# FORMALDEHYDE EMISSION CONTROL TECHNOLOGY FOR METHANOL-FUELED VEHICLES

Final Report
Appendices A - Y

Contract No. A732-148

LIBRARY-AIR RESOURCES BOARD

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## APPENDIX A

## COMPUTER PRINTOUTS OF TASK 1 EMISSION TESTS

| Page A- | Test No. | Test Cycle | Catalyst System |
|---|---|---|---|
| 2 | 1 Run 1 | FTP | None |
| 3 | 1 Run 1 | 30SS | None |
| 4 | 1 Run 1 | 55SS | None |
| 5 | 1 Run 2 | FTP | None |
| 6 | 1 Run 2 | 30SS | None |
| 7 | 1 Run 2 | 55SS | None |
| 8 | BL-3 | FTP | None |
| 9 | BL-3 | 30SS | None |
| 10 | BL-3 | 55SS | None |
| 11 | BL-4 | FTP | None |
| 12 | BL-4 | 30SS | None |
| 13 | BL-4 | 55SS | None |
| 14 | AESU1 | FTP | A |
| 15 | AESU1 | 30SS | A |
| 16 | AESU1 | 55SS | A |
| 17 | AESU2 | FTP | A |
| 18 | AESU2 | 30SS | A |
| 19 | AESU2 | 55SS | A |
| 20 | ANSU1 | FTP | B |
| 21 | ANSU1 | 30SS | B |
| 22 | ANSU1 | 55SS | B |
| 23 | ANSU2 | FTP | B |
| 24 | ANSU2 | 30SS | B |
| 25 | ANSU2 | 55SS | B |
| 26 | ADCU1 | FTP | C |
| 27 | ADCU1 | 30SS | C |
| 28 | ADCU1 | 55SS | C |
| 29 | ADCU2 | FTP | C |
| 30 | ADCU2 | 30SS | C |
| 31 | ADCU2 | 55SS | C |
| 32 | AJMU1 | FTP | D |
| 33 | AJMU1 | 30SS | D |
| 34 | AJMU1 | 55SS | D |
| 35 | AJMU1 | FTP | D |
| 36 | AJMU1 | 30SS | D |
| 37 | AJMU1 | 55SS | D |

## APPENDIX A (CONT'D)

## COMPUTER PRINTOUTS OF TASK 1 EMISSION TESTS

| Page A- | Test No. | Test Cycle | Catalyst System |
|---|---|---|---|
| 38 | AHCU-1 | FTP | E |
| 39 | AHCU-1 | 30SS | E |
| 40 | AHCU-1 | 55SS | E |
| 41 | AHCU-2 | FTP | E |
| 42 | AHCU-2 | 30SS | E |
| 43 | AHCU-2 | 55SS | E |
| 44 | ASWU-1 | FTP | F |
| 45 | ASWU-1 | 30SS | F |
| 46 | ASWU-1 | 55SS | F |
| 47 | AASC-1 | FTP | G |
| 48 | AASC-1 | 30SS | G |
| 49 | AASC-1 | 55SS | G |
| 50 | AASC-2 | FTP | G |
| 51 | AASC-2 | 30SS | G |
| 52 | AASC-2 | 55SS | G |
| 53 | ANSC-1 | FTP | H |
| 54 | ANSC-1 | 30SS | H |
| 55 | ANSC-1 | 55SS | H |
| 56 | ANSC-2 | FTP | H |
| 57 | ANSC-2 | 30SS | H |
| 58 | ANSC-2 | 55SS | H |
| 59 | ADCC-1 | FTP | I |
| 60 | ADCC-1 | 30SS | I |
| 61 | ADCC-1 | 55SS | I |
| 62 | ADCC-2 | FTP | I |
| 63 | ADCC-2 | 30SS | I |
| 64 | ADCC-2 | 55SS | I |
| 65 | AJMC-1 | FTP | J |
| 66 | AJMC-1 | 30SS | J |
| 67 | AJMC-1 | 55SS | J |
| 68 | AJMC-2 | FTP | J |
| 69 | AJMC-2 | 30SS | J |
| 70 | ADMC-2 | 55SS | J |
| 71 | ANSUC-1 | FTP | K |
| 72 | ANSUC-1 | 30SS | K |
| 73 | ANSUC-1 | 55SS | K |

## APPENDIX A (CONT'D)

## COMPUTER PRINTOUTS OF TASK 1 EMISSION TESTS

| Page A- | Test No. | Test Cycle | Catalyst System |
|---|---|---|---|
| 74 | ANSUC-2 | FTP | K |
| 75 | ANSUC-2 | 30SS | K |
| 76 | ANSUC-2 | 55SS | K |
| 77 | SWUC | FTP | L |
| 78 | SWUC | 30SS | L |
| 79 | SWUC | 55SS | L |
| 80 | AASC2-1 | FTP | M |
| 81 | AASC2-1 | 30SS | M |
| 82 | AASC2-1 | 55SS | M |
| 83 | AASC2-2 | FTP | M |
| 84 | AASC2-2 | 30SS | M |
| 85 | AASC2-2 | 55SS | M |
| 86 | AASC3-1 | FTP | N |
| 87 | AASC3-1 | 30SS | N |
| 88 | AASC3-1 | 55SS | N |
| 89 | ANSC2-1 | FTP | O |
| 90 | ANSC2-1 | 30SS | O |
| 91 | ANSC2-1 | 55SS | O |
| 92 | AJMM1-1 | FTP | P |
| 93 | AJMM1-1 | 30SS | P |
| 94 | AJMM1-1 | 55SS | P |
| 95 | AJMM1-2 | FTP | P |
| 96 | AJMM1-2 | 30SS | P |
| 97 | AJMM1-2 | 55SS | P |
| 98 | AJMM2-1 | FTP | Q |
| 99 | AJMM2-1 | 30SS | Q |
| 100 | AJMM2-1 | 55SS | Q |
| 101 | AJMM2-2 | FTP | Q |
| 102 | AJMM2-2 | 30SS | Q |
| 103 | AJMM2-2 | 55SS | Q |
| 104 | AJMM3-1 | FTP | R |
| 105 | AJMM3-1 | 30SS | R |
| 106 | AJMM3-1 | 55SS | R |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 12/14/88
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER

BAROMETER 739.90 MM HG(29.13 IN HG)
RELATIVE HUMIDITY 34. PCT
BAG RESULTS

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 6.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .88

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 42.2 (108.0) | 39.4 (103.0) | 42.2 (108.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40630. | 69876. | 40595. | 69589. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2662.) | 130.4 ( 4603.) | 75.3 ( 2660.) | 129.5 ( 4573.) |
| THC SAMPLE METER/RANGE/PPM | 49.3/ 3/ 493. | 13.6/ 3/ 134. | 14.7/ 3/ 144. | 10.6/ 3/ 104. |
| THC BCKGRD METER/RANGE/PPM | 1.3/ 3/ 13. | 1.2/ 3/ 12. | 1.1/ 3/ 11. | 1.2/ 3/ 12. |
| CO SAMPLE METER/RANGE/PPM | 74.3/ 3/1964. | 34.3/ 3/ 808. | 41.7/ 3/ 999. | 31.0/ 3/ 726. |
| CO BCKGRD METER/RANGE/PPM | .1/ 3/ 2. | .0/ 3/ 0. | .0/ 3/ 0. | .2/ 3/ 5. |
| CO2 SAMPLE METER/RANGE/PCT | 79.7/ 11/ .7363 | 57.9/ 11/ .4675 | 73.3/ 11/ .6504 | 57.3/ 11/ .4610 |
| CO2 BCKGRD METER/RANGE/PCT | 8.0/ 11/ .0477 | 8.2/ 11/ .0490 | 8.2/ 11/ .0490 | 8.1/ 11/ .0483 |
| NOX SAMPLE METER/RANGE/PPM | 25.6/ 2/ 25.6 | 30.6/ 1/ 7.7 | 87.3/ 1/ 21.9 | 28.7/ 1/ 7.3 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 | 2.8/ 1/ .7 | 3.2/ 1/ .8 | 2.4/ 1/ .6 |
| DILUTION FACTOR | 12.29 | 21.43 | 15.74 | 22.12 |
| THC CONCENTRATION PPM | 481. | 122. | 134. | 93. |
| CO CONCENTRATION PPM | 1899. | 789. | 970. | 704. |
| CO2 CONCENTRATION PCT | .6925 | .4208 | .6046 | .4148 |
| NOX CONCENTRATION PPM | 25.4 | 7.0 | 21.1 | 6.7 |
| THC MASS GRAMS | 44.20 | 19.43 | 12.33 | 14.62 |
| CO MASS GRAMS | 166.71 | 119.71 | 85.03 | 106.19 |
| CO2 MASS GRAMS | 956.0 | 1004.2 | 833.8 | 983.6 |
| NOX MASS GRAMS | 3.22 | 1.54 | 2.67 | 1.45 |
| THC GRAMS/MI | 12.33 | 4.97 | 3.45 | 3.79 |
| CO GRAMS/MI | 46.50 | 30.64 | 23.76 | 27.56 |
| CO2 GRAMS/MI | 266.7 | 257.0 | 233.0 | 255.3 |
| NOX GRAMS/MI | .90 | .39 | .75 | .38 |
| FUEL ECONOMY IN MPG | 12.54 13.43 | 14.37 | 16.31 15.47 | 14.77 |
| RUN TIME SECONDS | 505. | 869. | 506. | 868. |
| MEASURED DISTANCE MI | 3.59 7.49 | 3.91 | 3.58 7.43 | 3.85 |
| SCF, DRY | .976 .979 | .980 | .977 .979 | .981 |
| DFC, WET (DRY) | .941( .930) | | .948( .938) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.8/ .00 | | 204.9/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | 1 |
| BAROMETER | MM HG | 739.9 |
| HUMIDITY | G/KG | 6.5 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 252.5 | ( 251.9) |
| FUEL ECONOMY | MPG | 14.40 | ( 14.52) |
| HYDROCARBONS (THC) | G/MI | 6.07 | ( 5.72) |
| CARBON MONOXIDE | G/MI | 32.03 | ( 31.11) |
| OXIDES OF NITROGEN | G/MI | .59 | ( .59) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30SS - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 740.41 MM HG(29.15 IN HG)
RELATIVE HUMIDITY 42. PCT
BAG RESULTS

VEHICLE NO.
DATE 12/14/88
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 8.6 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER

NOX HUMIDITY CORRECTION FACTOR .94

| TEST CYCLE | 30SS |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 24061. |
| TOT FLOW STD. CU. METRES(SCF) | 44.7 ( 1578.) |
| THC SAMPLE METER/RANGE/PPM | 81.0/ 2/ 81. |
| THC BCKGRD METER/RANGE/PPM | 11.0/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 18.2/ 3/ 417. |
| CO BCKGRD METER/RANGE/PPM | .1/ 3/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 61.1/ 11/ .5030 |
| CO2 BCKGRD METER/RANGE/PCT | 8.1/ 11/ .0483 |
| NOX SAMPLE METER/RANGE/PPM | 97.2/ 1/ 24.3 |
| NOX BCKGRD METER/RANGE/PPM | 1.3/ 1/ .3 |
| DILUTION FACTOR | 21.74 |
| THC CONCENTRATION PPM | 71. |
| CO CONCENTRATION PPM | 404. |
| CO2 CONCENTRATION PCT | .4569 |
| NOX CONCENTRATION PPM | 23.9 |
| THC MASS GRAMS | 3.84 |
| CO MASS GRAMS | 21.00 |
| CO2 MASS GRAMS | 373.7 |
| NOX MASS GRAMS | 1.91 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .954 ( .941) |
| SCF, WET (DRY) | 1.000 ( .977) |
| VOL (SCM) | 44.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 2.54 |
| TEST NUMBER, | 1 |
| BAROMETER, MM HG | 740.4 |
| HUMIDITY, G/KG | 8.6 |
| TEMPERATURE, DEG C | 25.0 |
| CARBON DIOXIDE, G/MI | 147.2 |
| FUEL ECONOMY, MPG | 27.7 |
| HYDROCARBONS, (THC) G/MI | 1.51 |
| CARBON MONOXIDE, G/MI | 8.27 |
| OXIDES OF NITROGEN, G/MI | .75 |

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5SSS - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. 1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 12/14/88 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER |
| | CVS NO. 2 | |
| BAROMETER 740.41 MM HG(29.15 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| RELATIVE HUMIDITY 42. PCT | ABS. HUMIDITY 8.6 GM/KG | NOX HUMIDITY CORRECTION FACTOR .94 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 5SSS |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 24060. |
| TOT FLOW STD. CU. METRES(SCF) | 44.6 ( 1574.) |
| THC SAMPLE METER/RANGE/PPM | 17.7/ 3/ 174. |
| THC BCKGRD METER/RANGE/PPM | 1.5/ 3/ 15. |
| CO SAMPLE METER/RANGE/PPM | 18.7/ 3/ 429. |
| CO BCKGRD METER/RANGE/PPM | .2/ 3/ 5. |
| CO2 SAMPLE METER/RANGE/PCT | 62.9/ 3/1.1207 |
| CO2 BCKGRD METER/RANGE/PCT | 3.0/ 3/ .0489 |
| NOX SAMPLE METER/RANGE/PPM | 38.6/ 2/ 38.6 |
| NOX BCKGRD METER/RANGE/PPM | .9/ 2/ .9 |
| DILUTION FACTOR | 10.17 |
| THC CONCENTRATION PPM | 161. |
| CO CONCENTRATION PPM | 406. |
| CO2 CONCENTRATION PCT | 1.0766 |
| NOX CONCENTRATION PPM | 37.8 |
| THC MASS GRAMS | 8.75 |
| CO MASS GRAMS | 21.07 |
| CO2 MASS GRAMS | 878.9 |
| NOX MASS GRAMS | 3.02 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .902 ( .889) |
| SCF, WET (DRY) | 1.000 ( .966) |
| VOL (SCM) | 44.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 4.60 |
| TEST NUMBER, | 1 |
| BAROMETER, MM HG | 740.4 |
| HUMIDITY, G/KG | 8.6 |
| TEMPERATURE, DEG C | 25.0 |
| CARBON DIOXIDE, G/MI | 191.1 |
| FUEL ECONOMY, MPG | 22.3 |
| HYDROCARBONS, (THC) G/MI | 1.90 |
| CARBON MONOXIDE, G/MI | 4.58 |
| OXIDES OF NITROGEN, G/MI | .66 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 1 RUN 2
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 12/15/88
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER

BAROMETER 744.47 MM HG(29.31 IN HG)
RELATIVE HUMIDITY 58. PCT
BAG RESULTS

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR .98

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 44.4 (112.0) | 40.6 (105.0) | 43.3 (110.0) | 39.4 (103.0) |
| BLOWER REVOLUTIONS | 40591. | 69670. | 40485. | 69528. |
| TOT FLOW STD. CU. METRES(SCF) | 75.5 ( 2668.) | 130.6 ( 4611.) | 75.5 ( 2665.) | 130.6 ( 4611.) |
| THC SAMPLE METER/RANGE/PPM | 46.1/ 3/ 461. | 12.8/ 3/ 126. | 14.2/ 3/ 139. | 9.5/ 3/ 93. |
| THC BCKGRD METER/RANGE/PPM | 1.2/ 3/ 12. | 1.2/ 3/ 12. | .9/ 3/ 9. | 1.0/ 3/ 10. |
| CO SAMPLE METER/RANGE/PPM | 69.6/ 3/1809. | 36.4/ 3/ 862. | 47.0/ 3/1141. | 30.2/ 3/ 706. |
| CO BCKGRD METER/RANGE/PPM | .2/ 3/ 5. | .1/ 3/ 2. | .1/ 3/ 2. | .1/ 3/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 80.4/ 11/ .7461 | 57.6/ 11/ .4642 | 71.8/ 11/ .6312 | 56.6/ 11/ .4534 |
| CO2 BCKGRD METER/RANGE/PCT | 7.1/ 11/ .0421 | 7.2/ 11/ .0427 | 7.3/ 11/ .0433 | 7.2/ 11/ .0427 |
| NOX SAMPLE METER/RANGE/PPM | 29.5/ 2/ 29.5 | 34.4/ 1/ 8.7 | 76.5/ 1/ 19.2 | 30.7/ 1/ 7.8 |
| NOX BCKGRD METER/RANGE/PPM | 1.4/ 2/ 1.4 | 4.8/ 1/ 1.2 | 2.0/ 1/ .5 | 1.3/ 1/ .3 |
| DILUTION FACTOR | 12.42 | 21.41 | 15.88 | 22.58 |
| THC CONCENTRATION PPM | 450. | 114. | 131. | 84. |
| CO CONCENTRATION PPM | 1733. | 832. | 1097. | 682. |
| CO2 CONCENTRATION PCT | .7074 | .4235 | .5906 | .4126 |
| NOX CONCENTRATION PPM | 28.2 | 7.5 | 18.7 | 7.4 |
| THC MASS GRAMS | 41.39 | 18.20 | 12.07 | 13.30 |
| CO MASS GRAMS | 152.44 | 126.53 | 96.42 | 103.66 |
| CO2 MASS GRAMS | 978.5 | 1012.4 | 816.2 | 986.3 |
| NOX MASS GRAMS | 4.01 | 1.84 | 2.65 | 1.82 |
| THC GRAMS/MI | 11.50 | 4.69 | 3.38 | 3.44 |
| CO GRAMS/MI | 42.35 | 32.57 | 26.98 | 26.83 |
| CO2 GRAMS/MI | 271.8 | 260.6 | 228.4 | 255.3 |
| NOX GRAMS/MI | 1.11 | .47 | .74 | .47 |
| FUEL ECONOMY IN MPG | 12.63 13.35 | 14.09 | 16.29 15.51 | 14.85 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.60 7.48 | 3.89 | 3.57 7.44 | 3.86 |
| SCF, DRY | .968 .971 | .973 | .970 .972 | .973 |
| DFC, WET (DRY) | .941( .923) | | .949( .931) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.1/ .00 | | 206.1/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | 1 |
| BAROMETER | MM HG | 744.5 |
| HUMIDITY | G/KG | 10.2 |
| TEMPERATURE | DEG C | 22.8 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 254.1 | ( 252.5) |
| FUEL ECONOMY | MPG | 14.28 | ( 14.50) |
| HYDROCARBONS (THC) | G/MI | 5.74 | ( 5.37) |
| CARBON MONOXIDE | G/MI | 33.06 | ( 31.36) |
| OXIDES OF NITROGEN | G/MI | .68 | ( .68) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH -
30SS - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. 1 RUN 2 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 12/15/88 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER |
| | CVS NO. 2 | |
| BAROMETER 746.25 MM HG(29.38 IN HG) | DRY BULB TEMP. 22.8 DEG C(73.0 DEG F) | |
| RELATIVE HUMIDITY 58. PCT | ABS. HUMIDITY 10.1 GM/KG | NOX HUMIDITY CORRECTION FACTOR .98 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30SS |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 24061. |
| TOT FLOW STD. CU. METRES(SCF) | 45.2 ( 1596.) |
| THC SAMPLE METER/RANGE/PPM | 72.8/ 2/ 73. |
| THC BCKGRD METER/RANGE/PPM | 8.5/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 78.6/ 11/ 347. |
| CO BCKGRD METER/RANGE/PPM | .0/ 11/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.3/ 11/ .4940 |
| CO2 BCKGRD METER/RANGE/PCT | 7.2/ 11/ .0427 |
| NOX SAMPLE METER/RANGE/PPM | 98.8/ 1/ 24.7 |
| NOX BCKGRD METER/RANGE/PPM | .8/ 1/ .2 |
| DILUTION FACTOR | 22.42 |
| THC CONCENTRATION PPM | 65. |
| CO CONCENTRATION PPM | 336. |
| CO2 CONCENTRATION PCT | .4532 |
| NOX CONCENTRATION PPM | 24.5 |
| THC MASS GRAMS | 3.56 |
| CO MASS GRAMS | 17.68 |
| CO2 MASS GRAMS | 375.1 |
| NOX MASS GRAMS | 2.08 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .955 ( .938) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 45.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 2.54 |
| TEST NUMBER, | 1 |
| BAROMETER, MM HG | 746.3 |
| HUMIDITY, G/KG | 10.1 |
| TEMPERATURE, DEG C | 22.8 |
| CARBON DIOXIDE, G/MI | 147.8 |
| FUEL ECONOMY, MPG | 27.9 |
| HYDROCARBONS, (THC) G/MI | 1.40 |
| CARBON MONOXIDE, G/MI | 6.97 |
| OXIDES OF NITROGEN, G/MI | .82 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55SS - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 1 RUN 2
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 746.25 MM HG(29.38 IN HG)
RELATIVE HUMIDITY 58. PCT

VEHICLE NO.
DATE 12/15/88
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.1 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER

NOX HUMIDITY CORRECTION FACTOR .98

BAG RESULTS

| TEST CYCLE | 55SS |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 24054. |
| TOT FLOW STD. CU. METRES(SCF) | 45.0 ( 1588.) |
| THC SAMPLE METER/RANGE/PPM | 18.6/ 3/ 183. |
| THC BCKGRD METER/RANGE/PPM | .9/ 3/ 9. |
| CO SAMPLE METER/RANGE/PPM | 92.3/ 11/ 464. |
| CO BCKGRD METER/RANGE/PPM | .3/ 11/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 62.5/ 3/1.1127 |
| CO2 BCKGRD METER/RANGE/PCT | 2.7/ 3/ .0440 |
| NOX SAMPLE METER/RANGE/PPM | 38.3/ 2/ 38.3 |
| NOX BCKGRD METER/RANGE/PPM | .6/ 2/ .6 |
| DILUTION FACTOR | 10.21 |
| THC CONCENTRATION PPM | 175. |
| CO CONCENTRATION PPM | 440. |
| CO2 CONCENTRATION PCT | 1.0730 |
| NOX CONCENTRATION PPM | 37.8 |
| THC MASS GRAMS | 9.61 |
| CO MASS GRAMS | 23.05 |
| CO2 MASS GRAMS | 883.4 |
| NOX MASS GRAMS | 3.19 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .902 ( .885) |
| SCF, WET (DRY) | 1.000 ( .961) |
| VOL (SCM) | 45.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 4.61 |

| | | |
|---|---|---|
| TEST NUMBER, | | 1 |
| BAROMETER, | MM HG | 746.3 |
| HUMIDITY, | G/KG | 10.1 |
| TEMPERATURE, | DEG C | 22.8 |
| CARBON DIOXIDE, | G/MI | 191.8 |
| FUEL ECONOMY, | MPG | 22.2 |
| HYDROCARBONS, (THC) | G/MI | 2.09 |
| CARBON MONOXIDE, | G/MI | 5.00 |
| OXIDES OF NITROGEN, | G/MI | .69 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| NO. BL-3 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| HICLE MODEL 0 FORD ESCORT | DATE 2/24/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| GINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 / CVS NO. 2 | GASOLINE EM-835-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 89272. KM( 55471. MILES) |

ROMETER 750.57 MM HG(29.55 IN HG) DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
LATIVE HUMIDITY 33. PCT ABS. HUMIDITY 6.5 GM/KG NOX HUMIDITY CORRECTION FACTOR .88

G RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 39.4 (103.0) | 42.2 (108.0) | 39.4 (103.0) |
| BLOWER REVOLUTIONS | 40518. | 69590. | 40528. | 69523. |
| TOT FLOW STD. CU. METRES(SCF) | 76.5 ( 2702.) | 132.4 ( 4674.) | 76.7 ( 2708.) | 132.2 ( 4669.) |
| THC SAMPLE METER/RANGE/PPM | 49.3/ 3/ 493. | 14.5/ 3/ 142. | 16.9/ 3/ 166. | 10.6/ 3/ 104. |
| THC BCKGRD METER/RANGE/PPM | .8/ 3/ 8. | .9/ 3/ 9. | 1.0/ 3/ 10. | .9/ 3/ 9. |
| CO SAMPLE METER/RANGE/PPM | 75.5/ 3/2004. | 34.9/ 3/ 824. | 44.4/ 3/1071. | 30.9/ 3/ 723. |
| CO BCKGRD METER/RANGE/PPM | .1/ 3/ 2. | .1/ 3/ 2. | .6/ 3/ 14. | .4/ 3/ 9. |
| CO2 SAMPLE METER/RANGE/PCT | 82.7/ 11/ .7789 | 58.5/ 11/ .4740 | 74.1/ 11/ .6608 | 56.4/ 11/ .4513 |
| CO2 BCKGRD METER/RANGE/PCT | 7.8/ 11/ .0465 | 7.9/ 11/ .0471 | 7.9/ 11/ .0471 | 7.7/ 11/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 32.3/ 2/ 32.3 | 38.7/ 1/ 9.7 | 95.1/ 1/ 23.8 | 38.4/ 1/ 9.7 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 2/ .5 | .6/ 1/ .2 | .3/ 1/ .1 | .1/ 1/ .0 |
| DILUTION FACTOR | 11.73 | 21.09 | 15.35 | 22.53 |
| THC CONCENTRATION PPM | 486. | 134. | 157. | 95. |
| CO CONCENTRATION PPM | 1937. | 802. | 1027. | 698. |
| CO2 CONCENTRATION PCT | .7364 | .4292 | .6168 | .4075 |
| NOX CONCENTRATION PPM | 31.9 | 9.6 | 23.7 | 9.6 |
| THC MASS GRAMS | 45.28 | 21.62 | 14.69 | 15.37 |
| CO MASS GRAMS | 172.58 | 123.56 | 91.68 | 107.48 |
| CO2 MASS GRAMS | 1031.7 | 1040.1 | 866.0 | 986.5 |
| NOX MASS GRAMS | 4.10 | 2.13 | 3.05 | 2.14 |
| THC GRAMS/MI | 12.50 | 5.53 | 4.04 | 3.93 |
| CO GRAMS/MI | 47.64 | 31.61 | 25.22 | 27.48 |
| CO2 GRAMS/MI | 284.8 | 266.1 | 238.2 | 252.2 |
| NOX GRAMS/MI | 1.13 | .55 | .84 | .55 |
| FUEL ECONOMY IN MPG | 11.87 12.83 | 13.86 | 15.83 15.34 | 14.91 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.62 7.53 | 3.91 | 3.64 7.55 | 3.91 |
| SCF, DRY | .975 .979 | .981 | .978 .980 | .981 |
| DFC, WET (DRY) | .939( .929) | | .948( .938) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 208.9/ .00 | | 208.9/ .00 | |

MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | BL-3 |
| BAROMETER | MM HG | 750.6 |
| HUMIDITY | G/KG | 6.5 |
| TEMPERATURE | DEG C | 25.0 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 262.3 | ( 258.2) |
| FUEL ECONOMY | MPG | 13.86 | ( 14.15) |
| HYDROCARBONS (THC) | G/MI | 6.56 | ( 6.09) |
| CARBON MONOXIDE | G/MI | 33.17 | ( 31.95) |
| OXIDES OF NITROGEN | G/MI | .75 | ( .75) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

.. NO. BL-3 RUN 1
HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
ANSMISSION A3

ROMETER 749.30 MM HG(29.50 IN HG)
LATIVE HUMIDITY 34. PCT
G RESULTS
TEST CYCLE

VEHICLE NO.
DATE 2/24/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 6.9 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89298. KM( 55487. MILES)

NOX HUMIDITY CORRECTION FACTOR .89

| | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 24058. |
| TOT FLOW STD. CU. METRES(SCF) | 45.4 ( 1604.) |
| THC SAMPLE METER/RANGE/PPM | 82.5/ 2/ 83. |
| THC BCKGRD METER/RANGE/PPM | 8.9/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 75.8/ 11/ 327. |
| CO BCKGRD METER/RANGE/PPM | .4/ 11/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 60.6/ 11/ .4973 |
| CO2 BCKGRD METER/RANGE/PCT | 7.9/ 11/ .0471 |
| NOX SAMPLE METER/RANGE/PPM | 40.8/ 2/ 40.8 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 22.31 |
| THC CONCENTRATION PPM | 74. |
| CO CONCENTRATION PPM | 318. |
| CO2 CONCENTRATION PCT | .4524 |
| NOX CONCENTRATION PPM | 40.7 |
| THC MASS GRAMS | 4.09 |
| CO MASS GRAMS | 16.81 |
| CO2 MASS GRAMS | 376.3 |
| NOX MASS GRAMS | 3.15 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .955 ( .945) |
| SCF, WET (DRY) | 1.000 ( .980) |
| VOL (SCM) | 45.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 2.55 |

| | | BL-3 |
|---|---|---|
| TEST NUMBER, | | |
| BAROMETER, | MM HG | 749.3 |
| HUMIDITY, | G/KG | 6.9 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 147.7 |
| FUEL ECONOMY, | MPG | 28.0 |
| HYDROCARBONS, (THC) | G/MI | 1.61 |
| CARBON MONOXIDE, | G/MI | 6.60 |
| OXIDES OF NITROGEN, | G/MI | 1.23 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. BL-3 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 2/24/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 89304. KM( 55491. MILES) |
| | CVS NO. 2 | |
| BAROMETER 749.30 MM HG(29.50 IN HG) | DRY BULB TEMP. 25.6 DEG C(78.0 DEG F) | |
| RELATIVE HUMIDITY 34. PCT | ABS. HUMIDITY 6.9 GM/KG | NOX HUMIDITY CORRECTION FACTOR .89 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 24067. |
| TOT FLOW STD. CU. METRES(SCF) | 45.4 ( 1602.) |
| THC SAMPLE METER/RANGE/PPM | 25.3/ 3/ 251. |
| THC BCKGRD METER/RANGE/PPM | 1.1/ 3/ 11. |
| CO SAMPLE METER/RANGE/PPM | 91.0/ 11/ 451. |
| CO BCKGRD METER/RANGE/PPM | .5/ 11/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 63.8/ 3/1.1388 |
| CO2 BCKGRD METER/RANGE/PCT | 3.3/ 3/ .0538 |
| NOX SAMPLE METER/RANGE/PPM | 60.7/ 2/ 60.7 |
| NOX BCKGRD METER/RANGE/PPM | .6/ 2/ .6 |
| DILUTION FACTOR | 9.94 |
| THC CONCENTRATION PPM | 241. |
| CO CONCENTRATION PPM | 431. |
| CO2 CONCENTRATION PCT | 1.0904 |
| NOX CONCENTRATION PPM | 60.2 |
| THC MASS GRAMS | 13.31 |
| CO MASS GRAMS | 22.76 |
| CO2 MASS GRAMS | 905.6 |
| NOX MASS GRAMS | 4.64 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .899 ( .890) |
| SCF, WET (DRY) | 1.000 ( .969) |
| VOL (SCM) | 45.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 4.59 |

| | | |
|---|---|---|
| TEST NUMBER, | | BL-3 |
| BAROMETER, | MM HG | 749.3 |
| HUMIDITY, | G/KG | 6.9 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 197.2 |
| FUEL ECONOMY, | MPG | 21.5 |
| HYDROCARBONS, (THC) | G/MI | 2.90 |
| CARBON MONOXIDE, | G/MI | 4.96 |
| OXIDES OF NITROGEN, | G/MI | 1.01 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. BL-4 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/ 8/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89644. KM( 55702. MILES)

BAROMETER 749.05 MM HG(29.49 IN HG)
RELATIVE HUMIDITY 24. PCT

DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 4.3 GM/KG

NOX HUMIDITY CORRECTION FACTOR .83

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 741.7 (29.2) | 754.4 (29.7) | 746.8 (29.4) | 754.4 (29.7) |
| BLOWER INLET P MM. H2O(IN. H2O) | 739.1 (29.1) | 754.4 (29.7) | 746.8 (29.4) | 754.4 (29.7) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) | 45.6 (114.0) | 45.6 (114.0) | 45.6 (114.0) |
| BLOWER REVOLUTIONS | 40602. | 69660. | 40531. | 69594. |
| TOT FLOW STD. CU. METRES(SCF) | 76.6 ( 2705.) | 131.1 ( 4630.) | 76.4 ( 2697.) | 131.0 ( 4626.) |
| THC SAMPLE METER/RANGE/PPM | 41.2/ 3/ 412. | 12.4/ 3/ 125. | 15.9/ 3/ 160. | 7.6/ 3/ 77. |
| THC BCKGRD METER/RANGE/PPM | 2.1/ 3/ 21. | 1.7/ 3/ 17. | 1.5/ 3/ 15. | 1.3/ 3/ 13. |
| CO SAMPLE METER/RANGE/PPM | 96.2/ 2/2857. | 54.8/ 2/1091. | 67.1/ 2/1497. | 66.1/ 1/ 605. |
| CO BCKGRD METER/RANGE/PPM | .0/ 2/ 0. | .0/ 2/ 0. | .0/ 2/ 0. | .0/ 1/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 85.8/ 14/ .7723 | 67.8/ 14/ .4693 | 79.5/ 14/ .6499 | 66.2/ 14/ .4483 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 | 12.7/ 14/ .0426 | 12.5/ 14/ .0418 | 12.5/ 14/ .0418 |
| NOX SAMPLE METER/RANGE/PPM | 37.2/ 2/ 37.2 | 46.7/ 1/ 11.7 | 28.4/ 2/ 28.5 | 47.4/ 1/ 11.9 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 | .0/ 1/ .0 | .0/ 2/ .0 | .2/ 1/ .1 |
| DILUTION FACTOR | 10.99 | 20.38 | 14.77 | 23.28 |
| THC CONCENTRATION PPM | 393. | 109. | 146. | 64. |
| CO CONCENTRATION PPM | 2774. | 1068. | 1458. | 593. |
| CO2 CONCENTRATION PCT | .7335 | .4288 | .6109 | .4082 |
| NOX CONCENTRATION PPM | 37.1 | 11.7 | 28.5 | 11.8 |
| THC MASS GRAMS | 36.64 | 17.34 | 13.57 | 10.23 |
| CO MASS GRAMS | 247.33 | 163.07 | 129.66 | 90.42 |
| CO2 MASS GRAMS | 1028.7 | 1029.4 | 854.3 | 979.1 |
| NOX MASS GRAMS | 4.49 | 2.42 | 3.43 | 2.45 |
| THC GRAMS/MI | 10.06 | 4.44 | 3.73 | 2.62 |
| CO GRAMS/MI | 67.89 | 41.72 | 35.63 | 23.13 |
| CO2 GRAMS/MI | 282.4 | 263.4 | 234.7 | 250.5 |
| NOX GRAMS/MI | 1.23 | .62 | .94 | .63 |
| FUEL ECONOMY IN MPG | 11.12 12.19 | 13.39 | 15.16 15.31 | 15.45 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.64 7.55 | 3.91 | 3.64 7.55 | 3.91 |
| SCF, DRY | .978 .982 | .984 | .981 .983 | .984 |
| DFC, WET (DRY) | .935( .928) | | .948( .941) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 207.7/ .00 | | 207.4/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | BL-4 |
| BAROMETER | MM HG | 749.0 |
| HUMIDITY | G/KG | 4.3 |
| TEMPERATURE | DEG C | 23.3 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 259.4 | ( 255.6) |
| FUEL ECONOMY | MPG | 13.25 | ( 13.79) |
| HYDROCARBONS (THC) | G/MI | 5.41 | ( 4.87) |
| CARBON MONOXIDE | G/MI | 45.48 | ( 39.99) |
| OXIDES OF NITROGEN | G/MI | .84 | ( .84) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. BL-4 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/ 8/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89669. KM( 55718. MILES)

BAROMETER 749.30 MM HG(29.50 IN HG)
RELATIVE HUMIDITY 24. PCT
BAG RESULTS

DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 4.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .84

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 744.2 (29.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) |
| BLOWER REVOLUTIONS | 24079. |
| TOT FLOW STD. CU. METRES(SCF) | 45.4 ( 1604.) |
| THC SAMPLE METER/RANGE/PPM | 68.2/ 2/ 69. |
| THC BCKGRD METER/RANGE/PPM | 8.9/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 22.2/ 1/ 167. |
| CO BCKGRD METER/RANGE/PPM | .0/ 1/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 70.8/ 14/ .5108 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 |
| NOX SAMPLE METER/RANGE/PPM | 34.6/ 2/ 34.6 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 22.46 |
| THC CONCENTRATION PPM | 60. |
| CO CONCENTRATION PPM | 163. |
| CO2 CONCENTRATION PCT | .4701 |
| NOX CONCENTRATION PPM | 34.5 |
| THC MASS GRAMS | 3.31 |
| CO MASS GRAMS | 8.63 |
| CO2 MASS GRAMS | 390.9 |
| NOX MASS GRAMS | 2.51 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .955 ( .948) |
| SCF, WET (DRY) | 1.000 ( .983) |
| VOL (SCM) | 45.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 2.52 |

| | | |
|---|---|---|
| TEST NUMBER, | | BL-4 |
| BAROMETER, | MM HG | 749.3 |
| HUMIDITY, | G/KG | 4.7 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 155.2 |
| FUEL ECONOMY, | MPG | 27.6 |
| HYDROCARBONS, (THC) | G/MI | 1.31 |
| CARBON MONOXIDE, | G/MI | 3.43 |
| OXIDES OF NITROGEN, | G/MI | 1.00 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. BL-4 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 749.30 MM HG(29.50 IN HG)
RELATIVE HUMIDITY 24. PCT
BAG RESULTS

VEHICLE NO.
DATE 3/ 8/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 4.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89676. KM( 55722. MILES)

NOX HUMIDITY CORRECTION FACTOR .84

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) |
| BLOWER REVOLUTIONS | 24073. |
| TOT FLOW STD. CU. METRES(SCF) | 45.4 ( 1602.) |
| THC SAMPLE METER/RANGE/PPM | 18.0/ 3/ 181. |
| THC BCKGRD METER/RANGE/PPM | 1.2/ 3/ 12. |
| CO SAMPLE METER/RANGE/PPM | 47.8/ 1/ 402. |
| CO BCKGRD METER/RANGE/PPM | .0/ 1/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 97.7/ 14/1.0782 |
| CO2 BCKGRD METER/RANGE/PCT | 12.6/ 14/ .0422 |
| NOX SAMPLE METER/RANGE/PPM | 67.8/ 2/ 67.8 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 10.57 |
| THC CONCENTRATION PPM | 170. |
| CO CONCENTRATION PPM | 387. |
| CO2 CONCENTRATION PCT | 1.0400 |
| NOX CONCENTRATION PPM | 67.8 |
| THC MASS GRAMS | 9.39 |
| CO MASS GRAMS | 20.41 |
| CO2 MASS GRAMS | 863.7 |
| NOX MASS GRAMS | 4.91 |
| RUN TIME SECONDS | 300. |
| DFC, WET (DRY) | .905 ( .898) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 45.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 4.62 |

| | | |
|---|---|---|
| TEST NUMBER, | | BL-4 |
| BAROMETER, | MM HG | 749.3 |
| HUMIDITY, | G/KG | 4.7 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 187.0 |
| FUEL ECONOMY, | MPG | 22.8 |
| HYDROCARBONS, (THC) | G/MI | 2.03 |
| CARBON MONOXIDE, | G/MI | 4.42 |
| OXIDES OF NITROGEN, | G/MI | 1.06 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AESU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 1/18/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88636. KM( 55076. MILES)

BAROMETER 743.20 MM HG(29.26 IN HG)
RELATIVE HUMIDITY 48. PCT
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 10.6 GM/KG
NOX HUMIDITY CORRECTION FACTOR 1.00

