



**BOSTON & MAINE CORPORATION
MAINE CENTRAL RAILROAD COMPANY
SPRINGFIELD TERMINAL RAILWAY COMPANY**

**IRON HORSE PARK
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**LAW DEPARTMENT
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205571

June 7, 2002



HAND DELIVERED

Vernon A. Williams, Secretary
Surface Transportation Board
1925 K Street, N.W.
Washington, D.C. 20006

**Re: Finance Docket No. 33697
National Railroad Passenger Corporation --
Petition for Declaratory Order -- Weight of Rail
Reply in Opposition of The Boston and Maine Corporation,
The Springfield Terminal Railway Company and The Portland Terminal Company**

Dear Secretary Williams:

Enclosed for filing are the original and ten (10) copies and three (3) electronic copies included on a disk of the **Reply in Opposition of the Boston and Maine Corporation, the Springfield Terminal Railway Company and the Portland Terminal Company**, in the above-captioned proceeding.

Thank you for your assistance in this matter.

Sincerely,

Robert B. Culliford
Corporate Counsel

Enc.

cc: Service List

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Office of the Secretary**

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205871

**BEFORE THE UNITED STATES
SURFACE TRANSPORTATION BOARD**

FINANCE DOCKET NO. 33697



**NATIONAL RAILROAD PASSENGER CORPORATION--
PETITION FOR DECLARATORY ORDER--
WEIGHT OF RAIL**

**REPLY IN OPPOSITION OF THE BOSTON AND MAINE CORPORATION,
THE SPRINGFIELD TERMINAL RAILWAY COMPANY AND
THE PORTLAND TERMINAL COMPANY**

Dated: June 7, 2002

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**The Boston and Maine Corporation
The Springfield Terminal Railway Company
and The Portland Terminal Company**

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Philip D. Brake

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**BEFORE THE UNITED STATES
SURFACE TRANSPORTATION BOARD**

FINANCE DOCKET NO. 33697

**NATIONAL RAILROAD PASSENGER CORPORATION--
PETITION FOR DECLARATORY ORDER--
WEIGHT OF RAIL**

**REPLY IN OPPOSITION OF THE BOSTON AND MAINE CORPORATION, THE
SPRINGFIELD TERMINAL RAILWAY COMPANY AND THE PORTLAND
TERMINAL COMPANY**

On April 15, 2002, the Boston and Maine Corporation, the Springfield Terminal Railway Company and the Portland Terminal Company (hereinafter referred to collectively as "Guilford") were served with a "Motion for Further Clarification of the Board's October 22, 1999 Decision" (hereinafter referred to as "Further Clarification Motions") brought by the National Railroad Passenger Corporation (hereinafter referred to as "Amtrak") in the above referenced matter. In its latest pleading, Amtrak purports to request further clarification that (1) the actual methodology employed by the Transportation Technology Center, Inc. (hereinafter referred to as "TTCI") in testing track modulus along Guilford's Plaistow to Portland line was appropriate and consistent with the Board's prior approval for access to this line; (2) the conclusions reached by TTCI in its report are sound and support Amtrak's operations over the line at speeds up to 79 miles per hour; and (3) other compelling evidence supports Board approval of Amtrak operations at those speeds. For the reasons stated herein, and in previous

filings by the parties, Guilford respectfully requests that the Board deny Amtrak the relief that it is seeking.¹

I. INTRODUCTION

Once again, Amtrak has elected to request relief from the Board in relation to its operations over Guilford's line from Plaistow to Portland, this time because Guilford has declined to accept Amtrak's flawed test results as sufficient evidence that the track modulus values along this line meet the minimum requirements established by the Board in its October 22, 1999 Decision (hereinafter referred to as the "Weight of Rail Decision"). In support of its argument, Amtrak asserts that the Board should accept the results of the track modulus testing performed by TTCI in September and November of 2001, because that testing was purportedly performed in a manner consistent with the Board's June 29, 2001 Decision granting Amtrak access to Guilford's line. *National Railroad Passenger Corporation—Petition for Declaratory Order—Weight of Rail*, STB Finance Docket No. 33697, Served June 29, 2001 ("Clarification Decision"). Of course, Amtrak also admits that the testing that was actually performed had little or no relation to the testing methodology approved by the Board in its Clarification Decision, and that this new testing methodology was performed without any prior notice to, or approval from, the Board or Guilford.

As discussed in more detail below, the actual testing performed on the Plaistow to Portland line deviated substantially from the testing originally proposed by Amtrak during the Clarification Decision proceedings, to the extent that several of Amtrak's prior representations are now in direct conflict with those made in Amtrak's Motion for Further Clarification.

¹ The Northern New England Passenger Rail Authority (hereinafter referred to as "NNEPRA"), Trainriders Northeast and the National Association of Railroad Passengers are also parties to these proceedings, apparently supporting Amtrak's position. The Board has also requested that the Federal Railroad Administration participate.

Moreover, the results of this new testing methodology are seriously flawed and fail to identify all areas along this line where the track modulus values are below the minimum standard established by the Board.

Of course, Amtrak's behavior in the present proceeding is entirely consistent with its history, which has been replete with instances where Amtrak's credibility has been called into question, and often found to be lacking. Indeed, over the past few years, it has become a common practice for Amtrak to issue politically expedient statements in support of its positions, regardless of whether those statements are supported by fact.

II. AMTRAK LACKS CREDIBILITY:

Since its inception, and particularly over the past five years, Amtrak has engaged in a pattern of behavior that has significantly undermined its credibility with Congress, the federal government and the public. This deterioration in Amtrak's credibility is the result of its regular practice of issuing misleading and/or incorrect statements in support of its positions, statements that are more often than not found to be less than forthright when placed under scrutiny. For the purposes of this proceeding, this inherent credibility problem is directly relevant to the Board's ability to assess the results of the track testing methodology proffered by Amtrak in its Motion for Further Clarification, particularly in light of Amtrak's conduct in performing the track modulus testing. In fact, a review of Amtrak's recent history of credibility problems reveals that Amtrak's approach to satisfying the Board's minimum track modulus standard is entirely consistent with this prior conduct. By way of example, Guilford submits the following:

A. "THE GLIDE PATH TO SELF SUFFICIENCY":

Since the enactment of the Amtrak Reform and Accountability Act of 1997 (Public L. 105-134) (hereinafter referred to as "ARAA"), Amtrak has consistently stated that it has been on a "Glide Path to Self-Sufficiency" to meet the ARAA requirement that Amtrak no longer rely upon federal operating subsidies to provide its service. Of course, despite the public pronouncements by Amtrak that it was weaning itself off of the need for federal operating subsidies, on November 9, 2001, the Amtrak Reform Council (hereinafter referred to as "ARC"), determined that Amtrak would not meet this goal². *An Action Plan For the Restructuring and Rationalization of the National Intercity Rail Passenger System, A Report to Congress by the Amtrak Reform Council*, February 7, 2002 ("February 7th ARC Report")³. Furthermore, the ARC also found that Amtrak's failure to meet this goal was the fault of no one but Amtrak. In fact, the ARC noted that, in addition to the federal subsidies being provided to Amtrak pursuant to the ARAA, Amtrak had also been accessing additional funding sources in an effort to continue the charade that it was on its way to self-sufficiency. More particularly, the ARC noted that:

- "Although Amtrak represented that [Taxpayer Relief Act of 1997] funds would be used primarily for high return capital expenditures, through December 31, 2000, about \$590 million—or 26 percent of total TRA commitments—have in effect been used for expenditures that most companies and Generally Accepted Accounting Principles (GAAP) would treat as ordinary operating expenses, or required capital expenditures⁴." *Intercity Rail Passenger Service in America: Status, Problems, and Options for Reform*, Second Annual Report of the Amtrak Reform Council, March 20, 2002 ("March 20th ARC Report"), at 6.
- "Amtrak's inability to follow its business plans have led to imprudent borrowing, most notably the mortgaging of a portion of Penn Station New York to obtain a \$300 million

² The ARC is an independent body established by the ARAA to oversee Amtrak's operations.

³ "The [US DOT] Inspector General reached the same conclusions as the Amtrak Reform Council about Amtrak's performance, stating 'Amtrak's cash losses have not decreased and Amtrak is no closer to operating self-sufficiency now than it was in 1997'" February 7th ARC Report, at 3.

⁴ The Taxpayer Relief Act of 1997 provided Amtrak with a one-time \$2.184 billion income tax refund, despite the fact that Amtrak does not pay income taxes. Joseph Vranich and Edward L. Hudgins, *Help Passenger Rail by Privatizing Amtrak*, Cato Institute Policy Analysis No. 419, November 1, 2001, at 8. Exhibit A hereto.

loan that was used to avoid running out of cash in the last quarter of FY2001." March 20th ARC Report, at 4.

- "The Penn Station loan and other borrowings..., have tripled Amtrak's debt since 1995, increasing its costs for debt service to about \$200 million annually." *March 20th ARC Report*, at 4.

Apparently, despite its public statements, Amtrak was well aware that it was not going to meet the deadline established by the ARAA for operating self-sufficiency, and undertook extraordinary efforts to avoid full disclosure of its financial condition. Moreover, in the face of the overwhelming evidence that it would not meet the ARAA deadline, Amtrak continued to refuse to acknowledge the inevitable, and instead attempted to offer its own interpretation of "Self-Sufficiency."⁵ Such behavior is entirely consistent for Amtrak and continues to undermine what little credibility it may have left, to the frustration of many, including members of Congress:

- "In February, Amtrak announced that it will need \$1.2 billion in federal assistance—more than twice the amount that Congress provided in fiscal year 2002—to continue the same service levels and provide for basic needs. A bailout without comprehensive reform should not be an acceptable choice for the Congress or the Administration, and I will vigorously oppose such an effort." *Letter of Senator Phil Gramm of Texas to President George W. Bush*, April 15, 2002.
- "I note that Mr. Warrington's testimony fails to mention a single word about the [Penn Station] mortgage or [Amtrak's] financial situation. I would encourage the members to inquire about the specifics of the mortgage agreement. I am informed the transaction was out of desperation, because Amtrak would become insolvent. One last comment about the Penn Station mortgage, which you may find of interest. When my office requested a copy of the transaction last week, Amtrak responded that it was a 'private matter.' How can such a deal be private when, as I learned last week, it includes a provision which conveniently allows for the Federal Government—i.e taxpayers—to repay the mortgage on Amtrak's behalf?" *Senator John McCain, Testimony Before the Transportation*

⁵ "As Amtrak begins its final year of the glide path, it is becoming more apparent that the realization of the self-sufficiency goal itself may be less important than the need to measure the real progress contemplated in the [ARAA]." National Railroad Passenger Corporation, Office of the Inspector General, *Semiannual Report to Congress, April 1, 2001-September 30, 2001 (Executive Summary)*, at 1. Exhibit B hereto.

Appropriation Subcommittee of the Senate Appropriations Committee, 107th Cong., 1st sess., June 28, 2001, at 369.

B. AMTRAK'S "SUBSIDIES":

In another effort to mislead the public, Amtrak also mischaracterizes the nature of its public funding to create the impression that it receives precious little in federal subsidies in comparison to other transportation modes. More particularly, in testimony before Congress Amtrak has taken the position that highway and aviation receive far more in federal subsidies than passenger rail, implying that this inequality is a driving force behind Amtrak's failures.⁶

In reality, however, Amtrak is merely using statistics to hide two important distinctions between highway and aviation funding on the one hand, and Amtrak subsidies on the other. First, highway and aviation funding is derived for the most part from user fees and taxes that fund most of the federal financing of these modes, while Amtrak's operations contribute no such revenue to the federal government. Second, Amtrak received approximately 1 percent of total transportation modal spending in FY2001, although it retains only 0.6 percent of the transportation market share.⁷

On a related issue, Amtrak and its supporters also regularly claim that subsidies for intercity service are necessary, because it is not possible for this passenger service to be profitable on its own. In support of this claim, reference is often made to the fact that passenger service in other countries is heavily subsidized, which is not completely accurate. In fact, in many countries private entities run commuter and passenger service on behalf of the government

⁶ "In fact, all we are asking for is equal treatment. In FY2001, highways received \$33.5 billion in federal funds, aviation received \$12.6 billion, transit received \$6.3 billion—but intercity rail received \$0.5 billion—less than one percent of all transportation modal spending in FY2001." *Statement of George D. Warrington, President and Chief Executive Officer, Amtrak*, before the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, U.S. House of Representatives, March 21, 2001, pages 4-5.

⁷ Ronald D. Utt, Ph.D, *Amtrak's Impending Collapse Offers One-time Opportunity for Reform*, The Heritage Foundation Backgrounder, Volume No. 1547, May 13, 2002, at 4. Exhibit C hereto.

without the need for subsidies, a reality that has escaped Amtrak and its advocates. *March 20th ARC Report*, at 17.

C. AMTRAK'S FREIGHT AND EXPRESS PROGRAM:

Yet another example of Amtrak's inability to be straightforward is its "Freight and Express" program, originally designed to improve profitability through the transport of specialty commodities as part of Amtrak passenger service. Initially, Amtrak touted this service as a means to establish a niche market for specialty goods that needed time sensitive freight transportation. Of course, when it was later discovered that this service actually transported traditional freight goods, Amtrak claimed that such movements were merely "occasional and experimental" and only later did Amtrak admit that such movements were part of its regular service. In addition, when this service was initiated in 1997, Amtrak pronounced that its Freight/Express division would attract new business to Amtrak, and would provide an important new resource to improve its profitability. Nevertheless, by 1998 traffic was well below projections and approximately one-half of the freight/express fleet was sitting idle. True to form, however, Amtrak was reluctant to admit that this service had fallen well below expectations, or that the Freight/Express program was impeding Amtrak's core passenger service.⁸

With this background in mind, there are striking similarities between Amtrak's prior conduct, some examples of which are discussed above, and its approach to the present proceeding. Specifically, in order to show that the track modulus values along the Portland to Plaistow line meet the minimum requirements established by the Board, Amtrak described a specific testing methodology that Amtrak declared would produce "reliable" results. True to form, however, Amtrak significantly altered the proposed testing methodology without any prior

notice or approval, and now comes to the Board to proclaim that this deviation from the approved methodology should be accepted. To Guilford, such behavior raises two simple questions: First, if the methodology originally described by Amtrak was "reliable," why was it changed so significantly in the three months between the Board's Clarification Decision and the initiation of testing? Second, if the original methodology was not as "reliable" as Amtrak originally claimed, how can Amtrak now be trusted when it proclaims the virtues of the actual methodology utilized, particularly in light of Amtrak's historical lack of credibility?

D. AMTRAK's "EXPERTS":

In addition to Amtrak's credibility problems, it is also interesting to review the conflicting statements made by Amtrak's two experts in support of both the Motion for Clarification and the Motion for Further Clarification. More particularly, Dr. Chrismer made the following statements in his Verified Statement submitted in support of Amtrak's Motion for Clarification:

- As a result of my role in the development of the TLV's measurement capabilities with respect to vertical track support, I am very familiar with the manner in which TTCI proposes to analyze the track modulus of the Plaistow-Portland line using the TLV, and am confident that it will yield an accurate assessment of the line's modulus. *Verified Statement of Dr. Steven M. Chrismer in Support of the National Railroad Passenger Corporation's Motion for Testing Access and Clarification of Board's October 22, 1999 Decision* ("Initial Chrismer V.S."), at 3.
- With its vertical measurement capabilities having been in development since 1995, the TLV has been extensively tested and has been found to provide a highly reliable means of assessing track deflection on an entire line, identifying locations where track modulus can productively be measured because deflection data indicates that the location may have a track support problem, and actually measuring the track modulus at the locations so selected in an efficient and accurate manner. *Initial Chrismer V.S.*, at 3. (*emphasis added*).
- Because this in-motion track deflection is taken relative to the vehicle's measuring system and not from an independent, fixed-point reference, it is not 'absolute' deflection.... However, this relative in-motion deflection can be used to determine where potential track support problems may exist and where consequently a follow-up

⁸ Joseph Vranich and Edward L. Hudgins, *Help Passenger Rail by Privatizing Amtrak*, Cato Institute Policy Analysis, Volume No. 419, November 1, 2001, at 15. Exhibit A hereto.

measurement of track modulus should be performed...This stationary measurement will determine if the track modulus at the location is at least 2,750 lb/in². *Initial Chrismer V.S.*, at 4. (emphasis added).

- When the TLV detects deflection greater than this amount, it will place a paint mark at the location in question. Analysis of the TLV's output deflection data, combined with subsequent track inspection to spot the paint marks left by the TLV, will identify where the limiting deflection criterion has been exceeded and where follow-up modulus measurements are required. *Initial Chrismer V.S.*, at 5 (emphasis added).

Plainly, the testing methodology described by Dr. Chrismer in his Initial Verified Statement contained several inaccuracies, including Dr. Chrismer's assertion that he is very familiar with the manner in which TTCI proposes to perform the track modulus testing along the Plaistow to Portland line. More particularly, Dr. Chrismer apparently did not realize that the TLV would not be placing paint marks at locations where the TLV detects deflection greater than the deflection criteria used in the testing. In reality, the TLV placed (or attempted to) paint marks at locations where the TTCI proprietary measurement known as the Vertical Strength Index was exceeded. *National Railroad Passenger Corporation's Motion for Further Clarification of the Board's October 22, 1999 Decision* ("Further Clarification Motion"), at 25. Moreover, Dr. Chrismer was also apparently unaware that TTCI did not plan to perform follow-up stationary measurements at each of those locations where the TLV detected deflections greater than the adopted criteria. In fact, despite Dr. Chrismer's previous statement that such stationary testing is *required* to determine what the actual track modulus is along the line, it is now clear that no such testing was ever planned. *Verified Statement of Dr. Steven M. Chrismer in Support of the National Railroad Passenger Corporation's Motion for Further Clarification of Board's October 22, 1999 Decision* ("Supplemental Chrismer V.S."), at 12. Not surprisingly, even though the testing methodology actually employed was significantly different than the testing originally described by Dr. Chrismer, he apparently has little difficulty in completely contradicting his prior verified

statement in order to trumpet the merits of this new methodology. Accordingly, Dr. Chrismer's testimony must be discounted by his obvious willingness to tailor his testimony to meet the needs of his client.

As for Mr. Staplin he also was apparently unaware of the testing methodology to be utilized by TTCI, particularly the use of the paint spray system and the Vertical Strength Index. As Mr. Staplin admits in his most recent verified statement, "During the dynamic testing, I learned that the paint marking system on the TLV would not apply a paint mark on the track at those places where the 0.28-inch deflection criteria was exceeded (as I originally thought)...*Verified Statement of David E. Staplin in Support of Amtrak's Further Clarification Motion* ("Supplemental Staplin V.S."), at 8. In addition, similar to Dr. Chrismer, Mr. Staplin also appears to be willing to adopt the revised testing methodology wholesale, despite offering little in the way of direct testimony on the issue during the proceedings leading up to the Clarification Decision.

Of course, in light of the fact that Amtrak's experts originally proposed a testing methodology that was significantly different than the testing performed by TTCI, and the apparent misunderstanding of track modulus testing that these misstatements reflect, one would assume that Amtrak would provide the Board with some direct testimony from TTCI. However, rather than submit a detailed verified statement from a representative of TTCI, Amtrak simply offers a statement from David Read asserting that he prepared the report relied upon by Amtrak's experts in this round of testimony. *Verified Statement of David Read in Support of the National Passenger Corporation's Motion for Further Clarification of the Board's October 22, 1999 Decision* (Read V.S.), at 1. Despite this transparent attempt to offer some support by TTCI to Amtrak's argument, there are still numerous questions that remain unanswered, most of which

will be addressed below. For the purposes of credibility, however, there are two important questions that should be addressed: First, why is TTCI reluctant to offer direct testimony in support of its testing methodology and the results produced? Second, why does TTCI feel the need to heavily disclaim any responsibility for the accuracy of its own report? *Attachment 2 to Read V.S.* at 205. In other words, TTCI is apparently not willing to submit a detailed verified statement in this proceeding, and is also not willing to stand fully behind its report, which leads to the conclusion that TTCI is not entirely convinced with the accuracy of its work product.

Based upon Amtrak's historical inability to be forthright, the contradictory and uninformed testimony offered by Amtrak's expert witnesses, and the apparent unwillingness of TTCI to support its work product, the arguments submitted by Amtrak are sorely lacking in credibility. As a result, Guilford would submit that Amtrak's motion should be denied on this basis alone.

III. THE BOARD'S CLARIFICATION DECISION REQUIRED THAT AMTRAK CONDUCT TRACK MODULUS TESTING IN THE MANNER PROPOSED.

A. AMTRAK WAS GRANTED ACCESS TO GUILFORD'S LINE PURSUANT TO 49 U.S.C. § 24308(a)

As part of the proceedings that led up to the Clarification Decision, Amtrak requested that the Board order Guilford to provide Amtrak and its agents with access to its lines so that track modulus testing could be performed. Pursuant to 49 U.S.C. §24308(a), the Board did order that such access be allowed, "...so that the conditions set forth in this and our prior decision may be fulfilled." Clarification Decision, at 7. One of the conditions set forth in the Clarification Decision was that "Track modulus testing on the Plaistow-Portland Line through the use of the Track Loading Vehicle of the Transportation Technology Center, Inc., *in the manner described by Amtrak*, is a reasonable and practical method of determining whether the level of

rehabilitation described in our prior decision has been met...Guilford must allow Amtrak access to the line as necessary to conduct testing and to comply with the above findings.” Clarification Decision at 7. (*emphasis added*).

The Board based its decision to allow Amtrak access to Guilford’s line by finding that such access was “necessary” within the context of 49 U.S.C. §24308(a)(2)(A). Once that finding was made, the Board was then required to prescribe the terms to be imposed for access to Guilford’s property. 49 U.S.C. §24308(a)(2)(A)(ii). Since one of the terms prescribed by the Board was that Amtrak conduct the testing in the manner proposed to the Board, Amtrak had little discretion to significantly alter that testing methodology.

B. AMTRAK DID SUBSTANTIALLY DEVIATE FROM THE TESTING METHODOLOGY PROPOSED TO, AND APPROVED BY, THE BOARD:

As discussed briefly above, Amtrak submitted a detailed testing methodology in support of its Clarification Motion, with evidence offered primarily by Dr. Chrismer to justify that methodology. As also discussed above, the Board relied upon this evidence to determine that the proposed testing methodology was reasonable and to order Guilford to allow access to its facilities to perform testing in that manner. Unfortunately, when the testing was actually performed, there was little or no relation to that methodology.

Perhaps the most glaring difference between the proposed and actual testing methodologies related to the extent of stationary testing that was to be performed. As originally described in Amtrak’s Clarification Motion, track modulus testing was to be a two part process: (1) dynamic testing using the TLV; and (2) follow-up stationary testing at each of those locations where the TLV indicated that the selected deflection criteria was exceeded.⁹ According to

⁹ Amtrak initially proposed using 0.25 inches as the maximum deflection criteria, which was subsequently changed during the actual testing. Guilford does not agree that this change was proper, as discussed in more detail below.

Amtrak, a stationary test would be performed *at each location where a high track deflection reading has been obtained* [by the TLV]. *Clarification Motion* at 23. Furthermore, Amtrak claimed that this static measurement "...will determine whether track at the subject location meets the minimum value of 2,750 lb./in.². *Initial Chrismer V.S.*, at 3.

In reality, TTCI performed very few stationary tests along the line, and certainly not at each location where the TLV measurements indicated that such tests should be performed. Rather, TTCI apparently selected sites for static testing, including some sites where the maximum deflection criteria was not exceeded, with little regard for the testing methodology originally proposed by Amtrak. *Further Clarification Motion*, at 21. As a result, TTCI essentially failed to conduct static testing at all locations on the line where the maximum deflection criteria was exceeded, despite Dr. Chrismer's statements that such testing was *required* to accurately determine track modulus values along the line. *Initial Chrismer V.S.*, at 3.

