California Environmental Engineering

ENVIRONMENTAL TESTING LABORATORY
3231 S. STANDARD AVE. SANTA ANA, CA 92705
(714) 545-9822 FAX (714) 545-7667

February 28, 1992

Mr. Bill Williams, Chairman
Microlon, Inc.
1305 Fraser Street, Suite D-5
Bellingham, Washington 98226

Re: Testing the effect of Microlon on emissions in two vehicles

Dear Mr. Williams,

In accordance with your request that California Environmental Engineering laboratories perform emissions testing to evaluate the effectiveness of your Microlon engine treatment, I am pleased to provide you with our final report on this evaluation.

This laboratory equipment and procedures are inspected on a regular basis by both the Environmental Protection Agency and the California Air Resources Board to insure full compliance with the Code of Federal regulations..

Among the 15 or 20 products or devices that we have tested for gasoline engines in the past 5 years the lab has not run across anything that has had the effectiveness in reducing Nitrous Oxide emissions that Microlon has shown us.

Very few of these other products or devices reduce Nitrous Oxide emissions at all. The best of them measured only about a 2 or 3% reduction, in most cases they increased Nitrous Oxide emissions.

Additionally, the Microlon treatment's reduction of Hydrocarbon emissions by 24.9% and Carbon Monoxide reduction by 43.8% in the Mercedes Benz, and Nitrous Oxide reduction of 21.4% in the Mazda are indicative of a very high order of effectiveness.

I have enjoyed the cooperative working relationship developed between us. We look forward to working further with the Microlon, Inc. staff on this important and timely project.

Sincerely,

Larry Swiencki

Larry Swiencki
Manager
California Environmental Engineering

LS/tm

Encl:

California Environmental Engineering
ENVIRONMENTAL TESTING LABORATORY
3231 S. STANDARD AVE. SANTA ANA, CA 92705
(714) 545-9822 FAX (714) 545-7667

TEST REPORT

Automotive Exhaust Emission and Fuel Economy Effects of Microlon C100 Engine Treatment

February 27, 1992

Prepared for

Microlon, Inc.
P.O. Box 1946
Bellinghem, Wa. 98227

A complete description of the procedures that are utilized during the FTP tests can be found in the Code of Federal Regulations, Title 40, Parts 86 and 600, revised as of July 1, 1988.

TEST VEHICLES

Two test vehicles were used for evaluation of the Microlon C100 Engine Treatment.

TEST VEHICLE #1

1989 Mazda MX6

VIN.	1YVGD31AZK5214631
Engine Type	IL4
Fuel System	Electronic Fuel Injection
Transmission	Manual 5 Speed
Ignition System	Electronic

TEST VEHICLE #2

1984 Mercedes Benz 500Sec

VIN.	WDB126044lA076367
Engine Type	V8
Fuel System	Bosch Fuel Injection
Transmission	Automatic
Ignition System	Electronic

VEHICLE PREPARATION

The test vehicles were equipped with original equipment manufacturer's (OEM) emission controls pursuant to the year of manufacture. The test vehicles recieved an oil change, filter change (air, oil, fuel) and set to manufacture's specifications prior to baseline tests. (See Attachment "A").

TEST PROCEDURES

All tests were conducted in exact accordance with CFR title 40, parts 86 and 600, revised July 1, 1988, using EPA 511 test plan.

The test vehicles were baseline tested in standard OEM configuration following the vehicle preparation. A complete CVS 75 cold start test and highway fuel test was on each vehicle. (See attachment"B"). The Microlon C100 Engine Treatment was then added according to the manufactures specifications. Test vehicle one (Mazda) then accumulated fifty five (55) miles and test vehicle two (MBZ) accumulated eleven hundred ten (1110) miles. The vehicles were preconditioned and a complete CVS 75 and highway fuel test conducted. (See attachment "C").

CONCLUSIONS AND RECOMMENDATIONS

The Microlon C100 Engine Treatment showed positive results on these two test vehicles. (See test result summary; attachment "D").

