



Surface Transportation Board
Washington, D.C. 20423-0001

August 9, 2002

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Office of Compliance and Enforcement

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Mr. Edward W. Pritchard
Acting Director
Office of Safety Assurance and Compliance
Federal Railroad Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Pritchard:

Thank you for the analysis and comments you submitted to us on behalf of the Federal Railroad Administration (FRA), dated July 8, 2002, in the matter of National Railroad Passenger Corporation - Petition for Declaratory Order - Weight of Rail, STB Finance Docket No. 33697. In our most recent decision in this proceeding (served June 29, 2001), which, based on FRA's analysis, clarified our decision served October 22, 1999, the Board confirmed that the existing 115-pound rail would support Amtrak operations at speeds of up to 79 miles per hour (mph) over the Plaistow, NH/Portland, ME line, provided that the line is rehabilitated to and maintained to FRA Class 4 safety standards and at a level that produces a k value [for track modulus] of not less than 2,750 lb/in². Our decision also required the Guilford Rail System (Guilford) to allow the Transportation Technology Center, Inc. (TTCI), on behalf of Amtrak, to conduct the track modulus testing.

Based on testing by TTCI using a 25-foot moving average,¹ the average track modulus of the line was found to be 5,346 lb/in², and 99.95% of the line has a track modulus of 2,750 lb/in² or greater. However, as you know, testing was also performed for Guilford by Zeta-Tech Associates, Inc. (Zeta-Tech). Both test results indicated that, at certain locations, the track modulus was below 2,750 lb/in², and at some individual points, it may even be below 1,800 lb/in². Considering our requirement for Amtrak that the Guilford line be maintained at a k value of not less than 2,750 lb/in², we are seeking your additional input as to the appropriate treatment of such locations. In addition, Guilford's experts have suggested that it is inappropriate to base k value determinations on a 25-foot moving average, particularly where testing has indicated that the track modulus at specific locations is below 2,750 lb/in² and, in some cases, below 1,800 lb/in².

¹ Amtrak submits that the TTCI method for determining track modulus "is based on dynamic deflection data recorded at one measurement every two inches, which in turn is translated into 2-foot dynamic deflection data, which then is translated into 25-foot moving average data." Amtrak rebuttal filed June 27, 2002 at 22.

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Specifically, in Guilford's reply filed June 10, 2002, Guilford argues, based on a verified statement by Dr. Allan M. Zarembski, that "rail failure (fatigue, fracture, etc.) develops and occurs at a single location, not over a 25 foot (or any other) length." Reply at 22. Guilford submits that, because modulus values of 1,800 lb/in² or less will result in rail stresses greater than the AREMA allowable value of 25,000 pounds per square inch, such locations of high stress should not be averaged. "When the rail stress values exceed the allowable stress values, the potential exists for the development of rail fatigue defects that could result in a potential safety issue." Id. at 23. Thus, Guilford claims that "the results of the track modulus testing indicate that there are at least 75 locations along this line where the . . . permissible calculated rail stress exceeds 25,000 pounds per square inch. . . ." Id. at 28-29.

In its rebuttal brief at 28-31, Amtrak rejects Guilford's arguments. In connection with the 2,750 lb/in² standard, Amtrak argues that isolated areas with low track modulus "do not constitute an extended track segment with support problems" (Amtrak rebuttal at 12), which is at odds with Dr. Zarembski's submission (Attachment 1) that "rail failure (fatigue, fracture, etc.) is a point process." Could you comment on: 1) whether rail failure at a single location is a valid concern and one which would cause the use of the 25-foot moving average to be questioned; 2) whether a track modulus below 2,750 lb/in² is an appropriate basis for determining the potential for rail fatigue defects; and 3) whether a discrete incidence of lower track modulus would cause a track structure to be evaluated at below FRA Class 4 safety standards?

As noted, we have found that the track is to be rehabilitated and maintained at the 2,750 lb/in² standard. Based on the September dynamic deflection data using the 25-foot moving average, for example, there were 14 locations where the track deflection was equal to or was more than 0.27 inches, which would be expected to result in a track modulus equal to or less than 2,750 lb/in².² Amtrak indicates that at nine of these locations it will operate at less than 79 mph, and the track modulus in the tenth location is actually greater than 2,750 lb/in². Of the remaining four locations where the track modulus is less than 2,750 lb/in²; however, Amtrak states that "these modulus measurements are not indicative of any systemic support problems at these locations." Amtrak April 12, 2002 motion for clarification at 33-34. We would also like your opinion as to whether the track modulus should be remedied in these locations before 79 mile per hour operations can begin. If so, should maintenance also be done in locations where TTCI found, not based on the 25-foot moving average, that the track modulus was equal to or less than 2,750 lb/in², thus substantiating Zeta-Tech's findings.

² Guilford claims (reply at 21-22) that using a 25-foot moving average instead of the 2-foot moving average that TTCI utilized had the effect of "removing hundreds of locations where relative deflection exceeds the 0.27 inch maximum deflection criteria."

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Thank you for your continued assistance in this matter, and for your prompt response.

Sincerely,

A handwritten signature in cursive script, appearing to read "Melvin F. Clemens, Jr.", written in dark ink.

Melvin F. Clemens, Jr.
Director