Also, rather than using the absolute results of stationary testing to determine track modulus values along the line, TTCI instead elected to use statistics arrived at by a regression analysis to determine track modulus at the majority of the locations along the line, after field testing was completed. Notwithstanding the relative benefits of this regression analysis, it is far less determinative than the results that would have been obtained had TTCI performed the static testing in the manner proposed by Amtrak.¹⁰ *Verified Statement of David E. Staplin in Support of Further Clarification Motion*, at 18. Related to the use of this regression analysis was TTCI's decision to develop its test results based upon a 25 foot averaging that, as discussed further below, had the effect of softening those areas that dynamic testing indicated were suitable for follow-up static testing.

¹⁰ As discussed further below, Guilford believes that the regression analysis utilized by TTCI is even less accurate than reported.

Additionally, TTCI utilized its proprietary Vertical Strength Index (hereinafter referred to as "VSI") to determine where paint marks would be applied to identify sites for follow-up static testing, despite Amtrak's claims that paint marks would be applied at locations where the maximum deflection criteria was exceeded. *Initial Chrismer V.S.*, at 5. Of course, Amtrak also admits that the use of this VSI adds yet another level of uncertainty to the testing that was performed, because the VSI does not identify all locations where the maximum deflection criteria was exceeded. *Further Clarification Motion*, at 26.

As a final note, Amtrak also seems to be arguing that because Guilford representatives were present during the track modulus testing in September and November of 2001, it was somehow their responsibility to ensure that the testing was conducted properly. *Further Clarification Motion*, pp. 10, 18. This desperate attempt to imply that Guilford assented to the substantial deviations in the methodology is misplaced, however, for several reasons. First, Guilford representatives were present during the testing as observers only, and did not have the authority to prevent the testing from being done. Second, it was not possible during the actual testing to determine the actual nature of the testing that was being performed, particularly where the regression analysis employed by TTCI was not implemented until after testing was complete. Third, on November 1, 2001 Guilford did object to the manner in which the testing was being conducted, and Amtrak, NNEPRA, and TTCI failed to respond to these objections. *Verified Statement of Michael J. Murray in Support of Further Clarification Motion*, ("Murray V.S.") Attachment 7. Instead, after Guilford objected on November 1, 2001, TTCI returned to perform the November testing without taking any steps to recognize Guilford's concerns. *Murray V.S.*, Attachment 8.

These alterations, as well as others discussed below, were substantial deviations from the testing methodology originally proposed by Amtrak, and approved by the Board. Accordingly, the results of the testing methodology actually performed should be disregarded, and the Board should require that Amtrak perform the track modulus testing along the Plaistow to Portland line in the manner originally proposed.

IV. THE TESTING METHODOLOGY EMPLOYED BY TTCI DID NOT PRODUCE ACCURATE RESULTS:

As discussed above, the testing methodology employed by TTCI differed significantly from that originally proposed by Amtrak to the Board in its Clarification Motion. While this substantial deviation from the Board-approved testing methodology is troubling in itself, Guilford's review of the data provided by TTCI also reveals that significant errors were made in producing its report entitled "Vertical Track Deflection Measurements Using the TLV", P-02-001 (hereinafter referred to as the "TTCI Report"). These errors occurred during this field testing performed along the Plaistow to Portland line, as well as during TTCI's post-processing of the information gathered during the field testing, and ultimately served to produce an inaccurate portrayal of track modulus values along the line.

A. THE TTCI REPORT DID NOT IDENTIFY EACH LOCATION WHERE THE REVISED TTCI DEFLECTION CRITERIA WAS EXCEEDED:

As described in Amtrak's Motion for Further Clarification, TTCI performed dynamic testing along the Plaistow to Portland line in both September and November of 2001. *Motion for Further Clarification*, at 18-19. The stated purpose of this dynamic testing was to identify those locations on the line where the TTCI deflection criteria of 0.28 inches was exceeded, so that follow-up static testing would be performed at these sites to determine actual track modulus

values.¹¹ While this initial approach was consistent with the testing methodology approved by the Board in its Clarification Decision, in order to reach the results detailed in its report TTCI subsequently performed a regression analysis comparing dynamic and static track modulus test results to determine that those areas with a relative deflection measurement of greater than 0.27 inches were indicative of a track modulus values of less than 2,750 lb./in./in. *Further Clarification Motion*, at 26-27. Then, using this 0.27 inch deflection criteria to assess both the September-only test results, TTCI determined that there were 14 locations over 8 miles of track that had track modulus values less than 2,750 lb./in./in. and were identified as Track Modulus Exceptions in the TTCI Report. *TTCI Report*, at 15. However, Guilford's analysis of the data provided by TTCI revealed that the TTCI Report inexplicably failed to identify, and account for, all locations along the line where this 0.27 inch deflection criteria was exceeded. *Verified Statement of Philip D. Brake* ("Brake V.S."), at 2.0. More particularly, using the 0.27 inch deflection criteria developed by TTCI pursuant to its regression analysis, Guilford's analysis of both the September and November testing data found that there were actually 26 locations over 14 miles where the 0.27 inch deflection criteria was exceeded. *Brake V.S.* at 2.0. Moreover, even if TTCI's use of the September-only dynamic test results were justified, Guilford's analysis of that data determined that there were actually 17 locations over 10 miles of track that exceeded the 0.27 inch deflection criteria utilized by TTCI. *Brake V.S.*, at 2.0.¹² Accordingly, it is clear from the outset that, even if the methodology employed by TTCI were correct, the TTCI Report fails to identify all locations along the line where track modulus values are less than the 2,750

¹¹ As discussed in more detail below, TTCI initially utilized a deflection criteria of 0.28 inches for the testing, which was subsequently changed to 0.27 inches as a result of the regression analysis performed by TTCI after the September testing was complete, as opposed to the deflection criteria of 0.25 inches approved by the Board. Guilford does not agree that this change was appropriate or supported by the applicable data.

¹² Each of the locations identified by both TTCI and Guilford were based upon the 25 foot average utilized by TTCI. As discussed further below, the use of this averaging approach was also inappropriate.

lb./in./in. minimum standard prescribed by the Board in its Weight of Rail Decision. However, as discussed in the following sections, the testing methodology employed by TTCI during the September and November tests was also fundamentally flawed, leading to inaccurate test results that formed the basis for TTCI's List of Track Modulus Exceptions.

B. TTCI'S USE OF A REGRESSION ANALYSIS PRODUCED HIGHLY INACCURATE TRACK MODULUS RESULTS:

As described by Dr. Chrismer in Amtrak's Clarification Motion, dynamic testing using the TLV is a useful tool to identify those locations along an entire line may have low track modulus. *Initial Chrismer V.S.*, at 5. However, as Dr. Chrismer also explains, follow-up, static testing is *required* to determine the actual track modulus at those locations along the line where the track deflection exceeds the relevant criteria. *Chrismer Initial V.S.*, at 5. Accordingly, Amtrak proposed to perform static testing at *each* location where dynamic testing indicated that the relevant deflection criteria had been exceeded, the only method offered during these proceedings to determine absolute track modulus values. Apparently, however, no one explained this approach to TTCI.

Rather, TTCI instead elected to perform the track modulus testing according to its own methodology, which differed significantly from the approach presented to, and approved by, the Board in its Clarification Decision. First, in September of 2001 TTCI conducted dynamic testing along the line to determine those locations where the track deflection exceeded the 0.28 inch maximum deflection criteria utilized by TTCI. Next, TTCI performed static testing at various locations along the line, although the selection of these locations had little relationship to the results of the dynamic testing. *Further Clarification Motion*, at 19.¹³ Of course, since the goal

¹³ In fact, of the 40 locations statically tested by TTCI in both September and November, only two were at locations where the dynamic track deflection exceeded 0.28 inches. *Brake V.S.*, at 3.0.

of this entire exercise was to perform static testing at those locations where dynamic testing indicated that track modulus values would be below 2,750 lb./in./in., it is difficult to understand the basis for this decision, and neither TTCI nor Amtrak offers an explanation for this approach.

TTCI then repeated the same process in November, conducting dynamic testing along the line and performing additional static tests at 28 locations.¹⁴ *Brake V.S.*, at 1.0. Once again, however, the selection of these locations had little to do with the results of the dynamic testing, and is also unexplained.

Because of the limited static testing that was performed on the line, TTCI instead elected to use a regression analysis to establish a statistical relationship between the dynamic test results and the static track modulus values along the line. Specifically, TTCI utilized the dynamic data obtained from the September testing to determine that a dynamic track deflection of 0.274 inches was equivalent to a track modulus value of 2,750 lb./in./in. *Further Clarification Motion*, at 30. TTCI then converted the dynamic deflection data obtained as a two foot average during September testing into a 25 foot moving average, and plotted the September-only deflection data to identify those locations where a maximum deflection criteria of 0.27 inches was exceeded. *Further Clarification Motion*, at 30. If the dynamic deflection data collected during the September-only testing indicated that the maximum deflection was greater than 0.27 inches, TTCI determined that the track modulus values at that location would be *expected to be* less than 2,750 lb./in./in. *Further Clarification Motion*, at 30. Despite Amtrak's efforts to justify this approach in its *Further Clarification Motion*, the use of this regression analysis to determine actual track modulus values on the line was seriously flawed, as explained below.

¹⁴ Ironically, TTCI conducted 40 static tests between the September and November testing, the same number of tests proposed to be conducted by TTCI in its September 25, 2000 Revised Statement of Work. *Murray V.S.*, Attachment 3. Apparently, TTCI never intended to conduct more than this number of static tests, regardless of the results of the dynamic testing.

First, static testing is the only method currently available to determine *absolute* track modulus values, as explained by Dr. Chrismer. *Initial Chrismer V.S.*, at 5. As explained by Amtrak in its Further Clarification Motion, however, the List of Track Modulus Exceptions found by TTCI was based solely on the September *dynamic* test data obtained by the TLV. *TTCI Report*, at 15. Second, the track modulus values produced by the TTCI regression analysis were seriously flawed when compared to the static data obtained at certain locations. *Brake V.S.*, at 3.0. By way of explanation, by comparing the average static test data that was measured over a track distance of 25 feet to the peak 25 foot average relative deflection data recorded by the TLV at the same location, the accuracy of the 25 foot average utilized by TTCI using the regression analysis can be obtained. *Brake V.S.*, at 3.0. Of the two locations that were statically tested by TTCI where the TLV measured track deflection was reported to be in excess of 0.28 inches, only one location (Zone One), was statically measured over a track distance equal to or greater than 25 feet.¹⁵ Using the data developed by this static testing and provided by TTCI, the 25 foot average track modulus value of Zone One (again, utilizing the *absolute*, static measurements provided by TTCI), was actually 1,758 lb./in./in. *Brake V.S.*, at 3.0. In contrast, the regression formula utilized by TTCI determined that the 25 foot average track modulus value at this same location was 2,926 lb./in./in., an error of 66%. *Brake V.S.*, at 3.0. Alarming, Zone One was not identified as a Track Modulus Exception Location in the TTCI Report, despite the fact that each of the static measurements performed at this location found the track modulus values to be below 2,750 lb./in./in., including a low modulus value of 926 lb./in./in. *Brake V.S.*, at 3.0.

Of course, Amtrak will undoubtedly argue that the track modulus value errors found in the regression analysis calculations was the result of the location of an insulated joint within

¹⁵ As explained above, TTCI only conducted two of the 40 static tests at locations that actually had maximum deflection measurements that were greater than 0.28 inches over a 25 foot average.

Zone One. *Brake V.S.* at 3.0. However, if the average static track modulus is calculated for Zone One between Tie+12 and Tie 0, apart from the location of the insulated joint at Tie -3, the track modulus value determined by static measurement is still 1,944 lb.in./in., indicating an error of 51% in the results of the TTCI regression analysis. *Brake V.S.*, at 3.0. In addition, a similar review of the results of the TTCI statistical relationship at other Zones clearly shows that the results of the static measurements at these locations (where the maximum deflection criteria of 0.28 inches was *not* exceeded) differ from the TTCI regression analysis results significantly. *Brake V.S.*, at 3.0.

This significant variation in track modulus values is the result of the inherent unreliability of the use of relative deflection data as an absolute indicator of track modulus values, as well as the inaccuracy of the equation, and its application to a 25 foot average, that was developed from the TTCI regression analysis, and ultimately used to determine the track modulus values reported by TTCI. *Brake V.S.*, at 3.0. By way of example, Guilford conducted a review of the data utilized by TTCI to develop the regression analysis performed to determine that 0.27 inches was the appropriate maximum deflection criteria to be utilized in determining whether track modulus values were greater or less than 2,750 lb./in./in. This data is displayed as Table 2 on page 10 of the TTCI Report, and reveals variations in the recorded track modulus values obtained through static testing of as much as 40%, despite the fact the TLV measured the same deflection at each location. *Brake V.S.*, at 3.0. Specifically, within Zones 7, 10, 18, and 21, the TLV dynamic testing revealed maximum deflection of 0.38 inches, yet the static track modulus values measured at these locations ranged from 1,502 lb./in./in. to 2,472 lb./in./in. *Brake V.S.*, at 3.0. Accordingly, despite Amtrak's claims that the relative deflection data measured by the TLV is a reliable indicator of track modulus values, TTCI's own data proves that the actual track modulus,

as determined by static testing, can vary significantly within the same measured value of relative deflection.

Additionally, applying the relative deflection data contained in Table 2 of the TTCI Report to the equation developed by TTCI to arrive at the 0.27 inch maximum deflection criteria utilized by TTCI to determine track modulus values along the line illustrates the inaccuracy of this method. For example, applying the deflection data of 0.39 inches found in Zone 23 to the formula developed by TTCI (identified as equation 2 on page 11 of the TTCI Report) produces a track modulus measurement of 1,794 lb./in./in. *Brake V.S.*, at 3.0. However, as reported in Table 2 of the TTCI Report, the static testing performed at this location produced a track modulus value of 1,114 lb./in./in., a difference of 61% when compared to the value obtained through the TTCI regression analysis. *Brake V.S.*, at 3.0. Plainly, therefore, the regression analysis utilized by TTCI is far from a reliable indicator of track modulus values along the Plaistow to Portland line.

C. TTCI's USE OF A 25 FOOT MOVING AVERAGE TO CALCULATE TRACK MODULUS VALUES IS FUNDAMENTALLY WRONG:

In performing dynamic testing using the TLV over the Plaistow to Portland line, TTCI utilized a 2 foot moving average to gather the deflection data ultimately used to produce the TTCI Report. However, rather than apply the data developed by means of this 2 foot moving average to determine locations where the 0.27 inch maximum deflection criteria developed by TTCI was exceeded, TTCI instead extended the dynamic test data obtained from testing over a 25 foot moving average, after the testing was complete. The result of applying a 25 foot moving average to this data was to dampen the maximum deflection measured by the TLV, thereby removing hundreds of locations where the TLV-measured relative deflection exceeds the 0.27

inch maximum deflection criteria developed by TTCI to determine areas of track modulus values below 2,750 lb./in./in. *Brake V.S.*, at 4.0. More specifically, using a 25 foot moving average serves to disguise locations of low track modulus, particularly where the track modulus values have been obtained by field testing (as is the case here), because the actual deflection of the track under the test load already accounts for any variation in modulus in the influence zone of the test. *Verified Statement of Dr. Allan M. Zarembski* ("Zarembski V.S."), Attachment 1. For example, within Zones 11 and 23, 67% of the relative track deflection measurements recorded by the TLV indicated track modulus values below 2,750 lb./in./in., yet the average of all of these points indicated a track modulus value of greater than 2,750 lb./in./in. because one measurement was so high as to bring this "average" value above 2,750 lb./in./in. *Zarembski V.S.*, Attachment 1.

Furthermore, when determining whether the AREA criteria for maximum stresses in the rail base are exceeded, use of a 25 foot moving average approach is fundamentally wrong when applied to an analysis of rail stress.¹⁶ *Zarembski V.S.*, Attachment 1. This is because rail failure (fatigue, fracture, etc.) develops and occurs at a single location, not over a 25 foot (or any other) length. *Zarembski V.S.*, Attachment 1. Therefore, averaging the track modulus over 25 feet, particularly when the measured modulus values are obtained by testing that already reflects any actual local variation in track modulus, results in a value that significantly distorts and reduces the calculated stress in the rail. *Zarembski V.S.*, Attachment 1. Since modulus values of approximately 1800 lb/in/in or less result in rail stresses that exceed the AREA allowable value of 25,000 pounds per square inch, it is critical that these locations of high stress not be 'averaged' out by an artificial averaging process that has no justification in either theory or in the

¹⁶ As discussed below, the parties have agreed that the AREA standards must be met in order for Amtrak to operate over the Plaistow to Portland line at speeds of up to 79 miles per hour on 115 pound rail. In order to determine whether 115 pound rail is adequate for these speeds, the Board previously determined that two AREA criteria must

published literature. *Zarembski V.S.*, Attachment 1. 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. *Zarembski V.S.*, Attachment 1.

D. TTCI WAS REQUIRED TO UTILIZE A MAXIMUM DEFLECTION CRITERIA OF 0.25 INCHES:

Prior to initiating the proceedings that led up to the Board's Weight of Rail Decision, Amtrak, NNEPRA and Guilford agreed that the following issue would be presented to the Board for resolution:

Applying the engineering standards agreed to by NNEPRA and Railroad in the Rehabilitation Agreement, *with particular reference to the engineering standards of the American Railway Engineering Association ("AREA") specified therein*, what is the appropriate weight of continuous welded rail to be installed on the Rail Line in order to ensure the safe, consistent and continuous operation of Amtrak trains at speeds of up to 79 miles per hour? *Murray V.S.* Attachment 1, at page 3.

Therefore, pursuant to the agreement between the parties, these proceedings were intended to be conducted in accordance with the AREA engineering standards, a standard that TTCI blatantly disregarded in selecting a maximum deflection criteria of 0.28 inches (subsequently altered to 0.27 inches) to determine where dynamic testing indicated areas of low track modulus values.¹⁷ Rather, by agreement, these proceedings were to be conducted in accordance with the AREA standards, one of which establishes a maximum deflection criteria 0.25 inches for the purposes of determining track modulus values. *AREA Manual for Railway Engineering*, Chapter 16, Section 10.2.2.4.C. While Amtrak attempts to justify this change by asserting that the actual testing was performed using a vertical wheel load of 40,000 pounds, as

be met: (1) the maximum stresses in the rail base should not exceed 25,000 pounds per square inch; and (2) the largest vertical deflection of the rail must not exceed 0.25 inches. *Weight of Rail Decision*, at 2.

opposed to the 33,000 pound load limit originally proposed, this argument misses the point. *Further Clarification Motion*, at 26. Because a maximum deflection criteria of 0.25 inches is appropriate according to AREA, by agreement Amtrak was bound to follow these standards during these proceedings. Moreover, neither TTCI nor Amtrak attempts to explain why it was necessary to increase the vertical wheel load to be applied.

Most important, however, is the fact that the AREA standards establish a 0.25 inch vertical deflection as maximum rail deflection that should not be exceeded, and does not provide for any variations from that standard. Measured track deflection above 0.25 inches is indicative of poor track support characteristics, and, according to AREA, rail support that is too soft can strain or fatigue the rail in bending, and destabilize the ballast. *AREA Manual for Railway Engineering*, Chapter 16, Section 10.2.2.4.C. Accordingly, the deviation from this standard by TTCI was not acceptable pursuant to the AREA standards that control this proceeding.

Moreover, the reason offered by Amtrak in support of the change in wheel load from 33,000 pounds to 40,000 pounds rings hollow. According to Amtrak, "TTCI used the 40,000 pound load because that weight better represents the upper loading range of a freight car movement taking into account the moving car's dynamic effects on track and underlying support structure." *Further Clarification Motion*, at 24. Amtrak further claims that because of TTCI's use of this heavier load, modification of the 0.25 inch deflection benchmark to 0.28 inches was "required", but does not explain why such a change was necessary. *Further Clarification Motion*, at 24. Nevertheless, it should be noted that the 40,000 pound wheel load utilized by TTCI also better represents the loading range of a *passenger* locomotive taking into account the passenger

¹⁷ While Guilford recognizes that the Board approved certain deviations from the AREA engineering standards in its Clarification Decision, TTCI's wholesale abandonment of those standards did have a significant effect on the accuracy of the results produced in the TTCI Report.

locomotive's dynamic effects on track and underlying support structure. Accordingly, the distinction drawn by Amtrak does not really appear to be distinction at all, because passenger locomotives will be part of each passenger train consist. *Brake V.S.*, at 3.0. Therefore, it was completely inappropriate to modify the AREA deflection criteria of 0.25 inches for the reasons proffered by Amtrak.

In addition, TTCI's determination that a 0.27 inch maximum deflection criteria is indicative of track modulus values of less than 2,750 lb./in./in. also supports this argument. Quite simply, if a 0.28 inch maximum deflection criteria was utilized to determine where to perform follow-up static measurements, known locations of track modulus values that are less than 2,750 lb./in./in. would have been missed, because this deflection is actually higher than the deflection ultimately determined by TTCI to be indicative of track modulus values.

E. TESTING PERFORMED BY ZETA TECH REVEALED TRACK MODULUS VALUES THAT SIGNIFICANTLY DIFFER FROM THOSE REPORTED BY TTCI:

To further assess the accuracy of the track modulus testing performed by TTCI, Guilford contracted with Zeta-Tech Associates, Inc (hereinafter referred to as "ZT") to perform track modulus testing at various locations along the subject rail line where Amtrak has expressed its intent to operate at speeds of up to 79 miles per hour. The actual field testing and subsequent analysis was performed in two ways: (a) in accordance with the standards published by AREA Manual for Railway Engineering, Chapter 16.10.11.1; and (b) in a method that closely mirrored the testing methodology employed by TTCI by eliminating slack for the testing process.

Zarembski V.S., Attachment 2.

Sixty-two track modulus tests were conducted at 12 locations where Amtrak has proposed to operate at speeds of up to 79 miles per hour. The tests were conducted using a locomotive and empty tank car with known wheel loads, and incorporated the use of a wayside

level to record deflection as described in the AREA. At each site, multiple measurements were taken and a 25 foot average was calculated to determine if track modulus values at each location met the 2,750 lb./in./in. minimum standard established by the Board. Pursuant to the AREA track modulus value testing methodology, the 25 foot average in 11 out of 12 sites was less than 2,750 lb./in./in. *Zarembski V.S.*, Attachment 3. Furthermore, pursuant to a testing methodology similar to that employed by TTCI in performing the September and November testing, 9 of 12 sites showed the 25 foot average below 2750 lb./in./in.” *Zarembski V.S.*, Attachment 3.

Additionally, the testing performed by ZT found a significant number of locations where the track modulus values were below 1800 lb./in./in., resulting in rail stresses that exceed the AREMA allowable value of 25,000 pounds per square inch. *Zarembski V.S.*, Attachment 3. More particularly, 47 out of the 62 measurement locations had track modulus values less than 1800 lb./in./in. when calculated in accordance with the AREA testing methodology. *Zarembski V.S.*, Attachment 3. Pursuant to the testing methodology employed by TTCI , 34 out of the 62 measurement locations were found to track modulus values less than 1800 lb./in./in. *Zarembski V.S.*, Attachment 3. Interesting, the TTCI Report failed to identify any of those locations where track modulus values were found to be less than 1800 lb./in./in.³, though examination of the 2 foot moving average data and static test results contained in the TTCI Report clearly show the presence of these high rail stress locations. *Zarembski V.S.*, Attachment 3.

