UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
2565 PLYMOUTH ROAD
ANN ARBOR, MICHIGAN 48105-2498

OFFICE OF
AIR AND RADIATION

August 24, 2000 CCD-00-12 (LDV/LDT/HD/SVM/ICI/)

Dear Manufacturer:

SUBJECT: REISSUE OF ASSIGNED DF's FOR GASEOUS-FUELED VEHICLES AND ENGINES; formerly CD-95-14

On September 27, 1995, the Environmental Protection Agency issued a *Dear Manufacturer Letter,* CD-95-14, providing assigned deterioration factors (DF's) for gaseous-fueled vehicles and engines.

The original *Dear Manufacturer Letter* was applicable through Model Year 2000. In the original guidance EPA stated that the eligibility for 2001, and later MY's, durability requirements would be addressed at a later date. EPA again, in a Final Rule entitled: "*Optional Certification Streamlining Procedures for Light-Duty Vehicles, Light-duty Trucks, and Heavy-Duty Engines for Original Equipment Manufacturers and for Aftermarket Conversion Manufacturers,*" acknowledged that CD-14-95 would expire with the 2000 MY. In this rulemaking (45 FR 11900), EPA decided that extending the applicability of the assigned DF's of CD-14-95 was outside the scope of that Final rule. However, we did indicate that the issue would be addressed in a separate context. The issuance of this guidance full fills both of the promised actions.

The guidance in this document will remain in effect until rescinded or modified. In addition, except as otherwise changed in this letter, the provisions of CD-95-14 continue to apply, including the provisions on rescinding the assigned DF's. The actual DF values remain unchanged.

Under EPA's certification regulations, small-volume manufacturers may use assigned deterioration factors (DF's) for use in certifying new vehicles instead of operating the vehicle for its full useful life. The standard protocol EPA uses to assign DF's is described in EPA Advisory Circular No. 51-C. Certain small-volume manufacturers of alternative fuel vehicles and engines may choose one of the three methods described in this letter for deciding the appropriate DF's for their product line.

In the first method, applicable manufacturers may calculate and use DF's based on the criteria of 40 CFR 86.1826.01 for vehicles certified under the provisions of the ***CAP 2000*** rules or the provisions of 40 CFR 86.094-14 for vehicles or engines not subject to the ***CAP 2000*** rules.

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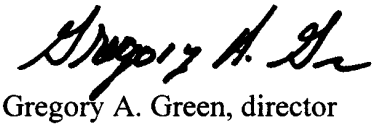
In the second method for determining the applicable DF's for their product line, the manufacturers can use the applicable assigned DF's contained in one of the enclosures identified in Enclosure 1 thru 8.

In the third method for determining the applicable DF's for their product line, manufacturers can follow the abbreviated durability protocol depicted in Enclosure 9. The DF's calculated using the actual emissions data obtained via the test protocol in Enclosure 9 will become the assigned DF's for that manufacturer. The criteria to use the data generated by a specific engine family to satisfy the DF data in another engine family or in another model year will be the same as described in Advisory Circular 17F.

For vehicles converted to dual-fuel operation (that is, vehicles that can operate on two separate fuels but only one fuel at a time and not on a mixture of fuels), the DF's depicted in this document can only be applied to emission values obtained when certifying the vehicle/engine on a gaseous fuel. The DF's that apply to such vehicles when certified on the fuel for which the vehicle/engine was originally certified must be based on the original fuel. EPA publishes, on the on the Internet, the certification test results for previous model years at; http://www.epa.gov/otaq/crttst.htm. If the DF's needed are not on this WEB site, or if you have questions, you may contact Mr. Clifford Tyree, 734-214-4310 or at "tyree.clifford@epa.gov."

