California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0359 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-02-003;

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)
2009	8CPXL27.0ESX	27.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module	Generator and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), 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
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	20	15	50
		FEL	N/A	N/A	N/A	N/A	0.18	N/A	N/A	N/A
		CERT	--	--	5.5	1.2	0.08	15	1	24

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

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 15 day of January 2009.

Annette Hebert

Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 1

Engine Model Summary Template

U-R-001-0359

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
9CPXL27.0ESX	Cert Test 2	C27	1150@2100	291	411.3	3876@1400	398	374.4	CAC, EM, DI, TC, ECM
9CPXL27.0ESX	1	C27	1150@2100	282	398.9	3876@1400	379	357.4	EM, DI, TC,
9CPXL27.0ESX	2 Cert Engine	C27	1151@2100	277	391.7	3876@1400	375	353	EM, DI, TC,
9CPXL27.0ESX	3	C27	1150@1800	325	393.9	3876@1400	379	357.4	EM, DI, TC,
9CPXL27.0ESX	4	C27	950@2100	233	328.7	3202@1400	317	298.2	EM, DI, TC,
9CPXL27.0ESX	5	C27	950@1800	266	321.8	3202@1400	317	298.2	EM, DI, TC,
9CPXL27.0ESX	6	C27	1050@2100	261	368.3	3539@1400	343	323	EM, DI, TC,
9CPXL27.0ESX	7	C27	1050@1800	298	360.6	3539@1400	343	323	EM, DI, TC,
9CPXL27.0ESX	8	C27	776@2000	195	262.7	2367@1300	230	201.6	EM, DI, TC,
9CPXL27.0ESX	9	C27	787@2000	198	266	2660@1300	228	261.1	EM, DI, TC,
9CPXL27.0ESX	10	C27	787@1800	215	260.5	2568@1200	253	204.2	EM, DI, TC,
9CPXL27.0ESX	11	C27	800@2100	200	282.3	2697@1400	265	249.9	EM, DI, TC,
9CPXL27.0ESX	12	C27	800@1800	223	270.6	2697@1400	265	249.9	EM, DI, TC,
9CPXL27.0ESX	13	C27	875@2100	217	307.1	2950@1400	288	270.8	EM, DI, TC,
9CPXL27.0ESX	14	C27	875@1800	242	293	2950@1400	288	270.8	EM, DI, TC,
9CPXL27.0ESX	15	C27	776@2000	204	275	2378@1300	237	207	EM, DI, TC,
9CPXL27.0ESX	16	C27	805@2000	210	282.3	2720@1300	271	236.5	EM, DI, TC,
9CPXL27.0ESX	17	C27	950@1800	272	329	3206@1400	303	285	EM, DI, TC,
9CPXL27.0ESX	18	C27	950@2100	245	346	3206@1400	303	285	EM, DI, TC,

ECM, CAC for all models