



Air Resources Board



Linda S. Adams
Secretary for
Environmental Protection

Mary D. Nichols, Chairman
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Arnold Schwarzenegger
Governor

November 23, 2010

Mr. Jason Maher
Brookville Equipment Corporation
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Brookville, Pennsylvania 15825

Dear Mr. Maher:

This letter is in reply to your request dated October 14, 2010, for an Air Resources Board (ARB) verification of the oxides of nitrogen (NOx) and particulate matter (PM) emission levels for Brookville Equipment Company's (BEC) multiple nonroad engine locomotives: BL21CG (a three-engine "genset") and BL14CG (a two-engine "genset"), but specific engine family ABECG019.CGA. This verification would be for BEC genset switch locomotives that are built with multiple Cummins QSK-19 Tier-3 nonroad engines as the primary diesel engine power.

As you know, in 1998, the BNSF Railway Company (BNSF) and Union Pacific Railroad (UP) Company (Participating Railroads), along with ARB entered into a Memorandum of Mutual Understandings and Agreements¹ (1998 MOU) to reduce locomotive emissions in the South Coast Air Basin. Under the 1998 MOU, beginning no later than 2010, each Participating Railroad must calculate the fleet average for NOx emissions from its locomotive fleet operating in the South Coast Air Basin. The fleet average is calculated using the emission level, as determined pursuant to 40 CFR 92 and 1033 for the line-haul duty cycle, for each locomotive in operation in the South Coast Nonattainment Area. Pursuant to the 1998 MOU, and as verified by ARB, UP and BNSF can receive ultra-low-emitting locomotive (ULEL) credit for advanced-technology locomotives with NOx emissions levels at or below 3.0 g/bhphr through 2014.

U.S. Environmental Protection Agency (U.S. EPA) issued a certificate of conformity for engine family ABECG019.CGA on September 24, 2010. However, U.S. EPA did not specify a specific NOx or PM emission level. As a result, staff relied on the Southwest Research Institute (SWRI) locomotive emission test data used to support the U.S. EPA

¹ MEMORANDUM OF MUTUAL UNDERSTANDINGS AND AGREEMENTS, South Coast Locomotive Fleet Average Emissions Program, July 2, 1998

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certificate of conformity and performed pursuant to 40 CFR Part 92 and 1033, for BEC two - and three - engine genset switch locomotive engine family ABECG019.CGA. Based on the SWRi test data, staff recognizes BEC engine family ABECG019.CGA has line haul NOx and PM emission levels at or below 3.0 and 0.1 g/bhphr, respectively. The 3.0 g/bhphr NOx emission level for engine family ABECG019.CGA can be used in calculating the average NOx emissions for a locomotive fleet operating in the South Coast Air Basin.

Alternative technology switcher locomotives funded by the Carl Moyer Program, such as genset locomotives, typically include an existing locomotive frame significantly refurbished with a new engine or engines, electronics, controls, and other equipment. For Carl Moyer Program funding, an alternative technology switcher must achieve a NOx emission rate of 3.5 g/bhp-hr and a PM emission rate of 0.14 g/bhp-hr, based on U.S. EPA locomotive emission testing requirements specified in Title 40 Code of Federal Regulations (CFR) Part 92.

Based on SWRi locomotive emission testing data, staff recognizes that engine family ABECG019.CGA has switch-duty-cycle emission levels of 3.2 g/bhphr NOx and 0.12 g/bhphr PM; both of which meet the switch-duty-cycle NOx and PM emissions levels specified for ARB incentive funding programs.

Based on the SWRi fuel specifications, it appears that the SWRi emission testing was performed using U.S. EPA ultra-low-sulfur diesel (15 ppmw) test fuel. We believe that if testing were performed using CARB diesel (or similar TXLED) the switch-duty-cycle emission levels would also potentially meet or exceed the ULEL NOx and PM emission levels of 3.0 and 0.1 g/bhphr, respectively. This assessment is based on other Cummins QSK19 multiple engine switch locomotive emission testing results (pursuant to 40 CFR Part 92).

Both the NOx and PM emission levels listed in this letter will be superseded if U.S. EPA revised the certificate of conformity referenced in this letter.

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If you have any questions please contact Mr. Harold Holmes, Manager, Engineering Evaluation Section (916) 322-8029, or at hholmes@arb.ca.gov.

Sincerely,


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