California Environmental Engineering feels that these positive results warrant additional evaluation and testing on a larger fleet of vehicles from varied manufacture's with varied engine sizes.

Test Vehicle Check-In

1 20 92
Mo Day Yr

Vehicle No.	Year	Make	Model	Mileage
Mic 2	89	Mazda	MX6	38538Mi

Eng. Displ.	Trans.	A/C	Vehicle Identification No.
2.2L	M-5	YES	1YVGD31A2K5214631

KTK2.2V5FCH8
Eng. Family (Emission Label)

3000 Inertia

7.3 AHP

1. Check exhaust system for leaks	✓
2. Check fuel system for leaks	✓
3. Check belts and hoses	✓
4. Check emission hose routing	✓
5. Check fluid levels: Engine oil	✓
Transmission	✓
Coolant	✓
6. Check air filter	✓
7. Check PCV	✓
8. Check for sufficient drive wheel tire tread	✓
9. Set drive wheel tire pressure to 45 psi	45
10. Attach smog check compliance certificate and test results	✓

COMMENTS: _____

L. Swiecki
Technician's Name

L. Swiecki
Technician's Signature

Engine Parameter Data

1	20	92
Mo	Day	Yr

Mic. 2	89	Mazda	MX6	38538mi
Vehicle No.	Year	Make	Model	Mileage

2.2L	TV4	1YVGD31A2K5214631
Eng. Displ.	Type	Vehicle Identification No.

Test #	Test	Computer Scanner - Make/Model	
*	1. Battery Voltage	13-8V	
*	2. Trouble Codes	no codes	
	3. Prom I. D. No.	w/A	
*	4. Closed/Open Loop - Rich/Lean Status	closed	yes
*	5. O_2 Voltage (Varies)	.2V - .6V	
*	6. Air Cleaner Divert-Air Switch Solenoid	w/A	
*	7. EGR Solenoid-Canister Purge Solenoid	w/A	
	8. Park/Neutral Switch - A/C Clutch	ok	ok
*	9. RPM - Throttle Position Sensor	750	
	10. Nose Switch - Wide Open Throttle	w/A	
*	11. RPM - MPH	750	0
	12. RPM - Torque Conv. Clutch	w/A	ok
	13. MPH - Torque Conv. Clutch		ok
	14. 3rd Gear SW - 4th Gear SW	w/A	
	15. Manifold Press. KPA - Volts	w/A	
	16. Barometric Press. KPA - Volts	[redacted]	w/A
*	17. Coolant Temperature-Idle Air Position	195F	
	18. Knock retard-Throttle Body Backup	w/A	
*	19. RPM - Mixture Control Dwell	w/A	
	20. Ignition - Crank	w/A	

* 23. Turbo Boost - O_2 Cross Counts ____ N/A

24. Start-up Enrich - Blend Enrich N/A

47. Diesel EGR Min. - Max. N/A

48. Exh. Press. Reg. N/A

49. EGR Press. Desired - Actual YES

* 50. Ignition Timing Spec.-Actual Measured 6° BTC

* Items marked must be verified by conventional means, i.e., timing light, digital multimeter (10,000 ohm impedance), OEM procedure, etc., if computer scanner is not available.

COMMENTS: _____

Wayne Warton
Technician's Name

Technician's Signature

Test Vehicle Check-In

2 3 92
Mo Day Yr

Micro 3	84	MAZ	500 SEC	54576 mi
Vehicle No.	Year	Make	Model	Mileage

303.5	Auto	YES	WDB126044 1A 076367
Eng. Displ.	Trans.	A/C	Vehicle Identification No.

	3875	13.2
Eng. Family (Emission Label)	Inertia	AHP

1. Check exhaust system for leaks	✓
2. Check fuel system for leaks	✓
3. Check belts and hoses	✓
4. Check emission hose routing	✓
5. Check fluid levels: Engine oil	✓
Transmission	✓
Coolant	✓
6. Check air filter	✓
7. Check PCV	✓
8. Check for sufficient drive wheel tire tread	✓
9. Set drive wheel tire pressure to 45 psi	45
10. Attach smog check compliance certificate and test results	N/A