Sincerely,



Gregory A. Green, director
Certification and Compliance Division
Office of Transportation and Air Quality

Enclosures

Enclosure 1

DF's for CLEAN-FUEL LIGHT-DUTY VEHICLES

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-1 & A104-2; 59 FR 50075)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TLEV	50K	0.125	1.6	3.4	1.6	0.4	2.0	0.015	1.6		
	100K	0.156	1.9	4.2	1.9	0.6	2.3	0.018	1.8	0.08	1.3
LEV **	50K	0.075	1.6	3.4	1.6	0.2	2.0	0.015	1.6		
	100K	0.090	1.8	4.2	1.9	0.3	2.3	0.018	1.8	0.08	1.3
ULEV	50K	0.040	1.8	1.7	1.6	0.2	2.0	0.008	1.8		
	100K	0.055	2.1	2.1	1.9	0.3	2.3	0.011	2.1	0.04	1.3

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULE NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 2 A

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-3 & A104-4; 59 FR 50075)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TLEV	50K	0.125	1.6	3.4	1.6	0.4	2.0	0.015	1.6		
	100K	0.156	1.9	4.2	1.9	0.6	2.3	0.018	1.8	0.08	1.3
LEV **	50K	0.075	1.6	3.4	1.6	0.2	2.0	0.015	1.6		
	100K	0.090	1.8	4.2	1.9	0.3	2.3	0.018	1.8	0.08	1.3
ULEV	50K	0.040	1.8	1.7	1.6	0.2	2.0	0.008	1.8		
	100K	0.055	2.1	2.1	1.9	0.3	2.3	0.011	2.1	0.04	1.3

Loaded Vehicle Weight 0 - 3,751 lbs.

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULEV NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 2 B

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-3 & A104-4; 59 FR 50075)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TLEV	50K	0.160	1.6	4.4	1.6	0.7	1.7	0.018	1.7		
	100K	0.200	1.9	5.5	1.9	0.9	1.9	0.023	1.9	0.08	1.3
LEV **	50K	0.100	1.7	4.4	1.6	0.4	1.6	0.018	1.7		
	100K	0.130	2.0	5.5	1.9	0.5	1.9	0.023	1.9	0.08	1.3
ULEV	50K	0.050	1.8	2.2	1.7	0.4	1.6	0.019	1.9		
	100K	0.070	2.1	2.8	1.9	0.5	1.9	0.013	2.2	0.04	1.3

Loaded Vehicle Weight 3,751 lbs - 5,750 lbs.

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULE NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 3 A

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-5 & A104-6; 59 FR 50076)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
LEV **	50K	0.125	1.9	3.4	1.9	0.4	2.0	0.015	1.9		
	100K	0.180	2.2	5.0	2.2	0.6	2.3	0.022	2.2	0.08	1.3
ULEV	50K	0.075	1.9	1.7	1.9	0.2	2.0	0.008	2.0		
	100K	0.107	2.1	2.5	2.2	0.3	2.3	0.012	2.3	0.04	1.3

Adjusted Loaded Vehicle Weight 0 - 3,750 lbs.

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULEV NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 3 B

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-5 & A104-6; 59 FR 50076)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
LEV **	50K	0.160	1.9	4.4	1.9	0.7	1.9	0.018	2.0		
	100K	0.230	2.2	6.4	2.2	1.0	2.1	0.027	2.3	0.10	1.3
ULEV	50K	0.100	1.9	2.2	1.9	0.4	1.6	0.009	1.9		
	100K	0.143	2.1	3.2	2.2	0.5	1.9	0.013	2.2	0.05	1.3

Adjusted Loaded Vehicle Weight = 3,751 lbs - 5,750 lbs.

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULE NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 3 C

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables A104-5 & A104-6; 59 FR 50076)

		NMOG		CO		NOx		HCHC		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
LEV **	50K	0.195	1.9	5.0	1.9	1.1	1.8	0.022	1.9		
	100K	0.280	2.2	7.3	2.2	1.5	2.0	0.032	2.2	0.12	1.3
ULEV	50K	0.117	1.9	2.5	1.9	0.6	1.7	0.011	1.9		
	100K	0.167	2.1	3.7	2.2	0.8	2.0	0.16	2.2	0.06	1.3

Adjusted Loaded Vehicle Weight 5,751 lbs. & >

* PM applies to diesel vehicles only.

** LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULE NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled systems.

