

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-49

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: Wheel Loader, Wheel Tractor, Truck, Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters (Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
VCP27.RZDARP	27.0 (1649)	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>
VCP27.RZDARP	0.1	1.3	6.5	0.1	13	3	30

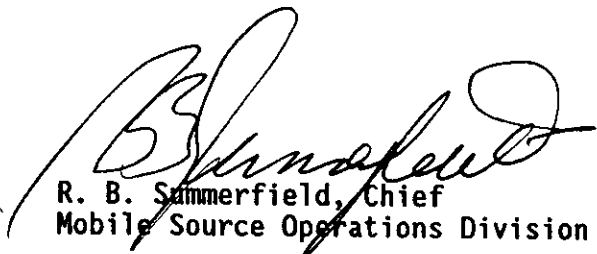
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

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  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 VCP27.RZDARP
 Displacement 27.0 / 1649 Liters/Cubic Inches Engine Configuration: V12
 All Codes in Eng. Family: CA 49S 50S XX Cert Test Procedures: ARB EPA XX
 Valves/Ports per Cylinder 2valves/cyl. Strokes per Combustion Cycle: 4
 Maximum Rated Power: 750 HP (559 KW) @ 1800 RPM
 Ignition: Compression XX Compression with Glow Plug _____ Spark _____
 Fuel Type (s): Dedicated X 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, Wheel Loaders, Wheel Tractors, Trucks
 Exhaust ECS (e.g., MFI, TC, CAC): EM, DI, TC, ECM, CAC

(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.
3412 (1)	MAX 750 @ 2100	195 (276.1)	1313098/1313098	1314359	----	----
3412 (2)	700 @ 2100	190 (268.9)	1313098/1313098	1314359	----	----
3412 (3)	750 @ 1800	218 (263.8)	1313098/1313098	1314359	----	----
3412 (4)	750 @ 2000	202 (272.4)	1313098/1313098	1314359	----	----
3412 (5)	700 @ 2000	186 (250.9)	1313098/1313098	1314359	----	----
3412 (6)	735 @ 1800	215 (260.0)	1313098/1313098	1314359	----	----
3412 (7)	700 @ 1800	203 (246.3)	1313098/1313098	1314359	----	----
3412 (8)	650 @ 1800	187 (226.7)	1313098/1313098	1314359	----	----
3412 (9)	MIN 600 @ 1800	171 (207.1)	1313098/1313098	1314359	----	----
3412 (10)	678 @ 2000	175 (235.9)	1313098/1313098	1278501	----	----
3412 (11)	660 @ 2000	174 (233.5)	1313098/1313098	1278501	----	----
3412 (12)	725 @ 2000	193 (259.1)	1313098/1313098	1345579	----	----
3412 (13)	692 @ 1800	194 (235.2)	1313098/1313098	1345579	----	----
3412 (14)	682 @ 2000	180 (242.9)	1313098/1313098	1345578	----	----
3412 (15)	654 @ 1800	186 (224.9)	1313098/1313098	1345578	----	----
3412 (16)	750 @ 1800	211 (255.2)	1313098/1313098	1314354	----	----
3412 (17)	704 @ 2000	185 (248.8)	1087090/1087090	1451028	----	----

ISSUE DATE	03 SEPT 96						
REVISION NUMBER	<u>1</u>						
REVISION DATE	<u>05MAR97</u>						