOSITE RESULTS

TEST NUMBER C-H-07
BAROMETER MM HG 743.5
HUMIDITY G/KG 11.1
TEMPERATURE DEG C 22.2

3-BAG
CARBON DIOXIDE G/MI 380.9
FUEL ECONOMY MPG 23.25
HYDROCARBONS (THC) G/MI .08
CARBON MONOXIDE G/MI .84
OXIDES OF NITROGEN G/MI .14

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TEST NO. C-AH-08 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/ 2/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 375. KM(233. MILES)

BAROMETER 737.87 MM HG(29.05 IN HG)

RELATIVE HUMIDITY 39. PCT

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)

ABS. HUMIDITY 7.6 GM/KG

NOX HUMIDITY CORRECTION FACTOR .91

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	767.1 (30.2)	767.1 (30.2)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	759.5 (29.9)	762.0 (30.0)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	42.2 (108.0)	40.0 (104.0)	42.2 (108.0)
BLOWER REVOLUTIONS	11206.	29226.	69403.	40471.
TOT FLOW STD. CU. METRES(SCF)	20.7 (732.)	54.2 (1913.)	129.1 (4559.)	75.0 (2648.)
THC SAMPLE METER/RANGE/PPM	40.4/ 2/ 40.	11.0/ 2/ 11.	8.5/ 2/ 8.	14.9/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	8.6/ 2/ 9.	9.5/ 2/ 9.	9.3/ 2/ 9.	9.2/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	47.0/ 13/ 110.	84.7/ 12/ 85.	1.3/ 12/ 1.	6.1/ 12/ 6.
CO BCKGRD METER/RANGE/PPM	.6/ 13/ 1.	.8/ 12/ 1.	.6/ 12/ 1.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	58.2/ 1/1.0681	66.0/ 1/1.2142	80.0/ 14/ .6589	94.0/ 14/ .9698
CO2 BCKGRD METER/RANGE/PCT	2.6/ 1/ .0459	2.4/ 1/ .0423	12.1/ 14/ .0403	12.2/ 14/ .0407
NOX SAMPLE METER/RANGE/PPM	65.3/ 2/ 65.3	31.9/ 1/ 8.0	4.1/ 1/ 1.1	13.1/ 1/ 3.4
NOX BCKGRD METER/RANGE/PPM	.1/ 2/ .1	.0/ 1/ .0	.0/ 1/ .0	.3/ 1/ .1
DILUTION FACTOR	12.38	10.95	20.31	13.79
THC CONCENTRATION PPM	32.	2.	0.	6.
CO CONCENTRATION PPM	105.	81.	1.	6.
CO2 CONCENTRATION PCT	1.0259	1.1758	.6206	.9321
NOX CONCENTRATION PPM	65.2	8.0	1.1	3.3
THC MASS GRAMS	.38	.07	.00	.27
CO MASS GRAMS	2.53	5.11	.10	.49
CO2 MASS GRAMS	389.2	1166.1	1466.9	1279.8
NOX MASS GRAMS	2.34	.76	.24	.43
THC GRAMS/MI	.56	.02	.00	.07
CO GRAMS/MI	3.71	1.73	.03	.14
CO2 GRAMS/MI	571.7	396.2	383.4	352.1
NOX GRAMS/MI	3.44	.26	.06	.12
FUEL ECONOMY IN MPG	15.31	20.49	23.13	24.07
RUN TIME SECONDS	140.	365.	868.	506.
MEASURED DISTANCE MI	.68	3.62	3.83	7.46
SCF, DRY	.978	.977	.981	.980
DFC, WET (DRY)		.912(.900)		.942(.930)
TOT VOL (SCM) / SAM BLR (SCM)		74.9/ .00		204.1/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-08
BAROMETER MM HG 737.9
HUMIDITY G/KG 7.6
TEMPERATURE DEG C 24.4

3-BAG
CARBON DIOXIDE G/MI 384.3
FUEL ECONOMY MPG 23.08
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .49
OXIDES OF NITROGEN G/MI .24

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TEST NO. C-AH-09 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/ 3/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 399. KM(248. MILES)

BAROMETER 736.60 MM HG(29.00 IN HG)

RELATIVE HUMIDITY 41. PCT

DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)

ABS. HUMIDITY 9.3 GM/KG

NOX HUMIDITY CORRECTION FACTOR .96

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	756.9 (29.8)	756.9 (29.8)	756.9 (29.8)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	41.7 (107.0)	42.2 (108.0)
BLOWER REVOLUTIONS	11206.	29238.	69392.	40467.
TOT FLOW STD. CU. METRES(SCF)	20.7 (731.)	54.0 (1907.)	128.5 (4539.)	74.9 (2643.)
THC SAMPLE METER/RANGE/PPM	38.8/ 2/ 38.	9.8/ 2/ 10.	8.9/ 2/ 9.	15.2/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	9.5/ 2/ 9.	9.8/ 2/ 10.	8.9/ 2/ 9.	9.8/ 2/ 10.
CO SAMPLE METER/RANGE/PPM	48.8/ 13/ 114.	2.2/ 12/ 2.	1.3/ 12/ 1.	6.2/ 12/ 6.
CO BCKGRD METER/RANGE/PPM	.0/ 13/ 0.	.1/ 12/ 0.	.0/ 12/ 0.	.3/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	93.2/ 14/ .9482	65.1/ 1/ 1.1973	80.8/ 14/ .6735	92.7/ 14/ .9349
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	2.2/ 1/ .0388	11.9/ 14/ .0395	12.0/ 14/ .0399
NOX SAMPLE METER/RANGE/PPM	48.2/ 2/ 48.2	22.0/ 1/ 5.6	3.1/ 1/ .8	7.4/ 1/ 1.9
NOX BCKGRD METER/RANGE/PPM	.2/ 2/ .2	.6/ 1/ .2	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	13.91	11.18	19.87	14.30
THC CONCENTRATION PPM	30.	1.	0.	6.
CO CONCENTRATION PPM	110.	2.	1.	5.
CO2 CONCENTRATION PCT	.9108	1.1620	.6359	.8978
NOX CONCENTRATION PPM	48.0	5.5	.8	1.9
THC MASS GRAMS	.35	.03	.03	.26
CO MASS GRAMS	2.66	.12	.18	.48
CO2 MASS GRAMS	345.1	1148.8	1496.6	1230.5
NOX MASS GRAMS	1.82	.54	.19	.26
THC GRAMS/MI	.52	.01	.01	.07
CO GRAMS/MI	3.91	.04	.05	.13
CO2 GRAMS/MI	507.2	389.7	383.3	337.4
NOX GRAMS/MI	2.67	.18	.05	.07
FUEL ECONOMY IN MPG	17.22	21.46	22.75	23.13
RUN TIME SECONDS	140.	365.	867.	506.
MEASURED DISTANCE MI	.68	3.63	2.95	7.55
SCF, DRY	.978	.976	.976	.978
DFC, WET (DRY)		.915(.903)		.942(.930)
TOT VOL (SCM) / SAM BLR (SCM)		74.7/ .00		203.4/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-09
BAROMETER MM HG 736.6
HUMIDITY G/KG 9.3
TEMPERATURE DEG C 26.7

CARBON DIOXIDE G/MI 376.6
FUEL ECONOMY MPG 23.57
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .22
OXIDES OF NITROGEN G/MI .18

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TEST NO. C-AH-10 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/ 6/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 446. KM(277. MILES)

BAROMETER 739.14 MM HG(29.10 IN HG)
RELATIVE HUMIDITY 59. PCT
BAG RESULTS

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 11.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.03

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	756.9 (29.8)	774.7 (30.5)	769.6 (30.3)
BLOWER INLET P MM. H2O(IN. H2O)	764.5 (30.1)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	42.2 (108.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11221.	29340.	69523.
TOT FLOW STD. CU. METRES(SCF)	20.8 (734.)	54.5 (1923.)	129.4 (4571.)
THC SAMPLE METER/RANGE/PPM	33.3/ 2/ 33.	12.1/ 2/ 12.	8.5/ 2/ 8.
THC BCKGRD METER/RANGE/PPM	8.5/ 2/ 8.	8.3/ 2/ 8.	8.9/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	86.0/ 12/ 86.	72.4/ 12/ 72.	2.3/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	.3/ 12/ 0.	.4/ 12/ 0.	.5/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	94.3/ 14/ .9781	64.3/ 1/1.1823	78.9/ 14/ .6393
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	2.2/ 1/ .0388	11.9/ 14/ .0395
NOX SAMPLE METER/RANGE/PPM	40.2/ 2/ 40.2	6.3/ 1/ 1.6	1.9/ 1/ .5
NOX BCKGRD METER/RANGE/PPM	.0/ 2/ .0	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	13.54	11.26	20.93
THC CONCENTRATION PPM	25.	4.	0.
CO CONCENTRATION PPM	83.	69.	2.
CO2 CONCENTRATION PCT	.9408	1.1470	.6017
NOX CONCENTRATION PPM	40.2	1.6	.5
THC MASS GRAMS	.30	.14	.00
CO MASS GRAMS	2.00	4.35	.25
CO2 MASS GRAMS	358.1	1143.4	1425.9
NOX MASS GRAMS	1.65	.18	.13
THC GRAMS/MI	.45	.05	.00
CO GRAMS/MI	2.98	1.50	.07
CO2 GRAMS/MI	534.4	395.2	372.2
NOX GRAMS/MI	2.47	.06	.03
FUEL ECONOMY IN MPG	16.41	20.89	22.30
RUN TIME SECONDS	140.	366.	868.
MEASURED DISTANCE MI	.67	3.56	2.89
SCF, DRY	.972	.970	.970
DFC, WET (DRY)		.915(.898)	.944(.926)
TOT VOL (SCM) / SAM BLR (SCM)		75.2/ .00	204.8/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-10
BAROMETER MM HG 739.1
HUMIDITY G/KG 11.7
TEMPERATURE DEG C 24.4

3-BAG
CARBON DIOXIDE G/MI 374.0
FUEL ECONOMY MPG 23.72
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .43
OXIDES OF NITROGEN G/MI .14

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TEST NO. C-AH-11 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 7/ 7/90
BAG CART NO. 2 / CVS NO. 2
DYND NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 467. KM(290. MILES)

BAROMETER 741.68 MM HG(29.20 IN HG)

RELATIVE HUMIDITY 65. PCT

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)

ABS. HUMIDITY 11.6 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.03

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	764.5 (30.1)	774.7 (30.5)	767.1 (30.2)	764.5 (30.1)
BLOWER INLET P MM. H2O(IN. H2O)	756.9 (29.8)	764.5 (30.1)	777.2 (30.6)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	41.7 (107.0)	39.4 (103.0)	41.1 (106.0)
BLOWER REVOLUTIONS	11259.	29224.	69579.	40482.
TOT FLOW STD. CU. METRES(SCF)	20.9 (739.)	54.5 (1924.)	130.1 (4595.)	75.5 (2666.)
THC SAMPLE METER/RANGE/PPM	44.1/ 2/ 44.	10.2/ 2/ 10.	8.8/ 2/ 9.	15.4/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	10.0/ 2/ 10.	10.1/ 2/ 10.	9.2/ 2/ 9.	7.9/ 2/ 8.
CO SAMPLE METER/RANGE/PPM	51.8/ 13/ 121.	14.8/ 12/ 14.	1.3/ 12/ 1.	8.3/ 12/ 8.
CO BCKGRD METER/RANGE/PPM	.3/ 13/ 1.	.3/ 12/ 0.	.0/ 12/ 0.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	93.6/ 14/ .9589	64.4/ 1/1.1842	79.3/ 14/ .6464	92.6/ 14/ .9323
CO2 BCKGRD METER/RANGE/PCT	11.4/ 14/ .0376	2.3/ 1/ .0406	11.3/ 14/ .0372	11.3/ 14/ .0372
NOX SAMPLE METER/RANGE/PPM	46.4/ 2/ 46.4	15.5/ 1/ 4.0	2.5/ 1/ .7	11.1/ 1/ 2.9
NOX BCKGRD METER/RANGE/PPM	.1/ 2/ .1	1.1/ 1/ .3	.2/ 1/ .1	.4/ 1/ .1
DILUTION FACTOR	13.74	11.29	20.70	14.34
THC CONCENTRATION PPM	34.	1.	0.	8.
CO CONCENTRATION PPM	116.	13.	1.	8.
CO2 CONCENTRATION PCT	.9240	1.1472	.6109	.8977
NOX CONCENTRATION PPM	46.3	3.7	.6	2.8
THC MASS GRAMS	.42	.03	.00	.35
CO MASS GRAMS	2.83	.85	.18	.67
CO2 MASS GRAMS	354.2	1144.5	1455.5	1240.8
NOX MASS GRAMS	1.91	.40	.16	.41
THC GRAMS/MI	.62	.01	.00	.10
CO GRAMS/MI	4.18	.29	.05	.19
CO2 GRAMS/MI	523.8	391.7	376.9	342.7
NOX GRAMS/MI	2.83	.14	.04	.11
FUEL ECONOMY IN MPG	16.66	21.19	23.53	24.59
RUN TIME SECONDS	140.	364.	868.	504.
MEASURED DISTANCE MI	.68	3.60	3.86	7.48
SCF, DRY	.970	.969	.973	.970
DFC, WET (DRY)		.916(.896)		.944(.924)
TOT VOL (SCM) / SAM BLR (SCM)		75.4/ .00		205.6/ .00

OMPOSITE RESULTS

TEST NUMBER C-AH-11
BAROMETER MM HG 741.7
HUMIDITY G/KG 11.6
TEMPERATURE DEG C 22.8

3-BAG
CARBON DIOXIDE G/MI 375.7
FUEL ECONOMY MPG 23.62
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .29
OXIDES OF NITROGEN G/MI .19

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TEST NO. CS-VAH-12 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/11/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 501. KM(311. MILES)

BAROMETER 738.38 MM HG(29.07 IN HG)
RELATIVE HUMIDITY 43. PCT
BAG RESULTS

DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 8.6 GM/KG

NOX HUMIDITY CORRECTION FACTOR .94

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	764.5 (30.1)	762.0 (30.0)	762.0 (30.0)	764.5 (30.1)
BLOWER INLET P MM. H2O(IN. H2O)	759.5 (29.9)	756.9 (29.8)	756.9 (29.8)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	42.2 (108.0)	43.3 (110.0)
BLOWER REVOLUTIONS	11200.	29186.	69418.	40404.
TOT FLOW STD. CU. METRES(SCF)	20.7 (732.)	54.0 (1908.)	128.8 (4548.)	74.8 (2641.)
THC SAMPLE METER/RANGE/PPM	35.3/ 2/ 35.	11.1/ 2/ 11.	8.2/ 2/ 8.	16.2/ 2/ 16.
THC BCKGRD METER/RANGE/PPM	7.9/ 2/ 8.	8.8/ 2/ 9.	8.8/ 2/ 9.	8.3/ 2/ 8.
CO SAMPLE METER/RANGE/PPM	80.8/ 12/ 81.	11.0/ 12/ 11.	1.0/ 12/ 1.	13.6/ 12/ 13.
CO BCKGRD METER/RANGE/PPM	.5/ 12/ 0.	.4/ 12/ 0.	.5/ 12/ 0.	.1/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	93.2/ 14/ .9482	64.4/ 1/1.1842	79.2/ 14/ .6446	92.3/ 14/ .9245
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	2.4/ 1/ .0423	11.8/ 14/ .0391	11.7/ 14/ .0388
NOX SAMPLE METER/RANGE/PPM	60.7/ 2/ 60.7	7.6/ 1/ 2.0	3.1/ 1/ .8	8.1/ 1/ 2.1
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	.7/ 1/ .2	.5/ 1/ .1	.6/ 1/ .2
DILUTION FACTOR	13.97	11.30	20.76	14.45
THC CONCENTRATION PPM	28.	3.	0.	8.
CO CONCENTRATION PPM	78.	10.	0.	13.
CO2 CONCENTRATION PCT	.9107	1.1456	.6073	.8884
NOX CONCENTRATION PPM	60.4	1.8	.7	2.0
THC MASS GRAMS	.33	.10	.00	.37
CO MASS GRAMS	1.87	.62	.07	1.10
CO2 MASS GRAMS	345.7	1133.6	1432.2	1216.5
NOX MASS GRAMS	2.24	.18	.16	.26
THC GRAMS/MI	.51	.03	.00	.10
CO GRAMS/MI	2.85	.21	.02	.31
CO2 GRAMS/MI	525.9	389.9	368.9	338.0
NOX GRAMS/MI	3.41	.06	.04	.07
FUEL ECONOMY IN MPG	16.67	21.29	24.04	25.02
RUN TIME SECONDS	140.	365.	868.	505.
MEASURED DISTANCE MI	.66	3.56	3.88	7.48
SCF, DRY	.977	.976	.980	.979
DFC, WET (DRY)		.916(.904)		.944(.931)
TOT VOL (SCM) / SAM BLR (SCM)		74.8/ .00		203.6/ .00

COMPOSITE RESULTS

TEST NUMBER CS-VAH-12
BAROMETER MM HG 738.4
HUMIDITY G/KG 8.6
TEMPERATURE DEG C 25.0

3-BAG
CARBON DIOXIDE G/MI 369.9
FUEL ECONOMY MPG 24.00
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .24
OXIDES OF NITROGEN G/MI .18

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TEST NO. CS-DE-13 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 7/12/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 525. KM(326. MILES)

BAROMETER 741.93 MM HG(29.21 IN HG)

RELATIVE HUMIDITY 59. PCT

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

ABS. HUMIDITY 11.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	764.5 (30.1)	767.1 (30.2)	772.2 (30.4)
BLOWER INLET P MM. H2O(IN. H2O)	754.4 (29.7)	734.1 (28.9)	762.0 (30.0)	764.5 (30.1)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	42.2 (108.0)	40.6 (105.0)	42.8 (109.0)
BLOWER REVOLUTIONS	11208.	29158.	69400.	40258.
TOT FLOW STD. CU. METRES(SCF)	20.9 (737.)	54.5 (1925.)	129.8 (4582.)	74.9 (2646.)
THC SAMPLE METER/RANGE/PPM	10.8/ 3/ 108.	10.8/ 2/ 11.	8.4/ 2/ 8.	10.1/ 2/ 10.
THC BCKGRD METER/RANGE/PPM	.8/ 3/ 8.	7.1/ 2/ 7.	7.9/ 2/ 8.	8.3/ 2/ 8.
CO SAMPLE METER/RANGE/PPM	79.4/ 14/ 383.	28.0/ 12/ 27.	2.0/ 12/ 2.	5.0/ 12/ 5.
CO BCKGRD METER/RANGE/PPM	.3/ 14/ 1.	1.1/ 12/ 1.	.6/ 12/ 1.	.9/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	90.6/ 14/ .8817	98.0/ 14/ 1.0876	78.1/ 14/ .6254	88.8/ 14/ .8387
CO2 BCKGRD METER/RANGE/PCT	12.4/ 14/ .0415	12.4/ 14/ .0415	12.3/ 14/ .0411	12.0/ 14/ .0399
NOX SAMPLE METER/RANGE/PPM	56.5/ 1/ 14.2	13.0/ 1/ 3.4	2.6/ 1/ .7	4.9/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.5/ 1/ .1	.0/ 1/ .0	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	14.42	12.28	21.39	15.95
THC CONCENTRATION PPM	100.	4.	1.	2.
CO CONCENTRATION PPM	368.	25.	1.	4.
CO2 CONCENTRATION PCT	.8431	1.0496	.5863	.8013
NOX CONCENTRATION PPM	14.0	3.4	.7	1.3
THC MASS GRAMS	1.21	.13	.07	.10
CO MASS GRAMS	8.95	1.60	.20	.33
CO2 MASS GRAMS	322.2	1047.7	1392.9	1099.4
NOX MASS GRAMS	.57	.35	.17	.19
THC GRAMS/MI	1.81	.05	.02	.03
CO GRAMS/MI	13.43	.55	.05	.09
CO2 GRAMS/MI	483.2	361.7	357.7	305.7
NOX GRAMS/MI	.85	.12	.04	.05
FUEL ECONOMY IN MPG	17.39	22.72	24.45	24.78
RUN TIME SECONDS	140.	364.	868.	503.
MEASURED DISTANCE MI	.67	3.56	2.90	7.49
SCF, DRY	.973	.972	.975	.975
DFC, WET (DRY)		.922(.904)		.947(.929)
TOT VOL (SCM) / SAM BLR (SCM)		75.4/ .00		204.7/ .00

OMPOSITE RESULTS

TEST NUMBER CS-DE-13
BAROMETER MM HG 741.9
HUMIDITY G/KG 11.2
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 349.0
FUEL ECONOMY MPG 25.40
HYDROCARBONS (THC) G/MI .09
CARBON MONOXIDE G/MI .66
OXIDES OF NITROGEN G/MI .09

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TEST NO. CS-VAH-12 RUN 2
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/13/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1035-F
ODOMETER 552. KM(343. MILES)

BAROMETER 740.66 MM HG(29.16 IN HG)
RELATIVE HUMIDITY 38. PCT
BAG RESULTS

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 7.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR .89

BAG NUMBER DESCRIPTION	1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	767.1 (30.2)	767.1 (30.2)	767.1 (30.2)
BLOWER INLET P MM. H2O(IN. H2O)	756.9 (29.8)	762.0 (30.0)	762.0 (30.0)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	42.8 (109.0)	40.0 (104.0)	41.1 (106.0)
BLOWER REVOLUTIONS	11218.	29251.	69408.	40436.
TOT FLOW STD. CU. METRES(SCF)	20.9 (737.)	54.4 (1920.)	129.7 (4579.)	75.4 (2663.)
THC SAMPLE METER/RANGE/PPM	49.6/ 3/ 495.	12.6/ 2/ 13.	11.3/ 2/ 11.	39.8/ 2/ 40.
THC BCKGRD METER/RANGE/PPM	1.7/ 3/ 17.	13.5/ 2/ 13.	13.6/ 2/ 14.	14.9/ 2/ 15.
CO SAMPLE METER/RANGE/PPM	66.8/ 1/ 614.	1.0/ 12/ 1.	.6/ 12/ 1.	7.3/ 12/ 7.
CO BCKGRD METER/RANGE/PPM	.3/ 1/ 2.	.0/ 12/ 0.	.0/ 12/ 0.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	90.3/ 14/ .8743	96.6/ 14/ 1.0445	77.0/ 14/ .6068	88.1/ 14/ .8227
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	11.4/ 14/ .0376	11.5/ 14/ .0380	11.5/ 14/ .0380
NOX SAMPLE METER/RANGE/PPM	62.3/ 1/ 15.6	28.6/ 1/ 7.2	4.9/ 1/ 1.3	3.8/ 1/ 1.0
NOX BCKGRD METER/RANGE/PPM	2.3/ 1/ .6	.0/ 1/ .0	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	13.63	12.81	22.04	16.20
THC CONCENTRATION PPM	479.	0.	0.	26.
CO CONCENTRATION PPM	594.	1.	1.	7.
CO2 CONCENTRATION PCT	.8370	1.0098	.5705	.7878
NOX CONCENTRATION PPM	15.1	7.2	1.3	1.0
THC MASS GRAMS	5.76	.00	.00	1.12
CO MASS GRAMS	14.43	.06	.08	.60
CO2 MASS GRAMS	319.8	1005.1	1354.5	1086.6
NOX MASS GRAMS	.54	.67	.29	.13
THC GRAMS/MI	8.67	.00	.00	.31
CO GRAMS/MI	21.71	.02	.02	.17
CO2 GRAMS/MI	481.2	346.3	351.7	302.6
NOX GRAMS/MI	.81	.23	.07	.04
FUEL ECONOMY IN MPG	16.34	23.16	25.21	26.98
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.66	3.57	3.85	7.44
SCF, DRY	.980	.979	.982	.981
DFC, WET (DRY)		.923(.912)		.949(.937)
TOT VOL (SCM) / SAM BLR (SCM)		75.2/ .00		205.1/ .00

COMPOSITE RESULTS

TEST NUMBER CS-VAH-12
BAROMETER MM HG 740.7
HUMIDITY G/KG 7.1
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 342.3
FUEL ECONOMY MPG 25.78
HYDROCARBONS (THC) G/MI .42
CARBON MONOXIDE G/MI .90
OXIDES OF NITROGEN G/MI .12

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TEST NO. CS-VAH-15 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/14/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 594. KM(369. MILES)

BAROMETER 742.44 MM HG(29.23 IN HG)
RELATIVE HUMIDITY 51. PCT
BAG RESULTS

DRY BULB TEMP. 20.6 DEG C(69.0 DEG F)
ABS. HUMIDITY 7.9 GM/KG

NOX HUMIDITY CORRECTION FACTOR .92

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	769.6 (30.3)	787.4 (31.0)	782.3 (30.8)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	764.5 (30.1)	777.2 (30.6)	774.7 (30.5)	767.1 (30.2)
BLOWER INLET TEMP. DEG. C(DEG. F)	40.0 (104.0)	39.4 (103.0)	37.8 (100.0)	38.9 (102.0)
BLOWER REVOLUTIONS	11231.	29236.	69531.	40426.
TOT FLOW STD. CU. METRES(SCF)	21.0 (743.)	54.7 (1932.)	130.6 (4611.)	75.8 (2678.)
THC SAMPLE METER/RANGE/PPM	21.7/ 3/ 216.	13.9/ 2/ 14.	9.3/ 2/ 9.	37.9/ 2/ 38.
THC BCKGRD METER/RANGE/PPM	1.0/ 3/ 10.	9.0/ 2/ 9.	9.6/ 2/ 10.	9.5/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	67.2/ 14/ 314.	47.6/ 12/ 47.	1.8/ 12/ 2.	12.8/ 12/ 12.
CO BCKGRD METER/RANGE/PPM	.2/ 14/ 1.	.5/ 12/ 0.	.4/ 12/ 0.	.6/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	89.7/ 14/ .8599	57.2/ 1/1.0494	77.2/ 14/ .6102	88.2/ 14/ .8250
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	2.3/ 1/ .0406	12.0/ 14/ .0399	12.0/ 14/ .0399
NOX SAMPLE METER/RANGE/PPM	47.6/ 1/ 11.9	11.0/ 1/ 2.8	2.4/ 1/ .6	4.9/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.3/ 1/ .1	.4/ 1/ .1	.2/ 1/ .1	.3/ 1/ .1
DILUTION FACTOR	14.69	12.70	21.92	16.15
THC CONCENTRATION PPM	207.	6.	0.	29.
CO CONCENTRATION PPM	303.	45.	1.	11.
CO2 CONCENTRATION PCT	.8223	1.0120	.5721	.7875
NOX CONCENTRATION PPM	11.9	2.7	.6	1.2
THC MASS GRAMS	2.51	.18	.01	1.27
CO MASS GRAMS	7.41	2.85	.20	1.01
CO2 MASS GRAMS	316.7	1013.5	1367.7	1093.4
NOX MASS GRAMS	.44	.26	.13	.16
THC GRAMS/MI	3.75	.06	.00	.35
CO GRAMS/MI	11.07	.98	.05	.28
CO2 GRAMS/MI	472.9	349.7	353.5	305.9
NOX GRAMS/MI	.65	.09	.03	.04
FUEL ECONOMY IN MPG	17.66	23.35	25.08	26.76
RUN TIME SECONDS	140.	365.	868.	505.
MEASURED DISTANCE MI	.67	3.57	3.87	7.44
SCF, DRY	.975	.974	.978	.976
DFC, WET (DRY)		.924(.909)		.948(.933)
TOT VOL (SCM) / SAM BLR (SCM)		75.7/ .00		206.4/ .00

