California Environmental Protection Agency AIR RESOURCES BOARD	DETROIT DIESEL CORPORATION	EXECUTIVE ORDER U-R-007-0071 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)
2002	2DDXL12.7VGD	12.7	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Engine Control Module, Turbocharger, Charge Air Cooler	Crane, Loader, Tractor, Dozer, Pump, Compressor, Generator

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons 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 2	STD	N/A	N/A	6.4	3.5	0.20	20	15	50
		CERT	--	--	6.0	1.5	0.19	13	3	29

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 27th day of December 2001.

Raphael Susowitz

for R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model S' mary Form

Manufacturer: **Detroit Diesel Corporation**

Engine category: **Nonroad CI**

EPA Engine Family: **2DDXL12.7VGD**

Mfr Family Name: **SERIES 60, 12.7L**

Process Code: **New Submission**

ATTACHMENT

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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
1A21	S60, 12.7L	500 @ 2100	252.5	176.3	1550 @ 1350	281.7	126.5	DDI, ECM, TC, CAC (all ratings)
1A18		500 @ 1800 (373 kw)	269.6	161.4	1550 @ 1350	281.7	126.5	
2A21	S60, 12.7L	475 @ 2100	241.3	168.5	1550 @ 1350	283.6	127.3	
2A18		475 @ 1800	277.4	166.1	1550 @ 1350	283.6	127.3	
3A21	S60, 12.7L	450 @ 2100	227.7	159.0	1550 @ 1350	286.7	128.7	
3A18		450 @ 1800	260.2	155.8	1550 @ 1350	286.7	128.7	
1B21	S60, 12.7L	425 @ 2100	221.7	154.8	1475 @ 1350	272.6	122.4	
1B18		425 @ 1800	251.3	150.4	1475 @ 1350	272.6	122.4	
1C21	S60, 12.7L	400 @ 2100	210.1	146.7	1400 @ 1350	259.1	116.3	
1C18		400 @ 1800	235.1	140.7	1400 @ 1350	259.1	116.3	
1D21	S60, 12.7L	375 @ 2100	198.3	138.5	1350 @ 1350	250.8	112.6	
1D18		375 @ 1800	218.1	130.6	1350 @ 1350	250.8	112.6	
2D21	S60, 12.7L	350 @ 2100	184.1	128.6	1350 @ 1350	252.8	113.5	
2D18		350 @ 1800	207.6	124.3	1350 @ 1350	252.8	113.5	
1E21	S60, 12.7L	325 @ 2100	171.4	119.7	1150 @ 1350	213.1	95.7	
1E18		325 @ 1800	192.9	115.5	1150 @ 1350	213.1	95.7	
1F21	S60, 12.7L	300 @ 2100	158.4	110.6	1050 @ 1350	195.1	87.6	
1F18		300 @ 1800 (225 kw)	177.5	106.3	1050 @ 1350	195.1	87.6	

Engine Model S mary Form

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Manufacturer: **Detroit Diesel Corporation**
Engine category: **Nonroad CI**
EPA Engine Family: **2DDXL12.7VGD**
Mfr Family Name: **SERIES 60, 12.7L**
Process Code: **New Sub - continued**

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
GS1	S60, 12.7L GEN SET	490 @ 1800	277.8	166.3	NA	NA	NA	DDI, ECM, TC, CAC (ALL RATINGS)
GS2	S60, 12.7L GEN SET	455 @ 1800	264.0	158.1	NA	NA	NA	
GS3	S60, 12.7l GEN SET	415 @ 1800	235.9	141.2	NA	NA	NA	
1H21	S60, 12.7L	500 @ 2100	247.1	172.6	1650 @ 1350	312.8	140.4	
1H18		500 @ 1800	277.9	166.4	1650 @ 1350	312.8	140.4	
2H21	S60, 12.7L	450 @ 2100	222.0	155.0	1550 @ 1350	297.3	133.5	
2H18		450 @ 1800	256.5	153.5	1550 @ 1350	297.3	133.5	
3H21	S60, 12.7L	400 @ 2100	197.2	137.7	1550 @ 1350	299.1	134.3	
3H18		400 @ 1800	226.6	135.6	1550 @ 1350	299.1	134.3	
1J23	S60, 12.7L	500 @ 2300	245.1	187.5	1650 @ 1350	298.9	134.2	
2J22	S60, 12.7L	445 @ 2200	228.8	167.4	1475 @ 1350	273.3	122.7	
3J22	S60, 12.7L	400 @ 2200	202.9	148.4	1350 @ 1350	248.3	111.5	