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 767.1 (30.2) | 774.7 (30.5) | 774.7 (30.5) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 769.6 (30.3) | 774.7 (30.5) | 774.7 (30.5) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 43.3 (110.0) | 43.3 (110.0) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 40584. | 69558. | 41087. | 69479. |
| TOT FLOW STD. CU. METRES(SCF) | 75.6 ( 2669.) | 129.5 ( 4571.) | 76.5 ( 2701.) | 129.4 ( 4570.) |
| THC SAMPLE METER/RANGE/PPM | 14.3/ 3/ 140. | 13.4/ 2/ 13. | 20.9/ 2/ 21. | 15.2/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 1.9/ 3/ 18. | 11.1/ 2/ 11. | 11.8/ 2/ 12. | 12.0/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | 26.9/ 3/ 625. | 39.4/ 13/ 36. | 66.2/ 12/ 146. | 34.8/ 13/ 32. |
| CO BCKGRD METER/RANGE/PPM | .1/ 3/ 2. | 2.0/ 13/ 2. | .9/ 12/ 2. | 1.0/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 89.2/ 11/ .8767 | 65.5/ 11/ .5539 | 80.8/ 11/ .7518 | 64.0/ 11/ .5362 |
| CO2 BCKGRD METER/RANGE/PCT | 8.1/ 11/ .0483 | 8.7/ 11/ .0521 | 9.1/ 11/ .0546 | 8.6/ 11/ .0515 |
| NOX SAMPLE METER/RANGE/PPM | 72.8/ 1/ 18.3 | 22.0/ 1/ 5.6 | 52.3/ 1/ 13.1 | 20.4/ 1/ 5.2 |
| NOX BCKGRD METER/RANGE/PPM | 4.8/ 1/ 1.2 | 2.5/ 1/ .7 | .1/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 12.61 | 21.47 | 15.62 | 22.17 |
| THC CONCENTRATION PPM | 124. | 3. | 10. | 4. |
| CO CONCENTRATION PPM | 598. | 34. | 140. | 30. |
| CO2 CONCENTRATION PCT | .8322 | .5042 | .7006 | .4871 |
| NOX CONCENTRATION PPM | 17.1 | 5.0 | 13.1 | 5.2 |
| THC MASS GRAMS | 11.37 | .44 | .92 | .59 |
| CO MASS GRAMS | 52.65 | 5.06 | 12.43 | 4.53 |
| CO2 MASS GRAMS | 1151.8 | 1194.9 | 981.1 | 1154.1 |
| NOX MASS GRAMS | 2.47 | 1.23 | 1.91 | 1.28 |
| THC GRAMS/MI | 3.17 | .11 | .25 | .15 |
| CO GRAMS/MI | 14.67 | 1.30 | 3.40 | 1.17 |
| CO2 GRAMS/MI | 320.8 | 307.3 | 268.5 | 299.3 |
| NOX GRAMS/MI | .69 | .32 | .52 | .33 |
| FUEL ECONOMY IN MPG | 12.89 13.69 | 14.51 | 16.39 15.59 | 14.91 |
| RUN TIME SECONDS | 505. | 867. | 510. | 867. |
| MEASURED DISTANCE MI | 3.59 7.48 | 3.89 | 3.65 7.51 | 3.86 |
| SCF, DRY | .969 .973 | .975 | .971 .974 | .975 |
| DFC, WET (DRY) | .941( .927) | | .948( .933) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.0/ .00 | | 205.9/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AESU1 |
| BAROMETER | MM HG | 743.2 |
| HUMIDITY | G/KG | 10.6 |
| TEMPERATURE | DEG C | 26.7 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 299.4 | ( 297.0) |
| FUEL ECONOMY | MPG | 14.59 | ( 14.71) |
| HYDROCARBONS (THC) | G/MI | .78 | ( .79) |
| CARBON MONOXIDE | G/MI | 4.64 | ( 4.61) |
| OXIDES OF NITROGEN | G/MI | .45 | ( .46) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AESU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

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

VEHICLE NO.
DATE 1/18/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 11.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88660. KM( 55091. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.02

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) |
| BLOWER REVOLUTIONS | 48079. |
| TOT FLOW STD. CU. METRES(SCF) | 89.3 ( 3153.) |
| THC SAMPLE METER/RANGE/PPM | 13.6/ 2/ 14. |
| THC BCKGRD METER/RANGE/PPM | 9.2/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 2.2/ 13/ 2. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.0/ 11/ .5362 |
| CO2 BCKGRD METER/RANGE/PCT | 8.2/ 11/ .0490 |
| NOX SAMPLE METER/RANGE/PPM | 31.9/ 2/ 31.9 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 22.30 |
| THC CONCENTRATION PPM | 5. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | .4895 |
| NOX CONCENTRATION PPM | 31.8 |
| THC MASS GRAMS | .52 |
| CO MASS GRAMS | .19 |
| CO2 MASS GRAMS | 800.1 |
| NOX MASS GRAMS | 5.56 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .939) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 89.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.06 |

| | | |
|---|---|---|
| TEST NUMBER, | | AESU1 |
| BAROMETER, | MM HG | 742.4 |
| HUMIDITY, | G/KG | 11.4 |
| TEMPERATURE, | DEG C | 26.7 |
| CARBON DIOXIDE, | G/MI | 158.1 |
| FUEL ECONOMY, | MPG | 28.4 |
| HYDROCARBONS, (THC) | G/MI | .10 |
| CARBON MONOXIDE, | G/MI | .04 |
| OXIDES OF NITROGEN, | G/MI | 1.10 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. AESU1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| EHICLE MODEL 0 FORD ESCORT | DATE 1/18/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| NGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| RANSMISSION A3 | DYNO NO. 3 | ODOMETER 88672. KM( 55098. MILES) |
| | CVS NO. 2 | |
| AROMETER 742.19 MM HG(29.22 IN HG) | DRY BULB TEMP. 26.1 DEG C(79.0 DEG F) | |
| ELATIVE HUMIDITY 50. PCT | ABS. HUMIDITY 10.9 GM/KG | NOX HUMIDITY CORRECTION FACTOR 1.01 |

AG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48035. |
| TOT FLOW STD. CU. METRES(SCF) | 89.2 ( 3151.) |
| THC SAMPLE METER/RANGE/PPM | 14.5/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 9.3/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | .2/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.8/ 3/1.1589 |
| CO2 BCKGRD METER/RANGE/PCT | 3.4/ 3/ .0554 |
| NOX SAMPLE METER/RANGE/PPM | 28.8/ 2/ 28.8 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 10.34 |
| THC CONCENTRATION PPM | 6. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1089 |
| NOX CONCENTRATION PPM | 28.7 |
| THC MASS GRAMS | .66 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1811.9 |
| NOX MASS GRAMS | 4.93 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .903 ( .889) |
| SCF, WET (DRY) | 1.000 ( .963) |
| VOL (SCM) | 89.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |
| TEST NUMBER, | AESU1 |
| BAROMETER, MM HG | 742.2 |
| HUMIDITY, G/KG | 10.9 |
| TEMPERATURE, DEG C | 26.1 |
| CARBON DIOXIDE, G/MI | 197.0 |
| FUEL ECONOMY, MPG | 22.8 |
| HYDROCARBONS, (THC) G/MI | .07 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .54 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AESU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 1/19/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88686. KM( 55107. MILES)

BAROMETER 742.70 MM HG(29.24 IN HG)
RELATIVE HUMIDITY 51. PCT

DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 11.4 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.02

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 767.1 (30.2) | 764.5 (30.1) | 769.6 (30.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 764.5 (30.1) | 769.6 (30.3) | 762.0 (30.0) | 772.2 (30.4) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 43.3 (110.0) | 43.3 (110.0) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 40506. | 69511. | 40451. | 69465. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2661.) | 129.4 ( 4568.) | 75.4 ( 2661.) | 129.4 ( 4568.) |
| THC SAMPLE METER/RANGE/PPM | 14.4/ 3/ 141. | 13.8/ 2/ 14. | 20.6/ 2/ 21. | 15.7/ 2/ 16. |
| THC BCKGRD METER/RANGE/PPM | 1.1/ 3/ 11. | 11.1/ 2/ 11. | 11.0/ 2/ 11. | 12.0/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | 28.1/ 3/ 655. | 42.2/ 13/ 39. | 82.7/ 12/ 196. | 46.9/ 13/ 44. |
| CO BCKGRD METER/RANGE/PPM | .2/ 3/ 5. | .1/ 13/ 0. | .0/ 12/ 0. | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 92.6/ 11/ .9312 | 67.1/ 11/ .5730 | 81.1/ 11/ .7560 | 65.1/ 11/ .5491 |
| CO2 BCKGRD METER/RANGE/PCT | 8.2/ 11/ .0490 | 8.2/ 11/ .0490 | 8.1/ 11/ .0483 | 8.1/ 11/ .0483 |
| NOX SAMPLE METER/RANGE/PPM | 71.9/ 1/ 18.0 | 20.6/ 1/ 5.2 | 58.0/ 1/ 14.6 | 20.5/ 1/ 5.2 |
| NOX BCKGRD METER/RANGE/PPM | 4.9/ 1/ 1.3 | 1.3/ 1/ .3 | .6/ 1/ .2 | .0/ =1/ .0 |
| DILUTION FACTOR | 11.90 | 20.74 | 15.44 | 21.61 |
| THC CONCENTRATION PPM | 132. | 3. | 10. | 4. |
| CO CONCENTRATION PPM | 623. | 38. | 189. | 42. |
| CO2 CONCENTRATION PCT | .8863 | .5264 | .7108 | .5030 |
| NOX CONCENTRATION PPM | 16.9 | 4.9 | 14.4 | 5.2 |
| THC MASS GRAMS | 12.09 | .51 | .95 | .67 |
| CO MASS GRAMS | 54.63 | 5.68 | 16.57 | 6.36 |
| CO2 MASS GRAMS | 1222.9 | 1246.7 | 980.6 | 1191.3 |
| NOX MASS GRAMS | 2.49 | 1.24 | 2.12 | 1.32 |
| THC GRAMS/MI | 3.36 | .13 | .26 | .17 |
| CO GRAMS/MI | 15.17 | 1.45 | 4.59 | 1.63 |
| CO2 GRAMS/MI | 339.5 | 318.9 | 271.4 | 305.1 |
| NOX GRAMS/MI | .69 | .32 | .59 | .34 |
| FUEL ECONOMY IN MPG | 12.20 13.06 | 13.98 | 16.11 15.28 | 14.59 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.60 7.51 | 3.91 | 3.61 7.52 | 3.90 |
| SCF, DRY | .967 .971 | .973 | .970 .972 | .974 |
| DFC, WET (DRY) | .939( .923) | | .947( .931) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.7/ .00 | | 204.7/ .00 | |

COMPOSITE RESULTS

| TEST NUMBER | | AESU2 |
|---|---|---|
| BAROMETER | MM HG | 742.7 |
| HUMIDITY | G/KG | 11.4 |
| TEMPERATURE | DEG C | 26.7 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 310.2 | ( 306.1) |
| FUEL ECONOMY | MPG | 14.06 | ( 14.24) |
| HYDROCARBONS (THC) | G/MI | .83 | ( .84) |
| CARBON MONOXIDE | G/MI | 5.14 | ( 5.19) |
| OXIDES OF NITROGEN | G/MI | .47 | ( .47) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

..ST NO. AESU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 742.19 MM HG(29.22 IN HG)
RELATIVE HUMIDITY 48. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/19/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 27.2 DEG C(81.0 DEG F)
ABS. HUMIDITY 11.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88710. KM( 55122. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.02

| | | |
|---|---|---|
| TEST CYCLE | | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | | 767.1 (30.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | | 764.5 (30.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | | 42.2 (108.0) |
| BLOWER REVOLUTIONS | | 48061. |
| TOT FLOW STD. CU. METRES(SCF) | | 89.6 ( 3164.) |
| THC SAMPLE METER/RANGE/PPM | | 14.5/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | | 12.8/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | | .3/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | | .0/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | | 65.3/ 11/ .5515 |
| CO2 BCKGRD METER/RANGE/PCT | | 8.0/ 11/ .0477 |
| NOX SAMPLE METER/RANGE/PPM | | 94.5/ 1/ 23.6 |
| NOX BCKGRD METER/RANGE/PPM | | 1.2/ 1/ .3 |
| DILUTION FACTOR | | 21.69 |
| THC CONCENTRATION PPM | | 2. |
| CO CONCENTRATION PPM | | 0. |
| CO2 CONCENTRATION PCT | | .5060 |
| NOX CONCENTRATION PPM | | 23.3 |
| THC MASS GRAMS | | .25 |
| CO MASS GRAMS | | .03 |
| CO2 MASS GRAMS | | 830.0 |
| NOX MASS GRAMS | | 4.06 |
| RUN TIME | SECONDS | 600. |
| DFC, WET (DRY) | | .954 ( .939) |
| SCF, WET (DRY) | | 1.000 ( .975) |
| VOL (SCM) | | 89.6 |
| SAM BLR (SCM) | | .00 |
| MI (MEASURED) | | 5.04 |
| TEST NUMBER, | | AESU2 |
| BAROMETER, | MM HG | 742.2 |
| HUMIDITY, | G/KG | 11.2 |
| TEMPERATURE, | DEG C | 27.2 |
| CARBON DIOXIDE, | G/MI | 164.7 |
| FUEL ECONOMY, | MPG | 27.3 |
| HYDROCARBONS, (THC) | G/MI | .05 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .81 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AESU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 741.93 MM HG(29.21 IN HG)
RELATIVE HUMIDITY 51. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/19/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 11.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88720. KM( 55128. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.02

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 777.2 (30.6) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48063. |
| TOT FLOW STD. CU. METRES(SCF) | 89.2 ( 3151.) |
| THC SAMPLE METER/RANGE/PPM | 18.0/ 2/ 18. |
| THC BCKGRD METER/RANGE/PPM | 13.6/ 2/ 14. |
| CO SAMPLE METER/RANGE/PPM | .7/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .3/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.9/ 3/1.1408 |
| CO2 BCKGRD METER/RANGE/PCT | 2.8/ 3/ .0456 |
| NOX SAMPLE METER/RANGE/PPM | 29.5/ 2/ 29.5 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 10.50 |
| THC CONCENTRATION PPM | 6. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.0995 |
| NOX CONCENTRATION PPM | 29.5 |
| THC MASS GRAMS | .62 |
| CO MASS GRAMS | .04 |
| CO2 MASS GRAMS | 1796.5 |
| NOX MASS GRAMS | 5.16 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .905 ( .890) |
| SCF, WET (DRY) | 1.000 ( .963) |
| VOL (SCM) | 89.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |

| | | |
|---|---|---|
| TEST NUMBER, | | AESU2 |
| BAROMETER, | MM HG | 741.9 |
| HUMIDITY, | G/KG | 11.4 |
| TEMPERATURE, | DEG C | 26.7 |
| CARBON DIOXIDE, | G/MI | 195.3 |
| FUEL ECONOMY, | MPG | 23.0 |
| HYDROCARBONS, (THC) | G/MI | .07 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .56 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH -
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

EST NO. ANSU1 RUN 1
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

VEHICLE NO.
DATE 1/25/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88752. KM( 55148. MILES)

AROMETER 740.92 MM HG(29.17 IN HG)
ELATIVE HUMIDITY 64. PCT
AG RESULTS

DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 14.0 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.12

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 767.1 (30.2) | 774.7 (30.5) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) | 769.6 (30.3) | 774.7 (30.5) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 42.2 (108.0) | 43.3 (110.0) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 40540. | 69661. | 40486. | 69598. |
| TOT FLOW STD. CU. METRES(SCF) | 75.2 ( 2656.) | 129.6 ( 4575.) | 75.1 ( 2651.) | 129.1 ( 4558.) |
| THC SAMPLE METER/RANGE/PPM | 87.5/ 2/ 88. | 11.7/ 2/ 12. | 13.6/ 2/ 14. | 15.8/ 2/ 16. |
| THC BCKGRD METER/RANGE/PPM | 13.6/ 2/ 14. | 11.6/ 2/ 12. | 12.4/ 2/ 12. | 13.0/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 89.6/ 11/ 438. | 10.3/ 13/ 9. | 33.7/ 13/ 31. | 3.2/ 13/ 3. |
| CO BCKGRD METER/RANGE/PPM | .4/ 11/ 1. | 1.1/ 13/ 1. | .5/ 13/ 0. | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.2/ 11/ .9410 | 66.1/ 11/ .5610 | 81.9/ 11/ .7674 | 64.5/ 11/ .5421 |
| CO2 BCKGRD METER/RANGE/PCT | 7.6/ 11/ .0452 | 7.7/ 11/ .0458 | 7.8/ 11/ .0465 | 7.6/ 11/ .0452 |
| NOX SAMPLE METER/RANGE/PPM | 39.6/ 1/ 10.0 | 19.6/ 1/ 5.0 | 43.3/ 1/ 10.9 | 17.6/ 1/ 4.5 |
| NOX BCKGRD METER/RANGE/PPM | 6.7/ 1/ 1.7 | 1.1/ 1/ .3 | .5/ 1/ .1 | .2/ 1/ .1 |
| DILUTION FACTOR | 12.10 | 21.30 | 15.54 | 22.05 |
| THC CONCENTRATION PPM | 75. | 1. | 2. | 3. |
| CO CONCENTRATION PPM | 417. | 8. | 29. | 3. |
| CO2 CONCENTRATION PCT | .8996 | .5173 | .7239 | .4989 |
| NOX CONCENTRATION PPM | 8.4 | 4.7 | 10.8 | 4.4 |
| THC MASS GRAMS | 6.87 | .10 | .18 | .53 |
| CO MASS GRAMS | 36.49 | 1.19 | 2.54 | .39 |
| CO2 MASS GRAMS | 1238.6 | 1227.0 | 995.2 | 1179.0 |
| NOX MASS GRAMS | 1.35 | 1.31 | 1.73 | 1.23 |
| THC GRAMS/MI | 1.91 | .03 | .05 | .14 |
| CO GRAMS/MI | 10.13 | .31 | .71 | .10 |
| CO2 GRAMS/MI | 343.8 | 318.0 | 277.9 | 306.2 |
| NOX GRAMS/MI | .38 | .34 | .48 | .32 |
| FUEL ECONOMY IN MPG | 12.39 13.22 | 14.11 | 16.10 15.32 | 14.66 |
| RUN TIME SECONDS | 505. | 869. | 505. | 869. |
| MEASURED DISTANCE MI | 3.60 7.46 | 3.86 | 3.58 7.43 | 3.85 |
| SCF, DRY | .962 .967 | .969 | .965 .968 | .970 |
| DFC, WET (DRY) | .940( .920) | | .948( .928) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.8/ .00 | | 204.2/ .00 | |

OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSU1 |
| BAROMETER | MM HG | 740.9 |
| HUMIDITY | G/KG | 14.0 |
| TEMPERATURE | DEG C | 26.1 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 312.4 | ( 308.8) |
| FUEL ECONOMY | MPG | 14.18 | ( 14.34) |
| HYDROCARBONS (THC) | G/MI | .42 | ( .46) |
| CARBON MONOXIDE | G/MI | 2.46 | ( 2.40) |
| OXIDES OF NITROGEN | G/MI | .39 | ( .38) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH -
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 740.41 MM HG(29.15 IN HG)
RELATIVE HUMIDITY 58. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/25/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 13.0 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88775. KM( 55162. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.08

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48084. |
| TOT FLOW STD. CU. METRES(SCF) | 89.2 ( 3149.) |
| THC SAMPLE METER/RANGE/PPM | 11.7/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 11.0/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 1.1/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .2/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.5/ 11/ .5539 |
| CO2 BCKGRD METER/RANGE/PCT | 7.2/ 11/ .0427 |
| NOX SAMPLE METER/RANGE/PPM | 94.7/ 1/ 23.7 |
| NOX BCKGRD METER/RANGE/PPM | .7/ 1/ .2 |
| DILUTION FACTOR | 21.60 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .5131 |
| NOX CONCENTRATION PPM | 23.5 |
| THC MASS GRAMS | .13 |
| CO MASS GRAMS | .08 |
| CO2 MASS GRAMS | 837.9 |
| NOX MASS GRAMS | 4.33 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .936) |
| SCF, WET (DRY) | 1.000 ( .971) |
| VOL (SCM) | 89.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |
| TEST NUMBER, | ANSU1 |
| BAROMETER, MM HG | 740.4 |
| HUMIDITY, G/KG | 13.0 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 166.5 |
| FUEL ECONOMY, MPG | 27.0 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .02 |
| OXIDES OF NITROGEN, G/MI | .86 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 739.90 MM HG(29.13 IN HG)
RELATIVE HUMIDITY 65. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/25/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 27.2 DEG C(81.0 DEG F)
ABS. HUMIDITY 15.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88788. KM( 55170. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.17

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48057. |
| TOT FLOW STD. CU. METRES(SCF) | 89.0 ( 3142.) |
| THC SAMPLE METER/RANGE/PPM | 10.1/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.1/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 1.0/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.9/ 3/1.1811 |
| CO2 BCKGRD METER/RANGE/PCT | 3.1/ 3/ .0505 |
| NOX SAMPLE METER/RANGE/PPM | 95.3/ 1/ 23.8 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 1/ .1 |
| DILUTION FACTOR | 10.14 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | 1.1356 |
| NOX CONCENTRATION PPM | 23.7 |
| THC MASS GRAMS | .21 |
| CO MASS GRAMS | .08 |
| CO2 MASS GRAMS | 1850.1 |
| NOX MASS GRAMS | 4.73 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .901 ( .883) |
| SCF, WET (DRY) | 1.000 ( .958) |
| VOL (SCM) | 89.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSU1 |
| BAROMETER, | MM HG | 739.9 |
| HUMIDITY, | G/KG | 15.2 |
| TEMPERATURE, | DEG C | 27.2 |
| CARBON DIOXIDE, | G/MI | 201.3 |
| FUEL ECONOMY, | MPG | 22.3 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .52 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 1/26/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88802. KM( 55179. MILES)

BAROMETER 744.73 MM HG(29.32 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 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 764.5 (30.1) | 767.1 (30.2) | 767.1 (30.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) | 764.5 (30.1) | 769.6 (30.3) | 769.6 (30.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 42.8 (109.0) | 43.3 (110.0) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 40620. | 69568. | 40466. | 69537. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2676.) | 130.1 ( 4593.) | 75.5 ( 2667.) | 130.2 ( 4597.) |
| THC SAMPLE METER/RANGE/PPM | 10.7/ 3/ 105. | 10.9/ 2/ 11. | 12.0/ 2/ 12. | 10.7/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 1.8/ 3/ 17. | 10.9/ 2/ 11. | 10.2/ 2/ 10. | 10.6/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 80.4/ 11/ 361. | 8.2/ 13/ 7. | 39.2/ 13/ 36. | 3.1/ 13/ 3. |
| CO BCKGRD METER/RANGE/PPM | .1/ 11/ 0. | .4/ 13/ 0. | .4/ 13/ 0. | .0/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 90.4/ 11/ .8956 | 65.8/ 11/ .5574 | 80.7/ 11/ .7504 | 64.0/ 11/ .5362 |
| CO2 BCKGRD METER/RANGE/PCT | 7.3/ 11/ .0433 | 7.2/ 11/ .0427 | 7.4/ 11/ .0440 | 7.5/ 11/ .0446 |
| NOX SAMPLE METER/RANGE/PPM | 67.4/ 1/ 16.9 | 20.7/ 1/ 5.3 | 44.0/ 1/ 11.1 | 21.4/ 1/ 5.4 |
| NOX BCKGRD METER/RANGE/PPM | 5.1/ 1/ 1.3 | 1.5/ 1/ .4 | .0/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 12.75 | 21.45 | 15.88 | 22.31 |
| THC CONCENTRATION PPM | 89. | 1. | 2. | 1. |
| CO CONCENTRATION PPM | 345. | 7. | 34. | 3. |
| CO2 CONCENTRATION PCT | .8557 | .5167 | .7092 | .4936 |
| NOX CONCENTRATION PPM | 15.7 | 4.9 | 11.1 | 5.4 |
| THC MASS GRAMS | 8.18 | .08 | .22 | .09 |
| CO MASS GRAMS | 30.42 | 1.01 | 3.02 | .40 |
| CO2 MASS GRAMS | 1187.3 | 1230.5 | 980.8 | 1176.7 |
| NOX MASS GRAMS | 2.45 | 1.31 | 1.72 | 1.46 |
| THC GRAMS/MI | 2.38 | .02 | .06 | .02 |
| CO GRAMS/MI | 8.83 | .26 | .84 | .10 |
| CO2 GRAMS/MI | 344.6 | 316.7 | 273.2 | 303.3 |
| NOX GRAMS/MI | .71 | .34 | .48 | .38 |
| FUEL ECONOMY IN MPG | 12.41 13.28 | 14.17 | 16.36 15.51 | 14.81 |
| RUN TIME SECONDS | 506. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.45 7.33 | 3.89 | 3.59 7.47 | 3.88 |
| SCF, DRY | .965 .969 | .971 | .968 .970 | .972 |
| DFC, WET (DRY) | .942( .924) | | .949( .931) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.9/ .00 | | 205.7/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSU2 |
| BAROMETER | MM HG | 744.7 |
| HUMIDITY | G/KG | 12.9 |
| TEMPERATURE | DEG C | 26.7 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 310.4 | ( 306.5) |
| FUEL ECONOMY | MPG | 14.28 | ( 14.47) |
| HYDROCARBONS (THC) | G/MI | .51 | ( .51) |
| CARBON MONOXIDE | G/MI | 2.15 | ( 2.10) |
| OXIDES OF NITROGEN | G/MI | .45 | ( .46) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH -
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. ANSU2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 1/26/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 88828. KM( 55195. MILES) |
| | CVS NO. 2 | |
| BAROMETER 744.73 MM HG(29.32 IN HG) | DRY BULB TEMP. 26.7 DEG C(80.0 DEG F) | |
| RELATIVE HUMIDITY 54. PCT | ABS. HUMIDITY 12.1 GM/KG | NOX HUMIDITY CORRECTION FACTOR 1.05 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 769.6 (30.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 48084. |
| TOT FLOW STD. CU. METRES(SCF) | 90.0 ( 3180.) |
| THC SAMPLE METER/RANGE/PPM | 11.6/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 10.0/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .1/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.7/ 11/ .5444 |
| CO2 BCKGRD METER/RANGE/PCT | 7.8/ 11/ .0465 |
| NOX SAMPLE METER/RANGE/PPM | 26.1/ 2/ 26.1 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 21.98 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5001 |
| NOX CONCENTRATION PPM | 25.9 |
| THC MASS GRAMS | .23 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 824.4 |
| NOX MASS GRAMS | 4.68 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .938) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 90.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |
| TEST NUMBER, | ANSU2 |
| BAROMETER, MM HG | 744.7 |
| HUMIDITY, G/KG | 12.1 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 164.0 |
| FUEL ECONOMY, MPG | 27.4 |
| HYDROCARBONS, (THC) G/MI | .04 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .93 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 744.73 MM HG(29.32 IN HG)
RELATIVE HUMIDITY 63. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/26/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 12.8 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88839. KM( 55202. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.08

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 772.2 (30.4) |
| BLOWER INLET P MM. H2O(IN. H2O) | 769.6 (30.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48084. |
| TOT FLOW STD. CU. METRES(SCF) | 89.7 ( 3169.) |
| THC SAMPLE METER/RANGE/PPM | 9.1/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 8.1/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .8/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .6/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 65.9/ 3/1.1811 |
| CO2 BCKGRD METER/RANGE/PCT | 2.7/ 3/ .0440 |
| NOX SAMPLE METER/RANGE/PPM | 27.9/ 2/ 27.9 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 10.15 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1415 |
| NOX CONCENTRATION PPM | 27.9 |
| THC MASS GRAMS | .20 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1875.5 |
| NOX MASS GRAMS | 5.15 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .901 ( .883) |
| SCF, WET (DRY) | 1.000 ( .958) |
| VOL (SCM) | 89.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSU1 |
| BAROMETER, | MM HG | 744.7 |
| HUMIDITY, | G/KG | 12.8 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 204.1 |
| FUEL ECONOMY, | MPG | 22.0 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .56 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ADCU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 1/30/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88870. KM( 55221. MILES)

BAROMETER 746.00 MM HG(29.37 IN HG)
RELATIVE HUMIDITY 40. PCT
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 7.3 GM/KG
NOX HUMIDITY CORRECTION FACTOR .90

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 772.2 (30.4) | 769.6 (30.3) | 772.2 (30.4) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) | 762.0 (30.0) | 769.6 (30.3) | 769.6 (30.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 40.6 (105.0) | 42.2 (108.0) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 40555. | 69606. | 40517. | 69528. |
| TOT FLOW STD. CU. METRES(SCF) | 75.9 ( 2680.) | 130.9 ( 4623.) | 75.9 ( 2681.) | 130.3 ( 4600.) |
| THC SAMPLE METER/RANGE/PPM | 81.3/ 2/ 81. | 12.3/ 2/ 12. | 12.5/ 2/ 13. | 11.1/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 12.2/ 2/ 12. | 12.3/ 2/ 12. | 10.5/ 2/ 11. | 11.1/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 91.7/ 11/ 458. | 12.0/ 13/ 11. | 27.4/ 13/ 25. | 4.9/ 13/ 4. |
| CO BCKGRD METER/RANGE/PPM | .4/ 11/ 1. | .9/ 13/ 1. | .4/ 13/ 0. | .6/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 92.0/ 11/ .9214 | 64.7/ 11/ .5444 | 79.4/ 11/ .7322 | 62.3/ 11/ .5166 |
| CO2 BCKGRD METER/RANGE/PCT | 7.4/ 11/ .0440 | 7.6/ 11/ .0452 | 7.8/ 11/ .0465 | 7.7/ 11/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 46.9/ 1/ 11.8 | 20.4/ 1/ 5.2 | 52.5/ 1/ 13.2 | 22.0/ 1/ 5.6 |
| NOX BCKGRD METER/RANGE/PPM | 2.2/ 1/ .6 | .4/ 1/ .1 | .4/ 1/ .1 | 1.0/ 1/ .3 |
| DILUTION FACTOR | 12.32 | 21.94 | 16.30 | 23.15 |
| THC CONCENTRATION PPM | 70. | 1. | 3. | 0. |
| CO CONCENTRATION PPM | 439. | 10. | 24. | 4. |
| CO2 CONCENTRATION PCT | .8810 | .5013 | .6886 | .4728 |
| NOX CONCENTRATION PPM | 11.3 | 5.1 | 13.1 | 5.3 |
| THC MASS GRAMS | 6.48 | .09 | .24 | .08 |
| CO MASS GRAMS | 38.82 | 1.46 | 2.09 | .56 |
| CO2 MASS GRAMS | 1224.0 | 1201.7 | 957.1 | 1127.5 |
| NOX MASS GRAMS | 1.47 | 1.15 | 1.71 | 1.20 |
| THC GRAMS/MI | 1.81 | .02 | .07 | .02 |
| CO GRAMS/MI | 10.84 | .38 | .58 | .15 |
| CO2 GRAMS/MI | 341.7 | 311.1 | 266.8 | 292.2 |
| NOX GRAMS/MI | .41 | .30 | .48 | .31 |
| FUEL ECONOMY IN MPG | 12.43 13.39 | 14.41 | 16.78 16.01 | 15.36 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.58 7.44 | 3.86 | 3.59 7.45 | 3.86 |
| SCF, DRY | .970 .975 | .977 | .974 .976 | .978 |
| DFC, WET (DRY) | .941( .929) | | .950( .938) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.8/ .00 | | 206.2/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ADCU1 |
| BAROMETER | MM HG | 746.0 |
| HUMIDITY | G/KG | 7.3 |
| TEMPERATURE | DEG C | 23.3 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 305.3 | ( 299.7) |
| FUEL ECONOMY | MPG | 14.50 | ( 14.77) |
| HYDROCARBONS (THC) | G/MI | .40 | ( .40) |
| CARBON MONOXIDE | G/MI | 2.60 | ( 2.53) |
| OXIDES OF NITROGEN | G/MI | .37 | ( .37) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ADCU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 746.51 MM HG(29.39 IN HG)
RELATIVE HUMIDITY 36. PCT

VEHICLE NO.
DATE 1/30/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 7.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88895. KM( 55237. MILES)

NOX HUMIDITY CORRECTION FACTOR .90

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 767.1 (30.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 764.5 (30.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 52179. |
| TOT FLOW STD. CU. METRES(SCF) | 97.7 ( 3450.) |
| THC SAMPLE METER/RANGE/PPM | 10.8/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 10.5/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | .3/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.0/ 11/ .5246 |
| CO2 BCKGRD METER/RANGE/PCT | 7.5/ 11/ .0446 |
| NOX SAMPLE METER/RANGE/PPM | 85.4/ 1/ 21.4 |
| NOX BCKGRD METER/RANGE/PPM | 1.2/ 1/ .3 |
| DILUTION FACTOR | 22.81 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4820 |
| NOX CONCENTRATION PPM | 21.1 |
| THC MASS GRAMS | .09 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 862.3 |
| NOX MASS GRAMS | 3.53 |
| RUN TIME SECONDS | 651. |
| DFC, WET (DRY) | .956 ( .945) |
| SCF, WET (DRY) | 1.000 ( .979) |
| VOL (SCM) | 97.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.46 |

| | | |
|---|---|---|
| TEST NUMBER, | | ADCU1 |
| BAROMETER, | MM HG | 746.5 |
| HUMIDITY, | G/KG | 7.2 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 158.1 |
| FUEL ECONOMY, | MPG | 28.4 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .65 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ADCU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 746.76 MM HG(29.40 IN HG)
RELATIVE HUMIDITY 36. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/30/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 7.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88907. KM( 55244. MILES)

NOX HUMIDITY CORRECTION FACTOR .90

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 772.2 (30.4) |
| BLOWER INLET P MM. H2O(IN. H2O) | 777.2 (30.6) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48091. |
| TOT FLOW STD. CU. METRES(SCF) | 90.0 ( 3176.) |
| THC SAMPLE METER/RANGE/PPM | 11.6/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 11.0/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | .3/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.1/ 3/1.1448 |
| CO2 BCKGRD METER/RANGE/PCT | 3.6/ 3/ .0587 |
| NOX SAMPLE METER/RANGE/PPM | 31.4/ 2/ 31.4 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 10.47 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.0918 |
| NOX CONCENTRATION PPM | 31.2 |
| THC MASS GRAMS | .18 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1798.0 |
| NOX MASS GRAMS | 4.82 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .904 ( .894) |
| SCF, WET (DRY) | 1.000 ( .968) |
| VOL (SCM) | 90.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.18 |

| | | |
|---|---|---|
| TEST NUMBER, | | ADCU1 |
| BAROMETER, | MM HG | 746.8 |
| HUMIDITY, | G/KG | 7.2 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 195.9 |
| FUEL ECONOMY, | MPG | 22.9 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .52 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

:ST NO. ADCU2 RUN 1
:HICLE MODEL 0 FORD ESCORT
:GINE 1.6 L( 98. CID) L-4
:ANSMISSION A3

VEHICLE NO.
DATE 1/31/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88921. KM( 55253. MILES)

:ROMETER 742.70 MM HG(29.24 IN HG)
:LATIVE HUMIDITY 41. PCT
:G RESULTS

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 7.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .91

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 772.2 (30.4) | 767.1 (30.2) | 767.1 (30.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) | 769.6 (30.3) | 769.6 (30.3) | 769.6 (30.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 41.1 (106.0) | 41.7 (107.0) | 40.0 (104.0) |
| BLOWER REVOLUTIONS | 40529. | 69550. | 40629. | 69365. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2662.) | 129.9 ( 4588.) | 75.8 ( 2678.) | 129.9 ( 4586.) |
| THC SAMPLE METER/RANGE/PPM | 83.0/ 2/ 83. | 9.9/ 2/ 10. | 14.5/ 2/ 15. | 10.6/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.1/ 2/ 9. | 9.9/ 2/ 10. | 9.8/ 2/ 10. | 10.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 85.3/ 11/ 400. | 10.2/ 13/ 9. | 53.2/ 13/ 50. | 5.4/ 13/ 5. |
| CO BCKGRD METER/RANGE/PPM | .4/ 11/ 1. | 1.8/ 13/ 2. | 1.7/ 13/ 1. | 1.2/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 91.2/ 11/ .9084 | 64.9/ 11/ .5468 | 80.5/ 11/ .7475 | 63.3/ 11/ .5281 |
| CO2 BCKGRD METER/RANGE/PCT | 7.7/ 11/ .0458 | 7.9/ 11/ .0471 | 9.0/ 11/ .0540 | 8.6/ 11/ .0515 |
| NOX SAMPLE METER/RANGE/PPM | 67.1/ 1/ 16.8 | 19.1/ 1/ 4.9 | 54.6/ 1/ 13.7 | 20.0/ 1/ 5.1 |
| NOX BCKGRD METER/RANGE/PPM | 2.0/ 1/ .5 | 2.3/ 1/ .6 | .9/ 1/ .2 | .5/ 1/ .1 |
| DILUTION FACTOR | 12.56 | 21.86 | 15.91 | 22.64 |
| THC CONCENTRATION PPM | 75. | 0. | 5. | 1. |
| CO CONCENTRATION PPM | 384. | 7. | 47. | 4. |
| CO2 CONCENTRATION PCT | .8663 | .5018 | .6969 | .4789 |
| NOX CONCENTRATION PPM | 16.4 | 4.3 | 13.5 | 5.0 |
| THC MASS GRAMS | 6.85 | .07 | .49 | .10 |
| CO MASS GRAMS | 33.69 | 1.10 | 4.15 | .35 |
| CO2 MASS GRAMS | 1195.7 | 1193.9 | 967.7 | 1138.8 |
| NOX MASS GRAMS | 2.15 | .97 | 1.78 | 1.12 |
| THC GRAMS/MI | 1.93 | .02 | .14 | .03 |
| CO GRAMS/MI | 9.48 | .29 | 1.17 | .14 |
| CO2 GRAMS/MI | 336.3 | 312.1 | 272.4 | 297.5 |
| NOX GRAMS/MI | .60 | .25 | .50 | .29 |
| FUEL ECONOMY IN MPG | 12.69 13.51 | 14.37 | 16.37 15.68 | 15.09 |
| RUN TIME SECONDS | 505. | 867. | 507. | 866. |
| MEASURED DISTANCE MI | 3.56 7.38 | 3.82 | 3.55 7.38 | 3.83 |
| SCF, DRY | .970 .975 | .977 | .973 .976 | .977 |
| DFC, WET (DRY) | .942( .929) | | .949( .936) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.3/ .00 | | 205.7/ .00 | |

:MPOSITE RESULTS

| TEST NUMBER | | ADCU2 |
|---|---|---|
| :AROMETER | MM HG | 742.7 |
| HUMIDITY | G/KG | 7.7 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 306.2 | ( 301.9) |
| FUEL ECONOMY | MPG | 14.46 | ( 14.67) |
| HYDROCARBONS (THC) | G/MI | .45 | ( .45) |
| CARBON MONOXIDE | G/MI | 2.43 | ( 2.39) |
| OXIDES OF NITROGEN | G/MI | .39 | ( .41) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

T NO. ADCU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 742.95 MM HG(29.25 IN HG)
RELATIVE HUMIDITY 53. PCT
BAG RESULTS