COMPOSITE RESULTS

TEST NUMBER CS-VAH-15
BAROMETER MM HG 742.4
HUMIDITY G/KG 7.9
TEMPERATURE DEG C 20.6

3-BAG
CARBON DIOXIDE G/MI 344.5
FUEL ECONOMY MPG 25.66
HYDROCARBONS (THC) G/MI .25
CARBON MONOXIDE G/MI .70
OXIDES OF NITROGEN G/MI .07

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TEST NO. CS-0E-14 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/15/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 637. KM(396. MILES)

BAROMETER 739.65 MM HG(29.12 IN HG)
RELATIVE HUMIDITY 69. PCT
BAG RESULTS

DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)
ABS. HUMIDITY 11.4 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.02

BAG NUMBER DESCRIPTION	1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	774.7 (30.5)	774.7 (30.5)	769.6 (30.3)
BLOWER INLET P MM. H2O(IN. H2O)	756.9 (29.8)	767.1 (30.2)	767.1 (30.2)	764.5 (30.1)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	40.6 (105.0)	38.9 (102.0)	41.1 (106.0)
BLOWER REVOLUTIONS	11237.	29303.	69579.	40478.
TOT FLOW STD. CU. METRES(SCF)	20.9 (736.)	54.6 (1927.)	130.0 (4590.)	75.3 (2660.)
THC SAMPLE METER/RANGE/PPM	10.7/ 3/ 107.	18.6/ 2/ 19.	13.0/ 2/ 13.	13.4/ 2/ 13.
THC BCKGRD METER/RANGE/PPM	1.7/ 3/ 17.	16.5/ 2/ 16.	14.7/ 2/ 15.	12.6/ 2/ 13.
CO SAMPLE METER/RANGE/PPM	70.8/ 14/ 334.	6.4/ 12/ 6.	2.2/ 12/ 2.	2.9/ 12/ 3.
CO BCKGRD METER/RANGE/PPM	.8/ 14/ 3.	2.7/ 12/ 3.	1.7/ 12/ 2.	1.0/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	89.8/ 14/ .8623	96.6/ 14/ 1.0445	77.0/ 14/ .6068	88.0/ 14/ .8204
CO2 BCKGRD METER/RANGE/PCT	12.0/ 14/ .0399	12.1/ 14/ .0403	12.0/ 14/ .0399	11.8/ 14/ .0391
NOX SAMPLE METER/RANGE/PPM	29.1/ 1/ 7.4	21.5/ 1/ 5.5	4.1/ 1/ 1.1	5.1/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.8/ 1/ .2	.3/ 1/ .1	.2/ 1/ .1	.1/ 1/ .0
DILUTION FACTOR	14.81	12.80	22.03	16.30
THC CONCENTRATION PPM	91.	3.	0.	2.
CO CONCENTRATION PPM	318.	4.	1.	2.
CO2 CONCENTRATION PCT	.8251	1.0073	.5687	.7837
NOX CONCENTRATION PPM	7.2	5.4	1.0	1.3
THC MASS GRAMS	1.09	.11	.00	.07
CO MASS GRAMS	7.72	.23	.08	.16
CO2 MASS GRAMS	315.0	1006.4	1353.4	1000.8
NOX MASS GRAMS	.29	.58	.26	.19
THC GRAMS/MI	1.61	.04	.00	.02
CO GRAMS/MI	11.41	.08	.02	.04
CO2 GRAMS/MI	465.3	343.4	346.9	300.3
NOX GRAMS/MI	.43	.20	.07	.05
FUEL ECONOMY IN MPG	18.16	23.92	25.56	27.32
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.68	3.61	3.90	7.50
SCF, DRY	.970	.969	.972	.971
DFC, WET (DRY)		.925(.904)		.949(.928)
TOT VOL (SCM) / SAM BLR (SCM)		75.4/ .00		205.3/ .00

COMPOSITE RESULTS

TEST NUMBER CS-0E-14
BAROMETER MM HG 739.6
HUMIDITY G/KG 11.4
TEMPERATURE DEG C 21.7

3-BAG
CARBON DIOXIDE G/MI 338.1
FUEL ECONOMY MPG 26.21
HYDROCARBONS (THC) G/MI .07
CARBON MONOXIDE G/MI .48
OXIDES OF NITROGEN G/MI .10

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
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TEST NO. C-VAH-16 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/18/90
BAG CART NO. 2 / CVS NO. 2
DYND NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 705. KM(438. MILES)

BAROMETER 742.95 MM HG(29.25 IN HG)

RELATIVE HUMIDITY 58. PCT

DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)

ABS. HUMIDITY 12.9 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.08

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	756.9 (29.8)	756.9 (29.8)	756.9 (29.8)	756.9 (29.8)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	42.8 (109.0)	41.7 (107.0)	41.1 (106.0)
BLOWER REVOLUTIONS	11217.	29204.	69465.	40403.
TOT FLOW STD. CU. METRES(SCF)	20.9 (739.)	54.5 (1925.)	129.9 (4587.)	75.6 (2671.)
THC SAMPLE METER/RANGE/PPM	12.9/ 3/ 129.	13.3/ 2/ 13.	12.7/ 2/ 13.	50.2/ 2/ 50.
THC BCKGRD METER/RANGE/PPM	1.3/ 3/ 13.	11.8/ 2/ 12.	11.8/ 2/ 12.	11.2/ 2/ 11.
CO SAMPLE METER/RANGE/PPM	51.8/ 14/ 231.	1.1/ 12/ 1.	1.5/ 12/ 1.	15.0/ 12/ 14.
CO BCKGRD METER/RANGE/PPM	.2/ 14/ 1.	.4/ 12/ 0.	.8/ 12/ 1.	.7/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	91.0/ 14/ .8915	96.7/ 14/ 1.0475	78.1/ 14/ .6254	88.5/ 14/ .8318
CO2 BCKGRD METER/RANGE/PCT	11.5/ 14/ .0380	11.6/ 14/ .0384	12.2/ 14/ .0407	12.3/ 14/ .0411
NOX SAMPLE METER/RANGE/PPM	94.9/ 1/ 23.7	12.3/ 1/ 3.2	1.7/ 1/ .4	5.1/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.5/ 1/ .1	.1/ 1/ .0	.3/ 1/ .1	.1/ 1/ .0
DILUTION FACTOR	14.46	12.78	21.38	15.99
THC CONCENTRATION PPM	117.	2.	1.	40.
CO CONCENTRATION PPM	222.	1.	1.	13.
CO2 CONCENTRATION PCT	.8562	1.0121	.5867	.7933
NOX CONCENTRATION PPM	23.5	3.2	.4	1.3
THC MASS GRAMS	1.41	.08	.11	1.73
CO MASS GRAMS	5.42	.04	.10	1.18
CO2 MASS GRAMS	328.2	1010.0	1395.4	1098.6
NOX MASS GRAMS	1.02	.35	.10	.20
THC GRAMS/MI	2.07	.03	.03	.48
CO GRAMS/MI	7.96	.01	.03	.32
CO2 GRAMS/MI	482.0	346.0	361.5	301.6
NOX GRAMS/MI	1.49	.12	.03	.06
FUEL ECONOMY IN MPG	17.70	23.62	24.52	26.59
RUN TIME SECONDS	140.	365.	868.	505.
MEASURED DISTANCE MI	.68	3.60	3.86	7.50
SCF, DRY	.973	.972	.976	.974
DFC, WET (DRY)		.924(.907)		.947(.930)
TOT VOL (SCM) / SAM BLR (SCM)		75.4/ .00		205.6/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-16
BAROMETER MM HG 743.0
HUMIDITY G/KG 12.9
TEMPERATURE DEG C 26.7

3-BAG
CARBON DIOXIDE G/MI 347.1
FUEL ECONOMY MPG 25.51
HYDROCARBONS (THC) G/MI .23
CARBON MONOXIDE G/MI .42
OXIDES OF NITROGEN G/MI .11

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TEST NO. C-VAH-16 RUN 3
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 7/19/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 761. KM(473. MILES)

BAROMETER 741.43 MM HG(29.19 IN HG)
RELATIVE HUMIDITY 67. PCT

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 14.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.13

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	767.1 (30.2)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	43.3 (110.0)	42.8 (109.0)	42.8 (109.0)
BLOWER REVOLUTIONS	11213.	29164.	69413.	40446.
TOT FLOW STD. CU. METRES(SCF)	20.8 (736.)	54.2 (1915.)	129.2 (4562.)	75.3 (2658.)
THC SAMPLE METER/RANGE/PPM	45.4/ 2/ 45.	12.6/ 2/ 13.	11.4/ 2/ 11.	19.8/ 2/ 20.
THC BCKGRD METER/RANGE/PPM	11.6/ 2/ 12.	10.7/ 2/ 11.	10.4/ 2/ 10.	17.9/ 2/ 18.
CO SAMPLE METER/RANGE/PPM	45.4/ 12/ 45.	5.0/ 12/ 5.	2.8/ 12/ 3.	10.4/ 12/ 10.
CO BCKGRD METER/RANGE/PPM	.8/ 12/ 1.	.7/ 12/ 1.	1.0/ 12/ 1.	3.1/ 12/ 3.
CO2 SAMPLE METER/RANGE/PCT	93.2/ 14/ .9482	65.2/ 1/1.1992	78.9/ 14/ .6393	92.6/ 14/ .9323
CO2 BCKGRD METER/RANGE/PCT	12.0/ 14/ .0399	2.3/ 1/ .0406	12.1/ 14/ .0403	12.1/ 14/ .0403
NOX SAMPLE METER/RANGE/PPM	45.4/ 2/ 45.4	11.3/ 1/ 2.9	2.1/ 1/ .6	7.8/ 1/ 2.0
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	.3/ 1/ .1	.6/ 1/ .2	.3/ 1/ .1
DILUTION FACTOR	14.00	11.16	20.91	14.33
THC CONCENTRATION PPM	35.	3.	1.	3.
CO CONCENTRATION PPM	42.	4.	2.	7.
CO2 CONCENTRATION PCT	.9111	1.1623	.6009	.8948
NOX CONCENTRATION PPM	45.1	2.9	.4	2.0
THC MASS GRAMS	.42	.09	.11	.14
CO MASS GRAMS	1.02	.25	.25	.61
CO2 MASS GRAMS	347.7	1153.9	1421.3	1233.2
NOX MASS GRAMS	2.03	.33	.11	.32
THC GRAMS/MI	.62	.03	.03	.04
CO GRAMS/MI	1.52	.09	.07	.17
CO2 GRAMS/MI	517.5	397.4	369.7	338.3
NOX GRAMS/MI	3.03	.12	.03	.09
FUEL ECONOMY IN MPG	16.99	21.06	23.98	25.00
RUN TIME SECONDS	140.	364.	867.	505.
MEASURED DISTANCE MI	.67	3.58	3.85	7.49
SCF, DRY	.969	.968	.972	.970
DFC, WET (DRY)		.915(.895)		.944(.924)
TOT VOL (SCM) / SAM BLR (SCM)		75.1/ .00		204.5/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-16
BAROMETER MM HG 741.4
HUMIDITY G/KG 14.2
TEMPERATURE DEG C 25.6

3-BAG
CARBON DIOXIDE G/MI 371.4
FUEL ECONOMY MPG 23.92
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .15
OXIDES OF NITROGEN G/MI .18

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TEST NO. C-VAH-17 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.5 L(154. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 7/20/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 803. KM(499. MILES)

BAROMETER 739.14 MM HG(29.10 IN HG)

RELATIVE HUMIDITY 50. PCT

DRY BULB TEMP. 28.9 DEG C(84.0 DEG F)

ABS. HUMIDITY 12.8 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.07

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	767.1 (30.2)	772.2 (30.4)	767.1 (30.2)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	764.5 (30.1)	762.0 (30.0)	767.1 (30.2)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	42.2 (108.0)	42.2 (108.0)	42.8 (109.0)
BLOWER REVOLUTIONS	11221.	29227.	69408.	40431.
TOT FLOW STD. CU. METRES(SCF)	20.8 (735.)	54.2 (1915.)	128.8 (4549.)	74.9 (2645.)
THC SAMPLE METER/RANGE/PPM	60.1/ 2/ 60.	11.4/ 2/ 11.	10.5/ 2/ 10.	10.9/ 2/ 11.
THC BCKGRD METER/RANGE/PPM	10.9/ 2/ 11.	10.7/ 2/ 11.	10.0/ 2/ 10.	8.9/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	49.7/ 12/ 49.	1.1/ 12/ 1.	1.8/ 12/ 2.	3.7/ 12/ 4.
CO BCKGRD METER/RANGE/PPM	.4/ 12/ 0.	.5/ 12/ 0.	.5/ 12/ 0.	.2/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	92.9/ 14/ .9402	64.0/ 1/1.1767	79.1/ 14/ .6428	91.8/ 14/ .9116
CO2 BCKGRD METER/RANGE/PCT	11.9/ 14/ .0395	2.2/ 1/ .0388	12.0/ 14/ .0399	12.1/ 14/ .0403
NOX SAMPLE METER/RANGE/PPM	47.4/ 2/ 47.4	32.0/ 1/ 8.1	3.3/ 1/ .9	11.1/ 1/ 2.9
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	.0/ 1/ .0	.1/ 1/ .0	.1/ 1/ .0
DILUTION FACTOR	14.09	11.38	20.81	14.68
THC CONCENTRATION PPM	50.	2.	1.	3.
CO CONCENTRATION PPM	47.	1.	1.	3.
CO2 CONCENTRATION PCT	.9035	1.1413	.6048	.8741
NOX CONCENTRATION PPM	47.1	8.1	.8	2.8
THC MASS GRAMS	.60	.05	.07	.11
CO MASS GRAMS	1.14	.04	.18	.28
CO2 MASS GRAMS	344.2	1133.1	1426.7	1198.9
NOX MASS GRAMS	2.02	.90	.22	.44
THC GRAMS/MI	.88	.02	.02	.03
CO GRAMS/MI	1.68	.01	.05	.08
CO2 GRAMS/MI	507.2	383.6	364.2	334.7
NOX GRAMS/MI	2.97	.30	.06	.12
FUEL ECONOMY IN MPG	17.30	21.75	24.34	25.32
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.68	3.63	3.92	7.50
SCF, DRY	.975	.974	.978	.975
DFC, WET (DRY)	.917(.902)		.945(.929)	
TOT VOL (SCM) / SAM BLR (SCM)	75.0/ .00		203.8/ .00	

COMPOSITE RESULTS

TEST NUMBER C-VAH-17
BAROMETER MM HG 739.1
HUMIDITY G/KG 12.8
TEMPERATURE DEG C 28.9

CARBON DIOXIDE G/MI 364.9
FUEL ECONOMY MPG 24.33
HYDROCARBONS (THC) G/MI .06
CARBON MONOXIDE G/MI .11
OXIDES OF NITROGEN G/MI .23

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TEST NO. C-AH-18 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 8/ 2/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 858. KM(533. MILES)

BAROMETER 739.90 MM HG(29.13 IN HG)
RELATIVE HUMIDITY 54. PCT
BAG RESULTS

DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 10.0 GM/KG

NOX HUMIDITY CORRECTION FACTOR .98

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	44.4 (112.0)	42.2 (108.0)	42.8 (109.0)
BLOWER REVOLUTIONS	11250.	29198.	69438.
TOT FLOW STD. CU. METRES(SCF)	20.8 (736.)	54.3 (1916.)	128.9 (4553.)
THC SAMPLE METER/RANGE/PPM	40.2/ 2/ 40.	16.9/ 2/ 17.	15.2/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	17.6/ 2/ 18.	17.2/ 2/ 17.	15.4/ 2/ 15.
CO SAMPLE METER/RANGE/PPM	47.2/ 12/ 46.	2.6/ 12/ 2.	1.6/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	1.4/ 12/ 1.	1.3/ 12/ 1.	1.2/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	91.5/ 14/ .9040	96.1/ 14/ 1.0296	78.6/ 14/ .6341
CO2 BCKGRD METER/RANGE/PCT	13.8/ 14/ .0470	13.5/ 14/ .0458	13.3/ 14/ .0450
NOX SAMPLE METER/RANGE/PPM	40.3/ 2/ 40.3	18.9/ 1/ 4.8	2.4/ 1/ .6
NOX BCKGRD METER/RANGE/PPM	.4/ 2/ .4	.9/ 1/ .2	.1/ 1/ .0
DILUTION FACTOR	14.68	12.99	21.08
THC CONCENTRATION PPM	24.	1.	1.
CO CONCENTRATION PPM	44.	1.	0.
CO2 CONCENTRATION PCT	.8603	.9873	.5912
NOX CONCENTRATION PPM	39.9	4.6	.6
THC MASS GRAMS	.29	.03	.04
CO MASS GRAMS	1.06	.08	.06
CO2 MASS GRAMS	328.1	981.0	1395.6
NOX MASS GRAMS	1.56	.47	.15
THC GRAMS/MI	.42	.01	.01
CO GRAMS/MI	1.56	.03	.02
CO2 GRAMS/MI	483.4	336.3	360.6
NOX GRAMS/MI	2.29	.16	.04
FUEL ECONOMY IN MPG	18.20	24.31	26.36
RUN TIME SECONDS	140.	365.	868.
MEASURED DISTANCE MI	.68	3.60	2.92
SCF, DRY	.974	.973	.973
DFC, WET (DRY)	.925(.909)		.947(.930)
TOT VOL (SCM) / SAM BLR (SCM)	75.1/ .00		204.1/ .00

COMPOSITE RESULTS

TEST NUMBER C-AH-18
BAROMETER MM HG 739.9
HUMIDITY G/KG 10.0
TEMPERATURE DEG C 23.3

3-BAG
CARBON DIOXIDE G/MI 345.0
FUEL ECONOMY MPG 25.74
HYDROCARBONS (THC) G/MI .03
CARBON MONOXIDE G/MI .08
OXIDES OF NITROGEN G/MI .15

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TEST NO. C-AH-19 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 8/ 3/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 877. KM(545. MILES)

BAROMETER 740.66 MM HG(29.16 IN HG)

RELATIVE HUMIDITY 55. PCT

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

ABS. HUMIDITY 10.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .99

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET TEMP. DEG. C(DEG. F)	39.4 (103.0)	38.9 (102.0)	38.9 (102.0)	38.9 (102.0)
BLOWER REVOLUTIONS	11207.	29167.	69372.	40399.
TOT FLOW STD. CU. METRES(SCF)	21.0 (740.)	54.6 (1929.)	129.9 (4587.)	75.7 (2671.)
THC SAMPLE METER/RANGE/PPM	40.9/ 2/ 41.	13.5/ 2/ 13.	12.0/ 2/ 12.	13.0/ 2/ 13.
THC BCKGRD METER/RANGE/PPM	12.6/ 2/ 13.	12.6/ 2/ 13.	11.5/ 2/ 11.	11.7/ 2/ 12.
CO SAMPLE METER/RANGE/PPM	57.6/ 12/ 57.	2.7/ 12/ 3.	2.9/ 12/ 3.	4.0/ 12/ 4.
CO BCKGRD METER/RANGE/PPM	1.4/ 12/ 1.	1.2/ 12/ 1.	.9/ 12/ 1.	.5/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	91.1/ 14/ .8940	95.9/ 14/ 1.0237	77.2/ 14/ .6102	88.3/ 14/ .8273
CO2 BCKGRD METER/RANGE/PCT	12.1/ 14/ .0403	12.2/ 14/ .0407	12.0/ 14/ .0399	12.1/ 14/ .0403
NOX SAMPLE METER/RANGE/PPM	52.7/ 1/ 13.2	11.7/ 1/ 3.0	2.3/ 1/ .6	5.6/ 1/ 1.5
NOX BCKGRD METER/RANGE/PPM	.9/ 1/ .2	.6/ 1/ .2	.4/ 1/ .1	.5/ 1/ .1
DILUTION FACTOR	14.83	13.07	21.91	16.17
THC CONCENTRATION PPM	29.	2.	1.	2.
CO CONCENTRATION PPM	54.	1.	2.	3.
CO2 CONCENTRATION PCT	.8564	.9861	.5721	.7894
NOX CONCENTRATION PPM	13.0	2.9	.5	1.3
THC MASS GRAMS	.35	.06	.08	.09
CO MASS GRAMS	1.31	.09	.28	.29
CO2 MASS GRAMS	328.7	986.1	1360.6	1093.4
NOX MASS GRAMS	.52	.30	.12	.19
THC GRAMS/MI	.52	.02	.02	.02
CO GRAMS/MI	1.93	.03	.07	.08
CO2 GRAMS/MI	484.3	336.3	347.0	305.4
NOX GRAMS/MI	.76	.10	.03	.05
FUEL ECONOMY IN MPG	18.13	24.29	25.54	27.09
RUN TIME SECONDS	140.	365.	868.	505.
MEASURED DISTANCE MI	.68	3.61	3.92	7.50
SCF, DRY	.974	.973	.977	.975
DFC, WET (DRY)		.926(.910)		.948(.932)
TOT VOL (SCM) / SAM BLR (SCM)		75.6/ .00		205.6/ .00

IMPOSITE RESULTS

TEST NUMBER C-AH-19
BAROMETER MM HG 740.7
HUMIDITY G/KG 10.5
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 339.2
FUEL ECONOMY MPG 26.16
HYDROCARBONS (THC) G/MI .04
CARBON MONOXIDE G/MI .14
OXIDES OF NITROGEN G/MI .08

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PROJECT 08-1815-001

TEST NO. C-VAH-20 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 8/ 7/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 908. KM(564. MILES)

BAROMETER 744.98 MM HG(29.33 IN HG)

RELATIVE HUMIDITY 59. PCT

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)

ABS. HUMIDITY 11.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	751.8 (29.6)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	749.3 (29.5)	759.5 (29.9)	759.5 (29.9)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.9 (111.0)	43.9 (111.0)	41.1 (106.0)	43.3 (110.0)
BLOWER REVOLUTIONS	11222.	29218.	69341.	40400.
TOT FLOW STD. CU. METRES(SCF)	21.0 (741.)	54.6 (1927.)	130.2 (4596.)	75.5 (2667.)
THC SAMPLE METER/RANGE/PPM	47.7/ 2/ 48.	13.2/ 2/ 13.	10.0/ 2/ 10.	14.7/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	9.3/ 2/ 9.	8.7/ 2/ 9.	8.8/ 2/ 9.	12.2/ 2/ 12.
CO SAMPLE METER/RANGE/PPM	92.9/ 12/ 93.	7.1/ 12/ 7.	1.8/ 12/ 2.	6.6/ 12/ 6.
CO BCKGRD METER/RANGE/PPM	.6/ 12/ 1.	.4/ 12/ 0.	.6/ 12/ 1.	.6/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	92.4/ 14/ .9271	64.4/ 1/1.1842	78.9/ 14/ .6393	90.5/ 14/ .8792
CO2 BCKGRD METER/RANGE/PCT	11.4/ 14/ .0376	2.3/ 1/ .0406	11.7/ 14/ .0388	12.4/ 14/ .0415
NOX SAMPLE METER/RANGE/PPM	20.8/ 2/ 20.9	24.4/ 1/ 6.2	4.1/ 1/ 1.1	7.1/ 1/ 1.9
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	.7/ 1/ .2	.7/ 1/ .2	.7/ 1/ .2
DILUTION FACTOR	14.24	11.30	20.92	15.21
THC CONCENTRATION PPM	39.	5.	2.	3.
CO CONCENTRATION PPM	89.	6.	1.	6.
CO2 CONCENTRATION PCT	.8921	1.1472	.6024	.8405
NOX CONCENTRATION PPM	20.6	6.0	.9	1.7
THC MASS GRAMS	.47	.17	.12	.14
CO MASS GRAMS	2.19	.39	.17	.49
CO2 MASS GRAMS	342.9	1146.3	1435.6	1162.3
NOX MASS GRAMS	.84	.64	.23	.25
THC GRAMS/MI	.69	.06	.03	.04
CO GRAMS/MI	3.21	.13	.04	.14
CO2 GRAMS/MI	503.9	392.9	370.0	323.2
NOX GRAMS/MI	1.23	.22	.06	.07
FUEL ECONOMY IN MPG	17.35	21.34	23.96	25.50
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.68	3.60	3.88	7.48
SCF, DRY	.973	.971	.975	.974
DFC, WET (DRY)	.917(.899)		.946(.928)	
TOT VOL (SCM) / SAM BLR (SCM)	75.6/ .00		205.7/ .00	

COMPOSITE RESULTS

TEST NUMBER C-VAH-20
BAROMETER MM HG 745.0
HUMIDITY G/KG 11.1
TEMPERATURE DEG C 23.9

3-BAG
CARBON DIOXIDE G/MI 366.2
FUEL ECONOMY MPG 24.26
HYDROCARBONS (THC) G/MI .06
CARBON MONOXIDE G/MI .21
OXIDES OF NITROGEN G/MI .13

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TEST NO. C-VAH-21 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 8/ 8/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 925. KM(575. MILES)

BAROMETER 744.73 MM HG(29.32 IN HG)
RELATIVE HUMIDITY 61. PCT
BAG RESULTS

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.9 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	774.7 (30.5)	774.7 (30.5)	774.7 (30.5)
BLOWER INLET P MM. H2O(IN. H2O)	759.5 (29.9)	769.6 (30.3)	769.6 (30.3)	769.6 (30.3)
BLOWER INLET TEMP. DEG. C(DEG. F)	36.7 (98.0)	36.7 (98.0)	36.7 (98.0)	39.4 (103.0)
BLOWER REVOLUTIONS	11232.	29189.	69291.	40500.
TOT FLOW STD. CU. METRES(SCF)	21.3 (751.)	55.2 (1948.)	131.0 (4624.)	76.1 (2688.)
THC SAMPLE METER/RANGE/PPM	33.4/ 2/ 33.	12.0/ 2/ 12.	13.2/ 2/ 13.	16.2/ 2/ 16.
THC BCKGRD METER/RANGE/PPM	12.5/ 2/ 12.	11.8/ 2/ 12.	12.5/ 2/ 12.	16.2/ 2/ 16.
CO SAMPLE METER/RANGE/PPM	45.5/ 12/ 45.	1.6/ 12/ 2.	3.0/ 12/ 3.	1.9/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	1.5/ 12/ 1.	1.0/ 12/ 1.	1.0/ 12/ 1.	.9/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	89.8/ 14/ .8623	96.3/ 14/1.0355	75.1/ 14/ .5758	87.6/ 14/ .8114
CO2 BCKGRD METER/RANGE/PCT	12.3/ 14/ .0411	12.2/ 14/ .0407	12.5/ 14/ .0418	12.9/ 14/ .0434
NOX SAMPLE METER/RANGE/PPM	73.4/ 1/ 18.4	3.1/ 1/ .8	2.0/ 1/ .5	7.9/ 1/ 2.1
NOX BCKGRD METER/RANGE/PPM	.4/ 1/ .1	.2/ 1/ .1	.3/ 1/ .1	.5/ 1/ .1
DILUTION FACTOR	15.40	12.92	23.21	16.48
THC CONCENTRATION PPM	22.	1.	1.	1.
CO CONCENTRATION PPM	42.	1.	2.	1.
CO2 CONCENTRATION PCT	.8239	.9980	.5358	.7707
NOX CONCENTRATION PPM	18.3	.8	.5	1.9
THC MASS GRAMS	.27	.04	.09	.04
CO MASS GRAMS	1.03	.04	.29	.08
CO2 MASS GRAMS	320.7	1008.0	1284.7	1074.1
NOX MASS GRAMS	.75	.08	.11	.28
THC GRAMS/MI	.39	.01	.02	.01
CO GRAMS/MI	1.53	.01	.07	.02
CO2 GRAMS/MI	474.4	344.6	332.0	298.4
NOX GRAMS/MI	1.11	.03	.03	.08
FUEL ECONOMY IN MPG	18.55	23.99	26.70	29.71
RUN TIME SECONDS	141.	365.	867.	506.
MEASURED DISTANCE MI	.68	3.60	3.87	7.47
SCF, DRY	.972	.971	.975	.973
DFC, WET (DRY)		.926(.908)		.950(.932)
TOT VOL (SCM) / SAM BLR (SCM)		76.4/ .00		207.1/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-21
BAROMETER MM HG 744.7
HUMIDITY G/KG 10.9
TEMPERATURE DEG C 22.8

