State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-123
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board at Sections 43000.5, 43013, and 43018 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned at Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9; and

IT IS ORDERED AND RESOLVED: That the following diesel engines and the exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Tractor, Loader and Industrial equipment

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

Fuel Type: Diesel

Engine Family	Displacement Liters	Displacement Cubic Inches	Exhaust Emission Control Systems and Special Features
YCPXL18.0HRN	18.0	1104	Engine Control Module Turbocharger Charge Air Cooler

The 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 in grams per brake horsepower-hour (g/hp-h) for total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak-values from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

	Exhaust Emissions (g/hp-h)				Smoke Opacity (%)		
	THC	CO	NOx	PM	Accel	Lug	Peak
Standard	1.0	8.5	6.9	0.4	20	15	50
Certification	0.05	1.6	6.6	0.2	17	4	28

BE IT FURTHER RESOLVED: That the listed engine models comply with "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 "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, Sections 2425 *et seq.*).

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

Executed at El Monte, California this 12th day of December 1999.

Raphael Susnowitz
for R. B. Summerfield, Chief
Mobile Source Operations Division

12/13/99

LARGE ENGINE MODEL SUMMARY

EO: U-R-1-123

Manufacturer: **CATERPILLAR INC.**

Process Code: **New Submission**

EPA Engine Family: **YCPXL18.0HRN**

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.	TC, CAC, ECM
1 - Cert Engine	3408	740 @ 2100	302	284.1	2222 @ 1400	338	214.4	EM, DI, TC, ECM,
2	3408	443 @ 1900	194	166.0	1797 @ 1050	275	129.6	EM, DI, TC, ECM,
3	3408	443 @ 1900	194	166.0	1797 @ 1050	275	129.6	EM, DI, TC, ECM,
4	3408	458 @ 2000	191	171.2	1549 @ 1200	242	130.4	EM, DI, TC, ECM,
5	3408	419 @ 1900	179	152.6	1471 @ 1200	221	118.8	EM, DI, TC, ECM,
6	3408	457 @ 1900	194	165.5	1595 @ 1200	241	129.9	EM, DI, TC, ECM,
7	3408	418 @ 1900	176	150.1	1350 @ 1200	205	110.5	EM, DI, TC, ECM,
8	3408	525 @ 2100	214	201.3	1615 @ 1200	253	136.1	EM, DI, TC, ECM,
9	3408	435 @ 2100	171	161.0	1295 @ 1200	193	103.8	EM, DI, TC, ECM,
10	3408	487 @ 2100	203	191.4	1452 @ 1200	232	124.6	EM, DI, TC, ECM,
11	3408	474 @ 2000	197	176.7	1519 @ 1300	237	137.8	EM, DI, TC, ECM,
12	3408	515 @ 2000	216	193.5	1656 @ 1300	256	149.1	EM, DI, TC, ECM,
13	3408	525 @ 2100	214	201.3	1615 @ 1200	253	136.1	EM, DI, TC, ECM,
14	3408	625 @ 2100	240	226.5	1876 @ 1400	286	179.9	EM, DI, TC, ECM,
15	3408	490 @ 2000	204	182.9	1560 @ 1500	232	155.8	EM, DI, TC, ECM,
16	3408	510 @ 2000	211	189.6	1653 @ 1300	252	146.8	EM, DI, TC, ECM,
17	3408	474 @ 2000	191	171.7	1518 @ 1300	225	131.1	EM, DI, TC, ECM,
18	3408	525 @ 2000	224	201.1	1655 @ 1400	252	158.1	EM, DI, TC, ECM,
19	3408	510 @ 2000	211	189.6	1653 @ 1300	252	146.8	EM, DI, TC, ECM,
20	3408	503 @ 1800	236	190.2	1653 @ 1300	252	146.8	EM, DI, TC, ECM,
21	3408	474 @ 2000	191	171.7	1518 @ 1300	225	131.1	EM, DI, TC, ECM,
22	3408	475 @ 1800	210	169.5	1663 @ 1200	262	140.9	EM, DI, TC, ECM,
23	3408	400 @ 1800	176	141.9	1399 @ 1200	225	121.2	EM, DI, TC, ECM,
24	3408	425 @ 1800	186	150.3	1488 @ 1200	234	126.1	EM, DI, TC, ECM,
25	3408	450 @ 1800	196	158.4	1575 @ 1200	244	131.2	EM, DI, TC, ECM,
26	3408	475 @ 1800	208	167.9	1662 @ 1200	260	139.8	EM, DI, TC, ECM,
27	3408	475 @ 2000	194	174.1	1497 @ 1400	222	139.4	EM, DI, TC, ECM,
28	3408	500 @ 2000	213	190.7	1577 @ 1400	240	150.4	EM, DI, TC, ECM,
29	3408	525 @ 2000	224	201.1	1655 @ 1400	252	158.1	EM, DI, TC, ECM,
30	3408	500 @ 1800	233	188.4	1752 @ 1200	282	151.7	EM, DI, TC, ECM,
31	3408	525 @ 2100	204	192.3	1575 @ 1400	242	151.7	EM, DI, TC, ECM,
32	3408	550 @ 2100	220	206.9	1650 @ 1400	254	159.8	EM, DI, TC, ECM,
33	3408	575 @ 2100	228	214.3	1727 @ 1400	266	166.9	EM, DI, TC, ECM,

34	3408	600 @ 2100	230	21[illegible]	1801 @ 1400	274	172.2	EM TC, ECM,
35	3408	625 @ 2100	245	23[illegible]	1876 @ 1400	286	179.8	EM, [illegible] TC, ECM,
36	3408	600 @ 2100	234	220.1	1801 @ 1400	275	172.9	EM, DI CAC, ECM,
37	3408	625 @ 2100	240	226.5	1876 @ 1400	286	179.9	EM, DI CAC, ECM,
38	3408	650 @ 2100	252	237.3	1952 @ 1400	297	186.6	EM, DI CAC, ECM,
39	3408	675 @ 2100	264	249.1	2025 @ 1400	308	193.4	EM, DI CAC, ECM, CAC

TC, CAC, ECM

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