V. LOW TRACK MODULUS VALUES DO AFFECT TRACK SAFETY

Throughout its Further Clarification Motion, Amtrak repeatedly asserts that track modulus is a maintenance issue, not a safety issue, most likely to counter the fact that there are significant areas of low track modulus values along the Plaistow to Portland line, as discussed above. While Guilford is aware that the Federal Railroad Administration (hereinafter referred to as “FRA”)

does not currently regulate track modulus as part of its Track Safety Regulations, that is not the issue. Rather, the real issue is whether poor track support conditions can undermine the safety of rail operations, and whether the use of track modulus as a tool to identify problems before they occur can be effective. Guilford believes that these conditions can directly affect the safety of railroad operations, and apparently TTCI and FRA agree with this position.

In a recent article discussing the development of a new type of track support, TTCI stated the following with regard to potential safety problems that can arise due to poor subgrade:

One of the main causes of track geometry degradation is the deterioration of soft subgrade support. Without remedy, track built on soft subgrade can develop excessive deformation under heavy axle loads, which, in turn, can lead to excessive track maintenance costs, which, in the worst cases, *can lead to derailment incidents*. Geometry degradation due to soft subgrade support can worsen with an *increase train axle loads and operation speeds*.¹⁸

FRA, for its part, has determined that the inspection of track support characteristics is an important area for future research and development, and has identified automated inspection of track subsurface layers as an area that needs to be developed over the next five years. In reaching this conclusion, FRA found:

Poor subsurface conditions result in poor track performance as well as excessive and uneven track degradation. Uneven degradation results in costly maintenance and *adversely affects track safety*.¹⁹

Clearly, both TTCI and FRA agree with Guilford that poor subgrade conditions can adversely affect track safety, and that increased operating speeds can exacerbate poor conditions, leading to derailments if not remedied. For this reason, Guilford strongly opposes Amtrak's approach to

¹⁸ Dingqing Li, Joe LoPresti, and David Davis, *TTCI R&D: Application and Performance of Hot-Mix-Asphalt Trackbed Over Soft Subgrade*, Railway Track and Structures, January, 2002, at 13 (*emphasis added*). Exhibit D hereto.

¹⁹ Federal Railroad Administration, *Five-Year Strategic Plan for Railroad Research, Development and Demonstrations*, March 2002, at 4-35. (*emphasis added*). Exhibit E hereto.

the issue of track modulus, because it reflects an inherent disregard for conducting the *safest* operations possible, as opposed to mere compliance with the Track Safety Standards.

Moreover, the use of track modulus values as a means to assess the safety of track is also entirely consistent with overall scope of the Track Safety Standards, which encourage railroads to adopt their own safety standards that are more stringent than those imposed by FRA. 49 C.F.R., §213.1(a). As a result, contrary to Amtrak's assertions, track modulus values are relevant to track safety, particularly where, as here, extensive track modulus test results prove that there are several areas along this line where soft support conditions exist.

In addition, Amtrak is incorrect by claiming that methods such as visual inspections and track geometry testing will ensure that any track support conditions will be identified before becoming problematical. Indeed, as FRA stated, "Since ballast, subballast and subgrade layers are beneath the track structure, they are difficult to properly inspect with purely visual methods."²⁰ Moreover, the Track Safety Standards recognize that preventive measure should be taken in the event that a combination of factors that individually do not arise to the level of being in violation exist along a rail line. Also, it is important to note that the Amtrak Geometry Vehicle has inspected this line, and found that several areas that were found to meet the FRA Track Safety Standards for Class 5 were also located at sites identified by TTCI in its Track Modulus Exceptions. *Brake V.S.*, at 5.0. As a result, it is difficult to believe Amtrak's claims that traditional inspection techniques will be sufficient to identify track support problems that can otherwise be measured by track modulus values.

As a final note, as discussed previously Guilford also believes that it is important to note the results of the track modulus testing indicate that there are at least 75 locations along this line

²⁰ *Id.*

where the AREA permissible calculated rail stress exceeds 25,000 pounds per square inch ("psi"). As found by the Board in its Weight of Rail Decision, rail stress is a strength criterion, and its purpose is to prevent rail from permanently deforming due to excessive bending moments and to reduce the possibility of rail breaks. Weight of Rail Decision, at 2. As a result, when the rail stresses exceed the allowable stress values, the potential exists for the development of rail fatigue defects. Accordingly, this is an important safety issue that must be addressed prior to allowing Amtrak to operate at speeds of up to 79 miles per hour over the Plaistow to Portland line.

VI. CONCLUSION

For the reasons set forth above, as well as in other filings in this proceeding, Guilford respectfully requests that the Board deny Amtrak the relief that it is seeking in its Further Clarification Motion.

Dated: June 7, 2002

Respectfully submitted,


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CERTIFICATE OF SERVICE

I hereby certify that on this 10th day of June, 2002, I caused to be served by the means indicated below a copy of the foregoing Reply in Opposition of the Boston and Maine Corporation, the Springfield Terminal Railway Company and the Portland Terminal Company on the following:

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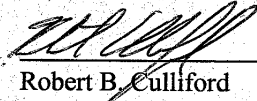

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EXHIBIT A

Policy Analysis

Help Passenger Rail by Privatizing Amtrak

by Joseph Vranich and Edward L. Hudgins

Joseph Vranich served on the Amtrak Reform Council from February 1998 to July 2000. He has also served as president and CEO of the High Speed Rail Association and executive director of the National Association of Railroad Passengers. Edward L. Hudgins is director of regulatory studies at the Cato Institute.

Executive Summary

The airport shutdowns and fear of flying that followed the September 11 terrorist attacks gave Amtrak a boost in ridership. But the government-owned and government-operated passenger railroad, established by Congress three decades ago, will not likely be able to take advantage of a public demand for alternatives to air travel. Since its creation Amtrak has received nearly \$25 billion in taxpayer funding, and there is no prospect that it will ever break even. Unfortunately, Congress is now proposing to throw billions of dollars in new subsidies at Amtrak.

In the Amtrak Reform and Accountability Act of 1997 Congress mandated that if Amtrak is not financially self-sufficient by December 2002 it must be restructured and liquidated. Secretary of Transportation Norman Mineta recently said that Amtrak would not meet that deadline.

Amtrak has failed to secure an increasing portion of Americas growing transportation market. It carries only about three-tenths of 1 percent of all intercity passengers. Its on-time performance on most routes is terrible, and it covers up this fact by measuring punctuality at a limited number of stops and building in lots of extra time before those stops.

Many of Amtraks trains run much more slowly today than did trains on the same routes earlier this century. Moreover, Amtrak uses creative accounting to disguise its financial problems. For example, Amtrak receives many subsidies from government agencies and has recently abandoned standard accounting practices to hide operating expenses as capital costs.

Congress established an Amtrak Reform Council to monitor Amtraks financial performance and decide whether the railroad can meet its deadline for becoming operationally self-sufficient. Amtrak clearly will not meet that goal. It is time for the council to make this finding official and begin the mandated process of restructuring and liquidation.

Full Text of Policy Analysis No. 419 (PDF, 38 pgs, 205 Kb) 

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Policy Analysis

No. 419

November 1, 2001

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Amtrak and the Aftermath of the September 11 Terrorist Attacks

In the immediate aftermath of the terrorist attacks of September 11, 2001, and the subsequent shutdown of commercial air travel, Amtrak reported that it carried twice the usual number of passengers on its trains between Washington and New York and saw increased ridership throughout the country.¹ The temporary closure of Reagan National Airport also put Amtrak in the unique position of being the fastest means of transportation from downtown Washington to New York.² Amtrak also boosted revenues from increased shipments by the U.S. Postal Service and United Parcel Service.

Amtrak crowed about "coming to the rescue of 100,000 passengers nationwide" and being "a viable form of transportation."³ Yet, despite those public pronouncements, it was later learned that Amtrak's Beech Grove, Indiana, maintenance facility asked employees to "double their production" and said "the biggest push" was on repairing mail cars and baggage cars, not passenger cars.⁴

The proper objective for Amtrak during such a time of need would have been to repair as many sidetracked passenger cars as possible. So much for Amtrak going the extra mile to move people in a pinch and taking advantage of an opportunity to attract passengers permanently to rail travel.

As more aircraft returned to the skies, reports indicated an easing in the number of sold-out trains. Inquiries to Amtrak about its traffic failed to clarify if the passenger surge was lasting. By September 20, Amtrak's West Palm Beach traffic was "thinning out and returning to normal."⁵ One week later the *Los Angeles Times* reported:

The surge of passengers who flocked to Amtrak trains in the days after the terrorist attacks has begun to subside, dimming hopes that the intercity rail service could attract lots of

new passengers amid the airline crisis. . . . Amtrak officials provided few specifics concerning ridership totals following the terrorist attacks. They said, however, that ridership nationwide was up an estimated 17% in the first week. . . . On Wednesday [Sept. 26], Amtrak said the increase since the attacks had fallen to somewhere between 10% and 13%. They declined to provide week-by-week or daily breakdowns of ridership. An informal survey conducted Wednesday by Carlson Wagonlit Travel, one of the nation's biggest travel agency chains, also suggested only a slight switch to riding the rails.⁶

Amtrak Trips Now More Competitive?

The market for passenger train service may have expanded because the added time required for airport security checks—some airports recommend arriving four hours before a flight—makes trains more competitive. That certainly is true on the Boston-New York-Washington route, and may be true for a few more niche markets.

Consider the Chicago-St. Louis rail line. Amtrak allots 3 hours and 17 minutes to travel the Chicago-Springfield segment, a schedule that is not normally competitive with air travel. But when allowing for an extra hour or two at the airport, the schedule on this segment becomes competitive with aviation. The key is to keep expectations realistic—the 5 hours and 40 minute schedule for the entire Chicago-St. Louis route means the train still cannot compete with air travel times. In light of increased airport delays, it is reasonable to assume that trains would be competitive with air travel on routes that are 25 to 60 miles (depending on the speed of the train) longer than routes that were previously considered competitive, provided the territory involved aligns with an air market. And the longer the air delays, the longer the additional distance over which rail would be competitive.

This small Amtrak competitive advantage

ignores the possibility of extra time that may be needed for security checks in train stations. Amtrak now requires passengers to show valid photo identification when buying tickets and checking baggage. Amtrak is working with the FBI to determine if it should institute measures such as screening baggage and checking passengers through metal detectors.⁷ Meanwhile, U.S. Department of Transportation secretary Norman Y. Mineta has questioned the need to require rail customers to pass through metal detectors before boarding Amtrak trains.⁸

Additional experience is needed to determine the degree to which these changing factors will help or hinder Amtrak.

Overreaching in Washington

In a display of political opportunism, Amtrak is requesting \$3.2 billion in "disaster aid" even though no disaster exists at Amtrak.⁹ In fact, Amtrak has profited from travelers' reluctance to fly. Amtrak's requested bailout is more excessive than the one the airlines received. Consider that airlines averaged 1.8 million passengers a day and received \$5 billion in grants and \$10 billion in loan guarantees. Amtrak carries fewer passengers—typically 60,000 a day, and up to 80,000 at the peak of the airline diversion—but wants a whopping \$3.2 billion in grants. The disparity should surprise no one because Amtrak has no upper limit to the amount of subsidies it seeks. Amtrak's current political posture is a low point in Amtrak's history. As one congressional aide told Reuters, "Amtrak's agenda, as usual, is capitalizing on [the attacks] in a bogus way."¹⁰

It must be acknowledged that Amtrak would use a portion of the funds to correct fire and safety problems in the tunnels leading to New York's Penn Station. But that very lack of repairs is an indictment of Amtrak policies. Amtrak has long known about the needed work; as the first report pointing to the problem was issued in 1978,¹¹ and other reports have been issued since.¹² But Amtrak failed to launch a tunnel improvement project for 23 years while it squandered billions of dollars on lightly used trains elsewhere

and on glamorous projects that yielded a poor rate of return. If given the funding, Amtrak will undertake needed tunnel work. But Amtrak also will waste a good portion of the \$3.2 billion on pork-barrel trains that serve few travelers.

Amtrak also is poised to benefit from three other pieces of legislation.

Under consideration is the \$12 billion High Speed Rail Investment Act of 2001, which would not really bring about high-speed trains (more will be said about this later).

Also being discussed is an ill-advised stimulus package that includes \$37 billion, a good portion of which would expand Amtrak.¹³ Commented one editorial, "A vastly expanded passenger rail system would do little for the nation's security and, if the system is a white elephant, the short-term economic stimulus would become a long-term economic burden."¹⁴

One measure, named the Rail Infrastructure Development and Expansion Act for the 21st Century, or RIDE-21, proposes to spend \$71 billion on a broad range of railroad-related projects.¹⁵ Although the bill appears to minimize Amtrak's participation, the fact remains that Amtrak's de facto monopoly in intercity passenger service positions the railroad to feed at this additional government trough.

The rush to throw money at Amtrak represents government at its worst. The nation should not stay wedded to the Amtrak paradigm, which has been a colossal failure for 30 years, because terrorists' acts have boosted train travel. Amtrak is the same mismanaged organization after September 11 that it was before that date. Additional subsidies will do nothing to reverse Amtrak's high costs and abysmal productivity and are likely to further institutionalize poor Amtrak practices.

Choosing to expand rail service through Amtrak instead of induce the creation of new, more efficient entities reflects more than the usual lack of governmental imagination; it reflects congressional panic and a dedication to a dysfunctional system, both of which are counterproductive to meeting future transport needs.

The giveaway fares appear to be a move to build ridership at any cost. Unfortunately, that cost could be billions of dollars in new taxpayer subsidies.

A string of reports in recent years paints a picture of a railroad that is unable to control expenditures.

Amtrak's New Fares a Clue to Its Troubles

Amtrak's central marketing ploy has long been to offer low fares, one thing that has made federal subsidies per passenger much higher for Amtrak than for any other mode of transportation. But why must Amtrak launch a new round of super-cheap fares after the post-September 11 influx of airline travelers? A September 29 check of Amtrak's Web site reveals travelers can "save up to 70% off regular coach fare." These "exclusive online fares," even with Amtrak limiting the seating, are astonishing. For little more than the price of a roundtrip on Washington's subway, it's possible to ride Amtrak from Indianapolis to Chicago. Generally effective October 9, the one-way fares are

\$3.40—Indianapolis to Chicago
(This fare was \$6.23 in April 1953).¹⁶
\$3.90—St. Louis to Bloomington, Ill.
\$6.60—Chicago to Jeffersonville
(Louisville)
\$11.70—Cleveland to Philadelphia
\$12.20—Chicago to Harrisburg
\$13.60—Seattle to Vancouver, B.C.
\$15.90—Sacramento to Bakersfield
\$16.00—Philadelphia to Chicago
\$17.20—Chicago to Detroit (The
Amtrak fare in 1971 was \$16.25).¹⁷
\$17.40—Chicago to St. Louis (The
Amtrak fare in 1971 was \$13.50).¹⁸

Other oddities: Take, for example, a train that Amtrak repeatedly calls a "success"—the Texas Eagle, which runs between St. Louis and San Antonio. Amtrak offers a discount fare of \$81.60 for exceptionally long periods, for example, from September 25 through December 17, 2001, and from January 7 through June 14, 2002. Cut-rate deals are also available in the busy Washington-Boston Northeast Corridor, where Amtrak says the traffic increase has been most pronounced.¹⁹ Amtrak is still offering a "buy two, get one free" promotion for rides on the Acela Express between Boston and New York.²⁰

As of September 29, attempts to book

space at the super-cheap fares succeeded on a number of days associated with heavy Thanksgiving travel.²¹ Policymakers who control the public's purse strings must question Amtrak's costly practice of instituting giveaway fares during busy travel seasons and while supposedly inundated with airline travelers. The giveaway fares appear to be a move to build ridership at any cost. Unfortunately, that cost could be billions of dollars in new taxpayer subsidies.

Amtrak and Its Future Riders

Will Amtrak's new riders stick with the railroad? History says no. The nation suffered a major shutdown of commercial aviation in 1966 when labor strife caused simultaneous strikes at virtually every U.S. airline for several days. The effect on rail traffic, then operated by private railroads, was electrifying. Passenger trains were full for the first time in years and long lines were seen at ticket windows. Prior to this strike, the passenger train had been in a long downward spiral, and it was typical for traffic to decline by 7 or 8 million passengers from year to year. In 1966, however, the airline strike caused a leveling off in the decline to only 996,000 passengers. But when the airplanes returned to the skies so did the passengers. The 1997 traffic fell by 7.2 million passengers compared to the prior year, rather typical for that era.²² Amtrak will not experience such a sharp loss, because the billions of dollars it receives in taxpayer subsidies enable it to retain riders through pricing schemes. The private railroads that preceded Amtrak had no such access to public subsidies.

A labor strike is different from a widespread fear of flying, but even terrible air crashes have failed to spark a long-term shift to passenger rail. On May 25, 1979, an American Airlines DC-10 crashed after takeoff from Chicago's O'Hare International Airport, resulting in the highest death toll in American aviation history. Amtrak experienced a traffic gain, which quickly dissipated.

Consider the peak of the 1995 summer travel season. New York's three airports were

placed under tightened security because of threats of terrorist attack. Airline passengers endured many delays as security checks intensified. For several weeks, hundreds of flights were delayed. Yet, Amtrak's patronage went down a million from the year before.

Safety fears mounted sharply in 1996, when within two months a Valujet DC-9 crashed in the Florida Everglades and a TWA Boeing 747 crashed into the Atlantic Ocean off the Long Island coast. In 1997, airline accidents occurred in the Dominican Republic, Peru, Nigeria, Zaire, Brazil, Ethiopia (a hijacking), and Indonesia. India suffered the world's worst midair collision. Still, Amtrak traffic dropped lower in each of those two years than in any year between 1985 and 1995.

Other examples demonstrate that Amtrak traffic surges evaporate when caused by external events. In the 1970s the United States suffered two gasoline shortages. The first resulted from the outbreak of the Arab-Israeli War in October 1973, when OPEC imposed an oil embargo against Western countries; the second resulted from Iran cutting its oil production for six months prior to April 1979. Each time, airline fares and gasoline prices skyrocketed, and lines of cars waited at filling stations. Both times Amtrak ridership surged. A typical headline read "Gasoline Lines and Cost of Flying Leading Many to Try Rail Travel."²³ But in each case, when fuel became more readily available Amtrak ridership declined or stagnated. Nine years went by before Amtrak carried more passengers than it did in 1979.

Amtrak's Future with Airline Passengers

Admittedly, fear of flying is different today than it was in the past. No one knows what travel trends will evolve, but it is known that Amtrak does not enthrall all airline passengers. Anecdotal evidence is building that airline travelers resist traveling by Amtrak. Consider:

- Many business travelers say it's hard to beat jetliners for long trips despite the new safety concerns. . . . "Time is

money," said Joe McClure, a Los Angeles-area travel agent and owner of Montrose Travel. "Corporate travelers don't have the time to waste getting from point A to point B."²⁴ That view was echoed by Kelly Kuhn of Navigant International in Chicago, who said: "We certainly have not seen an increase in selling tickets. Amtrak is not really a viable option."²⁵

- A leisure airline traveler, Kathy Brown of Santa Barbara, says for a long vacation Amtrak is out of the question because "it would take me two or three days to go where I want to go by Amtrak."²⁶
- Amtrak's lack of security measures prompted Danielle Fidler of Alexandria, Virginia, to write: "It is inexcusable for Amtrak to neglect even the most basic safety precautions. Although I am scheduled to take the train to New York soon, I think I would rather fly."²⁷ Lavita Jones of Los Angeles boarded Amtrak's Metroliner, saying: "It's just like it's another day. Anyone could just walk on with anything. I feel safer on an airplane."²⁸ Alfred Benner, a Michigan businessman, said: "The security is even worse on trains than planes. I'll be driving to Boston to see my family over the holidays, thank you very much."²⁹
- Conditions aboard trains leave customers unimpressed, or worse. Passenger Steven Green, planning to return to New Jersey from Florida on Amtrak, wondered, "How bad could it be? By the time he got off the train almost 30 hours later (and more than four hours late) he knew. . . . He was awakened every time the door in the car opened and slammed shut. . . . Then there were the bathrooms, which he says weren't cleaned en route and became filthy. 'I refused to use them,' he says. 'The best thing about the train was getting off.'"³⁰

Thus, even in light of the changes in the

To cover short-term operating losses Amtrak mortgaged Penn Station in New York as collateral for a \$300 million loan.

Congress passed the Amtrak Reform and Accountability Act of 1997 in an attempt once and for all to deal with Amtrak's three-decades-old problems.

transportation market that have resulted from the September 11 attacks, the future of Amtrak must be considered in light of its history and current operational problems.

Amtrak's Current Financial Crisis

Aviation crisis or no, Amtrak is doomed to perpetual failure. In recent years Amtrak has received a record level of public subsidies to improve service, boost efficiency, and set the stage to be free of federal operating hand-outs. But the railroad continues to provide inadequate service to many of its passengers, has become less efficient, and shows little sign that it can survive without substantial federal operating funds.

Amtrak's legacy of failure dates back to May 1, 1971, when it was established by Congress as a federally owned and operated passenger railroad. At that time policymakers believed that passenger rail service was important enough to necessitate the government running such a system. Nixon administration correspondence on Amtrak stated, "It is expected that the corporation would experience financial losses for about three years and then become a self-sustaining enterprise."³¹ In fact, since its creation the system has always run at a loss, requiring substantial subsidies to keep it afloat.

Infusions of \$3.91 billion in federal subsidies from 1998 through 2000 provided Amtrak with more taxpayer funding than in any other 3-year period in its 30-year history. But it seems that the more Amtrak receives, the greater its financial difficulties. According to recent congressional testimony by the inspector general of the U.S. Department of Transportation, "Four years into its mandate for operating self-sufficiency, Amtrak should be showing signs of significant improvement, not standing in place or, worse, moving backwards."³²

Amtrak's credibility has suffered as executives have repeatedly issued glowing reports about recent revenue increases.³³ But a string of reports in recent years paints a picture of a

railroad that is unable to control expenditures or generate adequate revenues. Reports from the 1994-99 period are replete with such warnings, including one that said Amtrak was borrowing money to pay for operating expenses, "including those for payroll, fuel, ticket stock, and food."³⁴ In September 2000 the General Accounting Office warned, "While Amtrak has 'spent money to make money,' it has realized little benefit from the expenditures it has made."³⁵ In March 2001 a GAO representative told Congress, "Amtrak has made minimal progress in reducing its budget gap in order to reach operational self-sufficiency."³⁶ But on July 25 the GAO admitted: "It is very unlikely that Amtrak can operate a national intercity passenger rail system as currently structured without substantial federal operating support. The outlook for it achieving operational self-sufficiency is dim."³⁷

The Department of Transportation, Office of the Inspector General, had warned in March 2001: "Amtrak's overall financial results have not improved significantly since 1999. . . . Our assessment of Amtrak's 2000 business plan identified a number of elements that are unlikely to perform as Amtrak had expected. If no corrective action were taken to compensate for them, Amtrak's cash loss would be about \$1.4 billion more than it projected over the four-year period 2001 through 2004."³⁸

A principal problem is that costs are rising faster than revenues, according to congressional testimony given in July by the DOT Inspector General (DOT IG):

Amtrak's fiscal year 2000 operating loss of \$944 million, including depreciation, was \$28 million more than its 1999 loss and the largest in Amtrak's history. . . . The picture remains bleak into 2001, where in the first eight months revenues grew by \$15 million over the same period a year earlier but cash expenses grew by \$53 million. Moreover, as of September 2000, Amtrak's long-

term debt and capital lease obligations totaled \$2.8 billion, an increase of \$1 billion over 1999.³⁹

To cover short-term operating losses until a new federal appropriation becomes available in October, Amtrak mortgaged Penn Station in New York as collateral for a \$300 million loan.⁴⁰ Said Sen. John McCain (R-Ariz.):

I am informed this transaction was out of desperation because Amtrak would become insolvent within the next month without an immediate infusion of cash. . . . I also understand the actual cost to repay the \$300 million dollar loan will be nearly \$600 million over the 16-year life of the loan. How is funding a few months of operating costs over a 16-year period a sound business judgment? It simply isn't.⁴¹

Amtrak's financial condition remains precarious despite the loan. In July 2001 the railroad offered 2,900 employees a voluntary separation through early retirement and other incentives.⁴² Whether that effort will be successful remains to be seen. As GAO notes:

Amtrak attempted to reduce its management staff in 1994 and 1995 by offering employees early retirement and buyouts to leave the company. As a result Amtrak's management staff declined by a total of about 15 percent between 1994 and 1995. But, by 1999, the number of management employees was almost the same as it was in 1994. Union-represented employment declined 7 percent from 1994 through 1996. But union-represented employment has also grown since then, and, in 1999, Amtrak had more union-represented workers than in 1994.⁴³

A report issued by the Working Group on Intercity Passenger Rail in June 1997 found

that Amtrak faces a major liquidity crisis and probable bankruptcy, long-distance trains make more sense as "rolling National Parks," passenger rail service should be opened to competition, Amtrak's monopoly should end, and reforms launched by Amtrak have not paid off.⁴⁴

The Amtrak Reform Council echoed many of these views by stating in March 2001: "Amtrak's performance in FY 2000 was approximately \$100 million short of its goal. Revenues were lower than expected, costs were higher than planned, and productivity improvements did not produce measurable financial gain."⁴⁵

All of these findings should come as no surprise in light of some of GAO's conclusions about Amtrak's chronic problems. For example:

- "Amtrak's expenses were at least two times greater than its revenues for 28 of its 40 routes in fiscal year 1997. In addition, 14 routes lost more than \$100 per passenger carried."⁴⁶
- "During fiscal year 1997, five Amtrak routes each carried more than 1 million passengers, accounting for nearly 60 percent of the railroad's ridership. In contrast, 17 Amtrak routes carried only about 10 percent of Amtrak's total ridership."⁴⁷
- "During fiscal year 1997, fewer than 100 passengers, on average, boarded Amtrak intercity trains and connecting buses per day in 13 states . . . the relatively large number of states with relatively low ridership, along with other financial performance data, is indicative of Amtrak's financial performance problems."⁴⁸

Congress has virtually ignored those findings and, in defiance of all logic, is considering additional funding boosts for Amtrak.