COMMENTS: _____

L. Swiencki
Technician's Name

L. Swiencki
Technician's Signature

Engine Parameter Data

2 3 92
Mo Day Yr

Micro 3	84	MAZ	5005EC	54576 mi
Vehicle No.	Year	Make	Model	Mileage

303.5	V8	WDB126044JA076367
Eng. Displ.	Type	Vehicle Identification No.

Test #	Test	Computer Scanner - Make/Model	
*	1. Battery Voltage	13-8V	
*	2. Trouble Codes	N/A	
	3. Prom I. D. No.	N/A	
*	4. Closed/Open Loop - Rich/Lean Status	Closed	Yes
*	5. O_2 Voltage (Varies)	.2V - .6V	
*	6. Air Cleaner Divert-Air Switch Solenoid	N/A	
*	7. EGR Solenoid-Canister Purge Solenoid	N/A	
	8. Park/Neutral Switch - A/C Clutch	Yes	Yes
*	9. RPM - Throttle Position Sensor	850+100	N/A
	10. Nose Switch - Wide Open Throttle	N/A	N/A
*	11. RPM - MPH	850	0
	12. RPM - Torque Conv. Clutch	850	N/A
	13. MPH - Torque Conv. Clutch	0	N/A
	14. 3rd Gear SW - 4th Gear SW	Yes	Yes
	15. Manifold Press. KPA - Volts	N/A	N/A
	16. Barometric Press. KPA - Volts	N/A	N/A
*	17. Coolant Temperature-Idle Air Position	175 F	N/A
	18. Knock retard-Throttle Body Backup	N/A	
*	19. RPM - Mixture Control Dwell	N/A	
	20. Ignition - Crank		

21. Power Steering	yes		
22. Block Learn - Integrator	N/A		
* 23. Turbo Boost - O_2 Cross Counts	N/A		
24. Start-up Enrich - Blend Enrich	N/A		
25. ALCL Vote - MC Sol. Dwell	N/A		
26. O_2 Loop region - MC Sol. Dwell	N/A		
27. Altitude SW - Temp. SW	N/A		
28. Press. diagnostic State (Min-T)		N/A	
* 29. Fan Sol. - Early Fuel Evaporation		N/A	
30. Spark Advance Ref. - ISC Motor		N/A	
31. E-Cell		N/A	
32. Hi Batt - Lo Batt Status	No	No	
33. Quasi Asynch - Asynch	N/A		
34. Manifold Air Temp.- Fan	N/A		
35. Air Flow - Filtered Load (LV8)	N/A		
36. Prop. Step Taken		Yes	
37. Clear Flood Mode		N/A	
38. Selected Diagnostic State		N/A	
39. O/D Disable - 4th Gear Delay		Yes	
40. A/C Head Pressure		N/A	
41. Inj. Pulse Width		N/A	
42. Vacuum - Wastegate Bypass		N/A	
43. Ignition Spark		16° BTC	
44. Eng. Temp. Warm - Hot	145	CLAM	
45. EST		N/A	
46. Rear Vac-Brk - A/C Freon Low		N/A	

47. Diesel EGR Min. - Max. ____ N/A

48. Exh. Press. Reg. W/A

49. EGR Press. Desired - Actual Yes ____

* 50. Ignition Timing Spec.-Actual Measured 16° BTC

* Items marked must be verified by conventional means, i.e., timing light, digital multimeter (10,000 ohm impedance), OEM procedure, etc., if computer scanner is not available.

