

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER B-59U-2

Relating to Conversion of Off-Road Engines to Alternative Fuels

Caterpillar, Inc.

Pursuant to the authority vested in the Air Resources Board by Sections 43013 and 43018 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-14-012;

IT IS ORDERED AND RESOLVED: That the Dynamic Gas Blending alternative fuel conversion system, manufactured by Caterpillar, Inc. (Caterpillar) of 100 NE Adams Street, Peoria, Illinois 61629-7250, is certified as described below for the following off-road compression-ignition engines and applications:

Fuel type: Natural gas/diesel or diesel only, meeting California specifications

Engine: 2000 through 2005 model-year Caterpillar 3512B

Displacement: 51.8 liter

Power: 1,476 hp (1,101 kW)

Emission standards: Tier 1

Application: Mobile, steady-state constant speed

Test cycle: D2 5-mode steady-state

Major conversion system components:

Gaseous Fuel Pressure Regulator	Pressure Sensors
Gaseous Fuel Heater	Speed Sensors
Shutoff valve	Detonation Sensors
Gaseous Fuel Control Valve	Engine Wiring Harness
Mixers	Generator Wiring Harness
Diesel Oxidation Catalyst	Water Lines
Electronic Control Module	Fuel Lines
Integrated Sensor Module	Air Lines
Temperature sensors	Control Panel Upgrades
Exhaust Temperature Sensors	Camshaft Covers

Emission standards and the D2 5-mode steady-state emission test values for a 2001 model-year Caterpillar 3512B engine equipped with the DGB conversion system are shown below:

<u>D2 5-mode steady-state test</u>	<u>THC</u>	<u>NOx</u>	<u>CO</u>	<u>PM</u>
Diesel only (g/kW-hr)	0.01	7.85	0.01	0.063
Tier 1 standards (g/kW-hr)	1.3	9.2	11.4	0.54

<u>D2 5-mode steady-state test</u>	<u>NMHC</u>	<u>NOx</u>	<u>NMHC+NOx</u>	<u>CO</u>	<u>PM</u>
Diesel/natural gas (g/kW-hr)	0.348	4.86	5.21	0.07	0.040
Tier 2 standards (g/kW-hr)	N/A	N/A	6.4	3.5	0.20

Emissions meet the Tier 1 exhaust emission standards when operating on diesel only, and the optionally more stringent Tier 2 exhaust emission standards when operating on a natural gas and diesel blend. Compliance with the above listed standards when the engine is operating on the designated fuels allows this conversion system to be certified at a Tier 1 emission standard.

All emission control systems and engine manufacturer's tune-up label shall be retained. The engine shall be adjusted to Caterpillar's tune-up specifications. The production conversion system shall be in all material respect the same as that for which certification is granted.

BE IT FURTHER RESOLVED: That Caterpillar shall provide a supplemental emission control information label, which shall be affixed in a permanent manner adjacent to the original Emission Control Information Label, and shall comply with the labeling requirements described in Sections I.E of the "California Certification and Installation Procedures for Systems Designed to Convert Off-Road Vehicles, Engines, and Equipment to Use Alternative Fuels," adopted October 1, 1999.

BE IT FURTHER RESOLVED: That Caterpillar shall maintain a record of the converted engine and/or equipment identification numbers as required under Section I.G of the "California Certification and Installation Procedures for Systems Designed to Convert Off-Road Vehicles, Engines, and Equipment to Use Alternative Fuels," adopted October 1, 1999.

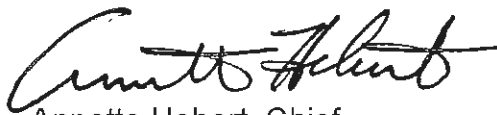
BE IT FURTHER RESOLVED: That Caterpillar has submitted and the Executive Officer hereby approves the materials required to demonstrate certification compliance with the warranty requirements under Section X of the "California Certification and Installation Procedures for Systems Designed to Convert Off-Road Vehicles, Engines, and Equipment to Use Alternative Fuels," Adopted October 1, 1999.

This Executive Order shall not apply to any Dynamic Gas Blending conversion system advertised, offered for sale, sold with, or installed on an engine prior to or concurrent with transfer to an ultimate purchaser.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE AN ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF CATERPILLAR'S DYNAMIC GAS BLENDING CONVERSION SYSTEM.

The conversion system certified under this Executive Order must conform to all applicable California emission regulations. Certification of the conversion system shall not be construed as a certification to sell, offer for sale, or advertise any component of the conversion system as an individually certified part.

Executed at El Monte, California this 24 day of February 2015.

A handwritten signature in black ink, appearing to read "Annette Hebert", written in a cursive style.

Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

