

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-162
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 and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Engine Displacement (liters)</u>	<u>Useful Life (hours)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
1CPXL06.6MRA	6.6	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 (g/kw-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>
75≤KW<130	Tier 1	Standard	N/A	N/A	9.2	N/A	20	15	50
		Certification	--	--	8.4	--	7	1	24

BE IT FURTHER RESOLVED: That the listed engine models with rated power equal to or greater than 19 KW but less than 130 KW 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. 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 equal to or greater than 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

Engine Model Summary Form

u-R-1-162

ATTN: HMENT

Manufacturer: **CATERPILLAR INC.**
 Engine category: **Nonroad Over 50 Hp**
 EPA Engine Family: **1CPXL06.6MRA**
 Mfr Family Name: **N/A**
 Process Code: **New Submission**

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 ³ /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								
2	3116	165 @ 2400	80	64.8	502 @ 1450	103	50.3	EM, DI, TC, SPL
3	3116	170 @ 2600	81	70.5	482 @ 1650	99	54.9	EM, DI, TC, SPL
4	3116	160 @ 2500	77	64.7	443 @ 1650	91	50.3	EM, DI, TC, SPL
5	3116	155 @ 2400	78	62.6	454 @ 1450	95	46.2	EM, DI, TC, SPL
6	3116	150 @ 2400	75	60.8	437 @ 1450	91	44.3	EM, DI, TC, SPL
7	3116	140 @ 2400	71	57.0	417 @ 1400	86	40.7	EM, DI, TC, SPL
8	3116	150 @ 2300	77	59.7	440 @ 1450	91	44.6	EM, DI, TC, SPL
9	3116	130 @ 2300	67	52.0	392 @ 1400	81	38.1	EM, DI, TC, SPL
10	3116	160 @ 2200	83	61.4	479 @ 1450	99	48.3	EM, DI, TC, SPL
11	3116	145 @ 2200	75	55.7	425 @ 1450	90	44.0	EM, DI, TC, SPL
12	3116	140 @ 2200	73	54.0	429 @ 1450	87	42.5	EM, DI, TC, SPL
13	3116	130 @ 2200	68	50.0	408 @ 1400	83	39.0	EM, DI, TC, SPL
14	3116	135 @ 2100	73	51.5	428 @ 1450	87	42.5	EM, DI, TC, SPL
15	3116	130 @ 2000	73	48.8	426 @ 1450	87	42.2	EM, DI, TC, SPL
16	3116	120 @ 2000	66	44.4	400 @ 1400	82	38.8	EM, DI, TC, SPL
17	3116	115 @ 1800	74	44.6	391 @ 1450	79	38.8	EM, DI, TC, SPL
18	3116	153 @ 2200	78	57.7	474 @ 1400	97	45.9	EM, DI, TC, SPL
19	3116	149 @ 2200	76	56.1	505 @ 1400	98	46.3	EM, DI, TC, SPL
20	3116	146 @ 2000	79	53.0	479 @ 1400	96	45.1	EM, DI, TC, SPL
21	3116	145 @ 2000	73	54.0	425 @ 1450	89	43.3	EM, DI, TC, SPL
22	3116	145 @ 2200	73	54.0	425 @ 1450	89	43.3	EM, DI, TC, SPL
23	3116	140 @ 2000	77	51.7	425 @ 1400	86	40.6	EM, DI, TC, SPL
24	3116	137 @ 2000	79	53.2	431 @ 1400	86	40.5	EM, DI, TC, SPL
25	3116	136 @ 2000	74	49.5	445 @ 1400	89	41.8	EM, DI, TC, SPL
26	3116	148 @ 1800	86	52.2	500 @ 1400	101	47.6	EM, DI, TC, SPL
27	3116	134 @ 1800	79	47.9	460 @ 1400	92	43.4	EM, DI, TC, SPL
28	3116	130 @ 2200	66	48.9	386 @ 1400	78	36.6	EM, DI, TC, SPL
29	3116	121 @ 2000	65	45.8	388 @ 1400	80	37.8	EM, DI, TC, SPL
30	3116	136 @ 1800	79	48.1	466 @ 1400	94	44.0	EM, DI, TC, SPL
31	3116	148 @ 1800	86	52.2	500 @ 1400	101	47.6	EM, DÇAC, SPL,
		133 @ 2200	68	50.3	400 @ 1400	82	38.8	EM, DÇAC, SPL,