Setting Low Reform Goals

Congress passed the Amtrak Reform and Accountability Act of 1997 in an attempt

Amtrak has yet to use its freedom to discontinue a single money-losing service.

Amtrak's worsening financial losses indicate that the railroad failed to wisely invest its "income tax refund" on "high rate-of-return" projects selected after "rigorous evaluation."

once and for all to deal with Amtrak's three-decades-old problems. But Anthony Haswell, who is sometimes referred to as the "father" of Amtrak and who helped write the 1970 law that created Amtrak, saw the legislation as setting modest goals. He wrote, "In view of Congress's impatience with Amtrak's chronic deficits and underwhelming market performance, the reforms it demanded were relatively few and unobjectionable."⁴⁹ Indeed, the ARAA is a pale shadow next to the imaginative methods foreign nations have used to truly reform their railroads. Consider the significant features of the ARAA:

- Amtrak must be financially self-sufficient by FY 2003, that is, by December 2, 2002. After that it will no longer receive federal operating subsidies, although it will remain eligible for capital subsidies. Amtrak President George Warrington has complained that this requirement is an "artificial political test."⁵⁰
- A new seven-person Reform Board of Directors was to be composed of individuals with "technical qualifications, professional standing, and demonstrated expertise in the fields of transportation or corporate or financial management." But President Clinton appointed mostly politicians with no relevant expertise and reappointed two members from the predecessor board and one who had served earlier in the decade.
- Amtrak was given freedom to change its route system in response to the marketplace, unlike under the congressionally mandated "basic system" of the past. Though Amtrak president Warrington still complains about policies that require the railroad to provide services but fail to provide adequate funding,⁵¹ Amtrak has yet to use its freedom to discontinue a single money-losing service that was in operation the day the law passed.

These modest reforms so far have failed to

change Amtrak's status quo.

Amtrak Squanders an "Income Tax Refund"

In section 977 of the Taxpayer Relief Act of 1997, Congress required that the Internal Revenue Service give Amtrak a \$2.184 billion "income tax refund"—even though Amtrak has never paid federal income taxes.⁵² Amtrak received the funds in two equal installments in fiscal years 1998 and 1999.

Congress meant for the funds to be spent for "the acquisition of equipment, rolling stock, and other capital improvements" and payment of interest and principal on obligations incurred for such purposes.⁵³ At the time, Amtrak argued for the funding by asserting it would "make it less expensive to operate the national passenger rail system."⁵⁴

The ARC had a statutory responsibility to make certain that Amtrak "tax return" expenditures were used wisely. The first Amtrak report describing TRA-financed projects was replete with phraseology stating that Amtrak was making a "wise investment" of its resources and that funds were being committed for "high rate-of-return" projects selected after "rigorous evaluation."⁵⁵

Amtrak was within legal bounds in using the money in part to repay a portion of a \$2.8 billion debt to the private capital markets and in part to invest in high-yield, interest-bearing accounts. But such spending still did not result in a large return on investment, which was what the "income tax refund" was supposed to produce.

The first TRA report suggested Amtrak was still following discredited spending patterns by ignoring high market-growth opportunities. Amtrak's first expenditure of \$360 million was spread across a broad geographic area. Half of that expenditure went to the least profitable routes, where the money produced no return on the investment.⁵⁶ Amtrak threw good money after bad.

When questioned,⁵⁷ Amtrak officials were unable or unwilling to provide sufficient

information to indicate how TRA expenditures would move Amtrak toward balancing its budget or how project rates of return would help reduce losses on individual poor-performing routes. Amtrak asserted it was "not producing the data in that context at this time."⁵⁸ Yet when I worked in Amtrak headquarters in the 1970s and served on the Passenger Service Committee, we recommended capital expenditures to the board on the basis of just such estimated rates-of-return. The fact that Amtrak's more advanced accounting systems cannot generate such information today reflects either willful obstruction or gross mismanagement. The ARC's difficulty in securing information from Amtrak suggests that Amtrak is not serious about reforming its wasteful ways.

The ARC eventually reported significant problems in how TRA funds were used. In 2000, the council stated, "Amtrak has not used a significant portion of the funds for the kinds of high-priority, high-return investments that will help its bottom line."⁵⁹ Early in 2001 the ARC reported, "Through December 31, 2000, about \$590 million—or 26 percent of total TRA commitments—have in effect been used for expenditures that most companies and generally accepted accounting principles . . . would treat as ordinary operating expenses or required capital expenditures."⁶⁰

In February 2000, the GAO stated that Amtrak's quarterly reports to the ARC on the use of TRA funds "do not fully disclose the extent to which Amtrak has used these funds for equipment maintenance. As a result these reports are less useful than they could be in helping the council comply with its responsibility to monitor Amtrak's use of Taxpayer Relief Act funds."⁶¹ Again, history was replaying itself as the GAO's comments echoed the assessment by the Working Group on Intercity Passenger Rail, which found that Amtrak subsidies "are not directed to activities of maximum benefit."⁶²

Amtrak's worsening financial losses indicate that the railroad failed to wisely invest its "income tax refund" on "high rate-of-return" projects selected after "rigorous evaluation."

Amtrak's Credibility Crises

Amtrak officials have continually assured Congress, the public, and the press that Amtrak is getting its finances in order and improving the quality of its service. When questioned about problems Amtrak officials offer easy answers and rosy predictions. But a close look at the railroad calls its credibility into serious question. That is why Amtrak is beginning to pay the price for incessant hyperbole about "progress" as its bank balances and credibility are diminishing. Many long-term Amtrak observers agree with Senator McCain's testimony before a Senate hearing in June 2001:

I trust one of the Subcommittee's goals is to receive an accurate assessment of Amtrak's current financial situation and not to simply sit through another day of testimony from Amtrak as it spins the "facts," provides only half-truths, and makes more promises that will go unmet. . . . Isn't Amtrak under an obligation to provide the Congress with accurate and timely information? Do we need to start swearing in Amtrak witnesses before our hearings begin in order to help ensure we receive honest testimony?⁶³

Disparaging comments regarding Amtrak are frequent because of the railroad's misrepresentations in 10 areas involving policymaking—and performance.

Credibility Crisis # 1: Acela Express Delays

The media have widely reported that the Acela Express is one year behind schedule. That time delay is technically accurate only if delivery dates for Acela Express trains are compared with the manufacturer's contract deadlines. In terms of high-speed rail promises that Amtrak made to Congress when requesting funds, Amtrak is two and a half years behind schedule. The inaugural of

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as 1996-97.**

high-speed service was supposed to occur in 1998; Amtrak's Acela Express started in December 2000.

The costs of Amtrak-developed high-speed rail in both delays and money began with the decision concerning equipment design. On February 1, 1993, Amtrak began operating the X2000, a high-speed tilting train used in Europe. Passenger reaction was enthusiastic—one saying "I thought I had walked onto a cloud"—as travelers took in the X2000's luxurious touches including "large plush seats, wheelchair lifts, carpeting, coffee stations in each car, telephones, fax machines, and electronic displays."⁶⁴ The train's performance was superior to that of all existing Amtrak trains, and the speed capability, at 155 mph, meant the train could shave 15 minutes off the schedule of the fastest New York-Washington Metroliner.⁶⁵ The performance was equivalent to that of the Acela Express. Although the X2000 was tested successfully, the train required modifications to meet American rail safety standards. The train's Swiss-Swedish manufacturers were prepared for that engineering task and promised to build the X2000 in this country.

Had Amtrak opted to purchase such proven technology, it could have had high-speed rail in operation in the Northeast Corridor as early as 1996-97. But Amtrak decided instead to design a new train, a competence it is not known for, and the result is the delay-prone Acela Express and several years worth of diminished revenue-generating capacity.

Consider the chronology:

May 19, 1993. When initiating the high-speed train procurement, Amtrak said that in order to qualify a firm must be able to "deliver two complete train sets by April 1996 and the remainder of the train sets within two years thereafter."⁶⁶

November 3, 1993. "Amtrak plans to award a contract by the middle of 1994 with the first trains being delivered two years later."⁶⁷

March 17, 1994. The projected delivery date slipped as Amtrak officials informed Congress: "Two advance versions of the train

sets are expected in early 1997 for testing. The remaining 24 train sets will then go into production, with the final train set arriving in 1999."⁶⁸

October 6, 1994. Amtrak reiterated the deadlines, adding: "The 26 high-speed trains will attain top speeds of 150 miles per hour. . . . The procurement award is expected in early 1995. . . . It is expected by the year 2000 that more than three million additional passengers will be attracted to the service." Amtrak also reiterated its promise that New York-Boston travel time would be reduced to "under three hours."⁶⁹

March 17, 1996. The Associated Press reported that Amtrak had selected a consortium to build the trains that would "go into service by 1999," a two-year slip from the 1997 start date.⁷⁰

March 11, 1998. Amtrak representatives testified before a House committee that "five train sets will be delivered in late 1999, with the remaining 13 by July 2000."⁷¹

December 11, 2000. The first Acela trains began running on this date.

As delays increased, Amtrak changed the name of the trains from "Metroliners" in the early 1990s, to the "American Flyer" when the equipment order was placed in the mid-1990s, and to the "Acela Express" to create a "brand image" beginning in March 1999.⁷²

After promising a New York-Boston trip in "under three hours," Amtrak has now delivered a three-and-a-half-hour run. In 1950 the New Haven Railroad's Merchants Limited linked New York and Boston in four hours without the benefits of full electrification, tilt-train technology, and advanced signaling systems. For the Acela Express to run only about 30 minutes faster after Amtrak has spent billions of dollars on the project is an example of Amtrak's inability to bring high-speed rail service that is truly competitive with air travel to America.

The slow pace reflects the fact that Acela Express operates at 150 miles per hour between New York and Boston on only 18 of the route's 231 miles.⁷³ By contrast, Japan's first Bullet Trains, which are now in museums, offered faster trip times in the 1960s

than the Acela Express offers in 2001.

Design Flaws and Delays. When the Acela Express was delivered for testing, design flaws delayed production and deployment. Early in 1999, the news media revealed that the trains were built four inches too wide to allow full use of the tilt mechanisms, and the trains would be unable to take the numerous curves between Boston and New York as fast as planned.⁷⁴ Amtrak and rail equipment suppliers Bombardier of Quebec and Britain's GEC Alsthorn, have bickered over the cause of the design flaw, most likely because the contract includes late-delivery penalties.⁷⁵ Next, during test runs, the trains suffered from excessive wheel wear.⁷⁶ By June 2000 Amtrak halted Acela Express test runs because of cracked or missing bolts in the wheel assemblies.⁷⁷ Another halt came a month later when broken bolts were found on components that help steady the ride of the passenger cars.⁷⁸

With testing completed, the trains went into commercial service on December 11, 2000. The Acela Express was sidelined the next day because of damage to its pantograph, the device that connects the train to overhead electrical wires, and a second Acela Express held in reserve was also found to be inoperable, so passengers were put on an older Metroliner, which ran late.⁷⁹ Acela Express trains have broken down in Stamford, Connecticut,⁸⁰ and near Philadelphia; in the latter case, passengers were delayed several hours and treated poorly. One passenger wrote: "Once in Philadelphia, we were told to go into the station where someone would be waiting to help us. There was no one there even remotely aware of our plight. In the end, we had to argue with the agents to honor our tickets and get us on the next train to Washington."⁸¹ Passengers have reported similar experiences in other Amtrak stations.

It is uncertain what effect the Acela Express will have on Amtrak revenue. In one instance, DOT IG Kenneth Mead has questioned the reasonableness of Amtrak's 2000-2004 revenue estimate of \$4.1 billion for the Northeast Corridor, instead projecting that revenues will

be \$304 million lower.⁸² He said, "We are concerned that Amtrak's projections for Acela Express ridership assume a higher-than-likely diversion of passengers from air and automobile, and an underestimation of ridership on the slightly slower, but significantly less expensive Acela Regional service."⁸³ But in a July 2001 statement, he said, "Our initial findings in our current annual assessment indicate that given the level of airline delays, Amtrak's projections for Acela revenue when fully ramped up may now, in fact, be somewhat conservative."⁸⁴

The question arises, What is high speed and at what price? Amtrak hopes that the faster Acela Express trains will allow it to better compete with airlines in the Northeast Corridor, but the degree of success is an open question.

Between Washington and New York passengers currently have three price options (weekday rates, one way): The Acela Express at \$144, the Metroliner at \$125 (to be phased out and replaced by the Acela Express), and the Acela Regional at \$69. It is open to question how many travelers will opt for the Acela Express over the Acela Regional, since the latter is generally only 42 minutes slower than the Acela Express but costs \$75 less.

A similar situation exists between New York and Boston. The current Acela Express time of 3 hours and 30 minutes, which Amtrak says will be speedier in the future, is 25 to 35 minutes faster than that of the Acela Regional trains. Whether that time difference will justify a ticket price of \$120 (versus \$58 for the slower train) is open to question.

Prior to the airline hijackings and the altered transportation landscape in the Northeast Corridor, Amtrak asserted that the Acela Express would reduce aviation congestion. But if aviation conditions return to normal in the Northeast, the evidence suggests Amtrak's best train will have only a minimal effect. If Amtrak is to attract airline travelers, it must be able to run trains that are not only faster but more reliable than planes. The Acela Express record so far has been mixed. For example, during the week of July 1, only 26 percent of Acela Express trains in

**Acela Express
operates at 150
miles per hour
between New
York and Boston
on only 18 of the
route's 231 miles.**

Amtrak suffered a record financial loss, because train tickets are seriously underpriced considering Amtrak's high cost structure.

and out of Boston showed up at or before scheduled arrivals.⁸⁵ Also by August 2001, the Acela Express was "falling short of projections in ridership and revenue. Reimbursement requests from dissatisfied customers are three times higher than Amtrak's goal [and] a nonstop Washington-to-New York service—Amtrak's silver bullet in its race with air shuttles—has been suspended due to low ridership."⁸⁶

When some sense of normalcy returns to the aviation system, it is reasonable to expect aggressive airline competition against the Acela Express. The airlines weren't standing still prior to the September 11 tragedies. Moreover, aviation competitors are not standing still. In the past two years, U.S. Airways Shuttle added new Washington-New York departures using newer Airbus A320 aircraft.⁸⁷ The Delta Shuttle set passenger boarding records during the Thanksgiving weekend of 2000, including its busiest day ever at Washington's Reagan National Airport, attributing its success in part to the positive customer reception for its new Boeing 737-800 aircraft.⁸⁸ Also, Amtrak's Acela will do nothing to hamper what will likely be a regrowth of fairly new Northeast Corridor airline routes, such as Southwest Airlines between Providence and Baltimore-Washington International, because of the distance involved. Growth is occurring elsewhere, such as between Islip Airport on Long Island and BWI, or the Atlantic Coast Airlines service between Dulles International Airport near Washington and Newark. Amtrak goes nowhere near Islip and Dulles airports and holds little allure for the growing number of travelers in nearby communities.

Airport expansion plans in the Northeast are progressing despite the current drop in traffic. Various expansion plans are moving forward at Newark International Airport, Philadelphia International Airport, BWI, and Dulles International Airport.⁸⁹

The Acela Express, despite its shaky start, is an attractive train that holds promise for the Northeast. It will likely make a contribution to mobility during these difficult

times. But considering Amtrak's record of delays and the intensity of airline competition, the promise of the Acela Express easing aviation congestion during normal periods in the Northeast Corridor is false.

Credibility Crisis # 2: National Passenger Traffic

More passengers ride trains today than 30 years ago when Amtrak was created, and Amtrak boasts that its fiscal year 2000 ridership of 22.5 million passengers set a new record. Amtrak vice chairman Michael Dukakis stated in the *New York Times* that "in July [2001] Amtrak recorded its highest monthly ridership in 22 years."⁹⁰ But Amtrak exaggerates ridership gains. According to the ARC, "During a decade when the American economy and most of its transportation system have expanded in an unprecedented manner, Amtrak's ridership has remained virtually unchanged."⁹¹

Amtrak's level of usage is an indictment of its market-insensitive network for the following reasons:

- Year 2000 ridership was only a half-million passengers higher than in 1990 and 1991, hardly an impressive feat considering that the decade saw an all-time record growth in domestic travel.
- The record came in the same year Amtrak suffered a record financial loss, because train tickets are seriously underpriced considering Amtrak's high cost structure.
- Passenger-miles are a more credible index for quantifying the volume of business. On that basis the quantity of Amtrak's passenger-miles was lower in 2000 than at its peak, from 1988 through 1994 (see Table 1).

For perspective, on Memorial Day weekend 2000, domestic aviation served well over 12 million passengers. In just one holiday weekend airlines carried more than half the traffic Amtrak moves in an entire year. The gap has been growing despite aviation con-

Table 1
Amtrak versus Aviation Ridership

Year	U.S. Census Population Estimate (millions)	Airline Revenue Passengers (millions)	Amtrak Passengers (millions)	Amtrak Passenger- Miles (billions)
1972	209.9	191.3	16.6	3.0
1973	211.9	202.2	16.9	3.8
1974	213.9	207.5	18.7	4.5
1975	216.0	205.1	17.4	3.9
1976	218.0	223.3	18.2	4.2
1977	220.2	240.3	19.2	4.3
1978	222.6	274.7	18.9	4.0
1979	225.0	316.9	21.4	4.9
1980	227.2	296.9	21.2	4.6
1981	229.5	286.0	20.6	4.8
1982	231.7	294.1	19.0	4.2
1983	233.8	318.6	19.0	4.2
1984	235.8	344.7	19.9	4.6
1985	237.9	382.0	20.8	4.8
1986	240.1	418.9	20.3	5.0
1987	242.3	447.7	20.4	5.2
1988	244.5	454.6	21.5	5.7
1989	246.8	453.7	21.4	5.9
1990	249.5	465.6	22.2	6.1
1991	252.2	452.3	22.0	6.3
1992	255.0	475.1	21.3	6.1
1993	257.8	488.5	22.1	6.2
1994	260.3	528.8	21.8	5.9
1995	262.8	547.8	20.7	5.5
1996	265.2	581.2	19.7	5.0
1997	267.8	594.7	20.2	5.2
1998	270.2	612.9	21.1	5.3
1999	272.7	635.4	21.5	5.3
2000	284.9	665.5	22.5	5.5

Source: Airline statistics from the Bureau of Transportation Statistics, U.S. Department of Transportation. Amtrak statistics from Background on Amtrak, GAO studies, and Amtrak annual reports.

gestion. In Amtrak's first full year of operation in 1972, it carried an average of 45,500 passengers a day. In 2000, more than a quarter-century later, Amtrak ridership stood at only 61,643 daily. Meanwhile, airline traffic reached 665.5 million in 2000,⁹² and the number of airline passenger trips has more than tripled, from 524,100 daily in 1972 to

1,823,287 daily in 2000.

Amtrak's inability to adapt to market demands is why its share of the intercity travel market is lower than ever—only about three-tenths of 1 percent of intercity passenger trips in the United States. Even private aircraft, at six-tenths of 1 percent, serve double the number of passengers.⁹³

Amtrak's share of the intercity travel market is only about three-tenths of 1 percent of intercity passenger trips in the United States.

Amtrak is able to report its trains as being more punctual than they in fact are on virtually every route.

Table 2
How Amtrak Measures Late Arrivals as "On Time"

	Station				
	A	B	C	D	E
Scheduled depart/arrival time	Noon	1:30 p.m.	3:00 p.m.	6:00 p.m.	9:00 p.m.
Actual arrival time	Noon	2:15 p.m.	4:00 p.m.	7:15 p.m.	9:15 p.m.
Difference scheduled v. actual	0 hrs.	45 min.	1 hr.	1hr. 15min.	15 min.

Notes. Amtrak measures on-time performance at Stop E. The scheduled trip time is 9 hours exactly, and the actual trip time is 9 hours 15 minutes. The train is technically on time, even though it is late for three of four stops.

Amtrak projections of future ridership increases have been wrong for years. A GAO study noted that in 1974 Amtrak had told Congress it anticipated ridership in 1979 would be a stunning 37 million;⁹⁴ it turned out to be 21.4 million passengers. More recently, Amtrak asserted that it would boost ridership by 4.4 million passengers in FY 2002, a 21 percent gain from FY 1998 traffic.⁹⁵ Although more modest than previous statements, it is nonetheless a projection that Amtrak will fail to reach.

Credibility Crisis # 3: On-Time Performance

Amtrak acknowledged in a 1994 statement that the "largest single area of complaint" by passengers is late trains, and "improving and sustaining Amtrak's on-time performance is a top priority."⁹⁶ Since, then Amtrak has issued statements suggesting that punctuality has improved. In 1998, Amtrak touted the best January on-time performance since 1981;⁹⁷ in 1999, Amtrak boasted in a letter to the ARC that its 80 percent record is "still ahead" of airline perfor-

mance.⁹⁸ A press release this year touted good on-time performance for the Acela Express.⁹⁹

Unfortunately, Amtrak's method of calculating late trains fails to reflect actual performance. Amtrak is able to report its trains as being more punctual than they in fact are on virtually every route outside of the Northeast Corridor. That is because Amtrak has larded schedules with extra time (railroaders refer to this as "padding" or "fat") at the end of a line. Amtrak inserts the extra time just before checkpoints where on-time performance is calculated. Across most of the nation, if measurements were taken at a station before an official checkpoint, Amtrak's record would be much worse than official reports indicate. The schedule padding, combined with the absence of Amtrak on-time calculations at intermediate stations, means many passengers arrive late at their destinations even though they were aboard "on time" trains.