3-BAG
CARBON DIOXIDE G/MI 330.4
FUEL ECONOMY MPG 26.89
HYDROCARBONS (THC) G/MI .03
CARBON MONOXIDE G/MI .11
OXIDES OF NITROGEN G/MI .08

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TEST NO. C-VAH-22 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 8/10/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 959. KM(596. MILES)

BAROMETER 743.71 MM HG(29.28 IN HG)
RELATIVE HUMIDITY 62. PCT

DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 11.4 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.02

BAG RESULTS

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	759.5 (29.9)	762.0 (30.0)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	41.1 (106.0)	37.8 (100.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11232.	69307.	40388.
TOT FLOW STD. CU. METRES(SCF)	21.0 (743.)	130.7 (4614.)	75.8 (2675.)
THC SAMPLE METER/RANGE/PPM	86.3/ 2/ 86.	13.4/ 2/ 13.	11.7/ 2/ 12.
THC BCKGRD METER/RANGE/PPM	14.5/ 2/ 14.	12.2/ 2/ 12.	11.3/ 2/ 11.
CO SAMPLE METER/RANGE/PPM	60.6/ 13/ 144.	2.9/ 12/ 3.	1.2/ 12/ 1.
CO BCKGRD METER/RANGE/PPM	1.1/ 13/ 3.	1.3/ 12/ 1.	.8/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	92.5/ 14/ .9297	77.3/ 14/ .6118	89.3/ 14/ .8504
CO2 BCKGRD METER/RANGE/PCT	12.4/ 14/ .0415	12.2/ 14/ .0407	12.2/ 14/ .0407
NOX SAMPLE METER/RANGE/PPM	47.9/ 1/ 12.0	4.9/ 1/ 1.3	8.0/ 1/ 2.1
NOX BCKGRD METER/RANGE/PPM	.4/ 1/ .1	.3/ 1/ .1	.1/ 1/ .0
DILUTION FACTOR	14.07	21.84	15.73
THC CONCENTRATION PPM	73.	2.	1.
CO CONCENTRATION PPM	136.	2.	0.
CO2 CONCENTRATION PCT	.8912	.5730	.8123
NOX CONCENTRATION PPM	11.9	1.2	2.1
THC MASS GRAMS	.88	.13	.05
CO MASS GRAMS	3.33	.23	.04
CO2 MASS GRAMS	343.4	1370.8	1126.6
NOX MASS GRAMS	.49	.31	.30
THC GRAMS/MI	1.30	.03	.01
CO GRAMS/MI	4.90	.06	.01
CO2 GRAMS/MI	506.3	350.1	309.9
NOX GRAMS/MI	.72	.08	.08
FUEL ECONOMY IN MPG	17.12 22.37 24.08	25.32 26.80	28.61
RUN TIME SECONDS	140.	867.	505.
MEASURED DISTANCE MI	.68 3.62 2.94	3.92 7.55	3.64
SCF, DRY	.971 .970 .970	.974 .974	.972
DFC, WET (DRY)	.920(.902)	.948(.929)	
TOT VOL (SCM) / SAM BLR (SCM)	76.1/ .00	206.4/ .00	

COMPOSITE RESULTS

TEST NUMBER C-VAH-22
BAROMETER MM HG 743.7
HUMIDITY G/KG 11.4
TEMPERATURE DEG C 23.3

3-BAG
CARBON DIOXIDE G/MI 347.8
FUEL ECONOMY MPG 25.52
HYDROCARBONS (THC) G/MI .08
CARBON MONOXIDE G/MI .43
OXIDES OF NITROGEN G/MI .11

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TEST NO. C-VAH-23 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 8/15/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 993. KM(617. MILES)

BAROMETER 742.44 MM HG(29.23 IN HG)
RELATIVE HUMIDITY 54. PCT
BAG RESULTS

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 9.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .96

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	749.3 (29.5)	762.0 (30.0)	759.5 (29.9)
BLOWER INLET P MM. H2O(IN. H2O)	744.2 (29.3)	736.6 (29.0)	754.4 (29.7)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	40.0 (104.0)	40.6 (105.0)
BLOWER REVOLUTIONS	11225.	69371.	40402.
TOT FLOW STD. CU. METRES(SCF)	21.0 (741.)	130.5 (4607.)	75.7 (2672.)
THC SAMPLE METER/RANGE/PPM	46.9/ 2/ 47.	13.0/ 2/ 13.	13.1/ 2/ 13.
THC BCKGRD METER/RANGE/PPM	12.4/ 2/ 12.	12.4/ 2/ 12.	11.8/ 2/ 12.
CO SAMPLE METER/RANGE/PPM	54.4/ 12/ 54.	2.9/ 12/ 3.	3.9/ 12/ 4.
CO BCKGRD METER/RANGE/PPM	.7/ 12/ 1.	.8/ 12/ 1.	.8/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	90.1/ 14/ .8695	65.8/ 1/1.2105	79.7/ 14/ .6535
CO2 BCKGRD METER/RANGE/PCT	13.9/ 14/ .0474	2.7/ 1/ .0476	13.1/ 14/ .0442
NOX SAMPLE METER/RANGE/PPM	55.9/ 2/ 55.9	53.4/ 1/ 13.4	3.8/ 1/ 1.0
NOX BCKGRD METER/RANGE/PPM	.8/ 2/ .8	1.9/ 1/ .5	5.2/ 1/ 1.4
DILUTION FACTOR	15.24	11.06	15.90
THC CONCENTRATION PPM	35.	2.	2.
CO CONCENTRATION PPM	51.	2.	3.
CO2 CONCENTRATION PCT	.8252	1.1671	.7997
NOX CONCENTRATION PPM	55.1	12.9	1.1
THC MASS GRAMS	.43	.05	.09
CO MASS GRAMS	1.25	.13	.26
CO2 MASS GRAMS	316.9	1169.2	1108.0
NOX MASS GRAMS	2.13	1.30	.16
THC GRAMS/MI	.62	.02	.02
CO GRAMS/MI	1.83	.04	.07
CO2 GRAMS/MI	463.4	395.1	304.1
NOX GRAMS/MI	3.11	.44	.04
FUEL ECONOMY IN MPG	18.94	21.68	26.07
RUN TIME SECONDS	140.	365.	505.
MEASURED DISTANCE MI	.68	3.64	3.64
SCF, DRY	.975	.972	.975
DFC, WET (DRY)	.916(.901)		.946(.930)
TOT VOL (SCM) / SAM BLR (SCM)	75.7/ .00		206.2/ .00

IMPOSITE RESULTS

TEST NUMBER C-VAH-23
BAROMETER MM HG 742.4
HUMIDITY G/KG 9.5
TEMPERATURE DEG C 22.8

3-BAG
CARBON DIOXIDE G/MI 361.5
FUEL ECONOMY MPG 24.62
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .16
OXIDES OF NITROGEN G/MI .23

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TEST NO. C-VAH-24 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 8/16/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 1015. KM(631. MILES)

BAROMETER 742.19 MM HG(29.22 IN HG)
RELATIVE HUMIDITY 57. PCT
BAG RESULTS

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 9.8 GM/KG

NOX HUMIDITY CORRECTION FACTOR .97

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	749.3 (29.5)	759.5 (29.9)	762.0 (30.0)	762.0 (30.0)
BLOWER INLET P MM. H2O(IN. H2O)	739.1 (29.1)	756.9 (29.8)	759.5 (29.9)	756.9 (29.8)
BLOWER INLET TEMP. DEG. C(DEG. F)	42.8 (109.0)	41.7 (107.0)	40.6 (105.0)	42.2 (108.0)
BLOWER REVOLUTIONS	11227.	29220.	69312.	40403.
TOT FLOW STD. CU. METRES(SCF)	21.0 (741.)	54.6 (1928.)	129.7 (4580.)	75.4 (2662.)
THC SAMPLE METER/RANGE/PPM	49.7/ 2/ 50.	15.6/ 2/ 16.	13.9/ 2/ 14.	14.9/ 2/ 15.
THC BCKGRD METER/RANGE/PPM	15.1/ 2/ 15.	14.4/ 2/ 14.	13.7/ 2/ 14.	12.4/ 2/ 12.
CO SAMPLE METER/RANGE/PPM	70.0/ 12/ 69.	5.4/ 12/ 5.	3.4/ 12/ 3.	6.3/ 12/ 6.
CO BCKGRD METER/RANGE/PPM	.6/ 12/ 1.	1.0/ 12/ 1.	.8/ 12/ 1.	.9/ 12/ 1.
CO2 SAMPLE METER/RANGE/PCT	89.9/ 14/ .8647	63.3/ 1/1.1636	79.5/ 14/ .6499	89.0/ 14/ .8434
CO2 BCKGRD METER/RANGE/PCT	12.6/ 14/ .0422	2.3/ 1/ .0406	12.7/ 14/ .0426	12.9/ 14/ .0434
NOX SAMPLE METER/RANGE/PPM	43.4/ 2/ 43.4	46.5/ 1/ 11.7	2.5/ 1/ .7	4.8/ 1/ 1.3
NOX BCKGRD METER/RANGE/PPM	.3/ 2/ .3	1.2/ 1/ .3	.6/ 1/ .2	.6/ 1/ .2
DILUTION FACTOR	15.29	11.50	20.56	15.85
THC CONCENTRATION PPM	36.	2.	1.	3.
CO CONCENTRATION PPM	67.	4.	2.	5.
CO2 CONCENTRATION PCT	.8252	1.1265	.6094	.8027
NOX CONCENTRATION PPM	43.1	11.4	.5	1.1
THC MASS GRAMS	.43	.08	.06	.14
CO MASS GRAMS	1.62	.26	.37	.44
CO2 MASS GRAMS	317.0	1125.9	1447.0	1100.0
NOX MASS GRAMS	1.68	1.15	.12	.16
THC GRAMS/MI	.57	.03	.02	.04
CO GRAMS/MI	2.17	.09	.09	.12
CO2 GRAMS/MI	423.1	396.4	374.0	308.1
NOX GRAMS/MI	2.24	.41	.03	.04
FUEL ECONOMY IN MPG	20.70	21.99	22.36	23.70
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.75	3.59	2.84	7.47
SCF, DRY	.974	.972	.971	.976
DFC, WET (DRY)		.919(.902)		.946(.929)
TOT VOL (SCM) / SAM BLR (SCM)		75.6/ .00		205.1/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-24
BAROMETER MM HG 742.2
HUMIDITY G/KG 9.8
TEMPERATURE DEG C 22.2

3-BAG
CARBON DIOXIDE G/MI 361.7
FUEL ECONOMY MPG 24.58
HYDROCARBONS (THC) G/MI .05
CARBON MONOXIDE G/MI .19
OXIDES OF NITROGEN G/MI .19

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TEST NO. C-VAH-25 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 9/12/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 1040. KM(646. MILES)

BAROMETER 739.39 MM HG(29.11 IN HG)
RELATIVE HUMIDITY 58. PCT
BAG RESULTS

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.3 GM/KG

NOX HUMIDITY CORRECTION FACTOR .99

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	759.5 (29.9)	774.7 (30.5)	767.1 (30.2)
BLOWER INLET P MM. H2O(IN. H2O)	754.4 (29.7)	769.6 (30.3)	759.5 (29.9)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	41.1 (106.0)	41.7 (107.0)
BLOWER REVOLUTIONS	11250.	69369.	40416.
TOT FLOW STD. CU. METRES(SCF)	20.9 (737.)	128.9 (4553.)	75.1 (2653.)
THC SAMPLE METER/RANGE/PPM	98.5/ 2/ 98.	11.3/ 2/ 11.	9.8/ 2/ 10.
THC BCKGRD METER/RANGE/PPM	11.2/ 2/ 11.	10.5/ 2/ 10.	9.5/ 2/ 9.
CO SAMPLE METER/RANGE/PPM	68.9/ 14/ 323.	19.8/ 12/ 19.	1.3/ 12/ 1.
CO BCKGRD METER/RANGE/PPM	.2/ 14/ 1.	.1/ 12/ 0.	.0/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	94.9/ 14/ .9949	81.6/ 14/ .6884	92.3/ 14/ .9245
CO2 BCKGRD METER/RANGE/PCT	13.0/ 14/ .0438	12.6/ 14/ .0422	12.4/ 14/ .0415
NOX SAMPLE METER/RANGE/PPM	11.0/ 1/ 2.8	1.6/ 1/ .4	5.7/ 1/ 1.5
NOX BCKGRD METER/RANGE/PPM	.4/ 1/ .1	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	12.94	11.32	19.43
THC CONCENTRATION PPM	88.	8.	1.
CO CONCENTRATION PPM	310.	18.	1.
CO2 CONCENTRATION PCT	.9545	1.1418	.6483
NOX CONCENTRATION PPM	2.7	1.0	1.5
THC MASS GRAMS	1.06	.24	.10
CO MASS GRAMS	7.54	1.16	.19
CO2 MASS GRAMS	364.8	1135.0	1530.4
NOX MASS GRAMS	.11	.11	.21
THC GRAMS/MI	1.60	.08	.03
CO GRAMS/MI	11.37	.39	.05
CO2 GRAMS/MI	549.9	384.3	393.9
NOX GRAMS/MI	.16	.04	.03
FUEL ECONOMY IN MPG	15.48	21.13	23.02
RUN TIME SECONDS	140.	365.	867.
MEASURED DISTANCE MI	.66	3.62	2.95
SCF, DRY	.972	.971	.970
DFC, WET (DRY)		.915(.898)	.942(.925)
TOT VOL (SCM) / SAM BLR (SCM)		75.2/ .00	204.1/ .00

COMPOSITE RESULTS

TEST NUMBER C-VAH-25
BAROMETER MM HG 739.4
HUMIDITY G/KG 10.3
TEMPERATURE DEG C 22.8

3-BAG
CARBON DIOXIDE G/MI 382.6
FUEL ECONOMY MPG 23.17
HYDROCARBONS (THC) G/MI .09
CARBON MONOXIDE G/MI .53
OXIDES OF NITROGEN G/MI .04

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PROJECT 08-1815-001

TEST NO. CS-VAH-26 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO. 92
DATE 9/13/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1135-F
ODOMETER 1096. KM(681. MILES)

BAROMETER 740.92 MM HG(29.17 IN HG)

RELATIVE HUMIDITY 69. PCT

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)

ABS. HUMIDITY 11.9 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.04

BAG RESULTS

BAG NUMBER
DESCRIPTION

	1A	1B	2	3
	COLD TRANSIENT	COLD TRANSIENT	STABILIZED	HOT TRANSIENT
	0-140 SEC	140-505 SEC		
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	774.7 (30.5)	774.7 (30.5)	800.1 (31.5)
BLOWER INLET P MM. H2O(IN. H2O)	759.5 (29.9)	769.6 (30.3)	769.6 (30.3)	795.0 (31.3)
BLOWER INLET TEMP. DEG. C(DEG. F)	43.3 (110.0)	42.2 (108.0)	40.6 (105.0)	32.2 (90.0)
BLOWER REVOLUTIONS	11217.	29255.	69442.	40373.
TOT FLOW STD. CU. METRES(SCF)	20.8 (736.)	54.4 (1921.)	129.5 (4573.)	76.4 (2696.)
THC SAMPLE METER/RANGE/PPM	32.8/ 2/ 33.	17.6/ 2/ 18.	13.3/ 2/ 13.	12.8/ 2/ 13.
THC BCKGRD METER/RANGE/PPM	13.7/ 2/ 14.	13.6/ 2/ 14.	13.1/ 2/ 13.	12.7/ 2/ 13.
CO SAMPLE METER/RANGE/PPM	41.1/ 12/ 40.	66.5/ 12/ 66.	1.5/ 12/ 1.	1.7/ 12/ 2.
CO BCKGRD METER/RANGE/PPM	.8/ 12/ 1.	1.1/ 12/ 1.	.9/ 12/ 1.	.5/ 12/ 0.
CO2 SAMPLE METER/RANGE/PCT	93.9/ 14/ .9671	65.1/ 1/ 1.1973	79.8/ 14/ .6553	88.9/ 14/ .8411
CO2 BCKGRD METER/RANGE/PCT	12.7/ 14/ .0426	2.5/ 1/ .0441	12.7/ 14/ .0426	12.7/ 14/ .0426
NOX SAMPLE METER/RANGE/PPM	22.3/ 1/ 5.7	6.9/ 1/ 1.8	1.7/ 1/ .4	3.7/ 1/ 1.0
NOX BCKGRD METER/RANGE/PPM	.2/ 1/ .1	.0/ 1/ .0	.0/ 1/ .0	.0/ 1/ .0
DILUTION FACTOR	13.75	11.12	20.40	15.90
THC CONCENTRATION PPM	20.	5.	1.	1.
CO CONCENTRATION PPM	38.	62.	1.	1.
CO2 CONCENTRATION PCT	.9275	1.1572	.6147	.8011
NOX CONCENTRATION PPM	5.6	1.8	.4	1.0
THC MASS GRAMS	.24	.16	.06	.04
CO MASS GRAMS	.92	3.93	.09	.10
CO2 MASS GRAMS	354.0	1152.4	1457.6	1119.9
NOX MASS GRAMS	.23	.19	.12	.15
THC GRAMS/MI	.36	.06	.02	.01
CO GRAMS/MI	1.37	1.35	.02	.03
CO2 GRAMS/MI	524.3	396.3	375.2	310.5
NOX GRAMS/MI	.35	.07	.03	.04
FUEL ECONOMY IN MPG	16.81	20.97	23.63	25.77
RUN TIME SECONDS	140.	365.	867.	505.
MEASURED DISTANCE MI	.68	3.58	3.89	7.49
SCF, DRY	.969	.967	.972	.970
DFC, WET (DRY)		.915(.894)		.946(.925)
TOT VOL (SCM) / SAM BLR (SCM)		75.2/ .00		205.9/ .00

COMPOSITE RESULTS

TEST NUMBER CS-VAH-26
BAROMETER MM HG 740.9
HUMIDITY G/KG 11.9
TEMPERATURE DEG C 22.2

3-BAG
CARBON DIOXIDE G/MI 366.7
FUEL ECONOMY MPG 24.27
HYDROCARBONS (THC) G/MI .03
CARBON MONOXIDE G/MI .30
OXIDES OF NITROGEN G/MI .05

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PROJECT 08-3734-001

TEST NO. CS-VAH-27 RUN 1
VEHICLE MODEL 90 TOYOTA CELICA
ENGINE 2.2 L(134. CID) L-4
TRANSMISSION A4

VEHICLE NO.92
DATE 9/14/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG(3000. LBS)
ACTUAL ROAD LOAD 4.3 KW(5.7 HP)
GASOLINE EM-1026-F
ODOMETER 1152. KM(716. MILES)

BAROMETER 742.44 MM HG(29.23 IN HG)
RELATIVE HUMIDITY 65. PCT
BAG RESULTS

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 11.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

BAG NUMBER
DESCRIPTION

1A COLD TRANSIENT 0-140 SEC	1B COLD TRANSIENT 140-505 SEC	2 STABILIZED	3 HOT TRANSIENT
BLOWER DIF P MM. H2O(IN. H2O)	762.0 (30.0)	774.7 (30.5)	784.9 (30.9)
BLOWER INLET P MM. H2O(IN. H2O)	759.5 (29.9)	769.6 (30.3)	774.7 (30.5)
BLOWER INLET TEMP. DEG. C(DEG. F)	41.7 (107.0)	41.7 (107.0)	40.0 (104.0)
BLOWER REVOLUTIONS	11214.	29183.	69301.
TOT FLOW STD. CU. METRES(SCF)	21.0 (740.)	54.4 (1922.)	129.5 (4574.)
THC SAMPLE METER/RANGE/PPM	38.3/ 2/ 38.	17.6/ 2/ 18.	13.9/ 2/ 14.
THC BCKGRD METER/RANGE/PPM	13.0/ 2/ 13.	13.3/ 2/ 13.	13.6/ 2/ 14.
CO SAMPLE METER/RANGE/PPM	52.9/ 12/ 53.	40.8/ 12/ 41.	6.5/ 12/ 7.
CO BCKGRD METER/RANGE/PPM	5.2/ 12/ 5.	5.2/ 12/ 5.	4.8/ 12/ 5.
CO2 SAMPLE METER/RANGE/PCT	94.7/ 14/ .9892	64.8/ 1/1.1917	78.9/ 14/ .6393
CO2 BCKGRD METER/RANGE/PCT	15.5/ 14/ .0540	3.1/ 1/ .0547	15.3/ 14/ .0531
NOX SAMPLE METER/RANGE/PPM	36.3/ 1/ 9.1	6.6/ 1/ 1.7	2.0/ 1/ .5
NOX BCKGRD METER/RANGE/PPM	.8/ 1/ .2	.6/ 1/ .2	.6/ 1/ .2
DILUTION FACTOR	13.43	11.19	20.89
THC CONCENTRATION PPM	26.	5.	1.
CO CONCENTRATION PPM	46.	34.	2.
CO2 CONCENTRATION PCT	.9393	1.1419	.5887
NOX CONCENTRATION PPM	8.9	1.6	.4
THC MASS GRAMS	.32	.17	.07
CO MASS GRAMS	1.12	2.16	.27
CO2 MASS GRAMS	360.3	1137.9	1396.3
NOX MASS GRAMS	.36	.17	.09
THC GRAMS/MI	.47	.06	.02
CO GRAMS/MI	1.65	.74	.07
CO2 GRAMS/MI	531.9	391.9	359.0
NOX GRAMS/MI	.54	.06	.02
FUEL ECONOMY IN MPG	16.55	21.10	24.69
RUN TIME SECONDS	140.	365.	867.
MEASURED DISTANCE MI	.68	3.58	7.50
SCF, DRY	.970	.968	.973
DFC, WET (DRY)	.915(.896)		.946(.926)
TOT VOL (SCM) / SAM BLR (SCM)	75.4/ .00		205.0/ .00

IMPOSITE RESULTS

TEST NUMBER CS-VAH-27
BAROMETER MM HG 742.4
HUMIDITY G/KG 11.2
TEMPERATURE DEG C 22.2

3-BAG
CARBON DIOXIDE G/MI 357.7
FUEL ECONOMY MPG 24.89
HYDROCARBONS (THC) G/MI .04
CARBON MONOXIDE G/MI .24
OXIDES OF NITROGEN G/MI .06

A P P E N D I X N

1990 BUICK LESABRE FTP HYDROCARBON SPECIATION MEASUREMENTS

TABLE N-1. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-11

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	117	32.7	22.03	37	9.7	29.27	71	19.9	37.57	17.3	27.84
ETHYLENE	7	1.9	1.27	0	0.0	0.00	5	1.4	2.63	0.8	1.24
ETHANE	31	8.8	5.93	5	1.3	3.77	11	3.1	5.93	3.3	5.33
ACETYLENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPANE	2	0.5	0.32	1	0.2	0.72	0	0.0	0.00	0.2	0.38
PROPYLENE	6	1.6	1.07	5	1.2	3.52	0	0.0	0.00	0.9	1.50
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	3	0.8	0.52	1	0.1	0.40	0	0.0	0.00	0.2	0.37
BUTANE	42	11.8	7.93	7	1.9	5.59	2	0.4	0.81	3.5	5.63
1-BUTENE	1	0.2	0.16	0	0.0	0.00	0	0.0	0.00	0.0	0.08
ISOBUTYLENE	6	1.6	1.06	0	0.0	0.00	4	1.1	2.08	0.8	1.00
CIS-2-BUTENE	1	0.4	0.26	1	0.2	0.59	1	0.2	0.46	0.2	0.39
TRANS-2-BUTENE	0	0.1	0.09	0	0.0	0.00	0	0.0	0.00	0.0	0.04
BENZENE	21	5.9	3.96	7	1.7	5.13	19	5.3	10.05	3.6	5.70
TOLUENE	45	12.5	8.42	6	1.5	4.60	25	7.0	13.18	5.3	8.47
ISOPENTANE	53	14.9	10.04	33	8.6	26.00	12	3.4	8.45	8.5	13.61
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	8	2.2	1.46	0	0.0	0.00	0	0.0	0.00	0.4	0.72
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	4	1.2	0.84	0	0.0	0.00	0	0.0	0.00	0.3	0.41
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	3	0.8	0.51	0	0.0	0.00	0	0.0	0.00	0.2	0.25
4-METHYL-2-PENTENE	3	0.7	0.50	0	0.0	0.00	0	0.0	0.00	0.2	0.25
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	4	1.2	0.84	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.3	0.41
HEXANE	1	0.3	0.23	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C6 OLEFINS	1	0.4	0.25	0	0.0	0.00	0	0.0	0.00	0.1	0.12
										0.1	0.12

TABLE N-1 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-11

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	2	0.8	0.40	0	0.0	0.00	0	0.0	0.00	0.1	0.19
METHYLCYCLOPENTANE	4	1.1	0.75	0	0.0	0.00	0	0.0	0.00	0.2	0.37
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	23	6.4	4.29	0	0.0	0.00	13	3.5	6.59	2.3	3.64
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	1	0.3	0.23	0	0.0	0.00	0	0.0	0.00	0.1	0.11
2,2,4-TRIMETHYLPENTANE	47	13.2	8.93	8	2.2	6.61	20	5.6	10.67	5.4	8.70
N-HEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	1.1	0.74	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,4-TRIMETHYLPENTANE	15	4.1	2.78	0	0.0	0.00	0	0.0	0.00	0.2	0.37
2,3,3-TRIMETHYLPENTANE	7	1.9	1.27	0	0.0	0.00	0	0.0	0.00	0.9	1.37
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.4	0.63
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	34	9.4	6.35	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	5	1.4	0.96	17	4.4	13.27	0	0.0	0.00	2.6	4.13
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	9	2.5	1.71	0	0.0	0.00	0	0.0	0.00	0.5	0.84

