State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-09-003-01

Pursuant to the authority vested in the Air Resources Board (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-02-003;

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 (Donaldson)
Semi-Active Electric Filter (SEF) Muffler System

ARB has reviewed Donaldson's request for verification of the SEF Muffler 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 SEF Muffler System reduces emissions of diesel particulate matter (PM) consistent with a Level 3 Plus device (greater than or equal to an 85 percent reduction and meets the 2009 nitrogen dioxide emissions limit) (Title 13, CCR, Sections 2702 and 2708). Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the SEF Muffler System as a Level 3 Plus system for heavy-duty on-road vehicles that use certain certified heavy-duty diesel engines. Engines for which the SEF Muffler 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/sef.htm

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

- The engine must be model year 1991 through 2006 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 0.25 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 engine must be rated to no more than 350 horsepower.

- The engine must have a displacement of no more than 11.5 liters.
- The engine must not be certified by ARB as having exhaust gas recirculation.
- The engine must not have a pre-existing original equipment manufacturer (OEM) diesel particulate filter (DPF).
- The engine may or may not have a pre-existing OEM oxidation catalyst.
- The engine must remain in its original certified configuration, except that if an OEM oxidation catalyst is present, it may be removed if the SEF Muffler System is installed. Should the SEF Muffler System be removed, the OEM oxidation catalyst must be re-installed, returning the engine to its original certified configuration.
- The engine must be four-stroke.
- The engine may be turbocharged or naturally aspirated.
- 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.
- Lube oil, or other oil, must not be mixed with the fuel.
- The product must not be operated with a fuel additive, as defined in Title 13, CCR, Section 2701, unless explicitly verified for use with the fuel additive.
- 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 SEF Muffler System, manufactured by Donaldson Company, Incorporated, 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 SEF Muffler 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 SEF Muffler System consists of the following major components, listed in order from exhaust inlet to outlet as they are arranged within the exhaust system of the vehicle: an inlet assembly, a diesel oxidation catalyst (DOC), a heater assembly, an uncatalyzed DPF, and an outlet assembly. The SEF Muffler System also includes a backpressure monitoring and warning system, and Regeneration Control Station

Assembly. The major components of the SEF Muffler 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 SEF Muffler System is comprised of a single DOC and a single DPF designed to filter the exhaust from a single engine. SEF Muffler Systems with multiple DPFs and/or multiple DOCs, including designs with two or more filter components canned together or multiple individually-canned filter 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 SEF Muffler 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 SEF Muffler System is not valid under this Executive Order.

The SEF Muffler System consists of one DOC and DPF size combinations specified within the parts list. SEF Muffler Systems with DOC and DPF combinations that do not exactly match any of the system specifications on the SEF Muffler System parts list are not valid under this Executive Order.

This Executive Order is valid provided that installation instructions for the SEF Muffler System do not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Prior to sale of an SEF Muffler System, Donaldson must provide each prospective owner/purchaser of the SEF Muffler System with a written estimate of the number of hours of vehicle operation that will typically elapse before regeneration is required. Donaldson must also provide, in writing, the length of time of a typical regeneration event.

Prior to sale of an SEF Muffler System, Donaldson must provide each prospective owner/purchaser of the SEF Muffler System with a written estimate of the number and cost of Regeneration Control Station Assemblies required to support their systems.

Donaldson must ensure that the installation of the SEF Muffler System conforms to all applicable industrial safety requirements.

No changes are permitted to the device without the written approval of ARB. Changes from the verified design without written approval of ARB shall invalidate this Executive Order.

No changes are permitted to the system. ARB must be notified in writing of any changes to any part of the SEF Muffler System. Any changes to the system must be evaluated and approved by ARB in writing. Failure to do so shall invalidate this Executive Order.

Changes made to the design or operating conditions of the SEF Muffler System, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system, shall invalidate this Executive Order.

Marketing of the SEF Muffler 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.

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 SEF Muffler 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 (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/2009/PM3+/N00/ON/DPF01.

As stated in the Procedure, Donaldson is responsible for record keeping requirements (Section 2702), honoring the required warranty for the SEF Muffler System and the regeneration station associated with it (Section 2707), and conducting in-use compliance testing (Section 2709).

Proper engine maintenance is critical for the proper functioning of the diesel emission control strategy. The owner of the vehicle on which the diesel emission 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.

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, 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.

The SEF Muffler 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.

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

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

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

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.

This Executive Order hereby supersedes Executive Order DE-09-003 (dated April 6, 2009).

Executed at El Monte, California, and effective this 2nd day of November 2012.

Robert H. Cross, M.S.M.E., P.E.
Chief, Mobile Source Control Division