For example, a train starts at station A at noon and, after stopping at stations B, C, and D, is scheduled to arrive at station E nine hours later. In the example in Table 2, the train is 45 minutes late arriving at station B,

one hour late arriving at station C and one hour and 15 minutes late arriving at station D. Passengers traveling to or from any of these stations suffer. Yet between station D and station E, which happens to be an on-time checkpoint, extra time or "fat" is built in. It might be that at normal speeds it would take an hour and a half to travel between those stations. By instead scheduling three hours between those stations, Amtrak permits late trains to make up time and arrive only 15 minutes late. Since "on-time" is measured at point E, an Amtrak train that is late for three of four arrivals is officially "on-time." A long-distance train is listed as "late" only if it is 30 minutes or more behind schedule, and for short distance trains the allowance is 10 minutes.

Some critics might ask whether congestion in metropolitan areas or other factors mean that trains need more time entering major cities or stations. In fact, it takes more time for a train to accelerate when leaving a major station than to brake when entering one, resulting in a difference of less than five minutes. Finally, any speed limits imposed on trains traveling through congested metropolitan areas will slow trains going in both directions.

How Amtrak applies this practice of building in "fat" is outlined in Table 3. The information reveals the contrast between the running time of trains leaving checkpoints where on-time measurements *will not* be calculated (and trains are scheduled to move fairly quickly) and trains entering the same checkpoints where on-time performance *will* be calculated (and the schedules contain excessive "fat").

The first train in the table, Amtrak's east-bound Sunset Limited, routinely takes 45 minutes when running from Los Angeles to Pomona, California, a distance of only 32 miles. No on-time calculation is made in this direction. On the westbound schedule from Pomona to Los Angeles—a checkpoint where on-time performance is calculated on incoming trains—it takes 1 hour and 57 minutes. Hence, the westbound time is more than twice as long as the eastbound time. Passengers

often are inconvenienced waiting for late west-bound Sunset Limited trains in one community after another, but official reports may show their particular train as being "on time."

Amtrak's already poor on-time record of 56 percent for long-distance trains in FY 2000¹⁰⁰ is not credible. The figure represents performance at a few dozen checkpoints, which means trains serving hundreds of non-checkpoint stations are running significantly behind schedule yet are never officially registered as "late."

Credibility Crisis # 4: Freight and Express Program

Amtrak, which was set up as a passenger railroad, established a new line of business in 1997 as it started to carry freight and express in boxcars or in special highway trailers attached to passenger trains. The railroad said the effort was designed to help it "reach its financial goals,"¹⁰¹ become "profitable,"¹⁰² and "improve the financial performance of passenger trains and help preserve and expand our network."¹⁰³

Amtrak strained credibility from the program's inception by claiming it was moving "freight/express" and "specialty commodities—computer chips, for example."¹⁰⁴ When the news media revealed that Amtrak was carrying boxcar loads of beer, steel, and other commodities, Amtrak responded by claiming such moves were "occasional and experimental."¹⁰⁵ Eventually, Amtrak conceded it was moving shipments that traditionally have been considered freight.

By 1998, traffic was below projections and approximately half of the freight/express fleet was sitting idle.¹⁰⁶ In that fiscal year, Amtrak said it would not discuss profitability until that year's scorecard was in,¹⁰⁷ and it never has. Even now, three years later, Amtrak has yet to go on the record about whether freight/express adds to or takes away from its bottom line.

Revenues generated from the new program along with revenues from Amtrak's mail-handling operation are below projections. The DOT IG, in examining Amtrak's

**What is modern?
The definition
certainly does
not mean inaugu-
rating trains that
are slower than
trains were
decades ago.**

Table 3
Schedule "Fat" Permits Misleading On-Time Reports

Amtrak Train	Segment under Review	Miles	Time When On-Time Statistics Are <i>NOT</i> Calculated (outbound) (1997-2000)	Times Are Slower When On-Time Statistics <i>ARE</i> Calculated (inbound)	Amtrak's "Fat" in Schedules
Sunset Limited	Pomona, Ca.-Los Angeles	32	45 min.	1 hr. 57 min.	1 hr. 12 min.
Sunset Limited	Schriver, La.-New Orleans	55	1 hr 25 min.	2 hr. 30 min.	1 hr. 05 min.
Southwest Chief	Naperville, Ill.-Chicago	28	36 min.	1 hr. 36 min.	1 hr. 00 min.
Texas Eagle	San Marcos, Tex.-San Antonio	54	1 hr. 40 min.	2 hr. 39 min.	59 min.
City of New Orleans	Hammond, La.-New Orleans	52	1 hr. 03 min.	2 hr.	57 min.
Three Rivers	Hammond, Ind.-Chicago	16	29 min.	1 hr. 25 min.	56 min.
San Francisco Zephyr	Naperville, Ill.-Chicago	28	34 min.	1 hr. 29 min.	55 min.
San Francisco Zephyr	Martinez-Emeryville, Calif.	25	11 min.	1 hr. 05 min.	54 min.
Capitol Limited	Hammond, Ind.-Chicago	16	30 min.	1 hr. 23 min.	53 min.
Pennsylvanian	Hammond, Ind.-Chicago	16	29 min.	1 hr. 19 min.	50 min.
Southern Crescent	Slidell, La.-New Orleans	37	53 min.	1 hr. 35 min.	42 min.
Empire Builder	Edmonds, Wash.-Seattle	18	32 min.	1 hr. 12 min.	40 min.
Sunset Limited Bay	St. Louis, Miss.-New Orleans	57	1 hr. 12 min.	2 hr. 51 min.	39 min.
Ann Rutledge	Alton, Ill.-St. Louis	27	40 min.	1 hr. 18 min.	38 min.
Lake Shore Limited	Hammond, Ind.-Chicago	16	32 min.	1 hr. 09 min.	37 min.
Cardinal	Dyer, Ind.-Chicago	29	1 hr. 12 min.	1 hr. 48 min.	36 min.
Empire Builder	Red Wing-Minneapolis	46	1 hr. 04 min.	1 hr. 39 min.	35 min.
Southwest Chief	Fullerton-Los Angeles	26	40 min.	1 hr. 14 min.	34 min.
International	Lapeer-Port Huron, Mich.	45	48 min.	1 hr. 19 min.	31 min.
Coast Starlight	Tacoma-Seattle	40	56 min.	1 hr. 25 min.	29 min.
Coast Starlight	Glendale-Los Angeles	5	18 min.	45 min.	27 min.
Wolverine	Hammond, Ind.-Chicago	16	27 min.	54 min.	27 min.
Lake Shore Limited	Back Bay-South Station, Boston	1	5 min.	32 min.	27 min.
Illini	Homewood-Chicago	24	1 hr. 10 min.	1 hr. 36 min.	26 min.
Illini	Du Quoin-Carbondale, Ill.	20	14 min.	40 min.	26 min.
Empire Builder	Glenview-Chicago	18	24 min.	50 min.	26 min.
Heartland Flyer	Gainesville-Fort Worth	68	1 hr. 20	1 hr. 46 min.	26 min.
Texas Eagle	Alton, Ill.-St. Louis	27	44 min.	1 hr. 09 min.	25 min.
Cascades	Seattle-Edmonds	18	51 min.	27 min.	24 min.
San Joaquins	Wasco-Bakersfield	26	27 min.	51 min.	24 min.
Pacific Surfliner	Grover Beach-San Luis Obispo	9	21 min.	45 min.	24 min.
Heartland Flyer	Norman-Oklahoma City	20	25 min.	49 min.	24 min.
Cardinal	Manassas, Va.-Washington	32	54 min.	1 hr. 18 min.	24 min.
Empire Builder	Vancouver, Wash.-Portland, Ore.	10	27 min.	50 min.	23 min.
City of New Orleans	Homewood-Chicago	24	45 min.	1 hr. 08 min.	23 min.
Empire Service-2 trains	Buffalo-Niagara Falls, NY	23	35 min.	58 min.	23 min.
Ann Rutledge	Joliet-Chicago	37	50 min.	1 hr. 12 min.	22 min.
Illinois Zephyr	Naperville-Chicago	28	35 min.	57 min.	22 min.
Silver Meteor	Hollywood-Miami	13	24 min.	46 min.	22 min.
Ethan Allen Express	Fair Haven-Rutland, Vt.	14	22 min.	44 min.	22 min.
Northeast Direct	Worcester-Boston	44	59 min.	1 hr. 20 min.	21 min.

Table 3 *continued*

Amtrak Train	Segment under Review	Miles	Time When On-Time Statistics Are NOT Calculated (outbound) (1997-2000)	Times Are Slower When On-Time Statistics ARE Calculated (inbound)	Amtrak's "Fat" in Schedules
Capitol Limited	Rockville, Md.-Washington	17	22 min.	42 min.	20 min.
Silver Palm	Hollywood-Miami	13	24 min.	43 min.	19 min.
Illinois Zephyr	Macomb-Quincy	56	48 min.	1 hr. 06 min.	18 min.
State	House Alton, Ill.-St. Louis	27	45 min.	1 hr. 03 min.	18 min.
Capitols-#729 & 733	Santa Clara-San Jose	7	12 min.	29	17 min.
Cascades	Albany, Ore.-Eugene	43	43 min.	59 min.	16 min.
Silver Star	Hollywood-Miami	13	28 min.	44 min.	16 min.
Piedmont	Cary-Raleigh	9	13 min.	28 min.	15 min.
Vermonter Essex	Jct.-St. Albans, Vt.	4	30 min.	45 min.	15 min.
Maple Leaf	Yonkers-New York	14	24 min.	38 min.	14 min.
Capitols-#727 & 731	Emeryville-Oakland	5	10 min.	24 min.	14 min.
Capitols-5 trains	Davis-Sacramento	13	19 min.	33 min.	14 min.
Adirondack	St. Lambert-Montreal	4	13 min.	26 min.	13 min.
Pere Marquette	Hammond, Ind.-Chicago	16	27 min.	40 min.	13 min.
Piedmont	Kannapolis-Charlotte	27	28 min.	40 min.	12 min.
State House	Joliet-Chicago	37	50 min.	1 hr. 02 min.	12 min.
Capitols-#723 & 725	Santa Clara-San Jose	7	12 min.	24	12 min.
Am Rutledge & K.C. Mule	Independence-Kansas City	10	19 min.	29 min.	10 min.
Cascades-3 trains	Tacoma-Seattle	40	58 min.	48 min.	10 min.
Cascades-3 trains	Vancouver, Wash.-Portland, Ore.	10	18 min.	28 min.	10 min.
Pacific Surfliner-11 trains	Solana Beach-San Diego	26	33 min.	34 min.-49 min.	16 min.-1 min.
Hiawatha Service-5 trains	Glenview-Chicago	18	22 min.	28 min.-32 min.	10 min.-6 min.

Note: Where ranges are given, "fat" varies from train to train. Information is given for only for trains that run five days or more per week for which schedules have been padded with 10 minutes or more.

2001 business plan, was skeptical about projections that revenue will reach \$402 million by 2003, stating: "We have disagreed with Amtrak on how quickly the mail and express service revenues are likely to ramp up. For instance, in 2000, Amtrak projected revenues of \$176 million, but its actual revenues totaled only \$122 million. We understand that Amtrak is in the process of revising its projections and we will look closely at those numbers during our ongoing assessment."¹⁰⁸

Amtrak asserted that carrying freight and express would not interfere with passenger operations. Yet, a comparison of 2001 train schedules with 1997 schedules shows time

added to schedules to accommodate freight/express shipments. In Chicago, for example, riders are delayed aboard motionless trains in rail yards while pokey locomotives shunt boxcars on and off the trains. It is difficult to see how the freight/express program can be construed as a legitimate business to enter when doing so slows passenger train schedules, and passengers are supposed to be Amtrak's core business.

Credibility Crisis # 5: Nonpassenger Revenues

Amtrak routinely issues glowing public statements about its growth in passenger rev-

"Amtrak's desperate financial situation suggests that its weaker routes should be discontinued."

The Economist
recently editorial-
ized in favor of
those who believe
that "giving
Amtrak control
over something
like \$12 billion in
capital spending
is insane."

enues while skirting the fact that nonpassenger revenues have grown and are a significant source of revenues. Such revenues in FY 2000 totaled \$886 million and accounted for more than 43 percent of Amtrak's total revenues.¹⁰⁹ Amtrak also leases portions of right-of-way along tracks to telecommunications companies, owns and operates parking garages, and sells souvenirs.¹¹⁰ Such activities raise questions of equity. Is it good public policy to expand Amtrak's subsidized freight and express program, while it competes with three major taxpaying motor carriers—Consolidated Freightways, Roadway Express, and Yellow Freight? Amtrak's nonpassenger ventures are a growing source of unfair competition with private enterprises.

Credibility Crisis # 6: Network Growth Strategy

In October 1998, the Amtrak Board of Directors initiated a comprehensive assessment of its route system with what it called a Market Based Network Analysis. Later, with great fanfare, Amtrak described the MBNA as a mechanism to find opportunities to "reduce costs and increase revenue" and "match consumer demand with an efficient operation."¹¹¹ Amtrak also said the MBNA would drive expansion and equipment acquisition to accommodate the "best and most profitable passenger rail service."¹¹² The effort also was designed to "increase our profitability."¹¹³

Amtrak later unveiled a Network Growth Strategy based on the MBNA, which in part called for service changes on 14 routes.¹¹⁴ Amtrak claimed: "When our Network Growth Strategy is fully implemented, it will add \$255 million in revenue by 2003 and expand Amtrak service in 21 states. . . . As part of that strategy, we launched the Lake Country Limited service between Chicago and Janesville [Wisconsin]."¹¹⁵

Regardless of Amtrak's phraseology, evidence does not indicate that added trains justified by the MBNA are meeting consumer demand, contributing to lower costs, or increasing profitability. In fact, Amtrak's new trains are

so substandard they violate Amtrak's charter, which mandates that it provide modern rail passenger service.¹¹⁶ What is modern? The definition certainly does not mean inaugurating trains that are slower than trains were decades ago, which is what Amtrak is doing and is why its prospects for success are bleak. Consider the following:

- The MBNA was referenced to justify starting Amtrak's Kentucky Cardinal from Jeffersonville, Indiana (near Louisville), to Chicago on a schedule of 12 hours, 45 minutes.¹¹⁷ In 1925, however, the Pennsylvania Railroad from Jeffersonville reached Chicago in 8 hours, 40 minutes¹¹⁸—4 hours and 5 minutes faster than Amtrak's new train. Our great-grandparents 76 years ago could ride a "milk run," pulled by a steam locomotive, stopping at 16 towns along the way, and get there faster than Amtrak, which serves only five intermediate stops. This could be one of the slowest passenger trains in the world, a "Conestoga wagon with lights."
- The MBNA was cited to justify the April 2000 start of Amtrak's Lake Country Limited, which links Janesville, Wisconsin, with Chicago in 2 hours and 30 minutes.¹¹⁹ In 1952, a Chicago and North Western train from Janesville reached Chicago in 1 hour, 52 minutes¹²⁰—38 minutes faster than Amtrak's new train. It is not surprising that in the first three months of operation an average of only 10 passengers per day rode Amtrak's train in each direction, a figure dismissed by an Amtrak spokesman who said, "it takes a while to ramp things up," and traffic is "going in the right direction."¹²¹ Those added passengers were nowhere to be found when an NBC News *Fleeing of America* segment this year showed that only one passenger was aboard a train with about 70 seats.¹²² Because of the adverse publicity, Amtrak has since announced discontinuance of the train effective September 21, 2001.¹²³

By Amtrak's own data, this train lost \$512 per passenger.¹²⁴

- Finally, the MBNA reportedly justified the startup of Amtrak service between Milwaukee and Fond du Lac, Wisconsin, and between Chicago and Des Moines. In September of this year Amtrak dropped plans for the Fond du Lac train because Amtrak found "the mail and express business isn't there to support it."¹²⁵ A month earlier, Amtrak cancelled plans for the Des Moines train as "customers never developed for the mail and express service that would have formed the line's financial foundation."¹²⁶

Amtrak said of the MBNA process in a report to Congress, "Amtrak can only grow by servicing markets where research—hard facts and data, not hunches, nostalgia, or historical precedent—indicates a strong chance for success."¹²⁷ But Amtrak is ignoring hard facts to promote unjustifiable expansion plans. What "market-based analysis" could justify adding trains on slower schedules than were in effect many decades ago? What "research" predicted that mail and express customers could be found for two new routes where customers were nonexistent?

The FY 2000 Transportation Appropriations Act and the FY 1999 Omnibus Appropriations Act require the Amtrak Reform Council to identify any Amtrak routes that might be candidates for closure or realignment. In November 1999 the council requested from Amtrak "comparisons and analysis of MBNA reports with Amtrak's normal general ledger accounting system and Route Profitability System reports [and] MBNA reports and analyses that are being used to prepare Amtrak's Strategic Business Plan."¹²⁸

But in its latest annual report the ARC said, "Until the data underlying Amtrak's MBNA analysis are made available to the Council for analysis . . . the Council will not be in a position to evaluate potential Amtrak route closures or realignments."¹²⁹ Later the same report said, "The Council has not yet had the opportunity to examine the MBNA

nor Amtrak's [Network Growth Strategy] analysis and detailed, underlying marketing and traffic flow data because such information had not been made available to the Council until very recently, and the data recently provided may not be available in sufficient detail to permit the kind of comprehensive analysis that is necessary before route changes are suggested."¹³⁰

Anthony Haswell, an advocate for modern passenger train service, filed suit against Amtrak in the U.S. District Court in Washington on July 30, 2001, under the federal Freedom of Information Act to force it to disclose financial information on its individual train routes and services. He requested this information from Amtrak in April 2000 under FOIA, and Amtrak has refused to comply. Haswell said:

Amtrak's desperate financial situation suggests that its weaker routes should be discontinued and available resources concentrated on services with long-term potential. In order for the government and the public to make informed decisions on the future of Amtrak and intercity rail passenger service, the information I have asked for is essential. Amtrak is spending many millions of federal tax dollars each year subsidizing the operation of trains which are slower than those of 60 years ago and which do not run on time. This expensive charade must end.¹³¹

The MBNA process is a failure. Evidence is growing that the MBNA is a fig leaf to justify adding trains through more congressional districts in a blatant attempt to distribute more pork-barrel expenditures, a concern reinforced by Amtrak's uncooperative responses to MBNA inquiries.

Credibility Crisis # 7: High-Speed Rail Bond Proposals

Two federal initiatives have been proposed to bring about intercity "high-speed" trains to

Indications are that Amtrak's high-speed train plans will draw only an infinitesimal number of passengers from other modes of transportation.

**Amtrak misleads
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modes of trans-
portation.**

America: the High Speed Rail Investment Act of 2001 and the Rail Infrastructure Development and Expansion Act for the 21st Century, or RIDE-21, a \$71 billion legislative package for various rail projects. But neither proposal would likely succeed outside of the Northeast Corridor where Amtrak's Acela Express program is underway.

The High Speed Rail Investment Act of 2001. This legislation would allow Amtrak to float \$12 billion in bonds to raise capital over a 10-year period to establish high-speed rail programs. Bondholders would receive tax credits rather than interest payments. Amtrak would be required to pay back only the principal on those bonds and participating states would furnish at least 20 percent in matching funds to support a project.

While Amtrak dangles promises of "Bullet Trains" to an unsuspecting public, the act would permit Amtrak to spend billions of dollars on trains that will remain rather ordinary. In cases where an Amtrak train ambles along at 40 mph, it will be able to use bond funds to bring the speed up to 50 mph. The result of this "high-speed" rail program in many cases would be yet more Amtrak trains running no faster than those run by private railroads decades ago. Billions of dollars would be wasted. It is little wonder that *The Economist* recently editorialized in favor of those who believe that "giving Amtrak control over something like \$12 billion in capital spending is insane."¹³²

Quite questionable is the claim by Amtrak vice chairman Michael S. Dukakis that future Amtrak "high-speed" trains will ease aviation congestion, or "winglock."¹³³ What is considered "high-speed" on Amtrak does not qualify for that label in other parts of the world. Even the Acela Express is hardly high-speed by international standards.¹³⁴

The legislation has many other problems:

- Amtrak maintains that the tax credit will cost the U.S. Treasury only \$3.3 billion over 10 years.¹³⁵ But the GAO estimates the cost to be between \$16.6 billion and \$19.1 billion (in nominal dollars)

over 30 years. This is because the bonds are for 20 years and if Amtrak issues bonds at the end of the 10-year period, the period of revenue losses would be 30 years. Also disagreeing with Amtrak is the Congressional Budget Office, which found "the tax-credit funding mechanism would essentially be a new and more expensive way for the federal government to assist Amtrak."¹³⁶

- The \$12 billion would cover only a fraction of the cost of 10 federally designated high-speed routes, warned the GAO. The total cost would be closer to \$100 billion.¹³⁷ The ARC said funding of this magnitude "should not logically be under the control of Amtrak as it exists today."¹³⁸

- The DOT IG stated that potential costs far exceed funds proposed: "If the bond bill or a similar funding instrument were to be adopted, it should be clear to all parties that the \$12 billion provided to Amtrak would just be the proverbial 'drop in the bucket.'... The cost for developing a high-speed rail program in each of the 10 designated corridors would run into the tens of billions of dollars. Careful consideration should be given to where the remaining funding would come from, as well as the likely return on investment, as a precursor to Amtrak investing in any of these corridors. Absent such analysis, it is plausible that the country could find itself with 10 partially built corridors that, in addition to the Northeast Corridor, will each boast a multibillion dollar price-tag for completion."¹³⁹

By incorporating tax-credit costs on Treasury Department ledgers, the \$12 billion in bonds creates massive subsidies that will be off the books for Amtrak. Such deception frees Amtrak to again claim financial "success" despite the continuing drain on taxpayers. On a related point, the GAO estimates that "The cost of the tax credits to the U.S.

Treasury under the bond approach would be at least \$400 million greater and could be more than \$3 billion greater (in present value terms) than providing annual appropriations of an equivalent amount.¹⁴⁰ In other words, it would be less costly to simply give Amtrak the money than to use the bond approach.

- As the GAO observed, the \$12 billion legislation neither directs Amtrak to "segregate bond proceeds from other funds" nor prohibits "the possibility that bond proceeds would be available to Amtrak for other purposes, including prior debt."¹⁴¹ Amtrak is still a candidate for bankruptcy, thus concerns about Amtrak's stability and use of additional funds should not be taken lightly.
- Amtrak will likely exploit the liability for bond repayments by claiming the cost is an obligation that should be paid by the federal government in a liquidation. Thus the program gives Amtrak leverage with which to argue against liquidation, which in turn would perpetuate the operation of slow long-distance trains, the antithesis of what the legislation is supposedly designed to accomplish.
- The railroad cannot be entrusted to exercise proper due diligence in fund expenditures or project completion, and considering its flirtation with bankruptcy a logical conclusion is that the bill sets the stage for another multi-billion-dollar federal Amtrak bailout.

From a transportation perspective, the Amtrak program grossly exaggerates the benefits of its high-speed trains. Consider:

- Only a small portion of the \$12 billion bond proceeds may finance construction of any significant high-speed rail infrastructure. Amtrak has politicized high-speed rail by endorsing proposals to run those trains where virtually no market exists, such as from Texarkana, Arkansas, to Dallas. Such "pet projects"

would spend bond funds to meet the pork-barrel needs of members of Congress.

