

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-111
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: Excavator and Industrial equipment

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

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>	
YCPXL10.4MRA	10.4	638	Smoke Puff Limiter Turbocharger

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 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	0.4	1.3	6.2	0.3	16	12	34

BE IT FURTHER RESOLVED: Any engine models listed on the attachments with engine power ratings less than 175 horsepower are not covered by this Executive Order.

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 7 day of December 1999.



R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

EO: U-R-1-11

Process Code: **New Submission**

Manufacturer: **CATERPILLAR INC.**

NA

EPA Engine Family: **YCPXL10.4MRA**

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 fuel rates are nominal values. Due to production engine avgs. these fuel rates may change.								
1 - Cert Engine	3208	260 @ 2600	89	104.3	760 @ 1560	118	82.5	EM, DI, TC, SPL
2	3208	260 @ 2600	91	106.0	734 @ 1560	116	81.1	EM, DI, TC, SPL
3	3208	250 @ 2600	89	104.0	710 @ 1560	112	78.2	EM, DI, TC, SPL
4	3208	225 @ 2600	81	94.3	654 @ 1560	103	72.4	EM, DI, TC, SPL
5	3208	210 @ 2600	74	86.3	617 @ 1560	94	65.8	EM, DI, TC, SPL
6	3208	196 @ 2600	69	80.9	578 @ 1560	87	60.9	EM, DI, TC, SPL
7	3208	175 @ 2600	63	73.2	510 @ 1440	82	53.1	EM, DI, TC, SPL
8	3208	166 @ 2600	60	70.0	482 @ 1560	72	50.1	EM, DI, TC, SPL
9	3208	250 @ 2800	88	110.9	722 @ 1680	113	84.6	EM, DI, TC, SPL
10	3208	210 @ 2800	76	95.8	608 @ 1680	95	71.4	EM, DI, TC, SPL
11	3208	175 @ 2800	63	78.8	504 @ 1680	75	56.2	EM, DI, TC, SPL
12	3208	189 @ 2500	68	75.7	557 @ 1500	84	56.5	EM, DI, TC, SPL
13	3208	220 @ 2400	79	84.7	646 @ 1440	101	65.2	EM, DI, TC, SPL
14	3208	210 @ 2400	75	81.0	618 @ 1440	96	61.7	EM, DI, TC, SPL
15	3208	200 @ 2400	72	77.3	589 @ 1440	90	58.1	EM, DI, TC, SPL
16	3208	190 @ 2400	70	75.2	558 @ 1440	86	55.4	EM, DI, TC, SPL
17	3208	175 @ 2400	64	68.4	505 @ 1440	76	48.8	EM, DI, TC, SPL
18	3208	150 @ 2400	56	59.8	426 @ 1440	63	40.7	EM, DI, TC, SPL
19	3208	125 @ 2400	48	51.6	368 @ 1440	54	35.1	EM, DI, TC, SPL
20	3208	165 @ 2300	61	63.0	481 @ 1400	72	44.9	EM, DI, TC, SPL
21	3208	185 @ 2200	70	68.9	558 @ 1400	88	55.4	EM, DI, TC, SPL
22	3208	175 @ 2200	66	65.3	522 @ 1400	83	49.2	EM, DI, TC, SPL
23	3208	165 @ 2200	65	61.7	512 @ 1320	77	45.7	EM, DI, TC, SPL
24	3208	160 @ 2200	61	60.1	497 @ 1320	73	43.4	EM, DI, TC, SPL
25	3208	142 @ 2200	55	53.8	415 @ 1400	61	38.0	EM, DI, TC, SPL
26	3208	150 @ 1800	65	52.6	482 @ 1400	72	45.5	EM, DI, TC, SPL
27	3208	250 @ 2600	89	104.0	710 @ 1560	112	78.2	EM, DI, TC, SPL
28	3208	225 @ 2600	81	94.3	654 @ 1560	103	72.4	EM, DI, TC, SPL
29	3208	189 @ 2500	68	75.7	558 @ 1500	84	56.5	EM, DI, TC, SPL