State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-152
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: Crane, Loader, Generator and Other Industrial Equipment

Fuel Type: Diesel

Engine Family	Engine Displacement (liters)	Useful Life (hours)	Exhaust Emission Control Systems and Special Features
1CPXL27.0MRH	27.0	8000	Direct Diesel Injection Turbocharger Charge Air Cooler 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):

Engine Power Rating (kw)	Emission Standard Category		Exhaust Emissions (g/kw-hr)				Smoke Opacity (%)		
			THC	CO	NOx	PM	Accel	Lug	Peak
450≤KW≤560	Tier 1	Standard	1.3	11.4	9.2	0.54	20	15	50
560<KW	Tier 1	Standard	1.3	11.4	9.2	0.54	20	15	50
All above		Certification	0.2	2.0	8.6	0.36	18	6	25

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: **1CPXL27.0MRH .**

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 product-	ion engine avgs.	these fuel rates	may change.	
1	3412	750 @ 1800	220	266.1	2430 @ 1350	248	225.0	EM, DI, TC, SPL,
2	3412	725 @ 1800	213	257.7	2328 @ 1350	238	216.3	EM, DC~~A~~C, SPL,
3	3412	715 @ 1800	210	253.8	2253 @ 1350	234	212.4	EM, DC~~A~~C, SPL,
4	3412	650 @ 1800	190	230.0	2039 @ 1350	209	189.7	EM, DC~~A~~C, SPL,
5	3412	625 @ 1800	182	220.9	1949 @ 1350	200	181.4	EM, DC~~A~~C, SPL,
6	3412	750 @ 1900	211	269.9	2393 @ 1350	245	222.6	EM, DC~~A~~C, SPL,
7	3412	750 @ 2000	203	273.5	2342 @ 1400	237	222.9	EM, DC~~A~~C, SPL,
8	3412	725 @ 2000	196	263.6	2244 @ 1400	227	213.4	EM, DC~~A~~C, SPL,
9	3412	750 @ 2100	195	276.1	2231 @ 1400	231	217.8	EM, DC~~A~~C, SPL,
10	3412	725 @ 2100	188	266.0	2187 @ 1400	222	209.1	EM, DI, TC, SPL,
11	3412	700 @ 2100	182	256.6	2084 @ 1400	211	198.9	EM, DC~~A~~C, SPL,
12	3412	650 @ 2100	169	238.5	1896 @ 1400	192	181.2	EM, DC~~A~~C, SPL,
13 -Cert Engine	3412	913 @ 1800	286	346.0	N/A	286	346.0	EM, DC~~A~~C, SPL,
14	3412	839 @ 1800	256	310.0	N/A	256	310.0	EM, DC~~A~~C, SPL,
15	3412	764 @ 1800	231	279.0	N/A	231	279.0	EM, DC~~A~~C, SPL,
16	3412	913 @ 1800	286	346.0	N/A	286	346.0	EM, DC~~A~~C, SPL,
17	3412	839 @ 1800	256	310.0	N/A	256	310.0	EM, DC~~A~~C, SPL,
18	3412	764 @ 1800	231	279.0	N/A	231	279.0	EM, DC~~A~~C, SPL,

CAC

DDI, TC, CAC, SPL