

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-86

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: Dozer and Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>		<u>Exhaust Emission Control Systems and Special Features</u>
XCPXL10.5MRF	10.5	(644)	Turbocharger Smoke Puff Limiter

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):

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
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:

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.4	0.8	5.7	0.1	13	1	33

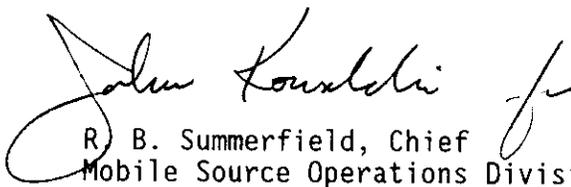
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 16th day of December 1998.


R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

EO: U-R-1-86 ^{10/20/88}

Manufacturer: CATERPILLAR INC.

Process Code: New Submission

EPA Engine Family: XCPXL10.5MRF

Manufacturer Family Name: NA

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesels 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	3306	225 @ 2000	132	88.5	752 @ 1400	154	72.6	EM, DI, TC, SPL
2	3306	215 @ 2200	120	88.8	753 @ 1400	153	71.8	EM, DI, TC, SPL
3	3306	200 @ 2200	107	79.4	658 @ 1400	127	59.8	EM, DI, TC, SPL
4	3306	200 @ 2000	112	75.6	652 @ 1400	131	61.5	EM, DI, TC, SPL
5	3306	210 @ 2000	119	79.5	687 @ 1400	143	66.7	EM, DI, TC, SPL
6	3306	190 @ 2000	107	72.0	619 @ 1400	123	58.1	EM, DI, TC, SPL
7	3306	200 @ 1800	122	73.8	732 @ 1200	149	60.2	EM, DI, TC, SPL
8	3306	200 @ 1800	122	73.8	710 @ 1200	145	58.7	EM, DI, TC, SPL
9	3306	175 @ 1800	108	65.6	637 @ 1200	132	53.4	EM, DI, TC, SPL
13	3306	206 @ 1900	126	80.4	695 @ 1200	148	59.5	EM, DI, TC, SPL
15	3306	183 @ 1900	112	71.7	623 @ 1200	128	51.5	EM, DI, TC, SPL
16	3306	199 @ 1900	121	77.4	687 @ 1200	146	58.8	EM, DI, TC, SPL
17	3306	190 @ 1900	119	76.2	677 @ 1200	143	57.9	EM, DI, TC, SPL
18	3306	209 @ 1900	128	81.8	723 @ 1200	154	62.2	EM, DI, TC, SPL
19	3306	206 @ 1900	126	80.6	720 @ 1200	152	61.3	EM, DI, TC, SPL
21	3306	179 @ 1900	108	68.7	611 @ 1200	125	50.5	EM, DI, TC, SPL
22	3306	176 @ 1900	108	67.5	601 @ 1200	123	49.7	EM, DI, TC, SPL
24	3306	179 @ 1900	108	68.7	611 @ 1200	125	50.5	EM, DI, TC, SPL
25	3306	199 @ 1900	122	77.8	711 @ 1400	146	68.5	EM, DI, TC, SPL
26	3306	189 @ 1900	115	73.5	676 @ 1400	139	65.5	EM, DI, TC, SPL
27	3306	179 @ 1900	110	70.4	640 @ 1400	130	61.3	EM, DI, TC, SPL
28	3306	179 @ 1800	114	68.9	644 @ 1400	134	62.9	EM, DI, TC, SPL
29	3306	179 @ 1900	110	70.4	640 @ 1400	130	61.3	EM, DI, TC, SPL
30	3306	189 @ 1800	118	71.7	679 @ 1400	141	68.3	EM, DI, TC, SPL
31	3306	189 @ 1900	115	73.5	676 @ 1400	139	65.5	EM, DI, TC, SPL
32	3306	194 @ 1800	122	74.1	696 @ 1400	146	68.5	EM, DI, TC, SPL
33	3306	194 @ 1900	118	75.5	694 @ 1400	144	67.9	EM, DI, TC, SPL
34	3306	194 @ 2100	108	76.2	693 @ 1400	137	64.3	EM, DI, TC, SPL