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State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-93

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

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
XCPXL10.3ERK	10.3 (632)	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>
0.9	2.2	6.6	0.1	8	2	16

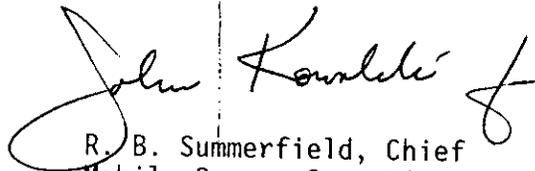
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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 22<sup>nd</sup> day of December 1998.



R. B. Summerfield, Chief  
Mobile Source Operations Division

# LARGE ENGINE MODEL SUMMARY

11/24/98

*EO: U-R-1-93*

Manufacturer: CATERPILLAR INC.

Process Code: New Submission

EPA Engine Family: XCPXL10.3ERK

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
<b>Note: Peak HP</b>	<b>and Peak torque</b>	<b>fuel rates are</b>	<b>nominal values.</b>	<b>Due to product-</b>	<b>ion engine avgs.</b>	<b>these fuel rates</b>	<b>may change.</b>	
1 - Cert Engine	3176	425 @ 2100	210	148.2	1325 @ 1400	251	118.3	EM, DI, TC, ECM,
2	3176	425 @ 2100	210	148.2	1325 @ 1400	251	118.3	EM, DI, TC, ECM,
3	3176	390 @ 2100	182	128.3	1250 @ 1400	232	109.3	EM, DI, TC, ECM,
4	3176	365 @ 2100	176	124.3	1165 @ 1400	223	105.1	EM, DI, TC, ECM,
5	3176	335 @ 2100	161	113.7	1075 @ 1400	206	96.8	EM, DI, TC, ECM,
6	3176	310 @ 2100	147	104.1	1000 @ 1400	190	89.6	EM, DI, TC, ECM,
7	3176	400 @ 2100	192	135.9	1280 @ 1500	242	122.3	EM, DI, TC, ECM,
8	3176	365 @ 2100	185	130.9	1165 @ 1400	228	107.2	EM, DI, TC, ECM,
9	3176	365 @ 2100	168	118.8	1163 @ 1400	218	102.5	EM, DI, TC, ECM,
10	3176	350 @ 2100	167	118.2	1139 @ 1400	215	101.1	EM, DI, TC, ECM,
11	3176	350 @ 2100	167	118.2	1139 @ 1400	215	101.1	EM, DI, TC, ECM,
12	3176	340 @ 2100	160	113.2	1089 @ 1400	203	95.4	EM, DI, TC, ECM,
13	3176	325 @ 2100	161	113.6	1200 @ 1400	230	108.5	EM, DI, TC, ECM,
14	3176	320 @ 2100	151	106.8	1040 @ 1400	198	93.3	EM, DI, TC, ECM,
15	3176	320 @ 2100	151	106.8	1040 @ 1400	198	93.3	EM, DI, TC, ECM,
16	3176	312 @ 2000	148	99.3	942 @ 1400	179	84.4	EM, DI, TC, ECM,

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