VEHICLE NO.
DATE 1/31/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88945. KM( 55268. MILES)

NOX HUMIDITY CORRECTION FACTOR .95

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 769.6 (30.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 48077. |
| TOT FLOW STD. CU. METRES(SCF) | 89.9 ( 3174.) |
| THC SAMPLE METER/RANGE/PPM | 10.0/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.3/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | .1/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.6/ 11/ .5316 |
| CO2 BCKGRD METER/RANGE/PCT | 7.8/ 11/ .0465 |
| NOX SAMPLE METER/RANGE/PPM | 91.6/ 1/ 22.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 22.52 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4872 |
| NOX CONCENTRATION PPM | 22.8 |
| THC MASS GRAMS | .12 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 801.7 |
| NOX MASS GRAMS | 3.72 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .939) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 89.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.01 |

| | | |
|---|---|---|
| TEST NUMBER, | | ADCU2 |
| BAROMETER, | MM HG | 743.0 |
| HUMIDITY, | G/KG | 9.1 |
| TEMPERATURE, | DEG C | 22.2 |
| CARBON DIOXIDE, | G/MI | 160.2 |
| FUEL ECONOMY, | MPG | 28.0 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .74 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ADCU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 1/31/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 88956. KM( 55275. MILES)

BAROMETER 742.95 MM HG(29.25 IN HG)
RELATIVE HUMIDITY 42. PCT
BAG RESULTS

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

NOX HUMIDITY CORRECTION FACTOR .93

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 784.9 (30.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48047. |
| TOT FLOW STD. CU. METRES(SCF) | 89.4 ( 3155.) |
| THC SAMPLE METER/RANGE/PPM | 10.5/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.2/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | .4/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .4/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.6/ 3/1.1348 |
| CO2 BCKGRD METER/RANGE/PCT | 3.0/ 3/ .0489 |
| NOX SAMPLE METER/RANGE/PPM | 28.1/ 2/ 28.1 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 10.56 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.0905 |
| NOX CONCENTRATION PPM | 27.8 |
| THC MASS GRAMS | .24 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 1784.0 |
| NOX MASS GRAMS | 4.44 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .905 ( .893) |
| SCF, WET (DRY) | 1.000 ( .966) |
| VOL (SCM) | 89.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.14 |

| | | |
|---|---|---|
| TEST NUMBER, | | ADCU2 |
| BAROMETER, | MM HG | 743.0 |
| HUMIDITY, | G/KG | 8.6 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 195.1 |
| FUEL ECONOMY, | MPG | 23.0 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .49 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 2/ 2/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89006. KM( 55306. MILES)

BAROMETER 739.39 MM HG(29.11 IN HG)
RELATIVE HUMIDITY 67. PCT
BAG RESULTS

DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 13.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.11

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 767.1 (30.2) | 762.0 (30.0) | 762.0 (30.0) | 767.1 (30.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 42.8 (109.0) | 43.3 (110.0) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 40547. | 69501. | 40463. | 70022. |
| TOT FLOW STD. CU. METRES(SCF) | 75.1 ( 2652.) | 129.0 ( 4554.) | 75.0 ( 2649.) | 130.0 ( 4589.) |
| THC SAMPLE METER/RANGE/PPM | 71.7/ 2/ 72. | 11.3/ 2/ 11. | 16.0/ 2/ 16. | 12.1/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 11.2/ 2/ 11. | 11.1/ 2/ 11. | 10.4/ 2/ 10. | 11.2/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 75.6/ 11/ 325. | 4.5/ 13/ 4. | 49.9/ 13/ 47. | 2.7/ 13/ 2. |
| CO BCKGRD METER/RANGE/PPM | .1/ 11/ 0. | .3/ 13/ 0. | .3/ 13/ 0. | .5/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 91.5/ 11/ .9133 | 65.1/ 11/ .5491 | 81.0/ 11/ .7546 | 53.7/ 11/ .5327 |
| CO2 BCKGRD METER/RANGE/PCT | 7.7/ 11/ .0458 | 7.7/ 11/ .0458 | 7.8/ 11/ .0465 | 7.8/ 11/ .0465 |
| NOX SAMPLE METER/RANGE/PPM | 58.4/ 1/ 14.7 | 18.9/ 1/ 4.8 | 37.2/ 1/ 9.4 | 18.0/ 1/ 4.6 |
| NOX BCKGRD METER/RANGE/PPM | 2.6/ 1/ .7 | 1.9/ 1/ .5 | 1.2/ 1/ .3 | 1.1/ 1/ .3 |
| DILUTION FACTOR | 12.61 | 21.78 | 15.77 | 22.45 |
| THC CONCENTRATION PPM | 61. | 1. | 6. | 1. |
| CO CONCENTRATION PPM | 310. | 4. | 45. | 2. |
| CO2 CONCENTRATION PCT | .8711 | .5054 | .7111 | .4884 |
| NOX CONCENTRATION PPM | 14.0 | 4.3 | 9.1 | 4.3 |
| THC MASS GRAMS | 5.62 | .11 | .57 | .22 |
| CO MASS GRAMS | 27.09 | .53 | 3.89 | .28 |
| CO2 MASS GRAMS | 1198.0 | 1193.3 | 976.5 | 1162.1 |
| NOX MASS GRAMS | 2.24 | 1.19 | 1.45 | 1.19 |
| THC GRAMS/MI | 1.57 | .03 | .16 | .06 |
| CO GRAMS/MI | 7.60 | .14 | 1.09 | .07 |
| CO2 GRAMS/MI | 336.0 | 311.8 | 274.3 | 301.9 |
| NOX GRAMS/MI | .63 | .31 | .41 | .31 |
| FUEL ECONOMY IN MPG | 12.83 13.59 | 14.40 | 16.26 15.51 | 14.87 |
| RUN TIME SECONDS | 506. | 867. | 505. | 874. |
| MEASURED DISTANCE MI | 3.57 7.39 | 3.83 | 3.56 7.41 | 3.85 |
| SCF, DRY | .962 .966 | .968 | .965 .967 | .969 |
| DFC, WET (DRY) | .942( .921) | | .949( .928) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.1/ .00 | | 205.0/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMU1 |
| BAROMETER | MM HG | 739.4 |
| HUMIDITY | G/KG | 13.7 |
| TEMPERATURE | DEG C | 25.0 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 306.5 | ( 303.6) |
| FUEL ECONOMY | MPG | 14.49 | ( 14.62) |
| HYDROCARBONS (THC) | G/MI | .39 | ( .39) |
| CARBON MONOXIDE | G/MI | 1.95 | ( 1.93) |
| OXIDES OF NITROGEN | G/MI | .40 | ( .40) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 739.39 MM HG(29.11 IN HG)
RELATIVE HUMIDITY 60. PCT
BAG RESULTS

VEHICLE NO.
DATE 2/ 2/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 12.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89032. KM( 55322. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.07

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48062. |
| TOT FLOW STD. CU. METRES(SCF) | 89.2 ( 3149.) |
| THC SAMPLE METER/RANGE/PPM | 12.6/ 2/ 13. |
| THC BCKGRD METER/RANGE/PPM | 11.6/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | .4/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.1/ 11/ .5491 |
| CO2 BCKGRD METER/RANGE/PCT | 7.8/ 11/ .0465 |
| NOX SAMPLE METER/RANGE/PPM | 97.3/ 1/ 24.3 |
| NOX BCKGRD METER/RANGE/PPM | 1.6/ 1/ .4 |
| DILUTION FACTOR | 21.79 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5048 |
| NOX CONCENTRATION PPM | 23.9 |
| THC MASS GRAMS | .17 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 824.1 |
| NOX MASS GRAMS | 4.36 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .936) |
| SCF, WET (DRY) | 1.000 ( .971) |
| VOL (SCM) | 89.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |
| TEST NUMBER, | AJMU1 |
| BAROMETER, MM HG | 739.4 |
| HUMIDITY, G/KG | 12.7 |
| TEMPERATURE, DEG C | 25.6 |
| CARBON DIOXIDE, G/MI | 164.2 |
| FUEL ECONOMY, MPG | 27.4 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .87 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. AJMU1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 2/ 2/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 89043. KM( 55329. MILES) |
| | CVS NO. 2 | |
| BAROMETER 739.14 MM HG(29.10 IN HG) | DRY BULB TEMP. 26.7 DEG C(80.0 DEG F) | |
| RELATIVE HUMIDITY 61. PCT | ABS. HUMIDITY 13.8 GM/KG | NOX HUMIDITY CORRECTION FACTOR 1.11 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET P MM. H2O(IN. H2O) | 779.8 (30.7) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48076. |
| TOT FLOW STD. CU. METRES(SCF) | 88.8 ( 3137.) |
| THC SAMPLE METER/RANGE/PPM | 13.6/ 2/ 14. |
| THC BCKGRD METER/RANGE/PPM | 13.3/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | .4/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .4/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.7/ 3/1.1771 |
| CO2 BCKGRD METER/RANGE/PCT | 3.1/ 3/ .0505 |
| NOX SAMPLE METER/RANGE/PPM | 98.6/ 1/ 24.6 |
| NOX BCKGRD METER/RANGE/PPM | 1.6/ 1/ .4 |
| DILUTION FACTOR | 10.18 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1315 |
| NOX CONCENTRATION PPM | 24.2 |
| THC MASS GRAMS | .17 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 1840.6 |
| NOX MASS GRAMS | 4.58 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .902 ( .884) |
| SCF, WET (DRY) | 1.000 ( .959) |
| VOL (SCM) | 88.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.18 |
| TEST NUMBER, | AJMU1 |
| BAROMETER, MM HG | 739.1 |
| HUMIDITY, G/KG | 13.8 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 200.4 |
| FUEL ECONOMY, MPG | 22.4 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .50 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 751.08 MM HG(29.57 IN HG)
RELATIVE HUMIDITY 20. PCT
BAG RESULTS

VEHICLE NO.
DATE 2/ 3/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 3.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89087. KM( 55356. MILES)

NOX HUMIDITY CORRECTION FACTOR .81

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 784.9 (30.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 48103. |
| TOT FLOW STD. CU. METRES(SCF) | 90.8 ( 3207.) |
| THC SAMPLE METER/RANGE/PPM | 7.0/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.4/ 2/ 6. |
| CO SAMPLE METER/RANGE/PPM | .7/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .2/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.9/ 3/1.1408 |
| CO2 BCKGRD METER/RANGE/PCT | 3.2/ 3/ .0522 |
| NOX SAMPLE METER/RANGE/PPM | 36.9/ 2/ 36.9 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 10.51 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.0936 |
| NOX CONCENTRATION PPM | 36.8 |
| THC MASS GRAMS | .13 |
| CO MASS GRAMS | .05 |
| CO2 MASS GRAMS | 1818.6 |
| NOX MASS GRAMS | 5.16 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .905 ( .899) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 90.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.17 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMU2 |
| BAROMETER, | MM HG | 751.1 |
| HUMIDITY, | G/KG | 3.4 |
| TEMPERATURE, | DEG C | 22.8 |
| CARBON DIOXIDE, | G/MI | 198.3 |
| FUEL ECONOMY, | MPG | 22.7 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .56 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AHCU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 2/ 8/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 1

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89143. KM( 55391. MILES)

BAROMETER 754.63 MM HG(29.71 IN HG)
RELATIVE HUMIDITY 19. PCT
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 3.4 GM/KG
NOX HUMIDITY CORRECTION FACTOR .81

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 769.6 (30.3) | 782.3 (30.8) | 784.9 (30.9) | 784.9 (30.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 767.1 (30.2) | 779.8 (30.7) | 782.3 (30.8) | 782.3 (30.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 44.4 (112.0) | 42.2 (108.0) | 43.3 (110.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40588. | 69617. | 40844. | 69534. |
| TOT FLOW STD. CU. METRES(SCF) | 76.8 ( 2711.) | 131.9 ( 4659.) | 77.2 ( 2727.) | 132.1 ( 4666.) |
| THC SAMPLE METER/RANGE/PPM | 37.5/ 2/ 38. | 9.1/ 2/ 9. | 12.0/ 2/ 12. | 9.8/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 6.5/ 2/ 7. | 7.6/ 2/ 8. | 8.0/ 2/ 8. | 8.1/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 71.1/ 11/ 295. | 16.0/ 13/ 14. | 33.0/ 13/ 30. | 7.7/ 13/ 7. |
| CO BCKGRD METER/RANGE/PPM | .1/ 11/ 0. | .4/ 13/ 0. | .5/ 13/ 0. | .6/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 95.6/ 11/ .9813 | 65.0/ 11/ .5480 | 79.5/ 11/ .7336 | 62.6/ 11/ .5200 |
| CO2 BCKGRD METER/RANGE/PCT | 6.9/ 11/ .0409 | 7.0/ 11/ .0415 | 7.2/ 11/ .0427 | 7.1/ 11/ .0421 |
| NOX SAMPLE METER/RANGE/PPM | 78.2/ 1/ 19.6 | 26.0/ 1/ 6.6 | 67.1/ 1/ 16.8 | 24.6/ 1/ 6.2 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 1/ .1 | .2/ 1/ .1 | .1/ 1/ .0 | .2/ 1/ .1 |
| DILUTION FACTOR | 11.83 | 21.80 | 16.26 | 22.99 |
| THC CONCENTRATION PPM | 32. | 2. | 4. | 2. |
| CO CONCENTRATION PPM | 285. | 14. | 29. | 6. |
| CO2 CONCENTRATION PCT | .9439 | .5084 | .6935 | .4798 |
| NOX CONCENTRATION PPM | 19.6 | 6.5 | 16.8 | 6.2 |
| THC MASS GRAMS | 2.95 | .30 | .42 | .33 |
| CO MASS GRAMS | 25.45 | 2.09 | 2.60 | .95 |
| CO2 MASS GRAMS | 1326.6 | 1228.0 | 980.4 | 1160.6 |
| NOX MASS GRAMS | 2.32 | 1.33 | 2.00 | 1.26 |
| THC GRAMS/MI | .82 | .08 | .12 | .09 |
| CO GRAMS/MI | 7.06 | .54 | .72 | .24 |
| CO2 GRAMS/MI | 368.0 | 318.1 | 271.9 | 299.7 |
| NOX GRAMS/MI | .64 | .34 | .56 | .33 |
| FUEL ECONOMY IN MPG | 11.82 12.89 | 14.08 | 16.44 15.64 | 14.97 |
| RUN TIME SECONDS | 505. | 867. | 509. | 867. |
| MEASURED DISTANCE MI | 3.61 7.47 | 3.86 | 3.61 7.48 | 3.87 |
| SCF, DRY | .976 .981 | .984 | .981 .983 | .985 |
| DFC, WET (DRY) | .940( .934) | | .950( .944) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 208.7/ .00 | | 209.4/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AHCU1 |
| BAROMETER | MM HG | 754.6 |
| HUMIDITY | G/KG | 3.4 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 315.7 | ( 310.3) |
| FUEL ECONOMY | MPG | 14.08 | ( 14.33) |
| HYDROCARBONS (THC) | G/MI | .24 | ( .24) |
| CARBON MONOXIDE | G/MI | 1.94 | ( 1.86) |
| OXIDES OF NITROGEN | G/MI | .46 | ( .46. |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH -
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AHCU1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 754.13 MM HG(29.69 IN HG)
RELATIVE HUMIDITY 16. PCT

VEHICLE NO.
DATE 2/ 8/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 2.9 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89167. KM( 55406. MILES)

NOX HUMIDITY CORRECTION FACTOR .80

BAG RESULTS

| TEST CYCLE | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48135. |
| TOT FLOW STD. CU. METRES(SCF) | 91.1 ( 3218.) |
| THC SAMPLE METER/RANGE/PPM | 8.5/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.5/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .3/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.3/ 11/ .5281 |
| CO2 BCKGRD METER/RANGE/PCT | 7.1/ 11/ .0421 |
| NOX SAMPLE METER/RANGE/PPM | 36.1/ 2/ 36.1 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 22.67 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4879 |
| NOX CONCENTRATION PPM | 35.8 |
| THC MASS GRAMS | .15 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 813.9 |
| NOX MASS GRAMS | 4.97 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .951) |
| SCF, WET (DRY) | 1.000 ( .985) |
| VOL (SCM) | 91.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |

| | | |
|---|---|---|
| TEST NUMBER, | | AHCU1 |
| BAROMETER, | MM HG | 754.1 |
| HUMIDITY, | G/KG | 2.9 |
| TEMPERATURE, | DEG C | 23.9 |
| CARBON DIOXIDE, | G/MI | 161.7 |
| FUEL ECONOMY, | MPG | 27.8 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .99 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AHCU1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 2/ 8/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 89179. KM( 55413. MILES) |
| | CVS NO. 2 | |
| BAROMETER 754.13 MM HG(29.69 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| RELATIVE HUMIDITY 15. PCT | ABS. HUMIDITY 3.0 GM/KG | NOX HUMIDITY CORRECTION FACTOR .80 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 784.9 (30.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 782.3 (30.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) |
| BLOWER REVOLUTIONS | 48126. |
| TOT FLOW STD. CU. METRES(SCF) | 90.8 ( 3207.) |
| THC SAMPLE METER/RANGE/PPM | 9.0/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.7/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 1.1/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .5/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.8/ 3/1.1791 |
| CO2 BCKGRD METER/RANGE/PCT | 3.4/ 3/ .0554 |
| NOX SAMPLE METER/RANGE/PPM | 43.7/ 2/ 43.7 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 10.16 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | 1.1291 |
| NOX CONCENTRATION PPM | 43.7 |
| THC MASS GRAMS | .23 |
| CO MASS GRAMS | .06 |
| CO2 MASS GRAMS | 1877.7 |
| NOX MASS GRAMS | 6.05 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .902 ( .897) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 90.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |
| TEST NUMBER, | AHCU1 |
| BAROMETER, MM HG | 754.1 |
| HUMIDITY, G/KG | 3.0 |
| TEMPERATURE, DEG C | 25.0 |
| CARBON DIOXIDE, G/MI | 204.3 |
| FUEL ECONOMY, MPG | 22.0 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .66 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AHCU2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 2/ 9/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89195. KM( 55423. MILES)

BAROMETER 759.46 MM HG(29.90 IN HG)
RELATIVE HUMIDITY 21. PCT

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 3.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .81

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 782.3 (30.8) | 782.3 (30.8) | 782.3 (30.8) | 792.5 (31.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 784.9 (30.9) | 784.9 (30.9) | 784.9 (30.9) | 795.0 (31.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 44.4 (112.0) | 41.7 (107.0) | 43.9 (111.0) | 39.4 (103.0) |
| BLOWER REVOLUTIONS | 40558. | 69590. | 40529. | 69490. |
| TOT FLOW STD. CU. METRES(SCF) | 77.1 ( 2721.) | 132.9 ( 4692.) | 77.1 ( 2722.) | 133.1 ( 4698.) |
| THC SAMPLE METER/RANGE/PPM | 33.3/ 2/ 33. | 7.7/ 2/ 8. | 10.8/ 2/ 11. | 8.2/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 5.8/ 2/ 6. | 6.7/ 2/ 7. | 6.6/ 2/ 7. | 6.9/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 62.6/ 11/ 243. | 14.5/ 13/ 13. | 44.6/ 13/ 41. | 6.6/ 13/ 6. |
| CO BCKGRD METER/RANGE/PPM | .1/ 11/ 0. | .5/ 13/ 0. | .6/ 13/ 1. | .6/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 94.1/ 11/ .9560 | 65.2/ 11/ .5503 | 79.5/ 11/ .7336 | 61.7/ 11/ .5098 |
| CO2 BCKGRD METER/RANGE/PCT | 7.2/ 11/ .0427 | 7.3/ 11/ .0433 | 7.3/ 11/ .0433 | 7.3/ 11/ .0433 |
| NOX SAMPLE METER/RANGE/PPM | 84.0/ 1/ 21.1 | 24.0/ 1/ 6.1 | 63.2/ 1/ 15.9 | 23.4/ 1/ 5.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 | .0/ 1/ .0 | .5/ 1/ .1 | .4/ 1/ .1 |
| DILUTION FACTOR | 12.20 | 21.71 | 16.24 | 23.46 |
| THC CONCENTRATION PPM | 28. | 1. | -5. | 2. |
| CO CONCENTRATION PPM | 235. | 12. | 40. | 5. |
| CO2 CONCENTRATION PCT | .9168 | .5090 | .6929 | .4683 |
| NOX CONCENTRATION PPM | 20.9 | 6.1 | 15.7 | 5.8 |
| THC MASS GRAMS | 2.63 | .21 | .43 | .26 |
| CO MASS GRAMS | 21.06 | 1.89 | 3.57 | .80 |
| CO2 MASS GRAMS | 1293.6 | 1238.2 | 977.8 | 1140.7 |
| NOX MASS GRAMS | 2.50 | 1.25 | 1.88 | 1.20 |
| THC GRAMS/MI | .73 | .05 | .12 | .07 |
| CO GRAMS/MI | 5.89 | .48 | .99 | .21 |
| CO2 GRAMS/MI | 361.8 | 317.8 | 272.3 | 294.7 |
| NOX GRAMS/MI | .70 | .32 | .52 | .31 |
| FUEL ECONOMY IN MPG | 12.07 13.05 | 14.10 | 16.39 15.77 | 15.22 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.58 7.47 | 3.90 | 3.59 7.46 | 3.87 |
| SCF, DRY | .976 .981 | .983 | .980 .982 | .984 |
| DFC, WET (DRY) | .941( .934) | | .950( .944) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 210.0/ .00 | | 210.1/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AHCU2 |
| BAROMETER | MM HG | 759.5 |
| HUMIDITY | G/KG | 3.5 |
| TEMPERATURE | DEG C | 22.2 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 314.4 | ( 307.5) |
| FUEL ECONOMY | MPG | 14.15 | ( 14.47) |
| HYDROCARBONS (THC) | G/MI | .21 | ( .22) |
| CARBON MONOXIDE | G/MI | 1.74 | ( 1.65) |
| OXIDES OF NITROGEN | G/MI | .45 | ( .45) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AHCU2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 2/ 9/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 89219. KM( 55438. MILES) |
| | CVS NO. 2 | |
| BAROMETER 759.71 MM HG(29.91 IN HG) | DRY BULB TEMP. 23.3 DEG C(74.0 DEG F) | |
| RELATIVE HUMIDITY 17. PCT | ABS. HUMIDITY 3.1 GM/KG | NOX HUMIDITY CORRECTION FACTOR .80 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 789.9 (31.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 787.4 (31.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 48120. |
| TOT FLOW STD. CU. METRES(SCF) | 92.1 ( 3251.) |
| THC SAMPLE METER/RANGE/PPM | 8.4/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.0/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .4/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .3/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 62.0/ 11/ .5132 |
| CO2 BCKGRD METER/RANGE/PCT | 7.1/ 11/ .0421 |
| NOX SAMPLE METER/RANGE/PPM | 26.6/ 2/ 26.6 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 23.33 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4729 |
| NOX CONCENTRATION PPM | 26.5 |
| THC MASS GRAMS | .08 |
| CO MASS GRAMS | .01 |
| CO2 MASS GRAMS | 797.0 |
| NOX MASS GRAMS | 3.73 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .957 ( .952) |
| SCF, WET (DRY) | 1.000 ( .985) |
| VOL (SCM) | 92.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.01 |

| | | |
|---|---|---|
| TEST NUMBER, | | AHCU2 |
| BAROMETER, | MM HG | 759.7 |
| HUMIDITY, | G/KG | 3.1 |
| TEMPERATURE, | DEG C | 23.3 |
| CARBON DIOXIDE, | G/MI | 159.0 |
| FUEL ECONOMY, | MPG | 28.3 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .74 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

EST NO. AHCU2 RUN 1
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

ARDMETER 759.71 MM HG(29.91 IN HG)
ELATIVE HUMIDITY 20. PCT
AG RESULTS

VEHICLE NO.
DATE 2/ 9/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 3.6 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89230. KM( 55445. MILES)

NOX HUMIDITY CORRECTION FACTOR .81

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 789.9 (31.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 792.5 (31.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48104. |
| TOT FLOW STD. CU. METRES(SCF) | 91.5 ( 3231.) |
| THC SAMPLE METER/RANGE/PPM | 8.7/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .7/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .4/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.7/ 3/1.1569 |
| CO2 BCKGRD METER/RANGE/PCT | 3.1/ 3/ .0505 |
| NOX SAMPLE METER/RANGE/PPM | 37.9/ 2/ 37.9 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 10.36 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1113 |
| NOX CONCENTRATION PPM | 37.9 |
| THC MASS GRAMS | .18 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 1861.8 |
| NOX MASS GRAMS | 5.38 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .903 ( .898) |
| SCF, WET (DRY) | 1.000 ( .973) |
| VOL (SCM) | 91.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.18 |

| | | |
|---|---|---|
| TEST NUMBER, | | AHCU2 |
| BAROMETER, | MM HG | 759.7 |
| HUMIDITY, | G/KG | 3.6 |
| TEMPERATURE, | DEG C | 23.3 |
| CARBON DIOXIDE, | G/MI | 202.8 |
| FUEL ECONOMY, | MPG | 22.2 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .59 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

T NO. ASWU RUN 1
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

VEHICLE NO.
DATE 4/ 7/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90353. KM( 56143. MILES)

ARDMETER 741.68 MM HG(29.20 IN HG)
ELATIVE HUMIDITY 48. PCT

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 9.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .96

AG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 43.3 (110.0) | 40.6 (105.0) | 42.2 (108.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40568. | 69685. | 40574. | 69646. |
| TOT FLOW STD. CU. METRES(SCF) | 75.5 ( 2665.) | 130.3 ( 4601.) | 75.6 ( 2671.) | 130.2 ( 4598.) |
| THC SAMPLE METER/RANGE/PPM | 19.2/ 3/ 193. | 18.9/ 2/ 19. | 34.2/ 2/ 35. | 14.9/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 2.3/ 3/ 23. | 13.4/ 2/ 14. | 14.0/ 2/ 14. | 12.6/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 59.0/ 2/1221. | 71.3/ 12/ 71. | 67.3/ 14/ 314. | 35.6/ 12/ 35. |
| CO BCKGRD METER/RANGE/PPM | .3/ 2/ 4. | 3.2/ 12/ 3. | .7/ 14/ 3. | 3.2/ 12/ 3. |
| CO2 SAMPLE METER/RANGE/PCT | 88.2/ 14/ .8250 | 73.1/ 14/ .5448 | 83.4/ 14/ .7231 | 70.7/ 14/ .5094 |
| CO2 BCKGRD METER/RANGE/PCT | 13.5/ 14/ .0458 | 13.5/ 14/ .0458 | 13.6/ 14/ .0462 | 13.6/ 14/ .0462 |
| NOX SAMPLE METER/RANGE/PPM | 96.1/ 1/ 24.0 | 23.1/ 1/ 5.9 | 67.1/ 1/ 16.8 | 25.5/ 1/ 6.5 |
| NOX BCKGRD METER/RANGE/PPM | 4.6/ 1/ 1.2 | 1.9/ 1/ .5 | 1.3/ 1/ .3 | .7/ 1/ .2 |
| DILUTION FACTOR | 12.47 | 21.67 | 15.85 | 23.32 |
| THC CONCENTRATION PPM | 172. | 6. | 21. | 3. |
| CO CONCENTRATION PPM | 1170. | 66. | 300. | 31. |
| CO2 CONCENTRATION PCT | .7829 | .5011 | .6799 | .4652 |
| NOX CONCENTRATION PPM | 22.8 | 5.4 | 16.5 | 6.3 |
| THC MASS GRAMS | 15.77 | .98 | 1.95 | .46 |
| CO MASS GRAMS | 102.80 | 9.98 | 26.45 | 4.69 |
| CO2 MASS GRAMS | 1081.8 | 1195.4 | 941.4 | 1109.1 |
| NOX MASS GRAMS | 3.17 | 1.29 | 2.29 | 1.51 |
| THC GRAMS/MI | 4.37 | .25 | .54 | .12 |
| CO GRAMS/MI | 28.45 | 2.56 | 7.36 | 1.22 |
| CO2 GRAMS/MI | 299.4 | 306.7 | 262.0 | 288.0 |
| NOX GRAMS/MI | .88 | .33 | .64 | .39 |
| FUEL ECONOMY IN MPG | 12.82 13.61 | 14.44 | 16.38 15.90 | 15.49 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.61 7.51 | 3.90 | 3.59 7.44 | 3.85 |
| SCF, DRY | .969 .973 | .975 | .971 .974 | .975 |
| DFC, WET (DRY) | .941( .927) | | .950( .935) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.8/ .00 | | 205.9/ .00 | |

OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ASWU |
| BAROMETER | MM HG | 741.7 |
| HUMIDITY | G/KG | 9.5 |
| TEMPERATURE | DEG C | 24.4 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 293.0 | ( 287.4) |
| FUEL ECONOMY | MPG | 14.53 | ( 14.83) |
| HYDROCARBONS (THC) | G/MI | 1.18 | ( 1.14) |
| CARBON MONOXIDE | G/MI | 9.23 | ( 8.84) |
| OXIDES OF NITROGEN | G/MI | .53 | ( .55) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

ST NO. ASWJ RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 741.43 MM HG(29.19 IN HG)
RELATIVE HUMIDITY 51. PCT
BAG RESULTS

VEHICLE NO.
DATE 4/ 7/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 9.3 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90378. KM( 56158. MILES)

NOX HUMIDITY CORRECTION FACTOR .96

| TEST CYCLE | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48149. |
| TOT FLOW STD. CU. METRES(SCF) | 89.7 ( 3168.) |
| THC SAMPLE METER/RANGE/PPM | 19.1/ 2/ 19. |
| THC BCKGRD METER/RANGE/PPM | 13.1/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 18.8/ 12/ 19. |
| CO BCKGRD METER/RANGE/PPM | 2.2/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 72.3/ 14/ .5328 |
| CO2 BCKGRD METER/RANGE/PCT | 13.4/ 14/ .0454 |
| NOX SAMPLE METER/RANGE/PPM | 86.5/ 1/ 21.6 |
| NOX BCKGRD METER/RANGE/PPM | .8/ 1/ .2 |
| DILUTION FACTOR | 22.35 |
| THC CONCENTRATION PPM | 7. |
| CO CONCENTRATION PPM | 16. |
| CO2 CONCENTRATION PCT | .4894 |
| NOX CONCENTRATION PPM | 21.4 |
| THC MASS GRAMS | .73 |
| CO MASS GRAMS | 1.66 |
| CO2 MASS GRAMS | 803.8 |
| NOX MASS GRAMS | 3.52 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .940) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 89.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |

| | | ASWJ |
|---|---|---|
| TEST NUMBER, | | |
| BAROMETER, | MM HG | 741.4 |
| HUMIDITY, | G/KG | 9.3 |
| TEMPERATURE, | DEG C | 23.3 |
| CARBON DIOXIDE, | G/MI | 159.7 |
| FUEL ECONOMY, | MPG | 28.0 |
| HYDROCARBONS, (THC) | G/MI | .14 |
| CARBON MONOXIDE, | G/MI | .33 |
| OXIDES OF NITROGEN, | G/MI | .70 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| EST NO. ASWU RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| EHICLE MODEL 0 FORD ESCORT | DATE 4/ 7/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| NGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| RANSMISSION A3 | DYND NO. 3 | ODOMETER 90389. KM( 56165. MILES) |
| | CVS NO. 2 | |
| ARDMETER 741.43 MM HG(29.19 IN HG) | DRY BULB TEMP. 23.3 DEG C(74.0 DEG F) | |
| ELATIVE HUMIDITY 51. PCT | ABS. HUMIDITY 9.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .96 |

AG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48133. |
| TOT FLOW STD. CU. METRES(SCF) | 89.6 ( 3163.) |
| THC SAMPLE METER/RANGE/PPM | 14.0/ 2/ 14. |
| THC BCKGRD METER/RANGE/PPM | 12.4/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 2.4/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | 2.2/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 63.3/ 1/1.1636 |
| CO2 BCKGRD METER/RANGE/PCT | 2.7/ 1/ .0476 |
| NOX SAMPLE METER/RANGE/PPM | 48.0/ 2/ 48.0 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 2/ .5 |
| DILUTION FACTOR | 10.29 |
| THC CONCENTRATION PPM | 3. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1205 |
| NOX CONCENTRATION PPM | 47.5 |
| THC MASS GRAMS | .31 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 1838.0 |
| NOX MASS GRAMS | 7.79 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .903 ( .888) |
| SCF, WET (DRY) | 1.000 ( .963) |
| VOL (SCM) | 89.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.25 |
| TEST NUMBER, | ASWU |
| BAROMETER, MM HG | 741.4 |
| HUMIDITY, G/KG | 9.3 |
| TEMPERATURE, DEG C | 23.3 |
| CARBON DIOXIDE, G/MI | 198.7 |
| FUEL ECONOMY, MPG | 22.6 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .84 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

.. NO. AASC-1 RUN 1
HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
NSMISSION A3

VEHICLE NO.
DATE 2/27/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89323. KM( 55503. MILES)

ROMETER 732.03 MM HG(28.82 IN HG)
LATIVE HUMIDITY 50. PCT
G RESULTS

DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 11.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) | 734.1 (28.9) | 731.5 (28.8) | 734.1 (28.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) | 731.5 (28.8) | 729.0 (28.7) | 731.5 (28.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) | 45.0 (113.0) | 45.6 (114.0) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 40511. | 69599. | 40468. | 69574. |
| TOT FLOW STD. CU. METRES(SCF) | 74.6 ( 2634.) | 128.0 ( 4520.) | 74.5 ( 2632.) | 128.0 ( 4518.) |
| THC SAMPLE METER/RANGE/PPM | 46.4/ 2/ 46. | 8.7/ 2/ 9. | 10.4/ 2/ 10. | 9.2/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.1/ 2/ 7. | 8.2/ 2/ 8. | 8.7/ 2/ 9. | 9.6/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 24.8/ 3/ 574. | 5.6/ 13/ 5. | 57.9/ 13/ 55. | 4.8/ 13/ 4. |
| CO BCKGRD METER/RANGE/PPM | .2/ 3/ 5. | .0/ 13/ 0. | .8/ 13/ 1. | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 94.4/ 11/ .9610 | 66.9/ 11/ .5706 | 83.7/ 11/ .7934 | 64.5/ 11/ .5421 |
| CO2 BCKGRD METER/RANGE/PCT | 7.2/ 11/ .0427 | 7.4/ 11/ .0440 | 7.6/ 11/ .0452 | 7.4/ 11/ .0440 |
| NOX SAMPLE METER/RANGE/PPM | 39.6/ 1/ 10.0 | 19.3/ 1/ 4.9 | 56.9/ 1/ 14.3 | 20.7/ 1/ 5.3 |
| NOX BCKGRD METER/RANGE/PPM | .7/ 1/ .2 | .0/ 1/ .0 | .1/ 1/ .0 | .2/ 1/ .1 |
| DILUTION FACTOR | 11.75 | 20.97 | 15.00 | 22.07 |
| THC CONCENTRATION PPM | 40. | 1. | 2. | 0. |
| CO CONCENTRATION PPM | 546. | 5. | 52. | 4. |
| CO2 CONCENTRATION PCT | .9219 | .5287 | .7512 | .5001 |
| NOX CONCENTRATION PPM | 9.8 | 4.9 | 14.3 | 5.2 |
| THC MASS GRAMS | 3.62 | .14 | .21 | .01 |
| CO MASS GRAMS | 47.37 | .71 | 4.53 | .60 |
| CO2 MASS GRAMS | 1258.8 | 1239.0 | 1025.0 | 1171.6 |
| NOX MASS GRAMS | 1.42 | 1.22 | 2.06 | 1.29 |
| THC GRAMS/MI | 1.02 | .04 | .06 | .00 |
| CO GRAMS/MI | 13.27 | .18 | 1.26 | .15 |
| CO2 GRAMS/MI | 352.7 | 319.2 | 284.4 | 301.4 |
| NOX GRAMS/MI | .40 | .31 | .57 | .33 |
| FUEL ECONOMY IN MPG | 11.98 12.98 | 14.06 | 15.69 15.27 | 14.89 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.57 7.45 | 3.88 | 3.60 7.49 | 3.89 |
| SCF, DRY | .966 .971 | .973 | .969 .972 | .974 |
| DFC, WET (DRY) | .939( .923) | | .947( .931) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 202.6/ .00 | | 202.5/ .00 | |

MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AASC-1 |
| BAROMETER | MM HG | 732.0 |
| HUMIDITY | G/KG | 11.1 |
| TEMPERATURE | DEG C | 26.1 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 316.5 | ( 311.3) |
| FUEL ECONOMY | MPG | 13.96 | ( 14.19) |
| HYDROCARBONS (THC) | G/MI | .24 | ( .23) |
| CARBON MONOXIDE | G/MI | 3.17 | ( 3.16) |
| OXIDES OF NITROGEN | G/MI | .40 | ( .41) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. AASC-1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| HICLE MODEL 0 FORD ESCORT | DATE 2/27/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| GINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 89348. KM( 55518. MILES) |
| | CVS NO. 2 | |
| ROMETER 731.77 MM HG(28.81 IN HG) | DRY BULB TEMP. 25.6 DEG C(78.0 DEG F) | |
| LATIVE HUMIDITY 50. PCT | ABS. HUMIDITY 10.6 GM/KG | NOX HUMIDITY CORRECTION FACTOR 1.00 |

G RESULTS

| TEST CYCLE | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 44.4 (112.0) |
| BLOWER REVOLUTIONS | 48120. |
| TOT FLOW STD. CU. METRES(SCF) | 88.4 ( 3122.) |
| THC SAMPLE METER/RANGE/PPM | 10.3/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 10.1/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .3/ 13/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.3/ 11/ .5515 |
| CO2 BCKGRD METER/RANGE/PCT | 7.5/ 11/ .0446 |
| NOX SAMPLE METER/RANGE/PPM | 28.5/ 2/ 28.5 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 21.71 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5090 |
| NOX CONCENTRATION PPM | 28.4 |
| THC MASS GRAMS | .07 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 823.8 |
| NOX MASS GRAMS | 4.79 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .939) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 88.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC-1 |
| BAROMETER, | MM HG | 731.8 |
| HUMIDITY, | G/KG | 10.6 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 164.2 |
| FUEL ECONOMY, | MPG | 27.4 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .95 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 731.52 MM HG(28.80 IN HG)
RELATIVE HUMIDITY 50. PCT
BAG RESULTS

VEHICLE NO.
DATE 2/27/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 10.6 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89360. KM( 55526. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.00

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 739.1 (29.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) |
| BLOWER REVOLUTIONS | 48129. |
| TOT FLOW STD. CU. METRES(SCF) | 88.4 ( 3123.) |
| THC SAMPLE METER/RANGE/PPM | 10.5/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 10.5/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 1.2/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .2/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 66.3/ 3/1.1892 |
| CO2 BCKGRD METER/RANGE/PCT | 2.9/ 3/ .0473 |
| NOX SAMPLE METER/RANGE/PPM | 57.9/ 2/ 57.9 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 10.08 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | 1.1466 |
| NOX CONCENTRATION PPM | 57.8 |
| THC MASS GRAMS | .11 |
| CO MASS GRAMS | .09 |
| CO2 MASS GRAMS | 1856.7 |
| NOX MASS GRAMS | 9.75 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .901 ( .886) |
| SCF, WET (DRY) | 1.000 ( .962) |
| VOL (SCM) | 88.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |
| TEST NUMBER, | AASC-1 |
| BAROMETER, MM HG | 731.5 |
| HUMIDITY, G/KG | 10.6 |
| TEMPERATURE, DEG C | 25.6 |
| CARBON DIOXIDE, G/MI | 201.7 |
| FUEL ECONOMY, MPG | 22.3 |
| HYDROCARBONS, (THC) G/MI | .01 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | 1.06 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

