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Air Resources Board

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Arnold Schwarzenegger
Governor

January 26, 2007

Mr. Tom Swenson
Claire Advanced Emission Controls
14775 Wicks Boulevard
San Leandro, California 94577

Reference No. RAS-07-02

Dear Mr. Swenson:

Using the Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Procedure), Air Resources Board (ARB) staff reviewed your application for conditional verification of the Claire Horizon Electric Particulate Filter (Horizon) for use with off-road diesel engines. Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, ARB hereby finds that the Horizon reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to an 85 percent reduction). ARB also finds that the Horizon satisfactorily completed at least 33 percent of the durability demonstration period for off-road diesel engines. Accordingly, ARB determines that the system merits conditional verification and, subject to the terms and conditions specified below, classifies the Horizon as a Level 3 system for off-road applications that use diesel engines.

The Horizon is compliant with the 2009 nitrogen dioxide emissions limit and as such is designated as a "Plus" system per section 2702(f) of the Procedure.

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

- The Horizon is conditionally verified for a period not to exceed three years from the date of this letter. For the Horizon to be considered for full verification, Claire must complete all remaining requirements as specified in the letter RAS-07-01 within three years of the date of this letter.
- Conditional verification is equivalent to verification for the purposes of satisfying the requirements of in-use emission control regulations.
- The engine must be certified to a PM emission level equal to or less than 0.4 grams per brake horsepower-hour.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

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- The engine must be model year 2007 or older.
- The engine must not have a displacement greater than 15 liters.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing diesel oxidation catalyst from the original equipment manufacturer.
- The engine must not have a pre-existing diesel particulate filter from the original equipment manufacturer.
- The engine can be mechanically or electronically controlled.
- The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- Lubricating oil, or other oil, should not be mixed with the fuel.
- 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 Horizon, manufactured by Cleaire Advanced Emission Controls, LLC, 14775 Wicks Boulevard, San Leandro, California 94577, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the Horizon is exempt from the prohibitions in section 27156 of the Vehicle Code for installation on off-road equipment. This exemption is only valid provided the engines meet the aforementioned conditions.

ARB reserves the right in the future to review this conditional verification letter and the exemption provided herein to assure that the exempted and conditionally verified add-on or modified part continues to meet the standards and procedures of Title 13, sections 2222, et seq and sections 2700 through 2710, of the California Code of Regulations (CCR).

The Horizon consists of a non-catalyzed silicon carbide wall-flow diesel particulate filter, electric heating element, air pump, and an electronic control system. All necessary hardware and controls are installed on the vehicle, requiring only off-board electric power to supply energy to the heater. The major components of the Horizon are identified in Attachment 1.

No changes are permitted to the device. ARB must be notified, in writing, of any changes to any part of the Horizon. Any changes to the device must be evaluated and approved by ARB. Failure to do so shall invalidate this conditional verification.

Changes made to the design or operating conditions of the Horizon, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system, shall invalidate this conditional verification.

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Marketing of the Horizon using identification other than that shown in this conditional verification letter or for an application other than that listed in this conditional verification letter shall be prohibited unless prior approval is obtained from ARB.

This conditional verification shall not apply to any Horizon advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

ARB estimates that the Horizon has no significant effect on average fuel economy.

As specified in the Procedure, ARB assigns each diesel emission control strategy a family name. The designated family name for the conditional verification as outlined above is:

CA/CLE/2007/PM3+/N00/OFF/DPF01.

Additionally, as stated in the Procedure, Cleaire is responsible for honoring the required warranty (section 2707) and conducting in-use compliance testing (section 2709).

This conditional verification 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 (ASTM) specification D6751 applicable for 15 ppm sulfur content;
- The diesel fuel portion of the blend complies with Title 13, CCR, sections 2281 and 2282;
- The use of biodiesel applies to devices verified to reduce only diesel particulate matter; and
- Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this conditional verification.

Systems conditionally verified in this letter shall conform to all applicable California emissions regulations.

This conditional verification does not release Cleaire from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this conditional verification.

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Thank you for participating in ARB's diesel emission control strategy verification program. If you have any questions or comments, please contact Ms. Shawn Daley, Manager at (626) 575-6972 or by email to sdaley@arb.ca.gov.

Sincerely,

/s/

Robert H. Cross, Chief
Mobile Source Control Division

Attachment

cc: Ms. Shawn Daley, Manager
Retrofit Assessment Section