State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-41

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. 1997 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: Industrial Equipment, Generator

Fuel Type: Diesel

Engine Family	Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
VCP14.RZDARK	14.6	(893)	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):

Exhaust Emissions (g/bhp-hp)				Smoke Opaciity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
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:

	Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
Engine Family	THC	CO	NOx	PM	Accel	Lug	Peak
VCP14.RZDARK	0.1	0.8	6.5	0.1	6	1	16

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 11th day of December 1996.

R. B. Summerfield, Chief
Mobile Source Operations Division

1997 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY OFF-ROAD DIESEL ENGINES

Manufacturer: Caterpillar Inc. Engine Family: VCP14.RZDARK
Displacement: 14.6 / 893 Liters/Cubic Inches Engine Configuration: I6
All Codes in Eng. Family: CA ___ 49S ___ 50S XX Cert Test Procedures: ARB ___ EPA XX
Valves/Ports per Cylinder: 4 valves/cyl Strokes per Combustion Cycle: 4
Maximum Rated Power: 660 HP (492 KW) @ 1800 RPM
Ignition: Compression XX Compression with Glow Plug ___ Spark ___
Fuel Type (s): Dedicated XX Flex-Fuel ___ Dual-Fuel ___ Diesel XX M100 ___ M85 ___
CNG ___ LNG ___ LPG ___ Other (specify) ___
Diesel Cert Fuel: 40 CFR 86.1313-94 XX Other (specify) ___
Primary Service Equipment: Industrial, GenSet, Articulate Dump Truck, Oil Well Service
Exhaust ECS (e.g., MFI, TC, CAC): EM, TC, DI, CAC, ECM
(Use abbreviations per **SAE J1930 JUN93**)

Engine Model (Eng. Code)	Rated HP @ RPM	Fuel Rate @ Rated HP mm^3/stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
3406 (1)	427 @ 2000	213 (143.3)	1287991/1287991	1358656	----	----
3406 (2)	MIN 325 @ 1800	176 (106.7)	1287991/1287991	1302954	----	----
3406 (3)	350 @ 1800	190 (115.1)	1287991/1287991	1302954	----	----
3406 (4)	375 @ 1800	202 (122.2	1287991/1287991	1302954	----	----
3406 (5)	400 @ 1800	215 (130.0)	1287991/1287991	1302954	----	----
3406 (6)	425 @ 1800	226 (137.0)	1287991/1287991	1302954	----	----
3406 (7)	325 @ 2000	171 (109.4)	1287991/1287991	1302954	----	----
3406 (8)	350 @ 2000	175 (118.0)	1287991/1287991	1302954	----	----
3406 (9)	375 @ 2000	185 (124.7)	1287991/1287991	1302954	----	----
3406 (10)	400 @ 2000	197 (132.7)	1287991/1287991	1302954	----	----
3406 (11)	425 @ 2000	209 (140.5)	1287991/1287991	1302954	----	----
3406 (12)	450 @ 1800	241 (145.8)	1287991/1287991	1302954	----	----
3406 (13)	375 @ 2100	183 (129.0)	1287991/1287991	1302954	----	----
3406 (14)	400 @ 2100	192 (136.0)	1287991/1287991	1302954	----	----
3406 (15)	425 @ 2100	203 (143.3)	1287991/1287991	1302954		
3406 (16)	450 @ 2100	215 (151.6)	1287991/1287991	1302954		

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1997 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY OFF-ROAD DIESEL ENGINES

Engine Model (Eng. Code)	Rated HP @ RPM	Fuel Rate @ Rated HP mm^3/stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
3406 (17)	325 @ 2100	161 (113.6)	1287991/1287991	1318055	----	----
3406 (18)	350 @ 2100	171 (120.9)	1287991/1287991	1318055	----	----
3406 (19)	375 @ 2100	183 (129.0)	1287991/1287991	1318055	----	----
3406 (20)	400 @ 2100	192 (136.0)	1287991/1287991	1318055	----	----
3406 (21)	425 @ 2100	203 (143.3)	1287991/1287991	1318055	----	----
3406 (22)	450 @ 2100	215 (151.6)	1287991/1287991	1318055	----	----
3406 (23)	475 @ 2100	225 (159.3)	1287991/1287991	1318055	----	----
3406 (24)	500 @ 2100	239 (168.5)	1287991/1287991	1318055	----	----
3406 (25)	525 @ 2100	252 (177.8)	1287991/1287991	1318055	----	----
3406 (26)	550 @ 2100	264 (186.2)	1287991/1287991	1318055	----	----
3406 (27)	565 @ 2100	271 (191.1)	1287991/1287991	1318055	----	----
3406 (28)	575 @ 2100	264 (186.4)	1287991/1287991	1318055	----	----
3406 (29)	MAX 660 @ 1800	358 (216.9)	1287991/1287991	1348461	----	----
3406 (30)	435 @ 2100	214 (151.2)	1189035/1189035	1285599	----	----
3406 (31)	500 @ 2100	244 (172.6)	1189035/1189035	1285599	----	----
3406 (32)	500 @ 2100	263 (185.6)	1287991/1287991	1366055	----	----
3406 (33)	490 @ 2000	252 (177.8)	1287991/1287991	1366055	----	----
3406 (34)	475 @ 2100	246 (173.5)	1287991/1287991	1366055	----	----
3406 (35)	450 @ 2100	236 (166.9)	1287991/1287991	1366055	----	----
3406 (36)	425 @ 2100	221 (156.4)	1287991/1287991	1366052	----	----
3406 (37)	400 @ 2100	209 (147.5)	1287991/1287991	1366052	----	----
3406 (38)	360 @ 2100	188 (132.8)	1287991/1287991	1366052	----	----
3406 (39)	360 @ 2100	188 (132.8)	1287991/1287991	1366052	----	----

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