California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER A-013-0173 New On-Road Heavy-Duty Engines

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE [1]	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS [2]	ECS & SPECIAL FEATURES [3]
2005	5CPXH0928EBK	15.2	Diesel	Diesel	HHDD	DDI, TC, OC, CAC, SPL, ECM

ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)
15.0	See Attachement
*	*
*	*
*	*

* =not applicable; GVWR=gross vehicle weight rating; 13 CCR xyz=Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc=Title 40, Code of Federal Regulations, Section 86.abc; L=liter; hp=horsepower; kw=kilowatt;
[1] CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas; E85=85% ethanol fuel; MF=multi fuel a.k.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;
[2] L/M/H HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;
[3] ECS=emission control system; TWC/OC=three-way/oxidizing catalyst; WU (prefix) =warm-up catalyst; DPF=diesel particulate filter; HO2S/O2S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); TBI=throttle body fuel injection; SFI/MFI=sequential/multi port fuel injection; DGI=direct gasoline injection; GCARB=gaseous carburetor; IDI/DDI=indirect/direct diesel injection; TC/SC=turbo/super charger; CAC=charge air cooler; EGR=exhaust gas recirculation; PAIR/AIR=pulsed/secondary air injection; SPL=smoke puff limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; (2) (suffix)=in series; (2004may26)

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.1 (urban bus) or 13 CCR 1956.8 (other than urban bus); 2) the EURO and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, in g/bhp-hr, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [ ] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.1 or 13 CCR 1956.8 are in parentheses.) [4]

	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.5	0.5	*	*	2.5	2.5	15.5	15.5	0.10	0.10	*	*
FEL	*	*	*	*	*	*	*	*	*	*	*	*
CERT	0.1	0.03	*	*	2.4	2.4	1.6	0.1	0.07	0.04	*	*
NTE	0.625		*		3.125		19.375		0.125		*	

[4] g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle; NTE=Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/HC=non-methane/hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde;

BE IT FURTHER RESOLVED: Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

BE IT FURTHER RESOLVED: For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels) and 13 CCR 2035 et seq. (emission control warranty).

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 Executive Order.

Executed at El Monte, California on this 18TH day of November 2004.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **CATERPILLAR INC.**

Engine category: **On-highway HDDE**

EPA Engine Family: **5CPXH0928EBK**

Mfr Family Name: **NA**

Process Code: **New Submission**

inclusive Ratings 1~33 {DDI, TC, CAC, ECM, OC, SPL}

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
Cert Eng	C-15	625 @ 1800	383	231.7	2050 @ 1200	405.2	163.6	EM, DI, TC, ECM,
1	C-15	490@ 1800	288	174.0	1650 @ 1200	318	128.2	EM, DI, TC, ECM,
2	C-15	490@ 1800	298	180.2	1850@1200	329	132.8	EM, DI, TC, ECM,
3	C-15	490@ 1800	298	180.3	1850@1200	359	144.8	EM, DI, TC, ECM,
4	C-15	490@ 1800	288	174.0	1650 @ 1200	318	128.2	EM, DI, TC, ECM,
5	C-15	490@ 1800	299	181.1	1650 @ 1200	313	126.4	EM, DI, TC, ECM,
6	C-15	490@ 1800	311	188.0	1850@1200	353	142.6	EM, DI, TC, ECM,
7	C-15	490@ 1800	298	180.2	1850@1200	329	132.8	EM, DI, TC, ECM,
8	C-15	550@1800	304	184.0	1850@1200	347	140.2	EM, DI, TC, ECM,
9	C-15	550@1800	298	180.2	1850 @ 1200	329	132.8	EM, DI, TC, ECM,
10	C-15	450@1800	275	166.2	1650 @ 1200	312	125.8	EM, DI, TC, ECM,
11	C-15	450@1800	275	166.7	1650 @ 1200	311	125.4	EM, DI, TC, ECM,
12	C-15	450@1800	275	166.2	1550@1200	304	122.6	EM, DI, TC, ECM,
13	C-15	450@1800	278	168.4	1750@1200	327	131.8	EM, DI, TC, ECM,
14	C-15	450@1800	273	165.5	1750@1200	335	135.1	EM, DI, TC, ECM,
15	C-15	490@ 1800	288	174.0	1650 @ 1200	327	131.7	EM, DI, TC, ECM,
16	C-15	490@ 1800	298	180.2	1850@1200	329	132.8	EM, DI, TC, ECM,
17	C-15	450@1800	275	166.2	1550@1200	304	122.6	EM, DI, TC, ECM,
18	C-15	450@1800	278	168.4	1750@1200	327	131.8	EM, DI, TC, ECM,
19	C-15	515@1800	314	189.8	1850@1200	361	145.8	EM, DI, TC, ECM,
20	C-15	515@1800	313	189.4	1850@1200	352	141.9	EM, DI, TC, ECM,
21	C-15	435@1800	275	166.2	1550@1200	313	126.3	EM, DI, TC, ECM,
22	C-15	435@1800	275	166.7	1550@1200	295	119.2	EM, DI, TC, ECM,
23	C-15	490@ 1800	309	186.9	1650 @ 1200	324	130.6	EM, DI, TC, ECM,
24	C-15	490@ 1800	297	179.9	1650 @ 1200	330	133.1	EM, DI, TC, ECM,
25	C-15	490@ 1800	303	183.2	1850@1200	370	149.2	EM, DI, TC, ECM,
26	C-15	490@ 1800	296	179.0	1850@1200	370	149.5	EM, DI, TC, ECM,
27	C-15	515@1800	322	194.7	1850@1200	360	145.1	EM, DI, TC, ECM,
28	C-15	515@1800	311	188.2	1850@1200	357	144.2	EM, DI, TC, ECM,
29	C-15	550@1800	335	202.8	1850@1200	361	145.6	EM, DI, TC, ECM,
30	C-15	550@1800	329	199.2	1850@1200	356	143.8	EM, DI, TC, ECM,
31	C-15	450@1800	274	166.0	1550@1200	313	126.5	EM, DI, TC, ECM

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32	C-15	450@1800	277	167.9	1550@1200	343	138.5	EM, DI, TC, ECM,
33	C-15	515@1800	307	185.8	1650 @ 1200	324	130.9	EM, DI, TC, ECM,

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