National Transportation Safety Board

Washington, D.C. 20594

Response to Petition for Reconsideration

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On November 21, 2018, CSX Transportation (CSXT) submitted to the National Transportation Safety Board (NTSB) a petition for reconsideration of highway accident report NTSB/HAR-18/01, *Collision Between Freight Train and Charter Motorcoach at High-Profile Highway–Railroad Grade Crossing, Biloxi, Mississippi, March 7, 2017*. According to Title 49 *Code of Federal Regulations* (CFR) 845.41(a), a petition for reconsideration will be "entertained only if based on the discovery of new evidence or on a showing that the Board's findings are erroneous." CSXT submitted a Mississippi Department of Transportation (MDOT) railroad crossing inspection report from March 2015 as new evidence and based its petition on what it characterized as erroneous NTSB findings.

The NTSB's response to this petition was delayed because CSXT did not initially provide copies of its petition to all parties to the investigation. On April 1, 2019, CSXT provided proof of service that copies of its petition were served on all other parties to the investigation, pursuant to 49 CFR 845.41(b), thereby fulfilling all requirements for the NTSB to review its petition. CSXT's November 21, 2018, letter also provided information about the company's responses to Safety Recommendations R-18-14 and -15. Based on that information, on July 22, 2019, the NTSB classified Safety Recommendations R-18-14 and -15 to CSXT "Open—Acceptable Response."

CSXT's petition asserts that the NTSB's findings in the report are erroneous in at least four respects:

> First, the Report's "finding" that the commercial bus driver's actions were "reasonable" in all respects is contrary to the evidence cited in the Report, as well as the guidance and regulations governing the safe operation of commercial vehicles at railroad grade crossings. *See* Finding Nos. 3, 4.

> Second, the Report's finding that CSXT's track resurfacing work in 2014 "increased the Crossing's vertical profile and resulted in increased frequency of vehicle groundings" is not supported by any evidence in the public docket. *See* Finding No. 8.
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> Third, the Report's assertion that CSXT somehow "denied" the City and the Mississippi Department of Transportation ("MDOT") the "opportunity" to take "proactive action" to enhance safety at the Crossing after the 2014 track work is similarly unsupported. *See* Report at 43, Finding Nos. 10-11.
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> Fourth, and finally, the Report appears to state several erroneous legal conclusions, all of which should be struck from the Report.

CSXT has challenged the accuracy of 5 of the 15 findings issued in the report. Based on its review of the petition, the NTSB denies the petition in full and states the facts that led to its decision below.

Actions of Driver

CSXT's first assertion is that findings 3 and 4 of the report are not supported by the evidence and by established guidance and regulations governing the safe operation of commercial vehicles at railroad grade crossings. The findings are as follows:

> Finding 3
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> The motorcoach driver's decisions to take a scenic route and to rely on a portable global positioning system device programmed for commercial vehicle navigation were reasonable.
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> Finding 4
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> Given that (1) the motorcoach driver most likely could not have perceived the steepness of the northern slope before beginning to traverse the crossing, (2) he took the precaution of raising the rear of the motorcoach to prevent scraping the crossing, and (3) no signage prohibited transiting the crossing in a commercial vehicle, the driver's decision to travel over the Main Street grade crossing was reasonable.

According to CSXT, on seeing the "Low Clearance" sign and plaque installed at the grade crossing, the driver should have done one of three things, as stated in the petition:[1]

> (i) Followed the original highway route which would have avoided grade crossings.
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> (ii) Used a different crossing, such as the nearby Caillavet Street crossing, which the Report concluded "has a considerably lesser slope."

[1] The report (page 1) describes the grade crossing as "marked with (1) a crossbuck, (2) warning lights that would activate at a train's approach, (3) a gate arm that would lower at a train's approach, and (4) a low ground clearance grade crossing (LGCGC) warning sign with a "LOW GROUND CLEARANCE" plaque below it on the signpost."

(iii) Exited the bus to visually confirm the downward slope of the Crossing before proceeding.

