California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0327 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	8CPXL18.1ESK	18.1	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler and Engine Control Module	Loader, Tractor 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 ≤ 560	Tier 2	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.3	2.4	0.15	5	3	10

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 1

Engine Model Summary Template

U-R-001-0327

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
8CPXL18.1ESK	1	C18	700@1800	419	254	2361@1400	468	220.5	EM, DI, TC, ~~CAC~~ ECM
8CPXL18.1ESK	2	C18	700@2100	370	261	2361@1400	461	217	EM, DI, TC,
8CPXL18.1ESK	3	C18	525@2100	272	192	1866@1400	365	172	EM, DI, TC,
8CPXL18.1ESK	4	C18	553@1800	319	193	1934@1400	389	183.2	EM, DI, TC,
8CPXL18.1ESK	5	C18	464@1800	265	160.2	1849@1250	373	157	EM, DI, TC,
8CPXL18.1ESK	6	C18	464@1800	268	162.5	1849@1250	382	160.6	EM, DI, TC,
8CPXL18.1ESK	7	C18	700@2100	370	261	2361@1400	461	217	EM, DI, TC,
8CPXL18.1ESK	8	C18	630@2100	343	242.4	2042@1400	407	191.5	EM, DI, TC,
8CPXL18.1ESK	9	C18	650@2100	339	210	2051@1500	417	239	EM, DI, TC,
8CPXL18.1ESK	10	C18	650@2000	358	240.6	2078@1200	410	165.4	EM, DI, TC,
8CPXL18.1ESK	11	C18	523@1800	302	182.5	2004@1200	404	163.2	EM, DI, TC,
8CPXL18.1ESK	12	C18	553@1800	320	194	2116@1200	432	193.9	EM, DI, TC,
8CPXL18.1ESK	13	C18	523@1800	302	182.5	2005@1200	405	182.5	EM, DI, TC,
8CPXL18.1ESK	14	C18	555@1800	320	193.6	2004@1200	403	162.8	EM, DI, TC,
8CPXL18.1ESK	15	C18	700@1800	419	254	2359@1400	468	220.5	EM, DI, TC,
8CPXL18.1ESK	16	C18	575@1900	327	209	2005@1300	402	175.8	EM, DI, TC,
8CPXL18.1ESK	17	C18	588@2100	308	217.9	2090@1400	400	188	EM, DI, TC,
8CPXL18.1ESK	18	C18	575@2100	296	209	1938@1400	381	179	EM, DI, TC,
8CPXL18.1ESK	19	C18	600@2100	313	221	2022@1400	411	194	EM, DI, TC,
8CPXL18.1ESK	20	C18	589@2000	312	210	2064@1300	399	175	EM, DI, TC,
8CPXL18.1ESK	21	C18	525@1800	302	183	1672@1300	346	151	EM, DI, TC,
8CPXL18.1ESK	22	C18	488@1800	276	166.8	1549@1300	309	135.2	EM, DI, TC,
8CPXL18.1ESK	23	C18	598@1800	359	217	1988@1300	405	177	EM, DI, TC,
8CPXL18.1ESK	24	C18	556@1800	334	202	1849@1300	373	163	EM, DI, TC,
8CPXL18.1ESK	25	C18	632@1800	374	227	2107@1300	417	182	EM, DI, TC,
8CPXL18.1ESK	26	C18	596@1800	348	211	1985@1300	391	171	EM, DI, TC,
8CPXL18.1ESK	27	C18	632@1800	374	227	2107@1300	417	182	EM, DI, TC,
8CPXL18.1ESK	28	C18	596@1800	348	211	1985@1300	391	171	EM, DI, TC,

ATTACHMENT 2 OF 2

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
8CPXL18.1ESK	30	C18	600@2100	313	221	2022@1400	411	194	EM, DI, TC, ~~CAC~~ ECM
8CPXL18.1ESK	31	C18	575@2100	292	206	1938@1400	376	177	EM, DI, TC,
8CPXL18.1ESK	32	C18	630@2100	331	234	2042@1400	387	182	EM, DI, TC,
8CPXL18.1ESK	33	C18	632@1800	377	228	2107@1300	409	179	EM, DI, TC,
8CPXL18.1ESK	34	C18	596@1800	357	216	1985@1300	386	169	EM, DI, TC,
8CPXL18.1ESK	35	C18	630@2100	338	239	2203@1400	425	200	EM, DI, TC,
8CPXL18.1ESK	36 Cert Engine	C18	700@1800	414	250	2361@1400	467	220	EM, DI, TC,
8CPXL18.1ESK	37	C18	700@2100	376	266	2361@1400	467	220	EM, DI, TC,
8CPXL18.1ESK	38	C18	575@1900	323	206	2005@1300	399	175	EM, DI, TC,
8CPXL18.1ESK	39	C18	525@2100	277	196	1908@1400	397	187	EM, DI, TC,
8CPXL18.1ESK	40	C18	650@2100	338	239	2051@1500	410	207	EM, DI, TC,
8CPXL18.1ESK	41	C18	488@1800	274	166	1549@1300	308	135	EM, DI, TC,
8CPXL18.1ESK	42	C18	588@2100	317	224	2090@1400	429	202	EM, DI, TC,
8CPXL18.1ESK	43	C18	542@1800	321	195	1762@1300	347	152	EM, DI, TC,
8CPXL18.1ESK	44	C18	500@2100	298	210	1667@1400	354	167	EM, DI, TC,
8CPXL18.1ESK	45	C18	440@2100	256	181	1466@1400	309	146	EM, DI, TC,
8CPXL18.1ESK	46	C18	700@1800	412	250	2361@1400	461	217	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
8CPXL18.1ESK	50	C18	575@2100	296	209	1938@1400	381	179	EM, DI, TC,