California Environmental Protection Agency AIR RESOURCES BOARD	PERKINS ENGINES COMPANY LTD.	EXECUTIVE ORDER U-R-022-0038 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)
2003	3PKXL03.9AK1	3.99	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger and Smoke Puff Limiter	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
37≤KW<75	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
		CERT	--	6.8	--	--	--	5	4	8

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 24th day of December 2002.

Raphael Susnowitz

for Allen Lyons, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 3

Engine Model Summary Form

ıufacturer: **Perkins Engines (Peterborough) Ltd**

ine category: **Nonroad CI**

.Engine Famıy: **3PKXL03.9AK1**

Family Name: **AS EPA**

cess Code: **New Sub - continued**

U-R-022-0038

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
	Caterpillar	77.8@ 2200	66.0	29.4	231.6 @ 1400	72.0	22.6	SPL TC DI
	1908/2000	85.8 @ 2000	73.9	33.0	258.1 @ 1400	78.0	24.3	SPL TC DI
	1908/2100	86.5 @ 2100	73.0	34.2	258.1 @ 1400	78.0	24.3	SPL TC DI
	1908/2200	85.8 @ 2200	71.3	34.9	258.1 @ 1400	78.0	24.3	SPL TC DI
	Caterpillar	85.8 @ 2000	73.9	33.0	258.1 @ 1400	78.0	24.3	SPL TC DI
	Caterpillar	86.5 @ 2100	73.0	34.2	258.1 @ 1400	78.0	24.3	SPL TC DI
	Caterpillar	85.8 @ 2200	71.3	34.9	258.1 @ 1400	78.0	24.3	SPL TC DI
	1909/1900	90.5 @ 1900	81.9	34.5	276.6 @ 1400	88.3	27.5	SPL TC DI
	1909/2000	92.5 @ 2000	81.1	36.1	276.6 @ 1400	88.3	27.5	SPL TC DI
	1909/2100	93.2 @ 2100	80.6	37.6	276.6 @ 1400	88.3	27.5	SPL TC DI
	1909/2200	95.2 @ 2200	79.8	39.0	276.6 @ 1400	88.3	27.5	SPL TC DI
	Caterpillar	90.5 @ 1900	81.9	34.5	276.6 @ 1400	88.3	27.5	SPL TC DI
	Caterpillar	92.5 @ 2000	81.1	36.1	276.6 @ 1400	88.3	27.5	SPL TC DI
	Caterpillar	93.9 @ 2100	80.6	37.6	276.6 @ 1400	88.3	27.5	SPL TC DI
	Caterpillar	95.2 @ 2200	79.8	39.0	276.6 @ 1400	88.3	27.5	SPL TC DI
	1998/2200	95.8 @ 2200	77.5	38.0	280.3 @ 1400	85.0	28.9	SPL TC DI
	5783/2200	93.9 @ 2200	77.5	38.0	274.4@ 1400	85.0	28.9	SPL TC DI
	5588/2000	100.0 @ 2000	88.0	39.0	271 Lbf ft @	91.0	32.3	SPL TC DI
	Caterpillar 3054	100.0 @ 2000	88.0	39.0	271 Lbf ft @	91.0	32.3	SPL TC DI
	1817/2200	95.9 @ 2200	80.0	37.7	258.5 @ 1400	90.0	27.4	SPL TC DI
	Caterpillar 3054	95.9 @ 2200	80.0	37.7	258.5 @ 1400	90.0	27.4	SPL TC DI
	2048/1800	95 bhp @ 1800	86.0	34.5	277.8 lbf ft @	86.0	34.5	SPL TC DI
	1932/1950	99 bhp @ 1950	83.0	35.7	297 @ 1400	92.0	28.3	SPL TC DI
	Caterpillar 3054	99 bhp @ 1950	83.0	35.7	297 @ 1400	92.0	28.3	SPL TC DI

