

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-167  
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, 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>
1CPXL15.8ESK	15.8	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 hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), or non-methane hydrocarbons plus NO<sub>x</sub> (NMHC+NO<sub>x</sub>) 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>HC</u>	<u>NO<sub>x</sub></u>	<u>CO</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
450≤KW≤560	Tier 1	Standard	1.3	9.2	11.4	0.54	20	15	50
		Certification	0.1	5.6	0.7	0.09	7	1	10
225≤KW<450	Tier 2	Standard	<u>NMHC+NO<sub>x</sub></u>		<u>CO</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
		Certification	6.4	5.8	3.5	0.20	20	15	50
						6	1	11	

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 21<sup>st</sup> day of December 2000.

  
R. B. Summerfield, Chief  
Mobile Source Operations Division

ATTN. MENT

# Engine Model Summary Form

Manufacturer: **CATERPILLAR INC.**  
Engine category: **Nonroad Over 50 Hp**  
EPA Engine Family: **1CPXL15.8ESK**  
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
1-Cert Engine	3456	680 @ 2100	336	237.6	2296 @ 1400	448	211.0	EM, DI, TC, ECM,
2	3456	692 @ 1800	381	230.8	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
3	3456	692 @ 1800	381	230.8	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
4	3456	616 @ 1800	338	204.5	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
5	3456	616 @ 1800	338	204.5	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
6	3456	613 @ 1800	424	214.2	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
7	3456	613 @ 1800	424	214.2	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
8	3456	553 @ 1500	378	190.5	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
9	3456	553 @ 1500	378	190.5	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
10	3456	493 @ 1500	338	170.8	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
11	3456	493 @ 1500	338	170.8	N/A	N/A	N/A	EM, DI, TC, ECM,
12	3456	616 @ 1800	338	204.5	N/A	N/A	N/A	EM, DI, <del>CAC</del> , ECM,
13	3456	600 @ 2100	292	206.4	2029 @ 1400	397	186.8	EM, DI, <del>CAC</del> , ECM,
14	3456	512 @ 2100	255	179.9	1820 @ 1400	348	163.9	EM, DI, <del>CAC</del> , ECM,
15	3456	660 @ 2100	326	230.0	2232 @ 1400	430	202.5	EM, DI, <del>CAC</del> , ECM,
16	3456	500 @ 2100	247	174.2	1691 @ 1400	317	149.3	EM, DI, <del>CAC</del> , ECM,
17	3456	550 @ 2100	268	189.3	1859 @ 1400	353	166.3	EM, DI, <del>CAC</del> , ECM,
18	3456	630 @ 2100	308	217.7	2130 @ 1400	411	193.7	EM, DI, <del>CAC</del> , ECM,
19	3456	500 @ 2100	292	206.4	2029 @ 1400	396	186.5	EM, DI, <del>CAC</del> , ECM,
20	3456	552 @ 2100	307	186.1	1851 @ 1400	368	173.4	EM, DI, <del>CAC</del> , ECM,
21	3456	650 @ 2000	326	219.2	2021 @ 1500	375	189.0	EM, DI, <del>CAC</del> , ECM,

CAC  
↑  
DI, TC, CAC, ECM