

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-66

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines
CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 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 Caterpillar, Inc. 1998 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Track-Type Tractor, Wheel Loader, Scraper, Cold Planner, Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>		<u>Exhaust Emission Control Systems and Special Features</u>
WCPXL18.0HRN	18.0	(1099)	Turbocharger Engine Control Module Charge Air Cooler

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 total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust Emissions (g/bhp-hp)</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>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

<u>Engine Family</u>	<u>Exhaust Emissions (g/bhp-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>
WCPXL18.0HRN	0.1	1.6	6.6	0.2	17	4	28

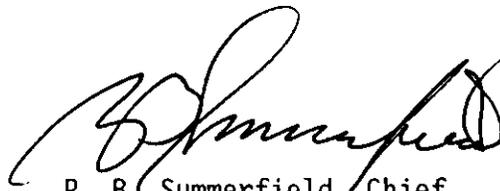
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 9th day of December 1997.



R. B. Summerfield, Chief
Mobile Source Operations Division

EO: U-R-1-66

LARGE ENGINE MODEL SUMMARY

Manufacturer: **CATERPILLAR INC.** Process Code: **New Submission**

EPA Engine Family: **WCPXL18.0HRN** Manufacturer Family Name: **NA**

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 - Cert Engine	3408	740 @ 2100	302	284.1	2222 @ 1400	338	EM, DI, TC, ECM, 214.4
2	3408	675 @ 2100	264	249.1	2025 @ 1400	308	EM, DPTAC, ECM, 193.4
3	3408	700 @ 2100	252	237.3	1952 @ 1400	297	EM, DPTAC, ECM, 186.6
4	3408	625 @ 2100	240	226.5	1876 @ 1400	286	EM, DPTAC, ECM, 179.9
5	3408	600 @ 2100	234	220.1	1801 @ 1400	275	EM, DPTAC, ECM, 172.9
6	3408	625 @ 2100	245	230.6	1876 @ 1400	286	EM, DPTAC, ECM, 179.8
7	3408	600 @ 2100	230	216.8	1801 @ 1400	274	EM, DPTAC, ECM, 172.2
8	3408	575 @ 2100	228	214.3	1727 @ 1400	266	EM, DPTAC, ECM, 166.9
9	3408	550 @ 2100	220	206.7	1650 @ 1400	254	EM, DPTAC, ECM, 159.8
10	3408	525 @ 2100	204	192.3	1575 @ 1400	242	EM, DPTAC, ECM, 151.7
11	3408	500 @ 1800	233	188.4	1752 @ 1200	282	EM, DPTAC, ECM, 151.7
12	3408	525 @ 2000	224	201.1	1655 @ 1400	252	EM, DPTAC, ECM, 158.1
13	3408	500 @ 2000	213	190.7	1577 @ 1400	240	EM, DPTAC, ECM, 150.4
14	3408	475 @ 2000	194	174.1	1497 @ 1400	222	EM, DPTAC, ECM, 139.4
15	3408	475 @ 1800	208	167.9	1662 @ 1200	260	EM, DPTAC, ECM, 139.8
16	3408	450 @ 1800	196	158.3	1575 @ 1200	244	EM, DPTAC, ECM, 131.2
17	3408	425 @ 1800	186	150.3	1488 @ 1200	234	EM, DPTAC, ECM, 126.1
18	3408	400 @ 1800	176	141.9	1399 @ 1200	225	EM, DPTAC, ECM, 121.2
19	3408	474 @ 2000	191	171.7	2058 @ 1300	225	EM, DPTAC, ECM, 131.1
20	3408	503 @ 1800	236	190.2	1653 @ 1300	252	EM, DPTAC, ECM, 146.8
21	3408	510 @ 2000	211	189.6	1653 @ 1300	252	EM, DPTAC, ECM, 146.8
22	3408	525 @ 2000	224	201.1	1655 @ 1400	252	EM, DPTAC, ECM, 158.1
23	3408	489 @ 2000	194	182.9	1560 @ 1500	232	EM, DPTAC, ECM, 155.8
24	3408	599 @ 2100	230	216.8	1801 @ 1400	274	EM, DPTAC, ECM, 172.2
25	3408	525 @ 2100	214	201.3	1615 @ 1200	253	EM, DPTAC, ECM, 136.1
26	3408	515 @ 2000	216	193.5	1656 @ 1300	256	EM, DPTAC, ECM, 149.1
27	3408	474 @ 2000	197	176.7	1519 @ 1300	236	EM, DPTAC, ECM, 137.8
28	3408	487 @ 2100	203	191.4	1452 @ 1200	232	EM, DPTAC, ECM, 124.6
29	3408	525 @ 2100	214	201.3	1615 @ 1200	253	EM, DPTAC, ECM, 136.1
30	3408	418 @ 1900	176	150.1	1350 @ 1200	285	EM, DPTAC, ECM, 110.5
31	3408	428 @ 2000	174	155.7	1417 @ 1200	285	EM, DPTAC, ECM, 115.2
32	3408	458 @ 2000	191	171.2	1549 @ 1200	242	EM, DPTAC, ECM, 130.4
33	3408	445 @ 1000	105	166.4	1708 @ 1000	214	EM, DPTAC, ECM, 124.2

3408	443 @ 1900	195	66.1	1798 @ 1050	205	134.3	LVI, DIPAC, ECM, CAC
------	------------	-----	------	-------------	-----	-------	----------------------

EO:U-R-1-66