

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:

NZE20B T4L	NZE20B DE T4L	NZE20C T4L	NZE20C DE T4L
NZE22B T4L	NZE22B DE T4L	NZE22C T4L	NZE22C DE T4L
NZE23B T4L	NZE23B DE T4L	NZE23C T4L	NZE23C DE T4L
NZE24B T4L	NZE24B DE T4L	NZE24C T4L	NZE24C DE T4L
NZE28B T4L	NZE28B DE T4L	NZE28C T4L	NZE28C DE T4L
NZE32B T4L	NZE32B DE T4L	NZE32C T4L	NZE32C DE T4L

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/>.

Mr. H. Peter Claussen
Mr. James M. Wurtz Jr.
July 9, 2019
Page 2

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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