

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-165  
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>	<u>Engine Displacement (liters)</u>	<u>Useful Life (hours)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
1CPXL12.0ESK	12.0	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):

Engine Power Rating (kw)	Emission Standard Category	<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>	
130≤KW<225	Tier 1	Standard	1.3	9.2	11.4	0.54	20	15	50
		Certification	0.1	5.8	1.7	0.17	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	3.5	0.20	20	15	50	
			5.9	1.7	0.17	8	2	14	

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:

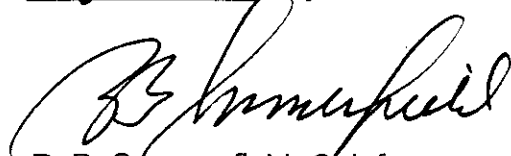
- the amended "Emission Control Labels—1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year;
- the Board's amended emission control system warranty provisions (Title 13, California Code of Regulations, Sections 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: **1CPXL12.0ESK**  
 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 1-Cert Engine	and Peak torque 3196/C-12	fuel rates are 515 @ 2100	nominal values. 252	Due to product- ion engine avgs. 177.6	1622 @ 1400	these fuel rates 328	may change. 154.4	DI, TC, ECM
2	3196/C-12	370 @ 2100	175	123.5	1200 @ 1400	226	106.7	EM, DI, TC, ECM
3	3196/C-12	400 @ 2100	190	134.5	1275 @ 1400	241	113.6	EM, DI, TC, ECM
4	3196/C-12	425 @ 2100	206	145.5	1350 @ 1400	263	123.7	EM, DI, TC, ECM
5	3196/C-12	455 @ 2100	217	153.0	1450 @ 1400	285	134.3	EM, DI, TC, ECM
6	3196/C-12	500 @ 2100	242	170.6	1575 @ 1400	312	146.7	EM, DI, TC, ECM
7	3196/C-12	425 @ 2100	204	143.8	1433 @ 1400	278	131.0	EM, DI, TC, ECM
8	3196/C-12	340 @ 2100	165	116.6	1238 @ 1400	227	107.0	EM, DI, TC, ECM
9	3196/C-12	380 @ 2100	185	131.0	1384 @ 1400	257	121.2	EM, DI, TC, ECM
10	3196/C-12	305 @ 2200	150	111.2	1061 @ 1400	198	93.0	EM, DI, TC, ECM
11	3196/C-12	405 @ 2000	211	142.2	1244 @ 1400	241	113.5	EM, DI, TC, ECM
12	3196/C-12	304 @ 2100	147	103.8	1058 @ 1400	203	95.6	EM, DI, TC, ECM
13	3196/C-12	287 @ 2100	138	97.6	1002 @ 1400	192	90.5	EM, DI, TC, ECM
14	3196/C-12	430 @ 1800	254	153.6	N/A	N/A	N/A	EM, DI, TC, ECM
15	3196/C-12	430 @ 1800	266	161.4	N/A	N/A	N/A	EM, DI, TC, ECM
16	3196/C-12	468 @ 1800	266	161.4	N/A	N/A	N/A	EM, DI, TC, ECM
17	3196/C-12	489 @ 1800	293	177.4	N/A	N/A	N/A	EM, DI, TC, ECM
18	3196/C-12	534 @ 1800	293	177.4	N/A	N/A	N/A	EM, DI, TC, ECM
19	3196/C-12	338 @ 1500	252	127.4	N/A	N/A	N/A	EM, DI, TC, ECM
20	3196/C-12	367 @ 1500	253	127.4	N/A	N/A	N/A	EM, DI, TC, ECM
21	3196/C-12	388 @ 1500	297	149.7	N/A	N/A	N/A	EM, DI, TC, ECM
22	3196/C-12	425 @ 1500	297	149.7	N/A	N/A	N/A	EM, DI, TC, ECM
23	3196/C-12	333 @ 1500	208	126.0	N/A	N/A	N/A	EM, DI, TC, ECM
24	3196/C-12	362 @ 1800	208	126.0	N/A	N/A	N/A	EM, DI, TC, ECM
25	3196/C-12	355 @ 1800	225	136.0	N/A	N/A	N/A	EM, DI, TC, ECM
26	3196/C-12	392 @ 1800	225	136.0	N/A	N/A	N/A	EM, DI, TC, ECM
27	3196/C-12	391 @ 1800	239	145.0	N/A	N/A	N/A	EM, DI, TC, ECM
28	3196/C-12	428 @ 1800	239	145.0	N/A	N/A	N/A	EM, DI, TC, ECM
29	3196/C-12	259 @ 1500	197	99.2	N/A	N/A	N/A	EM, DI, TC, ECM
30	3196/C-12	282 @ 1500	197	99.2	N/A	N/A	N/A	EM, DI, TC, ECM
31	3196/C-12	280 @ 1500	214	108.2	N/A	N/A	N/A	EM, DI, TC, ECM