COMMENTS: _____

Wanda's Wartar
Technician's Name

Wanda's Wartar
Technician's Signature

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6937	DATE	1/23/92	VEHICLE	MAZDA
MODEL	MX6	VIN	31A2K5214631	ENG. DISP.	2.2L
CAT. CONV.	YES	YEAR	1989	A/C	YES
CURB WT	N/A	INERTIA WT	3000	ARHP	7.3
IRHP	5.2	OPERATOR	L.SWIENCKI	DRIVER	J.DIETRICH
TIME	11:57	ODOMETER	38528MI	TRANS.	M-5
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #2-BASELINE
78 FTP CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	58.40	73.80	2757.64
BAG#2	30.1	58.60	74.90	4732.54
BAG#3	30.1	58.10	76.00	2743.26

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	3.6	38.03	0.88	13.18
BAG#2	3.8	35.90	0.88	19.51
BAG#3	3.6	31.65	0.86	15.43

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

			AMBIENT BAG		SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC	PPM BAG#1	3	4.0	12.47	27.3	82.30	3.19
HC	PPM BAG#2	2	11.1	11.24	12.8	12.95	0.18
HC	PPM BAG#3	2	9.1	9.24	13.2	13.35	0.21
CO	PPM BAG#1	3	1.9	12.59	52.9	439.42	38.89
CO	PPM BAG#2	1	4.4	8.05	13.1	24.16	2.58
CO	PPM BAG#3	1	4.1	7.49	34.8	65.39	5.28
NOX	PPM BAG#1	2	0.5	0.47	15.0	14.96	1.91
NOX	PPM BAG#2	2	0.4	0.37	1.8	1.77	0.32
NOX	PPM BAG#3	2	0.3	0.27	3.1	3.07	0.36
CO2	% BAG#1	2	2.4	0.09	23.9	0.96	1258.17
CO2	% BAG#2	2	2.3	0.09	17.3	0.68	1473.35
CO2	% BAG#3	2	2.1	0.08	21.5	0.86	1118.08

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS GM/MI	CARBON MONOXIDE GM/MI	OXIDES OF NITROGEN GM/MI	CARBON DIOXIDE GM/MI
0.225	3.006	0.182	357.099

78 FTP FUEL ECONOMY PER 40 CFR 600.113-88
25.18 MILES PER GALLON

QUALITY CONTROL

BY L.Swiencki

PASS ✓ FAIL

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6939	DATE	1/23/92	VEHICLE	MAZDA
MODEL	MX6	VIN	31A2K5214631	ENG. DISP.	2.2L
CAT. CONV.	YES	YEAR	1989	A/C	YES
CURB WT	N/A	INERTIA WT	3000	ARHP	7.3
IRHP	5.2	OPERATOR	L.SWIENCKI	DRIVER	J.DIETRICH
TIME	13:47	ODOMETER	38538MI	TRANS.	M-5
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #2-BASELINE
HFET CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	60.20	78.20	4123.08

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	10.4	33.19	0.88	10.81

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

		AMBIENT BAG		SAMPLE BAG		MASS DATA
	RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC PPM BAG#1	2	9.2	9.34	13.2	13.35	0.33
CO PPM BAG#1	1	4.2	7.68	19.9	36.89	4.07
NOX PPM BAG#1	2	0.4	0.37	3.5	3.47	0.62
CO2 % BAG#1	2	2.0	0.08	30.0	1.23	2491.04

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.031	0.390	0.059	239.041

HFET FUEL ECONOMY PER 40 CFR 600.113-88
38.07 MILES PER GALLON

L.L Swiencki

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6983	DATE	2/4/92	VEHICLE	MBZ
MODEL	500SEC	VIN	0441A076367	ENG. DISP.	303.5
CAT. CONV.	YES	YEAR	1984	A/C	YES
CURB WT	3550	INERTIA WT	3875	ARHP	13.2
IRHP	11.6	OPERATOR	J.DIETRICH	DRIVER	E.ATACHIAN
TIME	15:20	ODOMETER	54594MI	TRANS.	AUTO
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #3-BASELINE
78 FTP CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.0	55.00	76.50	2708.81
BAG#2	30.0	55.30	77.50	4641.41
BAG#3	30.0	55.00	77.00	2693.56

