State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-04-010-03

The diesel emission control strategy described herein qualifies as a potential compliance option for the Air Resources Board's (ARB) in-use diesel fleet rules.

Pursuant to the authority vested in the ARB by the *Health and Safety Code*, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by *Health and Safety Code* Sections 39515 and 39516 and Executive Order G-14-012;

Relating to Exemptions under Section 27156 of the *Vehicle Code*, and Verification under Sections 2700 through 2711 of Title 13 of the *California Code of Regulations* (CCR)

Donaldson Company, Incorporated
DCM Diesel Oxidation Catalyst (DOC) Muffler with Series 6000/6400 Catalyst Formulation and Spiracle™ Closed Crankcase Ventilation (CCV) Filtration System

Verification Revoked

ARB has reviewed Donaldson Company, Incorporated's (Donaldson) request for verification of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System. Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of ARB hereby finds that the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System reduces emissions of diesel particulate matter (PM) consistent with a Level 1 device (greater than or equal to 25 percent reductions) (Title 13, CCR, Sections 2702(f) and 2708). Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System as a Level 1 Plus system for heavy-duty on-road vhricles that use certain heavy-duty engines. Engines for which DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System is verified, the verified parts list, the verified labels, and other product information can be found here:

http://www.arb.ca.gov/diesel/verdev/companies/donaldson/dcm_6000spiracle.htm

The DCM DOC muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System is compliant with the 2009 nitrogen dioxide limit and as such is designated as a "Plus" system per Section 2702(f).

The aforementioned verification is subject to the following terms and conditions:

- The engine must be model year 1988 through 1990 and have an engine family name listed on the website.
- The engine must be certified for on-road applications.
- The engine must be certified to a PM emission level of at most 0.6 grams per brake horsepower-hour (g/bhp-hr), and greater than 0.01 g/bhp-hr.
- The engine must be used by an on-road motor vehicle with a manufacturer's Gross Vehicle Weight Rating of over 14,000 pounds.
- The application must have a duty cycle with normal exhaust temperature profiles greater than 100 degrees Celsius and below 550 degrees Celsius.
- The engine must be rated to at least 150 horsepower and no more than 600 horsepower.
- The engine must not be certified as having exhaust gas recirculation.
- The engine must not have a pre-existing original equipment manufacturer (OEM) diesel particulate filter.
- The engine must not have a pre-existing OEM oxidation catalyst.
- The engine must have a four-stroke combustion cycle.
- The engine must be turbocharged.
- The engine may be mechanically or electronically controlled.
- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The engine must be operated on fuel that has a sulfur content of no more than 350 parts per million by weight.
- Lube oil, or other oil, must not be mixed with the fuel.
- The Spiracle system must be used without the catch bottle.
- The product must not be operated with a fuel additive, as defined in Section 2701 of Title 13, of the CCR, unless explicitly verified for use with the fuel additive.

Verification Revoked

- The product must not be used with any other systems or engine modifications without ARB and manufacturer approval.

- The other terms and conditions specified below.

IT IS ALSO ORDERED AND RESOLVED: That installation of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System, manufactured by Donaldson Company, Incorporated, of Post Office Box 1299, Minneapolis, Minnesota 55440-1299, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System is exempt from the prohibitions in Section 27156 of the *Vehicle Code* for installation on heavy-duty on-road vehicles. This exemption is only valid provided the engines meet the aforementioned conditions.

The DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System consists of a DOC and a CCV filtration system. The major components of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System are identified in the parts list. The parts list and schematics of the approved product and engine labels are available on the website shown above.

The DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System is comprised of a single DOC and a single CCV filtration system. DCM DOC Mufflers with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration Systems with multiple DOCs, including designs with two or more DOC components canned together or multiple individually-canned DOC components in parallel or in series (or any combination thereof), are not valid under this Executive Order. Channeling exhaust from a single engine through multiple DCM DOC Mufflers with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration Systems, deployed in parallel or in series or any combination thereof, is also not valid under this Executive Order. Channeling the exhaust of multiple engines through a single DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System is not valid under this Executive Order.