TABLE N-1 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-11

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLOCTANE	2	0.7	0.46	0	0.0	0.00	0	0.0	0.00	0.1	0.23
O-ETHYLTOLUENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,2,4-TRIMETHYLBENZENE	12	3.3	2.19	0	0.0	0.00	5	1.4	2.64	1.1	1.69
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYMEANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	4	1.0	0.70	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.2	0.34
C8-C9 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	2	0.5	0.35	1	0.2	0.52	2	0.5	0.94	0.3	0.54
ACETALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	1	0.3	0.18	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.09
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-2. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	130	35.8	27.69	47	12.0	49.50	66	18.4	40.02	18.7	35.97
ETHYLENE	12	3.2	2.48	3	0.8	3.31	2	0.6	1.38	1.3	2.41
ETHANE	29	8.1	6.27	7	1.9	7.83	10	2.8	6.02	3.4	6.59
ACETYLENE	1	0.2	0.12	0	0.0	0.00	0	0.0	0.00	0.0	0.08
PROPANE	2	0.7	0.51	0	0.0	0.21	2	0.4	0.92	0.3	0.53
PROPYLENE	4	1.0	0.80	0	0.0	0.00	0	0.0	0.00	0.2	0.41
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	3	0.7	0.55	1	0.2	1.02	1	0.3	0.63	0.4	0.69
BUTANE	41	11.4	8.76	0	0.0	0.00	7	1.8	3.94	2.8	5.46
1-BUTENE	1	0.2	0.16	0	0.0	0.00	0	0.0	0.00	0.0	0.08
ISOBUTYLENE	4	1.1	0.85	2	0.6	2.37	2	0.5	1.05	0.7	1.27
CIS-2-BUTENE	1	0.2	0.18	0	0.0	0.00	0	0.0	0.00	0.0	0.09
TRANS-2-BUTENE	0	0.1	0.10	0	0.0	0.00	0	0.0	0.00	0.0	0.05
BENZENE	18	4.3	3.35	10	2.5	10.35	13	3.5	7.69	3.2	6.10
TOLUENE	34	9.3	7.19	8	2.1	8.82	0	0.0	0.00	3.0	5.85
ISOPENTANE	56	15.6	12.01	0	0.0	0.00	22	6.1	13.27	4.9	9.39
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	8	2.1	1.62	0	0.0	0.00	0	0.0	0.00	0.4	0.84
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	3	1.0	0.74	0	0.0	0.00	0	0.0	0.00	0.2	0.38
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	4	1.2	0.93	0	0.0	0.00	0	0.0	0.00	0.2	0.48
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	3	0.9	0.69	0	0.0	0.00	0	0.0	0.00	0.2	0.35
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-2 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	5	1.3	0.88	0	0.0	0.00	0	0.0	0.00	0.3	0.50
METHYLCYCLOPENTANE	1	0.3	0.21	0	0.0	0.00	0	0.0	0.00	0.1	0.11
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	20	5.4	4.19	0	0.0	0.00	7	2.0	4.30	1.7	3.20
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	1	0.3	0.24	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYLPENTANE	47	12.9	9.93	15	3.9	16.09	16	4.4	9.64	5.9	11.36
N-HEPTANE	1	0.3	0.21	0	0.0	0.00	0	0.0	0.00	0.1	0.11
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	1.0	0.79	0	0.0	0.00	0	0.0	0.00	0.2	0.41
2,3,4-TRIMETHYLPENTANE	6	1.6	1.24	0	0.0	0.00	0	0.0	0.00	0.3	0.64
2,3,3-TRIMETHYLPENTANE	4	1.2	0.95	0	0.0	0.00	0	0.0	0.00	0.3	0.49
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	2	0.5	0.42	0	0.0	0.00	0	0.0	0.00	0.1	0.21
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	13	3.7	2.85	0	0.0	0.00	16	4.5	9.71	2.0	3.82
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	3	0.9	0.66	0	0.0	0.00	0	0.0	0.00	0.2	0.34

TABLE N-2 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLOCTANE	0	0.1	0.08	0	0.0	0.00	0	0.0	0.00	0.0	0.04
O-ETHYLTOLUENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,2,4-TRIMETHYLBENZENE	4	1.2	0.90	0	0.0	0.00	2	0.4	0.86	0.4	0.70
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	3	0.8	0.65	0	0.0	0.00	0	0.0	0.00	0.2	0.33
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	2	0.7	0.52	0	0.1	0.29	0	0.0	0.00	0.2	0.34
ACETALDEHYDE	1	0.3	0.22	0	0.0	0.20	1	0.2	0.48	0.1	0.28
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-3. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	128	36.2	8.70	53	13.7	29.43	90	25.0	27.32	21.4	15.89
ETHYLENE	94	26.6	6.40	2	0.4	0.91	14	3.9	4.31	6.8	5.03
ETHANE	29	8.2	1.98	3	0.7	1.62	14	3.9	4.27	3.1	2.34
ACETYLENE	13	3.6	0.87	0	0.0	0.00	0	0.0	0.00	0.7	0.55
PROPANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLENE	90	25.2	6.07	27	7.0	15.09	12	3.3	3.61	9.7	7.23
1,3-BUTADIENE	15	4.2	1.00	0	0.0	0.00	0	0.0	0.00	0.9	0.64
ISOBUTANE	6	1.6	0.38	2	0.4	0.87	3	0.8	0.83	0.7	0.55
BUTANE	71	20.0	4.81	7	1.9	4.07	19	5.4	5.92	6.8	4.88
1-BUTENE	11	3.0	0.72	0	0.0	0.00	0	0.0	0.00	0.6	0.46
ISOBUTYLENE	52	14.6	3.52	0	0.0	0.00	6	1.7	1.87	3.5	2.58
CIS-2-BUTENE	5	1.5	0.37	0	0.0	0.00	1	0.4	0.40	0.4	0.31
TRANS-2-BUTENE	7	2.0	0.48	0	0.0	0.00	0	0.0	0.00	0.4	0.30
BENZENE	58	16.4	3.95	26	6.8	14.55	33	9.1	9.93	9.4	6.97
TOLUENE	264	74.3	17.88	0	0.0	0.00	39	10.9	11.96	18.3	13.57
ISOPENTANE	72	20.2	4.86	0	0.0	0.00	22	6.2	6.74	5.8	4.33
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	16	4.4	1.06	0	0.0	0.00	0	0.0	0.00	0.9	0.67
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	7	1.9	0.45	0	0.0	0.00	0	0.0	0.00	0.4	0.29
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	1	0.2	0.06	0	0.0	0.00	0	0.0	0.00	0.0	0.04
4-METHYL-1-PENTENE	1	0.2	0.06	0	0.0	0.00	0	0.0	0.00	0.0	0.04
2,3-DIMETHYLBUTANE	1	0.2	0.06	0	0.0	0.00	0	0.0	0.00	0.0	0.04
2,3-DIMETHYL-1-BUTENE	7	2.1	0.50	0	0.0	0.00	0	0.0	0.00	0.4	0.32
2-METHYLPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-2-PENTENE	6	1.7	0.40	0	0.0	0.00	0	0.0	0.00	0.3	0.25
MTBE	6	1.6	0.39	0	0.0	0.00	0	0.0	0.00	0.3	0.25
3-METHYLPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	7	1.9	0.45	0	0.0	0.00	0	0.0	0.00	0.4	0.28
HEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C6 OLEFINS	6	1.8	0.44	0	0.0	0.00	0	0.0	0.00	0.4	0.28
	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-3 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	13	3.7	0.89	0	0.0	0.00	0	0.0	0.00	0.8	0.57
METHYLCYCLOPENTANE	6	1.6	0.38	0	0.0	0.00	0	0.0	0.00	0.3	0.24
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	48	13.6	3.27	0	0.0	0.00	13	3.7	4.08	3.8	2.84
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	5	1.3	0.31	0	0.0	0.00	0	0.0	0.00	0.3	0.20
2,2,4-TRIMETHYLPENTANE	113	31.9	7.67	25	6.5	14.08	33	9.2	10.07	12.5	9.27
N-HEPTANE	3	0.9	0.21	0	0.0	0.00	0	0.0	0.00	0.2	0.13
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	4	1.0	0.24	0	0.0	0.00	0	0.0	0.00	0.2	0.15
2,4,4-TRIMETHYL-2-PENTENE	2	0.5	0.13	0	0.0	0.00	0	0.0	0.00	0.1	0.08
2,4/2-5-DIMETHYLHEXANE	13	3.6	0.87	0	0.0	0.00	0	0.0	0.00	0.7	0.55
2,3,4-TRIMETHYLPENTANE	19	5.3	1.28	0	0.0	0.00	3	0.7	0.82	1.3	0.97
2,3,3-TRIMETHYLPENTANE	12	3.4	0.83	0	0.0	0.00	3	0.7	0.82	0.9	0.68
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	4	1.2	0.29	0	0.0	0.00	0	0.0	0.00	0.2	0.18
3-METHYLHEPTANE	4	1.1	0.26	0	0.0	0.00	0	0.0	0.00	0.2	0.17
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	1.3	0.30	0	0.0	0.00	0	0.0	0.00	0.3	0.19
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	3	0.8	0.19	0	0.0	0.00	0	0.0	0.00	0.2	0.12
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	17	4.9	1.18	0	0.0	0.00	4	1.0	1.14	1.3	0.96
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	73	20.7	4.98	0	0.0	0.00	14	3.9	4.30	5.3	3.96
2-METHYLOCTANE	2	0.5	0.11	0	0.0	0.00	0	0.0	0.00	0.1	0.07
4-METHYLOCTANE	2	0.5	0.11	0	0.0	0.00	0	0.0	0.00	0.1	0.07
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	30	8.3	2.00	0	0.0	0.00	0	0.0	0.00	1.7	1.27

TABLE N-3 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	5	1.4	0.34	0	0.0	0.00	0	0.0	0.00	0.3	0.22
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	4	1.1	0.27	0	0.0	0.00	0	0.0	0.00	0.2	0.17
2,3-DIMETHYLOCTANE	9	2.6	0.63	0	0.0	0.00	0	0.0	0.00	0.5	0.40
O-ETHYLTOLUENE	5	1.3	0.31	0	0.0	0.00	0	0.0	0.00	0.3	0.19
1,2,4-TRIMETHYLBENZENE	23	6.4	1.55	7	1.9	3.99	5	1.4	1.53	2.7	1.98
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	5	1.3	0.31	19	5.0	10.83	0	0.0	0.00	0.0	0.00
INDAN(E)	1	0.4	0.09	7	1.8	3.93	0	0.0	0.00	2.9	2.14
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	1.0	0.76
M-DIETHYLBENZENE	1	0.4	0.09	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	2	0.6	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.06
N-BUTYLBENZENE/P-DIETHYLBENZENE	2	0.5	0.12	0	0.0	0.00	0	0.0	0.00	0.1	0.10
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.08
2-METHYLDECANE	3	0.8	0.18	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.2	0.12
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	11	3.0	0.71	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.6	0.45
C8-C9 OLEFINS	17	4.9	1.17	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	1.0	0.74
FORMALDEHYDE	18	5.2	1.25	1	0.2	0.42	0	0.0	0.00	0.0	0.00
ACETALDEHYDE	11	3.0	0.73	0	0.0	0.00	0	0.0	0.00	1.2	0.87
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.8	0.46
ACETONE	11	3.0	0.73	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.1	0.21	0	0.1	0.09	0.7	0.52
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-4. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	145	40.4	9.21	94	24.5	31.99	94	26.4	32.43	28.3	18.51
ETHYLENE	109	30.3	6.91	3	0.9	1.14	10	2.8	3.42	7.5	4.90
ETHANE	33	9.1	2.08	13	3.4	4.46	14	4.0	4.93	4.8	3.12
ACETYLENE	8	2.2	0.51	0	0.0	0.00	2	0.6	0.70	0.6	0.41
PROPANE	3	0.8	0.18	0	0.0	0.00	5	1.3	1.59	0.5	0.34
PROPYLENE	71	19.9	4.54	11	2.9	3.83	13	3.6	4.39	6.6	4.33
1,3-BUTADIENE	12	3.3	0.75	0	0.0	0.00	0	0.0	0.00	0.7	0.44
ISOBUTANE	1	0.4	0.09	0	0.0	0.00	3	0.9	1.10	0.3	0.21
BUTANE	62	17.2	3.92	17	4.4	5.80	21	5.8	7.09	7.5	4.87
1-BUTENE	12	3.5	0.79	0	0.0	0.00	0	0.0	0.00	0.7	0.47
ISOBUTYLENE	27	7.6	1.73	2	0.6	0.77	0	0.0	0.00	1.9	1.23
CIS-2-BUTENE	4	1.0	0.23	0	0.0	0.00	1	0.4	0.45	0.3	0.20
TRANS-2-BUTENE	5	1.5	0.35	0	0.0	0.00	1	0.2	0.30	0.4	0.25
BENZENE	144	40.1	9.14	102	26.5	34.62	33	9.3	11.37	24.6	16.09
TOLUENE	191	53.3	12.15	24	6.2	8.04	33	9.3	11.41	16.8	10.97
ISOPENTANE	57	15.8	3.60	0	0.0	0.00	0	0.0	0.00	3.3	2.14
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	37	10.3	2.34	0	0.0	0.00	0	0.0	0.00	2.1	1.39
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	4	1.3	0.29	0	0.0	0.00	0	0.0	0.00	0.3	0.17
TRANS-2-PENTENE	4	1.0	0.23	0	0.0	0.00	0	0.0	0.00	0.2	0.14
CIS-2-PENTENE	3	0.7	0.16	0	0.0	0.00	0	0.0	0.00	0.1	0.10
2-METHYL-2-BUTENE	9	2.5	0.56	0	0.0	0.00	0	0.0	0.00	0.5	0.34
2,2-DIMETHYLBUTANE	4	1.1	0.25	0	0.0	0.00	0	0.0	0.00	0.2	0.15
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	1	0.2	0.05	0	0.0	0.00	0	0.0	0.00	0.0	0.03
3-METHYL-1-PENTENE	1	0.2	0.05	0	0.0	0.00	0	0.0	0.00	0.0	0.03
4-METHYL-1-PENTENE	1	0.2	0.05	0	0.0	0.00	0	0.0	0.00	0.0	0.03
2,3-DIMETHYLBUTANE	12	3.4	0.78	0	0.0	0.00	0	0.0	0.00	0.7	0.47
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	17	4.8	1.09	0	0.0	0.00	0	0.0	0.00	1.0	0.65
4-METHYL-2-PENTENE	17	4.7	1.07	0	0.0	0.00	0	0.0	0.00	1.0	0.63
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	17	4.9	1.11	0	0.0	0.00	0	0.0	0.00	1.0	0.66
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	20	5.5	1.25	0	0.0	0.00	0	0.0	0.00	1.1	0.74
C6 OLEFINS	1	0.4	0.09	0	0.0	0.00	0	0.0	0.00	0.1	0.06

TABLE N-4 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	8	2.3	0.51	0	0.0	0.00	0	0.0	0.00	0.5	0.31
METHYLCYCLOPENTANE	7	2.0	0.45	0	0.0	0.00	0	0.0	0.00	0.4	0.27
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	3	0.7	0.17	0	0.0	0.00	0	0.0	0.00	0.2	0.10
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	33	9.3	2.11	26	6.8	8.87	0	0.0	0.00	5.4	3.56
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	12	3.3	0.75	0	0.0	0.00	0	0.0	0.00	0.7	0.45
2,2,4-TRIMETHYLPENTANE	53	14.9	3.39	0	0.0	0.00	19	5.3	6.47	4.5	2.96
N-HEPTANE	8	2.2	0.51	0	0.0	0.00	0	0.0	0.00	0.5	0.30
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	5	1.4	0.33	0	0.0	0.00	0	0.0	0.00	0.3	0.19
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	10	2.9	0.65	0	0.0	0.00	0	0.0	0.00	0.6	0.39
2,3,4-TRIMETHYLPENTANE	8	2.4	0.54	0	0.0	0.00	4	1.1	1.39	0.8	0.52
2,3,3-TRIMETHYLPENTANE	7	1.8	0.42	0	0.0	0.00	4	1.1	1.39	0.7	0.45
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	9	2.6	0.58	0	0.0	0.00	0	0.0	0.00	0.5	0.35
3-METHYLHEPTANE	9	2.4	0.55	0	0.0	0.00	0	0.0	0.00	0.5	0.33
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	1.1	0.24	0	0.0	0.00	0	0.0	0.00	0.2	0.14
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	6	1.6	0.35	0	0.0	0.00	0	0.0	0.00	0.3	0.21
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	2	0.6	0.13	0	0.0	0.00	0	0.0	0.00	0.1	0.07
ETHYLBENZENE	40	11.1	2.53	0	0.0	0.00	6	1.8	2.15	2.8	1.82
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	99	27.6	6.30	0	0.0	0.00	17	4.9	6.01	7.1	4.62
2-METHYLOCTANE	5	1.3	0.31	0	0.0	0.00	0	0.0	0.00	0.3	0.18
4-METHYLOCTANE	5	1.3	0.31	0	0.0	0.00	0	0.0	0.00	0.3	0.18
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	39	10.9	2.49	0	0.0	0.00	8	2.2	2.72	2.9	1.88

TABLE N-4 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	2	0.7	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.09
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	6	1.7	0.38	0	0.0	0.00	0	0.0	0.00	0.3	0.23
2,3-DIMETHYLOCTANE	15	4.3	0.97	0	0.0	0.00	0	0.0	0.00	0.9	0.58
O-ETHYLTOLUENE	8	2.1	0.48	0	0.0	0.00	0	0.0	0.00	0.4	0.28
1,2,4-TRIMETHYLBENZENE	36	10.0	2.28	0	0.0	0.00	2	0.6	0.71	2.2	1.46
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	6	1.8	0.41	0	0.0	0.00	0	0.0	0.00	0.4	0.24
INDAN(E)	3	0.8	0.18	0	0.0	0.00	0	0.0	0.00	0.2	0.11
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	2	0.7	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.09
1-METHYL-3-PROPYLBENZENE	3	0.9	0.21	0	0.0	0.00	0	0.0	0.00	0.2	0.12
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	0.8	0.19	0	0.0	0.00	0	0.0	0.00	0.2	0.11
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	4	1.2	0.27	0	0.0	0.00	0	0.0	0.00	0.2	0.16
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	1	0.4	0.09	0	0.0	0.00	0	0.0	0.00	0.1	0.06
1,3,5-TRIMETHYLBENZENE	11	3.2	0.72	0	0.0	0.00	0	0.0	0.00	0.7	0.43
C7 OLEFINS	6	1.7	0.38	0	0.0	0.00	0	0.0	0.00	0.3	0.23
C8-C8 OLEFINS	27	7.5	1.70	0	0.0	0.00	0	0.0	0.00	1.5	1.01
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	21	5.8	1.31	1	0.4	0.47	0	0.0	0.00	1.4	0.90
ACETALDEHYDE	7	2.1	0.47	0	0.0	0.00	0	0.0	0.00	0.4	0.28
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	1	0.3	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
METHYL ETHYL KETONE	1	0.3	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
BENZALDEHYDE	5	1.5	0.34	0	0.0	0.00	0	0.0	0.00	0.3	0.20
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-5. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	119	33.4	26.98	81	20.8	35.65	63	17.6	62.51	22.5	35.44
ETHYLENE	9	2.5	2.02	4	1.0	1.76	1	0.4	1.45	1.2	1.83
ETHANE	27	7.6	6.16	11	2.9	4.92	8	2.4	8.34	3.7	5.83
ACETYLENE	1	0.2	0.13	0	0.0	0.00	0	0.0	0.00	0.0	0.05
PROPANE	3	0.8	0.66	10	2.5	4.31	3	0.8	2.88	1.7	2.67
PROPYLENE	8	2.3	1.83	5	1.2	2.02	0	0.0	0.00	1.1	1.70
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	1	0.3	0.26	0	0.0	0.00	0	0.0	0.00	0.1	0.10
BUTANE	46	12.8	10.34	12	3.1	5.35	10	2.7	9.58	5.0	7.87
1-BUTENE	1	0.2	0.20	0	0.0	0.00	0	0.0	0.00	0.0	0.08
ISOBUTYLENE	2	0.7	0.55	2	0.4	0.67	1	0.4	1.30	0.4	0.70
CIS-2-BUTENE	1	0.4	0.31	0	0.0	0.00	0	0.0	0.00	0.1	0.13
TRANS-2-BUTENE	1	0.2	0.20	0	0.0	0.00	0	0.0	0.00	0.0	0.08
BENZENE	26	7.3	5.93	49	12.8	21.83	6	1.7	6.17	8.6	13.55
TOLUENE	9	2.5	2.02	46	11.9	20.44	0	0.0	0.00	6.7	10.56
ISOPENTANE	25	7.1	5.77	0	0.0	0.00	0	0.0	0.00	1.5	2.32
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	15	4.2	3.39	0	0.0	0.00	0	0.0	0.00	0.0	1.36
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	5	1.5	1.23	0	0.0	0.00	0	0.0	0.00	0.3	0.49
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	6	1.8	1.43	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.4	0.57
2-METHYLPENTANE	7	1.9	1.52	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-2-PENTENE	7	1.8	1.48	0	0.0	0.00	0	0.0	0.00	0.4	0.61
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.4	0.59
3-METHYLPENTANE	7	1.9	1.54	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.4	0.62
HEXANE	7	1.8	1.49	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.4	0.60
										0.0	0.00

TABLE N-5 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	3	0.8	0.63	0	0.0	0.00	0	0.0	0.00	0.2	0.25
METHYLCYCLOPENTANE	1	0.3	0.28	0	0.0	0.00	0	0.0	0.00	0.1	0.11
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	8	2.2	1.79	0	0.0	0.00	0	0.0	0.00	0.5	0.72
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	3	0.9	0.71	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYLPENTANE	20	5.7	4.63	6	1.5	2.62	8	2.1	7.47	0.2	0.29
N-HEPTANE	2	0.6	0.51	0	0.0	0.00	0	0.0	0.00	0.1	4.02
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.21
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	3	0.8	0.65	0	0.0	0.00	0	0.0	0.00	0.2	0.26
2,3,4-TRIMETHYLPENTANE	2	0.6	0.51	0	0.0	0.00	0	0.0	0.00	0.1	0.21
2,3,3-TRIMETHYLPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	3	0.7	0.57	0	0.0	0.00	0	0.0	0.00	0.1	0.23
2-/4-METHYLHEPTANE	2	0.6	0.45	0	0.0	0.00	0	0.0	0.00	0.1	0.18
3-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	2	0.4	0.34	0	0.0	0.00	0	0.0	0.00	0.1	0.14
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	8	2.3	1.87	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.5	0.75
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	24	6.8	5.49	0	0.0	0.00	0	0.0	0.00	1.4	2.20
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	10	2.7	2.19	0	0.0	0.00	0	0.0	0.00	0.6	0.88

TABLE N-5 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLOCTANE	2	0.4	0.34	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-ETHYLTOLUENE	1	0.3	0.24	0	0.0	0.00	0	0.0	0.00	0.1	0.14
1,2,4-TRIMETHYLBENZENE	8	2.3	1.90	0	0.1	0.17	0	0.1	0.31	0.1	0.10
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.6	0.88
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYMEANE	2	0.6	0.48	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.19
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	2	0.5	0.43	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.17
C8-C9 OLEFINS	2	0.7	0.56	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.22
FORMALDEHYDE	0	0.0	0.00	1	0.1	0.25	0	0.0	0.00	0.0	0.00
ACETALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.12
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-6. HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-16

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	122	33.9	28.75	80	20.6	31.42	80	22.2	32.33	23.8	30.80
ETHYLENE	5	1.3	1.14	3	0.8	1.19	2	0.6	0.89	0.8	1.10
ETHANE	29	8.0	6.78	0	0.0	0.00	10	2.9	4.18	2.4	3.17
ACETYLENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPANE	1	0.3	0.24	0	0.0	0.00	3	0.9	1.30	0.3	0.39
PROPYLENE	3	0.8	0.70	0	0.0	0.00	0	0.0	0.00	0.2	0.22
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	1	0.3	0.26	0	0.0	0.00	1	0.3	0.37	0.1	0.17
BUTANE	33	9.1	7.75	9	2.4	3.72	12	3.4	5.01	4.1	5.31
1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYLENE	2	0.5	0.41	0	0.0	0.00	1	0.4	0.53	0.2	0.28
CIS-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZENE	12	3.4	2.85	13	3.2	4.95	14	4.0	5.83	3.5	4.50
TOLUENE	18	5.1	4.34	23	6.1	9.25	9	2.6	3.76	4.9	6.36
ISOPENTANE	31	8.6	7.29	21	5.4	8.29	20	5.5	8.03	6.1	7.91
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	12	3.4	2.87	12	3.2	4.91	10	2.8	4.01	3.1	4.05
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	5	1.4	1.21	0	0.0	0.00	0	0.0	0.00	0.3	0.38
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	9	2.6	2.23	9	2.2	3.36	10	2.7	4.00	2.4	3.16
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	11	3.0	2.54	9	2.2	3.36	10	2.7	4.00	2.5	3.26
4-METHYL-2-PENTENE	11	2.9	2.48	8	2.1	3.28	10	2.7	3.90	2.5	3.18
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	8	2.1	1.80	12	3.2	4.89	10	2.7	4.00	2.8	3.69
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	6	1.8	1.53	10	2.6	3.97	7	1.9	2.72	2.2	2.89
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE N-6 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-16

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	3	0.8	0.70	0	0.0	0.00	0	0.0	0.00	0.2	0.22
METHYLCYCLOPENTANE	2	0.5	0.43	0	0.0	0.00	0	0.0	0.00	0.1	0.14
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	18	4.9	4.16	19	5.0	7.61	11	3.1	4.52	4.4	5.76
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	3	0.7	0.62	0	0.0	0.00	0	0.0	0.00	0.2	0.19
2,2,4-TRIMETHYLPENTANE	16	4.4	3.75	8	2.1	3.25	12	3.2	4.73	2.9	3.77
N-HEPTANE	2	0.4	0.38	0	0.0	0.00	0	0.0	0.00	0.1	0.12
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,4-TRIMETHYLPENTANE	4	1.2	1.05	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,3-TRIMETHYLPENTANE	2	0.5	0.44	0	0.0	0.00	0	0.0	0.00	0.3	0.33
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.14
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEPTANE	3	0.8	0.70	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.2	0.22
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	6	1.6	1.37	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.3	0.43
P-XYLENE/M-XYLENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLOCTANE	15	4.1	3.50	0	0.0	0.00	10	2.8	4.03	1.6	2.09
4-METHYLOCTANE	1	0.4	0.32	0	0.0	0.00	0	0.0	0.00	0.1	0.10
3-METHYLOCTANE	1	0.4	0.32	0	0.0	0.00	0	0.0	0.00	0.1	0.10
O-XYLENE	5	1.3	1.11	14	3.5	5.36	0	0.0	0.00	0.0	0.00

TABLE N-6 (Cont'd). HYDROCARBON SPECIATION FOR THE BUICK LESABRE, TEST NO. LS-AH-16

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLOCTANE	1	0.3	0.26	0	0.0	0.00	0	0.0	0.00	0.1	0.08
O-ETHYLTOLUENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,2,4-TRIMETHYLBENZENE	7	2.0	1.69	0	0.0	0.00	4	1.0	1.52	0.7	0.91
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYMEANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	15	4.1	3.44	0	0.0	0.00	0	0.0	0.00	0.8	1.09
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	1	0.4	0.30	2	0.5	0.71	1	0.2	0.34	0.4	0.49
ACETALDEHYDE	0	0.0	0.00	1	0.3	0.46	0	0.0	0.00	0.2	0.20
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	1	0.2	0.14	0	0.0	0.00	0	0.0	0.00	0.0	0.04
METHYLETHYL KETONE	1	0.2	0.14	0	0.0	0.00	0	0.0	0.00	0.0	0.04
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

A P P E N D I X O

**1990 BUICK LESABRE
FTP COLD-START HYDROCARBON SPECIATION MEASUREMENTS**

**TABLE O-1. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-11**

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	74	109.7	22.9	43	14.9	21.0	117	32.7	22.03
ETHYLENE	7	10.0	2.1	0	0.0	0.0	7	1.9	1.27
ETHANE	24	35.3	7.4	8	2.7	3.8	31	8.8	5.93
ACETYLENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPANE	2	2.5	0.5	0	0.0	0.0	2	0.5	0.32
PROPYLENE	6	8.5	1.8	0	0.0	0.0	6	1.6	1.07
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	2	2.8	0.5	1	0.3	0.5	3	0.8	0.52
BUTANE	31	46.2	9.7	11	3.8	5.4	42	11.8	7.93
1-BUTENE	1	1.3	0.3	0	0.0	0.0	1	0.2	0.16
ISOBUTYLENE	3	5.1	1.1	2	0.8	1.1	6	1.6	1.06
CIS-2-BUTENE	1	1.1	0.2	1	0.2	0.3	1	0.4	0.26
TRANS-2-BUTENE	0	0.7	0.2	0	0.0	0.0	0	0.1	0.09
BENZENE	9	12.8	2.7	12	4.3	6.0	21	5.9	3.96
TOLUENE	29	42.8	8.9	16	5.5	7.7	45	12.5	8.42
ISOPENTANE	30	45.0	9.4	23	7.9	11.2	53	14.9	10.04
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	8	11.5	2.4	0	0.0	0.0	8	2.2	1.46
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	4	6.7	1.4	0	0.0	0.0	4	1.2	0.84
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	3	4.1	0.9	0	0.0	0.0	3	0.8	0.51
4-METHYL-2-PENTENE	3	4.0	0.8	0	0.0	0.0	3	0.7	0.50
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	4	6.7	1.4	0	0.0	0.0	4	1.2	0.84
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	1	1.9	0.4	0	0.0	0.0	1	0.3	0.23
C6 OLEFINS	1	2.0	0.4	0	0.0	0.0	1	0.4	0.25
2,4-DIMETHYLPENTANE	2	3.1	0.7	0	0.0	0.0	2	0.6	0.40
METHYLCYCLOPENTANE	4	6.0	1.2	0	0.0	0.0	4	1.1	0.75
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	11	16.6	3.5	12	4.0	5.6	23	6.4	4.29
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	1	1.8	0.4	0	0.0	0.0	1	0.3	0.23
2,2,4-TRIMETHYLPENTANE	24	36.2	7.6	23	7.9	11.2	47	13.2	8.93
N-HEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	5.9	1.2	0	0.0	0.0	4	1.1	0.74
2,3,4-TRIMETHYLPENTANE	4	6.6	1.4	10	3.5	5.0	15	4.1	2.78