Further, CSXT maintains that the report fails to address the obligations of ECHO Transportation (the motorcoach operator) to provide adequate training to ensure that its drivers complied with all applicable *Federal Motor Carrier Safety Regulations* (FMCSRs) and state law requirements, including sections of the *Texas Commercial Motor Vehicle Drivers Handbook*, which instructs commercial drivers to exercise caution when navigating railroad grade crossings to avoid "getting hung up halfway across."

The Board disagrees with CSXT on all these points. As stated on page 33 of the report, the established Diamond Tours itinerary included directions from Hollywood Casino in Bay St. Louis, Mississippi, to Boomtown Casino in Biloxi. The directions instructed drivers to take Interstate 10, a route that would not have included traversing the grade crossing on Main Street in Biloxi. Although the driver did not take the established route, the scenic route the driver took was also approved by Diamond Tours. The driver's decision not to follow the established route therefore appears reasonable. In addition, Diamond Tours texted instructions for an alternate scenic route to the other tour drivers, but mistakenly *never sent the text to the accident driver*, as evidenced by the driver's cellular phone records. Instead, Diamond Tours twice sent the instructions to the group leader of that motorcoach.[2] Therefore, the Board rejects CSXT's assertation that the driver could have taken the alternate route sent by Diamond Tours, since the driver was never aware of those instructions. Third, as described at length in the report, the driver took precautions before approaching the grade crossing by engaging the motorcoach's rear-lift system. On approach from the south side of the Main Street crossing, the atypical nature of the north slope is not apparent. Thus, the driver had no reason to disregard the commercial global positioning system (GPS) unit he was using for directions when it routed him through the crossing.[3]

CSXT quotes section 2.15.5 of the *Texas Commercial Motor Vehicle Drivers Handbook*, which cautions that steep crossings can cause a unit to "hang up on the tracks" and that drivers should be sure they can get all the way across the tracks before starting. CSXT claims that to comply with the handbook, the driver should have exited the motorcoach to visually inspect the crossing. That would have required the driver to stop the motorcoach on an active and open roadway, exit the coach, cross two lanes of another active and open roadway, and then encroach on the right-of-way/tracks of an active railroad. The NTSB strongly disagrees with CSXT's interpretation of the Texas handbook, because exiting the vehicle and performing the actions that CSXT describes would have exposed the driver to significant safety risks. The driver's precautionary actions before reaching the crossing, which consisted of using a commercial GPS for directions, stopping ahead of the crossing, visually inspecting the crossing, and raising the rear axle of the bus, are consistent with the Texas handbook. At no point does the handbook state that drivers should exit their vehicles and inspect a crossing on foot.

CSXT also suggests that the driver's actions were unreasonable because of the distance of the slow-moving train from the crossing. As CSXT is aware, it is difficult to assess the speed and

[2] The group leader for the motorcoach later told investigators that she did not receive the text messages.

[3] The GPS model used by the driver, the Garmin DEZL 570MT, is designed to aid in the navigation of commercial vehicles, such as a motorcoach.

distance of an approaching train. Therefore, active protections and warnings are installed at crossings, including the one on Main Street. The protections were not active when the coach began to traverse the crossing. The handbook cited by CSXT states that drivers should allow 14 to 15 seconds to cross tracks; the driver had at least that much time when he began to cross. CSXT also states that the driver attempted to dislodge the coach from the crossing before telling the passengers to evacuate. As described in the report, the driver's attempt to dislodge the coach was brief and occurred before he was aware that a collision was imminent. The NTSB also notes the driver's attempt to dislodge the coach occurred long enough before the collision to allow six passengers, all senior citizens, to safely evacuate the coach.

Based on its analysis of the facts, the NTSB reaffirms its findings regarding the motorcoach driver. The NTSB thereby rejects CSXT's claim that the report fails to address ECHO Transportation's obligations under federal law to provide adequate training to ensure that its drivers comply with all applicable FMCSSs and state requirements.