NO. AASC-2 RUN 1
HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
ANSMISSION A3

VEHICLE NO.
DATE 2/28/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89375. KM( 55535. MILES)

ROMETER 738.89 MM HG(29.09 IN HG)
LATIVE HUMIDITY 39. PCT

DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 8.0 GM/KG

NOX HUMIDITY CORRECTION FACTOR .92

G RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) | 739.1 (29.1) | 734.1 (28.9) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 734.1 (28.9) | 741.7 (29.2) | 734.1 (28.9) | 741.7 (29.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 46.1 (115.0) | 42.8 (109.0) | 45.0 (113.0) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 40571. | 69648. | 40510. | 69658. |
| TOT FLOW STD. CU. METRES(SCF) | 75.5 ( 2667.) | 129.5 ( 4574.) | 75.3 ( 2657.) | 129.8 ( 4584.) |
| THC SAMPLE METER/RANGE/PPM | 37.7/ 2/ 38. | 7.6/ 2/ 8. | 9.6/ 2/ 10. | 7.8/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.7/ 2/ 9. | 7.6/ 2/ 8. | 7.4/ 2/ 8. | 7.9/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 67.3/ 1/ 620. | 10.0/ 12/ 10. | 78.6/ 12/ 79. | 8.7/ 12/ 9. |
| CO BCKGRD METER/RANGE/PPM | .8/ 1/ 6. | 3.9/ 12/ 4. | 1.7/ 12/ 2. | 1.6/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 93.8/ 14/ .9643 | 74.1/ 14/ .5601 | 85.9/ 14/ .7744 | 71.5/ 14/ .5210 |
| CO2 BCKGRD METER/RANGE/PCT | 12.5/ 14/ .0418 | 12.4/ 14/ .0415 | 12.3/ 14/ .0411 | 12.3/ 14/ .0411 |
| NOX SAMPLE METER/RANGE/PPM | 56.1/ 1/ 14.1 | 23.2/ 1/ 5.9 | 64.0/ 1/ 16.0 | 23.9/ 1/ 6.1 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 1/ .0 | .3/ 1/ .1 | .4/ 1/ .1 | .4/ 1/ .1 |
| DILUTION FACTOR | 11.67 | 21.35 | 15.32 | 22.95 |
| THC CONCENTRATION PPM | 30. | 0. | 3. | 0. |
| CO CONCENTRATION PPM | 590. | 6. | 74. | 7. |
| CO2 CONCENTRATION PCT | .9261 | .5206 | .7360 | .4817 |
| NOX CONCENTRATION PPM | 14.0 | 5.8 | 15.9 | 6.0 |
| THC MASS GRAMS | 2.75 | .06 | .25 | .04 |
| CO MASS GRAMS | 51.88 | .91 | 6.50 | 1.05 |
| CO2 MASS GRAMS | 1280.4 | 1234.7 | 1014.1 | 1144.9 |
| NOX MASS GRAMS | 1.86 | 1.32 | 2.10 | 1.36 |
| THC GRAMS/MI | .77 | .01 | .07 | .01 |
| CO GRAMS/MI | 14.44 | .23 | 1.81 | .27 |
| CO2 GRAMS/MI | 356.4 | 318.3 | 281.6 | 295.9 |
| NOX GRAMS/MI | .52 | .34 | .58 | .35 |
| FUEL ECONOMY IN MPG | 11.82 12.90 | 14.10 | 15.79 15.46 | 15.16 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.59 7.47 | 3.88 | 3.60 7.47 | 3.87 |
| SCF, DRY | .970 .975 | .977 | .973 .976 | .978 |
| DFC, WET (DRY) | .939( .927) | | .948( .936) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.1/ .00 | | 205.1/ .00 | |

MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AASC-2 |
| BAROMETER | MM HG | 738.9 |
| HUMIDITY | G/KG | 8.0 |
| TEMPERATURE | DEG C | 25.0 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 316.1 | ( 309.5) |
| FUEL ECONOMY | MPG | 13.95 | ( 14.24) |
| HYDROCARBONS (THC) | G/MI | .19 | ( .18) |
| CARBON MONOXIDE | G/MI | 3.60 | ( 3.61) |
| OXIDES OF NITROGEN | G/MI | .44 | ( .45) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

NO. AASC-2 RUN 1
/EHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 738.63 MM HG(29.08 IN HG)
RELATIVE HUMIDITY 37. PCT
BAG RESULTS

VEHICLE NO.
DATE 2/28/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 7.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89401. KM( 55551. MILES)

NOX HUMIDITY CORRECTION FACTOR .91

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 48156. |
| TOT FLOW STD. CU. METRES(SCF) | 89.4 ( 3157.) |
| THC SAMPLE METER/RANGE/PPM | 7.9/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.5/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 2.4/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .3/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 72.3/ 14/ .5328 |
| CO2 BCKGRD METER/RANGE/PCT | 12.2/ 14/ .0407 |
| NOX SAMPLE METER/RANGE/PPM | 39.2/ 2/ 39.2 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 22.47 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | .4939 |
| NOX CONCENTRATION PPM | 39.2 |
| THC MASS GRAMS | .08 |
| CO MASS GRAMS | .17 |
| CO2 MASS GRAMS | 808.3 |
| NOX MASS GRAMS | 6.11 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .944) |
| SCF, WET (DRY) | 1.000 ( .978) |
| VOL (SCM) | 89.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC-2 |
| BAROMETER, | MM HG | 738.6 |
| HUMIDITY, | G/KG | 7.7 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 161.1 |
| FUEL ECONOMY, | MPG | 27.9 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .03 |
| OXIDES OF NITROGEN, | G/MI | 1.22 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| NO. AASC-2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| ICLE MODEL 0 FORD ESCORT | DATE 2/28/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| INE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| NSMISSION A3 | DYNO NO. 3 | ODOMETER 89410. KM( 55557. MILES) |
| | CVS NO. 2 | |
| OMETER 738.38 MM HG(29.07 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| ATIVE HUMIDITY 39. PCT | ABS. HUMIDITY 8.0 GM/KG | NOX HUMIDITY CORRECTION FACTOR .92 |

; RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 42121. |
| TOT FLOW STD. CU. METRES(SCF) | 78.2 ( 2760.) |
| THC SAMPLE METER/RANGE/PPM | 7.8/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.0/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 3.1/ 12/ 3. |
| CO BCKGRD METER/RANGE/PPM | .6/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 64.3/ 1/1.1823 |
| CO2 BCKGRD METER/RANGE/PCT | 2.3/ 1/ .0406 |
| NOX SAMPLE METER/RANGE/PPM | 59.0/ 2/ 59.0 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 10.13 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | 1.1458 |
| NOX CONCENTRATION PPM | 58.9 |
| THC MASS GRAMS | .15 |
| CO MASS GRAMS | .22 |
| CO2 MASS GRAMS | 1639.6 |
| NOX MASS GRAMS | 6.08 |
| RUN TIME SECONDS | 525. |
| DFC, WET (DRY) | .901 ( .890) |
| SCF, WET (DRY) | 1.000 ( .956) |
| VOL (SCM) | 78.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 8.04 |
| TEST NUMBER, | AASC-2 |
| BAROMETER, MM HG | 738.4 |
| HUMIDITY, G/KG | 8.0 |
| TEMPERATURE, DEG C | 25.0 |
| CARBON DIOXIDE, G/MI | 203.9 |
| FUEL ECONOMY, MPG | 22.0 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .03 |
| OXIDES OF NITROGEN, G/MI | 1.00 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

ST NO. ANSC-1 RUN 1
HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
NSMISSION A3

VEHICLE NO.
DATE 3/ 2/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89444. KM( 55578. MILES)

ROMETER 738.89 MM HG(29.09 IN HG)
LATIVE HUMIDITY 43. PCT
G RESULTS

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR .95

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) | 736.6 (29.0) | 734.1 (28.9) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) | 736.6 (29.0) | 731.5 (28.8) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) | 44.4 (112.0) | 45.6 (114.0) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 40550. | 69624. | 40519. | 69553. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2662.) | 129.2 ( 4562.) | 75.4 ( 2661.) | 129.3 ( 4566.) |
| THC SAMPLE METER/RANGE/PPM | 53.7/ 2/ 54. | 10.1/ 2/ 10. | 13.1/ 2/ 13. | 10.2/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 7.9/ 2/ 8. | 8.4/ 2/ 8. | 8.7/ 2/ 9. | 9.4/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 27.9/ 3/ 650. | 35.1/ 13/ 32. | 53.7/ 13/ 51. | 11.0/ 13/ 10. |
| CO BCKGRD METER/RANGE/PPM | .1/ 3/ 2. | 1.5/ 13/ 1. | 1.6/ 13/ 1. | .9/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 96.0/ 11/ .9881 | 67.4/ 11/ .5766 | 83.2/ 11/ .7861 | 63.4/ 11/ .5293 |
| CO2 BCKGRD METER/RANGE/PCT | 8.0/ 11/ .0477 | 8.1/ 11/ .0483 | 8.2/ 11/ .0490 | 8.2/ 11/ .0490 |
| NOX SAMPLE METER/RANGE/PPM | 66.8/ 1/ 16.8 | 24.0/ 1/ 6.1 | 76.3/ 1/ 19.1 | 28.3/ 1/ 7.2 |
| NOX BCKGRD METER/RANGE/PPM | 2.9/ 1/ .8 | .0/ 1/ .0 | .0/ 1/ .0 | .1/ 1/ .0 |
| DILUTION FACTOR | 11.36 | 20.65 | 15.14 | 22.58 |
| THC CONCENTRATION PPM | 47. | 2. | 5. | 1. |
| CO CONCENTRATION PPM | 621. | 30. | 47. | 9. |
| CO2 CONCENTRATION PCT | .9446 | .5306 | .7404 | .4825 |
| NOX CONCENTRATION PPM | 16.1 | 6.1 | 19.1 | 7.1 |
| THC MASS GRAMS | 4.27 | .33 | .46 | .19 |
| CO MASS GRAMS | 54.46 | 4.51 | 4.17 | 1.31 |
| CO2 MASS GRAMS | 1303.7 | 1255.2 | 1021.7 | 1142.3 |
| NOX MASS GRAMS | 2.20 | 1.43 | 2.62 | 1.67 |
| THC GRAMS/MI | 1.19 | .09 | .13 | .05 |
| CO GRAMS/MI | 15.14 | 1.16 | 1.15 | .34 |
| CO2 GRAMS/MI | 362.4 | 323.0 | 281.5 | 293.2 |
| NOX GRAMS/MI | .61 | .37 | .72 | .43 |
| FUEL ECONOMY IN MPG | 11.58 12.65 | 13.83 | 15.85 15.56 | 15.29 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.60 7.48 | 3.89 | 3.63 7.53 | 3.90 |
| SCF, DRY | .968 .973 | .976 | .972 .975 | .977 |
| DFC, WET (DRY) | .937( .924) | | .948( .934) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.6/ .00 | | 204.7/ .00 | |

MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSC-1 |
| BAROMETER | MM HG | 738.9 |
| HUMIDITY | G/KG | 9.1 |
| EMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 319.7 | ( 310.9) |
| FUEL ECONOMY | MPG | 13.76 | ( 14.16) |
| HYDROCARBONS (THC) | G/MI | .32 | ( .31) |
| CARBON MONOXIDE | G/MI | 4.05 | ( 3.80) |
| OXIDES OF NITROGEN | G/MI | .52 | ( .53) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. ANSC-1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| HICLE MODEL 0 FORD ESCORT | DATE 3/ 2/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| GINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 89468. KM( 55593. MILES) |
| | CVS NO. 2 | |
| ROMETER 738.38 MM HG(29.07 IN HG) | DRY BULB TEMP. 26.7 DEG C(80.0 DEG F) | |
| LATIVE HUMIDITY 41. PCT | ABS. HUMIDITY 9.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .96 |

G RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 734.1 (28.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) |
| BLOWER REVOLUTIONS | 48124. |
| TOT FLOW STD. CU. METRES(SCF) | 89.3 ( 3155.) |
| THC SAMPLE METER/RANGE/PPM | 10.6/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.6/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 1.4/ 13/ 1. |
| CO BCKGRD METER/RANGE/PPM | .7/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 63.8/ 11/ .5339 |
| CO2 BCKGRD METER/RANGE/PCT | 8.2/ 11/ .0490 |
| NOX SAMPLE METER/RANGE/PPM | 26.0/ 2/ 26.0 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 2/ .4 |
| DILUTION FACTOR | 22.41 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .4871 |
| NOX CONCENTRATION PPM | 25.6 |
| THC MASS GRAMS | .16 |
| CO MASS GRAMS | .06 |
| CO2 MASS GRAMS | 796.9 |
| NOX MASS GRAMS | 4.19 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .943) |
| SCF, WET (DRY) | 1.000 ( .977) |
| VOL (SCM) | 89.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |
| TEST NUMBER, | ANSC-1 |
| BAROMETER, MM HG | 738.4 |
| HUMIDITY, G/KG | 9.3 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 158.5 |
| FUEL ECONOMY, MPG | 28.3 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .83 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

:ST NO. ANSC-1 RUN 1
:HICLE MODEL 0 FORD ESCORT
:GINE 1.6 L( 98. CID) L-4
:ANSMISSION A3

:ROMETER 738.12 MM HG(29.06 IN HG)
:LATIVE HUMIDITY 47. PCT
:G RESULTS

VEHICLE NO.
DATE 3/ 2/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 10.3 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89480. KM( 55600. MILES)

NOX HUMIDITY CORRECTION FACTOR .99

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) |
| BLOWER REVOLUTIONS | 48121. |
| TOT FLOW STD. CU. METRES(SCF) | 89.3 ( 3153.) |
| THC SAMPLE METER/RANGE/PPM | 15.6/ 2/ 16. |
| THC BCKGRD METER/RANGE/PPM | 9.9/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 5.2/ 13/ 5. |
| CO BCKGRD METER/RANGE/PPM | .1/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 67.4/ 3/1.2115 |
| CO2 BCKGRD METER/RANGE/PCT | 2.9/ 3/ .0473 |
| NOX SAMPLE METER/RANGE/PPM | 73.3/ 2/ 73.3 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 9.88 |
| THC CONCENTRATION PPM | 7. |
| CO CONCENTRATION PPM | 4. |
| CO2 CONCENTRATION PCT | 1.1690 |
| NOX CONCENTRATION PPM | 73.2 |
| THC MASS GRAMS | .73 |
| CO MASS GRAMS | .44 |
| CO2 MASS GRAMS | 1910.8 |
| NOX MASS GRAMS | 12.31 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .885) |
| SCF, WET (DRY) | 1.000 ( .963) |
| VOL (SCM) | 89.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSC-1 |
| BAROMETER, | MM HG | 738.1 |
| HUMIDITY, | G/KG | 10.3 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 207.6 |
| FUEL ECONOMY, | MPG | 21.6 |
| HYDROCARBONS, (THC) | G/MI | .08 |
| CARBON MONOXIDE, | G/MI | .05 |
| OXIDES OF NITROGEN, | G/MI | 1.34 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

:ST NO. ANSC-2 RUN 1
:HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
RANSMISSION A3

VEHICLE NO.
DATE 3/ 3/89
BAG CART NO. 1 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89494. KM( 55609. MILES)

ROMETER 731.52 MM HG(28.80 IN HG)
LATIVE HUMIDITY 52. PCT
G RESULTS

DRY BULB TEMP. 27.8 DEG C(82.0 DEG F)
ABS. HUMIDITY 12.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.07

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 723.9 (28.5) | 723.9 (28.5) | 721.4 (28.4) | 723.9 (28.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 721.4 (28.4) | 723.9 (28.5) | 721.4 (28.4) | 723.9 (28.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.6 (114.0) | 45.0 (113.0) | 44.4 (112.0) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 40588. | 69607. | 40565. | 69588. |
| TOT FLOW STD. CU. METRES(SCF) | 74.8 ( 2640.) | 128.1 ( 4522.) | 74.6 ( 2635.) | 128.0 ( 4521.) |
| THC SAMPLE METER/RANGE/PPM | 67.2/ 2/ 67. | 14.8/ 2/ 15. | 19.3/ 2/ 19. | 14.9/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 12.3/ 2/ 12. | 13.3/ 2/ 13. | 13.1/ 2/ 13. | 13.7/ 2/ 14. |
| CO SAMPLE METER/RANGE/PPM | 33.7/ 3/ 793. | 59.6/ 13/ 57. | 70.8/ 12/ 160. | 30.1/ 13/ 27. |
| CO BCKGRD METER/RANGE/PPM | .2/ 3/ 5. | .5/ 13/ 0. | .1/ 12/ 0. | .5/ 13/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 99.0/ 11/1.0407 | 70.7/ 11/ .6173 | 87.0/ 11/ .8427 | 67.6/ 11/ .5790 |
| CO2 BCKGRD METER/RANGE/PCT | 8.1/ 11/ .0483 | 8.1/ 11/ .0483 | 8.2/ 11/ .0490 | 8.2/ 11/ .0490 |
| NOX SAMPLE METER/RANGE/PPM | 60.7/ 1/ 15.2 | 25.1/ 1/ 6.4 | 67.3/ 1/ 16.9 | 27.0/ 1/ 6.8 |
| NOX BCKGRD METER/RANGE/PPM | 3.7/ 1/ 1.0 | .0/ 1/ .0 | .0/ 1/ .0 | .1/ 1/ .0 |
| DILUTION FACTOR | 10.68 | 19.21 | 13.95 | 20.57 |
| THC CONCENTRATION PPM | 56. | 2. | 7. | 2. |
| CO CONCENTRATION PPM | 753. | 54. | 153. | 26. |
| CO2 CONCENTRATION PCT | .9969 | .5715 | .7972 | .5324 |
| NOX CONCENTRATION PPM | 14.4 | 6.4 | 16.9 | 6.8 |
| THC MASS GRAMS | 5.10 | .34 | .65 | .29 |
| CO MASS GRAMS | 65.54 | 8.11 | 13.29 | 3.88 |
| CO2 MASS GRAMS | 1364.8 | 1340.0 | 1089.2 | 1248.2 |
| NOX MASS GRAMS | 2.20 | 1.67 | 2.58 | 1.78 |
| THC GRAMS/MI | 1.40 | .09 | .18 | .07 |
| CO GRAMS/MI | 17.98 | 2.09 | 3.65 | .99 |
| CO2 GRAMS/MI | 374.5 | 346.2 | 298.9 | 319.5 |
| NOX GRAMS/MI | .60 | .43 | .71 | .46 |
| FUEL ECONOMY IN MPG | 11.10 11.94 | 12.85 | 14.74 14.34 | 13.99 |
| RUN TIME SECONDS | 506. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.64 7.51 | 3.87 | 3.64 7.55 | 3.91 |
| SCF, DRY | .964 .969 | .972 | .968 .971 | .973 |
| DFC, WET (DRY) | .933( .917) | | .943( .927) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 202.9/ .00 | | 202.7/ .00 | |

MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSC-2 |
| BAROMETER | MM HG | 731.5 |
| HUMIDITY | G/KG | 12.7 |
| TEMPERATURE | DEG C | 27.8 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 339.0 | ( 331.2) |
| FUEL ECONOMY | MPG | 12.88 | ( 13.20) |
| HYDROCARBONS (THC) | G/MI | .39 | ( .38) |
| CARBON MONOXIDE | G/MI | 5.84 | ( 5.51) |
| OXIDES OF NITROGEN | G/MI | .54 | ( .55) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

:ST NO. ANSC-2 RUN 1
:HICLE MODEL 0 FORD ESCORT
:GINE 1.6 L( 98. CID) L-4
:ANSMISSION A3

:ROMETER 756.67 MM HG(29.79 IN HG)
:LATIVE HUMIDITY 47. PCT
:G RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/ 3/89
BAG CART NO. 1
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 10.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89520. KM( 55625. MILES)

NOX HUMIDITY CORRECTION FACTOR .99

| | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 718.8 (28.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 718.8 (28.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 48152. |
| TOT FLOW STD. CU. METRES(SCF) | 92.0 ( 3250.) |
| THC SAMPLE METER/RANGE/PPM | 15.2/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 13.4/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 3.1/ 13/ 3. |
| CO BCKGRD METER/RANGE/PPM | 1.2/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 66.8/ 11/ .5694 |
| CO2 BCKGRD METER/RANGE/PCT | 8.3/ 11/ .0496 |
| NOX SAMPLE METER/RANGE/PPM | 26.1/ 1/ 6.6 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 1/ .1 |
| DILUTION FACTOR | 21.00 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | .5221 |
| NOX CONCENTRATION PPM | 6.5 |
| THC MASS GRAMS | .27 |
| CO MASS GRAMS | .18 |
| CO2 MASS GRAMS | 879.8 |
| NOX MASS GRAMS | 1.14 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .952 ( .938) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 92.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |
| TEST NUMBER, | ANSC-2 |
| BAROMETER, MM HG | 756.7 |
| HUMIDITY, G/KG | 10.4 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 175.2 |
| FUEL ECONOMY, MPG | 25.6 |
| HYDROCARBONS, (THC) G/MI | .05 |
| CARBON MONOXIDE, G/MI | .04 |
| OXIDES OF NITROGEN, G/MI | .23 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. ANSC-2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| HICLE MODEL 0 FORD ESCORT | DATE 3/ 3/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| GINE 1.6 L( 98. CID) L-4 | BAG CART NO. 1 | GASOLINE EM-835-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 89531. KM( 55632. MILES) |
| | CVS NO. 2 | |
| ROMETER 731.27 MM HG(28.79 IN HG) | DRY BULB TEMP. 26.7 DEG C(80.0 DEG F) | |
| LATIVE HUMIDITY 48. PCT | ABS. HUMIDITY 10.9 GM/KG | NOX HUMIDITY CORRECTION FACTOR 1.01 |

G RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 723.9 (28.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 723.9 (28.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 45.0 (113.0) |
| BLOWER REVOLUTIONS | 48147. |
| TOT FLOW STD. CU. METRES(SCF) | 88.6 ( 3127.) |
| THC SAMPLE METER/RANGE/PPM | 20.3/ 2/ 20. |
| THC BCKGRD METER/RANGE/PPM | 13.5/ 2/ 14. |
| CO SAMPLE METER/RANGE/PPM | 9.6/ 13/ 8. |
| CO BCKGRD METER/RANGE/PPM | 1.2/ 13/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 70.5/ 3/1.2745 |
| CO2 BCKGRD METER/RANGE/PCT | 3.6/ 3/ .0587 |
| NOX SAMPLE METER/RANGE/PPM | 64.7/ 2/ 64.7 |
| NOX BCKGRD METER/RANGE/PPM | .6/ 2/ .6 |
| DILUTION FACTOR | 9.39 |
| THC CONCENTRATION PPM | 8. |
| CO CONCENTRATION PPM | 7. |
| CO2 CONCENTRATION PCT | 1.2220 |
| NOX CONCENTRATION PPM | 64.2 |
| THC MASS GRAMS | .89 |
| CO MASS GRAMS | .73 |
| CO2 MASS GRAMS | 1981.3 |
| NOX MASS GRAMS | 10.93 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .893 ( .880) |
| SCF, WET (DRY) | 1.000 ( .962) |
| VOL (SCM) | 88.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |
| TEST NUMBER, | ANSC-2 |
| BAROMETER, MM HG | 731.3 |
| HUMIDITY, G/KG | 10.9 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 215.4 |
| FUEL ECONOMY, MPG | 20.8 |
| HYDROCARBONS, (THC) G/MI | .10 |
| CARBON MONOXIDE, G/MI | .08 |
| OXIDES OF NITROGEN, G/MI | 1.19 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

EST NO. ADCC-1 RUN
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

VEHICLE NO.
DATE 3/ 9/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89703. KM( 55739. MILES)

ROMETER 750.32 MM HG(29.54 IN HG)
ELATIVE HUMIDITY 36. PCT

DRY BULB TEMP. 27.2 DEG C(81.0 DEG F)
ABS. HUMIDITY 8.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR .92

G RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 48.9 (120.0) | 47.8 (118.0) | 47.8 (118.0) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 40484. | 69521. | 40446. | 69524. |
| TOT FLOW STD. CU. METRES(SCF) | 76.6 ( 2703.) | 131.3 ( 4638.) | 76.4 ( 2698.) | 131.0 ( 4626.) |
| THC SAMPLE METER/RANGE/PPM | 22.8/ 2/ 23. | 6.9/ 2/ 7. | 9.6/ 2/ 10. | 8.8/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 6.1/ 2/ 6. | 6.5/ 2/ 7. | 8.2/ 2/ 8. | 8.8/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 54.0/ 1/ 467. | 2.5/ 12/ 3. | 46.9/ 12/ 46. | 3.2/ 12/ 3. |
| CO BCKGRD METER/RANGE/PPM | .0/ 1/ 0. | .0/ 12/ 0. | .0/ 12/ 0. | .4/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.3/ 14/ .9508 | 73.1/ 14/ .5448 | 83.9/ 14/ .7331 | 71.6/ 14/ .5224 |
| CO2 BCKGRD METER/RANGE/PCT | 12.8/ 14/ .0430 | 12.4/ 14/ .0415 | 12.8/ 14/ .0430 | 13.0/ 14/ .0438 |
| NOX SAMPLE METER/RANGE/PPM | 66.1/ 1/ 16.6 | 27.2/ 1/ 6.9 | 76.7/ 1/ 19.2 | 28.9/ 1/ 7.3 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 | .2/ 1/ .1 | .3/ 1/ .1 | .0/ 1/ .0 |
| DILUTION FACTOR | 12.02 | 21.98 | 16.24 | 22.90 |
| THC CONCENTRATION PPM | 17. | 1. | 2. | 0. |
| CO CONCENTRATION PPM | 449. | 2. | 45. | 3. |
| CO2 CONCENTRATION PCT | .9114 | .5052 | .6927 | .4805 |
| NOX CONCENTRATION PPM | 16.6 | 6.8 | 19.1 | 7.3 |
| THC MASS GRAMS | 1.62 | .11 | .18 | .06 |
| CO MASS GRAMS | 40.03 | .38 | 3.98 | .42 |
| CO2 MASS GRAMS | 1277.4 | 1214.8 | 969.1 | 1152.5 |
| NOX MASS GRAMS | 2.24 | 1.58 | 2.58 | 1.69 |
| THC GRAMS/MI | .45 | .03 | .05 | .02 |
| CO GRAMS/MI | 11.10 | .10 | 1.10 | .11 |
| CO2 GRAMS/MI | 354.3 | 311.3 | 268.1 | 296.0 |
| NOX GRAMS/MI | .62 | .41 | .71 | .43 |
| FUEL ECONOMY IN MPG | 12.06 13.19 | 14.42 | 16.65 15.85 | 15.17 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.61 7.51 | 3.90 | 3.61 7.51 | 3.89 |
| SCF, DRY | .971 .976 | .979 | .975 .978 | .979 |
| DFC, WET (DRY) | .941( .930) | | .950( .939) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 207.9/ .00 | | 207.4/ .00 | |

OSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ADCC-1 |
| BAROMETER | MM HG | 750.3 |
| HUMIDITY | G/KG | 8.2 |
| TEMPERATURE | DEG C | 27.2 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 308.3 | ( 303.8) |
| FUEL ECONOMY | MPG | 14.37 | ( 14.58) |
| HYDROCARBONS (THC) | G/MI | .12 | ( .12) |
| CARBON MONOXIDE | G/MI | 2.64 | ( 2.65) |
| OXIDES OF NITROGEN | G/MI | .53 | ( .54) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| NO. ADCC-1 RUN | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| EHICLE MODEL 0 FORD ESCORT | DATE 3/ 9/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| NGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| RANSMISSION A3 | DYNO NO. 3 | ODOMETER 89727. KM( 55754. MILES) |
| | CVS NO. 2 | |
| AROMETER 749.30 MM HG(29.50 IN HG) | DRY BULB TEMP. 26.1 DEG C(79.0 DEG F) | |
| ELATIVE HUMIDITY 20. PCT | ABS. HUMIDITY 4.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .82 |

AG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 47.8 (118.0) |
| BLOWER REVOLUTIONS | 48100. |
| TOT FLOW STD. CU. METRES(SCF) | 90.7 ( 3204.) |
| THC SAMPLE METER/RANGE/PPM | 9.6/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .7/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 73.2/ 14/ .5463 |
| CO2 BCKGRD METER/RANGE/PCT | 13.5/ 14/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 25.2/ 2/ 25.3 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 21.91 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .5026 |
| NOX CONCENTRATION PPM | 25.3 |
| THC MASS GRAMS | .07 |
| CO MASS GRAMS | .07 |
| CO2 MASS GRAMS | 834.9 |
| NOX MASS GRAMS | 3.62 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .948) |
| SCF, WET (DRY) | 1.000 ( .984) |
| VOL (SCM) | 90.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.05 |
| TEST NUMBER, | ADCC-1 |
| BAROMETER, MM HG | 749.3 |
| HUMIDITY, G/KG | 4.3 |
| TEMPERATURE, DEG C | 26.1 |
| CARBON DIOXIDE, G/MI | 165.5 |
| FUEL ECONOMY, MPG | 27.1 |
| HYDROCARBONS, (THC) G/MI | .01 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .72 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

EST NO. ADCC-1 ~~BL-1-1~~ RUN
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

ARDMETER 749.30 MM HG(29.50 IN HG)
ELATIVE HUMIDITY 20. PCT
AG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/ 9/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 4.3 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89739. KM( 55761. MILES)

NOX HUMIDITY CORRECTION FACTOR .82

| | |
|---|---|
| | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 47.8 (118.0) |
| BLOWER REVOLUTIONS | 48113. |
| TOT FLOW STD. CU. METRES(SCF) | 90.8 ( 3205.) |
| THC SAMPLE METER/RANGE/PPM | 9.5/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.2/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 1.6/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.9/ 1/1.2123 |
| CO2 BCKGRD METER/RANGE/PCT | 2.4/ 1/ .0423 |
| NOX SAMPLE METER/RANGE/PPM | 78.1/ 2/ 78.1 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 9.88 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | 1.1743 |
| NOX CONCENTRATION PPM | 78.0 |
| THC MASS GRAMS | .14 |
| CO MASS GRAMS | .16 |
| CO2 MASS GRAMS | 1951.3 |
| NOX MASS GRAMS | 11.17 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .893) |
| SCF, WET (DRY) | 1.000 ( .972) |
| VOL (SCM) | 90.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.21 |
| TEST NUMBER, | BL-1 1 |
| BAROMETER, MM HG | 749.3 |
| HUMIDITY, G/KG | 4.3 |
| TEMPERATURE, DEG C | 26.1 |
| CARBON DIOXIDE, G/MI | 212.0 |
| FUEL ECONOMY, MPG | 21.2 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .02 |
| OXIDES OF NITROGEN, G/MI | 1.21 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ADCC-2 RUN
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/10/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89753. KM( 55770. MILES)

BAROMETER 749.81 MM HG(29.52 IN HG)
RELATIVE HUMIDITY 41. PCT

DRY BULB TEMP. 21.7 DEG.C(71.0 DEG F)
ABS. HUMIDITY 6.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .88

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 746.8 (29.4) | 746.8 (29.4) | 746.8 (29.4) |
| BLOWER INLET P MM. H2O(IN. H2O) | 746.8 (29.4) | 746.8 (29.4) | 746.8 (29.4) | 746.8 (29.4) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 42.8 (109.0) | 42.8 (109.0) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 40526. | 69655. | 40519. | 69530. |
| TOT FLOW STD. CU. METRES(SCF) | 76.4 ( 2698.) | 131.6 ( 4646.) | 76.5 ( 2702.) | 131.5 ( 4642.) |
| THC SAMPLE METER/RANGE/PPM | 24.9/ 2/ 25. | 6.8/ 2/ 7. | 9.6/ 2/ 10. | 7.2/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 5.2/ 2/ 6. | 6.8/ 2/ 7. | 5.9/ 2/ 7. | 7.4/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 52.3/ 1/ 449. | 8.2/ 12/ 8. | 79.7/ 12/ 80. | 1.2/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .1/ 1/ 1. | .0/ 12/ 0. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.4/ 14/ .9535 | 74.1/ 14/ .5601 | 86.2/ 14/ .7808 | 72.0/ 14/ .5283 |
| CO2 BCKGRD METER/RANGE/PCT | 12.3/ 14/ .0411 | 12.3/ 14/ .0411 | 12.4/ 14/ .0415 | 12.4/ 14/ .0415 |
| NOX SAMPLE METER/RANGE/PPM | 50.7/ 1/ 12.7 | 25.7/ 1/ 6.5 | 71.1/ 1/ 17.8 | 28.0/ 1/ 7.1 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 1/ .1 | .4/ 1/ .1 | .4/ 1/ .1 | .2/ 1/ .1 |
| DILUTION FACTOR | 12.00 | 21.36 | 15.19 | 22.66 |
| THC CONCENTRATION PPM | 19. | 0. | 3. | 0. |
| CO CONCENTRATION PPM | 430. | 8. | 77. | 1. |
| CO2 CONCENTRATION PCT | .9159 | .5210 | .7421 | .4887 |
| NOX CONCENTRATION PPM | 12.6 | 6.4 | 17.7 | 7.0 |
| THC MASS GRAMS | 1.81 | .05 | .30 | .02 |
| CO MASS GRAMS | 38.26 | 1.22 | 6.85 | .18 |
| CO2 MASS GRAMS | 1281.0 | 1254.9 | 1039.8 | 1176.2 |
| NOX MASS GRAMS | 1.63 | 1.43 | 2.29 | 1.56 |
| THC GRAMS/MI | .50 | .01 | .08 | .01 |
| CO GRAMS/MI | 10.58 | .31 | 1.88 | .05 |
| CO2 GRAMS/MI | 354.4 | 321.9 | 284.9 | 300.9 |
| NOX GRAMS/MI | .45 | .37 | .63 | .40 |
| FUEL ECONOMY IN MPG | 12.09 12.98 | 13.93 | 15.60 15.25 | 14.93 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.61 7.51 | 3.90 | 3.65 7.56 | 3.91 |
| SCF, DRY | .970 .974 | .977 | .973 .976 | .977 |
| DFC, WET (DRY) | .940( .927) | | .948( .935) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 208.0/ .00 | | 208.0/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ADCC-2 |
| BAROMETER | MM HG | 749.8 |
| HUMIDITY | G/KG | 6.7 |
| TEMPERATURE | DEG C | 21.7 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 318.4 | ( 312.3) |
| FUEL ECONOMY | MPG | 13.90 | ( 14.18) |
| HYDROCARBONS (THC) | G/MI | .13 | ( .13) |
| CARBON MONOXIDE | G/MI | 2.87 | ( 2.79) |
| OXIDES OF NITROGEN | G/MI | .46 | ( .47) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ..: NO. ADCC-2 RUN | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| EHICLE MODEL 0 FORD ESCORT | DATE 3/10/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| NGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| RANSMISSION A3 | DYNO NO. 3 | ODOMETER 89777. KM( 55785. MILES) |
| | CVS NO. 2 | |
| AROMETER 749.81 MM HG(29.52 IN HG) | DRY BULB TEMP. 21.7 DEG C(71.0 DEG F) | |
| ELATIVE HUMIDITY 24. PCT | ABS. HUMIDITY 3.9 GM/KG | NOX HUMIDITY CORRECTION FACTOR .82 |

AG RESULTS

| TEST CYCLE | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 744.2 (29.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48115. |
| TOT FLOW STD. CU. METRES(SCF) | 90.9 ( 3210.) |
| THC SAMPLE METER/RANGE/PPM | 7.7/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.1/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .0/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.4/ 14/ .5342 |
| CO2 BCKGRD METER/RANGE/PCT | 12.5/ 14/ .0418 |
| NOX SAMPLE METER/RANGE/PPM | 27.6/ 2/ 27.7 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 22.42 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4943 |
| NOX CONCENTRATION PPM | 27.7 |
| THC MASS GRAMS | .10 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 822.8 |
| NOX MASS GRAMS | 3.93 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .948) |
| SCF, WET (DRY) | 1.000 ( .983) |
| VOL (SCM) | 90.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |

| | | |
|---|---|---|
| TEST NUMBER, | | ADCC-2 |
| BAROMETER, | MM HG | 749.8 |
| HUMIDITY, | G/KG | 3.9 |
| TEMPERATURE, | DEG C | 21.7 |
| CARBON DIOXIDE, | G/MI | 163.5 |
| FUEL ECONOMY, | MPG | 27.5 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .78 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| _T NO. ADCC-2 RUN | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| EHICLE MODEL 0 FORD ESCORT | DATE 3/10/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| NGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| RANSMISSION A3 | DYNO NO. 3 | ODOMETER 89789. KM( 55792. MILES) |
| | CVS NO. 2 | |
| AROMETER 749.81 MM HG(29.52 IN HG) | DRY BULB TEMP. 21.7 DEG C(71.0 DEG F) | |
| ELATIVE HUMIDITY 21. PCT | ABS. HUMIDITY 3.4 GM/KG | NOX HUMIDITY CORRECTION FACTOR .90 |

AG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48074. |
| TOT FLOW STD. CU. METRES(SCF) | 90.6 ( 3199.) |
| THC SAMPLE METER/RANGE/PPM | 8.4/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .0/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 68.4/ 1/1.2593 |
| CO2 BCKGRD METER/RANGE/PCT | 2.5/ 1/ .0441 |
| NOX SAMPLE METER/RANGE/PPM | 56.8/ 2/ 56.8 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 2/ .0 |
| DILUTION FACTOR | 9.52 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.2199 |
| NOX CONCENTRATION PPM | 56.8 |
| THC MASS GRAMS | .16 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 2023.5 |
| NOX MASS GRAMS | 7.92 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .895 ( .889) |
| SCF, WET (DRY) | 1.000 ( .971) |
| VOL (SCM) | 90.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.20 |
| TEST NUMBER, | ADCC-2 |
| BAROMETER, MM HG | 749.8 |
| HUMIDITY, G/KG | 3.4 |
| TEMPERATURE, DEG C | 21.7 |
| CARBON DIOXIDE, G/MI | 220.1 |
| FUEL ECONOMY, MPG | 20.4 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .86 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMC -1 RUN
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/15/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89851. KM( 55831. MILES)

BAROMETER 739.39 MM HG(29.11 IN HG)
RELATIVE HUMIDITY 37. PCT

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 7.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .91

