

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-126
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CATERPILLAR, INC.

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

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

IT IS ORDERED AND RESOLVED: That the following diesel engines and the exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Dozer, Loader, Tractor and Industrial equipment

Engine Power Ratings Range: 175 horsepower and greater

Fuel Type: Diesel

<u>Engine Family</u>	<u>Displacement</u>		<u>Exhaust Emission Control Systems and Special Features</u>
	<u>Liters</u>	<u>Cubic Inches</u>	
YCPXL27.0HRP	27.0	1658	Engine Control Module Turbocharger Charge Air Cooler

The 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 exhaust emission certification standards and certification values in grams per brake horsepower-hour (g/hp-h) for engines with power ratings between 175 and 750 horsepower, inclusive, for total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak-values from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

	<u>Exhaust Emissions (g/hp-h)</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>
Standard	1.0	8.5	6.9	0.4	20	15	50
Certification	0.1	3.6	6.2	0.1	7	1	28

The exhaust emission certification standards and certification values in grams per brake horsepower-hour (g/hp-h) for engines with power ratings above 750 horsepower for total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak-values from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

	<u>Exhaust Emissions (g/hp-h)</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>
Standard	1.0	8.5	6.9	0.4	20	15	50
Certification	0.04	0.7	6.0	0.1	16	2	26


BE IT FURTHER RESOLVED: That the listed engine models comply with "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 "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, Sections 2425 *et seq.*).

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

Executed at El Monte, California this 17th day of December 1999.


 for R. B. Summerfield, Chief
 Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

EO: U-R-1-126

Process Code: **New Submission**

Manufacturer: **CATERPILLAR INC.**

EPA Engine Family: **YCPXL27.0HRP**

NA

Manufacturer Family Name:

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			nominal values.	Due to product-	ion engine avgs.	these fuel rates	may change.	
1 - Cert Engine	3412	750 @ 1800	211	255.2	2844 @ 1200	286	230.7	EM, DI, TC, ECM,
2	3412	654 @ 1800	186	224.9	2089 @ 1200	208	167.6	EM, DI , ECM,
3	3412	682 @ 2000	180	242.9	2087 @ 1200	204	164.7	EM, DI , ECM,
4	3412	682 @ 2000	180	242.9	2087 @ 1200	204	164.7	EM, DI , ECM,
5	3412	704 @ 2000	185	248.8	2155 @ 1200	216	174.7	EM, DI , ECM,
6	3412	692 @ 1800	194	235.3	2227 @ 1200	222	179.5	EM, DI , ECM,
7	3412	725 @ 2000	193	259.1	2227 @ 1200	220	177.4	EM, DI , ECM,
8	3412	660 @ 2000	174	233.5	2148 @ 1200	216	172.4	EM, DI , ECM,
9	3412	675 @ 2000	175	235.9	2227 @ 1200	224	180.8	EM, DI , ECM,
10	3412	600 @ 1800	171	207.1	2101 @ 1200	214	172.9	EM, DI , ECM,
11	3412	650 @ 1800	187	226.7	2278 @ 1200	230	185.6	EM, DI , ECM,
12	3412	700 @ 1800	203	246.3	2452 @ 1200	250	201.9	EM, DI , ECM,
13	3412	735 @ 1800	215	259.8	2573 @ 1200	264	213.4	EM, DI , ECM,
14	3412	700 @ 2000	186	250.9	2206 @ 1400	215	202.8	EM, DI , ECM,
15	3412	750 @ 2000	202	272.4	2362 @ 1400	233	219.7	EM, DI , ECM,
16	3412	750 @ 1800	218	263.8	2625 @ 1200	271	218.8	EM, DI , ECM,
17	3412	700 @ 2100	190	268.9	2101 @ 1400	205	193.5	EM, DI , ECM,
18	3412	750 @ 2100	195	276.1	2250 @ 1400	220	207.0	EM, DI , ECM,
19	3412	725 @ 2000	193	259.1	2227 @ 1200	220	177.4	EM, DI , ECM,
20	3412	425 @ 1200	179	144.4	2285 @ 900	245	148.3	EM, DI , ECM,
21	3412	500 @ 1200	208	167.9	2284 @ 900	245	148.5	EM, DI , ECM,
22	3412	625 @ 1400	224	210.9	2742 @ 1000	279	187.7	EM, DI , ECM,
23	3412	585 @ 1300	224	195.5	2560 @ 900	273	165.2	EM, DI , ECM,
24	3412	760 @ 2100	196	276.5	2250 @ 1400	224	211.0	EM, DI , ECM,
25	3412	800 @ 2100	204	288.4	2401 @ 1400	238	224.1	EM, DI , ECM,
26	3412	820 @ 2100	211	297.8	2580 @ 1400	256	240.7	EM, DI , ECM,
27	3412	860 @ 2100	221	312.0	2584 @ 1400	258	242.7	EM, DI , ECM,
28	3412	900 @ 2100	227	320.1	2701 @ 1400	266	250.5	EM, DI , ECM,
29	3412	950 @ 2100	241	340.1	2852 @ 1400	282	265.2	EM, DI , ECM,
30	3412	1000 @ 2100	258	364.7	3003 @ 1400	298	280.8	EM, DI , ECM,
31	3412	1050 @ 2100	272	383.6	3148 @ 1400	315	296.7	EM, DI , ECM,
32-Cert Engines	3412	1082 @ 2100	276	389.7	3245 @ 1400	317	298.5	EM, DI , ECM, CAC