Air Resources Board

Mary D. Nichols, Chairman
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Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

November 22, 2010

Mr. Jeff Moser
Aftermarket Product Manager
Electro Motive
9301 West 55th Street
LaGrange, IL 60525

Dear Mr. Moser:

The California Air Resources Board (ARB or CARB) staff reviewed the emissions testing data submitted for an Electro Motive Diesel (EMD) supercharged 645 engine rebuilt with your Tier 2 U.S. Environmental Protection Agency (EPA) Marine Rebuild Kit identified with the new engine family designation *EMDN169.RT2. The "*" at the beginning of the engine family represents various letters that correlate to the appropriate model year. The EMD 645 Tier 2 U.S. EPA Marine Rebuild Kit satisfies the ARB's Commercial Harbor Craft Regulation[1] Tier 2 or equivalent compliance requirements. ARB is not certifying the engine rebuild kit, only allowing engines rebuilt with this kit to be used to comply with Tier 2 marine emission standards in the Commercial Harbor Craft Regulation when used with CARB diesel fuel.

EMD staff submitted emissions tests for their EMD 645 Tier 2 U.S. EPA Marine Rebuild Kit that had emission rates either at or below the Tier 2 marine emission standards. Southwest Research Institute performed the emissions tests using the ISO 8178 E3 marine propeller duty cycle. The emission tests were conducted with locomotive certification fuel that had a sulfur concentration of 2719 parts per million (ppm). The emissions test results for particulate matter (PM) meet the Tier 2 marine emission standard of 0.2 grams per brake horsepower hour (g/bhp-hr).

Considering the difference in sulfur content between locomotive certification fuel and CARB diesel, and the relationship between sulfur content and PM emissions, ARB staff calculates a PM emission rate for the E3 test cycle of 0.17 g/bhp-hr when using CARB diesel. The same PM emission rate calculation was applied to the D2 and E2 test cycles. Based on the emissions tests results presented in the table below, the EMD Tier 2 U. S. EPA Marine Rebuild Kit reduces emissions of the EMD 645 engine to below

[1] Commercial Harbor Craft Regulation (section 93118.5, title 17, California Code of Regulations (CCR).

U.S. EPA Tier 2 marine emission standard levels when burning CARB diesel. Therefore, ARB finds that the EMD 645 Tier 2 U.S. EPA Marine Rebuild Kit can be used to comply with the emission standards required in the Commercial Harbor Craft Regulation for Tier 2 engines.

EMD 645 Tier 2 U. S. EPA Marine Rebuild Kit Emissions

Test	CO (g/hp-hr)	PM (g/hp-hr)	NOx+HC (g/hp-hr)
Tier 2 Kit E3 Cycle	0.58	0.17	5.3
Tier 2 Kit D2 cycle	0.60	0.15	4.9
Tier 2 Kit E2 cycle	0.63	0.18	5.0
Tier 2 Marine Standards	3.7	0.2	5.8

The component parts lists for this engine rebuild kit are attached to provide a means to identify the individual parts specific to this rebuild kit. The components parts lists for the different engine configurations are identified with kit part numbers 40177323, 40177324, 40177325, 40177326. When using this rebuild kit, the parts identified in the associated component parts lists need to be installed to be compliant with the Commercial Harbor Craft Regulation. These component parts lists will be used by enforcement personnel to determine that the proper rebuild kit was installed.

Also attached is the U.S. EPA 1042 Certificate of Conformity for engine family AEMDN169.RT2 which complies with the terms of 40 CFR 1042.101(e). This defines the minimum emissions warranty period to be 10,000 hours of operation or 5 years (1/2 of the U.S. EPA defined useful life), which ever comes first.

Should you have any questions or comments, please contact Mr. John Lee, Air Resources Engineer at (916) 327-5975.

Sincerely,

/s/

Daniel E. Donohoue, Chief
Emissions Assessment Branch

Attachments

cc: John Lee
Air Resources Engineer
Control Strategies Section