NMOG = Non-Methane Organic Gas, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 4

DF's for CLEAN-FUEL HEAVY-DUTY ENGINES

APPLICABLE UNTIL RESCINDED

Standards = grams / Bhp-Hr; Assigned DF's = Multipliers

(Table 5, 49 FR 50058)

	THC *		NMHC + NOx		CO		NOx		PM **		HCHO	
	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
LEV; Fed Fuel												
Gas <= 14K GVWR	1.1	1.9	3.8	2.2	14.4	1.6	4.0	1.3	N / A		N / A	
Gas > 14K GVWR	1.9	1.9	3.8	2.2	37.1	1.6	4.0	1.3	N / A		N / A	
Diesel	1.3	1.5	3.8	2.0	15.5	1.6	4.0	1.3	0.1	1.3	N / A	
LEV; CALIF FUEL												
Gas <= 14K GVWR	1.1	1.9	3.5	2.2	14.4	1.6	4.0	1.3	N / A		N / A	
Gas > 14K GVWR	1.9	1.9	3.5	2.2	37.1	1.6	4.0	1.3	N / A		N / A	
Diesel	1.3	1.5	3.5	2.0	15.5	1.6	4.0	1.3	0.1	1.3	N / A	
ILEV **												
Gas <= 14K GVWR	1.1	1.9	2.5	2.2	14.4	1.6	4.0	1.3	N / A		0.050	2.2
Gas > 14K GVWR	1.9	1.9	2.5	2.2	14.4	1.6	4.0	1.3	N / A		0.050	2.2
Diesel	1.3	1.5	2.5	2.0	14.4	1.6	4.0	1.3	0.1	1.3	0.050	2.2
ULEV												
Gas <= 14K GVWR	1.1	1.9	2.5	2.2	7.2	1.6	4.0	1.3	N / A		0.025	2.2
Gas > 14K GVWR	1.9	1.9	2.5	2.2	7.2	1.6	4.0	1.3	N / A		0.025	2.2
Diesel	1.3	1.5	2.5	2.0	7.2	1.6	4.0	1.3	0.05	1.3	0.025	2.2

* LIQUID PROPANE GAS ONLY

** Diesel only

*** ILEV's must also have a closed Evaporative system that exists on with dedicated gaseous-fueled systems.

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 5

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables 1, 49 FR 48474)

NATURAL GAS

		THC		NMHC		CO		NOx		PM*		EVAP	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TIER 0	50K	N / A		0.34	1.6	3.4	1.6	1.0	2.0	0.2	1.3	2.0	3.0
	100K	N / A		N / A		N / A		N / A		N / A		N / A	
TIER 1	50K	N / A		0.25	1.6	3.4	1.6	0.4	2.0	0.8	1.3	2.0	3.0
	100K	N / A		0.31	1.9	4.2	1.9	0.6	2.3	0.1	1.3	N / A	

LIQUID PROPANE GAS

TIER 0	50K	0.41	1.7	N / A		3.4	1.6	1.0	2.0	0.20	1.3	2.0	3.0
	100K	N / A		N / A		N / A		N / A		N / A		N / A	
TIER 1	50K	0.41	1.7	0.25	1.6	3.4	1.6	0.4	2.0	0.08	1.3	2.0	3.0
	100K	N / A		0.31	1.9	4.2	1.9	0.6	2.3	0.10	1.3	N / A	

* PM applies to diesel vehicles and Tier 1 vehicles.

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 6 A

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

NATURAL GAS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Table 2; 59 FR 48474 & 48475)

Loaded Vehicle Weight 0 - 3,750 lbs

		THC		NMHC		CO		NOx		PM **	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TIER 0	50K	N / A		N / A		N / A		N / A		N / A	
	100K	N / A		0.67 (0.83)	1.6	10 (14)	1.9	1.2	2.3	0.26	1.3
TIER 1	50K	N / A		0.25	1.6	3.4	1.6	0.4	2.0	0.08	1.3
	100K	N / A		0.31	1.9	4.2	1.9	0.6	2.3	0.10	1.3

Loaded Vehicle Weight 3,751 lbs - 5,750 lbs.

