California Environmental Protection Agency AIR RESOURCES BOARD	LIEBHERR MACHINES BULLE SA	EXECUTIVE ORDER U-R-018-0084 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)
2007	7LHAL10.5LPA	10.5	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Electronic Control Module, Smoke Puff Limiter	Crane, Loader, Dozer, Compressor

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
130 ≤ kW < 225	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
225 ≤ kW < 450	Tier 3	STD	N/A	N/A	4.0	3.5	0.20	20	15	50
		CERT	--	--	3.9	0.7	0.12	5	3	5

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 5th day of September 2007.

Raphael Susnowitz

for Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT

U-R-018-0084

Engine Model Summary Form

Manufacturer: **Liebherr Machines Bulle SA**

Engine category: **Nonroad CI**

EPA Engine Family: **7LHAL10.5LPA**

Mfr Family Name: **NA**

Process Code: **New Submission**

1.Engine Code	2.Engine Model	kW	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
NA	D 936 R06L61017	211	284@2000	152@284	NA	941@1300	182@941	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61016		271@2000	145@271	NA	935@1300	173@935	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61021	272	365@2000	203@365	NA	1265@1300	259@1265	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61015		365@2000	203@365	NA	1266@1300	259@1266	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61020		257@2000	153@257	NA	907@1300	184@907	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61023		257@2000	153@257	NA	907@1300	184@907	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61018		237@2000	139@237	NA	818@1500	171@818	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
	D 936 R06L61017			161@284			192@944		
	D 936 R06L61016			160@271			197@935		
NA	D 934 R04L61005		244@1900	218@244	NA	841@1500	255@841	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61008		204@2000	175@204	NA	702@1500	216@702	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61019		325@1800	196@325	NA	1125@1500	224@1125	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61024		325@1800	196@325	NA	1125@1500	224@1125	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61007		204@1800	186@204	NA	706@1500	219@706	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61009		190@2000	168@190	NA	660@1500	217@660	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61001	137	184@1800	162@184	NA	637@1500	207@637	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61010		190@2000	168@190	NA	660@1500	217@660	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 936 R06L61026		338@2000	187@338	NA	1170@1500	232@1170	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL
NA	D 934 R04L61011		244@2000	206@244	NA	797@1500	242@797	NA	IAT, TC, CAC, ECM, MAP, ECT, RPM, SPL