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Replacement of the Spiracle™ filter is required at every oil change (maximum of 25,000 miles) or 500 hours of operation as specified in the owner's manual.

Donaldson must provide each installer with the specific criteria used to determine the compatibility of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System with a candidate engine pursuant to Section 2706(t), Title 13, CCR.

This Executive Order is valid provided that installation instructions for the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration

System do not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Donaldson Company, Incorporated, must ensure that the installation of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System conforms to all applicable industrial safety requirements.

Donaldson is responsible for ensuring all system DOCs are correctly sized for each engine.

No changes are permitted to the device. ARB must be notified in writing of any changes to any part of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System. Any changes to the system must be evaluated and approved in writing by ARB. Failure to do so shall invalidate this Executive Order.

Marketing of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior written approval is obtained from ARB.

Changes made to the design or operating conditions of the DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

Identification must include both device and engine labels consistent with the requirements of Title 13, CCR, Section, 2706, and the label schematic shown on the website. Changes or modifications to the label or label placement are prohibited without prior written approval from ARB.

This Executive Order shall not apply to any DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System advertised, offered for sale, offered for lease, sold with, leased with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

A copy of this Executive Order must be provided to the ultimate purchaser at the time of sale.

As specified in Section 2706(j) (Title 13, CCR) of the *Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (Procedure), ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/DON/2004/PM1+/N00/ON/SYS04

Verification Revoked

For clarification purposes, the designated control strategy family name CA/DON/2004/PM1+/N00/ON/SYS04 is the same technology as CA/DON/2004/PM1/N00/ON/SYS04.

Starting with the date of February 10, 2011, the control strategy family name CA/DON/2004/PM1+/N00/ON/SYS04 must be used on all system identification including all labels.

As stated in the Procedure, Donaldson Company is responsible for honoring the warranty for the DCM DOC Muffler with Series 6000/6400 and Spiracle™ CCV Filtration System (CCR, Title 13,Section 2707), record keeping requirements (CCR, Title 13, Section 2702), and conducting in-use compliance testing (CCR, Title 13, Section 2709).

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with Title 13, CCR, Sections 2281 and 2282, or U.S. EPA diesel fuel compliant with standards set forth in 40 CFR Part 80, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials specification D6751 applicable for 15 parts per million sulfur content; and

- The diesel fuel portion of the blend complies with Title 13, CCR, Sections 2281 and 2282.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

Proper engine maintenance is critical for the proper functioning of the diesel emission control strategy. The owner and/or operator of the vehicle on which the diesel emissions control strategy is installed, is strongly advised to adhere to all good engine maintenance practices. Failure to document proper engine maintenance, including keeping records of the engine's oil consumption, may be grounds for denial of a warranty claim.

Use of system parts or replacement parts not authorized by Donaldson may be grounds for denial of a warranty claim.

The DCM DOC Muffler with Series 6000/6400 catalyst formulation and Spiracle™ CCV Filtration System must not be located over any occupied space (e.g., driver or passenger compartments), or installed in a way which would result in noncompliance with any applicable safety standards including but not limited to Federal Motor Carrier Safety Administration, Subpart G, Miscellaneous Parts and Accessories, Section 393.83 Exhaust Systems, and any other location deemed unacceptable by Donaldson.

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In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the exemption and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of Title 13 CCR, Section 2222, et seq, and Title 13 CCR, Sections 2700 through 2711.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release Donaldson Company Inc., from complying with all other applicable regulations.

The terms and conditions of this Executive Order must be satisfied regardless of where the system is sold in order for the system to be considered verified.

Systems sold as verified, or which carry ARB approved label, must satisfy all the terms and conditions of this Executive Order.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

This Executive Order hereby supersedes Executive Order DE-04-010-02 (dated March 1, 2011), DE-04-010-01 (dated March 1, 2006) and Executive Order DE-04-010 (dated September 8, 2004).

Executed at El Monte, California and effective this 19th day of March 2014.

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

Verification Revoked