California Environmental Protection Agency AIR RESOURCES BOARD	CUMMINS INC.	EXECUTIVE ORDER A-021-0369 New On-Road Heavy-Duty Engines

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	4CEXH0912XAH	14.9	Diesel	Diesel	HHDD

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	ENGINE MODELS / CODES (rated power in horsepower, hp)
DDI, EGR, TC, CAC, PCM	SEE ATTACHMENT

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.)

					EURO'S NTE		NMHC: 0.625		NOx: *		NMHC+NOx: 3.125		PM: 0.125	
* = 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	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CERT	*	*	0.2	0.05	*	*	2.3	1.9	1.0	0.4	0.09	0.07	*	*

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 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.

Engines certified under this Executive Order shall conform to all applicable California emission regulations and all requirements under the Settlement Agreement and any modifications thereof.
The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 13TH day of January 2004.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **Cummins Inc.**

Engine category: **On-highway HDDE**

EPA Engine Family: **4CEXH0912XAH**

Mfr Family Name: **103H**

Process Code: **New Submission**

A-021-0369

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
8259|FR10427	ISX 500	525@1800	337	204	1850@1200	388	157	PCM, EGR, TC, CA
8259|FR10426	ISX 500ST2	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8259|FR10425	ISX 500	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8259|FR10422	ISX 475	500@1800	315	191	1650@1200	337	137	PCM, EGR, TC,
8259|FR10421	ISX 450	464@1800	280	170	1650@1200	337	137	PCM, EGR, TC,
8259|FR10419	ISX 450ST2	464@1800	280	170	1450@1200	296	120	PCM, EGR, TC,
8259|FR10418	ISX 400	425@1800	254	154	1650@1200	337	137	PCM, EGR, TC,
8259|FR10416	ISX 400ST2	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8259|FR10415	ISX 400	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8285|FR10481	ISX 500	525@1800	325	197	1850@1200	371	150	PCM, EGR, TC,
8285|FR10480	ISX 500	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8285|FR10482	ISX 500ST	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8285|FR10485	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8285|FR10486	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8285|FR10478	ISX 475	500@1800	304	185	1850@1200	371	150	PCM, EGR, TC,
8285|FR10477	ISX 475	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8285|FR10479	ISX 475ST	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8285|FR10475	ISX 450	464@1800	266	162	1650@1200	320	129	PCM, EGR, TC,
8285|FR10474	ISX 450	464@1800	266	162	1550@1200	291	118	PCM, EGR, TC,
8285|FR10471	ISX 400	425@1800	241	146	1650@1200	320	129	PCM, EGR, TC,
8285|FR10470	ISX 400	425@1800	241	146	1550@1200	291	118	PCM, EGR, TC,
8285|FR10469	ISX 400	425@1800	241	146	1450@1200	273	110	PCM, EGR, TC,
8285|FR10492	ISX 465V	464@1800	266	162	1650@1200	320	129	PCM, EGR, TC,
8285|FR10493	ISX 325V	425@1800	241	146	1450@1200	273	110	PCM, EGR, TC,
8283|FR10484	ISX 565	590@1800	349	212	1850@1200	371	150	PCM, EGR, TC,
8283|FR10483	ISX 530	550@1800	328	199	1850@1200	371	150	PCM, EGR, TC,
8283|FR10481	ISX 500	525@1800	315	191	1850@1200	371	150	PCM, EGR, TC,
8283|FR10480	ISX 500	525@1800	315	191	1650@1200	337	137	PCM, EGR, TC,