ATTACHMENT 2 of 3

Engine Model Summary Form

ufacturer: **Perkins Engines Company Ltd**

ne category: **Nonroad CI**

Engine Family: **3PKXL03.9AK1**

Family Name: **AS EPA**

:ess Code: **New Submission**

U-R-022-0038

:ngine 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
	1932/2000	99.6 @ 2000	88.0	38.3	297 @ 1400	92.0	30.5	SPL TC DI
	1932/2100	99.8 @ 2100	86.0	39.3	297 @ 1400	92.0	30.5	SPL TC DI
	1932/2200	100.0 @ 2200	83.0	39.8	297 @ 1400	92.0	30.5	SPL TC DI
	5586/2000	99.6 @ 2000	88.0	38.3	297 @ 1400	92.0	30.5	SPL TC DI
	5586/2100	99.8 @ 2100	86.0	39.3	297 @ 1400	92.0	30.5	SPL TC DI
	5586/2200	100.0 @ 2200	83.0	39.8	297 @ 1400	92.0	30.5	SPL TC DI
	1958/2000	92.5 @ 2000	73.0	32.6	264 @ 1400	79.0	24.6	SPL TC DI
	1958/2100	92.5 @ 2100	72.5	34.0	264 @ 1400	79.0	24.6	SPL TC DI
	1958/2200	91.8 @ 2200	71.0	34.9	264 @ 1400	79.0	24.6	SPL TC DI
	5632/2000	89.8 @ 2000	73.0	32.6	264 @ 1400	79.0	24.6	SPL TC DI
	5632/2100	90.5 @ 2100	72.5	34.0	264 @ 1400	79.0	24.6	SPL TC DI
	5632/2000	89.8 @ 2000	71.0	34.9	264 @ 1400	79.0	24.6	SPL TC DI
	1985/2100	99.6 @ 2100	83.0	38.8	290.6 @ 1400	93.0	28.9	SPL TC DI
	1985/2000	96.3 @ 2000	85.0	37.7	290.6 @ 1400	93.0	28.9	SPL TC DI
	1948/2200	85.8 @ 2200	68.2	33.3	258.1 @ 1400	77.6	24.0	SPL TC DI
	1948/2100	86.0 @ 2100	68.9	32.1	258.1 @ 1400	77.6	24.0	SPL TC DI
	1948/2000	83.7 @ 2000	70.4	31.2	258.1 @ 1400	77.6	24.0	SPL TC DI
	5616/2200	83.4 @ 2200	68.2	33.3	252.2 @ 1400	77.6	24.0	SPL TC DI
	5616/2100	83.7 @ 2100	68.9	32.1	252.2 @ 1400	77.6	24.0	SPL TC DI
	5616/2000	81.7 @ 2000	70.4	31.2	252.2 @ 1400	77.6	24.0	SPL TC DI
	1957/2200	80.6 @ 2200	66.0	30.0	246.3 @ 1400	75.0	23.2	SPL TC DI
	1957/2100	81.9 @ 2100	67.0	31.1	246.3 @ 1400	75.0	23.2	SPL TC DI
	1957/2000	79.4 @ 2000	70.0	30.9	246.3 @ 1400	75.0	23.2	SPL TC DI
	5629/2200	78.2 @ 2200	66.0	30.0	240.4 @ 1400	75.0	23.2	SPL TC DI
	5629/2100	80.1 @ 2100	67.0	31.1	240.4 @ 1400	75.0	23.2	SPL TC DI
	5629/2000	77.4 @ 2000	70.0	30.9	240.4 @ 1400	75.0	23.2	SPL TC DI
	1907/2200	81.8 @ 2200	67.8	33.1	244.9 @ 1400	76.3	23.8	SPL TC DI
	1907/2100	82.5 @ 2100	68.9	32.1	244.9 @ 1400	76.3	23.8	SPL TC DI
	1907/2000	83.1 @ 2000	69.3	31.9	244.9 @ 1400	76.3	23.8	SPL TC DI
	Caterpillar	81.8 @ 2200	67.8	33.1	244.9 @ 1400	76.3	23.8	SPL TC DI

	Caterpillar	82.5 @ 2100	68.9	32.1	244.9 @ 1400	76.3	23.8	SPL TC DI
	Caterpillar	83.1 @ 2000	69.3	31.9	244.9 @ 1400	76.3	23.8	SPL TC DI
	1977/2200	76.4 @ 2200	63.3	31.0	231.6 @ 1400	72.0	22.6	SPL TC DI
	1977/2100	78.2 @ 2100	64.7	30.2	231.6 @ 1400	72.0	22.6	SPL TC DI
	1977/2000	77.8 @ 2000	66.0	29.0	231.6 @ 1400	72.0	22.6	SPL TC DI
	Caterpillar	76.4 @ 2200	63.3	31.0	231.6 @ 1400	72.0	22.6	SPL TC DI
	Caterpillar	78.2 @ 2100	64.7	30.2	231.6 @ 1400	72.0	22.6	SPL TC DI

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ATTACHMENT 3 OF 3