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 731.5 (28.8) | 734.1 (28.9) | 734.1 (28.9) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) | 731.5 (28.8) | 734.1 (28.9) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 41.7 (107.0) | 42.2 (108.0) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 40469. | 69586. | 40435. | 69540. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2664.) | 130.0 ( 4589.) | 75.4 ( 2663.) | 129.8 ( 4582.) |
| THC SAMPLE METER/RANGE/PPM | 38.5/ 2/ 39. | 6.5/ 2/ 7. | 7.4/ 2/ 8. | 7.0/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.5/ 2/ 7. | 6.5/ 2/ 7. | 6.7/ 2/ 7. | 7.2/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 54.7/ 1/ 475. | 17.9/ 12/ 18. | 54.9/ 12/ 54. | 6.2/ 12/ 6. |
| CO BCKGRD METER/RANGE/PPM | .2/ 1/ 1. | .7/ 12/ 1. | .6/ 12/ 1. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 52.7/ 1/ .9653 | 74.1/ 14/ .5601 | 85.7/ 14/ .7702 | 72.1/ 14/ .5298 |
| CO2 BCKGRD METER/RANGE/PCT | 2.7/ 1/ .0476 | 12.2/ 14/ .0407 | 12.2/ 14/ .0407 | 12.2/ 14/ .0407 |
| NOX SAMPLE METER/RANGE/PPM | 55.0/ 1/ 13.8 | 26.4/ 1/ 6.7 | 71.9/ 1/ 18.0 | 29.4/ 1/ 7.4 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 1/ .1 | .4/ 1/ .1 | .4/ 1/ .1 | .3/ 1/ .1 |
| DILUTION FACTOR | 11.82 | 21.32 | 15.45 | 22.58 |
| THC CONCENTRATION PPM | 33. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 455. | 17. | 52. | 6. |
| CO2 CONCENTRATION PCT | .9217 | .5213 | .7321 | .4909 |
| NOX CONCENTRATION PPM | 13.7 | 6.6 | 17.9 | 7.4 |
| THC MASS GRAMS | 3.01 | .05 | .11 | .02 |
| CO MASS GRAMS | 39.94 | 2.51 | 4.55 | .92 |
| CO2 MASS GRAMS | 1272.9 | 1240.3 | 1010.8 | 1166.4 |
| NOX MASS GRAMS | 1.80 | 1.49 | 2.35 | 1.66 |
| THC GRAMS/MI | .83 | .01 | .03 | .00 |
| CO GRAMS/MI | 11.05 | .64 | 1.26 | .24 |
| CO2 GRAMS/MI | 352.0 | 319.0 | 279.5 | 299.6 |
| NOX GRAMS/MI | .50 | .38 | .65 | .43 |
| FUEL ECONOMY IN MPG | 12.12 13.05 | 14.04 | 15.96 15.44 | 14.98 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.62 7.50 | 3.89 | 3.62 7.51 | 3.89 |
| SCF, DRY | .971 .975 | .978 | .974 .977 | .979 |
| DFC, WET (DRY) | .939( .928) | | .948( .937) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.4/ .00 | | 205.2/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMC -1 |
| BAROMETER | MM HG | 739.4 |
| HUMIDITY | G/KG | 7.7 |
| TEMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 315.0 | ( 309.2 |
| FUEL ECONOMY | MPG | 14.05 | ( 14.31 |
| HYDROCARBONS (THC) | G/MI | .19 | ( .18 |
| CARBON MONOXIDE | G/MI | 2.97 | ( 2.85 |
| OXIDES OF NITROGEN | G/MI | .48 | ( .49 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| T NO. AJMC -1 RUN | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| ICLE MODEL 0 FORD ESCORT | DATE 3/15/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| INE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| NSMISSION A3 | DYND NO. 3 | ODOMETER 89875. KM( 55846. MILES) |
| | CVS NO. 2 | |
| OMETER 738.89 MM HG(29.09 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| ATIVE HUMIDITY 36. PCT | ABS. HUMIDITY 7.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .90 |

RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48108. |
| TOT FLOW STD. CU. METRES(SCF) | 89.7 ( 3167.) |
| THC SAMPLE METER/RANGE/PPM | 6.9/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.4/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .5/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.7/ 14/ .5387 |
| CO2 BCKGRD METER/RANGE/PCT | 12.3/ 14/ .0411 |
| NOX SAMPLE METER/RANGE/PPM | 74.9/ 1/ 18.8 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 1/ .1 |
| DILUTION FACTOR | 22.23 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4995 |
| NOX CONCENTRATION PPM | 18.7 |
| THC MASS GRAMS | .09 |
| CO MASS GRAMS | .05 |
| CO2 MASS GRAMS | 820.1 |
| NOX MASS GRAMS | 2.88 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .944) |
| SCF, WET (DRY) | 1.000 ( .979) |
| VOL (SCM) | 89.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.04 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMC -1 |
| BAROMETER, | MM HG | 738.9 |
| HUMIDITY, | G/KG | 7.3 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 162.6 |
| FUEL ECONOMY, | MPG | 27.6 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .57 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

..... NO. AJMC -1 RUN
EHICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
RANSMISSION A3

ROMETER 738.89 MM HG(29.09 IN HG)
ELATIVE HUMIDITY 34. PCT
G RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/15/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 7.1 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89887. KM( 55853. MILES)

NOX HUMIDITY CORRECTION FACTOR .89

55 MPH

| | |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 754.4 (29.7) |
| BLOWER INLET P MM. H2O(IN. H2O) | 751.8 (29.6) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 48099. |
| TOT FLOW STD. CU. METRES(SCF) | 89.5 ( 3160.) |
| THC SAMPLE METER/RANGE/PPM | 7.0/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.9/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .5/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .3/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 67.9/ 1/1.2499 |
| CO2 BCKGRD METER/RANGE/PCT | 2.4/ 1/ .0423 |
| NOX SAMPLE METER/RANGE/PPM | 63.4/ 2/ 63.4 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 9.59 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.2120 |
| NOX CONCENTRATION PPM | 63.3 |
| THC MASS GRAMS | .09 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1985.7 |
| NOX MASS GRAMS | 9.67 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .896 ( .886) |
| SCF, WET (DRY) | 1.000 ( .967) |
| VOL (SCM) | 89.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.22 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMC -1 |
| BAROMETER, | MM HG | 738.9 |
| HUMIDITY, | G/KG | 7.1 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 215.4 |
| FUEL ECONOMY, | MPG | 20.9 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | 1.05 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMC -2 RUN
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/16/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89901. KM( 55862. MILES)

BAROMETER 742.70 MM HG(29.24 IN HG)
RELATIVE HUMIDITY 48. PCT
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG
NOX HUMIDITY CORRECTION FACTOR .95

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) | 736.6 (29.0) | 736.6 (29.0) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 734.1 (28.9) | 736.6 (29.0) | 736.6 (29.0) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) | 42.8 (109.0) | 42.2 (108.0) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 40446. | 69573. | 40461. | 69504. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2677.) | 130.2 ( 4598.) | 75.8 ( 2677.) | 130.2 ( 4598.) |
| THC SAMPLE METER/RANGE/PPM | 38.2/ 2/ 39. | 8.5/ 2/ 9. | 9.4/ 2/ 10. | 8.1/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.2/ 2/ 8. | 8.5/ 2/ 9. | 7.7/ 2/ 8. | 8.4/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 56.6/ 1/ 495. | 14.2/ 12/ 14. | 39.3/ 12/ 39. | 8.7/ 12/ 9. |
| CO BCKGRD METER/RANGE/PPM | .5/ 1/ 3. | 2.0/ 12/ 2. | 6.1/ 12/ 6. | 4.3/ 12/ 4. |
| CO2 SAMPLE METER/RANGE/PCT | 93.6/ 14/ .9589 | 73.8/ 14/ .5555 | 85.0/ 14/ .7555 | 71.4/ 14/ .5195 |
| CO2 BCKGRD METER/RANGE/PCT | 13.2/ 14/ .0446 | 13.1/ 14/ .0442 | 13.3/ 14/ .0450 | 13.2/ 14/ .0446 |
| NOX SAMPLE METER/RANGE/PPM | 39.7/ 1/ 10.0 | 27.5/ 1/ 7.0 | 74.2/ 1/ 18.6 | 31.1/ 1/ 7.9 |
| NOX BCKGRD METER/RANGE/PPM | 1.1/ 1/ .3 | .8/ 1/ .2 | .7/ 1/ .2 | .5/ 1/ .1 |
| DILUTION FACTOR | 11.87 | 21.50 | 15.78 | 23.01 |
| THC CONCENTRATION PPM | 31. | 0. | 2. | 0. |
| CO CONCENTRATION PPM | 471. | 12. | 32. | 4. |
| CO2 CONCENTRATION PCT | .9181 | .5133 | .7134 | .4769 |
| NOX CONCENTRATION PPM | 9.7 | 6.8 | 18.4 | 7.7 |
| THC MASS GRAMS | 2.85 | .06 | .21 | .01 |
| CO MASS GRAMS | 41.60 | 1.79 | 2.79 | .66 |
| CO2 MASS GRAMS | 1274.2 | 1223.8 | 990.1 | 1136.9 |
| NOX MASS GRAMS | 1.33 | 1.60 | 2.53 | 1.82 |
| THC GRAMS/MI | .79 | .02 | .06 | .00 |
| CO GRAMS/MI | 11.53 | .46 | .77 | .17 |
| CO2 GRAMS/MI | 353.1 | 314.9 | 273.3 | 291.1 |
| NOX GRAMS/MI | .37 | .41 | .70 | .47 |
| FUEL ECONOMY IN MPG | 12.06 13.10 | 14.24 | 16.36 15.86 | 15.42 |
| RUN TIME SECONDS | 504. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.61 7.50 | 3.89 | 3.62 7.53 | 3.90 |
| SCF, DRY | .967 .972 | .975 | .971 .974 | .975 |
| DFC, WET (DRY) | .940( .925) | | .949( .935) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.0/ .00 | | 206.0/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMC -2 |
| BAROMETER | MM HG | 742.7 |
| HUMIDITY | G/KG | 9.1 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 311.4 | ( 304.4) |
| FUEL ECONOMY | MPG | 14.21 | ( 14.54) |
| HYDROCARBONS (THC) | G/MI | .19 | ( .18) |
| CARBON MONOXIDE | G/MI | 2.84 | ( 2.75) |
| OXIDES OF NITROGEN | G/MI | .48 | ( .50) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

EST NO. AJMC -2 RUN
EHICLE MODEL 0 FORD ESCORT
NGINE 1.6 L( 98. CID) L-4
RANSMISSION A3

ARDMETER 741.93 MM HG(29.21 IN HG)
ELATIVE HUMIDITY 51. PCT
AG RESULTS

VEHICLE NO.
DATE 3/16/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 9.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89927. KM( 55878. MILES)

NOX HUMIDITY CORRECTION FACTOR .97

| TEST CYCLE | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 734.1 (28.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48061. |
| TOT FLOW STD. CU. METRES(SCF) | 90.0 ( 3177.) |
| THC SAMPLE METER/RANGE/PPM | 8.0/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.2/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 3.3/ 12/ 3. |
| CO BCKGRD METER/RANGE/PPM | 2.3/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 72.0/ 14/ .5283 |
| CO2 BCKGRD METER/RANGE/PCT | 13.0/ 14/ .0438 |
| NOX SAMPLE METER/RANGE/PPM | 87.9/ 1/ 22.0 |
| NOX BCKGRD METER/RANGE/PPM | .7/ 1/ .2 |
| DILUTION FACTOR | 22.65 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .4864 |
| NOX CONCENTRATION PPM | 21.8 |
| THC MASS GRAMS | .02 |
| CO MASS GRAMS | .11 |
| CO2 MASS GRAMS | 801.3 |
| NOX MASS GRAMS | 3.64 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .940) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 90.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMC -2 |
| BAROMETER, | MM HG | 741.9 |
| HUMIDITY, | G/KG | 9.7 |
| TEMPERATURE, | DEG C | 23.9 |
| CARBON DIOXIDE, | G/MI | 159.7 |
| FUEL ECONOMY, | MPG | 28.1 |
| HYDROCARBONS, (THC) | G/MI | .00 |
| CARBON MONOXIDE, | G/MI | .02 |
| OXIDES OF NITROGEN, | G/MI | .72 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| ' NO. AJMC -2 RUN | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| :CLE MODEL 0 FORD ESCORT | DATE 3/16/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| :NE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| ISMISSION A3 | DYNO NO. 3 | ODOMETER 89938. KM( 55885. MILES) |
| | CVS NO. 2 | |
| IMETER 741.68 MM HG(29.20 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| ITIVE HUMIDITY 46. PCT | ABS. HUMIDITY 9.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .95 |

RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 759.5 (29.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48041. |
| TOT FLOW STD. CU. METRES(SCF) | 89.6 ( 3164.) |
| THC SAMPLE METER/RANGE/PPM | 7.9/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.2/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 4.1/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | 2.1/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 66.7/ 1/1.2274 |
| CO2 BCKGRD METER/RANGE/PCT | 2.5/ 1/ .0441 |
| NOX SAMPLE METER/RANGE/PPM | 62.8/ 2/ 62.8 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 9.76 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | 1.1878 |
| NOX CONCENTRATION PPM | 62.5 |
| THC MASS GRAMS | .06 |
| CO MASS GRAMS | .21 |
| CO2 MASS GRAMS | 1948.3 |
| NOX MASS GRAMS | 10.22 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .898 ( .884) |
| SCF, WET (DRY) | 1.000 ( .963) |
| VOL (SCM) | 89.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMC -2 |
| BAROMETER, | MM HG | 741.7 |
| HUMIDITY, | G/KG | 9.3 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 212.0 |
| FUEL ECONOMY, | MPG | 21.2 |
| /DROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .02 |
| OXIDES OF NITROGEN, | G/MI | 1.11 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSUC-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/23/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 89988. KM( 55916. MILES)

BAROMETER 743.46 MM HG(29.27 IN HG)
RELATIVE HUMIDITY 42. PCT

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 7.2 GM/KG

NOX HUMIDITY CORRECTION FACTOR .90

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 731.5 (28.8) | 739.1 (29.1) | 736.6 (29.0) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) | 739.1 (29.1) | 736.6 (29.0) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 41.7 (107.0) | 42.2 (108.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40521. | 69742. | 40486. | 69530. |
| TOT FLOW STD. CU. METRES(SCF) | 76.0 ( 2683.) | 130.9 ( 4622.) | 75.9 ( 2681.) | 130.7 ( 4614.) |
| THC SAMPLE METER/RANGE/PPM | 47.1/ 2/ 47. | 6.5/ 2/ 7. | 8.8/ 2/ 9. | 7.6/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.1/ 2/ 7. | 6.8/ 2/ 7. | 8.6/ 2/ 9. | 7.9/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 57.3/ 1/ 503. | 5.4/ 12/ 5. | 39.2/ 12/ 39. | 1.6/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .0/ 1/ 0. | .1/ 12/ 0. | .3/ 12/ 0. | .2/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 92.8/ 14/ .9376 | 72.2/ 14/ .5313 | 83.9/ 14/ .7331 | 70.4/ 14/ .5051 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 | 12.7/ 14/ .0426 | 13.1/ 14/ .0442 | 12.9/ 14/ .0434 |
| NOX SAMPLE METER/RANGE/PPM | 53.9/ 1/ 13.5 | 29.9/ 1/ 7.6 | 76.3/ 1/ 19.1 | 31.1/ 1/ 7.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 | .5/ 1/ .1 | .4/ 1/ .1 | .5/ 1/ .1 |
| DILUTION FACTOR | 12.11 | 22.52 | 16.26 | 23.70 |
| THC CONCENTRATION PPM | 41. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 483. | 5. | 37. | 1. |
| CO2 CONCENTRATION PCT | .8984 | .4905 | .6916 | .4636 |
| NOX CONCENTRATION PPM | 13.4 | 7.4 | 19.0 | 7.7 |
| THC MASS GRAMS | 3.77 | .00 | .07 | .01 |
| CO MASS GRAMS | 42.74 | .79 | 3.27 | .21 |
| CO2 MASS GRAMS | 1250.0 | 1175.6 | 961.6 | 1109.0 |
| NOX MASS GRAMS | 1.74 | 1.67 | 2.48 | 1.73 |
| THC GRAMS/MI | 1.05 | .00 | .02 | .00 |
| CO GRAMS/MI | 11.95 | .20 | .91 | .05 |
| CO2 GRAMS/MI | 349.3 | 303.6 | 267.1 | 285.6 |
| NOX GRAMS/MI | .49 | .43 | .69 | .45 |
| FUEL ECONOMY IN MPG | 12.15 13.39 | 14.78 | 16.73 16.20 | 15.73 |
| RUN TIME SECONDS | 505. | 870. | 505. | 868. |
| MEASURED DISTANCE MI | 3.58 7.45 | 3.87 | 3.60 7.48 | 3.88 |
| SCF, DRY | .970 .974 | .977 | .973 .976 | .977 |
| DFC, WET (DRY) | .942( .929) | | .951( .938) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.9/ .00 | | 206.6/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSUC-1 |
| BAROMETER | MM HG | 743.5 |
| HUMIDITY | G/KG | 7.2 |
| TEMPERATURE | DEG C | 22.2 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 303.0 | ( 297.7) |
| FUEL ECONOMY | MPG | 14.60 | ( 14.86) |
| HYDROCARBONS (THC) | G/MI | .22 | ( .22) |
| CARBON MONOXIDE | G/MI | 2.82 | ( 2.78) |
| OXIDES OF NITROGEN | G/MI | .51 | ( .52) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

ST NO. ANSUC-1 RUN 1
HICLE MODEL 0 FORD ESCORT
GINE 1.6 L( 98. CID) L-4
ANSMISSION A3

ROMETER 742.95 MM HG(29.25 IN HG)
LATIVE HUMIDITY 29. PCT
G RESULTS

VEHICLE NO.
DATE 3/23/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 6.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90014. KM( 55932. MILES)

NOX HUMIDITY CORRECTION FACTOR .87

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48096. |
| TOT FLOW STD. CU. METRES(SCF) | 90.1 ( 3183.) |
| THC SAMPLE METER/RANGE/PPM | 8.1/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .6/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.2/ 14/ .5313 |
| CO2 BCKGRD METER/RANGE/PCT | 12.8/ 14/ .0430 |
| NOX SAMPLE METER/RANGE/PPM | 96.3/ 1/ 24.0 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 22.54 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4902 |
| NOX CONCENTRATION PPM | 23.9 |
| THC MASS GRAMS | .07 |
| CO MASS GRAMS | .05 |
| CO2 MASS GRAMS | 809.0 |
| NOX MASS GRAMS | 3.58 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .947) |
| SCF, WET (DRY) | 1.000 ( .981) |
| VOL (SCM) | 90.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.04 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSUC-1 |
| BAROMETER, | MM HG | 743.0 |
| HUMIDITY, | G/KG | 6.2 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 160.5 |
| FUEL ECONOMY, | MPG | 28.0 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .71 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

:ST NO. ANSUC-1 RUN 1
:HICLE MODEL 0 FORD ESCORT
:GINE 1.6 L( 98. CID) L-4
:ANSMISSION A3

:ROMETER 742.70 MM HG(29.24 IN HG)
:LATIVE HUMIDITY 31. PCT
:G RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/23/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 6.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90025. KM( 55939. MILES)

NOX HUMIDITY CORRECTION FACTOR .88

55 MPH

| | |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 759.5 (29.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48093. |
| TOT FLOW STD. CU. METRES(SCF) | 89.8 ( 3172.) |
| THC SAMPLE METER/RANGE/PPM | 7.8/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 1.2/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.9/ 1/1.2123 |
| CO2 BCKGRD METER/RANGE/PCT | 2.4/ 1/ .0423 |
| NOX SAMPLE METER/RANGE/PPM | 62.1/ 2/ 62.1 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 9.89 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | 1.1743 |
| NOX CONCENTRATION PPM | 62.0 |
| THC MASS GRAMS | .09 |
| CO MASS GRAMS | .12 |
| CO2 MASS GRAMS | 1931.3 |
| NOX MASS GRAMS | 9.32 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .890) |
| SCF, WET (DRY) | 1.000 ( .968) |
| VOL (SCM) | 89.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.21 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSUC-1 |
| BAROMETER, | MM HG | 742.7 |
| HUMIDITY, | G/KG | 6.4 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 209.8 |
| FUEL ECONOMY, | MPG | 21.4 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | 1.01 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSUC-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/24/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90043. KM( 55950. MILES)

BAROMETER 741.93 MM HG(29.21 IN HG)
RELATIVE HUMIDITY 43. PCT

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 9.0 GM/KG

NOX HUMIDITY CORRECTION FACTOR .95

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) | 739.1 (29.1) | 739.1 (29.1) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) | 739.1 (29.1) | 739.1 (29.1) | 739.1 (29.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 41.7 (107.0) | 42.2 (108.0) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 40546. | 69651. | 40519. | 69562. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2677.) | 130.4 ( 4606.) | 75.8 ( 2677.) | 130.3 ( 4600.) |
| THC SAMPLE METER/RANGE/PPM | 38.6/ 2/ 39. | 8.1/ 2/ 8. | 8.4/ 2/ 9. | 8.3/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. | 8.0/ 2/ 8. | 8.1/ 2/ 8. | 8.7/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 68.7/ 14/ 322. | 11.6/ 12/ 12. | 30.3/ 12/ 30. | 2.9/ 12/ 3. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .3/ 12/ 0. | .7/ 12/ 1. | .7/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 92.4/ 14/ .9271 | 73.1/ 14/ .5448 | 84.7/ 14/ .7493 | 70.1/ 14/ .5009 |
| CO2 BCKGRD METER/RANGE/PCT | 12.6/ 14/ .0422 | 12.7/ 14/ .0426 | 12.7/ 14/ .0426 | 12.8/ 14/ .0430 |
| NOX SAMPLE METER/RANGE/PPM | 53.1/ 1/ 13.3 | 25.3/ 1/ 6.4 | 67.2/ 1/ 16.8 | 26.7/ 1/ 6.8 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 | .1/ 1/ .0 | .5/ 1/ .1 | .5/ 1/ .1 |
| DILUTION FACTOR | 12.47 | 21.94 | 15.93 | 23.89 |
| THC CONCENTRATION PPM | 32. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 309. | 11. | 28. | 2. |
| CO2 CONCENTRATION PCT | .8882 | .5041 | .7094 | .4597 |
| NOX CONCENTRATION PPM | 13.3 | 6.4 | 16.7 | 6.6 |
| THC MASS GRAMS | 2.92 | .08 | .08 | .00 |
| CO MASS GRAMS | 27.27 | 1.66 | 2.48 | .33 |
| CO2 MASS GRAMS | 1232.9 | 1203.8 | 984.5 | 1096.3 |
| NOX MASS GRAMS | 1.83 | 1.51 | 2.30 | 1.57 |
| THC GRAMS/MI | .81 | .02 | .02 | .00 |
| CO GRAMS/MI | 7.55 | .43 | .69 | .09 |
| CO2 GRAMS/MI | 341.5 | 307.9 | 272.8 | 282.9 |
| NOX GRAMS/MI | .51 | .39 | .64 | .40 |
| FUEL ECONOMY IN MPG | 12.67 13.59 | 14.56 | 16.40 16.13 | 15.88 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.61 7.52 | 3.91 | 3.61 7.48 | 3.88 |
| SCF, DRY | .969 .974 | .976 | .973 .975 | .977 |
| DFC, WET (DRY) | .942( .929) | | .950( .937) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.3/ .00 | | 206.1/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSUC-2 |
| BAROMETER | MM HG | 741.9 |
| HUMIDITY | G/KG | 9.0 |
| TEMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 305.2 | ( 297.8) |
| FUEL ECONOMY | MPG | 14.56 | ( 14.93) |
| HYDROCARBONS (THC) | G/MI | .18 | ( .1 |
| CARBON MONOXIDE | G/MI | 1.97 | ( 1.87) |
| OXIDES OF NITROGEN | G/MI | .48 | ( .49) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ASWUC RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/11/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90415. KM( 56181. MILES)

BAROMETER 749.30 MM HG(29.50 IN HG)
RELATIVE HUMIDITY 23. PCT

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 4.4 GM/KG

NOX HUMIDITY CORRECTION FACTOR .83

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 756.9 (29.8) | 749.3 (29.5) | 756.9 (29.8) |
| BLOWER INLET P MM. H2O(IN. H2O) | 751.8 (29.6) | 759.5 (29.9) | 751.8 (29.6) | 759.5 (29.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) | 38.9 (102.0) | 41.1 (106.0) | 38.3 (101.0) |
| BLOWER REVOLUTIONS | 40521. | 69673. | 40454. | 69627. |
| TOT FLOW STD. CU. METRES(SCF) | 76.5 ( 2702.) | 132.2 ( 4670.) | 76.5 ( 2703.) | 132.3 ( 4672.) |
| THC SAMPLE METER/RANGE/PPM | 68.2/ 2/ 69. | 6.6/ 2/ 7. | 10.2/ 2/ 10. | 6.7/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 7.4/ 2/ 8. | 6.6/ 2/ 7. | 6.2/ 2/ 6. | 6.4/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 55.2/ 2/1103. | 57.0/ 12/ 56. | 51.3/ 14/ 229. | 41.5/ 12/ 41. |
| CO BCKGRD METER/RANGE/PPM | .0/ 2/ 0. | .2/ 12/ 0. | .0/ 14/ 0. | .3/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 90.3/ 14/ .8743 | 72.5/ 14/ .5357 | 83.5/ 14/ .7251 | 69.7/ 14/ .4953 |
| CO2 BCKGRD METER/RANGE/PCT | 12.2/ 14/ .0407 | 12.2/ 14/ .0407 | 12.4/ 14/ .0415 | 12.4/ 14/ .0415 |
| NOX SAMPLE METER/RANGE/PPM | 75.8/ 1/ 19.0 | 26.5/ 1/ 6.7 | 81.1/ 1/ 20.3 | 32.8/ 1/ 8.3 |
| NOX BCKGRD METER/RANGE/PPM | .6/ 1/ .2 | .5/ 1/ .1 | .5/ 1/ .1 | .5/ 1/ .1 |
| DILUTION FACTOR | 12.14 | 22.13 | 16.03 | 23.99 |
| THC CONCENTRATION PPM | 62. | 0. | 4. | 1. |
| CO CONCENTRATION PPM | 1068. | 55. | 222. | 40. |
| CO2 CONCENTRATION PCT | .8370 | .4969 | .6862 | .4555 |
| NOX CONCENTRATION PPM | 18.9 | 6.6 | 20.2 | 8.1 |
| THC MASS GRAMS | 5.74 | .05 | .42 | .09 |
| CO MASS GRAMS | 95.12 | 8.45 | 19.82 | 6.11 |
| CO2 MASS GRAMS | 1172.6 | 1203.1 | 961.7 | 1103.4 |
| NOX MASS GRAMS | 2.28 | 1.38 | 2.45 | 1.71 |
| THC GRAMS/MI | 1.59 | .01 | .12 | .02 |
| CO GRAMS/MI | 26.42 | 2.18 | 5.50 | 1.57 |
| CO2 GRAMS/MI | 325.6 | 310.6 | 267.1 | 283.8 |
| NOX GRAMS/MI | .63 | .36 | .68 | .44 |
| FUEL ECONOMY IN MPG | 12.16 13.18 | 14.30 | 16.28 15.97 | 15.69 |
| RUN TIME SECONDS | 504. | 868. | 504. | 868. |
| MEASURED DISTANCE MI | 3.60 7.47 | 3.87 | 3.60 7.49 | 3.89 |
| SCF, DRY | .977 .981 | .983 | .980 .982 | .984 |
| DFC, WET (DRY) | .941( .934) | | .951( .944) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 208.8/ .00 | | 208.8/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ASWUC |
| BAROMETER | MM HG | 749.3 |
| HUMIDITY | G/KG | 4.4 |
| TEMPERATURE | DEG C | 24.4 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 301.8 | ( 293.9) |
| FUEL ECONOMY | MPG | 14.26 | ( 14.64) |
| HYDROCARBONS (THC) | G/MI | .37 | ( .37 |
| CARBON MONOXIDE | G/MI | 8.12 | ( 7.93) |
| OXIDES OF NITROGEN | G/MI | .50 | ( .53) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ASWUC RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 749.05 MM HG(29.49 IN HG)
RELATIVE HUMIDITY 23. PCT
BAG RESULTS

VEHICLE NO.
DATE 4/11/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 4.4 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90452. KM( 56204. MILES)

NOX HUMIDITY CORRECTION FACTOR .83

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48114. |
| TOT FLOW STD. CU. METRES(SCF) | 90.7 ( 3201.) |
| THC SAMPLE METER/RANGE/PPM | 7.6/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 6.1/ 2/ 6. |
| CO SAMPLE METER/RANGE/PPM | .9/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.5/ 1/1.2048 |
| CO2 BCKGRD METER/RANGE/PCT | 2.5/ 1/ .0441 |
| NOX SAMPLE METER/RANGE/PPM | 63.2/ 2/ 63.2 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 9.95 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | 1.1652 |
| NOX CONCENTRATION PPM | 63.0 |
| THC MASS GRAMS | .24 |
| CO MASS GRAMS | .09 |
| CO2 MASS GRAMS | 1934.1 |
| NOX MASS GRAMS | 9.04 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .893) |
| SCF, WET (DRY) | 1.000 ( .971) |
| VOL (SCM) | 90.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.18 |
| TEST NUMBER, | ASWUC |
| BAROMETER, MM HG | 749.0 |
| HUMIDITY, G/KG | 4.4 |
| TEMPERATURE, DEG C | 24.4 |
| CARBON DIOXIDE, G/MI | 210.6 |
| FUEL ECONOMY, MPG | 21.3 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .98 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ASWUC RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 749.05 MM HG(29.49 IN HG)
RELATIVE HUMIDITY 21. PCT
BAG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 4/11/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 4.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90440. KM( 56197. MILES)

NOX HUMIDITY CORRECTION FACTOR .82

| | 30 MPH |
|---|---|
| BLOWER DIF P MM. H20(IN. H20) | 754.4 (29.7) |
| BLOWER INLET P MM. H20(IN. H20) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 40.0 (104.0) |
| BLOWER REVOLUTIONS | 48125. |
| TOT FLOW STD. CU. METRES(SCF) | 91.2 ( 3221.) |
| THC SAMPLE METER/RANGE/PPM | 6.7/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.1/ 2/ 6. |
| CO SAMPLE METER/RANGE/PPM | .3/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 71.7/ 14/ .5239 |
| CO2 BCKGRD METER/RANGE/PCT | 12.3/ 14/ .0411 |
| NOX SAMPLE METER/RANGE/PPM | 38.1/ 2/ 38.1 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 22.86 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4846 |
| NOX CONCENTRATION PPM | 37.9 |
| THC MASS GRAMS | .10 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 809.3 |
| NOX MASS GRAMS | 5.44 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .950) |
| SCF, WET (DRY) | 1.000 ( .984) |
| VOL (SCM) | 91.2 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | ASWUC |
|---|---|---|
| TEST NUMBER, | | |
| BAROMETER, | MM HG | 749.0 |
| HUMIDITY, | G/KG | 4.2 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 161.1 |
| FUEL ECONOMY, | MPG | 27.9 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | 1.08 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/13/89
BAG CART NO. 2 / CVS NO. 2
DYND NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90482. KM( 56223. MILES)

BAROMETER 743.20 MM HG(29.26 IN HG)
RELATIVE HUMIDITY 41. PCT

DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
ABS. HUMIDITY 7.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .91

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 739.1 (29.1) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 741.7 (29.2) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 42.2 (108.0) | 43.3 (110.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40542. | 69740. | 40478. | 69679. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2678.) | 130.5 ( 4609.) | 75.6 ( 2670.) | 130.7 ( 4615.) |
| THC SAMPLE METER/RANGE/PPM | 39.2/ 2/ 40. | 7.3/ 2/ 7. | 11.5/ 2/ 12. | 7.5/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 6.5/ 2/ 7. | 6.6/ 2/ 7. | 6.7/ 2/ 7. | 7.1/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 98.2/ 14/ 493. | 6.3/ 12/ 6. | 44.1/ 13/ 102. | 3.8/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .6/ 12/ 1. | .0/ 13/ 0. | .6/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 93.2/ 14/ .9482 | 73.4/ 14/ .5493 | 84.9/ 14/ .7535 | 71.3/ 14/ .5181 |
| CO2 BCKGRD METER/RANGE/PCT | 11.8/ 14/ .0391 | 10.0/ 14/ .0324 | 10.8/ 14/ .0354 | 11.9/ 14/ .0395 |
| NOX SAMPLE METER/RANGE/PPM | 46.6/ 1/ 11.7 | 27.3/ 1/ 6.9 | 70.7/ 1/ 17.7 | 30.9/ 1/ 7.8 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 1/ .1 | .4/ 1/ .1 | .6/ 1/ .2 | .9/ 1/ .2 |
| DILUTION FACTOR | 12.00 | 21.78 | 15.69 | 23.10 |
| THC CONCENTRATION PPM | 33. | 1. | 5. | 1. |
| CO CONCENTRATION PPM | 473. | 6. | 99. | 3. |
| CO2 CONCENTRATION PCT | .9123 | .5184 | .7203 | .4802 |
| NOX CONCENTRATION PPM | 11.6 | 6.8 | 17.6 | 7.6 |
| THC MASS GRAMS | 3.09 | .16 | .49 | .12 |
| CO MASS GRAMS | 41.75 | .85 | 8.71 | .48 |
| CO2 MASS GRAMS | 1266.5 | 1239.0 | 997.2 | 1149.0 |
| NOX MASS GRAMS | 1.54 | 1.55 | 2.31 | 1.72 |
| THC GRAMS/MI | .86 | .04 | .14 | .03 |
| CO GRAMS/MI | 11.60 | .22 | 2.42 | .12 |
| CO2 GRAMS/MI | 351.9 | 317.9 | 276.8 | 294.8 |
| NOX GRAMS/MI | .43 | .40 | .64 | .44 |
| FUEL ECONOMY IN MPG | 12.10 13.07 | 14.12 | 16.00 15.59 | 15.23 |
| RUN TIME SECONDS | 504. | 868. | 504. | 868. |
| MEASURED DISTANCE MI | 3.60 7.50 | 3.90 | 3.60 7.50 | 3.90 |
| SCF, DRY | .970 .974 | .977 | .973 .976 | .977 |
| DFC, WET (DRY) | .940( .928) | | .949( .937) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.4/ .00 | | 206.3/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AASC2-1 |
| BAROMETER | MM HG | 743.2 |
| HUMIDITY | G/KG | 7.7 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 313.7 | ( 306.8) |
| FUEL ECONOMY | MPG | 14.08 | ( 14.40) |
| HYDROCARBONS (THC) | G/MI | .24 | ( .23) |
| CARBON MONOXIDE | G/MI | 3.17 | ( 3.14) |
| OXIDES OF NITROGEN | G/MI | .47 | ( .48) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 743.20 MM HG(29.26 IN HG)
RELATIVE HUMIDITY 37. PCT
BAG RESULTS

VEHICLE NO.
DATE 4/13/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 7.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90519. KM( 56246. MILES)

NOX HUMIDITY CORRECTION FACTOR .91

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48142. |
| TOT FLOW STD. CU. METRES(SCF) | 90.0 ( 3178.) |
| THC SAMPLE METER/RANGE/PPM | 8.3/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 6.5/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 1.9/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .2/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 63.3/ 1/1.1636 |
| CO2 BCKGRD METER/RANGE/PCT | 2.3/ 1/ .0406 |
| NOX SAMPLE METER/RANGE/PPM | 71.3/ 2/ 71.3 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 10.30 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | 1.1269 |
| NOX CONCENTRATION PPM | 71.0 |
| THC MASS GRAMS | .27 |
| CO MASS GRAMS | .17 |
| CO2 MASS GRAMS | 1857.2 |
| NOX MASS GRAMS | 11.11 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .903 ( .892) |
| SCF, WET (DRY) | 1.000 ( .967) |
| VOL (SCM) | 90.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.16 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC2-1 |
| BAROMETER, | MM HG | 743.2 |
| HUMIDITY, | G/KG | 7.7 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 202.7 |
| FUEL ECONOMY, | MPG | 22.2 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .02 |
| OXIDES OF NITROGEN, | G/MI | 1.21 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AASC2-1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 4/13/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 90508. KM( 56239. MILES) |
| | CVS NO. 2 | |
| BAROMETER 743.20 MM HG(29.26 IN HG) | DRY BULB TEMP. 25.6 DEG C(78.0 DEG F) | |
| RELATIVE HUMIDITY 37. PCT | ABS. HUMIDITY 7.7 GM/KG | NOX HUMIDITY CORRECTION FACTOR .91 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48158. |
| TOT FLOW STD. CU. METRES(SCF) | 90.1 ( 3183.) |
| THC SAMPLE METER/RANGE/PPM | 7.1/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.5/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 1.3/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 73.0/ 14/ .5432 |
| CO2 BCKGRD METER/RANGE/PCT | 12.1/ 14/ .0403 |
| NOX SAMPLE METER/RANGE/PPM | 83.0/ 1/ 20.8 |
| NOX BCKGRD METER/RANGE/PPM | .9/ 1/ .2 |
| DILUTION FACTOR | 22.04 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .5048 |
| NOX CONCENTRATION PPM | 20.6 |
| THC MASS GRAMS | .10 |
| CO MASS GRAMS | .13 |
| CO2 MASS GRAMS | 833.0 |
| NOX MASS GRAMS | 3.22 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .943) |
| SCF, WET (DRY) | 1.000 ( .978) |
| VOL (SCM) | 90.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC2-1 |
| BAROMETER, | MM HG | 743.2 |
| HUMIDITY, | G/KG | 7.7 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 165.8 |
| FUEL ECONOMY, | MPG | 27.1 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .03 |
| OXIDES OF NITROGEN, | G/MI | .64 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC2-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/14/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90532. KM( 56254. MILES)