Attachment A-021-0369

8283;FR10	ISX 500ST	525@1800	315		1650@1200	327	132	PCM, EGR, TC,
8283;FR10477	ISX 475	500@1800	295	179	1850@1200	371	150	PCM, EGR, TC,
8283;FR10477	ISX 475	500@1800	295	179	1650@1200	327	132	PCM, EGR, TC,
8283;FR10479	ISX 475ST	500@1800	295	179	1650@1200	327	132	PCM, EGR, TC,
8283;FR10485	ISX 525	525@1800	315	191	1650@1200	327	132	PCM, EGR, TC,
8283;FR10486	ISX 525	525@1800	315	191	1650@1200	327	132	PCM, EGR, TC,
8283;FR10507	ISX 600	600@1800	355	216	1850@1200	370	150	PCM, EGR, TC,
8283;FR10508	ISX 600	600@1800	355	216	1850@1200	370	150	PCM, EGR, TC,
8518;FR10507	ISX 600	600@1800	357	217	1850@1200	358	145	PCM, EGR, TC,
8518;FR10485	ISX 525	525@1800	325	197	1650@1200	327	132	PCM, EGR, TC,
8518;FR10486	ISX 525	525@1800	325	197	1650@1200	327	132	PCM, EGR, TC,
8518;FR10484	ISX 565	590@1800	350	212	1850@1200	358	145	PCM, EGR, TC,
8518;FR10483	ISX 530	550@1800	335	203	1850@1200	358	145	PCM, EGR, TC,
8519;FR10481	ISX 500	525@1800	325	197	1850@1200	358	145	PCM, EGR, TC,
8519;FR10480	ISX 500	525@1800	325	197	1650@1200	327	132	PCM, EGR, TC,
8519;FR10482	ISX 500ST	525@1800	325	197	1650@1200	327	132	PCM, EGR, TC,
8519;FR10478	ISX 475	500@1800	308	187	1850@1200	358	145	PCM, EGR, TC,
8519;FR10477	ISX 475	500@1800	308	187	1650@1200	327	132	PCM, EGR, TC,
8519;FR10479	ISX 475ST	500@1800	308	187	1650@1200	327	132	PCM, EGR, TC,
FEDERAL								
8260;FR10427	ISX 500	525@1800	337	204	1850@1200	388	157	PCM, EGR, TC,
8260;FR10426	ISX 500ST2	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8260;FR10425	ISX 500	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8260;FR10422	ISX 475	500@1800	315	191	1650@1200	337	137	PCM, EGR, TC,
8260;FR10421	ISX 450	464@1800	280	170	1650@1200	337	137	PCM, EGR, TC,
8260;FR10419	ISX 450ST2	464@1800	280	170	1450@1200	296	120	PCM, EGR, TC,
8260;FR10418	ISX 400	425@1800	254	154	1650@1200	337	137	PCM, EGR, TC,
8260;FR10416	ISX 400ST2	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8260;FR10415	ISX 400	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8286;FR10481	ISX 500	525@1800	325	197	1850@1200	371	150	PCM, EGR, TC,
8286;FR10480	ISX 500	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8286;FR10482	ISX 500ST	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8286;FR10485	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8286;FR10486	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8286;FR10478	ISX 475	500@1800	304	185	1850@1200	371	150	PCM, EGR, TC,
8286;FR10477	ISX 475	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8286;FR10479	ISX 475ST	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8286;FR10476	ISX 450	464@1800	266	162	1650@1200	320	129	PCM, EGR, TC,

Attachment

A-021-0369

Attachment

A-021-0369

8286FR10471	ISX 450	464@1800	266		1550@1200	291	118	PCM,EGR,TC			
8286FR10476	ISX 400	425@1800	241		1650@1200	320	129	PCM,EGR,TC			
8286FR10470	ISX 400	425@1800	241	146	1550@1200	291	118	PCM,EGR,TC			
8286FR10469	ISX 400	425@1800	241	146	1450@1200	273	110	PCM,EGR,TC			
8286FR10492	ISX 465V	464@1800	266	162	1650@1200	320	129	PCM,EGR,TC			
8286FR10493	ISX 325V	425@1800	241	146	1450@1200	273	110	PCM,EGR,TC			
8284FR10484	ISX 565	590@1800	349	212	1850@1200	371	150	PCM,EGR,TC			
8284FR10483	ISX 530	550@1800	328	199	1850@1200	371	150	PCM,EGR,TC			
8284FR10481	ISX 500	525@1800	315	191	1850@1200	371	150	PCM,EGR,TC			
8284FR10480	ISX 500	525@1800	315	191	1650@1200	327	132	PCM,EGR,TC			
8284FR10482	ISX 500ST	525@1800	315	191	1650@1200	327	132	PCM,EGR,TC			
8284FR10478	ISX 475	500@1800	295	179	1850@1200	371	150	PCM,EGR,TC			
8284FR10477	ISX 475	500@1800	295	179	1650@1200	327	132	PCM,EGR,TC			

A-021-0369