California Environmental Protection Agency AIR RESOURCES BOARD	DAEWOO HEAVY INDUSTRIES & MACHINERY LTD.	EXECUTIVE ORDER U-R-019-0059 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 engines 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)
2002	2DWXL08.1BPA	8.1	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Smoke Puff Limiter, Charge Air Cooler	Generator Set, 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
130≤ KW < 225	Tier 1	STD	1.3	9.2	N/A	11.4	0.54	N/A	N/A	N/A
		CERT	0.1	8.4	--	0.8	0.40	--	--	--

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 7TH day of March 2002.

Allen Lyons, Chief
New Vehicle/Engine Programs Branch

Engine Model Summary Form

Manufacturer: **Daewoo Heavy Industries & Machinery Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **2DWXL08.1BPA**

Mfr Family Name: **P086TI**

Process Code: **New Submission**

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EO# 4-R-019-0055

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
	P086TI POA	266@1500	179	88.9	934@1500	179	88.9	NOI TC & CAC SAE
	P086TI POA	237@1500	160	79.5	830@1500	160	79.5	TC & CAC
	P086TI POA	202@1500	137	68.0	709@1500	137	68.0	TC & CAC
	P086TI POA	223 299@1800	172	102.5	874@1800	172	102.5	TC & CAC
	P086TI POA	275@1800	157	93.6	804@1800	157	93.6	TC & CAC
	P086TI POA	250@1800	136	81.0	730@1800	136	81.0	TC & CAC
	P086TI POB	220@1500	148	73.5	772@1500	148	73.5	TC & CAC
	P086TI POB	150 200@1500	134	67.0	702@1500	134	66.5	TC & CAC
	P086TI POB	257@1800	179	87.0	750@1800	179	106.7	TC & CAC
	P086TI POB	234@1800	160	79.9	683@1800	160	95.3	TC & CAC
	P086TI PGA	266@1500	179	88.9	934@1500	179	88.9	TC & CAC
	P086TI PGA	237@1500	160	79.5	830@1500	160	79.5	TC & CAC
	P086TI PGA	202@1500	137	68.0	709@1500	137	68.0	TC & CAC
	P086TI PGA	299@1800	172	102.5	874@1800	172	102.5	TC & CAC
	P086TI PGA	275@1800	157	93.6	804@1800	157	93.6	TC & CAC
	P086TI PGA	250@1800	136	81.0	730@1800	136	81.0	TC & CAC
	P086TI PGB	220@1500	148	73.5	772@1500	148	73.5	TC & CAC
	P086TI PGB	200@1500	134	67.0	702@1500	134	66.5	TC & CAC
	P086TI PGB	257@1800	179	87.0	750@1800	179	106.7	TC & CAC
	P086TI PGB	234@1800	160	79.9	683@1800	160	95.3	TC & CAC