

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-104

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. 2000 model-year engine, with rated power greater than 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Pump and Generator

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
YCPXL51.8ERK	51.8 (3181)	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):

<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>
0.2	1.3	6.2	0.3	17	4	23


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 20 day of October 1999.


R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model Summary Form

EO: U-R-1-104

Manufacturer: CATERPILLAR INC.
Engine category: Nonroad CI
EPA Engine Family: YCPXL51.8ERK
Mfr Family Name: N/A
Process Code: New Submission

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
1	Cert Engine	3512	2250@1900	772	6219@1400	605	570.5	EM,DI,TC,ECM
2		3512	1450@1750	496.0	4347@1300	494	432.1	EM,DI,TC,ECM
3		3512	1700@1750	568.9	5099@1300	549	480.6	EM,DI,TC,ECM
4		3512	1303@1200	444.0	5700@1200	N/A	N/A	EM,DI,TC,ECM
5		3512	1478@1200	509.6	6463@1200	N/A	N/A	EM,DI,TC,ECM
6		3512	1621@1200	568.5	7090@1200	N/A	N/A	EM,DI,TC,ECM
7		3512	1784@1800	622.2	5200@1800	N/A	N/A	EM,DI,TC,ECM
8		3512	1971@1800	677.8	5747@1800	N/A	N/A	EM,DI,TC,ECM
9		3512	2172@1800	739.2	6334@1800	N/A	N/A	EM,DI,TC,ECM
10		3512	1492@1800	525.1	4349@1800	N/A	N/A	EM,DI,TC,ECM
11		3512	1644@1800	576.3	4793@1800	N/A	N/A	EM,DI,TC,ECM
12		3512	1810@1800	631.1	5278@1800	N/A	N/A	EM,DI,TC,ECM
13		3512	1847@1800	641.8	5384@1800	N/A	N/A	EM,DI,TC,ECM
14		3512	2028@1800	694.4	5912@1800	N/A	N/A	EM,DI,TC,ECM
15		3512	1478@1200	498.1	6463@1200	N/A	N/A	EM,DI,TC,ECM
16		3512	1910@1800	641.9	5568@1800	N/A	N/A	EM,DI,TC,ECM
17		3512	2000@1900	690.1	5526@1400	547	514.9	EM,DI,TC,ECM
18		3512	1476@1200	497.7	6457@1200	N/A	N/A	EM,DI,TC,ECM
19		3512	1509@1800	513.5	4399@1800	N/A	N/A	EM,DI,TC,ECM

ECM, TC, CAC