BAROMETER 742.19 MM HG(29.22 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 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 41.1 (106.0) | 42.8 (109.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40610. | 69658. | 40494. | 69637. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2675.) | 130.5 ( 4606.) | 75.6 ( 2670.) | 130.5 ( 4609.) |
| THC SAMPLE METER/RANGE/PPM | 49.5/ 2/ 50. | 8.4/ 2/ 9. | 10.5/ 2/ 11. | 7.8/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.1/ 2/ 7. | 7.6/ 2/ 8. | 6.9/ 2/ 7. | 7.4/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 66.3/ 1/ 608. | 31.3/ 12/ 31. | 50.6/ 12/ 50. | 8.2/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .1/ 1/ 1. | .5/ 12/ 1. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.2/ 14/ .9482 | 73.7/ 14/ .5539 | 85.1/ 14/ .7576 | 71.0/ 14/ .5137 |
| CO2 BCKGRD METER/RANGE/PCT | 11.8/ 14/ .0391 | 11.9/ 14/ .0395 | 12.0/ 14/ .0399 | 12.1/ 14/ .0403 |
| NOX SAMPLE METER/RANGE/PPM | 52.0/ 1/ 13.0 | 28.7/ 1/ 7.3 | 72.6/ 1/ 18.2 | 32.3/ 1/ 8.1 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 1/ .0 | .1/ 1/ .0 | .5/ 1/ .1 | .6/ 1/ .2 |
| DILUTION FACTOR | 11.86 | 21.50 | 15.71 | 23.27 |
| THC CONCENTRATION PPM | 43. | 1. | 4. | 1. |
| CO CONCENTRATION PPM | 580. | 29. | 48. | 8. |
| CO2 CONCENTRATION PCT | .9123 | .5162 | .7202 | .4752 |
| NOX CONCENTRATION PPM | 13.0 | 7.2 | 18.1 | 8.0 |
| THC MASS GRAMS | 3.98 | .19 | .38 | .12 |
| CO MASS GRAMS | 51.16 | 4.45 | 4.22 | 1.21 |
| CO2 MASS GRAMS | 1265.3 | 1232.9 | 996.9 | 1135.6 |
| NOX MASS GRAMS | 1.84 | 1.76 | 2.55 | 1.95 |
| THC GRAMS/MI | 1.11 | .05 | .11 | .03 |
| CO GRAMS/MI | 14.21 | 1.15 | 1.17 | .31 |
| CO2 GRAMS/MI | 351.5 | 317.6 | 277.4 | 293.0 |
| NOX GRAMS/MI | .51 | .45 | .71 | .50 |
| FUEL ECONOMY IN MPG | 11.97 12.97 | 14.06 | 16.08 15.67 | 15.31 |
| RUN TIME SECONDS | 505. | 867. | 504. | 868. |
| MEASURED DISTANCE MI | 3.60 7.48 | 3.88 | 3.59 7.47 | 3.88 |
| SCF, DRY | .965 .970 | .972 | .969 .972 | .973 |
| DFC, WET (DRY) | .940( .923) | | .949( .933) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.2/ .00 | | 206.1/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AASC2-2 |
| BAROMETER | MM HG | 742.2 |
| HUMIDITY | G/KG | 10.0 |
| TEMPERATURE | DEG C | 23.3 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 313.6 | ( 306.3) |
| FUEL ECONOMY | MPG | 14.04 | ( 14.38) |
| HYDROCARBONS (THC) | G/MI | .28 | ( .2 |
| CARBON MONOXIDE | G/MI | 3.86 | ( 3.61) |
| OXIDES OF NITROGEN | G/MI | .54 | ( .55) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AASC2-2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 4/14/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 88948. KM( 55270. MILES) |
| | CVS NO. 2 | |
| BAROMETER 742.19 MM HG(29.22 IN HG) | DRY BULB TEMP. 26.1 DEG C(79.0 DEG F) | |
| RELATIVE HUMIDITY 44. PCT | ABS. HUMIDITY 9.5 GM/KG | NOX HUMIDITY CORRECTION FACTOR .96 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48134. |
| TOT FLOW STD. CU. METRES(SCF) | 90.0 ( 3176.) |
| THC SAMPLE METER/RANGE/PPM | 8.0/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.1/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .8/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.2/ 14/ .5313 |
| CO2 BCKGRD METER/RANGE/PCT | 11.8/ 14/ .0391 |
| NOX SAMPLE METER/RANGE/PPM | 32.5/ 2/ 32.5 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 22.54 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .4939 |
| NOX CONCENTRATION PPM | 32.3 |
| THC MASS GRAMS | .14 |
| CO MASS GRAMS | .08 |
| CO2 MASS GRAMS | 813.3 |
| NOX MASS GRAMS | 5.33 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .956 ( .942) |
| SCF, WET (DRY) | 1.000 ( .976) |
| VOL (SCM) | 90.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.02 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC2-2 |
| BAROMETER, | MM HG | 742.2 |
| HUMIDITY, | G/KG | 9.5 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 162.1 |
| FUEL ECONOMY, | MPG | 27.7 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .02 |
| OXIDES OF NITROGEN, | G/MI | 1.06 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC2-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

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

VEHICLE NO.
DATE 4/14/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 9.8 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90569. KM( 56277. MILES)

NOX HUMIDITY CORRECTION FACTOR .97

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48108. |
| TOT FLOW STD. CU. METRES(SCF) | 89.8 ( 3171.) |
| THC SAMPLE METER/RANGE/PPM | 9.8/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 8.5/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | .2/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 65.9/ 1/1.2123 |
| CO2 BCKGRD METER/RANGE/PCT | 2.3/ 1/ .0406 |
| NOX SAMPLE METER/RANGE/PPM | 62.7/ 2/ 62.7 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 2/ .1 |
| DILUTION FACTOR | 9.88 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1759 |
| NOX CONCENTRATION PPM | 62.6 |
| THC MASS GRAMS | .24 |
| CO MASS GRAMS | .01 |
| CO2 MASS GRAMS | 1933.5 |
| NOX MASS GRAMS | 10.43 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .882) |
| SCF, WET (DRY) | 1.000 ( .960) |
| VOL (SCM) | 89.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.17 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC2-2 |
| BAROMETER, | MM HG | 742.2 |
| HUMIDITY, | G/KG | 9.8 |
| TEMPERATURE, | DEG C | 22.2 |
| CARBON DIOXIDE, | G/MI | 210.9 |
| FUEL ECONOMY, | MPG | 21.3 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | 1.14 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/19/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90609. KM( 56302. MILES)

BAROMETER 742.44 MM HG(29.23 IN HG)
RELATIVE HUMIDITY 58. PCT

DRY BULB TEMP. 27.2 DEG C(81.0 DEG F)
ABS. HUMIDITY 13.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.10

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 42.2 (108.0) | 43.3 (110.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40597. | 69595. | 40522. | 69598. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2675.) | 130.1 ( 4594.) | 75.6 ( 2670.) | 130.4 ( 4604.) |
| THC SAMPLE METER/RANGE/PPM | 43.5/ 2/ 44. | 9.4/ 2/ 10. | 9.6/ 2/ 10. | 6.8/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 8.7/ 2/ 9. | 8.2/ 2/ 8. | 6.3/ 2/ 6. | 5.8/ 2/ 6. |
| CO SAMPLE METER/RANGE/PPM | 58.4/ 1/ 516. | 14.2/ 12/ 14. | 34.2/ 12/ 34. | 4.5/ 12/ 5. |
| CO BCKGRD METER/RANGE/PPM | .2/ 1/ 1. | .0/ 12/ 0. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 91.9/ 14/ .9142 | 72.6/ 14/ .5372 | 84.1/ 14/ .7371 | 70.1/ 14/ .5009 |
| CO2 BCKGRD METER/RANGE/PCT | 13.1/ 14/ .0442 | 11.6/ 14/ .0384 | 11.2/ 14/ .0369 | 11.1/ 14/ .0365 |
| NOX SAMPLE METER/RANGE/PPM | 35.5/ 1/ 8.9 | 20.2/ 1/ 5.2 | 55.8/ 1/ 14.0 | 23.7/ 1/ 6.0 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 1/ .0 | .1/ 1/ .0 | .0/ 1/ .0 | .2/ 1/ .1 |
| DILUTION FACTOR | 12.39 | 22.23 | 16.18 | 23.89 |
| THC CONCENTRATION PPM | 36. | 2. | 4. | 1. |
| CO CONCENTRATION PPM | 491. | 14. | 32. | 4. |
| CO2 CONCENTRATION PCT | .8736 | .5006 | .7025 | .4659 |
| NOX CONCENTRATION PPM | 8.9 | 5.1 | 14.0 | 6.0 |
| THC MASS GRAMS | 3.29 | .25 | .35 | .20 |
| CO MASS GRAMS | 43.34 | 2.07 | 2.84 | .67 |
| CO2 MASS GRAMS | 1211.6 | 1192.4 | 972.5 | 1112.2 |
| NOX MASS GRAMS | 1.42 | 1.40 | 2.22 | 1.64 |
| THC GRAMS/MI | .92 | .07 | .10 | .05 |
| CO GRAMS/MI | 12.18 | .54 | .80 | .17 |
| CO2 GRAMS/MI | 340.5 | 309.9 | 272.3 | 289.1 |
| NOX GRAMS/MI | .40 | .36 | .62 | .43 |
| FUEL ECONOMY IN MPG | 12.44 13.41 | 14.45 | 16.41 15.94 | 15.52 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.56 7.41 | 3.85 | 3.57 7.42 | 3.85 |
| SCF, DRY | .965 .969 | .972 | .968 .971 | .972 |
| DFC, WET (DRY) | .942( .924) | | .951( .933) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.9/ .00 | | 206.0/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AASC3-1 |
| BAROMETER | MM HG | 742.4 |
| HUMIDITY | G/KG | 13.5 |
| TEMPERATURE | DEG C | 27.2 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 305.9 | ( 299.8) |
| FUEL ECONOMY | MPG | 14.45 | ( 14.75) |
| HYDROCARBONS (THC) | G/MI | .25 | ( .25) |
| CARBON MONOXIDE | G/MI | 3.01 | ( 2.91) |
| OXIDES OF NITROGEN | G/MI | .44 | ( .46) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 742.95 MM HG(29.25 IN HG)
RELATIVE HUMIDITY 42. PCT
BAG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 4/19/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 8.1 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90638. KM( 56320. MILES)

NOX HUMIDITY CORRECTION FACTOR .92

| | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 739.1 (29.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 48138. |
| TOT FLOW STD. CU. METRES(SCF) | 90.3 ( 3188.) |
| THC SAMPLE METER/RANGE/PPM | 9.1/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 8.3/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 5.0/ 12/ 5. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 73.8/ 14/ .5555 |
| CO2 BCKGRD METER/RANGE/PCT | 14.4/ 14/ .0494 |
| NOX SAMPLE METER/RANGE/PPM | 59.2/ 1/ 14.8 |
| NOX BCKGRD METER/RANGE/PPM | .6/ 1/ .2 |
| DILUTION FACTOR | 21.54 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 5. |
| CO2 CONCENTRATION PCT | .5083 |
| NOX CONCENTRATION PPM | 14.7 |
| THC MASS GRAMS | .13 |
| CO MASS GRAMS | .51 |
| CO2 MASS GRAMS | 840.3 |
| NOX MASS GRAMS | 2.34 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .941) |
| SCF, WET (DRY) | 1.000 ( .977) |
| VOL (SCM) | 90.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.00 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC3-1 |
| BAROMETER, | MM HG | 743.0 |
| HUMIDITY, | G/KG | 8.1 |
| TEMPERATURE, | DEG C | 24.4 |
| CARBON DIOXIDE, | G/MI | 168.1 |
| FUEL ECONOMY, | MPG | 26.7 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .10 |
| OXIDES OF NITROGEN, | G/MI | .47 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AASC3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 743.20 MM HG(29.26 IN HG)
RELATIVE HUMIDITY 54. PCT

VEHICLE NO.
DATE 4/19/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 9.5 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90650. KM( 56327. MILES)

NOX HUMIDITY CORRECTION FACTOR .96

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 754.4 (29.7) |
| BLOWER INLET P MM. H2O(IN. H2O) | 754.4 (29.7) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48099. |
| TOT FLOW STD. CU. METRES(SCF) | 89.9 ( 3173.) |
| THC SAMPLE METER/RANGE/PPM | 10.7/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 8.7/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 3.4/ 12/ 3. |
| CO BCKGRD METER/RANGE/PPM | 3.4/ 12/ 3. |
| CO2 SAMPLE METER/RANGE/PCT | 63.8/ 1/1.1729 |
| CO2 BCKGRD METER/RANGE/PCT | 3.1/ 1/ .0547 |
| NOX SAMPLE METER/RANGE/PPM | 55.0/ 2/ 55.0 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 10.21 |
| THC CONCENTRATION PPM | 3. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1236 |
| NOX CONCENTRATION PPM | 54.7 |
| THC MASS GRAMS | .32 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1848.6 |
| NOX MASS GRAMS | 9.05 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .902 ( .886) |
| SCF, WET (DRY) | 1.000 ( .962) |
| VOL (SCM) | 89.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.10 |

| | | |
|---|---|---|
| TEST NUMBER, | | AASC3-1 |
| BAROMETER, | MM HG | 743.2 |
| HUMIDITY, | G/KG | 9.5 |
| TEMPERATURE, | DEG C | 22.8 |
| CARBON DIOXIDE, | G/MI | 203.2 |
| FUEL ECONOMY, | MPG | 22.1 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .99 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSC2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/20/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90675. KM( 56343. MILES)

BAROMETER 743.46 MM HG(29.27 IN HG)
RELATIVE HUMIDITY 64. PCT
BAG RESULTS

DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)
ABS. HUMIDITY 10.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.00

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 40.6 (105.0) | 42.2 (108.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40608. | 69792. | 40443. | 69781. |
| TOT FLOW STD. CU. METRES(SCF) | 76.0 ( 2682.) | 131.1 ( 4629.) | 75.7 ( 2673.) | 131.1 ( 4628.) |
| THC SAMPLE METER/RANGE/PPM | 86.5/ 2/ 87. | 10.7/ 2/ 11. | 14.4/ 2/ 15. | 10.7/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.8/ 2/ 10. | 10.5/ 2/ 11. | 10.0/ 2/ 10. | 10.3/ 2/ 11. |
| CO SAMPLE METER/RANGE/PPM | 67.5/ 1/ 622. | 5.3/ 12/ 5. | 48.6/ 13/ 113. | 2.3/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .0/ 1/ 0. | .7/ 12/ 1. | .5/ 13/ 1. | 1.3/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 93.2/ 14/ .9482 | 73.8/ 14/ .5555 | 85.4/ 14/ .7639 | 71.2/ 14/ .5166 |
| CO2 BCKGRD METER/RANGE/PCT | 13.3/ 14/ .0450 | 13.5/ 14/ .0458 | 13.9/ 14/ .0474 | 13.9/ 14/ .0474 |
| NOX SAMPLE METER/RANGE/PPM | 40.9/ 1/ 10.3 | 19.3/ 1/ 4.9 | 50.3/ 1/ 12.6 | 22.7/ 1/ 5.8 |
| NOX BCKGRD METER/RANGE/PPM | .8/ 1/ .2 | .9/ 1/ .2 | .8/ 1/ .2 | .8/ 1/ .2 |
| DILUTION FACTOR | 11.80 | 21.53 | 15.45 | 23.16 |
| THC CONCENTRATION PPM | 78. | 1. | 5. | 1. |
| CO CONCENTRATION PPM | 593. | 4. | 108. | 1. |
| CO2 CONCENTRATION PCT | .9070 | .5118 | .7195 | .4713 |
| NOX CONCENTRATION PPM | 10.1 | 4.7 | 12.4 | 5.6 |
| THC MASS GRAMS | 7.18 | .11 | .47 | .14 |
| CO MASS GRAMS | 52.41 | .68 | 9.48 | .15 |
| CO2 MASS GRAMS | 1261.4 | 1228.3 | 997.4 | 1131.0 |
| NOX MASS GRAMS | 1.46 | 1.18 | 1.79 | 1.39 |
| THC GRAMS/MI | 2.01 | .03 | .13 | .04 |
| CO GRAMS/MI | 14.64 | .18 | 2.64 | .04 |
| CO2 GRAMS/MI | 352.4 | 316.4 | 278.1 | 294.2 |
| NOX GRAMS/MI | .41 | .30 | .50 | .36 |
| FUEL ECONOMY IN MPG | 11.87 12.97 | 14.19 | 15.91 15.57 | 15.27 |
| RUN TIME SECONDS | 505. | 869. | 505. | 868. |
| MEASURED DISTANCE MI | 3.58 7.46 | 3.88 | 3.59 7.43 | 3.84 |
| SCF, DRY | .962 .967 | .969 | .965 .968 | .970 |
| DFC, WET (DRY) | .940( .920) | | .949( .929) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 207.0/ .00 | | 206.8/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | ANSC2-1 |
| BAROMETER | MM HG | 743.5 |
| HUMIDITY | G/KG | 10.7 |
| TEMPERATURE | DEG C | 21.7 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 313.3 | ( 306.7) |
| FUEL ECONOMY | MPG | 14.04 | ( 14.34) |
| HYDROCARBONS (THC) | G/MI | .46 | ( .47) |
| CARBON MONOXIDE | G/MI | 3.84 | ( 3.80) |
| OXIDES OF NITROGEN | G/MI | .38 | ( .40) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. ANSC2-1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 4/20/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 90701. KM( 56359. MILES) |
| | CVS NO. 2 | |
| BAROMETER 743.97 MM HG(29.29 IN HG) | DRY BULB TEMP. 22.8 DEG C(73.0 DEG F) | |
| RELATIVE HUMIDITY 58. PCT | ABS. HUMIDITY 10.2 GM/KG | NOX HUMIDITY CORRECTION FACTOR .98 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 48114. |
| TOT FLOW STD. CU. METRES(SCF) | 90.4 ( 3193.) |
| THC SAMPLE METER/RANGE/PPM | 10.8/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 10.0/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .9/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .7/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 72.4/ 14/ .5342 |
| CO2 BCKGRD METER/RANGE/PCT | 13.8/ 14/ .0470 |
| NOX SAMPLE METER/RANGE/PPM | 32.2/ 2/ 32.2 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 2/ .4 |
| DILUTION FACTOR | 22.40 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4894 |
| NOX CONCENTRATION PPM | 31.9 |
| THC MASS GRAMS | .14 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 810.2 |
| NOX MASS GRAMS | 5.42 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .938) |
| SCF, WET (DRY) | 1.000 ( .972) |
| VOL (SCM) | 90.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.00 |
| TEST NUMBER, | ANSC2-1 |
| BAROMETER, MM HG | 744.0 |
| HUMIDITY, G/KG | 10.2 |
| TEMPERATURE, DEG C | 22.8 |
| CARBON DIOXIDE, G/MI | 162.2 |
| FUEL ECONOMY, MPG | 27.7 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | 1.08 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. ANSC2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 743.97 MM HG(29.29 IN HG)
RELATIVE HUMIDITY 58. PCT
BAG RESULTS

VEHICLE NO.
DATE 4/20/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.2 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90711. KM( 56365. MILES)

NOX HUMIDITY CORRECTION FACTOR .98

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48094. |
| TOT FLOW STD. CU. METRES(SCF) | 89.9 ( 3176.) |
| THC SAMPLE METER/RANGE/PPM | 10.7/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.9/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .7/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .5/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 65.6/ 1/1.2067 |
| CO2 BCKGRD METER/RANGE/PCT | 2.5/ 1/ .0441 |
| NOX SAMPLE METER/RANGE/PPM | 41.1/ 2/ 41.1 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 2/ .5 |
| DILUTION FACTOR | 9.93 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1671 |
| NOX CONCENTRATION PPM | 40.7 |
| THC MASS GRAMS | .20 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1921.6 |
| NOX MASS GRAMS | 6.87 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .899 ( .883) |
| SCF, WET (DRY) | 1.000 ( .960) |
| VOL (SCM) | 89.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.14 |

| | | |
|---|---|---|
| TEST NUMBER, | | ANSC2-1 |
| BAROMETER, | MM HG | 744.0 |
| HUMIDITY, | G/KG | 10.2 |
| TEMPERATURE, | DEG C | 22.8 |
| CARBON DIOXIDE, | G/MI | 210.2 |
| FUEL ECONOMY, | MPG | 21.4 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .75 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AJMM1-1 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 3/29/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 90146. KM( 56014. MILES) |
| | CVS NO. 2 | |
| BAROMETER 737.36 MM HG(29.03 IN HG) | DRY BULB TEMP. 26.7 DEG C(80.0 DEG F) | |
| RELATIVE HUMIDITY 38. PCT | ABS. HUMIDITY 8.6 GM/KG | NOX HUMIDITY CORRECTION FACTOR .94 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48153. |
| TOT FLOW STD. CU. METRES(SCF) | 89.5 ( 3161.) |
| THC SAMPLE METER/RANGE/PPM | 6.8/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.6/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .3/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.9/ 14/ .5417 |
| CO2 BCKGRD METER/RANGE/PCT | 11.6/ 14/ .0384 |
| NOX SAMPLE METER/RANGE/PPM | 40.2/ 1/ 10.1 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 22.11 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5051 |
| NOX CONCENTRATION PPM | 10.0 |
| THC MASS GRAMS | .06 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 827.7 |
| NOX MASS GRAMS | 1.60 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .943) |
| SCF, WET (DRY) | 1.000 ( .978) |
| VOL (SCM) | 89.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.06 |
| TEST NUMBER, | AJMM1-1 |
| BAROMETER, MM HG | 737.4 |
| HUMIDITY, G/KG | 8.6 |
| TEMPERATURE, DEG C | 26.7 |
| CARBON DIOXIDE, G/MI | 163.7 |
| FUEL ECONOMY, MPG | 27.4 |
| HYDROCARBONS, (THC) G/MI | .01 |
| CARBON MONOXIDE, G/MI | .01 |
| OXIDES OF NITROGEN, G/MI | .32 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM1-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 737.36 MM HG(29.03 IN HG)
RELATIVE HUMIDITY 39. PCT
BAG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/29/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 8.0 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90155. KM( 56020. MILES)

NOX HUMIDITY CORRECTION FACTOR .92

| | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 48142. |
| TOT FLOW STD. CU. METRES(SCF) | 89.3 ( 3153.) |
| THC SAMPLE METER/RANGE/PPM | 7.0/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.7/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | .2/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 64.1/ 1/1.1786 |
| CO2 BCKGRD METER/RANGE/PCT | 2.2/ 1/ .0388 |
| NOX SAMPLE METER/RANGE/PPM | 54.5/ 2/ 54.5 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 10.17 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1436 |
| NOX CONCENTRATION PPM | 54.2 |
| THC MASS GRAMS | .11 |
| CO MASS GRAMS | .02 |
| CO2 MASS GRAMS | 1869.9 |
| NOX MASS GRAMS | 8.50 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .902 ( .890) |
| SCF, WET (DRY) | 1.000 ( .966) |
| VOL (SCM) | 89.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.21 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM1-1 |
| BAROMETER, | MM HG | 737.4 |
| HUMIDITY, | G/KG | 8.0 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 203.0 |
| FUEL ECONOMY, | MPG | 22.1 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .92 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM1-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 3/30/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90170. KM( 56029. MILES)

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 34. PCT

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 7.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR .89

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) | 741.7 (29.2) | 736.6 (29.0) | 741.7 (29.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) | 741.7 (29.2) | 736.6 (29.0) | 741.7 (29.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) | 40.0 (104.0) | 42.2 (108.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40592. | 69638. | 40531. | 69536. |
| TOT FLOW STD. CU. METRES(SCF) | 75.4 ( 2664.) | 129.7 ( 4581.) | 75.3 ( 2657.) | 129.4 ( 4569.) |
| THC SAMPLE METER/RANGE/PPM | 39.9/ 2/ 40. | 7.7/ 2/ 8. | 8.0/ 2/ 8. | 7.6/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 8.0/ 2/ 8. | 8.1/ 2/ 8. | 7.5/ 2/ 8. | 8.0/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 80.8/ 14/ 391. | 20.9/ 12/ 21. | 34.1/ 12/ 34. | 6.8/ 12/ 7. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .5/ 12/ 1. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 92.8/ 14/ .9376 | 73.3/ 14/ .5478 | 84.9/ 14/ .7535 | 71.0/ 14/ .5137 |
| CO2 BCKGRD METER/RANGE/PCT | 13.0/ 14/ .0438 | 12.7/ 14/ .0426 | 12.4/ 14/ .0415 | 12.3/ 14/ .0411 |
| NOX SAMPLE METER/RANGE/PPM | 47.5/ 1/ 11.9 | 21.0/ 1/ 5.4 | 57.0/ 1/ 14.3 | 22.3/ 1/ 5.7 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 | .4/ 1/ .1 | .4/ 1/ .1 | .5/ 1/ .1 |
| DILUTION FACTOR | 12.25 | 21.78 | 15.83 | 23.28 |
| THC CONCENTRATION PPM | 33. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 377. | 20. | 32. | 7. |
| CO2 CONCENTRATION PCT | .8973 | .5071 | .7146 | .4744 |
| NOX CONCENTRATION PPM | 11.8 | 5.3 | 14.2 | 5.5 |
| THC MASS GRAMS | 3.01 | .00 | .09 | .00 |
| CO MASS GRAMS | 33.07 | 2.97 | 2.84 | 1.00 |
| CO2 MASS GRAMS | 1239.5 | 1204.6 | 984.6 | 1124.0 |
| NOX MASS GRAMS | 1.52 | 1.17 | 1.83 | 1.23 |
| THC GRAMS/MI | .84 | .00 | .03 | .00 |
| CO GRAMS/MI | 9.22 | .76 | .80 | .26 |
| CO2 GRAMS/MI | 345.5 | 310.6 | 275.7 | 291.0 |
| NOX GRAMS/MI | .42 | .30 | .51 | .32 |
| FUEL ECONOMY IN MPG | 12.44 13.39 | 14.41 | 16.22 15.79 | 15.42 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.59 7.47 | 3.88 | 3.57 7.43 | 3.86 |
| SCF, DRY | .972 .977 | .979 | .975 .978 | .980 |
| DFC, WET (DRY) | .941( .931) | | .950( .939) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.2/ .00 | | 204.7/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMM1-2 |
| BAROMETER | MM HG | 736.6 |
| HUMIDITY | G/KG | 7.1 |
| TEMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 308.3 | ( 302.4) |
| FUEL ECONOMY | MPG | 14.38 | ( 14.66) |
| HYDROCARBONS (THC) | G/MI | .18 | ( .1 |
| CARBON MONOXIDE | G/MI | 2.52 | ( 2.37) |
| OXIDES OF NITROGEN | G/MI | .38 | ( .39) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM1-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 33. PCT
BAG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 3/30/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 6.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90196. KM( 56045. MILES)

NOX HUMIDITY CORRECTION FACTOR .88

| | 30 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 731.5 (28.8) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 48144. |
| TOT FLOW STD. CU. METRES(SCF) | 89.5 ( 3162.) |
| THC SAMPLE METER/RANGE/PPM | 6.9/ 2/ 7. |
| THC BCKGRD METER/RANGE/PPM | 6.3/ 2/ 6. |
| CO SAMPLE METER/RANGE/PPM | .4/ 12/ 0. |
| CO BCKGRD METER/RANGE/PPM | .4/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 72.8/ 14/ .5402 |
| CO2 BCKGRD METER/RANGE/PCT | 11.7/ 14/ .0388 |
| NOX SAMPLE METER/RANGE/PPM | 53.3/ 1/ 13.4 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 22.17 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5032 |
| NOX CONCENTRATION PPM | 13.2 |
| THC MASS GRAMS | .10 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 825.0 |
| NOX MASS GRAMS | 2.00 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .945) |
| SCF, WET (DRY) | 1.000 ( .980) |
| VOL (SCM) | 89.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.06 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM1-2 |
| BAROMETER, | MM HG | 736.6 |
| HUMIDITY, | G/KG | 6.7 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 163.1 |
| FUEL ECONOMY, | MPG | 27.5 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .40 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM1-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 31. PCT
BAG RESULTS

VEHICLE NO.
DATE 3/30/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 6.5 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90205. KM( 56051. MILES)

NOX HUMIDITY CORRECTION FACTOR .88

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 754.4 (29.7) |
| BLOWER INLET P MM. H2O(IN. H2O) | 754.4 (29.7) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48126. |
| TOT FLOW STD. CU. METRES(SCF) | 89.0 ( 3144.) |
| THC SAMPLE METER/RANGE/PPM | 7.7/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.7/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | .6/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .6/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 64.5/ 1/1.1861 |
| CO2 BCKGRD METER/RANGE/PCT | 2.1/ 1/ .0370 |
| NOX SAMPLE METER/RANGE/PPM | 54.8/ 2/ 54.8 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 10.10 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1527 |
| NOX CONCENTRATION PPM | 54.5 |
| THC MASS GRAMS | .08 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 1878.9 |
| NOX MASS GRAMS | 8.15 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .901 ( .892) |
| SCF, WET (DRY) | 1.000 ( .969) |
| VOL (SCM) | 89.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.21 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM1-2 |
| BAROMETER, | MM HG | 736.6 |
| HUMIDITY, | G/KG | 6.5 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 204.1 |
| FUEL ECONOMY, | MPG | 22.0 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .88 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/ 3/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90238. KM( 56071. MILES)

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 77. PCT

DRY BULB TEMP. 22.2 DEG C(72.0 DEG F)
ABS. HUMIDITY 13.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.10

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 739.1 (29.1) | 739.1 (29.1) | 736.6 (29.0) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 739.1 (29.1) | 739.1 (29.1) | 736.6 (29.0) | 739.1 (29.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 41.1 (106.0) | 42.8 (109.0) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 40600. | 69631. | 40558. | 69540. |
| TOT FLOW STD. CU. METRES(SCF) | 75.3 ( 2658.) | 129.5 ( 4573.) | 75.2 ( 2656.) | 129.2 ( 4562.) |
| THC SAMPLE METER/RANGE/PPM | 43.4/ 2/ 44. | 8.6/ 2/ 9. | 9.3/ 2/ 10. | 9.4/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 8.6/ 2/ 9. | 8.6/ 2/ 9. | 9.1/ 2/ 9. | 9.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 92.5/ 14/ 460. | 13.4/ 12/ 13. | 60.0/ 12/ 59. | 8.1/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .2/ 14/ 1. | 1.0/ 12/ 1. | 1.3/ 12/ 1. | 1.3/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 92.6/ 14/ .9323 | 74.5/ 14/ .5663 | 86.4/ 14/ .7851 | 71.7/ 14/ .5239 |
| CO2 BCKGRD METER/RANGE/PCT | 12.8/ 14/ .0430 | 12.8/ 14/ .0430 | 13.0/ 14/ .0438 | 13.1/ 14/ .0442 |
| NOX SAMPLE METER/RANGE/PPM | 46.3/ 1/ 11.6 | 20.0/ 1/ 5.1 | 53.2/ 1/ 13.3 | 23.3/ 1/ 5.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 | .0/ 1/ .0 | .0/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 12.23 | 21.10 | 15.15 | 22.82 |
| THC CONCENTRATION PPM | 36. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 436. | 12. | 55. | 7. |
| CO2 CONCENTRATION PCT | .8928 | .5254 | .7442 | .4816 |
| NOX CONCENTRATION PPM | 11.5 | 5.1 | 13.3 | 5.9 |
| THC MASS GRAMS | 3.27 | .07 | .08 | .07 |
| CO MASS GRAMS | 38.18 | 1.79 | 4.85 | .99 |
| CO2 MASS GRAMS | 1230.6 | 1245.6 | 1025.0 | 1139.2 |
| NOX MASS GRAMS | 1.82 | 1.39 | 2.11 | 1.61 |
| THC GRAMS/MI | .91 | .02 | .02 | .02 |
| CO GRAMS/MI | 10.62 | .46 | 1.35 | .25 |
| CO2 GRAMS/MI | 342.4 | 321.8 | 285.0 | 293.8 |
| NOX GRAMS/MI | .51 | .36 | .59 | .41 |
| FUEL ECONOMY IN MPG | 12.47 13.18 | 13.93 | 15.65 15.45 | 15.27 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.59 7.47 | 3.87 | 3.60 7.47 | 3.88 |
| SCF, DRY | .958 .962 | .965 | .961 .964 | .966 |
| DFC, WET (DRY) | .940( .916) | | .948( .924) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.8/ .00 | | 204.4/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMM2-1 |
| BAROMETER | MM HG | 736.6 |
| HUMIDITY | G/KG | 13.5 |
| TEMPERATURE | DEG C | 22.2 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 316.0 | ( 307.7) |
| FUEL ECONOMY | MPG | 14.01 | ( 14.39) |
| HYDROCARBONS (THC) | G/MI | .20 | ( .20) |
| CARBON MONOXIDE | G/MI | 2.81 | ( 2.75) |
| OXIDES OF NITROGEN | G/MI | .45 | ( .47) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 736.85 MM HG(29.01 IN HG)
RELATIVE HUMIDITY 74. PCT

VEHICLE NO.
DATE 4/ 3/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 13.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90262. KM( 56086. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.11

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48148. |
| TOT FLOW STD. CU. METRES(SCF) | 89.4 ( 3158.) |
| THC SAMPLE METER/RANGE/PPM | 9.7/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.6/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 1.6/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | 1.6/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 73.5/ 14/ .5509 |
| CO2 BCKGRD METER/RANGE/PCT | 13.2/ 14/ .0446 |
| NOX SAMPLE METER/RANGE/PPM | 30.2/ 1/ 7.6 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 1/ .1 |
| DILUTION FACTOR | 21.73 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .5083 |
| NOX CONCENTRATION PPM | 7.5 |
| THC MASS GRAMS | .06 |
| CO MASS GRAMS | .00 |
| CO2 MASS GRAMS | 832.2 |
| NOX MASS GRAMS | 1.43 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .954 ( .931) |
| SCF, WET (DRY) | 1.000 ( .966) |
| VOL (SCM) | 89.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM2-1 |
| BAROMETER, | MM HG | 736.9 |
| HUMIDITY, | G/KG | 13.7 |
| TEMPERATURE, | DEG C | 23.3 |
| CARBON DIOXIDE, | G/MI | 165.5 |
| FUEL ECONOMY, | MPG | 27.1 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .28 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM2-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 736.85 MM HG(29.01 IN HG)
RELATIVE HUMIDITY 56. PCT
BAG RESULTS

VEHICLE NO.
DATE 4/ 3/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 11.0 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90273. KM( 56093. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.01

| TEST CYCLE | 55 MPH |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48102. |
| TOT FLOW STD. CU. METRES(SCF) | 89.1 ( 3146.) |
| THC SAMPLE METER/RANGE/PPM | 9.7/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 9.7/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 1.2/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .8/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 66.4/ 1/1.2217 |
| CO2 BCKGRD METER/RANGE/PCT | 2.6/ 1/ .0459 |
| NOX SAMPLE METER/RANGE/PPM | 42.5/ 2/ 42.5 |
| NOX BCKGRD METER/RANGE/PPM | .2/ 2/ .2 |
| DILUTION FACTOR | 9.81 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1805 |
| NOX CONCENTRATION PPM | 42.3 |
| THC MASS GRAMS | .11 |
| CO MASS GRAMS | .05 |
| CO2 MASS GRAMS | 1925.4 |
| NOX MASS GRAMS | 7.28 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .898 ( .882) |
| SCF, WET (DRY) | 1.000 ( .960) |
| VOL (SCM) | 89.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM2-1 |
| BAROMETER, | MM HG | 736.9 |
| HUMIDITY, | G/KG | 11.0 |
| TEMPERATURE, | DEG C | 24.4 |
| CARBON DIOXIDE, | G/MI | 209.4 |
| FUEL ECONOMY, | MPG | 21.5 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .79 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM2-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/ 4/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90287. KM( 56102. MILES)

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 52. PCT

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 10.3 GM/KG

NOX HUMIDITY CORRECTION FACTOR .99

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 41.1 (106.0) | 42.2 (108.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40512. | 69633. | 40444. | 69550. |
| TOT FLOW STD. CU. METRES(SCF) | 74.7 ( 2639.) | 128.8 ( 4549.) | 74.7 ( 2637.) | 128.7 ( 4543.) |
| THC SAMPLE METER/RANGE/PPM | 65.4/ 2/ 66. | 8.5/ 2/ 9. | 8.4/ 2/ 9. | 8.5/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 12.2/ 2/ 12. | 8.8/ 2/ 9. | 8.3/ 2/ 9. | 8.8/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 60.4/ 1/ 538. | 11.7/ 12/ 12. | 42.2/ 12/ 42. | 8.3/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .3/ 1/ 2. | .5/ 12/ 1. | 1.5/ 12/ 2. | 1.5/ 12/ 2. |
| CO2 SAMPLE METER/RANGE/PCT | 92.7/ 14/ .9349 | 74.7/ 14/ .5695 | 86.4/ 14/ .7851 | 71.9/ 14/ .5268 |
| CO2 BCKGRD METER/RANGE/PCT | 13.2/ 14/ .0446 | 13.2/ 14/ .0446 | 13.1/ 14/ .0442 | 13.0/ 14/ .0438 |
| NOX SAMPLE METER/RANGE/PPM | 53.0/ 1/ 13.3 | 21.9/ 1/ 5.6 | 58.6/ 1/ 14.7 | 23.8/ 1/ 6.0 |
| NOX BCKGRD METER/RANGE/PPM | .4/ 1/ .1 | .7/ 1/ .2 | .6/ 1/ .2 | .6/ 1/ .2 |
| DILUTION FACTOR | 12.08 | 20.99 | 15.18 | 22.69 |
| THC CONCENTRATION PPM | 54. | 0. | 1. | 0. |
| CO CONCENTRATION PPM | 513. | 11. | 39. | 7. |
| CO2 CONCENTRATION PCT | .8940 | .5270 | .7438 | .4850 |
| NOX CONCENTRATION PPM | 13.2 | 5.4 | 14.5 | 5.9 |
| THC MASS GRAMS | 4.94 | .02 | .06 | .01 |
| CO MASS GRAMS | 44.65 | 1.62 | 3.35 | .39 |
| CO2 MASS GRAMS | 1223.2 | 1243.1 | 1016.9 | 1142.4 |
| NOX MASS GRAMS | 1.86 | 1.31 | 2.05 | 1.43 |
| THC GRAMS/MI | 1.37 | .01 | .02 | .00 |
| CO GRAMS/MI | 12.39 | .42 | .93 | .26 |
| CO2 GRAMS/MI | 339.4 | 319.0 | 283.5 | 296.3 |
| NOX GRAMS/MI | .52 | .34 | .57 | .37 |
| FUEL ECONOMY IN MPG | 12.45 13.24 | 14.06 | 15.77 15.44 | 15.15 |
| RUN TIME SECONDS | 504. | 868. | 504. | 868. |
| MEASURED DISTANCE MI | 3.60 7.50 | 3.90 | 3.59 7.44 | 3.86 |
| SCF, DRY | .966 .971 | .973 | .969 .972 | .974 |
| DFC, WET (DRY) | .939( .924) | | .948( .932) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 203.6/ .00 | | 203.3/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMM2-2 |
| BAROMETER | MM HG | 736.6 |
| HUMIDITY | G/KG | 10.3 |
| TEMPERATURE | DEG C | 24.4 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 313.5 | ( 306.7) |
| FUEL ECONOMY | MPG | 14.10 | ( 14.41) |
| HYDROCARBONS (THC) | G/MI | .29 | ( .2 |
| CARBON MONOXIDE | G/MI | 3.03 | ( 2.98) |
| OXIDES OF NITROGEN | G/MI | .44 | ( .45) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM2-2 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

BAROMETER 738.38 MM HG(29.07 IN HG)
RELATIVE HUMIDITY 46. PCT
BAG RESULTS
TEST CYCLE

VEHICLE NO.
DATE 4/ 4/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 9.3 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90312. KM( 56117. MILES)

NOX HUMIDITY CORRECTION FACTOR .96

30 MPH

| | |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 48130. |
| TOT FLOW STD. CU. METRES(SCF) | 89.3 ( 3152.) |
| THC SAMPLE METER/RANGE/PPM | 7.6/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 7.7/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 1.5/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | 1.0/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 72.9/ 14/ .5417 |
| CO2 BCKGRD METER/RANGE/PCT | 12.4/ 14/ .0415 |
| NOX SAMPLE METER/RANGE/PPM | 41.9/ 1/ 10.5 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 22.10 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .5022 |
| NOX CONCENTRATION PPM | 10.4 |
| THC MASS GRAMS | .03 |
| CO MASS GRAMS | .05 |
| CO2 MASS GRAMS | 820.7 |
| NOX MASS GRAMS | 1.70 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .941) |
| SCF, WET (DRY) | 1.000 ( .975) |
| VOL (SCM) | 89.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM2-2 |
| BAROMETER, | MM HG | 738.4 |
| HUMIDITY, | G/KG | 9.3 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 163.1 |
| FUEL ECONOMY, | MPG | 27.5 |
| HYDROCARBONS, (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN, | G/MI | .34 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

| | | |
|---|---|---|
| TEST NO. AJMM2-2 RUN 1 | VEHICLE NO. | TEST WEIGHT 1134. KG( 2500. LBS) |
| VEHICLE MODEL 0 FORD ESCORT | DATE 4/ 4/89 | ACTUAL ROAD LOAD 4.8 KW( 6.5 HP) |
| ENGINE 1.6 L( 98. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-835-F |
| TRANSMISSION A3 | DYNO NO. 3 | ODOMETER 90323. KM( 56124. MILES) |
| | CVS NO. 2 | |
| BAROMETER 738.38 MM HG(29.07 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| RELATIVE HUMIDITY 46. PCT | ABS. HUMIDITY 9.3 GM/KG | NOX HUMIDITY CORRECTION FACTOR .96 |

