California Environmental Protection Agency AIR RESOURCES BOARD	KUKJE MACHINERY CO.	EXECUTIVE ORDER U-R-046-0054 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 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)
2011	BKMCL1.71A31	1.714	Diesel	5,000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Indirect Diesel Injection	Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator Set, 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
8 ≤ kW < 37	Tier 4 - Interim	OPTIONAL STD	N/A	N/A	7.5	5.5	0.30	20	15	50
		CERT	--	--	5.9	1.5	0.23	5	6	7

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has complied with the more stringent set of standards from the various power categories in conformance with Section 1039.230 (e) of the "California Exhaust Emission Standards and Test Procedures for 2008 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-C" adopted October 20, 2005.

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 17th day of February 2011.

J. Lourenco

Annette Hebert, Chief
Mobile Source Operations Division

Engine Model Summary Form

U-R-046-0054
2/7/11

ATTACHMENT

Manufacturer: **Kukje Machinery Co., EPA Mnfr:1700**
Engine category: **Nonroad CI**
EPA Engine Family: **BKMCL1.71A31**
Mfr Family Name: **A1700N1**
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
N/A	A1700N1 28	37@2800	34.0	16.1	85.5@1600	39.0	10.52	IDI,EM
N/A	A1700N2	35@2600	33.0	14.5	83.3@1600	38.0	10.30	IDI,EM
N/A	A1700N4	32.2@2500	32.0	13.3	80.5@1600	35.5	9.5	IDI,EM
N/A	A1700-Gen	25.3@1800	33.1	9.8	N/A	N/A	N/A	IDI,EM
N/A	A1700-Gen 16	21.7@1500	37.0	9.0	N/A	N/A	N/A	IDI,EM