## State of California AIR RESOURCES BOARD

## EXECUTIVE ORDER U-R-1-45

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

Fuel Type: Diesel

Engine Family	Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
VCP27.RZDARH	27.0	(1649)	Turbocharger Smoke Puff Limiter 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	Smoke Opaciity (%)				
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	Lug	<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> </u>	<u>mission</u>	Smoke	<u>Opacity</u>	(%)			
<b>Engine Family</b>	THC	<u>CO</u>	<u>N0x</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
VCP27.RZDARH	0.1	1.9	6.4	0.2	18	8	26

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

Page1	l of	1
-------	------	---

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

Manufacturer	acturer Caterpillar Inc.			Engine Family . VCP27.RZ					CP27.RZDA	RH		
Displacement		27.0 /	1649		Lite	rs/Cub	ic Inches	Engi		nfiguration:		V12
All Codes in Eng.	Family:	CA	498		50S	XX	Cert Tes	_		_	EPA	<del></del> -
Valves/Ports per C	ylinder	2	valves/cyl.		S		per Combi			4	•	
Maximum Rated P	ower:	750	HP	(	_	559	KW)	@		1800		RPM
Ignition: Compre		Compression with Glow Plug				Spark						
Fuel Type (s):	Dedicated	XX	Flex-Fuel		Dual-	-Fuel		Diesel	XX	M100	•	M85
	CNG		LNG	LPG	•	Oth	 er (specify	·)		•		
Diesel Cert Fuel:	40 CFR 86	1313-94	XX				er (specify				<del>-</del>	-
Primary Service Ed	quipment:	Indu	strial					´				<del></del>
Exhaust ECS (e.g.	, MFI, TC,	CAC):	EM, To	C, DI, (	CAC,	SPL		· , ,				
		•		(Use al	bbrevi	ations	per SAE J	1930 J	UN93	)		

Engine Model (Eng. Code)	Rated HP @ RPM	Fuel Rate @ Rated HP mm³/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)	1291354/1291351			
3412 (2)	750 @ 1800	220 (266.1)	1291354/1291351			
3412 (3)	700 @ 2100	182 (256.6)	1291354/1291351			
3412 (4)	725 @ 2000	196 (263.6)	1291354/1291351			
3412 (5)	MIN 650 @ 1800	190 (229.9)	1291354/1291351			
3412 (6)	625 @ 1800	182 (220.9)	1291354/1291351			
3412 (7)	715 @ 1800	210 (253.8)	1291354/1291351			
3412 (8)	725 @ 1800	213 (257.7)	1291354/1291351			
3412 (9)	750 @ 1900	211 (269.8)	1291354/1291351			
3412 (10)	750 @ 2000	203 (233.5)	1291354/1291351			
3412 (11)	650 @ 2100	169 (238.5)	1291354/1291351		***-	
3412 (12)	725 @ 2100	188 (266.0)	1291354/1291351			
į						
				ļ		

ISSUE DATE	03 SEPT 96									
REVISION NUMBER				1						
REVISION DATE									-	