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State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-77

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, Wheel Loader, Excavator, Track Loader, Motor Grader

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
XCPXL06.6MRB	6.6 (403)	Turbocharger Charge Air Cooler 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>
0.2	1.5	5.9	0.3	14	4	24

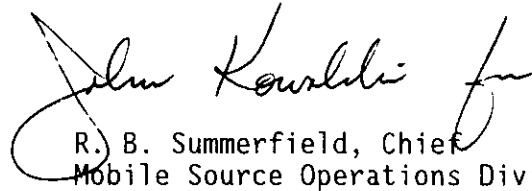
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 16<sup>th</sup> day of December 1998.

  
R. B. Summerfield, Chief  
Mobile Source Operations Division

# LARGE ENGINE MODEL SUMMARY

12/15/98

EO: U-R-1-77

Manufacturer: **CATERPILLAR INC.**

Process Code: **New Submission**

EPA Engine Family: **XCPXL06.6MRB**

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 diesel 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	fuel rates are	nominal values.	Due to product.	ion engine avgs.	these fuel rates	may change.	9. Emission Control Device Per SAE J1930
3	220 @ 2600	100	87.4	586 @ 1650	115	63.8	EM, DI, TC, SPL,
4	200 @ 2400	94	75.9	313 @ 1450	115	56.2	EM, DI, TC, SPL,
5	190 @ 2400	89	72.0	551 @ 1400	111	52.4	EM, DI, TC, SPL,
6	200 @ 2300	96	74.6	573 @ 1450	115	56.1	EM, DI, TC, SPL,
7	205 @ 2200	104	76.5	604 @ 1450	121	59.1	EM, DI, TC, SPL,
8	195 @ 2200	95	70.4	592 @ 1450	117	57.1	EM, DI, TC, SPL,
9	185 @ 2200	92	68.0	544 @ 1450	108	52.6	EM, DI, TC, SPL,
10	175 @ 2200	87	64.2	515 @ 1400	103	48.3	EM, DI, TC, SPL,
11	195 @ 2100	96	67.5	552 @ 1450	110	53.6	EM, DI, TC, SPL,
12	180 @ 2000	96	64.7	545 @ 1450	108	52.9	EM, DI, TC, SPL,
13	190 @ 2600	85	74.2	480 @ 1650	96	53.2	EM, DI, TC, SPL,
14	100 @ 2500	79	66.5	460 @ 1650	89	49.2	EM, DI, TC, SPL,
15	200 @ 2400	97	78.4	550 @ 1450	111	54.1	EM, DI, TC, SPL,
18	175 @ 2400	82	66.4	482 @ 1450	97	47.4	EM, DI, TC, SPL,
25	190 @ 2200	90	71.4	555 @ 1450	112	54.6	EM, DI, TC, SPL,
26	192 @ 1800	109	66.0	607 @ 1450	121	59.1	EM, DI, TC, SPL,
29	180 @ 1800	103	62.3	606 @ 1450	121	59.1	EM, DI, TC, SPL,
30	210 @ 2300	98	75.8	569 @ 1400	112	52.8	EM, DI, TC, SPL,
31	187 @ 2300	83	68.4	561 @ 1500	113	56.9	EM, DI, TC, SPL,
32	180 @ 2200	89	66.1	525 @ 1400	106	49.7	EM, DI, TC, SPL,
39-Cert Engine	177 @ 2000	91	61.2	604 @ 1400	130	61.2	EM, DI, TC, SPL,
	210 @ 2400	95	77.0	623 @ 1450	124	60.5	EM, DI, TC, SPL,