- Amtrak may spend funds on routes that are excessively long, such as Washington to New Orleans, where, at 1,152 miles, no train, no matter how fast, can compete with air travel. That fact applies in even the most train-dependent cultures in the world.
- Bond funds are likely to be spent on thinly populated routes, such as Chicago to Omaha. Most of the route goes through Iowa, but that state's entire population of 2.9 million is nowhere near the intense concentrations of people found in European cities—the Paris area alone has 10 million—or Japanese cities. Routes like the "high-speed" Chicago-Omaha are destined to be failures before the first spike is driven.
- Indications are that Amtrak's high-speed train plans will draw only an infinitesimal number of passengers from other modes of transportation. In particular, it stretches credibility to believe that Amtrak will divert more than a small number of air travelers to trains: it is doubtful a single flight would be removed anywhere in the nation's crowded aviation system.
- Amtrak's record disqualifies it from participation in planning high-speed rail projects. Consider Michigan, where Amtrak spent \$23 million in a joint federal-state program to install new signals on part of the Chicago-Detroit route¹⁴² and an additional \$3.3 million in TRA funding for communications, track, and bridge work. In April 2001, Amtrak activated the "high-speed" signals, put souped-up locomotives on the line, and indeed cut 15 minutes from schedules. Despite that, most Detroit trains remain *slower* than when the initial funds were granted six years ago.

The \$71 Billion Rail Legislation. A group of House legislators led by Rep. Don Young (R-Alaska)

Amtrak's disappearance would be insignificant outside of the Northeast Corridor and a few other lines.

Excluded from Amtrak's annual reports and congressional testimony are expenditures from numerous publicly funded programs that assist in financing Amtrak.

wants \$71 billion over a 10-year period to build high-speed rail lines through a \$36 billion tax-exempt bond provision and \$35 billion in direct loans or loan guarantees for freight and commuter rail lines. Even sponsors of this lavish spending recognize the futility of giving additional subsidies to Amtrak and instead would send money to states. "The legislation would in effect separate the future of high-speed rail service from the future of Amtrak. . . . Amtrak would not be eligible to apply for any of the funding, although it could compete to be the operator of any new train service. Some lawmakers have made clear that they will oppose high-speed rail funding that is put in Amtrak's control."¹⁴³

These proponents also promise bullet trains to justify the \$71 billion, but such trains will not result from what is another Washington pork-barrel program. Consider:

- Up to \$7 billion would be set aside for "short lines." These railroads are generally only a few miles long, are located in rural areas, and carry a small portion of the nation's freight. Passenger service is limited to historic trains, sometimes pulled by steam locomotives, which offer excursions and entertainment. On that basis, spending billions on those rail lines will do nothing to relieve airport and urban highway congestion as sponsors claim.
- The bill would not fund the construction of new corridors dedicated exclusively to high-speed passenger trains, such as those in Japan and France. The result will be trains too slow to relieve air traffic congestion anywhere outside of the Northeast Corridor.
- While the overall cost of the \$71 billion legislation has yet to be calculated by an objective party, costs would certainly be higher than the \$12 billion package and even then might be understated due to similar misrepresentations.
- It is unclear how the states will finance rail bonds and loans. Because many eligible projects will lack a positive rate of

return, it is likely that state taxpayers will be liable for guaranteeing loan principle and incurring significant obligations to loan issuers and bond holders.

Overall, the legislation illustrates that Amtrak and its allies have no upper limit for subsidies. Even \$71 billion leaves Amtrak proponents unsatisfied as revealed by ARC Chairman Gilbert Carmichael, who said, "It's not as big as it ought to be, but it's good."¹⁴⁴ He has urged federal spending of as much as \$200 billion.¹⁴⁵

Regardless of the details, both bills are premature as are Amtrak's request for \$3.2 billion in "emergency" funding and the \$37 billion stimulus package. Amtrak is under a mandate to prove it can operate without federal operating subsidies. As Amtrak faces the self-sufficiency deadline, DOT IG Mead said of the High Speed Rail Act, "Deciding on the bond bill (now) puts the cart before the horse."¹⁴⁶ The same is true for the \$71 billion package.

No such legislation should move in Congress until the Amtrak Reform Council pulls the sunset trigger to initiate Amtrak's liquidation or restructuring.

Credibility Crisis # 8: The Known Cost of Amtrak

Since 1970 Washington has provided Amtrak with \$25.3 billion in subsidies (see Table 4.) Amtrak misleads the public by saying its subsidies are "low" compared to government expenditures for other modes of transportation. For example, Amtrak vice chairman Dukakis wrote that Congress this year will spend "\$33 billion on highways, \$14 billion on airports, and only \$521 million on rail."¹⁴⁷ But user fees in the form of gasoline taxes and airline ticket taxes finance a significant amount of spending on highway and airport systems.

Amtrak's subsidy/revenue ratio is excessive. A 1998 GAO study found that "Amtrak spends almost \$2 for every dollar of revenue it earns in providing intercity passenger service. . . . Three Amtrak routes spent more than \$3 for every dollar of revenue, and 14 routes lost more than \$100 per passenger in fiscal year 1997."¹⁴⁸ These ratios are stratospheric.

Such Amtrak subsidies are persistent and legendary. In 1982, the Congressional Budget Office put a value on aid to Amtrak: "The comparison showed that on a passenger-mile basis, Amtrak passengers were subsidized at a level more than one hundred times the next closest alternative means of passenger travel. Each Amtrak passenger was subsidized at the rate of 23.6 cents per passenger-mile, while commercial airline passengers received two-tenths of one cent and private auto passengers about one-tenth of one cent."¹⁴⁹

Amtrak offers misleading subsidy comparisons. Specifically, it counts as "subsidies" receipts from government-mandated "user fees," paid by air travelers in the form of a ticket tax for air travel infrastructure and by motorists in the form of a gasoline tax for roads. But in these cases it is the users, not all taxpayers, who are footing some of the bill for the infrastructure they use. Furthermore, even if we were to accept Amtrak's flawed reasoning, the railroad still receives a significantly higher level of subsidies considering its low level of use. The hard fact is that so many people use the aviation and highway systems that on a relative basis the subsidies, if any, are much lower per passenger-mile than Amtrak's. Hundreds of millions of users regularly rely on aviation and highways; about 1.8 million passengers fly on commercial airlines daily and a greater (incalculable) number rely on streets and highways. Hence, subsidies for air and auto travelers at least go to systems enjoying an astonishing level of use. America cannot survive without its aviation and highway systems, while Amtrak's disappearance would be insignificant outside of the Northeast Corridor and a few other lines. Thus, on a quantitative basis, Amtrak subsidies are excessive.

Upcoming Funds. Amtrak has requested an appropriation of \$521 million for FY 2002 as well as authority to issue \$12 billion in bonds.

Credibility Crisis # 9: Amtrak's Stealth Subsidies

As bad as the subsidies discussed above might seem, they do not tell the full story.

Amtrak receives handouts from other government agencies that should be added to the subsidy total. A comprehensive accounting of Amtrak's true cost to taxpayers has never been made, which is regrettable because Amtrak's financial reporting system fails to fairly represent the level of subsidies Amtrak receives. Sen. Wayne Allard (R-Colo.) said on July 20, 2000: "I have grown increasingly skeptical about what is going on with Amtrak. It seems they found a way to pick up government subsidies all over the place. . . . We found that we even have the Federal Transit Administration subsidizing Amtrak."¹⁵⁰ The criticism is justified—Amtrak has lowered costs and deficits in its accounts by placing many expenditures on the ledgers of other public agencies. Excluded from Amtrak's annual reports and congressional testimony are expenditures from numerous publicly funded programs that assist in financing Amtrak. They include the following:

Income Tax Return. As mentioned earlier, Amtrak is benefiting from a taxpayer-sponsored windfall that is unprecedented in U.S. history. Although Amtrak has never paid income taxes, Congress, in the Taxpayer Relief Act of 1997, ordered the Internal Revenue Service to give Amtrak a \$2.2 billion "tax refund." This balance-sheet sweetener of monumental proportions had nothing to do with Amtrak activity as a railroad. The GAO testified that Amtrak recorded a portion of its taxpayer-financed "income-tax refund" as "revenues."¹⁵¹

Federal Railroad Administration Grants. Amtrak benefits from high-speed rail studies and technology development grants under the Swift Rail Development Act of 1994, and grants for train stations, historic building restorations and grade crossing improvements.

Federal Transit Administration Grants. Two examples are a grant of \$18.7 million to the state of Pennsylvania to purchase coaches for Amtrak¹⁵² and \$3.5 million to Vermont to inaugurate new train service to Rutland.¹⁵³ FTA grants also help finance Amtrak improvements at stations ranging in size from Chicago Union Station to the Elizabethtown, Pennsylvania, station near Harrisburg.¹⁵⁴

When Amtrak calculates subsidies it generally fails to discuss government-guaranteed loan subsidies.

Amtrak is using several unconventional accounting practices regarding maintenance and depreciation in an attempt to change the standards under which "self-sufficiency" will be evaluated.

DOT Direct Credit Assistance. The Transportation Equity Act for the 21st Century established the Transportation Infrastructure Finance and Innovation Act, which provides credit assistance to surface transportation projects.¹⁵⁵ Amtrak is seeking a \$29 million loan to finance part of a plan to rehabilitate locomotives.

Housing and Urban Development. The loan guarantee provision of the Community Development Block Grant program, HUD section 108, has benefited Amtrak in at least one instance—helping to finance the relocation of a reservations call center from Ft. Washington (Pa.) to Philadelphia.¹⁵⁶

Loan Default. When Amtrak calculates subsidies it generally fails to discuss government-guaranteed loan subsidies. In the 1970s, Congress provided Amtrak with guarantee loan authority to borrow nearly \$1 billion. The administration and Amtrak concluded in 1983 that Amtrak would likely never repay the debt, and arranged that the Federal Financing Bank of the U.S. Treasury be repaid through a special appropriation.¹⁵⁷ The 1983 Amtrak annual report states: "On September 30, 1983, Amtrak had borrowed under notes payable to the Federal Financing Bank up to its maximum Federal guaranteed loan authority of \$880 million. On October 5, 1983, this obligation, plus \$239 million in accrued interest, was paid on Amtrak's behalf by the Federal Railroad Administration, and a new note in the amount of some \$1.12 billion was executed as of that date between Amtrak and the U.S. Government. The note matures on November 1, 2082, and will be renewed for successive 99-year terms. Interest is payable only in the event of prepayment or acceleration of the principal."¹⁵⁸ Because the Federal Railroad Administration paid the \$1.1 billion obligation, it does not show up in Amtrak financial summaries the way it does in Table 4 in this report.

Congestion Mitigation and Air Quality Improvement. This Federal Highway Administration program has partially funded facilities that Amtrak uses now or will use in the future. Examples include renovation of the Worcester,

Massachusetts, Union Station,¹⁵⁹ initiation of a Los Angeles-Las Vegas train,¹⁶⁰ and construction of a new passenger station in Sturtevant, Wisconsin.¹⁶¹ Amtrak is hopeful that those projects will establish a precedent for future CMAQ funding of Amtrak plans "located outside of non-attainment and maintenance areas which have heretofore been generally ineligible."¹⁶²

Federally Imposed Local Tax Exemptions. This is a case of lowering Amtrak's tax bill at the cost of increasing someone else's. The ARAA exempted Amtrak from the local property tax levied in Beech Grove, Indiana, where a major Amtrak maintenance facility is located. The elimination of revenue from the maintenance facility meant the loss of about \$10 million in the city's assessed valuation. As a result of Amtrak's exemption, there is more of a burden placed on taxpayers.¹⁶³ The law also exempts "Amtrak's passengers and other customers from most state and local taxes, fees, and charges."¹⁶⁴ Again, hardly the kind of treatment that most "commercial enterprises" receive.

Credibility Crisis # 10: Standards for Measuring Amtrak Self-Sufficiency

Despite all of the public funding and support from other agencies, Amtrak still finds it necessary to reduced expenses by redefining them. Amtrak is using several unconventional accounting practices regarding maintenance and depreciation in an attempt to change the standards under which "self-sufficiency" will be evaluated.

Amtrak admits to using capital grants for "maintenance generally, which includes, and is even broader than, progressive [equipment] overhauls."¹⁶⁵ The amount could total \$800 million in 1998–2002 to underwrite maintenance expenses that traditionally have been treated as operating expenses.¹⁶⁶ Such diversion of capital funds permits Amtrak to appear to reduce operating losses. Proponents justify Amtrak's action since public transit agencies perform the same bookkeeping practice. However, Amtrak does not compete with public transit. It competes with intercity bus and air carriers, which receive no public funds for equipment repair

Table 4
History of Federal Subsidies, Grants, and Loans to Amtrak (in millions of dollars)

Fiscal Year	Operating Funds	Excess R.R. Retirement	General Capital	Bos-Wash Capital	Lump Sum	IRS "Tax Refund"	Total
1971-72	40.0						40.0
1973	170.0						170.0
1974	146.6		2.5				149.1
1975	276.5						276.5
1976	357.0		114.2				471.2
TQ ^a	105.0		25.0	50.0			180.0
1977	482.6		93.1	225.0			800.7
1978	561.0 ^b		130.0	425.0			1,116.0
1979	625.0 ^b		130.0	479.0			1,234.0
1980	670.4		191.0	362.0			1,223.4
1981	709.2		187.1	350.0			1,246.3
1982	522.4	36.0	176.6	170.0			905.0
1983	561.5	44.0	94.5	115.0			815.0
1984	562.1	56.0	98.3	100.0			816.4
1985	551.7	76.0	52.3	27.6			707.6
1986	500.7	88.0	2.0	12.0			602.7
1987	468.5	112.0	26.5	11.5			618.5
1988	413.6	121.0	46.2	27.5			608.3
1989	410.6	144.0	29.4	19.6			603.6
1990	388.1	133.0	83.6	24.4			629.1
1991	343.1	144.8	132.0	179.0			798.9
1992	331.0	150.2	175.0	205.0			861.2
1993	351.0	146.0	190.0	204.1			891.1
1994	351.7	150.5	195.0	225.0			922.2
1995	392.0	150.0	230.0	200.0			972.0
1996	285.0	120.0	230.0	115.0			750.0
1997	222.5	142.0	303.0	175.0			842.5
1998 ^c	245.0	142.0	250.0			1,091.8	1,728.8
1999					571.0	1,091.8	1,662.8
2000					521.0		521.0
2001					521.0		521.0
2002					521.0		521.0
Loans			1,119.6 ^d				1,119.6
Totals	11,043.8	1,955.5	4,306.9	3,701.7	2,134.0	2,183.6	25,325.5

Sources: *Background on Amtrak*, Amtrak Annual Reports, Amtrak Finance Department, General Accounting Office, DOT Inspector General, Amtrak Reform Council.

^a Transition quarter. Start of federal fiscal year changed from July 1 to Oct. 1.

^b Includes appropriations of \$25 million in 1978 and 1979 for partial repayments of government-guaranteed loans.

^c Amtrak combined Boston-Washington capital request with general capital.

^d In the 1970s, Congress gave Amtrak guarantee authority to borrow \$880 million in a government-guarantee loan program. Amtrak stated in 1983 that it would not ever be likely to repay the debt, and \$880 million in debt plus \$239.6 million in interest owed to the U.S. Treasury's Federal Financing Bank was repaid through an appropriation to DOT of \$1,119,635,000.

It is clear that Amtrak has not changed three decades of mismanagement, poor planning, and hidden expenses.

and maintenance and which consider such costs operating expenses, consistent with generally accepted accounting principles.

The DOT IG has said:

Congress approved using the capital appropriation for both maintenance of equipment and maintenance of infrastructure in this fiscal year. This funding approach does not change the definition of what constitutes operating costs under generally accepted accounting principles. We have stated and Amtrak agrees that, after 2002, Amtrak must fund directly all expenses for maintenance of equipment and infrastructure without using any Federal appropriations.¹⁶⁷

Joining with the DOT IG was the GAO, reporting:

Amtrak disagreed with our inclusion of expenses for progressive overhauls in our discussion of Amtrak's progress in achieving operational self-sufficiency. . . . As discussed in our report, generally accepted accounting principles consider progressive overhaul expenses to be operating expenses. As a result, we have not revised how these costs are categorized.¹⁶⁸

Amtrak also wants to exclude depreciation from operating expenses, an act tantamount to pushing aside GAAP standards for the purpose of measuring operating self-sufficiency. But such a practice is contrary to the requirements of the ARAA, as stated by the ARC: "The Council believes that the accounting standard specifically referred to in the Council's statutory mandate, GAAP, is, both logically and under current law, the method it must use to measure Amtrak's financial performance."¹⁶⁹ The ARC elaborated in congressional testimony:

The Council believes that the ARAA specifically establishes the standard that the Council is required to use generally accepted accounting prin-

ciples. . . . Section 203(g) of the ARAA specifically requires that in making its evaluation and recommendations with respect to Amtrak's performance, the Council "shall consider all relevant performance factors, including . . . appropriate methods for adoption of uniform cost and accounting procedures throughout the Amtrak system, based on generally accepted accounting principles. . . . The ARAA provides no standard other than generally accepted accounting principles by which the Council is to measure Amtrak's financial performances. Further, the Council believes that GAAP is the appropriate standard to use to measure Amtrak's financial performance under the provisions of the ARAA." [emphasis added]¹⁷⁰

Moreover, GAAP is used throughout the accounting and financial communities to evaluate the financial condition of a for-profit corporation, which is Amtrak's status under its federal charter.¹⁷¹

In short, Amtrak is attempting to lower the bar after the game has started. If Amtrak's contentions are accepted, no legitimate standard would be in place to evaluate "self-sufficiency," and taxpayers will continue to subsidize Amtrak operations during and after FY 2003.

The Routes to an Amtrak Alternative

It is clear that Amtrak has not changed three decades of mismanagement, poor planning, and hidden expenses that cost taxpayers nearly a billion dollars a year. Amtrak is irrelevant in much of the nation, is hopelessly dedicated to operating costly passenger trains that are a throwback to another era, has failed to boost productivity in a significant way, and is in the midst of a credibility crisis of its own making. The route created by

Congress to deal with Amtrak's chronic problems is through the Amtrak Reform Council.

Time for Sunset Trigger

If the ARC makes a finding that Amtrak will fail to reach self-sufficiency by FY 2003, a "sunset trigger" will be implemented. Within 90 days of such a finding, the ARC must submit to Congress "an action plan for a restructured and rationalized intercity rail passenger system," and Amtrak must submit a plan for its "complete liquidation."¹⁷² Congress then would be responsible for deciding which route to take. The ARC has yet to make such a finding.

But Transportation secretary Norman Y. Mineta essentially made such a finding in June when he said: "It's obvious that by 2003 they are not going to be self-sufficient. Despite repeated promises that profits are only a little further down the road, they haven't been. They come back to Congress every year with their tin cup."¹⁷³

The transportation secretary is indeed correct, and the time has come for the council to pull the sunset trigger, to officially find that Amtrak will not become operationally self-sufficient by late next year.

The Amtrak Reform Council: A Weakened Entity

The ARC has stopped short of grappling with fundamental Amtrak problems regarding its national system and has lacked the courage to do its job. The result could be billions of additional dollars in subsidies to perpetuate an Amtrak system the time for which has long passed.

The ARC has made some positive contributions to the dialogue on Amtrak, most notably in urging caution regarding the current high-speed rail bond legislation. The council is troubled by provisions that reinforce Amtrak's de facto monopoly and harm Amtrak's possible competitors. The council is also concerned about lack of objective criteria to evaluate proposals for bond funding and points to the need for adequate project

evaluation by an impartial government body.¹⁷⁴ The council warned that Northeast Corridor profits are not likely to be sufficient to cross-subsidize long-distance trains. It recommended creation of a separate rail infrastructure authority to assume ownership of Amtrak's Northeast Corridor line, and it published a critique describing how proposed Amtrak accounting methods violate generally accepted accounting principles.

The ARC made a recommendation that Amtrak split into two divisions, one to manage the passenger rail operations and the other to oversee property and infrastructure. Amtrak agreed.¹⁷⁵ This move could provide more visibility into Amtrak's often hidden costs and inefficiencies. But the move could also be used by the ARC as an excuse not to pull the sunset trigger.

Amtrak is certain to require federal operating subsidies in the future, even if those subsidies are disguised as capital subsidies, but the ARC has so far failed in its responsibility to set the sunset trigger in motion. The council's reluctance follows a three-and-a-half-year pattern of weak oversight. The ARC has not been as aggressive as the GAO and DOT IG regarding Amtrak's financial crisis, has not publicly objected to Amtrak's refusal to provide information that the ARC is required by statute to evaluate, has gone overboard in highlighting unsupportable Amtrak opinions in reports, and has yet to identify "routes which are candidates for closure or realignment."¹⁷⁶

The council's public meetings seem designed to bolster support for Amtrak rather than explore alternatives to the failed Amtrak paradigm. The council has solicited testimony from interests sympathetic to Amtrak without giving adequate attention to the pros and cons of rail privatizations in Japan, Australia, and Great Britain. Nor has the ARC invited presentations by Guilford Rail or Railway Services Corporation, which offered several years ago to purchase Amtrak's Northeast Corridor lines, to learn about their difficulties in attempting to bring certain Amtrak services closer to pri-

If patterned after the military base-closing commission, the new Amtrak commission would be able to terminate hopeless Amtrak routes and preserve and nurture promising ones.

Virgin Rail has taken over lines from British Rail, sparking a traffic boom far surpassing anything in Amtrak's history, and has placed a \$3 billion order for new trains, the largest-ever train order in Britain's history.

vate-sector operations. Finally, not one taxpayer-advocate organization has been invited to speak about Amtrak subsidies from the taxpayers' perspective.

One reason for the ARC's indecisive behavior is that rail labor organizations, although represented on the council, have worked diligently to neutralize its effectiveness. Their activities include urging Congress to terminate funding and disband the ARC.¹⁷⁷ Subsequent congressional challenges to the council's budget have generated some understandable caution on the part of the council.

ARC Chairman Carmichael also has proposed increasing taxes "two cents on the motor fuel tax—one penny at the federal level and a second penny from the states" in part to support Amtrak.¹⁷⁸ But this approach does not seem to be the one envisioned by Congress when it mandated that Amtrak run without operating subsidies from the federal government. Nor did this seem to be what then-Senate majority leader Trent Lott had in mind when appointing Carmichael to the council: "The ARC will ensure that Amtrak spends the taxpayers' money wisely. The Council's first loyalty will be to the American taxpayer—not to the nostalgic sound of passenger trains going down the tracks."¹⁷⁹

Congress has pressured the ARC not to follow its own legal mandate. In a February 23, 2000, hearing, Sens. Kay Bailey Hutchison (R-Tex.) and John F. Kerry (D-Mass.) instructed Chairman Carmichael to abandon GAAP and permit Amtrak to include depreciation and progressive overhauls as operating expenses eligible for capital subsidies. These senators seemed so reluctant to curb Amtrak's financial losses that they would rather "legislate by edict" in a committee hearing.

Their demand defied statutory language requiring that the Council evaluate Amtrak "based on generally accepted accounting principles."¹⁸⁰ Even though tax-paying private enterprises throughout the nation follow stringent GAAP rules, the senators would permit *tax-absorbing* Amtrak to follow looser rules.

Carmichael agreed to lower the accounting bar, thus facilitating Amtrak's ability to camouflage some operating losses as capital costs. That charade will permit Amtrak to claim it is "doing well" while it shifts billions of dollars from its operating account to its capital account. Congress then might rely on such misleading assertions to increase Amtrak subsidies by billions of dollars. No provision in the ARAA gave the chairman or any council member the prerogative to join in such a scheme. By agreeing with the two senators, the chairman improperly and summarily reversed language regarding GAAP approved in a full council vote and published a month earlier in the council's first annual report to Congress.¹⁸¹ The chairman's proper response should have been to state that the law must be amended if the council is to ignore GAAP standards.

An Amtrak "Base-Closing" Commission Proposal

Should the ARC fail to properly exercise its responsibilities, policymakers could establish an entity patterned after the military base closing commission.

The details of such a plan were established in the proposed Amtrak Route Closure and Realignment Act, as introduced by Rep. Frank R. Wolf (R-Va.) on March 20, 1997. The bill would create an 11-member commission. Eight commissioners would be required to have "expertise in rail finance, economic analysis, legal issues, and other relevant areas." The president would appoint three others, including the secretary of transportation, a representative of rail management, and a representative of rail labor organizations.¹⁸² If patterned after the military base-closing commission, the new Amtrak commission would be able to terminate hopeless Amtrak routes and preserve and nurture promising ones.

