

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-143

Relating to Certification of New Off-Road Compression-Ignition Equipment Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board (Board) by Sections 43013, 43018, 43101, 43102, 43104 and 43105 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 compression-ignition engine and exhaust emission control system produced by the manufacturer are certified as described below for use in off-road equipment:

Model Year: 2001

Typical Equipment Usage: Loader, Tractor and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	Engine Displacement <u>(liter)</u>	Useful Life <u>(hours)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
1CPXL10.4MRA	10.4	8000	Direct Diesel Injection Turbocharger 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 exhaust emission certification standards and certification values for total hydrocarbons (THC), carbon monoxide (CO), oxides of nitrogen (NOx), and particulate matter (PM) (units are expressed in grams per kilowatt-hour (g/kw-hr)), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423, as amended by Board approval on January 28, 2000):

<u>Engine Power Rating (kw)</u>	<u>Emission Standard Category</u>		<u>Exhaust Emissions</u> <u>(g/kw-hr)</u>				<u>Smoke Opacity</u> <u>(%)</u>		
			<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
37≤KW<130	Tier 1	Standard	N/A	N/A	9.2	N/A	20	15	50
130≤KW<225	Tier 1	Standard	1.3	11.4	9.2	0.54	20	15	50
All Above		Certification	0.6	1.7	8.2	0.42	16	12	34

BE IT FURTHER RESOLVED: That, at the request of the manufacturer, the listed engine models are **conditionally certified** to, and shall be required to comply with, all amendments to Title 13, California Code of Regulations, Sections 2420 through 2427 adopted by the Board on January 28, 2000 at its hearing "TO CONSIDER AMENDMENTS TO OFF-ROAD COMPRESSION-IGNITION ENGINE REGULATIONS: 2000 AND LATER EMISSION STANDARDS, COMPLIANCE REQUIREMENTS AND TEST PROCEDURES." The listed engine models comply with all such amendments, including, but not limited to:

- the amended "Emission Control Labels—1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year;
- the Board's amended emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 and 2426) for the listed engine models, as demonstrated by materials submitted by the manufacturer; and
- new California requirements for the Selective Enforcement Audit (SEA) for the listed engine models, as demonstrated by the manufacturer's submission of materials.

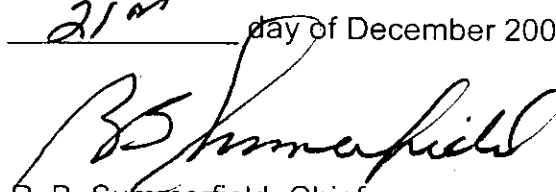
BE IT FURTHER RESOLVED: That the conditional certification described in the paragraph above is conditioned on the amendments being approved by the California Office of Administrative Law (OAL) pursuant to Government Code Section 11349.3, and where necessary, authorized by the Administrator of the U. S. Environmental Protection Agency (U.S. EPA) pursuant to Section 209(e)(2) of the Federal Clean Air Act.

- A. In the event that the OAL disapproves the amendments or the U.S. EPA decides not to authorize them, the ARB shall notify the manufacturer that the listed engine models must comply with the "California Exhaust Emission Standards and Test Procedures for 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Sections 2420 through 2427) adopted on May 12, 1993, as applicable. Failure to demonstrate compliance within 45 days after notification by the Air Resources Board shall be cause for the Board to revoke the Executive Order and deem the listed engine models uncertified.
- B. In the event that the OAL disapproves the amendments or the U.S. EPA decides not to authorize them, the conditional certification herein of the listed engine models with rated power greater than or equal to 19 KW but less than 130 KW shall be deemed null and void.

The conditional certification described herein is not conditioned on further U.S. EPA action on amendments determined by the Board to be within the scope of an existing U.S. EPA authorization.

Engines certified under this Executive Order must conform to the above requirements under Title 13, California Code of Regulations, Chapter 9, Article 4, and all other applicable California emission laws and regulations.

Executed at El Monte, California this 21st day of December 2000.


R. B. Summerfield, Chief
Mobile Source Operations Division

Manufacturer: **CATERPILLAR INC.**
 Engine category: **Nonroad Over 50 Hp**
 EPA Engine Family: **1CPXL10.4MRA**
 Mfr Family Name: **NA**
 Process Code: **New Submission**

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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