California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0324 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 engine and emission control system 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)
2008	8CPXL12.5ESK	12.5	Diesel	8000

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

The engine models and codes are attached.

The following are the exhaust certification standards (STD) 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
225 ≤ KW < 450	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.6	2.2	0.10	8	3	15

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 20 day of December 2007.

Annette Hebert

Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 2

Engine Model Summary Template

11-R-001-0324

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
8CPXL12.5ESK	1 Cert Engine	C13	520@1800	301	182.1	1625@1400	323	152	EM, DI, TC, CAC, ECM
8CPXL12.5ESK	2	C13	520@1800	301	182	1634@1400	314	148	EM, DI, TC,
8CPXL12.5ESK	3	C13	520@2100	266	188	1634@1400	314	148	EM, DI, TC,
8CPXL12.5ESK	4	C13	463@2100	235	166	1565@1575	308	163	EM, DI, TC,
8CPXL12.5ESK	5	C13	425@2100	218	154.1	1510@1400	299	140.9	EM, DI, TC,
8CPXL12.5ESK	6	C13	425@2100	218	154.1	1510@1400	299	140.9	EM, DI, TC,
8CPXL12.5ESK	7	C13	345@1800	200	116.8	1207@1400	240	112.6	EM, DI, TC,
8CPXL12.5ESK	8	C13	371@1800	215	127.3	1300@1400	253	121.6	EM, DI, TC,
8CPXL12.5ESK	9	C13	311@1800	182	110	1059@1400	222	105	EM, DI, TC,
8CPXL12.5ESK	10	C13	440@2100	226	160	1483@1400	290	137	EM, DI, TC,
8CPXL12.5ESK	11	C13	385@2100	194	137	1297@1400	249	117	EM, DI, TC,
8CPXL12.5ESK	12	C13	415@2100	205	145	1398@1400	265	125	EM, DI, TC,
8CPXL12.5ESK	14	C13	400@2100	200	142	1336@1400	258	142	EM, DI, TC,
8CPXL12.5ESK	15	C13	385@2100	193	136	1297@1400	252	119	EM, DI, TC,
8CPXL12.5ESK	16	C13	475@2100	246	173	1545@1400	298	140	EM, DI, TC,
8CPXL12.5ESK	17	C13	463@2100	243	172	1586@1400	317	150	EM, DI, TC,
8CPXL12.5ESK	18	C13	304@2000	161	108	1148@1000	221	74	EM, DI, TC,
8CPXL12.5ESK	19	C13	310@2000	164	110	1167@1000	221	75	EM, DI, TC,
8CPXL12.5ESK	20	C13	314@2000	166	112	1187@1000	229	77	EM, DI, TC,
8CPXL12.5ESK	21	C13	319@2000	168	113	1207@1000	230	77	EM, DI, TC,
[illegible]	22	C13	325@2000	168	113	1226@1000	235	79	EM, DI, TC,
8CPXL12.5ESK	23	C13	330@2000	174	114	1265@1000	238	80	EM, DI, TC,
8CPXL12.5ESK	24	C13	334@2000	174	117	1265@1000	242	81	EM, DI, TC,
8CPXL12.5ESK	25	C13	339@2000	175	118	1285@1000	245	82	EM, DI, TC,
8CPXL12.5ESK	26	C13	311@1800	180	109	1058@1400	221	104	EM, DI, TC,
8CPXL12.5ESK	27	C13	440@1800	249	151	1483@1400	292	138	EM, DI, TC,
8CPXL12.5ESK	28	C13	425@1900	230	147	1512@1400	300	141	EM, DI, TC,
8CPXL12.5ESK	29	C13	310@1800	173	105	1058@1400	213	100	EM, DI, TC,

ATTACHMENT 2 OF 2

Engine Model Summary Template

U-R-001-0324

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
8CPXL12.5ESK	30	C13	409@1800	223	135	1294@1400	254	120	EM, DI, TC, CAC, ECM
8CPXL12.5ESK	31	C13	371@1800	209	127	1300@1400	246	116	EM, DI, TC, ↓