July 9, 2019

Mr. H. Peter Claussen  
Chairman and CEO

Mr. James M. Wurtz Jr., President

Knoxville Locomotive Corporation  
422 West Cumberland Avenue  
Knoxville, Tennessee 37902

Dear Mr. Claussen and Mr. Wurtz:

This letter responds to the Knoxville Locomotive Works (KLW) request for a California Air Resources Board (CARB) locomotive verification for the Tier 4 Series 4000 locomotive family. CARB verifies that the KLW locomotive achieves U.S. EPA Tier 4 exhaust emissions levels. This verification is applicable to the following KLW locomotive models equipped with MTU’s Series 4000 diesel engine:

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<th>NZE20C T4L</th>
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</table>

The KLW switch and line haul locomotive family utilizes MTU Series 4000 engines with model names 12V4000R54 and 16V4000R54. The MTU engines in the KLW locomotives received calibration changes and were retrofitted with an emissions control system developed jointly by KLW and Catalytic Combustion Corporation that contains a Diesel Oxidation Catalyst and Selective Catalytic Reduction system.

The KLW Series 4000 locomotive accumulated 3,000 in-use hours in North Carolina and Tennessee. All exhaust emission testing was performed by West Virginia University’s Center for Alternative Fuels, Engines, and Emissions. In addition, KLW obtained Tier 4 certification (certificate number JKLWK57.2LTC and JKLWK76.3LTC) of the Tier 4 Series 4000 locomotive family from the U.S. EPA in December 2017. For the most current EPA Certificate of Conformity for the KLW locomotive, please see the EPA web site at https://iaspub.epa.gov/otaqpub/.
Based on CARB staff evaluation of the application, exhaust emission data, and additional information provided, CARB staff hereby verifies that this locomotive configuration and technology achieves U.S. EPA Tier 4 line haul and switch NOx, PM, CO, and HC exhaust emission levels.

If you have any questions or comments, please contact Ajay Mangat, Manager, Freight Systems Section at (916) 324-2718 or via email at ajay.mangat@arb.ca.gov or Mike Jaczola, Staff Air Pollution Specialist, Freight Systems Section at (916) 324-5607 or via email at michael.jaczola@arb.ca.gov.

Sincerely,

Cari Anderson, Chief
Freight Transport Branch
Transportation and Toxics Division

cc: Dennis Johnson, Director
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U.S. EPA
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1200 Pennsylvania Avenue, N.W.
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Ajay Mangat, Manager
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Mike Jaczola
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