California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0331 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 December 15, 1998 Settlement Agreement between the Air Resources Board and the manufacturer, and any modifications thereof to the Settlement Agreement;

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	8CPXL32.0ESW	32.0	Diesel	8000

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

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
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	N/A	N/A	N/A
		CERT	--	--	5.4	1.6	0.13	--	--	--

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, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 2

Engine Model Summary Template

U-R-001-0331

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
8CPXL32.0ESW	1	C32	1505@2100	376	530.8	4422@1400	418	393.4	EM, DI, TC, ECM
8CPXL32.0ESW	2	C32	1500@2100	376	530.8	4422@1400	418	393.4	EM, DI, TC,
8CPXL32.0ESW	3 Cert Engine	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	5	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	6	C32	1357@1800	374	453.1	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	8	C32	1357@1800	374	453.1	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	9	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	10	C32	1016@1750	294	345.9	3635@1300	349	305.4	EM, DI, TC,
8CPXL32.0ESW	11	C32	1257@1800	356	431.2	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	12	C32	1126@1800	324	392.1	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	13	C32	970@1750	277	325.8	3461@1300	335	292.9	EM, DI, TC,
[illegible]	14	C32	951@1800	266	322.7	3205@1400	298	280.3	EM, DI, TC,
8CPXL32.0ESW	15	C32	951@2100	238	336.9	3205@1400	298	280.3	EM, DI, TC,
8CPXL32.0ESW	16	C32	1124@1800	319	386.1	3792@1400	365	344.1	EM, DI, TC,
8CPXL32.0ESW	17	C32	1124@2100	279	393.6	3792@1400	365	344.1	EM, DI, TC,
8CPXL32.0ESW	18	C32	1200@1800	336	407.3	4045@1400	390	367.2	EM, DI, TC,
8CPXL32.0ESW	19	C32	1200@2100	301	425.9	4045@1400	390	367.2	EM, DI, TC,
8CPXL32.0ESW	20	C32	1350@1800	384	464.7	4552@1400	438	412.4	EM, DI, TC,
8CPXL32.0ESW	21	C32	1350@2100	340	480.6	4552@1400	438	412.4	EM, DI, TC,
8CPXL32.0ESW	22	C32	1016@1750	294	345.9	3635@1300	349	305.4	EM, DI, TC,
8CPXL32.0ESW	24	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	25	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	26	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	27	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	28	C32	1257@1800	356	431.2	NA	NA	NA	EM, DI, TC,
[illegible]	29	C32	1110@1500	408	412.2	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	30	C32	923@1800	257	311.4	3554@1300	345	302	EM, DI, TC,
8CPXL32.0ESW	31	C32	800@2100	207	292.9	2447@1350	239	217.1	EM, DI, TC,

Engine Model Summary Template

ATTACHMENT 2 OF 2

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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
8CPXL32.0ESW	32	C32	1000@2100	262	370	3047@1400	310	292	EM, DI, TC, CAC ECM
8CPXL32.0ESW	33	C32	800@2100	209	296	2447@1350	249	227	EM, DI, TC,
8CPXL32.0ESW	34	C32	861@2100	216	306	2607@1400	264	249	EM, DI, TC,
8CPXL32.0ESW	35	C32	920@2100	244	345	3023@1400	312	294	EM, DI, TC,
8CPXL32.0ESW	36	C32	1110@2100	296	419	3743@1400	386	364	EM, DI, TC,
8CPXL32.0ESW	37	C32	1225@2100	327	462	4129@1400	425	400	EM, DI, TC,
8CPXL32.0ESW	38	C32	950@1600	295	317	3627@1200	350	282	EM, DI, TC,
8CPXL32.0ESW	39	C32	1110@2100	296	419	3743@1400	386	364	EM, DI, TC,
8CPXL32.0ESW	40	C32	800@2100	209	295	2473@1350	249	227	EM, DI, TC,
8CPXL32.0ESW	41	C32	920@2100	239	338	3023@1400	312	294	EM, DI, TC,
8CPXL32.0ESW	42	C32	1225@2100	327	462	4129@1400	425	400	EM, DI, TC,
8CPXL32.0ESW	43	C32	860@2100	221	313	2599@1400	263	248	EM, DI, TC,
8CPXL32.0ESW	44	C32	1000@2100	262	370	3047@1400	310	292	EM, DI, TC,
8CPXL32.0ESW	45	C32	1357@1800	385	466	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	46	C32	1357@1800	385	466	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	47	C32	1502@1800	429	519	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	48	C32	1502@1800	429	519	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	49	C32	1257@1800	363	440	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	50	C32	1126@1800	333	403	NA	NA	NA	EM, DI, TC,
8CPXL32.0ESW	51	C32	1050@1900	280	359	3686@1350	360	327	EM, DI, TC,

Engine Model Summary Template

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
8CPXL32.0ESW	45			380	460				
8CPXL32.0ESW	46			380	460				
8CPXL32.0ESW	47			424	514				
8CPXL32.0ESW	48			424	514				
8CPXL32.0ESW	49			357	433				
8CPXL32.0ESW	50			301	365				