California Environmental Protection Agency Air Resources Board	CUMMINS INC.	EXECUTIVE ORDER U-R-002-0629 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 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-14-012;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2016	GCEXL04.5AAH	4.5	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Engine Control Module, Exhaust Gas Recirculation, Electronic Direct Injection, Turbocharger, Charge Air Cooler, Diesel Oxidation Catalyst, Selective Catalytic Reduction – Urea, Ammonia Oxidation Catalyst	Crane, Loader, Tractor, Dozer, Pump, Compressor, and Other Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
75 ≤ kW < 130	Tier 4 Final	STD	0.19	0.40	N/A	5.0	0.02	N/A	N/A	N/A
		CERT	0.03	0.10	--	0.04	0.02	--	--	--

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

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

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 7th day of October 2015.

FOR Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

Engine Model Summary Template

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Engine Family	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
GCEXL04.5AAH	4189:FR94118	QSB4.5	173@2500	115	97	520@1500	155	78	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94220	QSB4.5	162@2500	109	93	466@1500	138	70	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94221	QSB4.5	129@2500	92	77	457@1500	136	68.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94222	QSB4.5	158@2300	112	87	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94223	QSB4.5	129@2300	95	74	378@1500	113	57	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94224	QSB4.5	158@2200	117	86	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4189:FR94593	QSB4.5	139@2200	104	77	440@1500	131	66	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4189:FR94225	QSB4.5	129@2200	98	73	430@1500	128	64.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94226	QSB4.5	119@2200	92	68	347@1500	104	52.5	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4189:FR94227	QSB4.5	173@2000	141	94	520@1500	155	78	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94228	QSB4.5	154@2000	125	84	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4222:FR94229	QSB4.5	138@2000	113	76	457@1500	136	68.6	SCR,DOC,DDI,TC, EGR,CAC,ECM
GCEXL04.5AAH	4831:FR95210	QSB4.5	154@2000	125	84	460@1500	137	69	SCR,DOC,DDI,TC, EGR,CAC,ECM

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