California Environmental Protection Agency AIR RESOURCES BOARD	CUMMINS, INC	EXECUTIVE ORDER A-021-0341-3 New On-Road Heavy-Duty Engines

Pursuant to the authority vested in the Air Resources Board 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 G-02-003; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board 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 gross vehicle weight rating (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)
2002	2CEXH0912XAG	14.9	Diesel	Diesel	HHDD

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

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

The following are the exhaust emission standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) in grams per brake horsepower-hour (g/bhp-hr) for this engine family for hydrocarbon (HC) or non-methane HC (NMHC), oxides of nitrogen (NOx), or NMHC+NOx, carbon monoxide (CO) [except that "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], particulate matter (PM), and formaldehyde (HCHO) 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 a EURO's "Not-to-Exceed" NOx standard: (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 NOT-TO-EXCEED NOx STD					4.375
* = 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	1.3	1.3	*	*	*	*	*	*	15.5	15.5	0.10	0.10	*	*
AVERAGE STD	*	*	*	*	4.0	*	*	*	*	*	*	*	*	*
FEL	*	*	*	*	2.5	2.5	*	*	*	*	*	*	*	*
CERT	0.2	0.1	*	*	2.1	1.9	*	*	1.0	0.5	0.08	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 Settlement Agreement is in effect; and, (2) The manufacturer is in compliance with all applicable certification requirements of the Settlement Agreement 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.
This Executive Order hereby supersedes Executive Order A-021-0341-2 dated July 11, 2002.
This Executive Order is not valid for engines produced on or after October 1, 2002.

Executed at El Monte, California on this 16TH day of September 2002.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **Cummins Inc.**

Engine category: **On-highway HDDE**

EPA Engine Family: **2CEXH0912XAG**

Mfr Family Name: **103G**

Process Code: **Running Change**

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
8281;FR10481	ISX 500	525@1800	325	197	1850@1200	371	150	PCM, EGR, TC,
8281;FR10480	ISX 500	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8281;FR10482	ISX 500ST	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8281;FR10485	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8281;FR10486	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8281;FR10478	ISX 475	500@1800	304	185	1850@1200	371	150	PCM, EGR, TC,
8281;FR10477	ISX 475	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8281;FR10479	ISX 475ST	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8281;FR10475	ISX 450	464@1800	266	162	1650@1200	320	129	PCM, EGR, TC,
8281;FR10474	ISX 450	464@1800	266	162	1550@1200	291	118	PCM, EGR, TC,
8281;FR10471	ISX 400	425@1800	241	146	1650@1200	320	129	PCM, EGR, TC,
8281;FR10470	ISX 400	425@1800	241	146	1550@1200	291	118	PCM, EGR, TC,
8281;FR10469	ISX 400	425@1800	241	146	1450@1200	273	110	PCM, EGR, TC,
FEDERAL								
8282;FR10481	ISX 500	525@1800	325	197	1850@1200	371	150	PCM, EGR, TC,
8282;FR10480	ISX 500	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8282;FR10482	ISX 500ST	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8282;FR10485	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8282;FR10486	ISX 525	525@1800	325	197	1650@1200	320	129	PCM, EGR, TC,
8282;FR10478	ISX 475	500@1800	304	185	1850@1200	371	150	PCM, EGR, TC,
8282;FR10477	ISX 475	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8282;FR10479	ISX 475ST	500@1800	304	185	1650@1200	320	129	PCM, EGR, TC,
8282;FR10475	ISX 450	464@1800	266	162	1650@1200	320	129	PCM, EGR, TC,
8282;FR10474	ISX 450	464@1800	266	162	1550@1200	291	118	PCM, EGR, TC,
8282;FR10471	ISX 400	425@1800	241	146	1650@1200	320	129	PCM, EGR, TC,
8282;FR10470	ISX 400	425@1800	241	146	1550@1200	291	118	PCM, EGR, TC,

Attachment 1842 A-021-0341-3

Engine Model Summary Form

Manufacturer: Cummins, Inc.

Engine category: On-highway HDDE

EPA Engine Family: 2CEXH0912XAG

Mfr Family Name: 103G

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
8125;FR10427	ISX 500	525@1800	337	204	1850@1200	388	157	DDI, PCM, EGR, TC, CAC
8125;FR10423	ISX 525	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8125;FR10426	ISX 500ST2	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8125;FR10425	ISX 500	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,
8125;FR10422	ISX 475	500@1800	315	191	1650@1200	337	137	PCM, EGR, TC,
8125;FR10421	ISX 450	464@1800	280	170	1650@1200	337	137	PCM, EGR, TC,
8125;FR10419	ISX 450ST2	464@1800	280	170	1450@1200	296	120	PCM, EGR, TC,
8125;FR10418	ISX 400	425@1800	254	154	1650@1200	337	137	PCM, EGR, TC,
8125;FR10416	ISX 400ST2	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8125;FR10415	ISX 400	425@1800	254	154	1450@1200	296	120	PCM, EGR, TC,
8127;FR10433	ISX525	525@1800	337	204	1650@1200	337	137	PCM, EGR, TC,

Attachment-2#2 A-021-0341-3