California Environmental Protection Agency AIR RESOURCES BOARD	VOLVO CONSTRUCTION EQUIPMENT	EXECUTIVE ORDER U-R-003-0044-1 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;

Pursuant to the December 15, 1998 Settlement Agreement (SA) between ARB and the Manufacturer, and any modifications thereof to the Settlement Agreement;

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)
2006	6VSXL16.1CE3	16.1	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module, Smoke Puff Limiter, Exhaust-Gas Recirculation	Loader, Other 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	--	--	3.8	0.9	0.17	5	2	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.

This Executive Order hereby supersedes Executive Order U-R-003-0044 dated December 30, 2005

Executed at El Monte, California on this 24TH day of January 2006.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Template

Attachment
M-R-003-0044-1

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
6VSXL16.1CE3	II	D16EEAE3	464 @ 1800	276 ± 4 %	166 ± 4 %	1783 @ 1350	376 ± 4 %	169 ± 4 %	DDI EM,ECM,TC,CAC,EGR,SPL

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Engine Model Summary Template

10/2/06

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 J193
6VSXL16.1CE3	I	D16ELAE3	532 @ 1800	317± 4 %	190 ± 4 %	1879 @ 1400	366 ± 4 %	171 ± 4 %	EM,ECM,TC,CAC,E
6VSXL16.1CE3 *)	II	D16EEAE3	464 @ 1800	276 ± 4 %	166 ± 4 %	1783 @ 1350	376 ± 4 %	169 ± 4 %	EM,ECM,TC,CAC,E
6VSXL16.1CE3	III	D16EAAE3	469 @ 1800	283 ± 4 %	170 ± 4 %	1861 @ 1200	366 ± 4 %	146 ± 4 %	EM,ECM,TC,CAC,E

*) TEST ENGINE

added new