California Environmental Protection Agency AIR RESOURCES BOARD	LIEBHERR MACHINES BULLE SA	EXECUTIVE ORDER U-R-018-0022 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-45-9;

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)
2001	1LHAL9.96ASA	6.6 and 10.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Smoke Puff Limiter	Crane, Loader, Dozer, Compressor

ENGINE MODELS (rated power in kilowatts, kw)	Please see attachment

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 1	STD	1.3	9.2	N/A	11.4	0.54	20	15	50
75≤KW<130	Tier 1	STD	N/A	9.2	N/A	N/A	N/A	20	15	50
		CERT	0.4	6.2	--	0.7	0.13	2	1	4

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 28th day of June 2001.

R. B. Summerfield, Chief
Mobile Source Operations Division

ATTACHMENT

Engine Model Summary Form

U-R-01v-0022

Manufacturer: **Liebherr Machines Bulle SA**

Engine category: **Nonroad CI**

EPA Engine Family: **1LHAL9.96ASA**

Mfr Family Name: **NA**

Process Code: ~~**New Submission**~~ Running Change 9/18/01

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
NA	D926T-E	227@2000	128@227	NA	708@1100 - 1300	142@708	NA	SPL, TC, RPM
NA	D926T-E	232@1800	139@232	NA	804@1200	146@804	NA	SPL, TC, RPM
NA	D926T-E	182@1800	109@182	NA	612@1200	117@612	NA	SPL, TC, RPM
NA	D924T-E	168@2000	139@168	NA	516@1300	160@516	NA	SPL, TC, RPM
NA	D924T-E	164@1800	147@164	NA	531@1200-1400	163@531	NA	SPL, TC, RPM
NA	D924T-E	156@2000	125@156	NA	513@1200-1300	157@513	NA	SPL, TC, RPM
NA	D924T-E	138@1800	120@138	NA	461@1300-1400	134@461	NA	SPL, TC, RPM
NA	D924T-E	137@2000	110@137	NA	431@1300-1400	127@431	NA	SPL, TC, RPM
NA	D924T-E	134@2000	109@134	NA	435@1400	126@435	NA	SPL, TC, RPM
NA	D924T-E	118@2000	97@118	NA	384@1200-1400	111@384	NA	SPL, TC, RPM
NA	D924T-E	106@2000	87@106	NA	354@1400	102@354	NA	SPL, TC, RPM
NA	D924T-E	91@2000	76@91	NA	310@1400	89@310	NA	SPL, TC, RPM
NA	D924T-E	125@2100	97@125	NA	406@1400	118@406	NA	SPL, TC, RPM
NA	D926T-E	244@1800	147@244	NA	856@1150	171@856	NA	SPL, TC, RPM
NA	D926T-E	201@2000	112@201	NA	620@1300	123@620	NA	SPL, TC, RPM
NA	D926T-E	227@2000	123@227	NA	730@1100 - 1300	144@730	NA	SPL, TC, RPM
NA	D924T-E	145@2000	117@145	NA	470@1300	142@470	NA	SPL, TC, RPM
NA	D924T-E	127@2000	101@127	NA	409@1400	118@409	NA	SPL, TC, RPM
NA	D926T-E	182@1800	106@182	NA	612@1200	118@612	NA	SPL, TC, RPM
NA	D924T-E	168@2000	140@168	NA	546@1200	165@546	NA	SPL, TC, RPM
NA	D924T-E	164@1800	144@164	NA	553@1200	165@553	NA	SPL, TC, RPM
NA	D926T-E	173@1800	100@173	NA	583@1200	111@583	NA	SPL, TC, RPM