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48099. |
| TOT FLOW STD. CU. METRES(SCF) | 89.1 ( 3147.) |
| THC SAMPLE METER/RANGE/PPM | 7.4/ 2/ 8. |
| THC BCKGRD METER/RANGE/PPM | 6.8/ 2/ 7. |
| CO SAMPLE METER/RANGE/PPM | 2.4/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .6/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 65.2/ 1/1.1992 |
| CO2 BCKGRD METER/RANGE/PCT | 2.4/ 1/ .0423 |
| NOX SAMPLE METER/RANGE/PPM | 46.4/ 2/ 46.4 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 9.99 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | 1.1611 |
| NOX CONCENTRATION PPM | 46.1 |
| THC MASS GRAMS | .14 |
| CO MASS GRAMS | .18 |
| CO2 MASS GRAMS | 1894.4 |
| NOX MASS GRAMS | 7.52 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .900 ( .887) |
| SCF, WET (DRY) | 1.000 ( .964) |
| VOL (SCM) | 89.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.19 |
| TEST NUMBER, | AJMM2-2 |
| BAROMETER, MM HG | 738.4 |
| HUMIDITY, G/KG | 9.3 |
| TEMPERATURE, DEG C | 25.0 |
| CARBON DIOXIDE, G/MI | 206.1 |
| FUEL ECONOMY, MPG | 21.8 |
| HYDROCARBONS, (THC) G/MI | .02 |
| CARBON MONOXIDE, G/MI | .02 |
| OXIDES OF NITROGEN, G/MI | .82 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

VEHICLE NO.
DATE 4/25/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90759. KM( 56395. MILES)

BAROMETER 739.39 MM HG(29.11 IN HG)
RELATIVE HUMIDITY 61. PCT
BAG RESULTS

DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 11.0 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.01

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 734.1 (28.9) | 739.1 (29.1) | 734.1 (28.9) | 739.1 (29.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 731.5 (28.8) | 739.1 (29.1) | 734.1 (28.9) | 739.1 (29.1) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 40.6 (105.0) | 42.2 (108.0) | 40.0 (104.0) |
| BLOWER REVOLUTIONS | 40524. | 69524. | 40450. | 69509. |
| TOT FLOW STD. CU. METRES(SCF) | 75.5 ( 2664.) | 130.0 ( 4589.) | 75.4 ( 2664.) | 130.1 ( 4593.) |
| THC SAMPLE METER/RANGE/PPM | 79.5/ 2/ 80. | 12.1/ 2/ 12. | 20.9/ 2/ 21. | 12.9/ 2/ 13. |
| THC BCKGRD METER/RANGE/PPM | 12.1/ 2/ 12. | 12.1/ 2/ 12. | 10.5/ 2/ 11. | 11.5/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | 73.7/ 1/ 700. | 6.4/ 12/ 6. | 80.2/ 12/ 80. | 8.0/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .6/ 1/ 4. | 3.7/ 12/ 4. | 3.8/ 12/ 4. | 4.7/ 12/ 5. |
| CO2 SAMPLE METER/RANGE/PCT | 90.5/ 14/ .8792 | 72.0/ 14/ .5283 | 84.0/ 14/ .7351 | 70.8/ 14/ .5108 |
| CO2 BCKGRD METER/RANGE/PCT | 14.0/ 14/ .0478 | 14.2/ 14/ .0486 | 14.3/ 14/ .0490 | 14.6/ 14/ .0502 |
| NOX SAMPLE METER/RANGE/PPM | 48.0/ 1/ 12.0 | 19.5/ 1/ 5.0 | 57.4/ 1/ 14.4 | 23.9/ 1/ 6.1 |
| NOX BCKGRD METER/RANGE/PPM | .9/ 1/ .2 | 1.1/ 1/ .3 | 1.1/ 1/ .3 | 1.2/ 1/ .3 |
| DILUTION FACTOR | 12.57 | 22.62 | 16.10 | 23.38 |
| THC CONCENTRATION PPM | 68. | 1. | 11. | 2. |
| CO CONCENTRATION PPM | 665. | 3. | 73. | 3. |
| CO2 CONCENTRATION PCT | .8352 | .4819 | .6891 | .4628 |
| NOX CONCENTRATION PPM | 11.8 | 4.7 | 14.1 | 5.8 |
| THC MASS GRAMS | 6.29 | .09 | 1.03 | .30 |
| CO MASS GRAMS | 58.41 | .41 | 6.45 | .50 |
| CO2 MASS GRAMS | 1153.8 | 1146.6 | 951.8 | 1102.1 |
| NOX MASS GRAMS | 1.72 | 1.18 | 2.05 | 1.45 |
| THC GRAMS/MI | 1.74 | .02 | .28 | .08 |
| CO GRAMS/MI | 16.15 | .10 | 1.76 | .13 |
| CO2 GRAMS/MI | 319.0 | 293.2 | 260.4 | 282.0 |
| NOX GRAMS/MI | .48 | .30 | .56 | .37 |
| FUEL ECONOMY IN MPG | 12.95 14.08 | 15.31 | 17.04 16.44 | 15.92 |
| RUN TIME SECONDS | 505. | 867. | 505. | 868. |
| MEASURED DISTANCE MI | 3.62 7.53 | 3.91 | 3.65 7.56 | 3.91 |
| SCF, DRY | .964 .968 | .971 | .967 .969 | .971 |
| DFC, WET (DRY) | .943( .924) | | .950( .931) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.4/ .00 | | 205.5/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | AJMM3-1 |
| BAROMETER | MM HG | 739.4 |
| HUMIDITY | G/KG | 11.0 |
| TEMPERATURE | DEG C | 22.8 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 289.5 | ( 286.2) |
| FUEL ECONOMY | MPG | 15.16 | ( 15.33) |
| HYDROCARBONS (THC) | G/MI | .45 | ( .46) |
| CARBON MONOXIDE | G/MI | 3.88 | ( 3.88) |
| OXIDES OF NITROGEN | G/MI | .41 | ( .43) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
30 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

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

VEHICLE NO.
DATE 4/25/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
ABS. HUMIDITY 10.3 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90785. KM( 56411. MILES)

NOX HUMIDITY CORRECTION FACTOR .99

| | |
|---|---|
| TEST CYCLE | 30 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 736.6 (29.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 48080. |
| TOT FLOW STD. CU. METRES(SCF) | 89.8 ( 3172.) |
| THC SAMPLE METER/RANGE/PPM | 12.5/ 2/ 13. |
| THC BCKGRD METER/RANGE/PPM | 10.1/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 3.7/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | 3.7/ 12/ 4. |
| CO2 SAMPLE METER/RANGE/PCT | 72.9/ 14/ .5417 |
| CO2 BCKGRD METER/RANGE/PCT | 14.4/ 14/ .0494 |
| NOX SAMPLE METER/RANGE/PPM | 69.8/ 1/ 17.5 |
| NOX BCKGRD METER/RANGE/PPM | 1.1/ 1/ .3 |
| DILUTION FACTOR | 22.07 |
| THC CONCENTRATION PPM | 3. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | .4946 |
| NOX CONCENTRATION PPM | 17.2 |
| THC MASS GRAMS | .32 |
| CO MASS GRAMS | .01 |
| CO2 MASS GRAMS | 813.3 |
| NOX MASS GRAMS | 2.91 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .955 ( .937) |
| SCF, WET (DRY) | 1.000 ( .972) |
| VOL (SCM) | 89.8 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 5.03 |
| TEST NUMBER, | AJMM3-1 |
| BAROMETER, MM HG | 739.4 |
| HUMIDITY, G/KG | 10.3 |
| TEMPERATURE, DEG C | 22.8 |
| CARBON DIOXIDE, G/MI | 161.8 |
| FUEL ECONOMY, MPG | 27.8 |
| HYDROCARBONS, (THC) G/MI | .06 |
| CARBON MONOXIDE, G/MI | .00 |
| OXIDES OF NITROGEN, G/MI | .58 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
55 MPH- VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. AJMM3-1 RUN 1
VEHICLE MODEL 0 FORD ESCORT
ENGINE 1.6 L( 98. CID) L-4
TRANSMISSION A3

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

VEHICLE NO.
DATE 4/25/89
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
ABS. HUMIDITY 10.7 GM/KG

TEST WEIGHT 1134. KG( 2500. LBS)
ACTUAL ROAD LOAD 4.8 KW( 6.5 HP)
GASOLINE EM-835-F
ODOMETER 90796. KM( 56418. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.00

BAG RESULTS

| | |
|---|---|
| TEST CYCLE | 55 MPH |
| BLOWER DIF P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 741.7 (29.2) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 48091. |
| TOT FLOW STD. CU. METRES(SCF) | 89.5 ( 3160.) |
| THC SAMPLE METER/RANGE/PPM | 12.5/ 2/ 13. |
| THC BCKGRD METER/RANGE/PPM | 11.5/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | 4.3/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | 4.3/ 12/ 4. |
| CO2 SAMPLE METER/RANGE/PCT | 65.4/ 1/1.2030 |
| CO2 BCKGRD METER/RANGE/PCT | 2.8/ 1/ .0494 |
| NOX SAMPLE METER/RANGE/PPM | 45.6/ 2/ 45.6 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 |
| DILUTION FACTOR | 9.96 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 0. |
| CO2 CONCENTRATION PCT | 1.1585 |
| NOX CONCENTRATION PPM | 45.3 |
| THC MASS GRAMS | .24 |
| CO MASS GRAMS | .03 |
| CO2 MASS GRAMS | 1898.4 |
| NOX MASS GRAMS | 7.76 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .900 ( .883) |
| SCF, WET (DRY) | 1.000 ( .960) |
| VOL (SCM) | 89.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 9.21 |

| | | |
|---|---|---|
| TEST NUMBER, | | AJMM3-1 |
| BAROMETER, | MM HG | 739.4 |
| HUMIDITY, | G/KG | 10.7 |
| TEMPERATURE, | DEG C | 23.3 |
| CARBON DIOXIDE, | G/MI | 206.1 |
| FUEL ECONOMY, | MPG | 21.8 |
| HYDROCARBONS, (THC) | G/MI | .03 |
| CARBON MONOXIDE, | G/MI | .00 |
| OXIDES OF NITROGEN, | G/MI | .84 |

# APPENDIX B

## COMPUTER PRINTOUT OF TOYOTA CAMRY ENGINE-OUT EMISSIONS FOR M85

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - FUEL BLEND-
PROJECT 08-2346-001

TEST NO. B2TBL RUN 2
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

VEHICLE NO. 311
DATE 11/21/89
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-954-F
ODOMETER 36514. KM( 22689. MILES)

BAROMETER 741.43 MM HG(29.19 IN HG)
RELATIVE HUMIDITY 45. PCT

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

NOX HUMIDITY CORRECTION FACTOR .95

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 713.7 (28.1) | 716.3 (28.2) | 711.2 (28.0) | 711.2 (28.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 711.2 (28.0) | 713.7 (28.1) | 711.2 (28.0) | 711.2 (28.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) | 40.6 (105.0) | 41.1 (106.0) | 40.0 (104.0) |
| BLOWER REVOLUTIONS | 40532. | 69605. | 40526. | 69542. |
| TOT FLOW STD. CU. METRES(SCF) | 76.1 ( 2686.) | 131.0 ( 4625.) | 76.2 ( 2691.) | 131.1 ( 4628.) |
| THC SAMPLE METER/RANGE/PPM | 13.2/ 3/ 133. | 73.0/ 2/ 73. | 90.5/ 2/ 91. | 70.2/ 2/ 71. |
| THC BCKGRD METER/RANGE/PPM | 2.4/ 3/ 24. | 17.3/ 2/ 18. | 13.6/ 2/ 14. | 15.2/ 2/ 16. |
| CO SAMPLE METER/RANGE/PPM | 66.3/ 1/ 608. | 53.2/ 14/ 238. | 61.2/ 14/ 281. | 54.4/ 14/ 245. |
| CO BCKGRD METER/RANGE/PPM | .4/ 1/ 3. | .4/ 14/ 2. | .3/ 14/ 1. | .3/ 14/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 83.8/ 14/ .7311 | 67.9/ 14/ .4706 | 80.4/ 14/ .6661 | 67.8/ 14/ .4693 |
| CO2 BCKGRD METER/RANGE/PCT | 13.1/ 14/ .0442 | 12.9/ 14/ .0434 | 12.8/ 14/ .0430 | 12.7/ 14/ .0426 |
| NOX SAMPLE METER/RANGE/PPM | 60.3/ 2/ 60.3 | 33.0/ 2/ 33.0 | 55.9/ 2/ 55.9 | 33.9/ 2/ 33.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 2/ .5 | .5/ 2/ .5 | .2/ 2/ .2 | .3/ 2/ .3 |
| DILUTION FACTOR | 14.99 | 24.01 | 17.13 | 24.06 |
| THC CONCENTRATION PPM | 110. | 56. | 78. | 56. |
| CO CONCENTRATION PPM | 584. | 230. | 270. | 237. |
| CO2 CONCENTRATION PCT | .6898 | .4290 | .6256 | .4284 |
| NOX CONCENTRATION PPM | 59.8 | 32.6 | 55.7 | 33.6 |
| THC MASS GRAMS | 9.33 | 8.22 | 6.59 | 8.12 |
| CO MASS GRAMS | 51.69 | 35.11 | 23.99 | 36.12 |
| CO2 MASS GRAMS | 960.8 | 1028.9 | 873.1 | 1028.1 |
| NOX MASS GRAMS | 8.25 | 7.74 | 7.70 | 8.00 |
| THC GRAMS/MI | 2.60 | 2.14 | 1.83 | 2.10 |
| CO GRAMS/MI | 14.39 | 9.14 | 6.68 | 9.35 |
| CO2 GRAMS/MI | 267.5 | 267.7 | 243.1 | 266.3 |
| NOX GRAMS/MI | 2.30 | 2.01 | 2.14 | 2.07 |
| FUEL ECONOMY IN MPG | 16.55 16.81 | 17.06 | 18.99 17.97 | 17.13 |
| RUN TIME SECONDS | 505. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.59 7.44 | 3.84 | 3.59 7.45 | 3.86 |
| SCF, DRY | .972 .975 | .977 | .973 .975 | .977 |
| DFC, WET (DRY) | .949( .934) | | .952( .938) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 207.1/ .00 | | 207.3/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2TBL |
| BAROMETER | MM HG | 741.4 |
| HUMIDITY | G/KG | 9.1 |
| TEMPERATURE | DEG C | 23.9 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 260.9 | ( 260.5) |
| FUEL ECONOMY | MPG | 17.43 | ( 17.45) |
| HYDROCARBONS (THC) | G/MI | 2.15 | ( 2.14) |
| CARBON MONOXIDE | G/MI | 9.55 | ( 9.62) |
| OXIDES OF NITROGEN | G/MI | 2.11 | ( 2.13) |

## APPENDIX C

## COMPUTER PRINTOUTS OF TOYOTA CAMRY TASK 2 EMISSION TESTS

| Page C- | Test No. | Fuel | Catalyst | Test Cycle |
|---|---|---|---|---|
| 2 | B2TTCU-01 | M85 | OEM | FTP |
| 3 | B2TTCU-01 | M85 | OEM | HFET |
| 4 | B2TTCU-01 | M85 | OEM | NYCC |
| 5 | B2THCU-01 | M85 | Camet | FTP |
| 6 | B2THCU-01 | M85 | Camet | HFET |
| 7 | B2THCU-01 | M85 | Camet | NYCC |
| 8 | B2THCU-02 | M85 | Camet | FTP |
| 9 | B2THCU-02 | M85 | Camet | HFET |
| 10 | B2THCU-02 | M85 | Camet | NYCC |
| 11 | B2TDCC-01 | M85 | Degussa | FTP |
| 12 | B2TDCC-01 | M85 | Degussa | HFET |
| 13 | B2TDCC-01 | M85 | Degussa | NYCC |
| 14 | B2TDCC-02 | M85 | Degussa | FTP |
| 15 | B2TDCC-02 | M85 | Degussa | HFET |
| 16 | B2TDCC-02 | M85 | Degussa | NYCC |
| 17 | B2TJM2-01 | M85 | JM | FTP |
| 18 | B1TJM2-01 | M85 | JM | HFET |
| 19 | B1TJM2-01 | M85 | JM | NYCC |
| 20 | B2TJM2-02 | M85 | JM | FTP |
| 21 | B2TJM2-02 | M85 | JM | HFET |
| 22 | B2TJM2-02 | M85 | JM | NYCC |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

ST NO. B2TTCU-01 RUN 1
HICLE MODEL 86 TOYOTA CAMRY
GINE 2.0 L(122. CID) L-4
ANSMISSION A3

VEHICLE NO.311
DATE 3/13/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36658. KM( 22778. MILES)

ROMETER 734.06 MM HG(28.90 IN HG)
LATIVE HUMIDITY 56. PCT
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 11.5 GM/KG
NOX HUMIDITY CORRECTION FACTOR 1.03

G RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 782.3 (30.8) | 759.5 (29.9) | 759.5 (29.9) | 759.5 (29.9) |
| BLOWER INLET P MM. H2O(IN. H2O) | 779.8 (30.7) | 756.9 (29.8) | 756.9 (29.8) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 41.7 (107.0) | 42.8 (109.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40457. | 69424. | 40438. | 69362. |
| TOT FLOW STD. CU. METRES(SCF) | 74.2 ( 2620.) | 128.1 ( 4524.) | 74.5 ( 2630.) | 128.1 ( 4525.) |
| THC SAMPLE METER/RANGE/PPM | 79.7/ 2/ 79. | 17.1/ 2/ 17. | 19.9/ 2/ 20. | 19.0/ 2/ 19. |
| THC BCKGRD METER/RANGE/PPM | 16.8/ 2/ 17. | 17.0/ 2/ 17. | 17.6/ 2/ 17. | 18.6/ 2/ 18. |
| CO SAMPLE METER/RANGE/PPM | 66.6/ 14/ 310. | 12.1/ 12/ 12. | 17.0/ 12/ 16. | 16.7/ 12/ 16. |
| CO BCKGRD METER/RANGE/PPM | .3/ 14/ 1. | 1.0/ 12/ 1. | 1.0/ 12/ 1. | .9/ 12/ 1. |
| CO2 SAMPLE METER/RANGE/PCT | 86.0/ 14/ .7765 | 70.5/ 14/ .5066 | 82.6/ 14/ .7075 | 69.9/ 14/ .4981 |
| CO2 BCKGRD METER/RANGE/PCT | 13.4/ 14/ .0454 | 13.3/ 14/ .0450 | 13.4/ 14/ .0454 | 13.5/ 14/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 23.6/ 2/ 23.7 | 17.3/ 1/ 4.4 | 38.0/ 1/ 9.6 | 19.5/ 1/ 5.0 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 2/ .3 | 1.0/ 1/ .3 | .9/ 1/ .2 | .8/ 1/ .2 |
| DILUTION FACTOR | 14.78 | 23.63 | 16.92 | 24.00 |
| THC CONCENTRATION PPM | 63. | 1. | 3. | 1. |
| CO CONCENTRATION PPM | 297. | 10. | 15. | 15. |
| CO2 CONCENTRATION PCT | .7342 | .4635 | .6648 | .4542 |
| NOX CONCENTRATION PPM | 23.4 | 4.2 | 9.3 | 4.8 |
| THC MASS GRAMS | 5.23 | .12 | .27 | .17 |
| CO MASS GRAMS | 25.67 | 1.55 | 1.30 | 2.21 |
| CO2 MASS GRAMS | 997.3 | 1087.2 | 906.5 | 1065.5 |
| NOX MASS GRAMS | 3.41 | 1.05 | 1.37 | 1.20 |
| THC GRAMS/MI | 1.47 | .03 | .08 | .04 |
| CO GRAMS/MI | 7.21 | .41 | .36 | .58 |
| CO2 GRAMS/MI | 280.2 | 284.6 | 253.9 | 277.1 |
| NOX GRAMS/MI | .96 | .28 | .38 | .31 |
| FUEL ECONOMY IN MPG | 16.78 17.04 | 17.29 | 19.37 18.49 | 17.74 |
| RUN TIME SECONDS | 505. | 867. | 505. | 867. |
| MEASURED DISTANCE MI | 3.56 7.38 | 3.82 | 3.57 7.42 | 3.85 |
| SCF, DRY | .969 .972 | .973 | .970 .972 | .973 |
| DFC, WET (DRY) | .948( .931) | | .952( .935) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 202.3/ .00 | | 202.6/ .00 | |

OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2TTCU-01 |
| BAROMETER | MM HG | 734.1 |
| HUMIDITY | G/KG | 11.5 |
| TEMPERATURE | DEG C | 25.0 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 275.2 | ( 273.0) |
| FUEL ECONOMY | MPG | 17.70 | ( 17.83) |
| HYDROCARBONS (THC) | G/MI | .34 | ( .35) |
| CARBON MONOXIDE | G/MI | 1.81 | ( 1.86) |
| OXIDES OF NITROGEN | G/MI | .45 | ( .46) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

:T NO. B2TTCU-01 RUN 1
HICLE MODEL 86 TOYOTA CAMRY
GINE 2.0 L(122. CID) L-4
ANSMISSION A3

ROMETER 733.04 MM HG(28.86 IN HG)
LATIVE HUMIDITY 50. PCT
G RESULTS
TEST CYCLE

VEHICLE NO.311
DATE 3/13/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 10.6 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36680. KM( 22792. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.00

| | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 759.5 (29.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 61224. |
| TOT FLOW STD. CU. METRES(SCF) | 112.4 ( 3970.) |
| THC SAMPLE METER/RANGE/PPM | 19.1/ 2/ 19. |
| THC BCKGRD METER/RANGE/PPM | 17.1/ 2/ 17. |
| CO SAMPLE METER/RANGE/PPM | 6.3/ 12/ 6. |
| CO BCKGRD METER/RANGE/PPM | .5/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.5/ 14/ .9562 |
| CO2 BCKGRD METER/RANGE/PCT | 13.5/ 14/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 35.2/ 1/ 8.9 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| DILUTION FACTOR | 12.55 |
| THC CONCENTRATION PPM | 3. |
| CO CONCENTRATION PPM | 5. |
| CO2 CONCENTRATION PCT | .9141 |
| NOX CONCENTRATION PPM | 8.7 |
| THC MASS GRAMS | .42 |
| CO MASS GRAMS | .70 |
| CO2 MASS GRAMS | 1881.6 |
| NOX MASS GRAMS | 1.87 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .920 ( .906) |
| SCF, WET (DRY) | 1.000 ( .968) |
| VOL (SCM) | 112.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.12 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2TTCU-01 |
| BAROMETER, | MM HG | 733.0 |
| HUMIDITY, | G/KG | 10.6 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 185.9 |
| FUEL ECONOMY, | MPG | 26.5 |
| HYDROCARBONS, (THC) | G/MI | .04 |
| CARBON MONOXIDE, | G/MI | .07 |
| OXIDES OF NITROGEN, | G/MI | .19 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

T NO. B2TTCU-01 RUN 1
ICLE MODEL 86 TOYOTA CAMRY
INE 2.0 L(122. CID) L-4
NSMISSION A3

OMETER 732.28 MM HG(28.83 IN HG)
ATIVE HUMIDITY 59. PCT

VEHICLE NO.311
DATE 3/13/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 11.8 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36696. KM( 22802. MILES)

NOX HUMIDITY CORRECTION FACTOR 1.04

RESULTS

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 749.3 (29.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 746.8 (29.4) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 47852. |
| TOT FLOW STD. CU. METRES(SCF) | 88.0 ( 3108.) |
| THC SAMPLE METER/RANGE/PPM | 19.0/ 2/ 19. |
| THC BCKGRD METER/RANGE/PPM | 15.8/ 2/ 16. |
| CO SAMPLE METER/RANGE/PPM | 50.0/ 12/ 49. |
| CO BCKGRD METER/RANGE/PPM | .5/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.6/ 14/ .3804 |
| CO2 BCKGRD METER/RANGE/PCT | 13.5/ 14/ .0458 |
| NOX SAMPLE METER/RANGE/PPM | 14.9/ 1/ 3.8 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 |
| 'ILUTION FACTOR | 31.09 |
| -THC CONCENTRATION PPM | 4. |
| CO CONCENTRATION PPM | 47. |
| CO2 CONCENTRATION PCT | .3361 |
| NOX CONCENTRATION PPM | 3.7 |
| THC MASS GRAMS | .36 |
| CO MASS GRAMS | 4.85 |
| CO2 MASS GRAMS | 541.7 |
| NOX MASS GRAMS | .65 |
| RUN TIME SECONDS | 598. |
| DFC, WET (DRY) | .968 ( .949) |
| SCF, WET (DRY) | 1.000 ( .974) |
| VOL (SCM) | 88.0 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.16 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2TTCU-01 |
| BAROMETER, | MM HG | 732.3 |
| HUMIDITY, | G/KG | 11.8 |
| TEMPERATURE, | DEG C | 24.4 |
| CARBON DIOXIDE, | G/MI | 468.0 |
| FUEL ECONOMY, | MPG | 10.4 |
| HYDROCARBONS, (THC) | G/MI | .31 |
| CARBON MONOXIDE, | G/MI | 4.19 |
| OXIDES OF NITROGEN, | G/MI | .56 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

TEST NO. B2THCU-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

VEHICLE NO.311
DATE 2/28/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36563. KM( 22719. MILES)

BAROMETER 744.47 MM HG(29.31 IN HG)
RELATIVE HUMIDITY 50. PCT

DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 10.9 GM/KG

NOX HUMIDITY CORRECTION FACTOR 1.00

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| 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) | 43.3 (110.0) | 41.7 (107.0) | 42.2 (108.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40569. | 69460. | 40430. | 69486. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2676.) | 130.1 ( 4595.) | 75.7 ( 2672.) | 130.3 ( 4601.) |
| THC SAMPLE METER/RANGE/PPM | 50.1/ 2/ 50. | 10.5/ 2/ 10. | 19.9/ 2/ 20. | 10.7/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 10.0/ 2/ 10. | 11.0/ 2/ 11. | 9.3/ 2/ 9. | 10.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 54.0/ 14/ 243. | 2.6/ 12/ 2. | 60.6/ 12/ 60. | 4.3/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | .3/ 14/ 1. | .6/ 12/ 1. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 85.6/ 14/ .7681 | 69.8/ 14/ .4967 | 83.0/ 14/ .7153 | 69.7/ 14/ .4953 |
| CO2 BCKGRD METER/RANGE/PCT | 12.4/ 14/ .0415 | 12.4/ 14/ .0415 | 12.6/ 14/ .0422 | 12.6/ 14/ .0422 |
| NOX SAMPLE METER/RANGE/PPM | 35.0/ 1/ 8.8 | 6.8/ 1/ 1.8 | 13.0/ 1/ 3.4 | 6.5/ 1/ 1.7 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 1/ .0 | .1/ 1/ .0 | .0/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 15.11 | 24.17 | 16.64 | 24.23 |
| THC CONCENTRATION PPM | 40. | 0. | 11. | 1. |
| CO CONCENTRATION PPM | 233. | 2. | 58. | 4. |
| CO2 CONCENTRATION PCT | .7293 | .4569 | .6756 | .4548 |
| NOX CONCENTRATION PPM | 8.8 | 1.7 | 3.4 | 1.7 |
| THC MASS GRAMS | 3.40 | .00 | .93 | .10 |
| CO MASS GRAMS | 20.52 | .28 | 5.09 | .60 |
| CO2 MASS GRAMS | 1011.9 | 1088.6 | 935.9 | 1085.0 |
| NOX MASS GRAMS | 1.28 | .44 | .49 | .43 |
| THC GRAMS/MI | .95 | .00 | .26 | .03 |
| CO GRAMS/MI | 5.73 | .07 | 1.42 | .16 |
| CO2 GRAMS/MI | 282.8 | 283.7 | 260.4 | 281.6 |
| NOX GRAMS/MI | .36 | .11 | .14 | .11 |
| FUEL ECONOMY IN MPG | 16.81 17.10 | 17.37 | 18.74 18.08 | 17.50 |
| RUN TIME SECONDS | 506. | 867. | 505. | 868. |
| MEASURED DISTANCE MI | 3.58 7.41 | 3.84 | 3.59 7.45 | 3.85 |
| SCF, DRY | .971 .974 | .975 | .972 .974 | .975 |
| DFC, WET (DRY) | .949( .934) | | .952( .936) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 205.9/ .00 | | 206.0/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2THCU-01 |
| BAROMETER | MM HG | 744.5 |
| HUMIDITY | G/KG | 10.9 |
| TEMPERATURE | DEG C | 26.1 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 277.1 | ( 276.5) |
| FUEL ECONOMY | MPG | 17.61 | ( 17.64) |
| HYDROCARBONS (THC) | G/MI | .27 | ( .28) |
| CARBON MONOXIDE | G/MI | 1.62 | ( 1.64) |
| OXIDES OF NITROGEN | G/MI | .17 | ( .17) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

TEST NO. B2THCU-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

BAROMETER 743.97 MM HG(29.29 IN HG)
RELATIVE HUMIDITY 47. PCT
BAG RESULTS

VEHICLE NO.311
DATE 2/28/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 10.2 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36587. KM( 22734. MILES)

NOX HUMIDITY CORRECTION FACTOR .98

| | |
|---|---|
| TEST CYCLE | HFET |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 61240. |
| TOT FLOW STD. CU. METRES(SCF) | 114.3 ( 4036.) |
| THC SAMPLE METER/RANGE/PPM | 11.6/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.7/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 6.6/ 12/ 6. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.1/ 14/ .9455 |
| CO2 BCKGRD METER/RANGE/PCT | 12.3/ 14/ .0411 |
| NOX SAMPLE METER/RANGE/PPM | 11.5/ 1/ 3.0 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 12.70 |
| THC CONCENTRATION PPM | 3. |
| CO CONCENTRATION PPM | 6. |
| CO2 CONCENTRATION PCT | .9077 |
| NOX CONCENTRATION PPM | 3.0 |
| THC MASS GRAMS | .34 |
| CO MASS GRAMS | .81 |
| CO2 MASS GRAMS | 1899.3 |
| NOX MASS GRAMS | .64 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .921 ( .907) |
| SCF, WET (DRY) | 1.000 ( .969) |
| VOL (SCM) | 114.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.14 |
| TEST NUMBER, | B2THCU-01 |
| BAROMETER, MM HG | 744.0 |
| HUMIDITY, G/KG | 10.2 |
| TEMPERATURE, DEG C | 26.1 |
| CARBON DIOXIDE, G/MI | 187.4 |
| FUEL ECONOMY, MPG | 26.3 |
| HYDROCARBONS, (THC) G/MI | .03 |
| CARBON MONOXIDE, G/MI | .08 |
| OXIDES OF NITROGEN, G/MI | .06 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

TEST NO. B2THCU-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

VEHICLE NO.311
DATE 2/28/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 10.2 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 44648. KM( 27743. MILES)

BAROMETER 743.97 MM HG(29.29 IN HG)
RELATIVE HUMIDITY 47. PCT
BAG RESULTS

NOX HUMIDITY CORRECTION FACTOR .98

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 48019. |
| TOT FLOW STD. CU. METRES(SCF) | 89.9 ( 3174.) |
| THC SAMPLE METER/RANGE/PPM | 11.2/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.5/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 12.4/ 12/ 12. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 61.3/ 14/ .3885 |
| CO2 BCKGRD METER/RANGE/PCT | 12.2/ 14/ .0407 |
| NOX SAMPLE METER/RANGE/PPM | 7.8/ 1/ 2.0 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 30.80 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 12. |
| CO2 CONCENTRATION PCT | .3491 |
| NOX CONCENTRATION PPM | 2.0 |
| THC MASS GRAMS | .20 |
| CO MASS GRAMS | 1.22 |
| CO2 MASS GRAMS | 574.6 |
| NOX MASS GRAMS | .34 |
| RUN TIME SECONDS | 600. |
| DFC, WET (DRY) | .968 ( .953) |
| SCF, WET (DRY) | 1.000 ( .978) |
| VOL (SCM) | 89.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.16 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2THCU-01 |
| BAROMETER, | MM HG | 744.0 |
| HUMIDITY, | G/KG | 10.2 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 495.8 |
| FUEL ECONOMY, | MPG | 9.9 |
| HYDROCARBONS, (THC) | G/MI | .17 |
| CARBON MONOXIDE, | G/MI | 1.05 |
| OXIDES OF NITROGEN, | G/MI | .30 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

:ST NO. B2THCU-02 RUN 1
:HICLE MODEL 86 TOYOTA CAMRY
:GINE 2.0 L(122. CID) L-4
:ANSMISSION A3

VEHICLE NO.311
DATE 3/ 1/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36605. KM( 22745. MILES)

:AROMETER 748.79 MM HG(29.48 IN HG)
:ELATIVE HUMIDITY 29. PCT
:AG RESULTS

DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
ABS. HUMIDITY 5.6 GM/KG

NOX HUMIDITY CORRECTION FACTOR .85

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 769.6 (30.3) | 769.6 (30.3) | 762.0 (30.0) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 764.5 (30.1) | 764.5 (30.1) | 762.0 (30.0) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 44.4 (112.0) | 41.1 (106.0) | 41.7 (107.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40442. | 69440. | 40402. | 69425. |
| TOT FLOW STD. CU. METRES(SCF) | 75.8 ( 2678.) | 131.0 ( 4625.) | 76.2 ( 2690.) | 131.2 ( 4632.) |
| THC SAMPLE METER/RANGE/PPM | 56.5/ 2/ 56. | 9.3/ 2/ 9. | 9.4/ 2/ 9. | 9.2/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 7.8/ 2/ 8. | 9.2/ 2/ 9. | 8.0/ 2/ 8. | 8.8/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 66.5/ 14/ 310. | 4.3/ 12/ 4. | 8.3/ 12/ 8. | 7.0/ 12/ 7. |
| CO BCKGRD METER/RANGE/PPM | .3/ 14/ 1. | .5/ 12/ 0. | .3/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 86.6/ 14/ .7894 | 69.7/ 14/ .4953 | 82.8/ 14/ .7114 | 69.5/ 14/ .4925 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 | 12.7/ 14/ .0426 | 12.6/ 14/ .0422 | 12.6/ 14/ .0422 |
| NOX SAMPLE METER/RANGE/PPM | 42.6/ 1/ 10.7 | 10.5/ 1/ 2.7 | 19.4/ 1/ 5.0 | 12.3/ 1/ 3.2 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 | .9/ 1/ .2 | .2/ 1/ .1 | .1/ 1/ .0 |
| DILUTION FACTOR | 14.59 | 24.23 | 16.88 | 24.36 |
| THC CONCENTRATION PPM | 49. | 0. | 2. | 1. |
| CO CONCENTRATION PPM | 299. | 4. | 7. | 7. |
| CO2 CONCENTRATION PCT | .7497 | .4544 | .6716 | .4520 |
| NOX CONCENTRATION PPM | 10.7 | 2.5 | 4.9 | 3.2 |
| THC MASS GRAMS | 4.11 | .07 | .16 | .11 |
| CO MASS GRAMS | 26.42 | .54 | .66 | 1.00 |
| CO2 MASS GRAMS | 1041.0 | 1089.7 | 936.7 | 1085.4 |
| NOX MASS GRAMS | 1.33 | .53 | .61 | .68 |
| THC GRAMS/MI | 1.14 | .02 | .04 | .03 |
| CO GRAMS/MI | 7.34 | .14 | .18 | .26 |
| CO2 GRAMS/MI | 289.1 | 282.4 | 261.2 | 280.4 |
| NOX GRAMS/MI | .37 | .14 | .17 | .17 |
| FUEL ECONOMY IN MPG | 16.30 16.87 | 17.45 | 18.85 18.16 | 17.56 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.60 7.46 | 3.86 | 3.59 7.46 | 3.87 |
| SCF, DRY | .977 .981 | .982 | .979 .981 | .982 |
| DFC, WET (DRY) | .949( .940) | | .952( .943) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.8/ .00 | | 207.3/ .00 | |

:OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2THCU-02 |
| BAROMETER | MM HG | 748.8 |
| HUMIDITY | G/KG | 5.6 |
| TEMPERATURE | DEG C | 24.4 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 278.0 | ( 277.4) |
| FUEL ECONOMY | MPG | 17.55 | ( 17.58) |
| HYDROCARBONS (THC) | G/MI | .26 | ( .26) |
| CARBON MONOXIDE | G/MI | 1.65 | ( 1.68) |
| OXIDES OF NITROGEN | G/MI | .19 | ( .21) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

:T NO. B2THCU-02 RUN 1
HICLE MODEL 86 TOYOTA CAMRY
GINE 2.0 L(122. CID) L-4
NSMISSION A3

ROMETER 747.01 MM HG(29.41 IN HG)
ATIVE HUMIDITY 33. PCT
3 RESULTS

VEHICLE NO.311
DATE 3/ 1/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
ABS. HUMIDITY 6.6 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36627. KM( 22759. MILES)

NOX HUMIDITY CORRECTION FACTOR .88

| TEST CYCLE | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 61267. |
| TOT FLOW STD. CU. METRES(SCF) | 114.9 ( 4056.) |
| THC SAMPLE METER/RANGE/PPM | 9.2/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 8.6/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 2.3/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 95.9/ 14/1.0237 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 |
| NOX SAMPLE METER/RANGE/PPM | 22.3/ 1/ 5.7 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 11.74 |
| THC CONCENTRATION PPM | 1. |
| CO CONCENTRATION PPM | 2. |
| CO2 CONCENTRATION PCT | .9847 |
| NOX CONCENTRATION PPM | 5.7 |
| THC MASS GRAMS | .17 |
| CO MASS GRAMS | .27 |
| CO2 MASS GRAMS | 2070.8 |
| NOX MASS GRAMS | 1.10 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .915 ( .905) |
| SCF, WET (DRY) | 1.000 ( .972) |
| VOL (SCM) | 114.9 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.26 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2THCU-02 |
| BAROMETER, | MM HG | 747.0 |
| HUMIDITY, | G/KG | 6.6 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 201.9 |
| FUEL ECONOMY, | MPG | 24.4 |
| HYDROCARBONS, (THC) | G/MI | .02 |
| CARBON MONOXIDE, | G/MI | .03 |
| OXIDES OF NITROGEN, | G/MI | .11 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. B2THCU-02 RUN 1 | VEHICLE NO.311 | TEST WEIGHT 1361. KG( 3000. LBS) |
| HICLE MODEL 86 TOYOTA CAMRY | DATE 3/ 1/90 | ACTUAL ROAD LOAD 5.5 KW( 7.4 HP) |
| GINE 2.0 L(122. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-998-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 36643. KM( 22769. MILES) |
| | CVS NO. 2 | |
| ROMETER 747.01 MM HG(29.41 IN HG) | DRY BULB TEMP. 25.0 DEG C(77.0 DEG F) | |
| LATIVE HUMIDITY 33. PCT | ABS. HUMIDITY 6.6 GM/KG | NOX HUMIDITY CORRECTION FACTOR .88 |

