California Environmental Protection Agency AIR RESOURCES BOARD	DETROIT DIESEL CORPORATION	EXECUTIVE ORDER U-R-007-0094 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)
2004	4DDXL31.8XRE	15.9, 23.9, and 31.8	Diesel	8000

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

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
kW > 560	Tier 1	STD	1.3	9.2	N/A	11.4	0.54	20	15	50
		CERT	0.3	8.9	--	1.2	0.17	16	5	23

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 14TH day of January 2004.

Allen Lyons, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **Detroit Diesel Corporation**

Engine category: **Nonroad CI**

EPA Engine Family: **4DDXL31.8XRE**

Mfr Family Name: **SERIES 2000**

Process Code: **New Submission**

ATTACHMENT
EO #U-R-007-0094

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
5265	8V-2000 SCCC	760 @ 2100	294	274	2225 @ 1350	324	194	EC TAW (all ratings) (DDI, ECM, TC, CAC (ALL MODELS)
5266	8V-2000 SCCC	760 @ 2300	276	281	2225 @ 1350	324	194	
5218	8V-2000 SCCC	765 @ 1800	325	259	Constant speed	NA	NA	
5248	12V-2000 JWCC	760 @ 2100	200	276	2300 @ 1200	231	184	
5254	12V-2000 SCCC	1250 @ 2100	312	436	3424 @ 1500	318	317	
5258	12V-2000 SCCC	1120 @ 1800	324	388	Constant speed	NA	NA	
	12V-2000 SCCC	912 @ 1500	298	297		NA	NA	
5259	12V-2000 SCCC	960 @ 2100	204	339	3097 @ 1500	255	304	
5260	12V-2000 SCCC	860 @ 2100	200	302	2471 @ 1350	181	215	
5253	12V-2000 SCCC	1110 @ 2100	290	405	3200 @ 1500	304	303	
5252	12V-2000 SCCC	1005 @ 2100	256	358	3100 @ 1350	296	266	
5251	12V-2000 SCCC	905 @ 2100	233	325	2890 @ 1350	275	246	
	12V-2000 SCCC	905 @ 1800	252	302	2890 @ 1350	275	246	
5250	12V-2000 SCCC	850 @ 2100	215	300	2715 @ 1350	260	233	
	12V-2000 SCCC	850 @ 1800	236	283	2715 @ 1350	260	233	
5244	12V-2000 SCCC	1120 @ 1800	317	379	Constant speed	NA	NA	
5243	12V-2000 JWCC	910 @ 1800	261	312	Constant speed	NA	NA	
	12V-2000 JWCC	823 @ 1800	236	283		NA	NA	

Engine Model Summary Form

ATTACHMENT
EO#U-R-007-0094

Manufacturer: **Detroit Diesel Corporation**
Engine category: **Nonroad CI**
EPA Engine Family: **4DDXL31.8XRE**
Mfr Family Name: **SERIES 2000**
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
5249	12V-2000 JWCC	760 @ 2100 (587 kW)	198	276	2440 @ 1200	245	196	EC TAW
	12V-2000 JWCC	760 @ 1800	215	258	2440 @ 1200	245	196	(all ratings)
5231	16V-2000 SCCC	1205 @ 2100	225	419	3918 @ 1350	283	339	DDI, ECM, TC, CAC
	16V-2000 SCCC	1205 @ 1800	256	408	3918 @ 1350	283	339	(ALL MODELS)
5232	16V-2000 SCCC	1340 @ 2100	244	454	4204 @ 1500	301	400	
5233	16V-2000 SCCC	1495 @ 1800	315	503	Constant speed	NA	NA	
5240	16V-2000 SCCC	1495 @ 1800	319	509	Constant speed	NA	NA	
5234	16V-2000 SCCC	1350 @ 1800	284	453	Constant speed	NA	NA	
5239	16V-2000 SCCC	1200 @ 1500	298	397	Constant speed	NA	NA	
	16V-2000 SCCC	1350 @ 1800	284	453		NA	NA	
5262	16V-2000 SCCC	1340 @ 2100	244	454	4204 @ 1500	301	400	
5230	16V-2000 JWCC	1050 @ 2100	205	382	3415 @ 1350	258	309	
	16V-2000 JWCC	1050 @ 1800	226	360	3415 @ 1350	258	309	
5235	16V-2000 JWCC	1200 @ 1800	252	403	Constant speed	NA	NA	
	16V-2000 JWCC	1086 @ 1800	225	359		NA	NA	
5229	16V-2000 SCCC	1200 @ 1500	301	401	Constant speed	NA	NA	
	16V-2000 SCCC	1350 @ 1800	284	453		NA	NA	

Engine Model Summary Form

ATTACHMENT
EO #V-R-007-0094
BY R/C#03
PAGE 3 OF 3

Manufacturer: **Detroit Diesel Corporation**

Engine category: **Nonroad CI**

EPA Engine Family: **4DDXL31.8XRE**

Mfr Family Name:

Process Code: **Running Change**

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
5475	12V-2000 SCCC (R1238K39)	1005 @ 1800	285	340	3100 @ 1350	297	264	EC TAW (all)
5399	|	1005 @ 2100	255	354	3100 @ 1350	297	264	DDI, ECM TC, CAC (ALL MODELS)
5477	|	905 @ 1800	255	304	2890 @ 1350	281	251	
5476	|	905 @ 2100	230	320	2890 @ 1350	281	251	
5479	|	850 @ 1800	239	284	2715 @ 1350	269	239	
5478	V	850 @ 2100	213	296	2715 @ 1350	269	239	
5490	12V-2000 JWCC	760 @ 1800	216	259	2440 @ 1200	250	199	
5491	|	760 @ 2100	201	279	2440 @ 1200	250	199	
5487	V	760 @ 2100	201	279	2440 @ 1200	250	199	