## State of California AIR RESOURCES BOARD

## FXECUTIVE ORDER U-R-1-31

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	<u>Liters</u>	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
VCP10.RZDARA	10.4	(636)	Turbocharger Smoke Puff Limiter

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 (q/bhp-hp)					Smoke Opaciity (%)				
THC	<u>co</u>	<u>NOx</u>	<u>PM</u>		<u>Accel</u>	<u>Luq</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>Exhaust Er</u>	nission	Smoke	Smoke Opacity (%)				
Engine Family	<u>THC</u>	<u>CO</u>	<u>N0x</u>	<u>PM</u>	<u>Accel</u>	<u>Luq</u>	<u>Peak</u>
VCP10.RZDARA	0.4	1.3	6.2	0.3	16	12	34

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 Caterpilla		ar Inc. Engine Family					VCP10.RZDARA						
Displacement 10.4 / 0			636		Liters/Cubic Inches			Engi	Engine Configuration:			V8	
All Codes in Eng.	Family:	CA	49S		50S	XX	Cert Tes	t Proced	iures:	ARB	EPA	XX	
Valves/Ports per C	ylinder	2 va	ves/cyl.		S	trokes	per Comb	ustion C	Cycle:	4	-		
Maximum Rated P	ower:	260	HP	(		194	KW)	@		2600		RPM	
Ignition: Compre	ssion	XX		Compi	ressio	n with	Giow Plug	g		5	Spark	•	
Fuel Type (s):	Dedicated	$\overline{X}$	Flex-Fuel		Dual	-Fuel		Diesel	XX	M100		M85	
	CNG		LNG	LPG		Oth	er (specify	<b>/</b> )				·	
Diesel Cert Fuel:	40 CFR 8	5.1313-94	xx			Oth	er (specify	/) 					
Primary Service Ed	quipment:	Indu	strial										
Exhaust ECS (e.g.	, MFI, TC,	CAC):	EM, T	C, SPL	, DI								
				(Use al	bbrev	iations	per SAE	J1930 J	UN93	3)			

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.
3208 (1)	250 @ 2800	88 (110.9)	1261042/1229007			
3208 (2)	210 @ 2800	74 (92.8)	1304744/1229007			
3208 (3)	175@ 2800	63 (78.8)	1304744/1229007			
3208 (4)	MAX 260 @ 2600	91 (106.3)	1229000/1229007	<b>-</b>		
3208 (5)	250 @ 2600	88 (102.2)	1229000/1229007			
3208 (6)	225 @ 2600	79 (92.3)	1229000/1229007			
3208 (7)	210 @ 2600	74 (86.3)	1304744/1229007			
3208 (7)	196 @ 2600	69 (80.9)	1304744/1229007			
3208 (9)	175 @ 2600	63 (73.2)	1304744/1229007			
3208 (10)	166 @ 2600	60 (70.0)	1304744/1229007			
3208 (11)	189 @ 2500	68 (75.7)	1304744/1229007			
3208 (12)	220 @ 2400	79 (84.7)	1229000/1229007			
3208 (13)	210 @ 2400	75 (81.0)	1229000/1229007			
3208 (14)	200 @ 2400	72 (77.3)	1229000/1229007			

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1304744/1229007

190 @ 2400

69 (73.9)

3208 (15)