| California Environmental Protection Agency AIR RESOURCES BOARD | CATERPILLAR, INC. | EXECUTIVE ORDER A-013-0164 New On-Road Heavy-Duty Engines |
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Pursuant to the authority vested in the Air Resources Board (ARB) by Health and Safety Code (HSC) Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by HSC Sections 39515 and 39516 and Executive Order (EO) G-02-003; and

Pursuant to the December 15, 1998 Settlement Agreement (SA) between ARB and the manufacturer, and any modifications thereof to the Settlement Agreement;

**IT IS ORDERED AND RESOLVED:** That 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 SIZE (liter) | FUEL TYPE (CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas) | STANDARDS & TEST PROCEDURE | INTENDED SERVICE CLASS (L/M/H HDD=light/medium/heavy heavy-duty [HD] diesel; UB=urban bus; HDO=HD Otto) |
|---|---|---|---|---|---|
| 2004 | 4CPXH0537HBX | 8.8 | Diesel | Diesel | MHDD |

| SPECIAL FEATURES & EMISSION CONTROL SYSTEMS | ENGINE MODELS / CODES (rated power in horsepower, hp) |
|---|---|
| DDI, OC, TC, CAC, ECM, SPL | C9/1 (350 hp)<br>C9/2 (335 hp) |

GVWR=gross vehicle weight rating TWC/OC=three-way/oxidizing catalyst WU (prefix) =warm-up cat. O2S=oxygen sensor HO2S=heated O2S TBI=throttle body fuel injection MFI=multi port fuel injection SFI=sequentialMFI DDI/IDI=direct /indirect diesel injection TC/SC=turbo/super charger CAC=charge air cooler EGR=exhaust gas recirculation AIR=secondary air injection PAIR=pulsed AIR SPL=smoke puff limiter ECM/PCM=engine /powertrain control module EM=engine modification 2 (prefix)=parallel (2) (suffix)=in series HC=hydrocarbon NMHC=non-methane HC NOx=oxides of nitrogen CO=carbon monoxide PM=particulate matter HCHO=formaldehyde g/bhp-hr=grams per brake horsepower-hour

The following are the exhaust emission standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT), in g/bhp-hr, for this engine family under the "Federal Test Procedure" (FTP) (Title 13, California Code of Regulations, (13 CCR) Section 1956.1 (urban bus) or 1956.8 (other than urban bus)), and under the "Euro III Test Procedure" (EURO) in the Settlement Agreement, including EURO's "Not-to-Exceed" standard(s). "Diesel" CO certification compliance may have been demonstrated pursuant to Code of Federal Regulations, Title 40, Part 86, Subpart A, Section 86.091-23(c)(2)(i) 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 Section 1956.1 or 1956.8 are in parentheses.)

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | EURO'S NTE | | NMHC: 0.6250 | | NOx: * | | NMHC+NOx: 3.500 | | PM: 0.1250 | |
| * = not applicable | HC | | NMHC | | NOx | | NMHC+NOx | | CO | | PM | | HCHO | |
| | FTP | EURO | FTP | EURO | FTP | EURO | FTP | EURO | FTP | EURO | FTP | EURO | FTP | EURO |
| (DIRECT) STD | * | * | 0.5 | 0.5 | * | * | 2.5 | 2.5 | 15.5 | 15.5 | 0.10 | 0.10 | * | * |
| AVERAGE STD | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| FEL | * | * | * | * | * | * | 2.8 | 2.8 | * | * | * | * | * | * |
| CERT | * | * | 0.1 | 0.0 | * | * | 2.6 | 2.5 | 3.6 | 0.8 | 0.08 | 0.05 | * | * |

**BE IT FURTHER RESOLVED:** That 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:** That the listed engine models have been certified to the NMHC+NOx emission standard(s) listed above pursuant to 13 CCR Section 1956.1 or 1956.8.

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

**BE IT FURTHER RESOLVED:** That the listed engine models are conditionally certified subject to the following conditions: (**1**) The SA is in effect; (**2**) The manufacturer is in compliance with all applicable certification requirements of the SA and any modifications thereof; (**3**) The manufacturer has elected to seek certification of the listed engine models under the provisions in Chapter VI.E (Averaging, Banking and Trading) in the SA and shall be required to comply with these and any other related provisions.

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

Executed at El Monte, California on this 22ND day of July 2003.

Allen Lyons, Chief
Mobile Source Operations Division