TABLE O-1 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-11

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	3	4.8	1.0	4	1.2	1.7	7	1.9	1.27
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	3	4.3	0.9	31	10.6	14.9	34	9.4	6.35
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	5	7.6	1.6	0	0.0	0.0	5	1.4	0.96
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	6	8.2	1.7	4	1.2	1.7	9	2.5	1.71
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLOCTANE	2	3.7	0.8	0	0.0	0.0	2	0.7	0.46
O-ETHYLTOLUENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,2,4-TRIMETHYLBENZENE	5	7.9	1.7	6	2.2	3.1	12	3.3	2.19
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	4	5.5	1.2	0	0.0	0.0	4	1.0	0.70
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	2	0.5	0.35
ACETALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	1	0.3	0.18
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

**TABLE O-2. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-12**

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	91	131.3	26.5	39	13.4	26.0	130	35.9	27.69
ETHYLENE	9	13.1	2.6	3	0.9	1.7	12	3.2	2.48
ETHANE	23	32.7	6.6	7	2.4	4.6	29	8.1	6.27
ACETYLENE	1	0.8	0.2	0	0.0	0.0	1	0.2	0.12
PROPANE	1	1.4	0.3	1	0.5	1.0	2	0.7	0.51
PROPYLENE	4	5.4	1.1	0	0.0	0.0	4	1.0	0.80
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	2	2.8	0.5	1	0.3	0.5	3	0.7	0.55
BUTANE	32	45.7	9.2	10	3.3	6.3	41	11.4	8.76
1-BUTENE	1	1.1	0.2	0	0.0	0.0	1	0.2	0.16
ISOBUTYLENE	1	2.1	0.4	3	0.9	1.7	4	1.1	0.85
CIS-2-BUTENE	1	1.2	0.2	0	0.0	0.0	1	0.2	0.18
TRANS-2-BUTENE	0	0.7	0.1	0	0.0	0.0	0	0.1	0.10
BENZENE	7	10.5	2.1	8	2.9	5.6	16	4.3	3.35
TOLUENE	20	28.7	5.8	14	4.8	9.3	34	9.3	7.19
ISOPENTANE	32	46.8	9.5	24	8.2	15.9	56	15.6	12.01
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	8	11.0	2.2	0	0.0	0.0	8	2.1	1.62
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	3	5.0	1.0	0	0.0	0.0	3	1.0	0.74
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	4	6.3	1.3	0	0.0	0.0	4	1.2	0.93
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	3	4.7	0.9	0	0.0	0.0	3	0.9	0.69
C6 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	5	6.6	1.3	0	0.0	0.0	5	1.3	0.98
METHYLCYCLOPENTANE	1	1.4	0.3	0	0.0	0.0	1	0.3	0.21
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	12	16.9	3.4	8	2.7	5.3	20	5.4	4.19
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	1	1.6	0.3	0	0.0	0.0	1	0.3	0.24
2,2,4-TRIMETHYLPENTANE	26	37.8	7.6	21	7.0	13.6	47	12.9	9.93
N-HEPTANE	1	1.4	0.3	0	0.0	0.0	1	0.3	0.21
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	5.4	1.1	0	0.0	0.0	4	1.0	0.79
2,3,4-TRIMETHYLPENTANE	4	6.1	1.2	2	0.5	1.1	6	1.6	1.24

TABLE O-2 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-12

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	2	3.3	0.7	2	0.5	1.1	4	1.2	0.95
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	3	3.8	0.7	0	0.0	0.0	0	0.0	0.00
3-METHYLHEPTANE	2	2.9	0.6	0	0.0	0.0	0	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	2	2.2	0.4	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	5	7.1	1.4	0	0.0	0.0	2	0.5	0.42
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	13	19.3	3.9	7	2.4	4.7	13	3.7	2.85
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	5	7.4	1.5	0	0.0	0.0	3	0.9	0.66
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLOCTANE	2	2.2	0.4	0	0.0	0.0	0	0.1	0.08
O-ETHYLTOLUENE	1	1.5	0.3	0	0.0	0.0	0	0.0	0.00
1,2,4-TRIMETHYLBENZENE	5	7.8	1.6	2	0.8	1.6	4	1.2	0.90
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYME	2	3.1	0.6	0	0.0	0.0	0	0.0	0.00
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	2	2.7	0.5	0	0.0	0.0	0	0.0	0.00
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	2	3.6	0.7	0	0.0	0.0	3	0.8	0.65
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	2	0.7	0.52
ACETALDEHYDE	—	—	—	—	—	—	1	0.3	0.22
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE O-3. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-OEM-13

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	86	128.0	7.0	43	14.8	20.7	128	36.2	8.70
ETHYLENE	91	136.5	7.4	3	1.0	1.4	94	26.6	6.40
ETHANE	25	37.0	2.0	4	1.5	2.1	29	8.2	1.98
ACETYLENE	13	19.2	1.0	0	0.0	0.0	13	3.6	0.87
PROPANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLENE	79	118.5	6.5	10	3.5	4.9	90	25.2	6.07
1,3-BUTADIENE	15	22.1	1.2	0	0.0	0.0	15	4.2	1.00
ISOBUTANE	4	6.0	0.3	2	0.6	0.8	6	1.6	0.38
BUTANE	63	93.5	5.1	8	2.9	4.0	71	20.0	4.81
1-BUTENE	11	15.8	0.9	0	0.0	0.0	11	3.0	0.72
ISOBUTYLENE	49	73.8	4.0	3	0.9	1.2	52	14.6	3.52
CIS-2-BUTENE	5	8.2	0.4	0	0.0	0.0	5	1.5	0.37
TRANS-2-BUTENE	7	10.5	0.6	0	0.0	0.0	7	2.0	0.48
BENZENE	41	61.8	3.4	17	5.9	8.2	58	16.4	3.95
TOLUENE	243	362.3	19.8	21	7.3	10.2	264	74.3	17.88
ISOPENTANE	52	78.2	4.3	19	6.7	9.3	72	20.2	4.86
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	16	23.4	1.3	0	0.0	0.0	16	4.4	1.06
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	7	10.0	0.5	0	0.0	0.0	7	1.9	0.45
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.06
3-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.06
4-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.06
2,3-DIMETHYLBUTANE	7	11.0	0.6	0	0.0	0.0	7	2.1	0.50
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	6	8.7	0.5	0	0.0	0.0	6	1.7	0.40
4-METHYL-2-PENTENE	6	8.5	0.5	0	0.0	0.0	6	1.6	0.39
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	7	9.9	0.5	0	0.0	0.0	7	1.9	0.45
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	6	9.7	0.5	0	0.0	0.0	6	1.8	0.44
C8 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	13	19.7	1.1	0	0.0	0.0	13	3.7	0.89
METHYLCYCLOPENTANE	6	8.4	0.5	0	0.0	0.0	6	1.6	0.38
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	38	57.1	3.1	10	3.5	4.9	48	13.6	3.27
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	5	6.9	0.4	0	0.0	0.0	5	1.3	0.31
2,2,4-TRIMETHYLPENTANE	87	129.3	7.1	27	9.2	12.8	113	31.9	7.67
N-HEPTANE	3	4.6	0.3	0	0.0	0.0	3	0.9	0.21
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	4	5.3	0.3	0	0.0	0.0	4	1.0	0.24
2,4,4-TRIMETHYL-2-PENTENE	2	2.9	0.2	0	0.0	0.0	2	0.5	0.13
2,4/2-5-DIMETHYLHEXANE	13	19.1	1.0	0	0.0	0.0	13	3.6	0.87
2,3,4-TRIMETHYLPENTANE	17	25.3	1.4	2	0.7	0.9	19	5.3	1.28

TABLE O-3 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-OEM-13

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	10	15.4	0.8	2	0.7	0.9	12	3.4	0.83
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-4-METHYLHEPTANE	4	6.3	0.3	0	0.0	0.0	4	1.2	0.29
3-METHYLHEPTANE	4	5.7	0.3	0	0.0	0.0	4	1.1	0.26
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	6.6	0.4	0	0.0	0.0	4	1.3	0.30
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	3	4.3	0.2	0	0.0	0.0	3	0.8	0.19
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	17	26.0	1.4	0	0.0	0.0	17	4.9	1.18
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENEM-XYLENE	53	78.7	4.3	21	7.2	10.0	73	20.7	4.98
2-METHYLOCTANE	2	2.4	0.1	0	0.0	0.0	2	0.5	0.11
4-METHYLOCTANE	2	2.4	0.1	0	0.0	0.0	2	0.5	0.11
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	21	32.0	1.7	8	2.8	3.9	30	8.3	2.00
NONANE	1	2.2	0.1	4	1.2	1.7	5	1.4	0.34
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	4	6.1	0.3	0	0.0	0.0	4	1.1	0.27
2,3-DIMETHYLOCTANE	9	13.8	0.8	0	0.0	0.0	9	2.6	0.63
O-ETHYLTOLUENE	5	6.7	0.4	0	0.0	0.0	5	1.3	0.31
1,2,4-TRIMETHYLBENZENE	19	28.2	1.5	4	1.4	1.9	23	6.4	1.55
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	5	6.8	0.4	0	0.0	0.0	5	1.3	0.31
INDAN(E)	1	2.0	0.1	0	0.0	0.0	1	0.4	0.09
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	1	2.1	0.1	0	0.0	0.0	1	0.4	0.09
1-METHYL-3-PROPYLBENZENE	2	3.3	0.2	0	0.0	0.0	2	0.6	0.15
N-BUTYLBENZENE/P-DIETHYLBENZENE	2	2.6	0.1	0	0.0	0.0	2	0.5	0.12
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	3	4.1	0.2	0	0.0	0.0	3	0.8	0.18
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	11	15.7	0.9	0	0.0	0.0	11	3.0	0.71
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	17	25.8	1.4	0	0.0	0.0	17	4.9	1.17
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	18	5.2	1.25
ACETALDEHYDE	—	—	—	—	—	—	11	3.0	0.73
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	11	3.0	0.73
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE O-4. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-OEM-14

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	72	107.9	5.8	72	24.9	25.1	145	40.4	9.21
ETHYLENE	105	156.9	8.4	3	1.2	1.2	109	30.3	6.91
ETHANE	23	34.9	1.9	9	3.2	3.2	33	9.1	2.08
ACETYLENE	8	11.9	0.6	0	0.0	0.0	8	2.2	0.51
PROPANE	3	4.2	0.2	0	0.0	0.0	3	0.8	0.18
PROPYLENE	67	99.3	5.3	5	1.6	1.6	71	19.9	4.54
1,3-BUTADIENE	12	17.5	0.9	0	0.0	0.0	12	3.3	0.75
ISOBUTANE	1	2.1	0.1	0	0.0	0.0	1	0.4	0.09
BUTANE	47	70.7	3.8	14	4.9	4.9	62	17.2	3.92
1-BUTENE	12	17.6	0.9	1	0.2	0.2	12	3.5	0.79
ISOBUTYLENE	25	37.7	2.0	2	0.7	0.7	27	7.6	1.73
CIS-2-BUTENE	4	5.4	0.3	0	0.0	0.0	4	1.0	0.23
TRANS-2-BUTENE	5	8.2	0.4	0	0.0	0.0	5	1.5	0.35
BENZENE	77	115.5	6.2	66	22.7	22.9	144	40.1	9.14
TOLUENE	143	213.4	11.5	48	16.4	16.6	191	53.3	12.15
ISOPENTANE	42	62.9	3.4	14	4.9	5.0	57	15.8	3.60
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	30	44.3	2.4	7	2.5	2.5	37	10.3	2.34
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	4	6.7	0.4	0	0.0	0.0	4	1.3	0.29
TRANS-2-PENTENE	4	5.4	0.3	0	0.0	0.0	4	1.0	0.23
CIS-2-PENTENE	3	3.8	0.2	0	0.0	0.0	3	0.7	0.16
2-METHYL-2-BUTENE	9	13.2	0.7	0	0.0	0.0	9	2.5	0.56
2,2-DIMETHYLBUTANE	4	5.8	0.3	0	0.0	0.0	4	1.1	0.25
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.05
3-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.05
4-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.05
2,3-DIMETHYLBUTANE	12	18.4	1.0	0	0.0	0.0	12	3.4	0.78
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	17	25.6	1.4	0	0.0	0.0	17	4.8	1.09
4-METHYL-2-PENTENE	17	25.0	1.3	0	0.0	0.0	17	4.7	1.07
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	17	26.0	1.4	0	0.0	0.0	17	4.9	1.11
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	20	29.4	1.6	0	0.0	0.0	20	5.5	1.25
C6 OLEFINS	1	2.2	0.1	0	0.0	0.0	1	0.4	0.09
2,4-DIMETHYLPENTANE	8	12.0	0.6	0	0.0	0.0	8	2.3	0.51
METHYLCYCLOPENTANE	7	10.5	0.6	0	0.0	0.0	7	2.0	0.45
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	3	3.9	0.2	0	0.0	0.0	3	0.7	0.17
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	26	39.4	2.1	7	2.3	2.4	33	9.3	2.11
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	12	17.6	0.9	0	0.0	0.0	12	3.3	0.75
2,2,4-TRIMETHYLPENTANE	38	56.0	3.0	16	5.4	5.5	53	14.9	3.39
N-HEPTANE	8	11.9	0.6	0	0.0	0.0	8	2.2	0.51
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	5	7.6	0.4	0	0.0	0.0	5	1.4	0.33
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	10	15.3	0.8	0	0.0	0.0	10	2.9	0.65
2,3,4-TRIMETHYLPENTANE	8	12.6	0.7	0	0.0	0.0	8	2.4	0.54

TABLE O-4 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-OEM-14

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	7	9.8	0.5	0	0.0	0.0	7	1.8	0.42
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	9	13.7	0.7	0	0.0	0.0	9	2.6	0.58
3-METHYLHEPTANE	9	12.9	0.7	0	0.0	0.0	9	2.4	0.55
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	5.7	0.3	0	0.0	0.0	4	1.1	0.24
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	8	8.3	0.4	0	0.0	0.0	8	1.8	0.35
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	2	3.0	0.2	0	0.0	0.0	2	0.8	0.13
ETHYLBENZENE	35	52.7	2.8	4	1.5	1.6	40	11.1	2.53
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	90	134.3	7.2	9	3.1	3.1	99	27.6	6.30
2-METHYLOCTANE	5	7.2	0.4	0	0.0	0.0	5	1.3	0.31
4-METHYLOCTANE	5	7.2	0.4	0	0.0	0.0	5	1.3	0.31
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	32	47.7	2.6	7	2.5	2.5	39	10.9	2.49
NONANE	2	3.5	0.2	0	0.0	0.0	2	0.7	0.15
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	8	9.0	0.5	0	0.0	0.0	8	1.7	0.38
2,3-DIMETHYLOCTANE	15	22.8	1.2	0	0.0	0.0	15	4.3	0.97
O-ETHYLTOLUENE	8	11.2	0.6	0	0.0	0.0	8	2.1	0.48
1,2,4-TRIMETHYLBENZENE	32	48.4	2.6	3	1.1	1.2	36	10.0	2.28
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	6	9.8	0.5	0	0.0	0.0	6	1.8	0.41
INDAN(E)	3	4.2	0.2	0	0.0	0.0	3	0.8	0.18
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	2	3.5	0.2	0	0.0	0.0	2	0.7	0.15
1-METHYL-3-PROPYLBENZENE	3	4.9	0.3	0	0.0	0.0	3	0.9	0.21
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	4.3	0.2	0	0.0	0.0	3	0.8	0.18
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	4	6.4	0.3	0	0.0	0.0	4	1.2	0.27
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	1	2.2	0.1	0	0.0	0.0	1	0.4	0.09
1,3,5-TRIMETHYLBENZENE	11	16.9	0.9	0	0.0	0.0	11	3.2	0.72
C7 OLEFINS	6	8.9	0.5	0	0.0	0.0	6	1.7	0.38
C8-C9 OLEFINS	27	39.9	2.1	0	0.0	0.0	27	7.5	1.70
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	21	5.8	1.31
ACETALDEHYDE	—	—	—	—	—	—	7	2.1	0.47
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	1	0.3	0.06
METHYL ETHYL KETONE	—	—	—	—	—	—	1	0.3	0.06
BENZALDEHYDE	—	—	—	—	—	—	5	1.5	0.34
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE O-5. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-15

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	87	100.7	21.3	52	17.8	41.5	119	33.4	26.98
ETHYLENE	7	9.8	2.1	2	0.8	1.9	9	2.5	2.02
ETHANE	21	31.3	6.6	6	2.1	5.0	27	7.6	6.16
ACETYLENE	1	0.9	0.2	0	0.0	0.0	1	0.2	0.13
PROPANE	2	3.1	0.7	1	0.3	0.6	3	0.8	0.66
PROPYLENE	4	5.3	1.1	4	1.5	3.6	8	2.3	1.83
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	1	1.7	0.4	0	0.0	0.0	1	0.3	0.26
BUTANE	36	54.4	11.5	9	3.2	7.4	46	12.8	10.34
1-BUTENE	1	1.3	0.3	0	0.0	0.0	1	0.2	0.20
ISOBUTYLENE	1	2.2	0.5	1	0.3	0.8	2	0.7	0.55
CIS-2-BUTENE	1	1.1	0.2	1	0.2	0.5	1	0.4	0.31
TRANS-2-BUTENE	1	1.3	0.3	0	0.0	0.0	1	0.2	0.20
BENZENE	9	13.6	2.9	17	5.9	13.7	26	7.3	5.93
TOLUENE	9	13.3	2.8	0	0.0	0.0	9	2.5	2.02
ISOPENTANE	25	38.0	8.0	0	0.0	0.0	25	7.1	5.77
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	15	22.3	4.7	0	0.0	0.0	15	4.2	3.39
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	5	8.1	1.7	0	0.0	0.0	5	1.5	1.23
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	6	9.4	2.0	0	0.0	0.0	6	1.8	1.43
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	7	10.0	2.1	0	0.0	0.0	7	1.9	1.52
4-METHYL-2-PENTENE	7	9.7	2.1	0	0.0	0.0	7	1.8	1.48
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	7	10.2	2.1	0	0.0	0.0	7	1.9	1.54
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	7	9.8	2.1	0	0.0	0.0	7	1.8	1.49
C6 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	3	4.1	0.9	0	0.0	0.0	3	0.8	0.63
METHYLCYCLOPENTANE	1	1.8	0.4	0	0.0	0.0	1	0.3	0.28
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	8	11.8	2.5	0	0.0	0.0	8	2.2	1.79
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	3	4.7	1.0	0	0.0	0.0	3	0.9	0.71
2,2,4-TRIMETHYLPENTANE	11	16.8	3.6	9	3.2	7.4	20	5.7	4.63
N-HEPTANE	2	3.4	0.7	0	0.0	0.0	2	0.6	0.51
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,4-TRIMETHYLPENTANE	3	4.3	0.9	0	0.0	0.0	3	0.8	0.65

TABLE O-5 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-15

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	2	3.4	0.7	0	0.0	0.0	2	0.8	0.51
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	3	3.7	0.8	0	0.0	0.0	3	0.7	0.57
3-METHYLHEPTANE	2	3.0	0.6	0	0.0	0.0	2	0.6	0.45
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	2	2.2	0.5	0	0.0	0.0	2	0.4	0.34
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	5	7.3	1.5	3	1.2	2.7	8	2.3	1.87
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	13	19.8	4.2	11	3.8	8.8	24	6.8	5.49
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	5	7.7	1.6	5	1.6	3.7	10	2.7	2.19
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLOCTANE	2	2.2	0.5	0	0.0	0.0	2	0.4	0.34
O-ETHYLTOLUENE	1	1.6	0.3	0	0.0	0.0	1	0.3	0.24
1,2,4-TRIMETHYLBENZENE	5	8.0	1.7	3	1.0	2.4	8	2.3	1.90
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYME	2	3.2	0.7	0	0.0	0.0	2	0.6	0.48
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	2	2.8	0.6	0	0.0	0.0	2	0.5	0.43
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	2	3.7	0.8	0	0.0	0.0	2	0.7	0.56
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACETALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

**TABLE O-6. COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-16**

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	75	110.5	27.9	47	16.0	30.8	122	33.9	28.75
ETHYLENE	3	4.3	1.1	2	0.7	1.3	5	1.3	1.14
ETHANE	22	32.3	8.1	7	2.3	4.5	29	8.0	6.78
ACETYLENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPANE	1	1.5	0.4	0	0.0	0.0	1	0.3	0.24
PROPYLENE	2	2.5	0.6	1	0.4	0.8	3	0.8	0.70
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	1	1.1	0.3	0	0.1	0.2	1	0.3	0.28
BUTANE	28	41.4	10.4	5	1.6	3.1	33	9.1	7.75
1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTYLENE	0	0.7	0.2	1	0.4	0.8	2	0.5	0.41
CIS-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BENZENE	4	5.3	1.3	9	2.9	5.6	12	3.4	2.85
TOLUENE	8	11.4	2.9	11	3.7	7.0	18	5.1	4.34
ISOPENTANE	21	31.5	8.0	9	3.2	6.2	31	8.6	7.29
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	12	17.9	4.5	0	0.0	0.0	12	3.4	2.87
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	5	7.5	1.9	0	0.0	0.0	5	1.4	1.21
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	6	8.6	2.2	4	1.2	2.4	9	2.6	2.23
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	6	9.2	2.3	5	1.6	3.0	11	3.0	2.54
4-METHYL-2-PENTENE	6	9.0	2.3	4	1.5	2.9	11	2.9	2.48
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	8	11.2	2.8	0	0.0	0.0	8	2.1	1.80
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	6	9.5	2.4	0	0.0	0.0	6	1.8	1.53
C8 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	3	4.4	1.1	0	0.0	0.0	3	0.8	0.70
METHYLCYCLOPENTANE	2	2.7	0.7	0	0.0	0.0	2	0.5	0.43
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	8	11.2	2.8	10	3.4	6.6	18	4.9	4.16
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	3	3.8	1.0	0	0.0	0.0	3	0.7	0.62
2,2,4-TRIMETHYLPENTANE	8	12.1	3.1	8	2.6	5.0	16	4.4	3.75
N-HEPTANE	2	2.4	0.6	0	0.0	0.0	2	0.4	0.38
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,4-TRIMETHYLPENTANE	4	6.6	1.7	0	0.0	0.0	4	1.2	1.05

TABLE O-6 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
BUICK LESABRE, TEST NO. LS-AH-16

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	2	2.7	0.7	0	0.0	0.0	2	0.5	0.44
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEPTANE	3	4.4	1.1	0	0.0	0.0	3	0.8	0.70
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	2	3.2	0.8	4	1.2	2.4	6	1.6	1.37
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	7	10.3	2.8	8	2.7	5.1	15	4.1	3.50
2-METHYLOCTANE	1	2.0	0.5	0	0.0	0.0	1	0.4	0.32
4-METHYLOCTANE	1	2.0	0.5	0	0.0	0.0	1	0.4	0.32
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	5	7.0	1.8	0	0.0	0.0	5	1.3	1.11
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLOCTANE	1	1.6	0.4	0	0.0	0.0	1	0.3	0.26
O-ETHYLTOLUENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,2,4-TRIMETHYLBENZENE	3	4.8	1.2	4	1.3	2.8	7	2.0	1.69
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYME	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	0	0.0	0.0	15	5.0	9.8	15	4.1	3.44
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	1	0.4	0.30
ACETALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	1	0.2	0.14
METHYL ETHYL KETONE	—	—	—	—	—	—	1	0.2	0.14
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

A P P E N D I X P

**1990 TOYOTA CELICA
FTP HYDROCARBON SPECIATION MEASUREMENTS**

TABLE P-1. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	108	30.2	24.32	4	1.1	28.62	29	7.9	9.11	9.0	17.42
ETHYLENE	12	3.4	2.77	0	0.0	0.00	4	1.2	1.39	1.0	2.02
ETHANE	16	4.6	3.70	2	0.4	11.63	5	1.3	1.53	1.5	3.00
ACETYLENE	1	0.2	0.15	0	0.0	0.00	0	0.0	0.00	0.0	0.08
PROPANE	0	0.1	0.05	0	0.0	0.00	0	0.1	0.07	0.0	0.06
PROPYLENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3-BUTADIENE	0	0.1	0.11	0	0.0	0.00	0	0.0	0.00	0.0	0.05
ISOBUTANE	2	0.6	0.47	0	0.0	0.00	1	0.4	0.46	0.2	0.45
BUTANE	29	8.1	6.49	0	0.0	0.00	27	7.5	8.68	3.7	7.26
1-BUTENE	1	0.3	0.22	0	0.0	0.00	0	0.0	0.00	0.1	0.11
ISOBUTYLENE	5	1.5	1.22	0	0.0	0.00	2	0.5	0.56	0.4	0.86
CIS-2-BUTENE	1	0.2	0.19	0	0.0	0.00	0	0.0	0.00	0.0	0.10
TRANS-2-BUTENE	1	0.2	0.19	0	0.0	0.00	0	0.0	0.00	0.0	0.10
BENZENE	21	5.8	4.69	7	1.7	45.20	14	3.8	4.38	3.1	6.11
TOLUENE	41	11.5	9.23	0	0.0	0.00	45	12.6	14.48	5.8	11.31
ISOPENTANE	29	8.0	6.46	0	0.0	0.00	40	11.2	12.81	4.7	9.20
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	10	2.8	2.25	0	0.0	0.00	0	0.0	0.00	0.6	1.12
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	5	1.3	1.03	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.3	0.51
2-METHYLPENTANE	2	0.6	0.45	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-2-PENTENE	2	0.5	0.44	0	0.0	0.00	0	0.0	0.00	0.1	0.22
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	3	0.8	0.67	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.2	0.33
HEXANE	2	0.6	0.45	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.22
										0.0	0.00