TIER 0	50K	N / A		N / A		N / A		N / A		N / A	
	100K	N / A		0.67 (0.83)	1.6	10 (14)	1.9	1.7	2.1	0.26	1.3
TIER 1	50K	N / A		0.32	1.6	4.4	1.6	0.7	1.8	0.08	1.3
	100K	N / A		0.40	1.9	5.5	1.9	0.97	2.1	0.10	1.3

* LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULEV NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled vehicles

** PM applies to diesel vehicles & Tier 1 vehicles

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 6 B

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

LIQUID PROPANE GAS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables 2; 59 FR 48474 & 48475)

Loaded Vehicle Weight 0 - 3,750 lbs

		THC		NMHC		CO		NOx		PM **	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
TIER 0	50K	N / A		N / A		N / A		N / A		N / A	
	100K	0.8 (1.0)	1.9	N / A		10 (14)	1.9	1.2	2.3	0.26	1.3
TIER 1	50K	N / A		0.25	1.6	3.4	1.6	0.4	2.0	0.08	1.3
	100K	0.8	1.9	0.31	1.9	4.2	1.9	0.6	2.3	0.10	1.3

Loaded Vehicle Weight 3,751 lbs - 5,750 lbs.

TIER 0	50K	N / A		0.32	1.6	N / A		N / A		N / A	
	100K	0.8 (1.0)	1.9	0.40	1.9	10 (14)	2.2	1.7	2.1	0.13	1.3
TIER 1	50K	N / A		0.32	1.6	4.4	1.6	0.7	1.8	0.08	1.3
	100K	0.8	1.9	0.40	1.9	5.5	1.9	0.97	2.1	0.10	1.3

* LEV and ILEV vehicles have the same exhaust emission standards for NMOG, CO, HCHO & PM and the ULEV NOx standard. ILEV's must also have a closed Evaporative system that exists on dedicated gaseous-fueled vehicles

** PM applies to diesel vehicles and Tier 1 vehicles.

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 7 A

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables 3; 59 FR 48475 & 48476)

NATURAL GAS

		THC		NMHC		CO		NOx		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
Tier 0 **	50K	N / A		N / A		N / A		N / A		N / A	
	100K	N / A		0.67 (0.83)	1.6	10 (14)	1.9	1.2	2.3	0.26	1.3
Tier 0 ***	50K	N / A		N / A		N / A		N / A		N / A	
	100K	N / A		0.67 (0.83)	1.6	10 (14)	1.9	1.7	2.3	0.13	1.3
Tier 1 ****	50K	N / A		0.32	1.9	4.4	1.9	0.07	1.9	N / A	
	100K	N / A		0.46	2.2	6.4	2.2	0.98	2.1	0.10	1.3
Tier 1 *****	50K	N / A		0.39	1.9	5.0	1.9	1.1	1.8	N / A	
	100K	N / A		0.56	2.2	7.3	2.2	1.53	2.1	0.12	1.3

* PM applies to diesel vehicles and Tier 1 vehicles.

**** Loaded Vehicle Weight 0 - 3,750 lbs.**

***** Loaded Vehicle Weight > 3,750 lbs.**

****** Loaded Vehicle Weight 3,751 - 5,750 lbs.**

******* Loaded Vehicle Weight > 5,750 lbs.**

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 7 B

DF's for CLEAN-FUEL LIGHT-DUTY TRUCKS

APPLICABLE UNTIL RESCINDED

Standards = grams / mile; Assigned DF's = Multipliers

(Tables 3; 59 FR 48475 & 48476)

LIQUID PROPANE GAS

		THC		NMHC		CO		NOx		PM *	
		Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
Tier 0 **	50K	N / A		N / A		N / A		N / A		N / A	
	100K	0.80 (1.0)	1.9	N / A		10 (14)	1.9	1.2	2.3	0.26	1.3
Tier 0 ***	50K	N / A		N / A		N / A		N / A		N / A	
	100K	0.80 (1.0)	1.9	N / A		10 (14)	1.9	1.7	2.3	0.13	1.3
Tier 1 ****	50K	N / A		0.32	1.9	4.4	1.9	0.07	1.9	N / A	
	100K	0.80 (1.0)	1.9	0.46	2.2	6.4	2.2	0.98	2.1	0.10	1.3
Tier 1 *****	50K	N / A		0.39	1.9	5.0	1.9	1.1	1.8	N / A	
	100K	0.80 (1.0)	1.9	0.56	2.2	7.3	2.2	1.53	2.1	0.12	1.3

* PM applies to diesel vehicles and Tier 1 vehicles.