Liquidation Issues

The GAO examined a possible Amtrak bankruptcy or liquidation in a 1998 study, "Issues Associated with a Possible Amtrak

Liquidation." The report focused on uncertainties in estimating the costs associated with liquidation, possible financial impacts on creditors, the railroad retirement and unemployment systems, and other rail services. The study said Amtrak estimated that the net liquidation cost could be \$10 billion to \$14 billion over a six-year period.¹⁸³

Since 1985, the GAO has stated that legitimate differences of opinion exist concerning the rights and obligations of the United States in the event of an Amtrak bankruptcy.¹⁸⁴ While pointing to uncertainties in estimating Amtrak's potential liquidation costs, the GAO stated: "In our opinion, the United States would not be legally liable for secured or unsecured creditors' claims in the event of an Amtrak liquidation. Therefore, any losses experienced by Amtrak's secured and unsecured creditors would be borne in full by the creditors themselves or their insurers. Nevertheless, we recognize that creditors could attempt to recover losses from the United States."¹⁸⁵

Although liquidation appears to be a measure of last resort, it has major appeal: Liquidation would be the least expensive option, even if Amtrak's estimated costs are accurate, because the cost would be substantially less than the \$100 billion the GAO estimates may be needed for future Amtrak trains—trains that in most cases will lose money.

Alternatives to Amtrak

Advocates of increased Amtrak funding would have the public believe that almost everywhere else in the world nations spend from a bottomless pit of public funding to operate and maintain national rail passenger systems. The ARC found a different situation:

To the contrary, financial pressures have caused governments to implement various programs of reform, restructuring, and privatization of the national railroads of Germany, Sweden, the Netherlands, Italy, and the United Kingdom. The effect of

these reforms has been significant. In some cases, higher efficiency and quality have actually permitted a reduction of public support. In other cases, support has increased because the clearer contractual relationships under the new regimes have given governments higher confidence that budgeted funds would be spent effectively and for the purposes intended.¹⁸⁶

Virgin Rail has taken over lines from British Rail, sparking a traffic boom far surpassing anything in Amtrak's history, and has placed a \$3 billion order for new trains, the largest-ever train order in Britain's history.¹⁸⁷ In Japan, privatization has reinvigorated development efforts, and the new railways have designed more experimental trains using more advanced technology than the old national railway would have done. Productivity improvements have made Japanese railways nine times more productive than Amtrak.

The productivity of other sectors is also far more impressive than Amtrak's. For example, in 2000 Amtrak had 26,000 workers producing 5.5 billion passenger miles of output, or 213,000 miles per worker. Southwest Airlines produced 42 billion passenger miles with its 30,000 employees, seven times Amtrak's productivity.¹⁸⁸

Around the world, no fewer than 40 nations are replacing Amtrak-style railways with franchised private operators, by selling publicly owned rail assets to private interests, inducing private funds in new rail facilities, and devolving rail service to more efficient regional or provincial public authorities.¹⁸⁹

Amtrak supporters are fond of saying that no other national passenger railway in the world has been able to make a profit. The ARC found otherwise:

After the restructuring of the old Japanese National Railway, the largest new railways, East Japan, West Japan and Central Japan have

Around the world, no fewer than 40 nations are replacing Amtrak-style railways with franchised private operators.

**Most Amtrak
trains outside of a
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been steadily profitable, and a majority of their shares have been sold to private investors. In many countries, profitable companies provide rail passenger services under contracts, franchises or concessions awarded and supported by public agencies. . .

. Long-haul passenger trains in Australia and the franchised passenger operators in the U.K. operate profitably, including contracted-for public support and after paying track access fees; and all suburban passenger services and the Metros in Buenos Aires and Rio de Janeiro are operated by concessionaires who competed for the right to operate trains and receive minimum public support.¹⁹⁰

Precedents exist in the United States where publicly owned railroads have been privatized or moved from federal to regional authority.

Consider Conrail, formerly a major freight line in the East and Midwest. With about \$7 billion in federal aid, Conrail revitalized the lines of six bankrupt railroads including those of Penn Central. The federal government owned 85 percent of Conrail, prior to privatizing it under the 1981 Northeast Rail Services Act. When Conrail was sold for \$1.6 billion on March 26, 1987, it was at that time the largest initial public stock offering in the nation's history.¹⁹¹ Conrail's value continually increased, and by 1997 CSX and Norfolk Southern made competing \$10.3 billion merger offers to Conrail shareholders, the result of which was a buy-out and split of Conrail with about half going to each bidding railroad.

The Alaska Railroad was regionalized through the Alaska Railroad Transfer Act of 1982, in which Congress surrendered federal control.¹⁹² The railroad routinely carries more than a half a million passengers annually.¹⁹³ Comparisons with the most recent GAO calculations of Amtrak traffic by route, issued in 1998, show that more passengers traveled on

this one highly seasonal Alaska railroad than rode 35 of Amtrak's 43 routes.¹⁹⁴

In 1988 the President's Commission on Privatization, a bipartisan panel including representatives from labor and management, concluded unanimously that the privatization of Amtrak would be best for taxpayers and for the future of the railroad.¹⁹⁵

The most promising method for privatizing American passenger service would be to allow competitive contracting for regional rail service. Building on domestic and foreign experience, the United States could establish a process for awarding passenger rail franchises. Doing so would create competition, a key factor in developing better performance. Franchising would also foster good management because the cost of a service is highly visible in the price of a contract, whereas the cost of a government-operated service is usually obscured. But regardless of whether Amtrak assets are sold, leased, or franchised, private operators would do a better job of developing routes with true market potential.

The most significant ridership increases on Amtrak often come from new services or major service improvements initiated and financed by states or groups of states. This was true of Seattle-Portland, where, had it not been for state involvement beginning in 1994, Amtrak traffic would have remained at the stagnant level it experienced from 1971 through 1993. California has spurred ridership increases on short-distance routes into Sacramento and San Diego. The localization process sets the stage for non-Amtrak operation of state-subsidized trains. Dallas selected Burlington Northern Santa Fe Railroad and Herzog Transit Services over Amtrak for commuter rail services, and Amtrak lost a Los Angeles commuter car maintenance contract to Bombardier.

Private companies have innovated specialized trains that appeal to the tourist market, namely the American Orient Express with coast-to-coast trips and the Napa Valley Wine Train, with a focus on a particularly alluring section of California. Holland America Westours and Princess Tours cater

to the leisure market by running special coaches on the Alaska Railroad, helping that rail line outperform most Amtrak routes in the lower forty-eight.

Regrettably, America's policymakers have been pro-Amtrak and anti-private sector, wasting billions of dollars in subsidies. Nevertheless, glimmers of interest from the private sector have emerged. Massachusetts-based Guilford Rail System several years ago offered to purchase or lease Amtrak's Northeast Corridor line and to operate private passenger service as a "responsible approach to the inevitable failure of Amtrak."¹⁹⁶ A Philadelphia-based private company, Railway Services Corporation, offered to take over Amtrak service between Harrisburg and Philadelphia.¹⁹⁷ But the Clinton administration stonewalled the first proposal, and Amtrak blocked the second. Quite recently, New Jersey Transit's board voted to take over operation of Amtrak's Clocker service during the next five years on the Northeast Corridor line.¹⁹⁸ A recent report by the New York State Senate Standing Committee on Transportation urged the state to take control of the two East River tunnels that are used exclusively by the Long Island Rail Road to reach Penn Station in New York. "The Metropolitan Transportation Authority, the state agency that runs the commuter railroad, has been rebuffed by Amtrak in previous attempts to gain control of the tunnels."¹⁹⁹

The fact that Amtrak is now splitting into two divisions, one to run the trains and the other to manage the properties, should make any sell-off or franchising system easier to implement.

Although little known, private companies are monitoring prospects for private operation of rail passenger service in the United States. *Travel Agent* reported that the companies known to be examining Amtrak include "U.K.-based Virgin Management Group, Boston-based Guilford Rail, and St. Joseph, Missouri-based Herzog Transit Services, according to spokespersons from each company."²⁰⁰

Conclusion

A government-owned Amtrak will never be solvent. If the government required Amtrak to live by the same accounting standards used by private industry, Amtrak would never be profitable. Amtrak is a severely bleeding patient, and Congress is a doctor who simply keeps pumping in more blood. This particular doctor has yet to learn that he needs to treat the disease that causes Amtrak's hemorrhaging, not the symptoms.

The Amtrak Reform Council has a duty to make the finding that Amtrak cannot run without operating subsidies. The ARC should pull the sunset trigger, beginning the 90-day period for determining Amtrak's future. There are a number of ways to dispose of Amtrak. It can be privatized as a whole, or its potentially profitable routes can be sold off piecemeal to private companies. It is important that we start this process rather than throw more good money after bad in the form of subsidies, or new bond authority, or "emergency" bail-out money.

Intercity rail passenger service has a future in the United States, particularly on short-distance routes where high population densities are found. Even some of the long-distance routes might survive as a "land cruise" aimed at vacationers and tourists who are willing to pay the price for a unique travel experience.

But most Amtrak trains outside of a few high-density, short-distance corridors are a throwback to days gone by. The railroad does not now contribute much to America's mobility, and its future plans, although expensive, spell more of the same. History is clear that increasing subsidies to Amtrak will not solve Amtrak's problems. The nation must create a public-private rail franchise program and eliminate disincentives to private companies that may be interested in taking over promising Amtrak routes.

The federal government does not run a national airline. It does not operate a national bus company. The justification for a national passenger railroad has evaporated.

A government-owned Amtrak will never be solvent.

If ever there was a time for a true reform of rail passenger service, the time is now.

Notes

1. Laurence Arnold, "Amtrak Usage Swells after Attack," *Associated Press*, September 14, 2001.
2. Lyndsey Layton and Katherine Shaver, "Travelers Switch to Rail as National Stays Closed," *Washington Post*, September 18, 2001, p. A19.
3. Liz Kowalczyk and Jeffrey Krasner, "Sudden Drop in Air Travel Strains Rail and Bus Service," *Boston Globe*, September 17, 2001.
4. Terry Horne, "Attacks Shift Focus of Federal Workers," *Indianapolis Star*, September 30, 2001.
5. Sonja Isger, "Train, Bus Ridership Tapering Off after Post-Disaster Peak," *Palm Beach Post*, September 20, 2001, p. 3A.
6. Stuart Silverstein, "Amtrak's Post-Attack Ridership Surge Is Ebbing," *Los Angeles Times*, September 27, 2001, p. C-1.
7. Bob McCoppin, "Amtrak Looks at Beefing Up Security," (*Chicago Daily Herald*, September 24, 2001.
8. David Morgan, "Mineta Questions Need to Screen Amtrak Passengers," *Reuters*, October 1, 2001.
9. Dawn Kopecki, "Lawmakers Support Amtrak Disaster Aid, Rail Wants \$3.2B," *Dow Jones Newswire*, September 24, 2001.
10. Peter Kaplan, "U.S. Airline Crisis Seen Sparking Rail Investment," *Reuters*, September 25, 2001.
11. Dean E. Murphy, "State Faults Amtrak for Neglect of Tunnels," *New York Times*, August 23, 2001.
12. Mark R. Dayton, Office of the Inspector General, Department of Transportation, "Fire and Safety Needs in the Penn Station-New York Tunnels," Testimony before the New York State Senate Transportation Committee, March 9, 2001, www.oig.dot.gov.
13. Shailagh Murray, "Senate Democrats Weigh Funds for Rail Service to Spur Economy," *Wall Street Journal*, September 25, 2001.
14. "Transportation Issue Requires Realistic Thought," *Evansville Courier and Press*, September 30, 2001.
15. Kopecki, "Key US House Lawmaker Plans \$71B High-Speed Railway Bill," *Dow Jones Newswires*, September 24, 2001.
16. New York Central Railroad Timetable, Form 1001, April 1953, p. 44.
17. Amtrak Nationwide Schedules, Sample Fares, May 1, 1971, p. 27.
18. Ibid.
19. Daniel Machalaba and Carlos Tejada, "Amtrak Ridership Jumps by 60%; Increase Could Endure for Years," *Wall Street Journal*, September 14, 2001.
20. "Amtrak Offers Deal for Acela Express Tickets," *Trains.com News Wire*, September 10, 2001, www.trains.com.
21. See tickets.Amtrak.com.
22. The total number of intercity passengers was 114,786,407 in 1964; 106,282,578 in 1965 (down 8,503,829 from the previous year); 105,286,419 in 1966 (down 996,159); and 98,078,484 in 1967 (down 7,207,935), as reported in "Passenger Traffic and Revenues—Other than Commutation," Interstate Commerce Commission, Washington, undated.
23. *Washington Star*, July 9, 1979. Other stories included William H. Jones, "Travel Record Nationwide on Amtrak Rails," *Washington Post*, May 31, 1979; Joe Ledlie, "85% Ridership Jump May Breathe New Life into Near-Dead Crescent," *Atlanta Journal and Constitution*, June 24, 1979; Fred Pillsbury, "Fuel Problems a Pickup for Amtrak," *Boston Globe*, May 24, 1979; "Suddenly, the Trains Are Sold Out," *Richmond Times-Dispatch*, May 18, 1979; "Gasoline-Wary Travelers Line Up for Buses, Trains," *Chicago Sun-Times*, May 11, 1979.
24. Quoted in Silverstein, p. C-1.
25. Quoted in James Evans, "Riding the Rails," *Crain's Chicago Business*, September 25, 2001.
26. Quoted in Silverstein, p. C-1.
27. Danielle Fidler, "In Search of Security," Letter to the editor, *Washington Post*, September 28, 2001, p. A38.
28. Quoted in Layton and Shaver, p. A19.
29. Quoted in David Kiley, "Uneasy Travelers Put Holiday Plans on Hold," *USA Today*, September 23, 2001.
30. Quoted in Lisa Gubernick and Daniel Machalaba, "Travelers Take to the Rails, but Find Service Is Spotty," *Wall Street Journal*, September 26, 2001.

31. James. M. Beggs, Under Secretary of Transportation, Letter to John D. Ehrlichman, February 18, 1970, p. 8.
32. Kenneth M. Mead, Inspector General, U.S. Department of Transportation, Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001, p. 1.
33. Amtrak issued nine press releases between August 25, 1999, and April 26, 2001, with headlines such as "Amtrak's Bottom Line Continues to Improve" and "Another Month of Record-Setting Revenue." None of them mention Amtrak's substantial cost growth.
35. "Amtrak's Progress in Improving Its Financial Condition Has Been Mixed," U.S. General Accounting Office, July 9, 1999, pp. 5, 8.
35. Phyllis F. Scheinberg, General Accounting Office, Testimony before the Senate Committee on Commerce, Science, and Transportation, 106th Cong., 1st sess., September 26, 2000, pp. 1, 5.
36. Scheinberg, Testimony before the House Transportation Appropriations Subcommittee, 107th Cong., 2d sess., March 21, 2001, p. 5.
37. JayEtta Z. Hecker, General Accounting Office, "The Congress Faces Critical Decisions about the Role of and Funding for Intercity Passenger Rail Systems," Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001, p. 1.
38. Mead, "Amtrak's Financial Performance and Requirements," Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, March 21, 2001, pp. 2, 3, 12, 13, 15.
39. Mead, Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001, p. 5.
40. Don Phillips, "Amtrak Wants to Mortgage Penn Station," *Washington Post*, June 6, 2001, p. E1.
41. Sen. John McCain, Testimony before the Transportation Appropriation Subcommittee of the Senate Appropriations Committee, 107th Cong., 1st sess., June 28, 2001, p. 2.
42. Arnold, "Amtrak Plans to Cut Management Jobs," *Associated Press*, July 27, 2001.
43. "Amtrak Will Continue to Have Difficulty Controlling Its Costs and Meeting Capital Needs," General Accounting Office, Washington, May 31, 2000, p. 23.
44. "A New Vision for America's Passenger Rail," Working Group on Intercity Passenger Rail, Washington, June 1997.
45. "Intercity Rail Passenger Service in America: Status, Problems, and Options for Reform," Amtrak Reform Council, Washington, March 19, 2001, p. 4.
46. "Financial Performance of Amtrak's Routes," General Accounting Office, GAO/RCED-98-151, May 1998, p. 5.
47. *Ibid.*, p. 10.
48. Scheinberg, "Prospects for Amtrak's Financial Viability," Letter to Rep. Frank Wolf, June 5, 1998, p. 7.
49. Anthony Haswell, "Which Way for Amtrak?" *Washington Post*, July 24, 1998, p. A19.
50. George Warrington, president, Amtrak, Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001.
51. Quoted in Tom Ramstack, "Amtrak Likely to Miss Deadline for Self-Sufficiency, Officials Say," *Washington Times*, July 26, 2001, p. B10.
52. The action was denounced by the David Keating of the National Taxpayers Union, who wrote: "This is offensive to taxpaying Americans who normally have but three years to lawfully obtain refunds to which they are entitled. We know of no other entity or taxpayer being treated in such a favored manner." Letter to members of the U.S. House of Representatives, November 13, 1997.
53. Taxpayer Relief Act of 1997, § 977(e)(1).
54. Untitled Amtrak press release, ATK-97-162, July 30, 1997.
55. "Making Investments in America's Passenger Rail System: Amtrak's Quarterly Report on TRA Funding," Amtrak Reform Council, July 31, 1998, p. 1.
56. *Ibid.*, p. 2.
57. Joseph Vranich, member, Amtrak Reform Council, Letter to Amtrak, August 31, 1998.
58. Mark Yachmetz, Federal Railroad Adminis-

tration, Letter to Joseph Vranich, November 5, 1998, p. 2. Such representations by Amtrak were also made orally in a meeting with Amtrak staff on July 31, 1998, and with members of the Amtrak Board of Directors on September 24, 1998.

59. "A Preliminary Assessment of Amtrak," Amtrak Reform Council, Washington, January 24, 2000, p. v.

60. "Intercity Rail Passenger Service in America," p. 6.

61. "Amtrak Needs to Improve Its Accountability for Taxpayer Relief Act Funds," Report to the Chairman, House Committee on Transportation and Infrastructure, GAO/RCED/AIMD-00-78 February, 2000, p. 5.

62. "A New Vision for America's Passenger Rail," Report of the Working Group on Intercity Passenger Rail to the Committee on Transportation and Infrastructure, June 1997, p. 3 and Appendix A, p. 1.

63. McCain, Testimony before the Transportation Appropriations Subcommittee of the Senate Appropriations Committee, 107th Cong., 1st sess., June 28, 2001, pp. 2-3.

64. Martin Tolchin, "Amtrak Picks up Fans with High-Speed S-2000," *New York Times*, February 2, 1993.

65. James Harney, "Techno-Train Turns Corner on the Future," *USA Today*, January 28, 1993, p. 3A.

66. Untitled Amtrak press release, ATK-93-24, May 19, 1993.

67. "Amtrak Announces Six Pre-Qualified High-Speed Train Set Consortiums," Amtrak press release, ATK93-57, November 3, 1993.

68. Thomas M. Downs, president and chairman, Amtrak, Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, 106th Cong., 1st sess., March 17, 1994, pp. 20-21.

69. "Amtrak Seeks Bids for First High-Speed Train Sets Built in the United States," Amtrak press release, ATK-94-83, October 6, 1994.

70. Gene Kramer, "Amtrak Train Deliveries behind Schedule," Associated Press, March 17, 1996.

71. Warrington, acting president and chief executive officer, Amtrak, Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, 105th Cong., 2nd sess., March 11, 1998, p. 13.

72. Machalaba, "All Aboard? Amtrak's Metroliner Has Disappearing-Railroad Blues," *Wall Street Journal*, March 10, 1999.

73. Machalaba, "Much-Hyped as Super-Fast Train, Acela Creeps along Certain Routes," *Wall Street Journal*, August 2, 2001.

74. Phillips, "Amtrak's New Tilt Trains a Bit Too Wide," *Washington Post*, January 7, 1999, p. F1.

75. Lorraine Woellert, "Fast Train to Nowhere?" *Business Week*, September 27, 1999, p. 56.

76. Phillips, "High-Speed Rail Meets New Delay," *Washington Post*, February 1, 2000, p. E1.

77. Phillips, "Amtrak Halts Tests of New Fast Trains," *Washington Post*, June 20, 2000, p. A14.

78. Phillips, "Amtrak Testing of High-Speed Electric Train Is Delayed Again," *Washington Post*, July 22, 2000, p. A11.

79. Arnold, "Equipment Problem Stops Speed Train," Associated Press, December 12, 2000.

80. Penelope Overton, "Bullet Train Loses Power: Amtrak's Acela Express Experiencing 'A Very Bad Run of Luck,'" *Hartford Courant*, July 13, 2001, p. B1.

81. Paul Doocey, "Just Thinking," *Bank Systems and Technology*, June 1, 2001.

82. "2000 Assessment of Amtrak's Financial Performance and Requirements," U.S. Department of Transportation, Office of the Inspector General, CR-2000-121, Washington, September 19, 2000, pp. 13-15.

83. Mead, "Amtrak's Financial Performance and Requirements," Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, 107th Cong., 1st sess., March 21, 2001, p. 17.

84. Mead, Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001, p. 10.

85. Raphael Lewis, "On-Time Woes for Acela Express Train," *Boston Globe*, July 8, 2001.

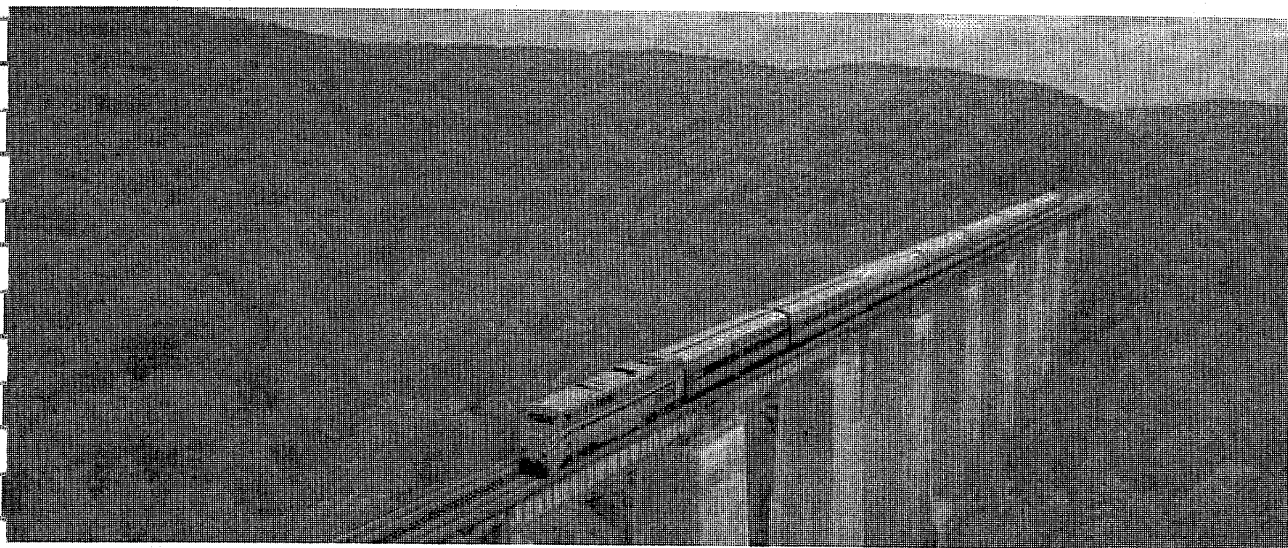
86. Arnold, "Acela Express off to Slow Start," Associated Press, August 21, 2001.

87. "US Airways Shuttle New 6 A.M. Departures Begin Tomorrow between Reagan National and LaGuardia Airports," US Airways press release, January 31, 2000.