TABLE P-1 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	2	0.6	0.52	0	0.0	0.00	0	0.0	0.00	0.1	0.26
2,3-DIMETHYLOCTANE	2	0.7	0.53	0	0.0	0.00	0	0.0	0.00	0.1	0.26
O-ETHYLTOLUENE	1	0.3	0.26	0	0.0	0.00	0	0.0	0.00	0.1	0.13
1,2,4-TRIMETHYLBENZENE	12	3.3	2.66	0	0.0	0.00	7	1.8	2.12	1.2	2.31
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	12	3.3	2.64	0	0.0	0.00	11	3.0	3.47	1.5	2.92
INDAN(E)	4	1.1	0.87	0	0.0	0.00	4	1.2	1.44	0.6	1.10
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	3	0.8	0.65	0	0.0	0.00	0	0.0	0.00	0.2	0.32
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	14	3.9	3.18	0	0.0	0.00	0	0.0	0.00	0.0	1.58
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	0	0.0	0.00	2	0.6	14.55	0	0.0	0.00	0.3	0.56
ACETALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.1	0.05	0	0.0	0.00	0	0.0	0.00	0.0	0.02
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-1 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	4	1.2	0.98	0	0.0	0.00	0	0.0	0.00	0.2	0.49
METHYLCYCLOPENTANE	1	0.4	0.30	0	0.0	0.00	0	0.0	0.00	0.1	0.15
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	12	3.2	2.62	0	0.0	0.00	24	6.6	7.54	2.5	4.80
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	1	0.3	0.25	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYLPENTANE	37	10.3	8.32	0	0.0	0.00	56	15.7	18.02	6.4	12.50
N-HEPTANE	1	0.3	0.22	0	0.0	0.00	0	0.0	0.00	0.1	0.11
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	1.2	0.95	0	0.0	0.00	0	0.0	0.00	0.2	0.47
2,3,4-TRIMETHYLPENTANE	5	1.4	1.14	0	0.0	0.00	11	3.0	3.41	1.1	2.15
2,3,3-TRIMETHYLPENTANE	3	0.9	0.70	0	0.0	0.00	7	1.9	2.13	0.7	1.33
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	1	0.3	0.28	0	0.0	0.00	0	0.0	0.00	0.1	0.14
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	4	1.0	0.83	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	4	1.1	1.32	0.5	1.02
P-XYLENEM-XYLENE	20	5.6	4.53	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLOCTANE	1	0.4	0.31	0	0.0	0.00	14	3.9	4.48	2.2	4.33
4-METHYLOCTANE	1	0.4	0.31	0	0.0	0.00	0	0.0	0.00	0.1	0.15
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.15
O-XYLENE	6	1.7	1.40	0	0.0	0.00	8	2.2	2.51	1.0	1.86

TABLE P-2. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	91	25.5	7.99	12	3.0	27.37	24	6.7	32.89	8.7	11.24
ETHYLENE	45	12.5	3.92	3	0.8	7.07	6	1.6	7.71	3.4	4.43
ETHANE	16	4.6	1.43	0	0.1	0.89	2	0.5	2.31	1.1	1.45
ACETYLENE	6	1.5	0.49	0	0.0	0.00	0	0.0	0.00	0.3	0.41
PROPANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLENE	43	11.9	3.73	0	0.0	0.00	2	0.6	2.97	2.6	3.40
1,3-BUTADIENE	4	1.1	0.34	0	0.0	0.00	0	0.0	0.00	0.2	0.29
ISOBUTANE	5	1.4	0.45	2	0.6	5.49	2	0.5	2.46	0.7	0.97
BUTANE	66	18.5	5.78	4	1.0	9.03	7	2.0	9.98	4.9	6.33
1-BUTENE	5	1.5	0.47	0	0.0	0.00	0	0.0	0.00	0.3	0.40
ISOBUTYLENE	26	7.4	2.32	0	0.0	0.00	1	0.4	1.78	1.6	2.11
CIS-2-BUTENE	4	1.0	0.32	0	0.0	0.00	0	0.0	0.00	0.2	0.27
TRANS-2-BUTENE	4	1.1	0.33	0	0.0	0.00	0	0.0	0.00	0.2	0.28
BENZENE	47	13.1	4.11	0	0.0	0.00	0	0.0	0.00	2.7	3.50
TOLUENE	178	49.8	15.59	0	0.0	0.00	9	2.6	12.74	11.0	14.22
ISOPENTANE	73	20.3	6.36	0	0.0	0.00	0	0.0	0.00	4.2	5.43
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	18	5.2	1.62	0	0.0	0.00	0	0.0	0.00	1.1	1.38
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	4	1.2	0.38	0	0.0	0.00	0	0.0	0.00	0.3	0.33
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	1	0.2	0.07	0	0.0	0.00	0	0.0	0.00	0.0	0.06
3-METHYL-1-PENTENE	1	0.2	0.07	0	0.0	0.00	0	0.0	0.00	0.0	0.06
4-METHYL-1-PENTENE	1	0.2	0.07	0	0.0	0.00	0	0.0	0.00	0.0	0.06
2,3-DIMETHYLBUTANE	10	2.7	0.85	0	0.0	0.00	0	0.0	0.00	0.8	0.73
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	7	2.1	0.65	0	0.0	0.00	0	0.0	0.00	0.4	0.55
4-METHYL-2-PENTENE	7	2.0	0.63	0	0.0	0.00	0	0.0	0.00	0.4	0.54
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	9	2.5	0.80	0	0.0	0.00	0	0.0	0.00	0.5	0.68
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	8	2.3	0.71	0	0.0	0.00	0	0.0	0.00	0.5	0.61
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-2 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	17	4.7	1.47	0	0.0	0.00	0	0.0	0.00	1.0	1.25
METHYLCYCLOPENTANE	6	1.8	0.57	0	0.0	0.00	0	0.0	0.00	0.4	0.48
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	47	13.2	4.12	0	0.0	0.00	0	0.0	0.00	2.7	3.51
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	6	1.7	0.53	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYLPENTANE	114	32.0	10.02	5	1.3	11.72	10	2.7	13.10	0.4	0.46
N-HEPTANE	4	1.0	0.32	0	0.0	0.00	0	0.0	0.00	0.2	0.27
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	4	1.2	0.37	0	0.0	0.00	0	0.0	0.00	0.2	0.32
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	17	4.7	1.46	0	0.0	0.00	0	0.0	0.00	1.0	1.24
2,3,4-TRIMETHYLPENTANE	21	5.9	1.85	0	0.0	0.00	0	0.0	0.00	1.2	1.58
2,3,3-TRIMETHYLPENTANE	13	3.7	1.16	0	0.0	0.00	0	0.0	0.00	0.8	0.99
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-/4-METHYLHEPTANE	5	1.4	0.45	0	0.0	0.00	0	0.0	0.00	0.3	0.38
3-METHYLHEPTANE	4	1.3	0.39	0	0.0	0.00	0	0.0	0.00	0.3	0.33
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	5	1.4	0.42	0	0.0	0.00	0	0.0	0.00	0.3	0.36
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	3	0.9	0.27	0	0.0	0.00	0	0.0	0.00	0.2	0.23
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	15	4.2	1.32	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.9	1.13
P-XYLENE/M-XYLENE	59	16.6	5.20	16	4.2	38.44	10	2.8	13.47	0.0	0.00
2-METHYLOCTANE	1	0.2	0.05	0	0.0	0.00	0	0.0	0.00	6.4	8.27
4-METHYLOCTANE	1	0.2	0.05	0	0.0	0.00	0	0.0	0.00	0.0	0.05
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	21	5.8	1.82	0	0.0	0.00	0	0.0	0.00	1.2	1.55

TABLE P-2 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-13

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	2	0.5	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.13
TRANS-2-NONENE	1	0.2	0.07	0	0.0	0.00	0	0.0	0.00	0.0	0.06
PROPYLBENZENE	4	1.0	0.33	0	0.0	0.00	0	0.0	0.00	0.2	0.28
2,3-DIMETHYLOCTANE	8	2.2	0.69	0	0.0	0.00	0	0.0	0.00	0.5	0.59
O-ETHYLTOLUENE	4	1.2	0.37	0	0.0	0.00	0	0.0	0.00	0.2	0.31
1,2,4-TRIMETHYLBENZENE	22	6.1	1.90	0	0.0	0.00	0	0.0	0.00	1.2	1.62
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	4	1.1	0.34	0	0.0	0.00	0	0.0	0.00	0.2	0.29
INDAN(E)	1	0.4	0.11	0	0.0	0.00	0	0.0	0.00	0.1	0.09
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	2	0.5	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.13
1-METHYL-3-PROPYLBENZENE	2	0.5	0.16	0	0.0	0.00	0	0.0	0.00	0.1	0.14
N-BUTYLBENZENE/P-DIETHYLBENZENE	2	0.5	0.15	0	0.0	0.00	0	0.0	0.00	0.1	0.13
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	2	0.7	0.22	0	0.0	0.00	0	0.0	0.00	0.1	0.18
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	11	3.1	0.98	0	0.0	0.00	0	0.0	0.00	0.6	0.83
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	24	6.6	2.08	0	0.0	0.00	0	0.0	0.00	1.4	1.77
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	5	1.3	0.41	0	0.0	0.00	0	0.0	0.00	0.3	0.35
ACETALDEHYDE	4	1.0	0.32	0	0.0	0.00	0	0.0	0.00	0.2	0.27
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	3	0.8	0.24	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.2	0.25
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-3. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12-2

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	458	128.8	8.00	13	3.4	12.81	32	9.0	3.03	30.8	7.20
ETHYLENE	156	43.7	2.72	0	0.0	0.00	0	0.1	0.04	8.1	2.12
ETHANE	50	14.1	0.87	30	7.8	29.49	6	1.7	0.57	7.4	1.73
ACETYLENE	7	1.9	0.12	0	0.0	0.00	0	0.0	0.00	0.4	0.09
PROPANE	9	2.5	0.15	13	3.3	12.46	4	1.0	0.34	2.5	0.59
PROPYLENE	163	45.9	2.85	0	0.0	0.00	0	0.0	0.00	9.5	2.22
1,3-BUTADIENE	23	6.6	0.41	0	0.0	0.00	0	0.0	0.00	1.4	0.32
ISOBUTANE	36	10.1	0.63	0	0.0	0.14	6	1.6	0.52	2.5	0.59
BUTANE	598	168.1	10.45	0	0.0	0.00	93	26.0	8.72	41.9	9.78
1-BUTENE	20	5.6	0.35	0	0.0	0.00	1	0.2	0.08	1.2	0.29
ISOBUTYLENE	113	31.6	1.97	0	0.0	0.00	2	0.6	0.21	6.7	1.57
CIS-2-BUTENE	15	4.2	0.26	0	0.0	0.00	1	0.2	0.05	0.9	0.21
TRANS-2-BUTENE	18	5.2	0.32	0	0.0	0.00	1	0.4	0.13	1.2	0.27
BENZENE	309	86.8	5.40	0	0.0	0.00	45	12.6	4.24	21.4	5.00
TOLUENE	749	210.3	13.07	0	0.0	0.00	147	41.1	13.78	54.7	12.79
ISOPENTANE	716	201.2	12.51	0	0.0	0.00	105	29.4	9.85	49.7	11.60
1-PENTENE	6	1.6	0.10	0	0.0	0.00	0	0.0	0.00	0.3	0.08
PENTANE	170	47.7	2.96	0	0.0	0.00	0	0.0	0.00	9.9	2.30
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	13	3.7	0.23	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	13	3.6	0.22	0	0.0	0.00	0	0.0	0.00	0.8	0.18
CIS-2-PENTENE	7	1.8	0.11	0	0.0	0.00	0	0.0	0.00	0.7	0.17
2-METHYL-2-BUTENE	29	8.0	0.50	0	0.0	0.00	0	0.0	0.00	0.4	0.09
2,2-DIMETHYLBUTANE	19	5.3	0.33	0	0.0	0.00	0	0.0	0.00	1.7	0.39
CYCLOPENTENE	3	0.8	0.05	0	0.0	0.00	0	0.0	0.00	1.1	0.25
CYCLOPENTANE	6	1.8	0.11	0	0.0	0.00	0	0.0	0.00	0.2	0.04
3-METHYL-1-PENTENE	6	1.8	0.11	0	0.0	0.00	0	0.0	0.00	0.4	0.09
4-METHYL-1-PENTENE	6	1.8	0.11	0	0.0	0.00	0	0.0	0.00	0.4	0.09
2,3-DIMETHYLBUTANE	78	22.0	1.37	0	0.0	0.00	19	5.3	1.77	6.0	1.40
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	57	16.0	1.00	0	0.0	0.00	14	3.9	1.30	4.4	1.02
4-METHYL-2-PENTENE	56	15.6	0.97	0	0.0	0.00	14	3.8	1.27	4.3	1.00
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	65	18.4	1.14	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	5	1.4	0.09	0	0.0	0.00	17	4.8	1.60	5.1	1.19
HEXANE	56	15.7	0.97	0	0.0	0.00	0	0.0	0.00	0.3	0.07
C8 OLEFINS	0	0.0	0.00	0	0.0	0.00	12	3.3	1.09	4.1	0.97
							0	0.0	0.00	0.0	0.00

TABLE P-3 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12-2

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	103	29.0	1.81	0	0.0	0.00	33	9.3	3.10	8.5	2.00
METHYLCYCLOPENTANE	45	12.6	0.78	0	0.0	0.00	11	2.9	0.99	3.4	0.80
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	5	1.5	0.09	0	0.0	0.00	0	0.0	0.00	0.3	0.07
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	254	71.3	4.43	0	0.0	0.00	90	25.1	8.43	21.8	5.08
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	34	9.5	0.59	0	0.0	0.00	12	3.3	1.09	2.9	0.67
2,2,4-TRIMETHYLPENTANE	512	144.0	8.95	0	0.0	0.00	174	48.4	16.24	43.1	10.08
N-HEPTANE	0	0.0	0.00	0	0.0	0.00	8	1.8	0.59	0.5	0.11
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	19	5.2	0.33	0	0.0	0.00	7	2.1	0.70	1.7	0.39
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	69	19.5	1.21	0	0.0	0.00	33	9.1	3.05	6.5	1.53
2,3,4-TRIMETHYLPENTANE	76	21.4	1.33	0	0.0	0.00	30	8.3	2.78	6.7	1.57
2,3,3-TRIMETHYLPENTANE	43	12.1	0.76	0	0.0	0.00	24	6.6	2.20	4.3	1.01
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	23	6.5	0.40	0	0.0	0.00	10	2.9	0.98	2.1	0.50
3-METHYLHEPTANE	17	4.7	0.29	0	0.0	0.00	9	2.5	0.84	1.7	0.39
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	21	5.8	0.36	0	0.0	0.00	9	2.6	0.88	1.9	0.45
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	10	2.8	0.18	0	0.0	0.00	5	1.5	0.50	1.0	0.23
2,3,5-TRIMETHYLHEXANE	3	0.9	0.06	0	0.0	0.00	0	0.0	0.00	0.2	0.04
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	4	1.1	0.07	0	0.0	0.00	0	0.0	0.00	0.2	0.05
ETHYLBENZENE	41	11.5	0.71	0	0.0	0.00	8	2.2	0.74	3.0	0.69
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	119	33.3	2.07	0	0.0	0.00	37	10.3	3.45	8.7	2.27
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	2	0.6	0.03	0	0.0	0.00	0	0.0	0.00	0.1	0.03
3-METHYLOCTANE	2	0.6	0.03	0	0.0	0.00	0	0.0	0.00	0.1	0.03
O-XYLENE	62	17.5	1.09	12	3.2	11.96	6	1.6	0.54	5.7	1.33

TABLE P-3 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-12-2

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	3	0.7	0.05	0	0.0	0.00	14	3.8	1.28	1.2	0.28
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	9	2.5	0.15	0	0.0	0.00	0	0.0	0.00	0.5	0.12
2,3-DIMETHYLOCTANE	14	4.0	0.25	0	0.0	0.00	6	1.7	0.56	1.3	0.30
O-ETHYLTOLUENE	8	2.3	0.14	0	0.0	0.00	0	0.0	0.00	0.5	0.11
1,2,4-TRIMETHYLBENZENE	31	8.6	0.53	0	0.0	0.00	6	1.8	0.60	2.3	0.53
ISOBUTYLBENZENE	0	0.0	0.00	9	2.4	9.25	0	0.0	0.00	1.3	0.30
DECANE	0	0.0	0.00	10	2.6	9.81	0	0.0	0.00	1.3	0.31
P-CYME	6	1.7	0.11	7	1.9	7.12	0	0.0	0.00	1.3	0.31
INDAN(E)	2	0.4	0.03	7	1.8	6.96	0	0.0	0.00	1.0	0.24
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	2	0.7	0.04	0	0.0	0.00	0	0.0	0.00	0.1	0.03
1-METHYL-3-PROPYLBENZENE	4	1.1	0.07	0	0.0	0.00	0	0.0	0.00	0.2	0.06
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	0.9	0.05	0	0.0	0.00	0	0.0	0.00	0.2	0.04
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	4	1.2	0.07	0	0.0	0.00	0	0.0	0.00	0.2	0.06
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	1	0.4	0.02	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	23	6.6	0.41	0	0.0	0.00	12	3.4	1.13	2.3	0.53
C7 OLEFINS	50	14.1	0.88	0	0.0	0.00	0	0.0	0.00	2.9	0.68
C8-C9 OLEFINS	39	10.9	0.68	0	0.0	0.00	6	1.7	0.55	2.7	0.63
C9-C11 PARAFFINS, OLEFINS, AROMATICS	26	7.3	0.45	0	0.0	0.00	0	0.0	0.00	1.5	0.35
FORMALDEHYDE	0	0.0	0.00	0	0.0	0.00	1	0.3	0.11	0.1	0.02
ACETALDEHYDE	2	0.6	0.04	0	0.0	0.00	1	0.2	0.06	0.2	0.04
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-4. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	251	70.3	9.02	24	6.1	47.40	43	12.0	3.75	20.9	8.71
ETHYLENE	63	17.6	2.48	0	0.0	0.00	8	2.1	0.66	4.2	1.75
ETHANE	28	7.7	1.09	19	4.9	37.84	12	3.3	1.04	5.0	2.09
ACETYLENE	5	1.4	0.19	5	1.3	9.06	0	0.0	0.00	0.9	0.39
PROPANE	1	0.4	0.05	0	0.0	0.00	4	1.0	0.31	0.3	0.14
PROPYLENE	32	8.9	1.25	0	0.0	0.00	7	2.0	0.62	2.4	0.99
1,3-BUTADIENE	6	1.6	0.23	0	0.0	0.00	0	0.0	0.00	0.3	0.14
ISOBUTANE	6	1.8	0.25	0	0.0	0.00	2	0.7	0.21	0.5	0.23
BUTANE	249	69.8	9.85	1	0.3	2.04	94	26.5	8.29	21.8	9.06
1-BUTENE	6	1.6	0.23	0	0.0	0.00	1	0.4	0.12	0.4	0.18
ISOBUTYLENE	13	3.6	0.51	0	0.0	0.00	2	0.5	0.16	0.9	0.38
CIS-2-BUTENE	4	1.0	0.14	0	0.0	0.00	1	0.4	0.12	0.3	0.13
TRANS-2-BUTENE	4	1.1	0.18	0	0.0	0.00	22	6.2	1.84	1.9	0.80
BENZENE	99	27.7	3.91	0	0.0	0.00	50	14.0	4.38	9.5	3.97
TOLUENE	132	37.1	5.23	0	0.0	0.00	71	19.8	6.20	13.1	5.44
ISOPENTANE	253	70.8	9.99	0	0.0	0.00	88	24.5	7.68	21.3	8.87
1-PENTENE	6	1.7	0.24	0	0.0	0.00	0	0.0	0.00	0.4	0.15
PENTANE	189	47.2	6.66	0	0.0	0.00	58	16.3	5.11	14.2	5.92
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	5	1.3	0.18	0	0.0	0.00	0	0.0	0.00	0.3	0.11
TRANS-2-PENTENE	17	4.9	0.69	0	0.0	0.00	0	0.0	0.00	1.0	0.42
CIS-2-PENTENE	10	2.7	0.38	0	0.0	0.00	0	0.0	0.00	0.6	0.23
2-METHYL-2-BUTENE	28	7.8	1.10	0	0.0	0.00	0	0.0	0.00	1.6	0.87
2,2-DIMETHYLBUTANE	42	11.9	1.68	0	0.0	0.00	17	4.7	1.47	3.7	1.56
CYCLOPENTENE	4	1.2	0.16	0	0.0	0.00	0	0.0	0.00	0.2	0.10
CYCLOPENTANE	4	1.0	0.15	0	0.0	0.00	0	0.0	0.00	0.2	0.09
3-METHYL-1-PENTENE	4	1.0	0.15	0	0.0	0.00	0	0.0	0.00	0.2	0.09
4-METHYL-1-PENTENE	4	1.0	0.15	0	0.0	0.00	0	0.0	0.00	0.2	0.09
2,3-DIMETHYLBUTANE	64	17.9	2.53	0	0.0	0.00	37	10.4	3.28	6.5	2.72
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	90	25.1	3.55	0	0.0	0.00	41	11.6	3.62	8.3	3.47
4-METHYL-2-PENTENE	88	24.5	3.48	0	0.0	0.00	40	11.3	3.53	8.1	3.39
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	86	24.2	3.42	0	0.0	0.00	42	11.7	3.66	8.2	3.41
2-METHYL-1-PENTENE/1-HEXENE	6	1.7	0.24	0	0.0	0.00	0	0.0	0.00	0.4	0.15
HEXANE	78	21.9	3.09	0	0.0	0.00	39	10.9	3.42	7.5	3.12
C6 OLEFINS	29	8.2	1.15	0	0.0	0.00	0	0.0	0.00	1.7	0.70

TABLE P-4 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	32	8.9	1.26	0	0.0	0.00	16	4.4	1.39	3.1	1.27
METHYLCYCLOPENTANE	28	7.9	1.12	0	0.0	0.00	12	3.5	1.09	2.6	1.07
CYCLOHEXANE	4	1.2	0.16	0	0.0	0.00	0	0.0	0.00	0.2	0.10
METHYLCYCLOPENTENE	4	1.2	0.18	0	0.0	0.00	0	0.0	0.00	0.3	0.11
3-METHYL-1,3-PENTADIENE	4	1.1	0.16	0	0.0	0.00	0	0.0	0.00	0.2	0.10
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	82	22.8	3.22	0	0.0	0.00	50	13.9	4.38	8.5	3.55
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	36	10.0	1.41	0	0.0	0.00	25	7.0	2.18	4.0	1.65
2,2,4-TRIMETHYLPENTANE	92	25.7	3.62	0	0.0	0.00	50	14.1	4.41	9.1	3.81
N-HEPTANE	25	7.0	0.99	0	0.0	0.00	15	4.2	1.31	2.6	1.07
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	12	3.2	0.46	0	0.0	0.00	9	2.6	0.82	1.4	0.57
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	18	5.1	0.73	0	0.0	0.00	18	5.2	1.62	2.5	1.03
2,3,4-TRIMETHYLPENTANE	17	4.8	0.69	0	0.0	0.00	16	4.5	1.42	2.3	0.94
2,3,3-TRIMETHYLPENTANE	13	3.6	0.51	0	0.0	0.00	13	3.7	1.15	1.8	0.73
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	18	5.0	0.70	0	0.0	0.00	20	5.6	1.74	2.5	1.06
3-METHYLHEPTANE	16	4.5	0.63	0	0.0	0.00	18	4.9	1.54	2.3	0.95
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	6	1.7	0.25	0	0.0	0.00	7	1.9	0.59	0.9	0.37
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	8	2.3	0.33	0	0.0	0.00	10	2.8	0.87	1.2	0.51
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	3	0.8	0.11	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	28	7.8	1.10	0	0.0	0.00	29	8.1	2.53	3.8	1.59
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	65	18.2	2.57	0	0.0	0.00	71	19.9	6.22	9.2	3.83
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	1	0.4	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
3-METHYLOCTANE	1	0.4	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
O-XYLENE	29	8.2	1.15	0	0.0	0.00	27	7.6	2.39	3.8	1.57

TABLE P-4 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-15

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	3	0.7	0.10	0	0.0	0.00	0	0.0	0.00	0.2	0.08
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	3	0.9	0.13	0	0.0	0.00	4	1.2	0.37	0.5	0.22
2,3-DIMETHYLOCTANE	8	2.2	0.32	0	0.0	0.00	11	3.0	0.95	1.3	0.54
O-ETHYLTOLUENE	4	1.0	0.14	0	0.0	0.00	0	0.0	0.00	0.2	0.09
1,2,4-TRIMETHYLBENZENE	17	4.7	0.68	0	0.0	0.00	13	3.8	1.18	2.0	0.93
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	3	1.0	0.13	0	0.0	0.00	5	1.3	0.41	0.6	0.23
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	2	0.4	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
1-METHYL-3-PROPYLBENZENE	2	0.5	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.04
N-BUTYLBENZENE/P-DIETHYLBENZENE	1	0.4	0.06	0	0.0	0.00	0	0.0	0.00	0.1	0.03
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	2	0.7	0.09	0	0.0	0.00	0	0.0	0.00	0.1	0.06
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	6	1.6	0.23	0	0.0	0.00	7	2.0	0.63	0.9	0.37
C7 OLEFINS	28	7.8	1.10	0	0.0	0.00	3	0.7	0.23	1.8	0.75
C8-C9 OLEFINS	13	3.7	0.52	0	0.0	0.00	11	3.0	0.93	1.6	0.68
C9-C11 PARAFFINS, OLEFINS, AROMATICS	6	1.8	0.25	0	0.0	0.00	0	0.0	0.00	0.4	0.15
FORMALDEHYDE	3	0.9	0.12	1	0.3	2.16	1	0.2	0.08	0.4	0.16
ACETALDEHYDE	3	0.7	0.10	0	0.1	0.60	1	0.2	0.07	0.3	0.11
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-5. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	107	29.6	9.06	15	3.8	14.59	20	5.4	35.40	9.5	11.23
ETHYLENE	57	15.7	4.80	1	0.2	0.78	3	0.7	4.83	3.5	4.17
ETHANE	20	5.7	1.73	1	0.3	1.17	2	0.6	3.94	1.5	1.75
ACETYLENE	7	1.9	0.59	0	0.0	0.00	0	0.0	0.00	0.4	0.47
PROPANE	4	1.1	0.34	7	1.9	7.25	1	0.2	1.04	1.2	1.47
PROPYLENE	30	8.3	2.55	61	15.6	60.27	0	0.0	0.00	9.8	11.53
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	0	0.1	0.04	1	0.2	0.86	0	0.0	0.00	0.2	0.18
BUTANE	10	2.7	0.81	4	0.9	3.51	0	0.0	0.00	1.0	1.20
1-BUTENE	0	0.1	0.03	0	0.0	0.00	0	0.0	0.00	0.0	0.02
ISOBUTYLENE	3	0.8	0.24	0	0.0	0.00	0	0.0	0.00	0.2	0.19
CIS-2-BUTENE	1	0.2	0.06	1	0.2	0.89	0	0.0	0.00	0.2	0.19
TRANS-2-BUTENE	0	0.0	0.01	0	0.0	0.14	0	0.0	0.00	0.0	0.03
BENZENE	68	18.7	5.74	2	0.6	2.41	9	2.6	16.99	4.9	5.77
TOLUENE	113	31.3	9.60	2	0.6	2.37	0	0.0	0.00	6.8	7.98
ISOPENTANE	83	23.0	7.06	0	0.0	0.00	0	0.0	0.00	4.8	5.60
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	36	9.9	3.03	0	0.0	0.00	0	0.0	0.00	2.0	2.40
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	5	1.4	0.42	0	0.0	0.00	0	0.0	0.00	0.3	0.34
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	9	2.4	0.72	0	0.0	0.00	0	0.0	0.00	0.5	0.57
2,2-DIMETHYLBUTANE	7	2.0	0.60	0	0.0	0.00	0	0.0	0.00	0.4	0.48
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	1	0.3	0.10	0	0.0	0.00	0	0.0	0.00	0.1	0.08
3-METHYL-1-PENTENE	1	0.3	0.10	0	0.0	0.00	0	0.0	0.00	0.1	0.08
4-METHYL-1-PENTENE	1	0.3	0.10	0	0.0	0.00	0	0.0	0.00	0.1	0.08
2,3-DIMETHYLBUTANE	21	5.8	1.78	0	0.0	0.00	0	0.0	0.00	1.2	1.41
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	20	5.6	1.72	0	0.0	0.00	0	0.0	0.00	1.2	1.36
4-METHYL-2-PENTENE	20	5.5	1.68	0	0.0	0.00	0	0.0	0.00	1.1	1.33
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	25	7.0	2.13	0	0.0	0.00	0	0.0	0.00	1.4	1.69
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	19	5.3	1.62	0	0.0	0.00	0	0.0	0.00	1.1	1.28
C6 OLEFINS	1	0.4	0.12	0	0.0	0.00	0	0.0	0.00	0.1	0.10