**** Loaded Vehicle Weight 0 - 3,750 lbs.**

***** Loaded Vehicle Weight > 3,750 lbs.**

****** Loaded Vehicle Weight 3,751 - 5,750 lbs.**

******* Loaded Vehicle Weight > 5,750 lbs.**

THC = Total Hydrocarbons, NMOG = Non-Methane Organic Gas, NMHC = Non Methane Hydrocarbon CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 8

DF's for GASEOUS-FUEL HEAVY-DUTY ENGINES

APPLICABLE UNTIL RESCINDED

Standards = grams / Bhp-Hr; Assigned DF's = Multipliers

(Tables 4, 59 FR 48476)

	THC *		NMHC		CO		NOx		PM	
	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF	Emission Standard	DF
Natural Gas										
Otto 8,501 - 14,000 lbs. GVWR	N / A		0.9	2.2	14.4	1.6	5.0	1.3	N / A	
Otto > 14,000 lbs. GVWR			1.7	2.2	37.1	1.6	5.0	1.3	N / A	
Natural Gas										
Diesel 8,501 - 14,000 lbs. GVWR	N / A		1.2	2.0	1.5.5	1.6	5.0	1.3	0.10	1.3
Diesel > 14,000 lbs. GVWR			1.2	2.0	15.5	1.6	5.0	1.3	0.10	1.3
LPG										
Otto 8,501 - 14,000 lbs. GVWR	1.1	1.9	N / A		14.4	1.6	5.0	1.3	N / A	2.2
Otto > 14,000 lbs. GVWR	1.9	1.9			37.1	1.6	5.0	1.3	N / A	2.2
LPG										
Diesel 8,501 - 14,000 lbs. GVWR	1.3	1.5	N / A		15.5	1.6	5.0	1.3	0.10	1.0
Diesel > 14,000 lbs. GVWR	1.3	1.5			15.5	1.6	5.0	1.3	0.10	1.3

The bove values are for engines equipped with aftertretment devices.

THC = Total Hydrocarbons, NMHC = Non Methane Hydrocarbon, CO = Carbon Monoxide, NOx = Oxides of Nitrogen, PM = Particulates, HCHO = Formaldehyde

Enclosure 9

DURABILITY OPTION:

1. Valid until rescinded or modified.

2. All provisions of 40 CFR Part 86 apply unless specifically addressed in this abbreviated protocol.

2. The vehicle being converted must have been in the original certification configuration prior to the conversion.

3. Bench testing of valves and switches must show useful-life capability. Equipment manufacturers' data may be used in lieu of running data for each application.

4. The total sales for any manufacturer for ALL vehicles converted, without regard to the model year, cannot exceed 10,000 units unless EPA grants an extension up to 30,000.

5. A temperature profile of the catalyst, as outlined in A/C 17F, must show that vehicle operation on a gaseous fuel will not cause thermal degradation to the catalyst.

6. Accumulate 25,000 miles on the conversion system on a vehicle that has less than 75,000 miles.

7. An optional test at 0-conversion system miles is strongly encouraged to assure the installer that the system has been installed properly. Testing must be performed at each 5K, 10K, 15K, 20K, and 25K miles(± 250 miles) using equipment described in 40 CFR Subpart B as amended on September 21, 1994 (ref: 59 FR 48503).

8. The data generated at each test point will be treated as described in 40 CFR, Subpart A; e.g., line-crossing, multiple tests at a test point except where explicitly superseded by instructions in this enclosure.

9. The CARB data outlier program can be used to eliminate one (1) data point only.

10. No unscheduled maintenance to ANY emission control system. (Scheduled oil changes, filter changes, spark plug changes, CNG filters, etc., may be performed.)

11. If any unscheduled emission control system maintenance is performed, the vehicle would have to restart at 0-system miles and EPA would have to be provided with an engineering report as to why the need for the unscheduled maintenance and an engineering evaluation as to why the modifications to the failed part would be unlikely to occur in the field.

12. All of the DF values determined would have to be used to determine compliance with emission standards. That is, all of the DF values must come from either the data generated via this alternative procedure or from one of the eight enclosures.