State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-13-46
Relating to Certification of New Motor Vehicle Heavy-Duty Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102, and 43103 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-45-3;

IT IS ORDERED AND RESOLVED: That the following Caterpillar, Inc. 1987 model-year diesel engines have shown compliance with the transient test procedure and standards and are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating greater than 8500 pounds:

Engine Family	Displacement Cubic Inches	(Liters)	Exhaust Emission Control Systems (Special Features)
HCT0636EPA5	636	(10.4)	(Diesel Injection-Direct) (Turbocharged)
HCT0636FPA8	636	(10.4)	(Diesel Injection-Direct) (Turbocharged) (Aftercooler)
HCT0638FPA5	638	(10.5)	(Diesel Injection-Prechamber) (Turbocharged) (Aftercooler)
HCT0638FPC7	638	(10.5)	(Diesel Injection-Direct) (Turbocharged) (Aftercooler)
HCT0893FPA5	893	(14.6)	(Diesel Injection-Direct) (Turbocharged) (Aftercooler)
HCT0893FPB6	893	(14.6)	(Diesel Injection-Direct) (Turbocharged) (Aftercooler)

Engine models and codes are listed on attachments.

The following are the certification emission values for these engine families:

Engine Family	Hydrocarbons gm/bhp-hr	Carbon Monoxide gm/bhp-hr	Nitrogen Oxides gm/bhp-hr
HCT0636EPA5	0.7	1.8	4.2
HCT0636FPA8	1.0	2.4	4.4
HCT0638FPA5	0.5	1.7	4.6
HCT0638FPC7	1.1	4.4	4.8
HCT0893FPA5	0.4	2.4	5.1
HCT0893FPB6	0.3	2.4	5.1

BE IT FURTHER RESOLVED: That the Executive Officer has been provided all material required to demonstrate certification compliance with the Board's emission control system warranty regulations (Title 13, California Administrative Code, Section 2036).

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

The Bureau of Automotive Repair will be notified by copy of this order.

Executed at El Monte, California this 24th day of September, 1986.

K. D. Drachand, Chief
Mobile Source Division

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Manufacturer Caterpillar Inc. Executive Order No. A-13-46 Page 1

Engine Family See below Evaporative Family NA

Engine CID (Liters) See below

ABBREVIATIONS

Ignition System

CA -Centrifugal Advance
EEC-Electronic Engine Control
EI -Electronic Ignition
ESAC-Electronic Spark Advance Control
VA -Vacuum Advance
VR -Vacuum Retard

Fuel System

CFI, CL, DID, DIP, EFI, MFI
nV -nVenturi Carburetor

Exhaust Emissions Control System

AIP-Air Injection-Pump
AIV-Air Injection-Valve
CL -Closed Loop
EGR-Exhaust Gas Recirculation
EM -Engine Modification
OC -Oxidation Catalyst System
SPL-Smoke Puff Limiter or Throttle Delay
TOC-Trap Oxidizer, Continual
TOP-Trap Oxidizer, Periodical
TR -Thermal Reactor
TWC-Three Way Catalyst System

Special Features

CCV -Combustion Chamber Valve
CFI -Central Fuel Injection
DID -Diesel Injection-Direct
DIP -Diesel Injection-Prechamber
EFI -Electronic Fuel Injection
IC -Intercooler or Aftercooler
MFI -Mechanical Fuel Injection

TC -Turbocharged
AC -Aftercooled
ATAAC-Air-to-Air Aftercooled

Engine Family	Engine Model	CID (Liters)
HCT0636EPA5	3208	636 (10.4)
HCT0636FPA8	3208	636 (10.4)
HCT0638FPA5	3306	638 (10.5)
HCT0638FPC7	3306B	638 (10.5)
HCT0893FPA5	3406B	893 (14.6)
HCT0893FPB6	3406B	893 (14.6)

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AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer CATERPILLAR INC. Page 24

Engine Family HCT0638FPA5 CID(Liter)-Type 638 (10.5) I6

ECS (Special Features) EM, (TC, AC, DIP)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rate at Maximum Rated Torque ~~(LB-FT)~~ mm^3/stroke (lbs/hr
3306	Caterpillar 7W0279	Caterpillar 9N2845	270 @ 2200	151 (112)	775 @ 1400	174 (82)
			270 @ 2100	157 (111)	775 @ 1400	174 (82)
	Turbocharger 9N1289 9N1287		245 @ 2200	137(101.7)	810 @ 1400	181 (85.1)
			245 @ 2100	138 (97.8)	810 @ 1400	181 (85.1)

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AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET
HEAVY-DUTY DIESEL ENGINES