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	3.6	21.29	0.82	7.95
BAG#2	3.9	20.27	0.82	11.21
BAG#3	3.6	20.33	0.82	8.87

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

			AMBIENT BAG		SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC	PPM BAG#1	3	1.7	5.57	28.9	87.10	3.64
HC	PPM BAG#2	2	5.9	6.03	7.9	8.04	0.19
HC	PPM BAG#3	2	5.3	5.43	18.6	18.76	0.61
CO	PPM BAG#1	3	0.5	3.36	51.8	428.11	37.97
CO	PPM BAG#2	1	2.0	3.63	5.0	9.15	0.89
CO	PPM BAG#3	1	1.8	3.26	14.3	26.39	2.09
NOX	PPM BAG#1	2	0.3	0.27	26.7	26.65	3.18
NOX	PPM BAG#2	2	0.3	0.27	9.1	9.06	1.82
NOX	PPM BAG#3	2	0.0	-0.03	15.1	15.06	1.80
CO2	% BAG#1	2	1.3	0.05	38.6	1.63	2231.95
CO2	% BAG#2	2	1.6	0.06	29.1	1.19	2739.21
CO2	% BAG#3	2	1.3	0.05	35.9	1.51	2040.68

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.281	2.459	0.563	650.125

78 FTP FUEL ECONOMY PER 40 CFR 600.113-88
13.94 MILES PER GALLON

QUALITY CONTROL

BY L. Lorinczi

PASS ✓ FAIL

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6984	DATE	2/4/92	VEHICLE	MBZ
MODEL	500SEC	VIN	0441A076367	ENG. DISP.	303.5
CAT. CONV.	YES	YEAR	1984	A/C	YES
CURB WT	3550	INERTIA WT	3875	ARHP	13.2
IRHP	11.6	OPERATOR	J.DIETRICH	DRIVER	E.ATACHIAN
TIME	17:10	ODOMETER	54605MI	TRANS.	AUTO
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #3-BASELINE
HFET CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.0	54.00	76.80	4010.63

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	10.4	17.85	0.81	6.12

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

		AMBIENT BAG		SAMPLE BAG		MASS DATA
	RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC PPM BAG#1	2	7.4	7.54	12.1	12.24	0.39
CO PPM BAG#1	1	2.7	4.92	37.2	70.07	8.72
NOX PPM BAG#1	2	0.3	0.27	12.3	12.26	2.11
CO2 % BAG#1	2	1.1	0.04	49.7	2.18	4456.65

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.037	0.837	0.202	427.661

HFET FUEL ECONOMY PER 40 CFR 600.113-88
21.27 MILES PER GALLON

QUALITY CONTROL

BY _____

P[illegible] _____ F[illegible] _____

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6942	DATE	1/24/92	VEHICLE	MAZDA
MODEL	MX6	VIN	31A2K5214631	ENG. DISP.	2.2L
CAT. CONV.	YES	YEAR	1989	A/C	YES
CURB WT	N/A	INERTIA WT	3000	ARHP	7.3
IRHP	5.2	OPERATOR	L.SWIENCKI	DRIVER	J.DIETRICH
TIME	10:21	ODOMETER	38600MI	TRANS.	M-5
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS W/MICROLON C100 AFTER 55 MILE RUN IN
78 FTP CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	56.60	71.30	2757.33
BAG#2	30.1	57.60	73.10	4715.05
BAG#3	30.1	57.80	75.20	2744.03

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	3.6	38.42	0.87	13.33
BAG#2	3.8	37.11	0.87	19.71
BAG#3	3.6	32.56	0.86	15.57