TABLE P-5 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	9	2.6	0.80	0	0.0	0.00	0	0.0	0.00	0.5	0.63
METHYLCYCLOPENTANE	9	2.4	0.73	0	0.0	0.00	0	0.0	0.00	0.5	0.58
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	2	0.7	0.21	0	0.0	0.00	0	0.0	0.00	0.1	0.17
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	28	7.8	2.40	0	0.0	0.00	0	0.0	0.00	1.6	1.90
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	13	3.5	1.08	0	0.0	0.00	0	0.0	0.00	0.7	0.86
2,2,4-TRIMETHYLPENTANE	37	10.2	3.12	0	0.0	0.00	0	0.0	0.00	2.1	2.48
N-HEPTANE	8	2.3	0.70	0	0.0	0.00	0	0.0	0.00	0.5	0.55
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	5	1.4	0.44	0	0.0	0.00	0	0.0	0.00	0.3	0.35
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	11	2.9	0.90	0	0.0	0.00	0	0.0	0.00	0.6	0.72
2,3,4-TRIMETHYLPENTANE	6	1.6	0.50	0	0.0	0.00	0	0.0	0.00	0.3	0.40
2,3,3-TRIMETHYLPENTANE	6	1.7	0.51	0	0.0	0.00	0	0.0	0.00	0.3	0.40
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	10	2.7	0.84	0	0.0	0.00	0	0.0	0.00	0.6	0.67
3-METHYLHEPTANE	9	2.5	0.77	0	0.0	0.00	0	0.0	0.00	0.5	0.61
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	1.1	0.33	0	0.0	0.00	0	0.0	0.00	0.2	0.28
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	6	1.7	0.54	0	0.0	0.00	0	0.0	0.00	0.4	0.43
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	4	1.2	0.37	0	0.0	0.00	0	0.0	0.00	0.2	0.29
ETHYLBENZENE	31	8.5	2.61	0	0.0	0.00	0	0.1	0.69	1.8	2.10
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENEM-XYLENE	81	22.3	6.84	0	0.0	0.00	0	0.0	0.00	4.5	5.43
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	1	0.4	0.12	0	0.0	0.00	0	0.0	0.00	0.1	0.09
3-METHYLOCTANE	1	0.4	0.12	0	0.0	0.00	0	0.0	0.00	0.1	0.09
O-XYLENE	32	9.0	2.75	4	0.9	3.56	0	0.0	0.00	2.3	2.75

TABLE P-5 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-OE-14

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	4	1.1	0.33	0	0.0	0.00	0	0.0	0.00	0.2	0.26
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	6	1.6	0.50	0	0.0	0.00	0	0.0	0.00	0.3	0.40
2,3-DIMETHYLOCTANE	15	4.3	1.31	0	0.0	0.00	0	0.0	0.00	0.9	1.04
O-ETHYLTOLUENE	7	1.9	0.58	0	0.0	0.00	0	0.0	0.00	0.4	0.46
1,2,4-TRIMETHYLBENZENE	34	9.4	2.88	0	0.0	0.00	3	0.9	5.58	2.2	2.58
ISOBUTYLBENZENE	5	1.5	0.44	0	0.0	0.00	0	0.0	0.00	0.3	0.35
DECANE	6	1.5	0.47	0	0.0	0.00	0	0.0	0.00	0.3	0.37
P-CYME	8	2.3	0.70	0	0.0	0.00	12	3.3	21.36	1.4	1.61
INDAN(E)	2	0.7	0.20	0	0.0	0.00	0	0.0	0.00	0.1	0.16
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	6	1.6	0.50	0	0.0	0.00	4	1.2	7.63	0.7	0.78
1-METHYL-3-PROPYLBENZENE	3	1.0	0.30	0	0.0	0.00	0	0.0	0.00	0.2	0.24
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	0.8	0.24	0	0.0	0.00	0	0.0	0.00	0.2	0.19
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	4	1.2	0.38	0	0.0	0.00	0	0.0	0.00	0.3	0.30
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	1	0.3	0.10	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	14	3.8	1.16	0	0.0	0.00	0	0.0	0.00	0.1	0.08
C7 OLEFINS	8	2.3	0.69	0	0.0	0.00	0	0.0	0.00	0.8	0.92
C8-C9 OLEFINS	26	7.1	2.17	0	0.0	0.00	0	0.0	0.00	0.5	0.55
C9-C11 PARAFFINS, OLEFINS, AROMATICS	21	5.9	1.81	0	0.0	0.00	0	0.0	0.00	1.5	1.72
FORMALDEHYDE	3	0.8	0.26	1	0.3	1.02	1	0.2	1.36	1.2	1.43
ACETALDEHYDE	3	0.8	0.25	1	0.3	1.06	1	0.2	1.18	0.4	0.43
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	14	4.0	1.22	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.8	0.97
										0.0	0.00

TABLE P-6. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-26

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	109	30.3	27.30	11	2.8	9.66	21	5.7	46.36	9.3	22.36
ETHYLENE	20	5.6	5.09	26	6.6	22.48	0	0.1	1.07	4.6	11.15
ETHANE	14	3.9	3.52	0	0.0	0.00	3	0.7	6.05	1.0	2.43
ACETYLENE	0	0.0	0.00	2	0.5	1.84	0	0.0	0.00	0.3	0.87
PROPANE	2	0.6	0.54	0	0.0	0.00	1	0.3	2.31	0.2	0.49
PROPYLENE	4	1.0	0.92	0	0.0	0.13	0	0.0	0.00	0.2	0.56
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	1	0.3	0.24	0	0.1	0.27	2	0.4	3.84	0.2	0.52
BUTANE	17	4.6	4.15	1	0.3	1.16	3	0.9	7.14	1.4	3.29
1-BUTENE	1	0.2	0.15	0	0.0	0.00	0	0.0	0.00	0.0	0.08
ISOBUTYLENE	3	0.7	0.67	0	0.0	0.06	1	0.1	1.13	0.2	0.49
CIS-2-BUTENE	0	0.1	0.07	0	0.0	0.13	1	0.2	1.26	0.1	0.19
TRANS-2-BUTENE	1	0.3	0.31	0	0.0	0.00	2	0.5	4.01	0.2	0.50
BENZENE	58	16.3	14.65	4	1.1	3.84	2	0.4	3.38	4.1	9.76
TOLUENE	38	10.5	9.42	7	1.8	6.13	0	0.0	0.00	3.1	7.45
ISOPENTANE	19	5.3	4.74	8	2.0	6.96	5	1.5	12.11	2.6	6.15
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	5	1.3	1.14	0	0.0	0.00	0	0.0	0.00	0.3	0.83
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	3	0.8	0.74	1	0.3	1.17	0	0.0	0.00	0.3	0.84
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	2	0.5	0.46	1	0.2	0.56	0	0.0	0.00	0.2	0.46
4-METHYL-2-PENTENE	2	0.5	0.45	1	0.2	0.55	0	0.0	0.00	0.2	0.45
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	4	1.1	1.01	5	1.4	4.79	0	0.0	0.00	1.0	2.32
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANE	3	0.9	0.84	12	3.2	10.82	0	0.0	0.00	1.8	4.44
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-6 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-26

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	2	0.6	0.56	0	0.0	0.00	0	0.0	0.00	0.1	0.31
METHYLCYCLOPENTANE	1	0.3	0.27	0	0.0	0.00	0	0.0	0.00	0.1	0.15
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	16	4.4	3.93	17	4.4	14.82	5	1.4	11.28	3.5	8.53
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYLPENTANE	22	6.0	5.43	2	0.6	2.06	0	0.0	0.00	0.0	0.00
N-HEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	1.6	3.75
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,4-TRIMETHYLPENTANE	6	1.8	1.90	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,3-TRIMETHYLPENTANE	6	1.6	1.42	0	0.0	0.00	0	0.0	0.00	0.4	0.89
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	6	1.6	1.49	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.3	0.82
P-XYLENE/M-XYLENE	13	3.7	3.32	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.8	1.83
4-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	4	1.2	1.04	0	0.0	0.00	0	0.0	0.00	0.0	0.00
										0.2	0.57

TABLE P-6 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-26

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	1	0.4	0.32	0	0.0	0.00	0	0.0	0.00	0.1	0.18
2,3-DIMETHYLOCTANE	1	0.4	0.34	0	0.0	0.00	0	0.0	0.00	0.1	0.19
O-ETHYLTOLUENE	1	0.4	0.35	0	0.0	0.00	0	0.0	0.00	0.1	0.19
1,2,4-TRIMETHYLBENZENE	2	0.6	0.55	0	0.0	0.00	0	0.0	0.00	0.1	0.30
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYME	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDAN(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	3	0.9	0.78	0	0.0	0.00	0	0.0	0.00	0.2	0.43
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	4	1.1	0.95	0	0.0	0.00	0	0.0	0.00	0.2	0.52
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
FORMALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETALDEHYDE	3	0.9	0.80	14	3.8	12.13	0	0.0	0.00	2.0	4.90
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	2	0.5	0.43	1	0.1	0.44	0	0.0	0.27	0.2	0.42
PROPIONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-7. HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-27

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
METHANE	98	27.4	24.95	25	6.4	31.28	26	7.2	48.37	10.9	29.31
ETHYLENE	17	4.9	4.44	8	2.0	9.78	1	0.4	2.72	2.1	5.76
ETHANE	17	4.7	4.26	3	0.7	3.68	3	0.9	5.95	1.6	4.28
ACETYLENE	0	0.1	0.06	0	0.0	0.00	1	0.2	1.52	0.1	0.20
PROPANE	0	0.1	0.06	0	0.0	0.00	4	1.1	7.36	0.3	0.84
PROPYLENE	8	2.3	2.14	7	1.8	8.69	2	0.6	4.21	1.6	4.22
1,3-BUTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTANE	0	0.0	0.03	0	0.0	0.00	0	0.0	0.00	0.0	0.02
BUTANE	20	5.6	5.12	5	1.2	5.72	0	0.0	0.00	1.8	4.73
1-BUTENE	1	0.3	0.31	0	0.0	0.00	0	0.0	0.00	0.1	0.19
ISOBUTYLENE	4	1.2	1.14	2	0.6	2.86	1	0.4	2.46	0.7	1.77
CIS-2-BUTENE	1	0.2	0.19	1	0.2	1.05	0	0.1	0.93	0.2	0.52
TRANS-2-BUTENE	1	0.3	0.30	2	0.4	1.91	1	0.4	2.46	0.4	0.99
BENZENE	33	9.2	8.36	6	1.5	7.52	2	0.6	3.79	2.8	7.62
TOLUENE	41	11.5	10.45	14	3.6	17.81	4	1.2	8.10	4.6	12.28
ISOPENTANE	18	5.1	4.64	0	0.0	0.00	0	0.0	0.00	1.0	2.81
1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PENTANE	1	0.3	0.25	0	0.0	0.00	0	0.0	0.00	0.1	0.15
2-METHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CIS-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
CYCLOPENTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLBUTANE	10	2.8	2.59	0	0.1	0.42	0	0.1	0.48	0.6	1.74
2,3-DIMETHYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLPENTANE	4	1.0	0.93	0	0.0	0.00	0	0.0	0.00	0.2	0.57
4-METHYL-2-PENTENE	4	1.0	0.91	0	0.0	0.00	0	0.0	0.00	0.2	0.55
MTBE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLPENTANE	1	0.4	0.35	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.1	0.21
HEXANE	7	2.0	1.84	1	0.1	0.70	0	0.0	0.00	0.5	1.31
C6 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

TABLE P-7 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-27

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
2,4-DIMETHYLPENTANE	5	1.4	1.32	0	0.0	0.00	0	0.0	0.00	0.3	0.80
METHYLCYCLOPENTANE	3	0.7	0.66	0	0.0	0.00	0	0.0	0.00	0.1	0.40
CYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	7	1.8	1.68	0	0.0	0.00	0	0.0	0.00	0.4	1.02
CYCLOHEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLHEXANE	2	0.6	0.51	0	0.0	0.00	0	0.0	0.00	0.1	0.31
2,2,4-TRIMETHYLPENTANE	7	1.9	1.72	0	0.0	0.00	0	0.0	0.00	0.4	1.04
N-HEPTANE	4	1.2	1.07	0	0.0	0.00	0	0.0	0.00	0.2	0.65
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,4-TRIMETHYLPENTANE	1	0.4	0.38	0	0.0	0.00	0	0.0	0.00	0.1	0.23
2,3,3-TRIMETHYLPENTANE	1	0.3	0.29	0	0.0	0.00	0	0.0	0.00	0.1	0.17
2-METHYL-3-HEPTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-4-METHYLHEPTANE	2	0.6	0.51	0	0.0	0.00	0	0.0	0.00	0.1	0.31
3-METHYLHEPTANE	1	0.4	0.35	0	0.0	0.00	0	0.0	0.00	0.1	0.21
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
OCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ETHYLBENZENE	11	3.1	2.80	0	0.0	0.00	0	0.0	0.00	0.6	1.70
2,3-DIMETHYLHEPTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-XYLENE/M-XYLENE	23	6.3	5.78	0	0.0	0.00	6	1.7	11.64	1.8	4.78
2-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
3-METHYLOCTANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-XYLENE	10	2.8	2.53	0	0.0	0.00	0	0.0	0.00	0.6	1.54

TABLE P-7 (Cont'd). HYDROCARBON SPECIATION FOR THE TOYOTA CELICA, TEST NO. CS-VAH-27

COMPOUND	BAG 1			BAG 2			BAG 3			FTP TOTAL	
	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG	MG/MI	WGT. %	MG/MI	WGT. %
NONANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
TRANS-2-NONENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPYLBENZENE	1	0.4	0.36	0	0.0	0.00	0	0.0	0.00	0.1	0.22
2,3-DIMETHYLOCTANE	3	0.9	0.82	0	0.0	0.00	0	0.0	0.00	0.2	0.50
O-ETHYLTOLUENE	1	0.4	0.33	0	0.0	0.00	0	0.0	0.00	0.1	0.20
1,2,4-TRIMETHYLBENZENE	11	2.9	2.68	0	0.0	0.00	0	0.0	0.00	0.6	1.63
ISOBUTYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
DECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
P-CYMEANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
INDANE(E)	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
2-METHYLDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BICYCLOPENTYL	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
UNDECANE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
1,3,5-TRIMETHYLBENZENE	2	0.7	0.62	0	0.0	0.00	0	0.0	0.00	0.1	0.38
C7 OLEFINS	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
C8-C9 OLEFINS	4	1.1	0.97	0	0.0	0.00	0	0.0	0.00	0.2	0.59
C9-C11 PARAFFINS, OLEFINS, AROMATICS	2	0.4	0.40	0	0.0	0.00	0	0.0	0.00	0.1	0.25
FORMALDEHYDE	0	0.1	0.10	0	0.0	0.00	0	0.0	0.00	0.0	0.06
ACETALDEHYDE	2	0.4	0.38	5	1.3	6.57	0	0.0	0.00	0.8	2.10
ACROLEIN	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ACETONE	2	0.5	0.44	0	0.0	0.00	0	0.0	0.00	0.0	0.00
PROPIONALDEHYDE	0	0.0	0.00	2	0.4	2.02	0	0.0	0.00	0.3	0.84
CROTONALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
ISOBUTYRALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
METHYL ETHYL KETONE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
BENZALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00
HEXANALDEHYDE	0	0.0	0.00	0	0.0	0.00	0	0.0	0.00	0.0	0.00

A P P E N D I X Q

**1990 TOYOTA CELICA
FTP COLD-START HYDROCARBON SPECIATION MEASUREMENTS**

**TABLE Q-1. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-12**

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	84	127.1	24.2	24	8.2	24.9	108	30.2	24.32
ETHYLENE	9	14.3	2.7	3	1.0	3.0	12	3.4	2.77
ETHANE	12	17.5	3.3	5	1.7	5.0	16	4.8	3.70
ACETYLENE	1	1.0	0.2	0	0.0	0.0	1	0.2	0.15
PROPANE	0	0.0	0.0	0	0.1	0.2	0	0.1	0.05
PROPYLENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3-BUTADIENE	0	0.7	0.1	0	0.0	0.0	0	0.1	0.11
ISOBUTANE	2	2.5	0.5	0	0.1	0.4	2	0.6	0.47
BUTANE	26	38.8	7.4	3	1.1	3.3	29	8.1	6.49
1-BUTENE	1	1.5	0.3	0	0.0	0.0	1	0.3	0.22
ISOBUTYLENE	4	5.3	1.0	2	0.6	2.0	5	1.5	1.22
CIS-2-BUTENE	1	1.3	0.2	0	0.0	0.0	1	0.2	0.19
TRANS-2-BUTENE	1	1.3	0.2	0	0.0	0.0	1	0.2	0.19
BENZENE	9	14.1	2.7	11	3.9	12.0	21	5.8	4.69
TOLUENE	27	40.2	7.8	14	4.9	15.0	41	11.5	9.23
ISOPENTANE	29	43.4	8.2	0	0.0	0.0	29	8.0	6.46
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	10	15.1	2.9	0	0.0	0.0	10	2.8	2.25
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	5	8.9	1.3	0	0.0	0.0	5	1.3	1.03
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	2	3.0	0.6	0	0.0	0.0	2	0.6	0.45
4-METHYL-2-PENTENE	2	2.9	0.6	0	0.0	0.0	2	0.5	0.44
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	3	4.5	0.9	0	0.0	0.0	3	0.8	0.67
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	2	3.0	0.6	0	0.0	0.0	2	0.6	0.45
C6 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	4	6.5	1.2	0	0.0	0.0	4	1.2	0.98
METHYLCYCLOPENTANE	1	2.0	0.4	0	0.0	0.0	1	0.4	0.30
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	12	17.6	3.3	0	0.0	0.0	12	3.2	2.62
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	1	1.7	0.3	0	0.0	0.0	1	0.3	0.25
2,2,4-TRIMETHYLPENTANE	27	41.2	7.8	10	3.3	10.1	37	10.3	8.32
N-HEPTANE	1	1.5	0.3	0	0.0	0.0	1	0.3	0.22
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	4	6.3	1.2	0	0.0	0.0	4	1.2	0.95
2,3,4-TRIMETHYLPENTANE	5	7.6	1.5	0	0.0	0.0	5	1.4	1.14

TABLE Q-1 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-12

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	3	4.7	0.9	0	0.0	0.0	3	0.9	0.70
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	1	1.9	0.4	0	0.0	0.0	1	0.3	0.28
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	4	5.5	1.1	0	0.0	0.0	4	1.0	0.83
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	11	16.8	3.2	9	3.1	9.4	20	5.6	4.53
2-METHYLOCTANE	1	2.0	0.4	0	0.0	0.0	1	0.4	0.31
4-METHYLOCTANE	1	2.0	0.4	0	0.0	0.0	1	0.4	0.31
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	6	9.4	1.8	0	0.0	0.0	6	1.7	1.40
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	2	3.5	0.7	0	0.0	0.0	2	0.6	0.52
2,3-DIMETHYLOCTANE	2	3.5	0.7	0	0.0	0.0	2	0.7	0.53
O-ETHYLTOLUENE	1	1.7	0.3	0	0.0	0.0	1	0.3	0.26
1,2,4-TRIMETHYLBENZENE	7	11.0	2.1	5	1.5	4.7	12	3.3	2.66
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	12	17.7	3.4	0	0.0	0.0	12	3.3	2.64
INDAN(E)	4	5.8	1.1	0	0.0	0.0	4	1.1	0.87
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	3	4.4	0.8	0	0.0	0.0	3	0.8	0.65
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	5	7.0	1.3	9	3.3	9.9	14	3.9	3.18
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACETALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.1	0.05
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

**TABLE Q-2. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-OEM-13**

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	67	99.6	6.5	24	8.4	24.9	91	25.5	7.99
ETHYLENE	42	62.5	4.1	3	1.0	2.9	45	12.5	3.92
ETHANE	13	19.8	1.3	3	1.0	3.1	16	4.6	1.43
ACETYLENE	6	8.3	0.5	0	0.0	0.0	6	1.5	0.49
PROPANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLENE	35	52.5	3.4	7	2.5	7.5	43	11.9	3.73
1,3-BUTADIENE	4	5.8	0.4	0	0.0	0.0	4	1.1	0.34
ISOBUTANE	4	5.8	0.4	1	0.5	1.3	5	1.4	0.45
BUTANE	59	88.7	5.8	6	2.2	6.6	66	18.5	5.78
1-BUTENE	5	8.0	0.5	0	0.0	0.0	5	1.5	0.47
ISOBUTYLENE	24	36.2	2.4	2	0.8	2.3	26	7.4	2.32
CIS-2-BUTENE	4	5.5	0.4	0	0.0	0.0	4	1.0	0.32
TRANS-2-BUTENE	4	5.8	0.4	0	0.0	0.0	4	1.1	0.33
BENZENE	38	53.8	3.5	11	3.7	11.0	47	13.1	4.11
TOLUENE	164	245.1	15.9	14	4.7	13.8	178	49.8	15.59
ISOPENTANE	73	108.3	7.0	0	0.0	0.0	73	20.3	6.36
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	18	27.5	1.8	0	0.0	0.0	18	5.2	1.62
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	4	6.5	0.4	0	0.0	0.0	4	1.2	0.38
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.07
3-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.07
4-METHYL-1-PENTENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.07
2,3-DIMETHYLBUTANE	10	14.5	0.9	0	0.0	0.0	10	2.7	0.85
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	7	11.0	0.7	0	0.0	0.0	7	2.1	0.65
4-METHYL-2-PENTENE	7	10.7	0.7	0	0.0	0.0	7	2.0	0.63
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	9	13.6	0.9	0	0.0	0.0	9	2.5	0.80
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	8	12.1	0.8	0	0.0	0.0	8	2.3	0.71
C8 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	17	25.0	1.6	0	0.0	0.0	17	4.7	1.47
METHYLCYCLOPENTANE	6	9.6	0.6	0	0.0	0.0	6	1.8	0.57
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	47	70.1	4.6	0	0.0	0.0	47	13.2	4.12
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	6	9.1	0.6	0	0.0	0.0	6	1.7	0.53
2,2,4-TRIMETHYLPENTANE	102	151.7	9.9	13	4.3	12.8	114	32.0	10.02
N-HEPTANE	4	5.4	0.3	0	0.0	0.0	4	1.0	0.32
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	4	6.4	0.4	0	0.0	0.0	4	1.2	0.37
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	17	24.8	1.6	0	0.0	0.0	17	4.7	1.46
2,3,4-TRIMETHYLPENTANE	20	29.6	1.9	1	0.4	1.3	21	5.9	1.85

TABLE Q-2 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-OEM-13

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	12	17.8	1.2	1	0.4	1.3	13	3.7	1.16
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-14-METHYLHEPTANE	5	7.8	0.5	0	0.0	0.0	5	1.4	0.45
3-METHYLHEPTANE	4	6.7	0.4	0	0.0	0.0	4	1.3	0.39
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	5	7.2	0.5	0	0.0	0.0	5	1.4	0.42
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	3	4.6	0.3	0	0.0	0.0	3	0.9	0.27
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	15	22.5	1.5	0	0.0	0.0	15	4.2	1.32
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	53	79.4	5.2	8	2.1	6.1	59	16.6	5.20
2-METHYLOCTANE	1	0.9	0.1	0	0.0	0.0	1	0.2	0.05
4-METHYLOCTANE	1	0.9	0.1	0	0.0	0.0	1	0.2	0.05
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	21	30.9	2.0	0	0.0	0.0	21	5.8	1.82
NONANE	2	2.8	0.2	0	0.0	0.0	2	0.5	0.15
TRANS-2-NONENE	1	1.3	0.1	0	0.0	0.0	1	0.2	0.07
PROPYLBENZENE	4	5.5	0.4	0	0.0	0.0	4	1.0	0.33
2,3-DIMETHYLOCTANE	8	11.8	0.8	0	0.0	0.0	8	2.2	0.69
O-ETHYLTOLUENE	4	6.2	0.4	0	0.0	0.0	4	1.2	0.37
1,2,4-TRIMETHYLBENZENE	21	31.4	2.0	1	0.2	0.6	22	6.1	1.90
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	4	5.7	0.4	0	0.0	0.0	4	1.1	0.34
INDAN(E)	1	1.9	0.1	0	0.0	0.0	1	0.4	0.11
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	2	2.8	0.2	0	0.0	0.0	2	0.5	0.15
1-METHYL-3-PROPYLBENZENE	2	2.8	0.2	0	0.0	0.0	2	0.5	0.15
N-BUTYLBENZENE/P-DIETHYLBENZENE	2	2.8	0.2	0	0.0	0.0	2	0.5	0.15
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	2	3.7	0.2	0	0.0	0.0	2	0.7	0.22
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	11	16.6	1.1	0	0.0	0.0	11	3.1	0.98
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	19	28.7	1.9	4	1.5	4.5	24	6.6	2.08
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	5	1.3	0.41
ACETALDEHYDE	—	—	—	—	—	—	4	1.0	0.32
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	3	0.8	0.24
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE Q-3. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-12-2

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	438	663.3	7.7	21	7.1	39.2	458	128.8	8.00
ETHYLENE	156	235.6	2.7	0	0.0	0.0	156	43.7	2.72
ETHANE	45	67.6	0.8	5	1.9	10.4	50	14.1	0.87
ACETYLENE	7	10.1	0.1	0	0.0	0.0	7	1.9	0.12
PROPANE	6	8.9	0.1	3	1.0	5.7	9	2.5	0.15
PROPYLENE	163	247.7	2.9	0	0.0	0.0	163	45.9	2.85
1,3-BUTADIENE	23	35.4	0.4	0	0.0	0.0	23	6.6	0.41
ISOBUTANE	36	54.5	0.6	0	0.0	0.0	36	10.1	0.63
BUTANE	598	906.7	10.6	0	0.0	0.0	598	168.1	10.45
1-BUTENE	20	30.3	0.4	0	0.0	0.0	20	5.6	0.35
ISOBUTYLENE	112	169.2	2.0	1	0.3	1.8	113	31.6	1.97
CIS-2-BUTENE	15	22.8	0.3	0	0.0	0.0	15	4.2	0.26
TRANS-2-BUTENE	18	27.9	0.3	0	0.0	0.0	18	5.2	0.32
BENZENE	305	462.6	5.4	4	1.3	7.4	309	86.8	5.40
TOLUENE	747	1131.2	13.2	2	0.7	3.7	749	210.3	13.07
ISOPENTANE	715	1083.7	12.6	1	0.4	2.3	716	201.2	12.51
1-PENTENE	6	8.9	0.1	0	0.0	0.0	6	1.6	0.10
PENTANE	170	257.2	3.0	0	0.0	0.0	170	47.7	2.96
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	13	19.9	0.2	0	0.0	0.0	13	3.7	0.23
TRANS-2-PENTENE	13	19.2	0.2	0	0.0	0.0	13	3.8	0.22
CIS-2-PENTENE	7	10.0	0.1	0	0.0	0.0	7	1.8	0.11
2-METHYL-2-BUTENE	29	43.4	0.5	0	0.0	0.0	29	8.0	0.50
2,2-DIMETHYLBUTANE	19	28.3	0.3	0	0.0	0.0	19	5.3	0.33
CYCLOPENTENE	3	4.1	0.0	0	0.0	0.0	3	0.8	0.05
CYCLOPENTANE	6	9.6	0.1	0	0.0	0.0	6	1.8	0.11
3-METHYL-1-PENTENE	6	9.6	0.1	0	0.0	0.0	6	1.8	0.11
4-METHYL-1-PENTENE	6	9.6	0.1	0	0.0	0.0	6	1.8	0.11
2,3-DIMETHYLBUTANE	78	118.5	1.4	0	0.0	0.0	78	22.0	1.37
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	57	88.3	1.0	0	0.0	0.0	57	16.0	1.00
4-METHYL-2-PENTENE	56	84.3	1.0	0	0.0	0.0	56	15.6	0.97
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	65	99.0	1.2	0	0.0	0.0	65	18.4	1.14
2-METHYL-1-PENTENE/1-HEXENE	5	7.4	0.1	0	0.0	0.0	5	1.4	0.09
HEXANE	56	84.5	1.0	0	0.0	0.0	56	15.7	0.97
C6 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	103	156.6	1.8	0	0.0	0.0	103	29.0	1.81
METHYLCYCLOPENTANE	45	68.1	0.8	0	0.0	0.0	45	12.6	0.78
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	5	7.9	0.1	0	0.0	0.0	5	1.5	0.09
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	254	384.6	4.5	0	0.0	0.0	254	71.3	4.43
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	34	51.4	0.6	0	0.0	0.0	34	9.5	0.59
2,2,4-TRIMETHYLPENTANE	510	772.6	9.0	3	0.9	4.9	512	144.0	8.95
N-HEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	19	28.2	0.3	0	0.0	0.0	19	5.2	0.33
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	69	105.2	1.2	0	0.0	0.0	69	19.5	1.21
2,3,4-TRIMETHYLPENTANE	76	115.5	1.3	0	0.0	0.0	76	21.4	1.33

