State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-28

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CUMMINS ENGINE COMPANY, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 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-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Crane, Tractor, Dozer, Pump, and Generator Set

Fuel Type: Diesel

Engine Family	Liters (Cubic Inches)	Exhaust Emission Control Systems and Special Features
WCEXL0661AAA (A353)	10.8 (661)	Turbocharger Charge Air Cooler

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

Exhaust Emissions (g/bhp-hr)				Smoke Opacity (%)		
THC	CO	NOx	PM	Accel	Lug	Peak
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

	Exhaust Emission (g/bhp-hr)				Smoke Opacity (%)		
Engine Family	THC	CO	NOx	PM	Accel	Lug	Peak
WCEXL0661AAA (A353)	0.2	1.2	6.5	0.1	18	2	41

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

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 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 11th day of February 1998.

R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

12/5/96

Manufacturer: **Cummins Engine Company** Process Code: **New Submission**

EPA Engine Family: **WCEXLO661AAA** Manufacturer Family Name: **A353**

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
CPL 2363	M11-C							
FR 2520	M11-C	350@2100	162	114.9	1150@1300	214	93.9	EM, TC, CAC
FR 2521	M11-C*	350@2100	162	114.9	1150@1300	214	93.9	EM,TC, CAC
FR 2522	M11-C	350@2100	162	114.9	1150@1300	214	93.9	EM,TC, CAC
FR 2523	M11-C	350@2100	162	114.9	1150@1300	214	93.9	EM,TC, CAC
FR 2518	M11-C	350@2100	162	114.9	1075@1300	202	88.7	EM,TC, CAC
FR 2519	M11-C*	350@2100	162	114.9	1075@1300	202	88.7	EM,TC, CAC
FR 2528	M11-C	350@2100	162	114.9	1075@1300	202	88.7	EM,TC, CAC
FR 2529	M11-C	350@2100	162	114.9	1075@1300	202	88.7	EM,TC, CAC
FR 2524	M11-C	335@1800	174	105.7	1075@1300	202	88.7	EM,TC, CAC
FR 2497	M11-C*	330@2100	154	109.0	1075@1300	202	88.7	EM,TC, CAC
FR 2498	M11-C	330@2100	154	109.0	1075@1300	202	88.7	EM,TC, CAC
FR 2509	M11-C	330@2100	154	109.0	1075@1300	202	88.7	EM,TC, CAC
FR 2527	M11-C	315@1800	165	100.0	1060@1300	198	87.0	EM,TC, CAC
CPL 2336								
FR 2502	M11-C	320@2000	157	106.1	910@1300	171	74.8	EM,TC, CAC
FR 2503	M11-C	320@2000	157	106.1	910@1300	171	74.8	EM,TC, CAC
FR 2504	M11-C	310@2100	148	104.9	1050@1300	176	85.6	EM,TC, CAC
FR 2505	M11-C	290@1800	169	102.6	975@1300	182	79.7	EM,TC, CAC
CPL 2119								
FR 2393	M11-C	300@2100	144	102.1	1015@1300	192	84.0	EM,TC, CAC
FR 2346	M11-C	290@2100	141	99.5	980@1300	185	81.3	EM,TC, CAC
FR 2482	M11-C	290@2100	141	99.5	885@1300	169	73.9	EM,TC, CAC
FR 2407	M11-C	280@2100	137	96.8	950@1300	180	78.9	EM,TC, CAC
FR 2408	M11-C	275@1800	150	91.3	950@1300	180	78.9	EM,TC, CAC
FR 2484	M11-C	275@1800	150	90.8	975@1300	185	81.0	EM,TC, CAC
FR 2394	M11-C	270@2100	132	93.5	950@1300	180	78.9	EM,TC, CAC
FR 2480	M11-C	270@2100	132	93.5	885@1300	169	73.9	EM,TC, CAC
FR 2409	M11-C	270@2000	137	92.6	920@1300	175	76.7	EM,TC, CAC
FR 2410	M11-C	265@1700	152	87.2	900@1300	171	75.1	EM,TC, CAC
FR 2433	M11-C	260@2100	128	90.4	845@1300	161	70.5	EM,TC, CAC
FR 2411	M11-C	250@2100	123	87.2	845@1300	161	70.5	EM,TC, CAC

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FR 2489	M11-C	250@2100	123	87.2	845@1300	161	70.5	EM,TC,CAC
FR 2377	M11-C	245@2100	121	8[illegible]	750@1300	144	63.2	EM,TC,CAC
FR 239[illegible]	M11-C	245@2100	121	[illegible]	750@1300	144	63.2	EM,TC,CAC
FR 2396	M11-C	245@2000	126	85.3	780@1300	150	65.6	EM,TC,CAC
FR 2412	M11-C	245@1800	136	82.8	860@1300	165	71.7	EM,TC,CAC
FR 2397	M11-C	225@2100	113	80.0	760@1300	146	64.0	EM,TC,CAC
FR 2483	M11-C	225@1800	127	76.9	790@1300	152	66.4	EM,TC,CAC
CPL 2165								
FR 2487	M11-G	380@1800	202	122.4	330@1500	214	107.9	EM,TC,CAC
		345@1800	191	115.5	300@1500	195	98.4	EM,TC,CAC
FR 2486	M11-G	345@1800	191	115.5	310@1500	203	102.4	EM,TC,CAC
		310@1800	168	101.8	280@1500	185	93.7	EM,TC,CAC

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LARGE ENGINE MODEL SUMMARY

5/28/98

Manufacturer: **Cummins Engine Company** Process Code: **Running Change**

EPA Engine Family: **WCEXL0661AAA** Manufacturer Family Name: **A353**

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
CPL 2363 FR 2690	M11-C	330 @ 2100	154	109.0	1075@1300	202	88.7	EM,TC
CPL 2503 FR 2699	M11-C	295 @ 2000	146	98.5	875 @ 1400	161	76.0	EM, TC

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