California Environmental Protection Agency AIR RESOURCES BOARD	CUMMINS, INC.	EXECUTIVE ORDER A-021-0387 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	5CEXH0912XAJ	14.9	Diesel	Diesel	HHDD	PCM, EGR, DDI, TC, CAC

ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)
14.9	See Attachment
*	*
*	*
*	*

* =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	*	*	*	*	15.5	15.5	0.10	0.10	*	*
FEL	*	*	*	*	2.4	2.4	*	*	*	*	*	*
CERT	0.2	0.1	*	*	2.3	2.2	0.9	0.4	0.09	0.06	*	*
NTE	0.625		*		3.0		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 20TH day of December 2004.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model S[illegible]ary Form

Attachment: List of Engine Model & Code

Manufacturer: **Cummins Inc.**

Engine category: **On-highway HDDE**

EPA Engine Family: **5CEXH0912XAJ**

Mfr Family Name: **103J**

Process Code: **New Submission**

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
8287;FR10494	ISX 450	450@1800	281	170	1650@1200	328	133	DDI, PCM, EGR, TC, CAC
8287;FR10476	ISX 450ST	450@1800	281	170	1450@1200	284	115	PCM, EGR, TC,
8287;FR10495	ISX 435	435@1800	265	161	1650@1200	328	133	PCM, EGR, TC,
8287;FR10473	ISX 435ST	435@1800	365	161	1450@1200	284	115	PCM, EGR, TC,
8287;FR10496	ISX 400	400@1800	245	149	1650@1200	328	133	PCM, EGR, TC,
8287;FR10472	ISX 400ST	400@1800	245	149	1450@1200	284	115	PCM, EGR, TC,
8287;FR10498	ISX 450	450@1800	281	170	1550@1200	308	125	PCM, EGR, TC,
8287;FR10499	ISX 400	408@1800	245	149	1550@1200	308	125	PCM, EGR, TC,
8287;FR10501	ISX 400	408@1800	245	149	1450@1200	284	115	PCM, EGR, TC,
8287;FR10503	ISX 385ST	408@1800	245	149	1450@1200	284	115	PCM, EGR, TC,
8287;FR10504	ISX 465V	450@1800	281	170	1650@1200	328	135	PCM, EGR, TC,
8287;FR10505	ISX 435V	425@1800	256	156	1450@1200	284	115	PCM, EGR, TC,
8520;FR10494	ISX 450	450@1800	273	166	1650@1200	336	136	PCM, EGR, TC,
8520;FR10498	ISX 450	450@1800	273	166	1550@1200	306	124	PCM, EGR, TC,
8520;FR10495	ISX 435	435@1800	262	159	1650@1200	336	136	PCM, EGR, TC,
8520;FR10496	ISX 400	408@1800	244	148	1650@1200	336	136	PCM, EGR, TC,
8520;FR10499	ISX 400	408@1800	244	148	1550@1200	306	124	PCM, EGR, TC,
8520;FR10501	ISX 400	425@1800	255	155	1450@1200	282	114	PCM, EGR, TC,
8520;FR10476	ISX 450ST	450@1800	273	166	1450@1200	282	114	PCM, EGR, TC,
8520;FR10473	ISX 435ST	435@1800	262	159	1450@1200	282	114	PCM, EGR, TC,
8520;FR10472	ISX 400ST	408@1800	244	148	1450@1200	282	114	PCM, EGR, TC,
8520;FR10503	ISX 385ST	408@1800	244	148	1450@1200	282	114	PCM, EGR, TC,
8520;FR10504	ISX 465V	450@1800	273	166	1650@1200	336	136	PCM, EGR, TC,
8520;FR10505	ISX 435V	425@1800	255	155	1450@1200	282	114	PCM, EGR, TC,