

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-166
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, Generator and Other Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	Engine Displacement <u>(liters)</u>	Useful Life <u>(hours)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
1CPXL14.6ESK	14.6	8000	Engine Control Module Turbocharger Charge Air Cooler Direct Diesel Injection

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 non-methane hydrocarbons plus oxides of nitrogen (NMHC+NO_x), carbon monoxide (CO), 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>	Standard Certification	<u>Exhaust Emissions (g/kw-hr)</u>			<u>Smoke Opacity (%)</u>		
			<u>NMHC+NO_x</u>	<u>CO</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
225≤KW<450	Tier 2		6.4	3.5	0.20	20	15	50
			5.8	1.5	0.14	6	2	7

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:

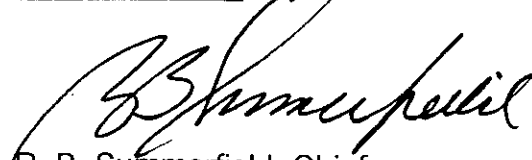
- the amended "Emission Control Labels—1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year;
- the Board's amended emission control system warranty provisions (Title 13, California Code of Regulations, Sections 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. 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.

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

ATTACHMENT

Engine Model Summary Form

Manufacturer: **CATERPILLAR INC.**
 Engine category: **Nonroad Over 50 Hp**
 EPA Engine Family: **1CPXL14.6ESK**
 Mfr Family Name: **N/A**
 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	3406	593 @ 2100	292	206.1	2000 @ 1400	398	187.8	EM, DI, TC, ECM, DI, TC, ECM
2	3406	425 @ 2100	211	148.8	1435 @ 1400	276	130.2	EM, DI, TC, ECM, DI, TC, ECM
3	3406	450 @ 2100	222	156.9	1520 @ 1400	294	138.5	EM, DI, TC, ECM, DI, TC, ECM
4	3406	525 @ 2100	257	181.6	1774 @ 1400	347	163.4	EM, DI, TC, ECM, DI, TC, ECM
5	3406	565 @ 2100	278	196.2	1908 @ 1400	379	178.6	EM, DI, TC, ECM, DI, TC, ECM
6	3406	575 @ 2100	283	200.1	1942 @ 1400	387	182.4	EM, DI, TC, ECM, DI, TC, ECM
7	3406	525 @ 2100	258	182.4	1708 @ 1400	333	157.0	EM, DI, TC, ECM, DI, TC, ECM
8	3406	500 @ 2100	250	176.7	1688 @ 1400	332	156.1	EM, DI, TC, ECM, DI, TC, ECM
9	3406	446 @ 2100	219	154.5	1584 @ 1400	309	145.4	EM, DI, TC, ECM, DI, TC, ECM
10	3406	393 @ 1800	219	132.4	1490 @ 1200	289	116.7	EM, DI, TC, ECM, DI, TC, ECM
11	3406	358 @ 1800	199	120.6	1280 @ 1200	249	100.4	EM, DI, TC, ECM, DI, TC, ECM
12	3406	528 @ 1900	211	134.5	1583 @ 1200	304	122.8	EM, DI, TC, ECM, DI, TC, ECM
13	3406	394 @ 2100	194	137.2	1431 @ 1260	274	116.1	EM, DI, TC, ECM, DI, TC, ECM
14	3406	441 @ 1900	232	148.5	1778 @ 1200	338	136.5	EM, DI, TC, ECM, DI, TC, ECM
15	3406	441 @ 2100	217	153.1	1766 @ 1260	323	137.1	EM, DI, TC, ECM, DI, TC, ECM
16	3406	380 @ 2000	196	132.0	1312 @ 1200	258	104.2	EM, DI, TC, ECM, DI, TC, ECM
17	3406	343 @ 2000	180	121.3	1266 @ 1200	254	102.6	EM, DI, TC, ECM, DI, TC, ECM
18	3406	337 @ 2000	180	120.9	1221 @ 1200	251	101.2	EM, DI, TC, ECM, DI, TC, ECM

CAC
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 DI, TC, CAC, ECM