State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER A-21-216

Relating to Certification of New Heavy-Duty Motor Vehicle Engines

CUMMINS ENGINE COMPANY, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43100, 43102 and 43103 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Cummins Engine Company, Inc. 1998 model diesel engines are certified for use in motor vehicles with a manufacturer's gross vehicle weight rating (GVWR) over 14,000 pounds:

Fuel Type: Diesel

Engine Family	Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
WCEXH0505CAC (413J)	8.3	505	Charge Air Cooler Turbocharger Powertrain Control Module

Engine models and codes are listed on attachments.

The following are the certification exhaust emission standards for this engine family in grams per brake-horsepower-hour:

Non-Methane Hydrocarbons	Carbon Monoxide	Nitrogen Oxides	Particulates
1.3	15.5	4.0	0.10

The following are the certification exhaust emission values for this engine family in grams per brake-horsepower-hour:

Non-Methane Hydrocarbons	Carbon Monoxide	Nitrogen Oxides	Particulates
0.3	1.0	3.8	0.09

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2035 et seq.).

BE IT FURTHER RESOLVED: That the aforementioned engine family has been conditionally certified subject to the following conditions:

1. Any engine which employs a defeat device shall not be covered by this Executive Order.

2. Within 90 days following the issuance of this Executive Order, the manufacturer must show cause, to the satisfaction of the Executive Officer or his designee, that the strategy for fuel injection timing, including timing during the fuel economy mode, is not a defeat device.

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 order and attachments.

Executed at El Monte, California this 30th day of April 1998.

R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

2/17/98

Manufacturer: **Cummins Engine Company, Inc.** Process Code: **New Submission**

EPA Engine Family: **WCEXH0505CAC** Manufacturer Family Name: **413J**

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
CPL2229 FR90253	ISC 350	350@2000	180	121.5	1050@1400	192	90.7	PCM, TC, CAC
CPL2298 FR90307	ISC 330	330@2000	166	112.0	950@1400	174	82.1	PCM, TC, CAC

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LARGE ENGINE TEST ENGINE INFORMATION FORM

2/17/98

E.O. A-21-216

Manufacturer: **Cummins Engine Company, Inc.**

1. EPA Standardized Engine Family Name: WCEXH0505CAC 2. Process Code: New Submission 3. Test Data Set: 1

4. Engine Code: CPL2229
5. Engine Model: ISC 350
6. Displacement(s) (cid Or Liters): 505 CID
7. Engine I.d. Number: 45638440
8. Rated *HP* @ 350 @ Rated RPM: 2000
9. Torque *(ft-lb)* @ 1050 @ Engine RPM: 1400

10. WAIVERs:

CO	PM	Smoke	Idle Co
No	No	Yes	NA

11. COLD START: Yes
12. Certification Fuel: Diesel (Part 86.1313-94(b)-Table N94-2)
13. Special Test Device ☐ Yes ☒ No
14 Test Procedure: On-Hwy Diesel

15. Official Test Results

Date: 2/9/98

	Test 1	Test 2	Test 3
HC/OMHCE	0.14		
NMHC/OMNMHCE			
HC + NOx			
CARBON MONOXIDE	0.89		
OXIDE OF NITROGEN	3.83		
PARTICULATE	0.086		
FORMALDEHYDE			
ACCELERATION (%opacity)			
LUGGING (Gen) (%opacity)			
PEAK (%opacity)			
IDLE CO %			
CO2	500		

16. Deterioration Factors

0.145
0.087
0.011
0.005

17. Certification Levels (Rounded Test Results)

Units– g/bHp-hr –Units

		STDs g/BHP-hr	STDs g/KW-hr	FELs
HC/OMHCE	0.3	1.3	1.7	
NMHC/OMNMHCE				
HC + NOx				
CARBON MONOXIDE	1.0	15.5	20.8	
OXIDE OF NITROGEN	3.8	4.0	5.4	
PARTICULATE	0.09	0.10	0.13	
FORMALDEHYDE				
ACCELERATION (%opacity)		20		
LUGGING (Gen) (%opacity)		15		
PEAK (%opacity)		50		
IDLE CO%				