G RESULTS

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 47794. |
| TOT FLOW STD. CU. METRES(SCF) | 89.7 ( 3167.) |
| THC SAMPLE METER/RANGE/PPM | 10.0/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 8.4/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 23.2/ 12/ 23. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.3/ 14/ .3770 |
| CO2 BCKGRD METER/RANGE/PCT | 12.5/ 14/ .0418 |
| NOX SAMPLE METER/RANGE/PPM | 12.4/ 1/ 3.2 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 31.65 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 22. |
| CO2 CONCENTRATION PCT | .3365 |
| NOX CONCENTRATION PPM | 3.2 |
| THC MASS GRAMS | .18 |
| CO MASS GRAMS | 2.30 |
| CO2 MASS GRAMS | 552.6 |
| NOX MASS GRAMS | .48 |
| RUN TIME SECONDS | 598. |
| DFC, WET (DRY) | .968 ( .958) |
| SCF, WET (DRY) | 1.000 ( .983) |
| VOL (SCM) | 89.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.16 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2THCU-02 |
| BAROMETER, | MM HG | 747.0 |
| HUMIDITY, | G/KG | 6.6 |
| TEMPERATURE, | DEG C | 25.0 |
| CARBON DIOXIDE, | G/MI | 476.4 |
| FUEL ECONOMY, | MPG | 10.3 |
| HYDROCARBONS, (THC) | G/MI | .16 |
| CARBON MONOXIDE, | G/MI | 1.98 |
| OXIDES OF NITROGEN, | G/MI | .42 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

:T NO. B2TDCC-01 RUN 1
:ICLE MODEL 86 TOYOTA CAMRY
:INE 2.0 L(122. CID) L-4
:NSMISSION A3

:OMETER 739.90 MM HG(29.13 IN HG)
:ATIVE HUMIDITY 28. PCT
: RESULTS
TEST CYCLE

VEHICLE NO.311
DATE 3/16/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 5.8 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-999-F
ODOMETER 36745. KM( 22832. MILES)

NOX HUMIDITY CORRECTION FACTOR .86

| | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 777.2 (30.6) |
| BLOWER INLET P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 44.4 (112.0) |
| BLOWER REVOLUTIONS | 61212. |
| TOT FLOW STD. CU. METRES(SCF) | 113.1 ( 3994.) |
| THC SAMPLE METER/RANGE/PPM | 15.3/ 2/ 15. |
| THC BCKGRD METER/RANGE/PPM | 10.3/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 8.0/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .5/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.5/ 14/ .9562 |
| CO2 BCKGRD METER/RANGE/PCT | 12.5/ 14/ .0418 |
| NOX SAMPLE METER/RANGE/PPM | 40.4/ 1/ 10.1 |
| NOX BCKGRD METER/RANGE/PPM | .3/ 1/ .1 |
| :ILUTION FACTOR | 12.56 |
| -THC CONCENTRATION PPM | 6. |
| CO CONCENTRATION PPM | 7. |
| CO2 CONCENTRATION PCT | .9177 |
| NOX CONCENTRATION PPM | 10.1 |
| THC MASS GRAMS | .72 |
| CO MASS GRAMS | .92 |
| CO2 MASS GRAMS | 1900.4 |
| NOX MASS GRAMS | 1.88 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .920 ( .912) |
| SCF, WET (DRY) | 1.000 ( .975) |
| VOL (SCM) | 113.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.12 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2TDCC-01 |
| BAROMETER, | MM HG | 739.9 |
| HUMIDITY, | G/KG | 5.8 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 187.9 |
| FUEL ECONOMY, | MPG | 26.2 |
| HYDROCARBONS. (THC) | G/MI | .07 |
| CARBON MONOXIDE, | G/MI | .09 |
| OXIDES OF NITROGEN, | G/MI | .19 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

:ST NO. B2TDCC-01 RUN 1
:HICLE MODEL 86 TOYOTA CAMRY
:GINE 2.0 L(122. CID) L-4
:ANSMISSION A3

VEHICLE NO.311
DATE 3/16/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36722. KM( 22818. MILES)

:ROMETER 740.66 MM HG(29.16 IN HG)
:LATIVE HUMIDITY 26. PCT
:G RESULTS

DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 5.6 GM/KG
NOX HUMIDITY CORRECTION FACTOR .86

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) | 769.6 (30.3) | 769.6 (30.3) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) | 764.5 (30.1) | 764.5 (30.1) | 769.6 (30.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.9 (111.0) | 40.6 (105.0) | 43.9 (111.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40435. | 69427. | 40460. | 69465. |
| TOT FLOW STD. CU. METRES(SCF) | 75.0 ( 2649.) | 129.5 ( 4573.) | 75.0 ( 2649.) | 129.4 ( 4568.) |
| THC SAMPLE METER/RANGE/PPM | 79.1/ 2/ 78. | 15.7/ 2/ 16. | 17.3/ 2/ 17. | 14.0/ 2/ 14. |
| THC BCKGRD METER/RANGE/PPM | 13.5/ 2/ 13. | 17.2/ 2/ 17. | 13.1/ 2/ 13. | 13.1/ 2/ 13. |
| CO SAMPLE METER/RANGE/PPM | 58.1/ 14/ 264. | 5.4/ 12/ 5. | 6.5/ 12/ 6. | 5.5/ 12/ 5. |
| CO BCKGRD METER/RANGE/PPM | .0/ 14/ 0. | .3/ 12/ 0. | .1/ 12/ 0. | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 86.0/ 14/ .7765 | 70.1/ 14/ .5009 | 82.2/ 14/ .6998 | 70.1/ 14/ .5009 |
| CO2 BCKGRD METER/RANGE/PCT | 12.7/ 14/ .0426 | 12.8/ 14/ .0430 | 13.0/ 14/ .0438 | 13.1/ 14/ .0442 |
| NOX SAMPLE METER/RANGE/PPM | 40.4/ 1/ 10.1 | 30.1/ 1/ 7.6 | 37.8/ 1/ 9.5 | 23.9/ 1/ 6.1 |
| NOX BCKGRD METER/RANGE/PPM | .5/ 1/ .1 | 1.0/ 1/ .3 | .8/ 1/ .2 | .3/ 1/ .1 |
| DILUTION FACTOR | 14.86 | 23.93 | 17.14 | 23.93 |
| THC CONCENTRATION PPM | 66. | 0. | 5. | 1. |
| CO CONCENTRATION PPM | 256. | 5. | 6. | 5. |
| CO2 CONCENTRATION PCT | .7368 | .4597 | .6585 | .4585 |
| NOX CONCENTRATION PPM | 10.0 | 7.4 | 9.3 | 6.0 |
| THC MASS GRAMS | 5.49 | .00 | .41 | .21 |
| CO MASS GRAMS | 22.40 | .72 | .52 | .76 |
| CO2 MASS GRAMS | 1011.9 | 1090.0 | 904.6 | 1086.0 |
| NOX MASS GRAMS | 1.23 | 1.56 | 1.14 | 1.27 |
| THC GRAMS/MI | 1.55 | .00 | .12 | .05 |
| CO GRAMS/MI | 6.33 | .19 | .15 | .20 |
| CO2 GRAMS/MI | 286.1 | 286.1 | 256.1 | 284.8 |
| NOX GRAMS/MI | .35 | .41 | .32 | .33 |
| FUEL ECONOMY IN MPG | 16.52 16.87 | 17.22 | 19.22 18.17 | 17.29 |
| RUN TIME SECONDS | 505. | 868. | 505. | 869. |
| MEASURED DISTANCE MI | 3.54 7.35 | 3.81 | 3.53 7.34 | 3.81 |
| SCF, DRY | .979 .981 | .983 | .980 .982 | .983 |
| DFC, WET (DRY) | .949( .941) | | .952( .944) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.5/ .00 | | 204.4/ .00 | |

:MPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2TDCC-01 |
| BAROMETER | MM HG | 740.7 |
| HUMIDITY | G/KG | 5.6 |
| TEMPERATURE | DEG C | 26.1 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 277.9 | ( 277.5) |
| FUEL ECONOMY | MPG | 17.56 | ( 17.59) |
| HYDROCARBONS (THC) | G/MI | .35 | ( .37) |
| CARBON MONOXIDE | G/MI | 1.45 | ( 1.45) |
| OXIDES OF NITROGEN | G/MI | .37 | ( .35) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

ST NO. B2TDCC-01 RUN 1
HICLE MODEL 86 TOYOTA CAMRY
GINE 2.0 L(122. CID) L-4
ANSMISSION A3

ROMETER 739.65 MM HG(29.12 IN HG)
LATIVE HUMIDITY 30. PCT
G RESULTS

VEHICLE NO.311
DATE 3/16/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 6.6 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36761. KM( 22842. MILES)

NOX HUMIDITY CORRECTION FACTOR .88

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 774.7 (30.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 772.2 (30.4) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 47786. |
| TOT FLOW STD. CU. METRES(SCF) | 88.5 ( 3124.) |
| THC SAMPLE METER/RANGE/PPM | 12.0/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 10.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 4.7/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | .4/ 12/ .0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.8/ 14/ .3827 |
| CO2 BCKGRD METER/RANGE/PCT | 12.6/ 14/ .0422 |
| NOX SAMPLE METER/RANGE/PPM | 9.8/ 1/ 2.5 |
| NOX BCKGRD METER/RANGE/PPM | .1/ 1/ .0 |
| DILUTION FACTOR | 31.31 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 4. |
| CO2 CONCENTRATION PCT | .3418 |
| NOX CONCENTRATION PPM | 2.5 |
| THC MASS GRAMS | .19 |
| CO MASS GRAMS | .42 |
| CO2 MASS GRAMS | 553.7 |
| NOX MASS GRAMS | .38 |
| RUN TIME SECONDS | 598. |
| DFC, WET (DRY) | .968 ( .959) |
| SCF, WET (DRY) | 1.000 ( .984) |
| VOL (SCM) | 88.5 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.15 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2TDCC-01 |
| BAROMETER, | MM HG | 739.6 |
| HUMIDITY, | G/KG | 6.6 |
| TEMPERATURE, | DEG C | 26.7 |
| CARBON DIOXIDE, | G/MI | 482.2 |
| FUEL ECONOMY, | MPG | 10.2 |
| HYDROCARBONS, (THC) | G/MI | .16 |
| CARBON MONOXIDE, | G/MI | .36 |
| OXIDES OF NITROGEN, | G/MI | .33 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

ST NO. B2TDCC-02 RUN 1
HICLE MODEL 86 TOYOTA CAMRY
GINE 2.0 L(122. CID) L-4
ANSMISSION A3

VEHICLE NO.311
DATE 3/19/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36775. KM( 22851. MILES)

ROMETER 749.05 MM HG(29.49 IN HG)
LATIVE HUMIDITY 28. PCT

DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 5.7 GM/KG

NOX HUMIDITY CORRECTION FACTOR .86

G RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 787.4 (31.0) | 789.9 (31.1) | 787.4 (31.0) | 795.0 (31.3) |
| BLOWER INLET P MM. H2O(IN. H2O) | 782.3 (30.8) | 787.4 (31.0) | 784.9 (30.9) | 787.4 (31.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) | 41.1 (106.0) | 42.8 (109.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40355. | 69473. | 40423. | 69357. |
| TOT FLOW STD. CU. METRES(SCF) | 75.7 ( 2674.) | 130.7 ( 4614.) | 75.8 ( 2678.) | 130.4 ( 4606.) |
| THC SAMPLE METER/RANGE/PPM | 66.3/ 2/ 66. | 10.2/ 2/ 10. | 11.5/ 2/ 11. | 9.1/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 8.4/ 2/ 8. | 8.9/ 2/ 9. | 7.6/ 2/ 8. | 7.7/ 2/ 8. |
| CO SAMPLE METER/RANGE/PPM | 43.8/ 14/ 191. | 5.3/ 12/ 5. | 5.9/ 12/ 6. | 4.9/ 12/ 5. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .0/ 12/ 0. | .1/ 12/ 0. | .2/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 85.4/ 14/ .7639 | 70.0/ 14/ .4995 | 81.6/ 14/ .6884 | 69.5/ 14/ .4925 |
| CO2 BCKGRD METER/RANGE/PCT | 11.8/ 14/ .0391 | 11.7/ 14/ .0388 | 11.7/ 14/ .0388 | 11.7/ 14/ .0388 |
| NOX SAMPLE METER/RANGE/PPM | 39.9/ 1/ 10.0 | 18.2/ 1/ 4.7 | 27.2/ 1/ 6.9 | 7.3/ 1/ 1.9 |
| NOX BCKGRD METER/RANGE/PPM | .8/ 1/ .2 | .8/ 1/ .2 | .3/ 1/ .1 | .1/ 1/ .0 |
| DILUTION FACTOR | 15.25 | 24.02 | 17.44 | 24.37 |
| THC CONCENTRATION PPM | 58. | 2. | 4. | 2. |
| CO CONCENTRATION PPM | 185. | 5. | 5. | 4. |
| CO2 CONCENTRATION PCT | .7273 | .4623 | .6518 | .4553 |
| NOX CONCENTRATION PPM | 9.8 | 4.5 | 6.8 | 1.9 |
| THC MASS GRAMS | 4.87 | .24 | .36 | .25 |
| CO MASS GRAMS | 16.33 | .75 | .48 | .67 |
| CO2 MASS GRAMS | 1008.3 | 1106.1 | 905.0 | 1087.3 |
| NOX MASS GRAMS | 1.22 | .95 | .85 | .40 |
| THC GRAMS/MI | 1.36 | .06 | .10 | .06 |
| CO GRAMS/MI | 4.58 | .20 | .13 | .18 |
| CO2 GRAMS/MI | 282.5 | 287.8 | 256.1 | 285.2 |
| NOX GRAMS/MI | .34 | .25 | .24 | .11 |
| FUEL ECONOMY IN MPG | 16.89 17.00 | 17.11 | 19.23 18.16 | 17.27 |
| RUN TIME SECONDS | 504. | 868. | 505. | 867. |
| MEASURED DISTANCE MI | 3.57 7.41 | 3.84 | 3.53 7.35 | 3.81 |
| SCF, DRY | .978 .981 | .983 | .979 .982 | .983 |
| DFC, WET (DRY) | .950( .941) | | .953( .944) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 206.4/ .00 | | 206.3/ .00 | |

OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2TDCC-02 |
| BAROMETER | MM HG | 749.0 |
| HUMIDITY | G/KG | 5.7 |
| TEMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 278.0 | ( 277.3) |
| FUEL ECONOMY | MPG | 17.59 | ( 17.64) |
| HYDROCARBONS (THC) | G/MI | .34 | ( .34) |
| CARBON MONOXIDE | G/MI | 1.09 | ( 1.08) |
| OXIDES OF NITROGEN | G/MI | .27 | ( .22) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

T NO. 32TDCC-02 RUN 1
ICLE MODEL 86 TOYOTA CAMRY
INE 2.0 L(122. CID) L-4
NSMISSION A3

OMETER 748.03 MM HG(29.45 IN HG)
ATIVE HUMIDITY 24. PCT
; RESULTS
TEST CYCLE

VEHICLE NO.311
DATE 3/19/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 5.2 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
GASOLINE EM-998-F
ODOMETER 36811. KM( 22873. MILES)

NOX HUMIDITY CORRECTION FACTOR .85

| | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 800.1 (31.5) |
| BLOWER INLET P MM. H2O(IN. H2O) | 795.0 (31.3) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) |
| BLOWER REVOLUTIONS | 61186. |
| TOT FLOW STD. CU. METRES(SCF) | 114.3 ( 4037.) |
| THC SAMPLE METER/RANGE/PPM | 12.5/ 2/ 12. |
| THC BCKGRD METER/RANGE/PPM | 8.8/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 7.3/ 12/ 7. |
| CO BCKGRD METER/RANGE/PPM | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.2/ 14/ .9482 |
| CO2 BCKGRD METER/RANGE/PCT | 11.8/ 14/ .0391 |
| NOX SAMPLE METER/RANGE/PPM | 28.9/ 1/ 7.3 |
| NOX BCKGRD METER/RANGE/PPM | 1.4/ 1/ .4 |
| DILUTION FACTOR | 12.67 |
| THC CONCENTRATION PPM | 4. |
| CO CONCENTRATION PPM | 7. |
| CO2 CONCENTRATION PCT | .9121 |
| NOX CONCENTRATION PPM | 7.0 |
| THC MASS GRAMS | .55 |
| CO MASS GRAMS | .89 |
| CO2 MASS GRAMS | 1909.0 |
| NOX MASS GRAMS | 1.29 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .921 ( .914) |
| SCF, WET (DRY) | 1.000 ( .976) |
| VOL (SCM) | 114.3 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.22 |

| | | |
|---|---|---|
| TEST NUMBER, | | 32TDCC-02 |
| BAROMETER, | MM HG | 748.0 |
| HUMIDITY, | G/KG | 5.2 |
| TEMPERATURE, | DEG C | 26.7 |
| CARBON DIOXIDE, | G/MI | 186.9 |
| FUEL ECONOMY, | MPG | 26.4 |
| HYDROCARBONS, (THC) | G/MI | .05 |
| CARBON MONOXIDE, | G/MI | .09 |
| OXIDES OF NITROGEN, | G/MI | .13 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS - 85% METHANOL
PROJECT 08-2346-001

| | | |
|---|---|---|
| ST NO. B2TDCC-02 RUN 1 | VEHICLE NO.311 | TEST WEIGHT 1361. KG( 3000. LBS) |
| HICLE MODEL 86 TOYOTA CAMRY | DATE 3/19/90 | ACTUAL ROAD LOAD 5.5 KW( 7.4 HP) |
| GINE 2.0 L(122. CID) L-4 | BAG CART NO. 2 | GASOLINE EM-998-F |
| ANSMISSION A3 | DYNO NO. 3 | ODOMETER 36827. KM( 22883. MILES) |
| | CVS NO. 2 | |
| ROMETER 748.03 MM HG(29.45 IN HG) | DRY BULB TEMP. 26.1 DEG C(79.0 DEG F) | |
| LATIVE HUMIDITY 23. PCT | ABS. HUMIDITY 4.9 GM/KG | NOX HUMIDITY CORRECTION FACTOR .84 |

G RESULTS

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 787.4 (31.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 784.9 (30.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 47889. |
| TOT FLOW STD. CU. METRES(SCF) | 89.7 ( 3167.) |
| THC SAMPLE METER/RANGE/PPM | 11.0/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 9.2/ 2/ 9. |
| CO SAMPLE METER/RANGE/PPM | 5.1/ 12/ 5. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.3/ 14/ .3770 |
| CO2 BCKGRD METER/RANGE/PCT | 12.2/ 14/ .0407 |
| NOX SAMPLE METER/RANGE/PPM | 9.7/ 1/ 2.5 |
| NOX BCKGRD METER/RANGE/PPM | .7/ 1/ .2 |
| DILUTION FACTOR | 31.78 |
| THC CONCENTRATION PPM | 2. |
| CO CONCENTRATION PPM | 5. |
| CO2 CONCENTRATION PCT | .3376 |
| NOX CONCENTRATION PPM | 2.3 |
| THC MASS GRAMS | .21 |
| CO MASS GRAMS | .50 |
| CO2 MASS GRAMS | 554.5 |
| NOX MASS GRAMS | .34 |
| RUN TIME SECONDS | 599. |
| DFC, WET (DRY) | .969 ( .961) |
| SCF, WET (DRY) | 1.000 ( .986) |
| VOL (SCM) | 89.7 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.14 |

| | | |
|---|---|---|
| TEST NUMBER, | | B2TDCC-02 |
| BAROMETER, | MM HG | 748.0 |
| HUMIDITY, | G/KG | 4.9 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 485.3 |
| FUEL ECONOMY, | MPG | 10.1 |
| HYDROCARBONS, (THC) | G/MI | .18 |
| CARBON MONOXIDE, | G/MI | .44 |
| OXIDES OF NITROGEN, | G/MI | .29 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. B2TJM2-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

VEHICLE NO.311
DATE 7/ 2/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
MBS EM-998-F
ODOMETER 36870. KM( 22910. MILES)

BAROMETER 739.14 MM HG(29.10 IN HG)
RELATIVE HUMIDITY 44. PCT

DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 9.5 GM/KG

NOX HUMIDITY CORRECTION FACTOR .96

BAG RESULTS

| BAG NUMBER | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| DESCRIPTION | COLD TRANSIENT | STABILIZED | HOT TRANSIENT | STABILIZED |
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) | 764.5 (30.1) | 757.1 (30.2) | 764.5 (30.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 751.8 (29.6) | 756.9 (29.8) | 762.0 (30.0) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 43.3 (110.0) | 40.6 (105.0) | 41.7 (107.0) | 40.6 (105.0) |
| BLOWER REVOLUTIONS | 40401. | 69349. | 40364. | 69326. |
| TOT FLOW STD. CU. METRES(SCF) | 74.9 ( 2646.) | 129.2 ( 4562.) | 75.0 ( 2648.) | 129.1 ( 4558.) |
| THC SAMPLE METER/RANGE/PPM | 21.9/ 3/ 218. | 9.8/ 2/ 10. | 9.7/ 2/ 10. | 9.6/ 2/ 9. |
| THC BCKGRD METER/RANGE/PPM | 1.7/ 3/ 17. | 9.9/ 2/ 10. | 9.8/ 2/ 10. | 10.2/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | 65.1/ 14/ 302. | .5/ 12/ 0. | 5.4/ 12/ 5. | .7/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .1/ 12/ 0. | .0/ 12/ 0. | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 85.9/ 14/ .7744 | 70.6/ 14/ .5080 | 82.1/ 14/ .6979 | 69.0/ 14/ .4856 |
| CO2 BCKGRD METER/RANGE/PCT | 12.3/ 14/ .0411 | 12.2/ 14/ .0407 | 12.1/ 14/ .0403 | 11.9/ 14/ .0395 |
| NOX SAMPLE METER/RANGE/PPM | 71.0/ 1/ 17.8 | 3.5/ 1/ .9 | 4.1/ 1/ 1.1 | 1.9/ 1/ .5 |
| NOX BCKGRD METER/RANGE/PPM | 4.2/ 1/ 1.1 | .0/ 1/ .0 | .0/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 14.58 | 23.64 | 17.21 | 24.73 |
| THC CONCENTRATION PPM | 203. | 0. | 0. | 0. |
| CO CONCENTRATION PPM | 291. | 0. | 5. | 1. |
| CO2 CONCENTRATION PCT | .7361 | .4690 | .6599 | .4476 |
| NOX CONCENTRATION PPM | 16.8 | .9 | 1.1 | .5 |
| THC MASS GRAMS | 16.89 | .05 | .04 | .00 |
| CO MASS GRAMS | 25.40 | .06 | .44 | .10 |
| CO2 MASS GRAMS | 1010.0 | 1109.5 | 906.1 | 1057.9 |
| NOX MASS GRAMS | 2.31 | .22 | .15 | .11 |
| THC GRAMS/MI | 4.70 | .01 | .01 | .00 |
| CO GRAMS/MI | 7.07 | .01 | .12 | .03 |
| CO2 GRAMS/MI | 281.2 | 286.3 | 254.2 | 274.2 |
| NOX GRAMS/MI | .64 | .06 | .04 | .03 |
| FUEL ECONOMY IN MPG | 16.44 16.83 | 17.22 | 19.38 18.63 | 17.98 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.59 7.47 | 3.87 | 3.56 7.42 | 3.86 |
| SCF, DRY | .973 .976 | .977 | .974 .976 | .978 |
| DFC, WET (DRY) | .948( .935) | | .953( .940) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 204.1/ .00 | | 204.1/ .00 | |

OMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | B2TJM2-01 |
| BAROMETER | MM HG | 739.1 |
| HUMIDITY | G/KG | 9.5 |
| TEMPERATURE | DEG C | 26.1 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 276.5 | ( 272.9) |
| FUEL ECONOMY | MPG | 17.58 | ( 17.61) |
| HYDROCARBONS (THC) | G/MI | .98 | ( .98) |
| CARBON MONOXIDE | G/MI | 1.50 | ( 1.51) |
| OXIDES OF NITROGEN | G/MI | .17 | ( .17) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 92TJM2-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

BAROMETER 738.12 MM HG(29.06 IN HG)
RELATIVE HUMIDITY 41. PCT
BAG RESULTS

VEHICLE NO.311
DATE 7/ 2/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 8.9 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
M85 EM-998-F
ODOMETER 36894. KM( 22925. MILES)

NOX HUMIDITY CORRECTION FACTOR .94

| TEST CYCLE | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 764.5 (30.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.8 (109.0) |
| BLOWER REVOLUTIONS | 61192. |
| TOT FLOW STD. CU. METRES(SCF) | 113.4 ( 4003.) |
| THC SAMPLE METER/RANGE/PPM | 10.0/ 2/ 10. |
| THC BCKGRD METER/RANGE/PPM | 10.4/ 2/ 10. |
| CO SAMPLE METER/RANGE/PPM | .8/ 12/ 1. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 93.3/ 14/ .9508 |
| CO2 BCKGRD METER/RANGE/PCT | 11.7/ 14/ .0388 |
| NOX SAMPLE METER/RANGE/PPM | 7.6/ 1/ 2.0 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 12.64 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 1. |
| CO2 CONCENTRATION PCT | .9151 |
| NOX CONCENTRATION PPM | 2.0 |
| THC MASS GRAMS | .05 |
| CO MASS GRAMS | .10 |
| CO2 MASS GRAMS | 1899.4 |
| NOX MASS GRAMS | .40 |
| RUN TIME SECONDS | 766. |
| DFC, WET (DRY) | .921 ( .909) |
| SCF, WET (DRY) | 1.000 ( .971) |
| VOL (SCM) | 113.4 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.08 |

| | | |
|---|---|---|
| TEST NUMBER. | | 92TJM2-01 |
| BAROMETER, | MM HG | 738.1 |
| HUMIDITY, | G/KG | 8.9 |
| TEMPERATURE, | DEG C | 26.1 |
| CARBON DIOXIDE, | G/MI | 188.5 |
| FUEL ECONOMY, | MPG | 26.2 |
| HYDROCARBONS. (THC) | G/MI | .01 |
| CARBON MONOXIDE, | G/MI | .01 |
| OXIDES OF NITROGEN. | G/MI | .04 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 92TJM2-01 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

BAROMETER 738.12 MM HG(29.06 IN HG)
RELATIVE HUMIDITY 41. PCT

VEHICLE NO.311
DATE 7/ 2/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.1 DEG C(79.0 DEG F)
ABS. HUMIDITY 8.9 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
M85 EM-998-F
ODOMETER 36910. KM( 22935. MILES)

NOX HUMIDITY CORRECTION FACTOR .94

BAG RESULTS

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.7 (107.0) |
| BLOWER REVOLUTIONS | 47726. |
| TOT FLOW STD. CU. METRES(SCF) | 88.6 ( 3129.) |
| THC SAMPLE METER/RANGE/PPM | 10.1/ 3/ 10. |
| THC BCKGRD METER/RANGE/PPM | 10.1/ 3/ 10. |
| CO SAMPLE METER/RANGE/PPM | 8.3/ 12/ 8. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 60.5/ 14/ .3793 |
| CO2 BCKGRD METER/RANGE/PCT | 11.7/ 14/ .0388 |
| NOX SAMPLE METER/RANGE/PPM | 1.1/ 1/ .3 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 31.58 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 8. |
| CO2 CONCENTRATION PCT | .3418 |
| NOX CONCENTRATION PPM | .3 |
| THC MASS GRAMS | .03 |
| CO MASS GRAMS | .80 |
| CO2 MASS GRAMS | 554.4 |
| NOX MASS GRAMS | .05 |
| RUN TIME SECONDS | 597. |
| DFC, WET (DRY) | .968 ( .956) |
| SCF, WET (DRY) | 1.000 ( .980) |
| VOL (SCM) | 88.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.12 |

| | | |
|---|---|---|
| TEST NUMBER. | | 92TJM2-01 |
| BAROMETER. | MM HG | 738.1 |
| HUMIDITY. | G/KG | 8.9 |
| TEMPERATURE. | DEG C | 26.1 |
| CARBON DIOXIDE. | G/MI | 493.5 |
| FUEL ECONOMY. | MPG | 18.0 |
| HYDROCARBONS. (THC) | G/MI | .03 |
| CARBON MONOXIDE. | G/MI | .71 |
| OXIDES OF NITROGEN. | G/MI | .04 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
FTP - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 92TJM2-02 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

VEHICLE NO. 311
DATE 7/ 3/90
BAG CART NO. 2 / CVS NO. 2
DYNO NO. 3

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
MSS EM-998-F
ODOMETER 38918. KM( 22940. MILES)

BAROMETER 737.52 MM HG(29.04 IN HG)
RELATIVE HUMIDITY 43. PCT

DRY BULB TEMP. 25.6 DEG C(79.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG

NOX HUMIDITY CORRECTION FACTOR .95

BAG RESULTS

| BAG NUMBER / DESCRIPTION | 1 COLD TRANSIENT | 2 STABILIZED | 3 HOT TRANSIENT | 4 STABILIZED |
|---|---|---|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) | 762.0 (30.0) | 762.0 (30.0) | 764.5 (30.1) |
| BLOWER INLET P MM. H2O(IN. H2O) | 754.4 (29.7) | 759.5 (29.9) | 756.9 (29.8) | 759.5 (29.9) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) | 41.1 (106.0) | 41.7 (107.0) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 40454. | 69396. | 40387. | 69249. |
| TOT FLOW STD. CU. METRES(SCF) | 75.0 ( 2648.) | 128.8 ( 4549.) | 74.9 ( 2646.) | 128.7 ( 4546.) |
| THC SAMPLE METER/RANGE/PPM | 19.4/ 3/ 193. | 11.1/ 3/ 11. | 10.8/ 3/ 11. | 10.9/ 3/ 11. |
| THC BCKGRD METER/RANGE/PPM | 1.3/ 3/ 13. | 11.2/ 3/ 11. | 11.2/ 3/ 11. | 11.7/ 3/ 12. |
| CO SAMPLE METER/RANGE/PPM | 67.7/ 14/ 317. | .9/ 12/ 1. | 2.7/ 12/ 3. | 1.9/ 12/ 2. |
| CO BCKGRD METER/RANGE/PPM | .1/ 14/ 0. | .5/ 12/ 0. | .0/ 12/ 0. | .1/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 87.5/ 14/ .8092 | 71.6/ 14/ .5224 | 82.6/ 14/ .7075 | 69.6/ 14/ .4939 |
| CO2 BCKGRD METER/RANGE/PCT | 12.6/ 14/ .0422 | 12.4/ 14/ .0415 | 12.3/ 14/ .0411 | 12.2/ 14/ .0407 |
| NOX SAMPLE METER/RANGE/PPM | 70.9/ 1/ 17.3 | 4.0/ 1/ 1.1 | 3.4/ 1/ .9 | .6/ 1/ .2 |
| NOX BCKGRD METER/RANGE/PPM | 2.2/ 1/ .6 | .6/ 1/ .2 | .0/ 1/ .0 | .0/ 1/ .0 |
| DILUTION FACTOR | 14.01 | 22.98 | 16.98 | 24.31 |
| THC CONCENTRATION PPM | 181. | 0. | 0. | 0. |
| CO CONCENTRATION PPM | 305. | 0. | 2. | 2. |
| CO2 CONCENTRATION PCT | .7700 | .4828 | .6688 | .4549 |
| NOX CONCENTRATION PPM | 17.2 | .9 | .9 | .2 |
| THC MASS GRAMS | 15.12 | .05 | .02 | .00 |
| CO MASS GRAMS | 36.62 | .06 | .02 | .25 |
| CO2 MASS GRAMS | 1057.3 | 1138.8 | 917.5 | 1072.1 |
| NOX MASS GRAMS | 2.35 | .21 | .12 | .04 |
| THC GRAMS/MI | 4.20 | .01 | .01 | .00 |
| CO GRAMS/MI | 7.38 | .01 | .06 | .07 |
| CO2 GRAMS/MI | 293.2 | 291.2 | 259.8 | 281.5 |
| NOX GRAMS/MI | .65 | .05 | .03 | .01 |
| FUEL ECONOMY IN MPG | 15.92 16.38 | 16.93 | 19.05 19.22 | 17.51 |
| RUN TIME SECONDS | 505. | 868. | 505. | 868. |
| MEASURED DISTANCE MI | 3.61 7.52 | 3.91 | 3.55 7.25 | 3.81 |
| SCF, DRY | .972 .975 | .977 | .974 .976 | .978 |
| DFC, WET (DRY) | .946( .933) | | .952( .939) | |
| TOT VOL (SCM) / SAM BLR (SCM) | 203.8/ .20 | | 203.7/ .00 | |

COMPOSITE RESULTS

| | | |
|---|---|---|
| TEST NUMBER | | 92TJM2-02 |
| BAROMETER | MM HG | 727.6 |
| HUMIDITY | G/KG | 9.1 |
| TEMPERATURE | DEG C | 25.6 |

| | | 3-BAG | (4-BAG) |
|---|---|---|---|
| CARBON DIOXIDE | G/MI | 282.8 | ( 279.8) |
| FUEL ECONOMY | MPG | 17.20 | ( 17.38) |
| HYDROCARBONS (THC) | G/MI | .87 | ( .87) |
| CARBON MONOXIDE | G/MI | 1.55 | ( 1.56) |
| OXIDES OF NITROGEN | G/MI | .17 | ( .16) |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
HFET - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 92TJM2-02 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

BAROMETER 736.85 MM HG(29.01 IN HG)
RELATIVE HUMIDITY 41. PCT
BAG RESULTS

VEHICLE NO.311
DATE 7/ 3/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
ABS. HUMIDITY 9.3 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
MBS EM-999-F
ODOMETER 36941. KM( 22954. MILES)

NOX HUMIDITY CORRECTION FACTOR .96

| TEST CYCLE | HFET |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 767.1 (30.2) |
| BLOWER INLET P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 42.2 (108.0) |
| BLOWER REVOLUTIONS | 61144. |
| TOT FLOW STD. CU. METRES(SCF) | 113.1 ( 3994.) |
| THC SAMPLE METER/RANGE/PPM | 10.9/ 3/ 11. |
| THC BCKGRD METER/RANGE/PPM | 11.5/ 3/ 11. |
| CO SAMPLE METER/RANGE/PPM | 4.0/ 12/ 4. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 94.3/ 14/ .9781 |
| CO2 BCKGRD METER/RANGE/PCT | 11.9/ 14/ .0395 |
| NOX SAMPLE METER/RANGE/PPM | .8/ 1/ .2 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 12.29 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 4. |
| CO2 CONCENTRATION PCT | .9418 |
| NOX CONCENTRATION PPM | .2 |
| THC MASS GRAMS | .04 |
| CO MASS GRAMS | .48 |
| CO2 MASS GRAMS | 1950.1 |
| NOX MASS GRAMS | .04 |
| RUN TIME SECONDS | 765. |
| DFC, WET (DRY) | .919 ( .906) |
| SCF, WET (DRY) | 1.000 ( .970) |
| VOL (SCM) | 113.1 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 10.12 |

| | | |
|---|---|---|
| TEST NUMBER. | | 92TJM2-02 |
| BAROMETER. | MM HG | 736.9 |
| HUMIDITY. | G/KG | 9.3 |
| TEMPERATURE. | DEG C | 35.7 |
| CARBON DIOXIDE. | G/MI | 192.7 |
| FUEL ECONOMY. | MPG | 25.6 |
| HYDROCARBONS. (THC) | G/MI | .00 |
| CARBON MONOXIDE. | G/MI | .05 |
| OXIDES OF NITROGEN. | G/MI | .00 |

SOUTHWEST RESEARCH INSTITUTE - DEPARTMENT OF EMISSIONS RESEARCH
NYCC - VEHICLE EMISSIONS RESULTS -
PROJECT 08-2346-001

TEST NO. 92TJM2-02 RUN 1
VEHICLE MODEL 86 TOYOTA CAMRY
ENGINE 2.0 L(122. CID) L-4
TRANSMISSION A3

BAROMETER 736.60 MM HG(29.00 IN HG)
RELATIVE HUMIDITY 43. PCT
BAG RESULTS

VEHICLE NO.311
DATE 7/ 3/90
BAG CART NO. 2
DYNO NO. 3
CVS NO. 2
DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
ABS. HUMIDITY 9.1 GM/KG

TEST WEIGHT 1361. KG( 3000. LBS)
ACTUAL ROAD LOAD 5.5 KW( 7.4 HP)
M85 EM-998-F
ODOMETER 36957. KM( 22964. MILES)

NOX HUMIDITY CORRECTION FACTOR .95

| TEST CYCLE | NYCC |
|---|---|
| BLOWER DIF P MM. H2O(IN. H2O) | 762.0 (30.0) |
| BLOWER INLET P MM. H2O(IN. H2O) | 756.9 (29.8) |
| BLOWER INLET TEMP. DEG. C(DEG. F) | 41.1 (106.0) |
| BLOWER REVOLUTIONS | 47796. |
| TOT FLOW STD. CU. METRES(SCF) | 88.6 ( 3129.) |
| THC SAMPLE METER/RANGE/PPM | 11.4/ 2/ 11. |
| THC BCKGRD METER/RANGE/PPM | 11.8/ 2/ 12. |
| CO SAMPLE METER/RANGE/PPM | 9.7/ 12/ 9. |
| CO BCKGRD METER/RANGE/PPM | .0/ 12/ 0. |
| CO2 SAMPLE METER/RANGE/PCT | 61.5/ 14/ .3908 |
| CO2 BCKGRD METER/RANGE/PCT | 11.9/ 14/ .0395 |
| NOX SAMPLE METER/RANGE/PPM | 1.2/ 1/ .3 |
| NOX BCKGRD METER/RANGE/PPM | .0/ 1/ .0 |
| DILUTION FACTOR | 30.63 |
| THC CONCENTRATION PPM | 0. |
| CO CONCENTRATION PPM | 9. |
| CO2 CONCENTRATION PCT | .3525 |
| NOX CONCENTRATION PPM | .3 |
| THC MASS GRAMS | .00 |
| CO MASS GRAMS | .94 |
| CO2 MASS GRAMS | 572.1 |
| NOX MASS GRAMS | .05 |
| RUN TIME SECONDS | 598. |
| DFC, WET (DRY) | .957 ( .954) |
| SCF, WET (DRY) | 1.000 ( .979) |
| VOL (SCM) | 88.6 |
| SAM BLR (SCM) | .00 |
| MI (MEASURED) | 1.17 |

| | | |
|---|---|---|
| TEST NUMBER, | | 92TJM2-02 |
| BAROMETER, | MM HG | 736.6 |
| HUMIDITY, | G/KG | 9.1 |
| TEMPERATURE, | DEG C | 25.6 |
| CARBON DIOXIDE, | G/MI | 488.9 |
| FUEL ECONOMY, | MPG | 10.1 |
| HYDROCARBONS, (THC) | G/MI | .00 |
| CARBON MONOXIDE, | G/MI | .90 |
| OXIDES OF NITROGEN, | G/MI | .04 |