

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-7-49  
Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

DETROIT DIESEL CORPORATION

Pursuant to the authority vested in the Air Resources Board at Sections 43000.5, 43013, and 43018 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned at Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board and Detroit Diesel Corporation and any modification to the Settlement Agreement;

IT IS ORDERED AND RESOLVED: That the following diesel engines and exhaust emission control systems produced by the manufacturer are certified as described below for use in heavy-duty off-road equipment:

Model Year: 2000

Typical Equipment Usage: Crane, Dozer, Pump, Compressor, Generator

Engine Power Ratings Range: 175 – 750 horsepower, inclusive

Fuel Type: Diesel

| <u>Engine Family</u>        | <u>Displacement</u> |                     | <u>Exhaust Emission Control Systems and Special Features</u> |
|-----------------------------|---------------------|---------------------|--|
|                             | <u>Liters</u>       | <u>Cubic Inches</u> |  |
| YDDXL08.5TJD<br>(Series 50) | 8.5                 | 519                 | Engine Control Module<br>Turbocharger<br>Charge Air Cooler   |

The engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The exhaust emission certification standards and certification values in grams per brake horsepower-hour (g/bhp-h) for total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423):

|               | <u>Exhaust Emissions (g/bhp-h)</u> |           |            |           | <u>Smoke Opacity (%)</u> |            |             |
|---------------|------------------------------------|-----------|------------|-----------|--------------------------|------------|-------------|
|               | <u>THC</u>                         | <u>CO</u> | <u>NOx</u> | <u>PM</u> | <u>Accel</u>             | <u>Lug</u> | <u>Peak</u> |
| Standard      | 1.0                                | 8.5       | 6.9        | 0.4       | 20                       | 15         | 50          |
| Certification | 0.1                                | 2.1       | 6.4        | 0.1       | 11                       | 2          | 31          |

BE IT FURTHER RESOLVED: That the listed engine models comply with "Exhaust Emission Standards and Test Procedures—Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with "Emission Control Labels—1996 and Later Heavy-Duty Off-Road Diesel-Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model-year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 *et seq.*).

BE IT FURTHER RESOLVED: That the aforementioned engine family has been conditionally certified subject to the following conditions:

1. The Settlement Agreement is in effect.
2. The manufacturer is in compliance with all applicable certification requirements of the Settlement Agreement.

Engines certified under this Executive Order must conform to all applicable California emission regulations and to all applicable terms and conditions of the Settlement Agreement.

Executed at El Monte, California this 6<sup>th</sup> day of January 2000.



R. B. Summerfield, Chief  
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

Manufacturer: **Detroit Diesel Corporation**

Process Code: **New Submission**

*EO:U-R-7-49*

EPA Engine Family: **YDDXL08.5TJD**      Manufacturer Family Name: **SERIES 50**

| Engine Code | Engine Model | BHP@RPM<br>(SAE Gross) | Fuel Rate:<br>mm/stroke @ peak<br>HP<br><i>(for diesels only)</i> | Fuel Rate:<br>(lbs/hr) @ peak<br>HP<br><i>(for diesels only)</i> | Torque @ RPM<br>(SEA Gross) | Fuel Rate:<br>mm/stroke@peak<br>torque | Fuel Rate:<br>(lbs/hr)@peak torque | Emission Control<br>Device Per SAE J1930 |
|-------------|--------------|------------------------|---|--|-----------------------------|--|------------------------------------|--|
| 1A21        | SERIES 50    | 315 @ 2100             | 235.6   | 109.7  | 1050 @ 1200                 | 290.6                                  | 77.3                               | EC TAA                                   |
| 1A18        | SERIES 50    | 315 @ 1800             | 251.1   | 100.2  | 1050 @ 1200                 | 290.6                                  | 77.3                               | EC TAA                                   |
| 1B21        | SERIES 50    | 300 @ 2100             | 215.2   | 100.2  | 1000 @ 1200                 | 270.0                                  | 71.8                               | EC TAA                                   |
| 1B18        | SERIES 50    | 300 @ 1800             | 236.8   | 94.5   | 1000 @ 1200                 | 270.0                                  | 71.8                               | EC TAA                                   |
| 1C21        | SERIES 50    | 275 @ 2100             | 197.9   | 92.2   | 900 @ 1200                  | 241.9                                  | 64.4                               | EC TAA                                   |
| 1C18        | SERIES 50    | 275 @ 1800             | 215.8   | 86.1   | 900 @ 1200                  | 241.9                                  | 64.4                               | EC TAA                                   |
| 1D21        | SERIES 50    | 250 @ 2100             | 190.7   | 88.8   | 800 @ 1200                  | 218.8                                  | 58.2                               | EC TAA                                   |
| 1D18        | SERIES 50    | 250 @ 1800             | 195.5   | 78.0   | 800 @ 1200                  | 218.8                                  | 58.2                               | EC TAA                                   |
| 1E22        | SERIES 50    | 350 @ 2200             | 247.7   | 120.8  | 1050 @ 1200                 | 297.7                                  | 79.2                               | EC TAA                                   |
| 2E22        | SERIES 50    | 315 @ 2200             | 219.6   | 107.1  | 1050 @ 1200                 | 297.7                                  | 79.2                               | EC TAA                                   |
| 1F21        | SERIES 50    | 350 @ 2100             | 258.6   | 120.4  | 1050 @ 1200                 | 295.9                                  | 78.7                               | EC TAA                                   |
| 2F21        | SERIES 50    | 315 @ 2100             | 234.1   | 109.0  | 1050 @ 1200                 | 295.9                                  | 78.7                               | EC TAA                                   |
| GS1         | SERIES 50    | 315 @ 1800             | 251.6   | 100.4  | NA                          | NA                                     | NA                                 | EC TAA                                   |
| GS2         | SERIES 50    | 250 @ 1800             | 196.0   | 78.2   | NA                          | NA                                     | NA                                 | EC TAA                                   |
| GS3         | SERIES 50    | 350 @ 1800             | 292.0   | 116.5  | NA                          | NA                                     | NA                                 | EC TAA                                   |

*↑ TC, CAC, ECM*