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

			AMBIENT BAG		SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC	PPM BAG#1	3	3.0	9.47	22.3	67.32	2.64
HC	PPM BAG#2	2	9.1	9.24	11.7	11.84	0.24
HC	PPM BAG#3	2	8.0	8.14	13.9	14.05	0.29
CO	PPM BAG#1	3	2.2	14.59	47.3	382.99	33.59
CO	PPM BAG#2	1	5.3	9.70	20.3	37.64	4.42
CO	PPM BAG#3	1	4.5	8.23	38.6	72.81	5.89
NOX	PPM BAG#1	2	0.9	0.87	12.5	12.46	1.51
NOX	PPM BAG#2	2	0.9	0.87	1.7	1.67	0.19
NOX	PPM BAG#3	2	0.6	0.57	3.6	3.57	0.39
CO2	% BAG#1	2	2.8	0.11	23.8	0.96	1231.67
CO2	% BAG#2	2	2.8	0.11	17.1	0.67	1403.47
CO2	% BAG#3	2	2.6	0.10	21.3	0.85	1080.98

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.207	2.998	0.143	343.770

78 FTP FUEL ECONOMY PER 40 CFR 600.113-88
26.14 MILES PER GALLON

QUALITY CONTROL

BY L.Swiencki

PASS ✓ FAIL

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	6945	DATE	1/24/92	VEHICLE	MAZDA
MODEL	MX6	VIN	31A2K5214631	ENG. DISP.	2.2L
CAT. CONV.	YES	YEAR	1989	A/C	YES
CURB WT	N/A	INERTIA WT	3000	ARHP	7.3
IRHP	5.2	OPERATOR	L.SWIENCKI	DRIVER	J.DIETRICH
TIME	12:41	ODOMETER	38610MI	TRANS.	M-5
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS W/MICROLON C100 AFTER 55 MILE RUN IN
HFET CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	54.80	72.70	4109.22

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	10.4	28.63	0.84	11.24

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

			AMBIENT BAG		SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC	PPM BAG#1	2	8.6	8.74	15.5	15.65	0.52
CO	PPM BAG#1	1	5.3	9.70	31.2	58.42	6.72
NOX	PPM BAG#1	2	0.1	0.07	3.3	3.27	0.60
CO2	% BAG#1	2	1.5	0.06	28.9	1.19	2413.30

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.050	0.645	0.057	231.580

HFET FUEL ECONOMY PER 40 CFR 600.113-88
39.22 MILES PER GALLON

QUALITY CONTROL

BY L.Swiencki

PASS ✓

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	7033	DATE	2/25/92	VEHICLE	MBZ
MODEL	500SEC	VIN	0441A076367	ENG. DISP.	303.5
CAT. CONV.	YES	YEAR	1984	A/C	YES
CURB WT	3550	INERTIA WT	3875	ARHP	13.2
IRHP	11.6	OPERATOR	L.SWIENCKI	DRIVER	E.ATACHIAN
TIME	15:00	ODOMETER	55746MI	TRANS.	AUTO
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #3-AFTER 1116 MILE ACCUMULATION
78 FTP CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	61.20	81.50	2730.73
BAG#2	30.1	61.00	82.00	4676.02
BAG#3	30.1	61.00	81.50	2708.38

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	3.6	29.16	0.88	8.32
BAG#2	3.8	27.63	0.87	11.77
BAG#3	3.6	28.60	0.88	9.06

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

			AMBIENT BAG		SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC	PPM BAG#1	3	1.7	5.26	19.2	57.96	2.38
HC	PPM BAG#2	2	6.1	6.37	8.0	8.28	0.19
HC	PPM BAG#3	2	5.7	5.96	19.1	19.48	0.63
CO	PPM BAG#1	3	0.5	3.31	30.4	227.47	20.22
CO	PPM BAG#2	1	2.1	3.76	3.8	6.82	0.52
CO	PPM BAG#3	1	2.1	3.76	13.0	23.69	1.82
NOX	PPM BAG#1	2	0.2	0.15	24.8	24.74	3.21
NOX	PPM BAG#2	2	0.1	0.05	7.2	7.14	1.57
NOX	PPM BAG#3	2	0.1	0.05	8.5	8.44	1.08
CO2	% BAG#1	2	1.0	0.04	38.0	1.58	2194.68
CO2	% BAG#2	2	0.9	0.03	28.3	1.14	2682.75
CO2	% BAG#3	2	1.0	0.04	35.7	1.47	2024.36

