State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-94

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Caterpillar, Inc. 1999 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Industrial Equipment

Fuel Type: Diesel

Engine Family	Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
XCPXL12.0ERM	12.0	(736)	Turbocharger Engine Control Module Charge Air Cooler

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
0.2	1.7	6.3	0.1	4	4	9

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 22nd day of December 1998.

R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

11/24/98

EO: U-R-1-94

Manufacturer: CATERPILLAR INC. Process Code: New Submission

EPA Engine Family: XCPXL12.0ERM Manufacturer Family Name: N/A

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
Note: Peak HP	and Peak torque	fuel rates are	nominal values.	Due to product-	ion engine avgs.	these fuel rates	may change.	
1 - Cert Engine	3196	500 @ 2100	226	160.0	1575 @ 1400	286	134.5	EM, DI, TC, ECM,
2	3196	420 @ 2100	189	133.4	1365 @ 1400	248	117.0	EM, DI, TC, ECM,
3	3196	420 @ 2100	189	133.4	1365 @ 1400	248	117.0	EM, DI, TC, ECM,
4	3196	385 @ 2100	173	121.9	1252 @ 1400	227	106.7	EM, DI, TC, ECM,
5	3196	380 @ 2100	169	119.5	1217 @ 1400	221	103.9	EM, DI, TC, ECM,
6	3196	370 @ 2100	165	116.5	1185 @ 1400	215	101.1	EM, DI, TC, ECM,
7	3196	350 @ 2100	158	111.6	1139 @ 1400	206	96.8	EM, DI, TC, ECM,
8	3196	340 @ 2100	154	108.9	1089 @ 1400	196	92.5	EM, DI, TC, ECM,
9	3196	412 @ 2000	205	138.2	1219 @ 1400	234	110.2	EM, DI, TC, ECM, CAC
10	3196	327 @ 2000	167	112.4	1061 @ 1400	195	91.7	EM, DI, TC, ECM,
11	3196	385 @ 2100	173	121.9	1252 @ 1400	227	106.7	EM, DI, TC, ECM,
12	3196	405 @ 2000	205	138.2	1244 @ 1400	234	110.2	EM, DI, TC, ECM,
13	3196	322 @ 2200	152	112.4	1061 @ 1400	195	91.7	EM, DI, TC, ECM,
14	3196	340 @ 2100	158	111.6	1139 @ 1400	206	96.8	EM, DI, TC, ECM,
15	3196	370 @ 2100	167	117.8	1200 @ 1400	218	102.7	EM, DI, TC, ECM,
16	3196	400 @ 2100	179	126.6	1275 @ 1400	227	106.8	EM, DI, TC, ECM,
17	3196	425 @ 2100	192	135.5	1350 @ 1400	240	113.0	EM, DI, TC, ECM,
18	3196	455 @ 2100	205	144.7	1450 @ 1400	258	121.3	EM, DI, TC, ECM,