California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR, INC.	EXECUTIVE ORDER A-013-0174-1 New On-Road Heavy-Duty Engines

Pursuant to the authority vested in the Air Resources Board (ARB) 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	5CPXH0537H3K	8.8	Diesel (ultra low sulfur diesel, <15ppm sulfur)	Diesel	UB	DDI, TC, CAC, ECM, SPL, DPF

ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)
8.8	C9 : 1 / 330hp, 2 / 285hp, 3 / 330hp

* =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; CTOX=Continous Trap Oxidizer **(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	0.01	0.01	*	*
CERT	0.1	0.02	*	*	2.3	2.3	0.6	0.1	0.004	0.009	*	*
NTE	0.625		*		3.125		19.375		0.0125		*	

[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 RESOVED: That the listed engine models are certified to the 2004-2006 model-year alternative exhaust emissions standards for new diesel fuel urban bus engines per 13 CCR Section 1956.1(a)(11)(A), and their sale as engines for new urban buses is limited to sales to transit districts that are exempted by the Executive Officer under subsections 1956.2(c)(8) or (d)(7) from the requirements of subsections 1956.2(c)(5) or (d)(4), respectively; and that pursuant to section 1956.1(a)(6) and the 1998 Heavy-Duty Diesel Engine Settlement Agreements with ARB, these exhaust emission standards are identical to the primary standards for 2003 model-year new diesel fuel urban bus engines applicable to the manufacturer, and as a result, the listed engine models may also be used to re-power 2003 and earlier model-year urban buses consistent with the fleet and reporting requirements in 13 CCR Sections 1956.2 and 1956.4 [to be recodified as Sections 2023, 2023.1 and 2023.4 pursuant to Board action on February 24, 2005].

BE IT FURTHER RESOLVED: That the manufacturer shall submit quarterly reports of sales of all engines in this family to transit fleets in California. The reports shall be submitted to the Executive Officer within 45 days after the end of each calendar quarter and shall include engines sold during the reporting quarter. At a minimum, the reports shall provide the following information: name of the transit fleet, engine serial numbers, and any other information deemed necessary by the Executive Officer.

BE IT FURTHER RESOLVED: That the above-described certification is also subject to the following terms, limitations and conditions: (i) the manufacturer must take appropriate measures to ensure that all vehicles equipped with engines covered by this Executive Order bear appropriate labels in the vehicle fuel tank filler area and the driver's dashboard area disclosing the low sulfur (15 ppm maximum) fuel requirement, (ii) the manufacturer must take appropriate measures to ensure that all vehicles equipped with engines covered by this Executive Order are sold only to fleets with central fueling capability for low sulfur diesel fuel, and (iii) the manufacturer must require these fleet owners to sign agreements which require the fleet owner to use appropriate low sulfur diesel fuel and stipulate that the fleet owner is at risk of voiding the warranty for use of improper diesel fuel.

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.
This Executive Order hereby supersedes Executive Order A-013-0174 dated December 23, 2004.

Executed at El Monte, California on this 8TH day of September 2005.

Allen Lyons, Chief
Mobile Source Operations Division