CSXT states in its petition for reconsideration that it "disagrees with the Report's conclusion that the meaning of the [LGCGC] sign and plaque are unclear to experienced CDL drivers" (meaning drivers holding a commercial driver's license, or CDL). However, the report draws no such conclusion. CSXT might be referring to finding 6, which states:

> Finding 6
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> Based on the high frequency of grounding incidents at the Main Street grade crossing, which was posted with low ground clearance grade crossing (LGCGC) warning signage, and the lack of evidence of the safety benefits provided by LGCGC warning signs, the effectiveness of such signs in promoting safety at grade crossings may be negligible.

The NTSB maintains that section 2.3.1.1 of the report, which describes the vague language in the guidance and the inconsistent application of signs, supports finding 6. CSXT states in its petition that "it is unreasonable for an experienced commercial motorcoach and school bus driver to claim ignorance as to the meaning of the plaque's unambiguous language . . . ." The NTSB notes that the driver never made such a claim, nor did the NTSB.

Track Resurfacing

With regard to track resurfacing, CSXT asserts that finding 8, stated below, is not supported by any evidence in the public docket:

> Finding 8
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> Due to the February 2014 track maintenance work, which increased the crossing's vertical profile and resulted in increased frequency of vehicle groundings, the Main Street grade crossing had been unsafe for certain types of vehicles for several years before the fatal March 2017 crash.

CSXT claims that this finding is supported only by a conversation with an unidentified CSXT engineer, who stated that replacing wooden railroad ties "typically" raises the track by "about 1.5 inches." CSXT further claims that the NTSB ignored other possible explanations for

the increase in groundings and train-vehicle collisions after 2014. Finally, CSXT claims that the report includes mathematical errors based on erroneous interpretations of historical Main Street improvement plans and surveys.

The NTSB confirms finding 8. First, the engineer with whom NTSB investigators spoke was a professional engineer (P.E.) from the Engineering Services Division of CSXT's Engineering Department. Although the CSXT engineer's statement was not recorded, it was made in the presence of two NTSB investigators; and his statement is consistent with the experience of former railroad track safety inspectors currently working at the NTSB. Second, the CSX Maintenance of Way Instructions 901-08—Road Crossing Installation (docket item 13) states: "The minimum practical track raise should be used to limit its effect on the highway profile." This passage suggests that track maintenance projects, such as the one performed in February 2014, result in a change in track elevation and subsequently affect the highway profile, adding further credence to the statement made by the CSXT engineer.

Third, as a party member, CSXT was given the opportunity to review the draft factual report of each NTSB investigator for technical accuracy. However, in the technical review comments it sent to the NTSB on November 1, 2017, CSXT did not comment on the information on page 21, lines 18–20, of the Highway Factors Group Chairman's factual report, which states that the track work conducted in February 2014 typically raised the track "by up to two-inches, after which an approximate 1/2-inch settlement of the tracks would be expected due to the compaction process." [4] The Highway Factors Group Chairman's factual report also states:

> Based on the 1977 Main Street improvement plans, the Main Street surface of the grade crossing had an elevation of approximately 19.14 feet above mean sea level. A survey conducted in 1999, in preparation for additional improvements to Main Street, found that the grade crossing had an elevation of 19.39 feet above mean sea level.

That constitutes an increase in elevation of about 3 inches over a span of 22 years, not counting any increase in elevation caused by the 2014 track work.

In its petition for reconsideration, CSXT argues that the 1977 and the 1999 measurements cannot be compared because the surveys were done by two different engineering firms that did not reference the same survey monument. The NTSB notes, however, that the idea behind referencing *any* survey monument (or benchmark) is that they are all accurate and have already been referenced either to each other or to other parts of a survey monument network. That allows for meaningful comparisons between any number of surveys conducted over any span of time. Without such a system, every survey conducted anywhere in the country would have to be measured back to the exact same monument or reference point. The NTSB further notes that CSXT has failed to present evidence that referencing different survey monuments led to actual discrepancies in the resulting measurements. CSXT also argues that the NTSB misread the crossing elevation on the 1977 Main Street improvement plans. The NTSB has confirmed that its reading of the elevation was correct.

[4] The factual reports and other documents related this accident can be found in the NTSB's online Docket Management System; search for accident number HWY17MH010.