HHDD

Manufacturer CATERPILLAR INC. Page 5

Engine Family HCT0638FPC7 CID(Liter)-Type 638(10.5) I6

ECS (Special Features) EM, (TC, ATAAC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rate at Maximum Rated Torque(LB-FT) mm^3/stroke (lbs/hr)
3306B Code D	Caterpillar 7W5928	Caterpillar 8N7003	300 @ 2000	159 (107.0)	1050 @ 1350	208 (94.6)
			285 @ 2000	151 (101.7)	1050 @ 1350	208 (94.6)
	Turbocharger 7C3408 7C7587		300 @ 1900	165 (105.8)	1050 @ 1350	208 (94.6)
			285 @ 1900	157 (100.5)	1050 @ 1350	208 (94.6)
			300 @ 1800	173 (104.8)	1050 @ 1350	208 (94.6)
			285 @ 1800	164 (99.6)	1050 @ 1350	208 (94.6)
3306B Code E	Caterpillar 7W5928	Caterpillar 8N7003	300 @ 2000	159 (107.0)	950 @ 1350	201 (84.7)
			285 @ 1900	157 (100.5)	950 @ 1350	201 (84.7)
	Turbocharger 7C3408 7C7587		270 @ 1800	156 (94.3)	950 @ 1350	201 (84.7)

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HEAVY-DUTY DIESEL ENGINES

HHDD

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Engine Family HCT0636EPA5

CID(Liter)-Type 636 (10.4) V8

ECS (Special Features) EM (TC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rate at Maximum Rated Torque ~~(LB-FT)~~ mm^3/stroke (lbs/hr)
3208 Code B	Caterpillar 7W5479	Caterpillar 4W7016	225 @ 2600	79 (92.2)	590 @ 1400	92 (58.0)
			210 @ 2800	71 (89.5)	550 @ 1400	87 (54.6)
			210 @ 2600	74 (86.5)	550 @ 1400	87 (54.6)
		Turbocharger 7W2874 7W2875	200 @ 2200	76 (75.4)	560 @ 1400	89 (55.6)
			175 @ 2200	69 (68.3)	500 @ 1400	79 (49.6)

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HEAVY-DUTY DIESEL ENGINES

MHDD

Manufacturer CATERPILLAR INC. Page ~~2~~ 3

Engine Family HCT0636FPA8 CID(Liter)-Type 636 (10.4) V8

ECS (Special Features) EM, (TC, ATAAC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rate at Maximum Rated Torque ~~(LB-FT)~~ mm^3/stroke (lbs/hr)
3208	Caterpillar 7C1645	Caterpillar 4W7016	300 @ 2800	95 (120.0)	750 @ 1400	116 (73.0)
			275 @ 2600	87 (101.6)	700 @ 1400	113 (70.9)
	Turbocharger 7C2510 7C3856					

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HEAVY-DUTY DIESEL ENGINES

HHDD

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Engine Family HCT0893FPA5 CID(Liter)-Type 893 (14.6) I6

ECS (Special Features) EM, (TC, AC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rate at Maximum Rated Torque ~~(LB-FT)~~ mm^3/stroke (lbs/hr)
3406B Code H	Caterpillar 4W2551	Caterpillar 4W7018	300 @ 2100	165 (116.7)	1145 @ 1200	232 (93.4)
			300 @ 1800	186 (112.5)	1145 @ 1200	232 (93.4)
	Turbocharger 4W4537 4W4538		280 @ 1600	189 (101.6)	1145 @ 1200	232 (93.4)
340[illegible] Code J	Caterpillar 7L0007	Caterpillar 4W7018	400 @ 2100	211 (149.1)	1325 @ 1260	264 (111.8)
			400 @ 1800	238 (143.8)	1395 @ 1260	279 (118.3)
	Turbocharger 4W5188 4W5189		380 @ 1800	221 (134.1)	1325 @ 1260	264 (111.8)
			360 @ 1800	210 (127.4)	1325 @ 1260	264 (111.8)
			340 @ 1700	211 (120.4)	1325 @ 1260	264 (111.8)

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HHDD

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Engine Family HCT0893FPB6 CID(Liter)-Type 893 (14.6) I6

ECS (Special Features) EM, (TC, ATAAC, DID)

Engine Model	Fuel Injection Pump Manufacturer Part Number	Injector Manufacturer Part Number	Maximum Rated hp at rpm	Fuel Rate at Maximum hp mm^3/stroke (lbs/hr)	Maximum Rated Torque LB-FT AT RPM	Fuel Rat at Maxim Rated Torque(LB- mm^3/stroke (lbs/hr
3406B Code D	Caterpillar 4W2551	Caterpillar 4W7023	310 @ 1800	173 (104.5)	1150 @ 1000	227 (76.3
			285 @ 1600	178 (96.0)	1150 @ 1000	227 (76.3
	Turbocharger 7C7686		285 @ 1800	161 (97.5)	1150 @ 1000	227 (76.3
3406B 3406B Code E CODE E	Caterpillar 7L0007	Caterpillar 4W7017	400 @ 2100	203 (143.2)	1375 @ 1200	259 (104.
			400 @ 2100	203 (143.2)	1340 @ 1200	254 (102.
	Turbocharger 7W9472		400 @ 1800	223 (134.8)	1375 @ 1200	259 (104.
			370 @ 1800	207 (125.1)	1375 @ 1200	259 (104.
			360 @ 1700	212 (121.3)	1375 @ 1200	259 (104.

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