Department of Transportation
Federal Transit Administration
Washington, DC

FTA Party Submission
Philip Herbert, Accident Investigator

On Wednesday January 11, 2023, NTSB and parties to the investigation met at NTSB headquarters to discuss the findings and examine concurrence on the root cause to the October 2021 Arlington Derailment of Washington Metropolitan Area Transit Authority's 7000 series train.

Based on the discussion and supporting evidence gathered by the team over the past fourteen months, the FTA agrees the evidence overwhelmingly supports that "Ratcheting Extrusion" from simultaneous bending and rotating of the hollow wheel axle within the wheel seat as the cause of the micro-slippage resulting in widening wheel gauge.

Additional evidence supports Frequency Vibration of within tolerance, but slightly out of round, wheelsets and special track work may further exacerbate the Ratcheting Extrusion. The wheelset press force tonnage (or lack thereof) and weight of the WMATA 7K railcar (21,000 pounds - the heaviest in the U.S. transit industry) likely also contributed to the Ratcheting Extrusion and Frequency Vibration phenomena.

It would be our recommendation to prevent similar events to encourage all transit agencies operating "heavy rail" transit cars exceeding 20,000 lbs. (gross weight) to increase the interference fit and press force on wheelsets to freight-rail industry standards.

Interference fits should be .0065 to .0085 inches and press force of 80 to 110 tons. This would only effect WMATA and likely Los Angeles County Metropolitan Transit Authority, who operate trains above 20K pounds. This recommendation is within industry capabilities and introduces no engineering changes as it's a known used standard.

Additionally, in keeping with FTA Safety Advisory 21-1, transit agencies should maintain a regular program of back-to-back wheel measurements on its transit rail fleet to identify potential wheel migration.