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS	CARBON MONOXIDE	OXIDES OF NITROGEN	CARBON DIOXIDE
GM/MI	GM/MI	GM/MI	GM/MI
0.211	1.381	0.480	643.765

78 FTP FUEL ECONOMY PER 40 CFR 600.113-88
14.11 MILES PER GALLON

QUALITY CONTROL

BY L.Swiencki

PASS ✓ FAIL

CALIFORNIA ENVIRONMENTAL ENGINEERING

40 CFR 86.144-78

TEST #	7036	DATE	2/25/92	VEHICLE	MBZ
MODEL	500SEC	VIN	0441A076367	ENG. DISP.	303.5
CAT. CONV.	YES	YEAR	1984	A/C	YES
CURB WT	3550	INERTIA WT	3875	ARHP	13.2
IRHP	11.6	OPERATOR	L.SWIENCKI	DRIVER	E.ATACHIAN
TIME	17:02	ODOMETER	55756MI	TRANS.	AUTO
CARB.	NO	FUEL INJ.	YES	FUEL	INDOLENE
CARBON WT F	.867	SPEC. GRAV	.793	NET HEAT V	18500

COMMENTS MICROLON #3-AFTER 1116 MILE ACCUMULATION
HFET CVS TEST WITH CRITICAL FLOW VENTURI

	BAROMETER	TEMP WET	TEMP. DRY	V.MIX
BAG#1	30.1	61.20	82.20	4019.64

	MILES	REL HUM	NOX CORECTION	DIL. FCT.
BAG#1	10.4	27.79	0.88	6.17

HYDROCARBONS RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON MONOXIDE RANGE CODES 0=CONC. 1=200 2=500 3=1000 4=3000 PPM
OXIDES OF NITROGEN RANGE CODES 0=CONC. 1=30 2=100 3=300 4=1000 PPM
CARBON DIOXIDE RANGE CODES 0=CONC. 1=2% 2=6%

		AMBIENT BAG			SAMPLE BAG		MASS DATA
		RANGE	%F.S.	CONC.	%F.S.	CONC.	GRAMS
HC PPM	BAG#1	2	6.1	6.37	16.8	17.16	0.78
CO PPM	BAG#1	1	2.3	4.12	46.4	88.23	11.24
NOX PPM	BAG#1	2	0.0	-0.05	11.0	10.94	2.10
CO2 %	BAG#1	2	1.0	0.04	49.8	2.16	4441.47

WEIGHTED MASS EMISSIONS SUMMARY

HYDROCARBONS GM/MI	CARBON MONOXIDE GM/MI	OXIDES OF NITROGEN GM/MI	CARBON DIOXIDE GM/MI
0.074	1.078	0.201	426.204

HFET FUEL ECONOMY PER 40 CFR 600.113-88
21.32 MILES PER GALLON

QUALITY CONTROL

BY L Swiencki

PASS ✓ FAIL

TEST RESULT SUMMARY

Vehicle #1 Mazda	HC	CO	NOX	CO2	City Fe	Hwy. Fe
Baseline	.225	3.006	.182	357.099	25.18	38.07
W/C100	.207	2.998	.143	343.770	26.14	39.22
% Change	-8%	-.3%	-21.4%	-3.7%	+3.8%	+3%

Vehicle #2 Mercedes Benz						
Baseline	.281	2.459	.563	650.125	13.94	21.27
W/C100	.211	1.381	.480	643.765	14.11	21.32
% Change	-24.9%	-43.8%	-14.7%	-1%	+1.2%	+.2%

Two vehicle combined average percent change.

HC	CO	NOX	CO2	City Fe	Hwy. Fe
-16.45%	-22.05%	-18.05%	-2.35%	+2.5%	+1.6%