TABLE Q-3 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-12-2

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	43	65.5	0.8	0	0.0	0.0	43	12.1	0.76
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	23	35.1	0.4	0	0.0	0.0	23	6.5	0.40
3-METHYLHEPTANE	17	25.2	0.3	0	0.0	0.0	17	4.7	0.29
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	21	31.3	0.4	0	0.0	0.0	21	5.8	0.36
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	10	15.2	0.2	0	0.0	0.0	10	2.8	0.18
2,3,5-TRIMETHYLHEXANE	3	4.9	0.1	0	0.0	0.0	3	0.9	0.06
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	4	6.0	0.1	0	0.0	0.0	4	1.1	0.07
ETHYLBENZENE	36	55.0	0.8	5	1.6	8.7	41	11.5	0.71
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	119	179.7	2.1	0	0.0	0.0	119	33.3	2.07
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	2	3.0	0.0	0	0.0	0.0	2	0.6	0.03
3-METHYLOCTANE	2	3.0	0.0	0	0.0	0.0	2	0.6	0.03
O-XYLENE	54	81.5	0.9	8	2.9	16.0	62	17.5	1.09
NONANE	3	3.9	0.0	0	0.0	0.0	3	0.7	0.05
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	9	13.3	0.2	0	0.0	0.0	9	2.5	0.15
2,3-DIMETHYLOCTANE	14	21.6	0.3	0	0.0	0.0	14	4.0	0.25
O-ETHYLTOLUENE	8	12.5	0.1	0	0.0	0.0	8	2.3	0.14
1,2,4-TRIMETHYLBENZENE	31	46.3	0.5	0	0.0	0.0	31	8.6	0.53
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	6	9.4	0.1	0	0.0	0.0	6	1.7	0.11
INDAN(E)	2	2.4	0.0	0	0.0	0.0	2	0.4	0.03
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	2	3.5	0.0	0	0.0	0.0	2	0.7	0.04
1-METHYL-3-PROPYLBENZENE	4	6.2	0.1	0	0.0	0.0	4	1.1	0.07
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	4.8	0.1	0	0.0	0.0	3	0.9	0.05
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	4	6.4	0.1	0	0.0	0.0	4	1.2	0.07
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	1	2.1	0.0	0	0.0	0.0	1	0.4	0.02
1,3,5-TRIMETHYLBENZENE	23	35.5	0.4	0	0.0	0.0	23	6.6	0.41
C7 OLEFINS	50	76.0	0.9	0	0.0	0.0	50	14.1	0.88
C8-C9 OLEFINS	39	58.6	0.7	0	0.0	0.0	39	10.9	0.68
C9-C11 PARAFFINS, OLEFINS, AROMATICS	26	39.1	0.5	0	0.0	0.0	26	7.3	0.45
FORMALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACETALDEHYDE	—	—	—	—	—	—	2	0.6	0.04
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE Q-4. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-15

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	211	315.1	8.9	40	13.7	28.1	251	70.3	9.92
ETHYLENE	57	85.6	2.4	6	1.9	3.9	63	17.6	2.48
ETHANE	17	24.9	0.7	11	3.8	7.7	28	7.7	1.09
ACETYLENE	4	5.4	0.2	1	0.4	0.8	5	1.4	0.19
PROPANE	1	1.9	0.1	0	0.0	0.0	1	0.4	0.05
PROPYLENE	25	37.4	1.1	7	2.3	4.7	32	8.9	1.25
1,3-BUTADIENE	6	8.7	0.2	0	0.0	0.0	6	1.6	0.23
ISOBUTANE	6	9.3	0.3	0	0.0	0.1	6	1.8	0.25
BUTANE	244	364.6	10.3	5	1.7	3.5	249	69.8	9.85
1-BUTENE	5	7.1	0.2	1	0.3	0.7	6	1.6	0.23
ISOBUTYLENE	11	15.8	0.4	2	0.8	1.6	13	3.6	0.51
CIS-2-BUTENE	3	4.4	0.1	1	0.2	0.5	4	1.0	0.14
TRANS-2-BUTENE	3	5.1	0.1	1	0.2	0.5	4	1.1	0.16
BENZENE	71	106.0	3.0	28	9.6	19.6	99	27.7	3.91
TOLUENE	120	179.1	5.0	12	4.2	8.7	132	37.1	5.23
ISOPENTANE	251	375.3	10.6	1	0.4	0.9	253	70.8	9.99
1-PENTENE	6	9.2	0.3	0	0.0	0.0	6	1.7	0.24
PENTANE	169	251.7	7.1	0	0.0	0.0	169	47.2	6.66
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	5	6.8	0.2	0	0.0	0.0	5	1.3	0.18
TRANS-2-PENTENE	17	26.0	0.7	0	0.0	0.0	17	4.9	0.69
CIS-2-PENTENE	10	14.3	0.4	0	0.0	0.0	10	2.7	0.38
2-METHYL-2-BUTENE	28	41.6	1.2	0	0.0	0.0	28	7.8	1.10
2,2-DIMETHYLBUTANE	42	63.4	1.8	0	0.0	0.0	42	11.9	1.68
CYCLOPENTENE	4	6.2	0.2	0	0.0	0.0	4	1.2	0.16
CYCLOPENTANE	4	5.5	0.2	0	0.0	0.0	4	1.0	0.15
3-METHYL-1-PENTENE	4	5.5	0.2	0	0.0	0.0	4	1.0	0.15
4-METHYL-1-PENTENE	4	5.5	0.2	0	0.0	0.0	4	1.0	0.15
2,3-DIMETHYLBUTANE	64	95.5	2.7	0	0.0	0.0	64	17.9	2.53
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	90	134.0	3.8	0	0.0	0.0	90	25.1	3.55
4-METHYL-2-PENTENE	88	130.8	3.7	0	0.0	0.0	88	24.5	3.46
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	86	129.1	3.6	0	0.0	0.0	86	24.2	3.42
2-METHYL-1-PENTENE/1-HEXENE	6	9.2	0.3	0	0.0	0.0	6	1.7	0.24
HEXANE	78	116.5	3.3	0	0.0	0.0	78	21.9	3.09
C6 OLEFINS	29	43.6	1.2	0	0.0	0.0	29	8.2	1.15
2,4-DIMETHYLPENTANE	32	47.7	1.3	0	0.0	0.0	32	8.9	1.26
METHYLCYCLOPENTANE	28	42.1	1.2	0	0.0	0.0	28	7.9	1.12
CYCLOHEXANE	4	6.2	0.2	0	0.0	0.0	4	1.2	0.16
METHYLCYCLOPENTENE	4	6.6	0.2	0	0.0	0.0	4	1.2	0.18
3-METHYL-1,3-PENTADIENE	4	6.1	0.2	0	0.0	0.0	4	1.1	0.16
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	82	121.7	3.4	0	0.0	0.0	82	22.8	3.22
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	36	53.3	1.5	0	0.0	0.0	36	10.0	1.41
2,2,4-TRIMETHYLPENTANE	91	136.3	3.8	0	0.1	0.2	92	25.7	3.62
N-HEPTANE	25	37.2	1.0	0	0.0	0.0	25	7.0	0.99
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	12	17.2	0.5	0	0.0	0.0	12	3.2	0.46
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	18	27.4	0.8	0	0.0	0.0	18	5.1	0.73
2,3,4-TRIMETHYLPENTANE	17	26.1	0.7	0	0.0	0.0	17	4.9	0.69

TABLE Q-4 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-15

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	13	19.4	0.5	0	0.0	0.0	13	3.6	0.51
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	18	26.5	0.7	0	0.0	0.0	18	5.0	0.70
3-METHYLHEPTANE	16	23.9	0.7	0	0.0	0.0	16	4.5	0.63
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	6	9.3	0.3	0	0.0	0.0	6	1.7	0.25
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	8	12.3	0.3	0	0.0	0.0	8	2.3	0.33
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	3	4.1	0.1	0	0.0	0.0	3	0.8	0.11
ETHYLBENZENE	22	33.5	0.9	5	1.9	3.8	28	7.8	1.10
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	57	85.4	2.4	8	2.7	5.5	65	18.2	2.57
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	1	2.2	0.1	0	0.0	0.0	1	0.4	0.06
3-METHYLOCTANE	1	2.2	0.1	0	0.0	0.0	1	0.4	0.06
O-XYLENE	21	31.4	0.9	8	2.8	5.8	29	8.2	1.15
NONANE	3	3.9	0.1	0	0.0	0.0	3	0.7	0.10
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	3	5.1	0.1	0	0.0	0.0	3	0.9	0.13
2,3-DIMETHYLOCTANE	6	8.5	0.2	2	0.8	1.6	8	2.2	0.32
O-ETHYLTOLUENE	4	5.4	0.2	0	0.0	0.0	4	1.0	0.14
1,2,4-TRIMETHYLBENZENE	14	20.9	0.6	3	0.9	1.9	17	4.7	0.66
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYMENE	3	5.1	0.1	0	0.0	0.0	3	1.0	0.13
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	2	2.3	0.1	0	0.0	0.0	2	0.4	0.06
1-METHYL-3-PROPYLBENZENE	2	2.5	0.1	0	0.0	0.0	2	0.5	0.06
N-BUTYLBENZENE/P-DIETHYLBENZENE	1	2.1	0.1	0	0.0	0.0	1	0.4	0.06
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	2	3.5	0.1	0	0.0	0.0	2	0.7	0.09
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	6	8.7	0.2	0	0.0	0.0	6	1.6	0.23
C7 OLEFINS	28	41.4	1.2	0	0.0	0.0	28	7.8	1.10
C8-C9 OLEFINS	13	19.6	0.6	0	0.0	0.0	13	3.7	0.52
C9-C11 PARAFFINS, OLEFINS, AROMATICS	6	9.3	0.3	0	0.0	0.0	6	1.8	0.25
FORMALDEHYDE	—	—	—	—	—	—	3	0.9	0.12
ACETALDEHYDE	—	—	—	—	—	—	3	0.7	0.10
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE Q-5. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-OEM-14

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	75	110.4	7.5	32	10.8	20.1	107	29.8	9.06
ETHYLENE	53	78.0	5.3	4	1.2	2.2	57	15.7	4.80
ETHANE	15	21.6	1.5	8	2.0	3.8	20	5.7	1.73
ACETYLENE	7	10.3	0.7	0	0.0	0.0	7	1.9	0.59
PROPANE	2	2.9	0.2	2	0.7	1.3	4	1.1	0.34
PROPYLENE	30	44.2	3.0	0	0.0	0.0	30	8.3	2.55
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	0	0.0	0.0	0	0.2	0.3	0	0.1	0.04
BUTANE	0	0.0	0.0	10	3.3	6.1	10	2.7	0.81
1-BUTENE	0	0.5	0.0	0	0.0	0.0	0	0.1	0.03
ISOBUTYLENE	1	1.4	0.1	2	0.7	1.2	3	0.8	0.24
CIS-2-BUTENE	0	0.0	0.0	1	0.3	0.5	1	0.2	0.06
TRANS-2-BUTENE	0	0.0	0.0	0	0.0	0.1	0	0.0	0.01
BENZENE	52	76.5	5.2	18	5.3	9.9	68	18.7	5.74
TOLUENE	103	151.2	10.3	10	3.5	6.5	113	31.3	9.60
ISOPENTANE	58	85.2	5.8	25	8.6	16.0	83	23.0	7.06
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	36	52.4	3.6	0	0.0	0.0	36	9.9	3.03
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	5	7.3	0.5	0	0.0	0.0	5	1.4	0.42
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	9	12.5	0.9	0	0.0	0.0	9	2.4	0.72
2,2-DIMETHYLBUTANE	7	10.4	0.7	0	0.0	0.0	7	2.0	0.60
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	1	1.8	0.1	0	0.0	0.0	1	0.3	0.10
3-METHYL-1-PENTENE	1	1.8	0.1	0	0.0	0.0	1	0.3	0.10
4-METHYL-1-PENTENE	1	1.8	0.1	0	0.0	0.0	1	0.3	0.10
2,3-DIMETHYLBUTANE	15	22.2	1.5	8	2.0	3.7	21	5.8	1.78
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	18	27.0	1.8	2	0.6	1.2	20	5.6	1.72
4-METHYL-2-PENTENE	18	26.4	1.8	2	0.6	1.2	20	5.5	1.68
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	21	30.2	2.1	5	1.6	2.9	25	7.0	2.13
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	19	28.0	1.9	0	0.0	0.0	19	5.3	1.62
C6 OLEFINS	1	2.1	0.1	0	0.0	0.0	1	0.4	0.12
2,4-DIMETHYLPENTANE	9	12.9	0.9	1	0.2	0.4	9	2.6	0.80
METHYLCYCLOPENTANE	9	12.7	0.9	0	0.0	0.0	9	2.4	0.73
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	2	3.7	0.2	0	0.0	0.0	2	0.7	0.21
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	26	38.6	2.6	2	0.7	1.2	28	7.8	2.40
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	12	17.0	1.2	1	0.4	0.7	13	3.5	1.08
2,2,4-TRIMETHYLPENTANE	33	48.5	3.3	4	1.3	2.4	37	10.2	3.12
N-HEPTANE	8	12.0	0.8	0	0.0	0.0	8	2.3	0.70
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	5	7.7	0.5	0	0.0	0.0	5	1.4	0.44
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	11	15.7	1.1	0	0.0	0.0	11	2.9	0.90
2,3,4-TRIMETHYLPENTANE	6	8.8	0.6	0	0.0	0.0	6	1.6	0.50

TABLE Q-5 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-OEM-14

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	6	8.8	0.6	0	0.0	0.0	6	1.7	0.51
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-4-METHYLHEPTANE	10	14.6	1.0	0	0.0	0.0	10	2.7	0.84
3-METHYLHEPTANE	9	13.3	0.9	0	0.0	0.0	9	2.5	0.77
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	4	5.6	0.4	0	0.0	0.0	4	1.1	0.33
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	6	9.3	0.6	0	0.0	0.0	6	1.7	0.54
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	4	6.4	0.4	0	0.0	0.0	4	1.2	0.37
ETHYLBENZENE	27	40.3	2.7	3	1.1	2.1	31	8.5	2.61
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	76	111.1	7.6	5	1.7	3.2	81	22.3	6.84
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	1	2.0	0.1	0	0.0	0.0	1	0.4	0.12
3-METHYLOCTANE	1	2.0	0.1	0	0.0	0.0	1	0.4	0.12
O-XYLENE	26	37.6	2.6	7	2.3	4.3	32	9.0	2.75
NONANE	4	5.6	0.4	0	0.0	0.0	4	1.1	0.33
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	6	8.7	0.6	0	0.0	0.0	6	1.6	0.50
2,3-DIMETHYLOCTANE	10	14.8	1.0	5	1.8	3.4	15	4.3	1.31
O-ETHYLTOLUENE	7	10.0	0.7	0	0.0	0.0	7	1.9	0.58
1,2,4-TRIMETHYLBENZENE	29	42.8	2.9	5	1.6	3.0	34	9.4	2.88
ISOBUTYLBENZENE	5	7.7	0.5	0	0.0	0.0	5	1.5	0.44
DECANE	6	8.2	0.6	0	0.0	0.0	6	1.5	0.47
P-CYMENE	8	12.1	0.8	0	0.0	0.0	8	2.3	0.70
INDAN(E)	2	3.5	0.2	0	0.0	0.0	2	0.7	0.20
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	6	8.7	0.6	0	0.0	0.0	6	1.6	0.50
1-METHYL-3-PROPYLBENZENE	3	5.1	0.3	0	0.0	0.0	3	1.0	0.30
N-BUTYLBENZENE/P-DIETHYLBENZENE	3	4.1	0.3	0	0.0	0.0	3	0.8	0.24
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	4	6.5	0.4	0	0.0	0.0	4	1.2	0.38
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	1	1.8	0.1	0	0.0	0.0	1	0.3	0.10
1,3,5-TRIMETHYLBENZENE	10	14.8	1.0	4	1.2	2.3	14	3.8	1.16
C7 OLEFINS	8	12.0	0.8	0	0.0	0.0	8	2.3	0.69
C8-C9 OLEFINS	26	37.6	2.6	0	0.0	0.0	26	7.1	2.17
C9-C11 PARAFFINS, OLEFINS, AROMATICS	21	31.3	2.1	0	0.0	0.0	21	5.9	1.81
FORMALDEHYDE	—	—	—	—	—	—	3	0.8	0.26
ACETALDEHYDE	—	—	—	—	—	—	3	0.8	0.25
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	0	0.0	0.00
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	14	4.0	1.22
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE Q-6. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-26

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	68	99.6	32.2	41	14.1	22.4	109	30.3	27.30
ETHYLENE	4	6.4	2.1	18	5.5	8.7	20	5.6	5.09
ETHANE	9	13.2	4.3	5	1.7	2.8	14	3.9	3.52
ACETYLENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPANE	1	1.4	0.4	1	0.4	0.7	2	0.6	0.54
PROPYLENE	4	5.4	1.8	0	0.0	0.0	4	1.0	0.92
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	1	1.0	0.3	0	0.1	0.1	1	0.3	0.24
BUTANE	9	12.7	4.1	8	2.7	4.3	17	4.6	4.15
1-BUTENE	1	0.9	0.3	0	0.0	0.0	1	0.2	0.15
ISOBUTYLENE	1	2.0	0.6	1	0.5	0.7	3	0.7	0.67
CIS-2-BUTENE	0	0.4	0.1	0	0.0	0.0	0	0.1	0.07
TRANS-2-BUTENE	1	0.9	0.3	1	0.2	0.3	1	0.3	0.31
BENZENE	10	14.7	4.8	48	16.6	26.3	58	16.3	14.85
TOLUENE	24	35.1	11.4	14	4.7	7.5	38	10.5	9.42
ISOPENTANE	11	16.0	5.2	8	2.8	4.4	19	5.3	4.74
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	5	6.7	2.2	0	0.0	0.0	5	1.3	1.14
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	2	2.8	0.9	1	0.4	0.6	3	0.8	0.74
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	1	1.5	0.5	1	0.3	0.4	2	0.5	0.46
4-METHYL-2-PENTENE	1	1.5	0.5	1	0.3	0.4	2	0.5	0.45
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	1	2.1	0.7	3	0.9	1.4	4	1.1	1.01
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	3	4.9	1.6	0	0.0	0.0	3	0.9	0.84
C8 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	2	3.3	1.1	0	0.0	0.0	2	0.6	0.56
METHYLCYCLOPENTANE	1	1.6	0.5	0	0.0	0.0	1	0.3	0.27
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	6	8.8	2.8	10	3.3	5.3	16	4.4	3.93
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYLPENTANE	11	16.8	5.4	10	3.5	5.6	22	6.0	5.43
N-HEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,4-TRIMETHYLPENTANE	3	4.2	1.4	4	1.2	1.9	6	1.8	1.60

TABLE Q-6 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-26

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	2	3.1	1.0	4	1.2	1.9	6	1.6	1.42
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	3	4.7	1.5	3	0.9	1.5	6	1.6	1.49
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	8	12.2	3.9	5	1.7	2.7	13	3.7	3.32
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	4	6.1	2.0	0	0.0	0.0	4	1.2	1.04
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	1	1.9	0.6	0	0.0	0.0	1	0.4	0.32
2,3-DIMETHYLOCTANE	1	2.0	0.6	0	0.0	0.0	1	0.4	0.34
O-ETHYLTOLUENE	1	2.0	0.7	0	0.0	0.0	1	0.4	0.35
1,2,4-TRIMETHYLBENZENE	2	3.2	1.0	0	0.0	0.0	2	0.6	0.55
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYME	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	3	4.8	1.5	0	0.0	0.0	3	0.9	0.78
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	4	5.5	1.8	0	0.0	0.0	4	1.1	0.95
C9-C11 PARAFFINS, OLEFINS, AROMATICS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
FORMALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ACETALDEHYDE	—	—	—	—	—	—	3	0.9	0.80
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	2	0.5	0.43
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

TABLE Q-7. COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-27

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
METHANE	59	86.7	27.7	39	13.4	22.2	98	27.4	24.95
ETHYLENE	8	11.4	3.6	10	3.3	5.5	17	4.9	4.44
ETHANE	11	16.6	5.3	5	1.9	3.1	17	4.7	4.26
ACETYLENE	0	0.3	0.1	0	0.0	0.0	0	0.1	0.06
PROPANE	0	0.4	0.1	0	0.0	0.0	0	0.1	0.06
PROPYLENE	5	7.6	2.4	3	1.1	1.8	8	2.3	2.14
1,3-BUTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOBUTANE	0	0.2	0.0	0	0.0	0.0	0	0.0	0.03
BUTANE	14	20.4	6.5	8	2.1	3.5	20	5.6	5.12
1-BUTENE	1	1.8	0.6	0	0.0	0.0	1	0.3	0.31
ISOBUTYLENE	3	3.8	1.2	2	0.7	1.1	4	1.2	1.14
CIS-2-BUTENE	0	0.6	0.2	0	0.1	0.2	1	0.2	0.19
TRANS-2-BUTENE	1	1.3	0.4	0	0.1	0.2	1	0.3	0.30
BENZENE	12	17.6	5.6	21	7.2	11.9	33	9.2	8.36
TOLUENE	23	34.0	10.9	18	6.2	10.2	41	11.5	10.45
ISOPENTANE	3	3.8	1.2	16	5.4	8.9	18	5.1	4.64
1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PENTANE	1	1.4	0.5	0	0.0	0.0	1	0.3	0.25
2-METHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ISOPRENE(2-METHYL-1,3-BUTADIENE)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CIS-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYL-2-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2-DIMETHYLBUTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
CYCLOPENTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLBUTANE	4	5.5	1.7	6	2.2	3.7	10	2.8	2.59
2,3-DIMETHYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLPENTANE	2	2.7	0.8	2	0.6	1.1	4	1.0	0.93
4-METHYL-2-PENTENE	2	2.6	0.8	2	0.6	1.0	4	1.0	0.91
MTBE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLPENTANE	1	1.2	0.4	1	0.2	0.3	1	0.4	0.35
2-METHYL-1-PENTENE/1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
HEXANE	2	2.8	0.9	5	1.8	3.0	7	2.0	1.84
C8 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLPENTANE	2	2.4	0.8	4	1.2	2.0	5	1.4	1.32
METHYLCYCLOPENTANE	1	1.0	0.3	2	0.6	1.1	3	0.7	0.66
CYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOPENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYL-1,3-PENTADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3-DIMETHYLPENTANE/2-METHYLHEXANE	3	4.1	1.3	4	1.3	2.2	7	1.8	1.68
CYCLOHEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
5-METHYL-2-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLHEXANE	2	2.9	0.9	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYLPENTANE	4	5.5	1.7	3	1.0	1.7	7	1.9	1.72
N-HEPTANE	2	2.4	0.8	3	0.9	1.5	4	1.2	1.07
2,4,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,4-TRIMETHYL-1-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
METHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4,4-TRIMETHYL-2-PENTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4/2-5-DIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,4-TRIMETHYLPENTANE	1	2.2	0.7	0	0.0	0.0	1	0.4	0.38

TABLE Q-7 (CONT'D). COLD-START HYDROCARBON SPECIATION FOR THE
TOYOTA CELICA, TEST NO. CS-VAH-27

COMPOUND	BAG 1A			BAG 1B			BAG 1 TOTAL		
	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %	MG	MG/MI	WEIGHT %
2,3,3-TRIMETHYLPENTANE	1	1.8	0.5	0	0.0	0.0	1	0.3	0.29
2-METHYL-3-HEPTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3,5,5-TRIMETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-/4-METHYLHEPTANE	2	2.9	0.9	0	0.0	0.0	2	0.8	0.51
3-METHYLHEPTANE	1	2.0	0.8	0	0.0	0.0	1	0.4	0.35
2,5-DIMETHYL-1,5-HEXADIENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,2,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-ETHYL-1-HEXENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-CIS-4-DIMETHYLCYCLOHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
OCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,3,5-TRIMETHYLHEXANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,4-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2,5/3,5-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
ETHYLBENZENE	5	7.3	2.3	6	2.1	3.4	11	3.1	2.80
2,3-DIMETHYLHEPTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-XYLENE/M-XYLENE	13	19.2	8.1	10	3.3	5.5	23	6.3	5.78
2-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
3-METHYLOCTANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-XYLENE	5	8.0	2.6	5	1.6	2.6	10	2.8	2.53
NONANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
TRANS-2-NONENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
PROPYLBENZENE	1	2.1	0.7	0	0.0	0.0	1	0.4	0.36
2,3-DIMETHYLOCTANE	3	4.7	1.5	0	0.0	0.0	3	0.9	0.82
O-ETHYLTOLUENE	1	1.9	0.6	0	0.0	0.0	1	0.4	0.33
1,2,4-TRIMETHYLBENZENE	6	9.2	2.9	4	1.5	2.4	11	2.9	2.68
ISOBUTYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
DECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
P-CYME	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
INDAN(E)	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
4-PHENYL-1-BUTENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
M-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1-METHYL-3-PROPYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
N-BUTYLBENZENE/P-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
O-DIETHYLBENZENE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
2-METHYLDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
BICYCLOPENTYL	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
UNDECANE	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
1,3,5-TRIMETHYLBENZENE	2	3.6	1.1	0	0.0	0.0	2	0.7	0.62
C7 OLEFINS	0	0.0	0.0	0	0.0	0.0	0	0.0	0.00
C8-C9 OLEFINS	4	5.6	1.8	0	0.0	0.0	4	1.1	0.97
C9-C11 PARAFFINS, OLEFINS, AROMATICS	2	2.3	0.7	0	0.0	0.0	2	0.4	0.40
FORMALDEHYDE	—	—	—	—	—	—	0	0.1	0.10
ACETALDEHYDE	—	—	—	—	—	—	2	0.4	0.38
ACROLEIN	—	—	—	—	—	—	0	0.0	0.00
ACETONE	—	—	—	—	—	—	2	0.5	0.44
PROPIONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
CROTONALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
ISOBUTYRALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
METHYL ETHYL KETONE	—	—	—	—	—	—	0	0.0	0.00
BENZALDEHYDE	—	—	—	—	—	—	0	0.0	0.00
HEXANALDEHYDE	—	—	—	—	—	—	0	0.0	0.00

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