Finally, CSXT argues that the NTSB erred in its calculation of the north slope of the crossing, maintaining that the correct slope was 12.6 percent when measured 360 inches north of the nearest rail. The NTSB took survey measurements at distances of 2 feet and 30 feet from the nearest rail. Therefore, the lateral distance was 336 inches, not 360 inches. The reason the NTSB began its measurement 2 feet from the nearest rail is that the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) recommend that a crossing surface should be level with the top of the rails for at least 2 feet outside the rails.[5] The 2001 MDOT *Roadway Design Manual*, which was in effect at the time of the collision, also recommends that a crossing surface should be level with the top of the rails for at least 2 feet outside the rails. Thus, the slope of any grade crossing should not commence until a point 2 feet beyond the rail. The point where the NTSB began its measurement was 0.5 inches below the top of the rail. The point where the measurement ended was 45.4 inches below the top of the rail. That is a drop of 44.9 inches over a span of 336 inches, which equates to an average downhill slope of -13.3 percent, consistent with the report.

Regardless of how the slope is calculated, the overarching issue is that the 44.9-inch drop in elevation 30 feet from the closest track grossly exceeds the guidelines in the 2001 MDOT *Roadway Design Manual*. As explained on page 17 of the report, the manual recommends that the road surface should not be more than 3 inches above or 6 inches below the top of the nearest rail at a distance of 10 feet from the nearest rail. Moreover, since 2010, MDOT has relied on the FHWA guidance for approval of grade crossing projects; and AASHTO and the FHWA recommend that the road surface should *not be more than 3 inches higher or lower* than the top of the nearest rail at a point 30 feet from the rail.

Other Plausible Explanations for Change in Vertical Profile

CSXT argues that, in its investigation, the NTSB did not consider other factors that may have resulted in an increase in grounding incidents after the track work in 2014, such as the public road improvement projects conducted by the city on the north side of Esters Boulevard. Further, CSXT asserts that the NTSB largely ignored the practical engineering and topographical constraints along the entire rail corridor. However, CSXT's petition does not identify specific errors in the report, nor does it present new evidence to support CSXT's claim that other factors may have led to the increase in groundings after the track work in 2014. In point of fact, as evidenced in the Highway Factors factual report and as referenced in CSXT's petition, the NTSB did consider other factors to explain the increase in grounding since 2014; the track work presented the best evidence for the increase.

Communication Between MDOT, City of Biloxi, and CSXT

CSXT asserts that the City of Biloxi and MDOT knew that track work was to take place in 2014, with the city having "publicized the grade crossing closure on its traffic notifications website." In addition, CSXT states that MDOT inspected the crossing in March 2015, approximately 13 months after the 2014 tie-replacement work, and that the MDOT inspection report expressly recognized that the crossing had a "high profile." CSXT maintains that the report's

[5] See *A Policy on Geometric Design of Highways and Streets, 6th Edition* (Washington, DC: AASHTO, 2011); and *Railroad-Highway Grade Crossing Handbook*, revised 2nd edition (Washington, DC: FHWA, 2007).

suggestion that MDOT did not have notice of the crossing's vertical profile before the 2017 accident is erroneous. Therefore, CSXT claims that findings 10 and 11, below, are unsupported by the evidence:

> Finding 10
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> Had CSX Transportation communicated and coordinated with the City of Biloxi and the Mississippi Department of Transportation about planned railroad projects that might affect the vertical profiles of grade crossings in their jurisdictions, it would have provided them the opportunity to assess and monitor the risks of vehicle groundings and, if necessary, to take proactive action to reduce those risks.
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> Finding 11
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> Although CSX Transportation and the City of Biloxi knew that numerous vehicle groundings had occurred on the Main Street grade crossing after track maintenance was performed in early 2014, neither took action to reduce the safety risk posed by the crossing to both railroad and highway traffic.

Finding 10 does not dispute that the City of Biloxi and MDOT were aware that the crossing had a high profile and that the appropriate signage was present at the crossing. Instead, the point of the finding is that communication between CSXT, the City of Biloxi, and MDOT regarding the potential for the planned railroad project to further increase the vertical profile of the crossing would have given the parties the opportunity to assess and monitor the risks of vehicle groundings and, if necessary, to take proactive action to reduce the risks. Nothing in CSXT's petition indicates that it informed MDOT and the City of Biloxi that the track work would increase the vertical profile of the crossing.

Legal Conclusions in Report

The final section in CSXT's petition for reconsideration states that "the Report includes several incorrect or legally erroneous conclusions regarding: (i) CSXT's obligations and duties at public grade crossings and (ii) the effect of certain recommended practices or guidelines for the design of highway-rail grade crossings offered by the American Railway Engineering and Maintenance-of-Way Association ('AREMA') and AASHTO." According to CSXT,

> While acknowledging that it "is outside the scope of this investigation to make a definitive determination as to which entity bears the responsibility for maintenance" of the Crossing, the Report goes on to suggest that Mississippi "case law indicates a railroad may not contract away its duties and liabilities concerning the safety of public grade crossings." Report at 44. In doing so, the Report fails to acknowledge Mississippi Supreme Court case law holding that: (i) a railroad's ability to make changes to grade crossings may be constrained or affected by the close proximity of adjacent city streets, *Gulf & S. I. R. Co. v. Simmons*, 117 So. 345, 351 (Miss. 1928); and (ii) "railroad companies are not responsible for maintaining roads leading to crossings." *Ill. Cent. Gulf R.R. Co. v. Travis*, 106 So. 3d 320, 339-40 (Miss. 2012).
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> Moreover, while the Report acknowledges that both AREMA and AASHTO only provide "guidance" on the "maximum acceptable vertical profile for a *new or newly*

> *reconstructed grade* crossing," the Report nevertheless appears to suggest that AREMA and AASHTO provide "design standards" governing the existing Crossing at issue here. *See* Report at 17, 42.

CSXT makes three claims in the paragraphs above, which will be addressed in turn. First, CSXT claims that when the NTSB quoted Mississippi case law, it failed to acknowledge that "a railroad's ability to make changes to grade crossings may be constrained or affected by the close proximity of adjacent city streets." The NTSB asserts that the report does not dispute that constraints might have affected CSXT's ability to make changes to grade crossings. As indicated in finding 10, the NTSB found that CSXT should have coordinated better with the City of Biloxi and MDOT to communicate any constraints and consequences of its track work, such as the potential of the track work to alter the vertical profile of the grade crossing.

Second, CSXT cites legal precedent stating that "railroad companies are not responsible for maintaining roads leading to crossings." However, the NTSB's report does not claim that railroad companies are responsible for maintaining the roads that lead to crossings. Section 1.5.5.2 of the report describes confusion between CSXT, the City of Biloxi, and MDOT regarding their responsibility for maintaining the approach to the tracks, but it does not assign responsibility to any of the entities. Sections 2.3.1.3 and 2.3.2.1 of the report make it clear that the crash did not occur because of the action or inaction of one party. Like most crashes, it occurred due to a host of factors combining to override or bypass existing safeguards. In its findings and recommendations, the NTSB identified several factors, including the need for federal guidance regarding the use of LGCGC warning signage versus vehicle exclusion signs; the need for coordination between federal agencies to develop strategies to mitigate or eliminate risks at existing grade crossings; and the need for better communication channels between the railroads, state and local government entities, and the public regarding the constraints and consequences of grade crossing maintenance projects.

Third, CSXT claims that the report suggests that AREMA and AASHTO provide "design standards" governing this grade crossing, citing pages 17 and 42 of the report. The NTSB reviewed the language on both pages and found no evidence for CSXT's claims. On both pages, documents published by AREMA and AASHTO are referred to as guidance, with no suggestion that they constitute design standards.

Disposition

After review of the evidence, the petition for reconsideration and modification concerning the NTSB's Biloxi, Mississippi, accident report is denied in its entirety.

Chairman SUMWALT, Vice Chairman LANDSBERG, and Member HOMENDY concurred in this petition for reconsideration.