EXHIBIT B

NATIONAL RAILROAD PASSENGER CORPORATION

Office of the Inspector General



APRIL 1, 2001 – SEPTEMBER 30, 2001

Semiannual Report to Congress



NATIONAL RAILROAD PASSENGER CORPORATION

Office of the Inspector General

Semiannual Report to Congress

REPORT NO. 24

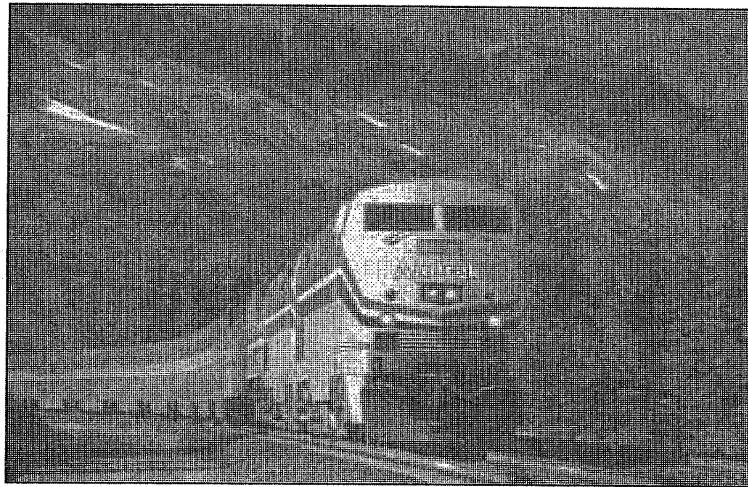
APRIL 1, 2001 – SEPTEMBER 30, 2001



Executive Summary

This is the Office of Inspector General's (OIG) twenty-fourth Semiannual Report to Congress, which summarizes major activities and accomplishments of the Office for the period April 1, 2001 through September 30, 2001.

The Semiannual Report contains statistical information on audit and investigations. In the body of the report, we discuss in greater detail some of the more significant audits, investigations, and evaluations we have conducted. To help readers who are less familiar with Amtrak's operations and programs, we include this overview to provide topical information about the company so readers can better understand what drives Amtrak's operations and programs.



Empire Builder | Glacier National Park, MT

OVERVIEW

In 1997, Congress enacted the Amtrak Reform and Accountability Act, authorizing \$5.2 billion for Amtrak over five years and requiring Amtrak to manage its way to being free of federal operating subsidies by December 2002. This began the "glide path" of Amtrak towards operating self-sufficiency. The Act also created the Amtrak Reform Council, intended to oversee compliance with the Act and make certain recommendations to Congress if it determined Amtrak could not make the glide path. It also created the Amtrak Reform Board which serves as a more traditional Board of Directors. It oversees Amtrak's management, and helps in setting funding priorities and effecting policy decisions.

Amtrak is beginning its fifth year in its glide path to operating self-sufficiency, and there will soon be debates, hearings, and disagreements about the successes and failures of the company in achieving this statutory goal. However, at the end FY 2001, there are just as many opportunities as obstacles facing the company in moving forward.

It is unknown what long term effect September 11 will have on Amtrak operations. Congress is considering emergency legislation to provide safety and security funds for improvements in critical tunnel repairs, bridge upgrades and replacements, and other infrastructure improvements, as well as improvements in life safety and emergency response systems. This legislation will help Amtrak prepare its facilities and personnel to meet the new security challenges ahead. Amtrak's operations were immediately impacted by September 11. Ridership initially increased signifi-

cantly in the northeast, especially on Amtrak's Acela services; however, total ridership for September was still below Amtrak's plan. Ridership and revenues did increase at least slightly for Amtrak in most areas of the country at a very critical time in the company's strategic business plan and glide path, and at least some of the new travelers drawn to Amtrak will permanently change their mode of travel to rail. Additional ridership potential may be realized if other transportation modes continue to be adversely affected by terrorist events or economic conditions.

As Amtrak begins its final year of the glide path, it is becoming more apparent that the realization of the self-sufficiency goal itself may be less important than the need to measure the real progress contemplated in the Amtrak Reform and Accountability Act. The very definition of operating self-sufficiency has created some confusion and misperceptions. Initially, the goal contemplated that Amtrak would eliminate its need for a federal operating subsidy, but not the need for continued federal capital funding. During the glide path, Congress refined the definition and granted the additional flexibility given other subsidized modes by permitting capital appropriations to be used for certain non-capital work, i.e. certain maintenance of equipment, progressive overhauls, and certain maintenance of way expenses. Today, however, there are still those who believe that achieving operating self-sufficiency means a permanent end to all federal subsidies, or those who continue to apply the traditional generally accepted accounting principles (GAAP) definition to self-sufficiency.

For the last several years, practically all of Amtrak's planning and spending has been driven by the singular goal of operating self-sufficiency. For that reason, budgeting, revenue forecasts, borrowing to meet short term cash obligations, where and when to commit capital, and other financial decisions have sometimes been force-fit into the glide path, or backing into the required numbers. Amtrak realized that not meeting the glide path might trigger statutory reorganization and/or liquidation planning, and it saw as its first goal the need to meet the glide path at any and all costs.

To a large degree, Amtrak has been severely hamstrung in its efforts by external circumstances. Amtrak relied heavily in its strategic business planning on a timely launch of the high speed Acela Express service, and obtaining almost immediate financial contribution to achieve the glide path numbers. Unfortunately, design and manufacturing delays ensued. Amtrak reported the delay of Acela high speed trainsets alone has cost the company potentially over \$300 million in lost passenger revenues. Similarly, Amtrak's network growth strategy and its mail and express service expansion assumed all necessary capital would become available, a good economy would continue, and there would be a highly favorable market responses. Not all of these assumptions proved accurate, and there are no alternate plans that can fill the revenue and cash shortfalls, short of borrowing and significant asset conversion.

There were also certain assumptions made by Amtrak that were within its control and where Amtrak consistently assumed positive results. The Department of Transportation's Inspector General has commented in his annual reviews that Amtrak's optimistic assumptions on business plan actions, productivity improvements, and revenue forecasts were over estimated. It appears the Inspector General's assessments, which could not have foreseen and did not anticipate economic downturns, were more on target than Amtrak's planned scenarios. Certain improvements tied to implementation of revised service standards, productivity improvements, presenteeism, and other internal savings or expense reductions never fully materialized.

OIG Perspective

As the debate on Amtrak begins in the new fiscal year, we would like to add our perspective and advice as the in-house OIG. First, it is clear there is a broad mandate for rail passenger services as demonstrated in the bi-partisan support for expansion of high speed rail services, in at least two competing high speed rail bond bills, as well as the support for significant investment in safety and security for the railroads in pending legislation.

Second, well intended efforts to privatize Amtrak in its current incarnation, or efforts to require that Amtrak attain profitability, will not be successful. Any examination of "privatization" and comparisons with other countries should be viewed carefully and within the broader context of their culture, historical subsidization, and hidden subsidization.

Third, despite route and service flexibility given in the Reform Act of 1997, Amtrak remains a statutorily mandated national rail passenger service. As such, Amtrak provides a myriad of services in different operating environments, with different partners, with differing levels of social and economic contributions and impact, and with different financial outcomes for each service. While there may be room for other carriers in any possible expansion of rail passenger service, the considerable historical investment in Amtrak's physical resources, infrastructure, and personnel must play a pivotal role in any solution going forward.

What has gone wrong over the years is that there are unfounded expectations that Amtrak can become profitable through some kind of company break-up, superior for-profit management initiative, radically revised labor contracts, unspecified expansion or growth, depolitization in selecting and de-selecting services and routes, or opening the Amtrak rail passenger service monopoly to competition and the free market. While each of these events can affect the bottom line, it is highly unlikely they will occur overnight, together, or if at all in the short term.

The simple fact is that Amtrak as a national system, or even as individual parts of the Amtrak system, cannot exist or stand alone without federal or a federal-state subsidy. Among industrialized nations with significant passenger rail service, only Japan and some Scandinavian countries claim a profit. Yet, even these modest profits discount years of substantial national subsidies. The population densities, geography, and supportive culture around passenger rail in these nations are not readily duplicated in the United States. Congress, Amtrak, and most Americans want a national rail passenger system of which all can be proud. They want their version of a *Tres Grande Vitesse* (TGV) or an ICE train, or they want more Acela Express, Talgo, Surfliners, or other more modern, faster service. There is growing frustration that the United States does not have such service after years of federal and state investment.

Funding Passenger Rail Service

Any new plan to effect improvements in rail passenger service must address the significant capital needs that historically have not been met. This refrain has been sounded by supporters and critics of Amtrak alike, but there are different opinions about where and how funding should be derived. What has also been missing is a failure to distinguish among which projects and programs warrant funding, and ultimately how success will be determined. For example, there is now momentum building for high speed rail and for developing certain corridors. Are all corridors equal candidates for development? Are there greater social and economic needs in some corridors than others? Are some states and localities better off financially than others and more likely to obtain funding first? Should several corridors be developed simultaneously, with planned intercity, inter-corridor linkages? What entity should control and manage these decisions?

There needs to be more dialog about the relationship between funding and outcomes. When Congress passed the Taxpayer Relief Act of 1997 (TRA), the funding arrangements for the glide path changed. Amtrak was then reluctant to request the full authorized funding in light of the TRA cash infusion, and Amtrak also was not forthcoming with Congress until later in the glide path about its larger long term capital needs. Subsequently, some TRA funds were diverted to more traditional operating purposes to help achieve the glide path. Today however, the current backlog of capital work necessary to bring the infrastructure to a required "state of good repair" is substantial and must be addressed. How and where capital is used and leveraged for the long term, needs to be understood and spelled out so that it is clear how and when operating expenses will, or will not, be affected.

New Metrics

It is time for Congress to move away from the singular, global metric of operating self-sufficiency. Rail passenger service will not make a profit in the foreseeable future, and while desirable, it is doubtful Amtrak or any other entity providing rail passenger service can be held to traditional standards of profitability. Congress instead needs to adopt a set of "betterment" metrics and clearer definitions of success to gage properly the return on future federal investments. And, within these metrics, decision makers should acknowledge that the transportation needs of the cities and communities served and the opportunities for expanded service are vastly different across the nation. It is more important that Amtrak demonstrate continual improvement in its services and a more effective use of its assets, than achieving a self-sufficiency goal but in a precarious financial condition.

What kinds of metrics make sense? Traditionally, within the transportation industry, business metrics include both financial and non-financial performance measures, including safety performance, on-time performance, passenger load factor, ticket yield, revenue/cost per seat/passenger mile, and customer satisfaction indices. Metrics can be further broken down or examined by geography (origin-destination city pairs, trip length, service/route/lane), levels of equipment utilization (fleet/equipment type, return on asset), or contractual arrangement (subsidiary operating carrier, state-supported service). Other broader but equally important metrics, address productivity and outputs such as the efficacy and costs of mechanical and maintenance efforts. While Amtrak provides a great deal of information about its operations and programs to the Office of Management and Budget and Congressional oversight committees, no adequate baselines or service success measures have been established. Additionally, there has not been enough discussion about the social impact and needs in some areas of the country which have been adversely affected by transportation deregulation or the economy.

On the most important of measures Congress and the Department of Transportation have repeatedly demonstrated, they are first and foremost concerned that Amtrak maintain a safe railroad; and Amtrak has unequivocally delivered on this



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critical requirement. Amtrak not only adheres to Federal Railroad Administration regulations, it often adopts maintenance and inspections standards greater than those required by law or regulation. Given the uncertainties ahead, substantial work will be required to keep Amtrak a safe railroad in light of the September 11 events. Greater attention to protection of physical infrastructure, traffic control, passenger screening, and emergency response and evacuation are paramount. While still being defined, the Rail Security bill is a timely and appropriate response to these needs.

Asset Utilization and Financial Management

With the amount of investment made in rail to date, there should be considerably more attention paid to asset utilization and managing capacity. One measure cited frequently for passenger equipment is passenger load factor, usually measured as a percentage of capacity. Most persons can argue that Amtrak's load factors have not been optimized, standing at less than 50% nationwide; however, their frame of reference is an airline load factor. In some areas of the country for passenger rail service, an equally critical metric is the peak load factor, which describes that point in a route where a near "sold out" point is reached. Unlike an aircraft that flies from point A to point B with possibly an intermediate stop, most Amtrak trains make many intermediate station stops. Amtrak, therefore, must balance its capacity and bookings to accommodate a peak load factor, while trying to offer a competitive alternative. Load factors alone, like any singular metric, need context.

Carriers are also concerned with yield, usually expressed as revenue per passenger/seat mile. The airline industry has developed a comprehensive and complex yield management system, which provides a framework for optimizing fare and pricing policies and fleet planning. Amtrak's yield management program, even after thirty years, is still embryonic and needs considerably more investment and attention. Amtrak should be required to use its excess capacity more efficiently by adjusting consists (train make-up) more frequently and demonstrating more effective fare and pricing policies. During the early years of the glide path period, Amtrak attempted to undertake changes in this area by identifying areas of market need which overlap its route structure. These route analyses were grounded in econometrics modeling and detailed cost analyses, known as the market-based network analysis (MBNA), but the MBNA strategy was not fully completed and has not been fully effected.

Amtrak needs to improve upon its financial and management information reporting systems. While Amtrak has been operating under GAAP for thirty years, and has had "clean opinions" in all of those years, a company cannot manage on financial

statement outcomes alone. A company's critical asset is information, especially financial information and the relationship of expenses to revenues. While Amtrak collects significant amounts of financial information, there is insufficient analysis and distribution of such information within the company. Amtrak does have several very effective management systems in place for some activities, such as Amtrak's ARROW reservations and ticketing system; however overall, Amtrak lacks true financial and management information systems. There are inadequate support systems in place for mechanical and maintenance operations that link costs and the true benefits of activities.

State and Local Partnerships

There should be greater recognition that Amtrak's considerable service offerings, state and local contract agreements, and freight railroad relations are not the same in all parts of the country. Amtrak and the northeast regional commuter entities have a long history of successfully working together, most often in sharing equipment, track construction, track maintenance resources, and coordinating scheduling and traffic dispatching. These relations are unique in the northeast as the Northeast Corridor (NEC) spine from Washington, DC to Boston is primarily owned and operated by Amtrak. Too often, critics of Amtrak cite a "preference" to the NEC, but the NEC operations are different because it is the only major piece of railroad property owned and operated by Amtrak, and furthermore, it is the only electrified passenger service in the country.

Amtrak should build on and leverage the other kinds of state and regional partnerships in place; from the well established successes in California, Oregon, and Washington in the west, to the expansion of commuter and short-distance markets in Virginia, North Carolina, Georgia, and Florida in the east. Since 1990, California and Amtrak have jointly funded \$1.2 billion in predominantly capital projects involving stations, maintenance facilities, tracks, and signaling. Amtrak worked closely with California in developing their 20-year Passenger Rail System Improvement Plan. Since 1993 in the northwest, Amtrak expanded its partnership with the states, cities, freight railroads, and business's in a \$550 million program to reduce traffic congestion in the I-5 corridor and to expand the Vancouver service. Other projects address grade crossing safety and ground work in anticipation of a high speed rail investment act. In the midwest, Amtrak has worked closely with Illinois, Michigan, and Wisconsin, to prepare for high speed rail services through Chicago, which will augment a number of other state-supported services.

Most states supporting Amtrak plan around the Amtrak service in the broader context of their other transportation needs.

Amtrak service is often tied to intermodal facilities, including buses, light rail commuter, and airport connectors. Many nations have found that rail, especially high speed and increased frequency, play a critical role in the 300 mile and under market. Amtrak's station connections at the Baltimore-Washington International Airport, recently announced Airtrain service connections at Newark International with New Jersey Transit and Amtrak to Continental, and planned connections at T. F. Green in Providence are a few examples of such integrated planning. It is inconceivable that any debate about Amtrak and the future of passenger rail service can take place without acknowledging these state and regional agreements, taking note of what has and has not worked well with these entities. Amtrak, the participating states and regional authorities, and others should be given credit for the many successes in these service relationships.

Any decision to eliminate parts of the national route structure must be taken very carefully. It is quite probable that when a route elimination decision is made, it will be decades, if ever, when that decision could be reversed. The efforts to restart Oklahoma service after years of abandonment should be remembered.

Employees of the Rail Service

Finally, there has been insufficient attention paid to Amtrak's human capital, its employees, and their ability to operate passenger rail services in sometimes difficult conditions. As with any company of approximately 25,000 employees, there are always opportunities for improving productivity and effectiveness. Within Amtrak, there are very dedicated people who take pride in being part of passenger railroading. They, like their counterparts in airlines and other 24-7 transportation companies, form the backbone of their companies. Too often, these people are left out because their roles and contributions are clouded by partisanship beliefs and predispositions about labor or management. Ultimately, regardless of any reorganization, rebudgeting, or rethinking of Amtrak, these employees should be recognized for their contributions and their potential in making improved passenger rail service possible.

Recommendations for Congressional Decision Makers

In summary, we offer the following about Amtrak and the future of rail passenger service:

- Move immediately away from the operating self-sufficiency criterion in the glide path to a set of betterment metrics over time that will account for both financial and non-financial performance at system, region, and route levels.

- Do not lose sight of traditional financial statement results, but do not let financial statement results alone, in the aggregate, or on a route-by-route basis, be the sole determinant or driver of the value and benefit of any service.
- Require betterment measures which are appropriate for the circumstances and avoid aggregating routes and services that have dissimilar operating and demographic characteristics.
- Consult with and involve states and regions to build specifically on their successful transportation experiences, more clearly identifying their short and long term needs from the bottom up, emphasizing and rewarding intermodalism and partnerships wherever possible. Weave these inputs into a set of better integrated national transportation network needs that involve all modes.
- Avoid undocumented claims that privatization or an unspecified "free market" fix is a panacea for passenger rail service; it has not worked anywhere else in the world, and it is highly improbable it can work here. Some limited private service may be viable, but all considerations of the same should be done with full knowledge of total costs and benefits.
- Insist on updating Amtrak's financial and management information systems, more complete expense and cost-benefit analyses for major investments and projects, yield management, and asset utilization. You cannot fully evaluate what you cannot accurately measure.
- Acknowledge that the Congressional authorization and appropriation processes sometimes and unintentionally drive short term thinking. Require accountability, return on federal investment, and finally, determine an adequate and stable long term capital funding source.

Recommendations for Amtrak Decision Makers

The success of Amtrak can be measured in a variety of ways, depending on how the company is recast. Regardless of any performance metrics used, Amtrak itself must engage in a concerted, consistent, and bold effort to achieve progress and improve its financial performance. In summary, we offer the following:

- Continue and expand efforts to cut costs, utilizing the Cost Management Initiatives (CMI) project, and include mechanisms to ensure the initiatives are practical, enforceable, and are maintained for a sufficient period of time to become effective.

- Reduce reliance on outside consultants and make more effective use of only those remaining consulting firms that demonstrate true added value.
- Implement more effective internal controls for major capital projects, including better pre-contract review and subsequent contract administration, capital budget discipline, and demand accountability from contractors.
- Press for legislation which will provide Amtrak with both the maximum protection for federal funds invested and maximum flexibility for seeking new business and entrepreneurship.
- Develop more creative marketing strategies and fare flexibility, particularly for mid-day and historically under-utilized trains and services.
- Immediately improve financial and management information support systems, providing greater distribution of information on successes and failures to management and all employees.
- Re-balance the company with an optimum amount of decentralization vs. centralization of business processes. Centralize functions that require quality, consistency, economies of scale, and shared resources. Decentralize only those functions that meet time-to-market objectives, or use non-shared resources.

AUDITS

We issued 26 audit reports during this reporting period. The findings in these audit reports identified over \$3 million in questioned costs, \$9.3 in unsupported costs, and \$3 million in funds to be put to better use.

The OIG Audit group continues to provide a significant positive return on department investment. Significant audits, which are explained in greater detail later in the report, include:

- Identifying overstated billings from vendors and host railroads.
- Maintaining a strong oversight and presence in the company's internal operations, information technology, and its self-insured health care program.
- Continuing our review of high speed trainsets and northend electrification change orders, modifications, claims, and Buy America compliance.

INVESTIGATIONS

During this reporting period, the Office of Investigations (OI) opened 80 new cases and closed 41; the current active caseload is 403 cases or investigations nationwide. There has been a surge in allegations and active investigations, the nature of cases has expanded, and our caseload has grown significantly, more than doubling since 1995. Our current caseload is an increase of 137% from 1995 and 19% from last year.

Our investigations resulted in 27 criminal referrals to prosecutors, three criminal indictments, guilty pleas, felony prosecutions, or pretrial diversions, as well as many administrative actions. We have 37 pending civil and/or criminal prosecutive referrals. We continue to work closely with management on many issues, including safety and security of the public, employees, and facilities, internal procurement and contracting procedures, controls and collection policies regarding conductors and ticket agents, and internal controls related to cash and worker productivity. We have also issued management reports on several matters pertaining to internal controls and safeguards.

Our significant investigations and case results, include inquiries concerning:

- Security and safety
- Conductor related fraud and abuse
- Construction fraud
- Employee embezzlements
- Health care fraud
- Miscellaneous employee frauds, including theft of services
- Potential antitrust violations

INSPECTIONS AND EVALUATIONS

In late 1999, the Inspector General (IG) established a new Office of Inspections and Evaluations (OIE). The addition of this new office is providing the needed capacity to perform additional oversight functions that are neither audits nor investigations, and were being provided through consultants, or not at all. The OIE is currently involved in cost management activities, the Northend Electrification Project, and developing various corporate guidelines and policies.

EXHIBIT C

88. "Delta Shuttle Shatters Boarding Records," Delta Air Lines press release, November 29, 2000.
89. See Marcia Gelbart, "Airport Planners Are Not Worried about Drop in Traffic," *Philadelphia Inquirer*, September 18, 2001; Sabrina Jones, "At BWI and Dulles Airports, It's Hurry Up and Wait," *Washington Post*, October 1, 2001, p. A09; and Al Frank, "Continental Moves Ahead with Newark Project," *Newark Star-Ledger*, October 1, 2001.
90. Michael S. Dukakis, "A Down-to-Earth Solution to Airport Gridlock," *New York Times*, September 1, 2001, A23.
91. "A Preliminary Assessment of Amtrak," p. ii.
92. "Historical Air Traffic Data: 1954-2000," U.S. Department of Transportation, Bureau of Transportation Statistics, ntl.bts.gov/faq/bts.html, July 29, 2001.
93. Stephen J. Thompson, "Amtrak: Background and Selected Public Policy Issues," Congressional Research Service, Washington D.C., November 12, 1998, p. CRS-2.
94. Cited in Vranich, *Derailed: What Went Wrong and What to Do about America's Passenger Trains* (New York: St. Martin's, 1997), p. 34.
95. "Strategic Business Plan FY 1999-2002," Amtrak, October 12, 1998, p. 6.
96. "On-Time Performance: A Key Ingredient of Customer Satisfaction," Amtrak press release ATK-94-27, April 1994.
97. "Amtrak On-Time Performance Reaches New High," Amtrak press release ATK-98-14, February 5, 1998.
98. Tommy G. Thompson, chairman, Amtrak, Letter to Amtrak Reform Council, June 14, 1999.
99. "Acela Express Gets off to Strong Start," Amtrak press release, ATK-01-03, January 11, 2001.
100. "Amtrak Annual Report, 2000," Statistical Appendix, p. 46.
101. "The Market Based Network Analysis of the National Railroad Passenger Corporation," Amtrak report to Congress, February 29, 2000, p. 8.
102. Ed Ellis, "No, Really, Amtrak Can Be Profitable, Trains, September 1995, pp. 68-69.
103. Lee W. Bullock, Amtrak Intercity Interim President, quoted in "Edwin E. Ellis Named Vice President at Chicago-Based Amtrak Intercity," Amtrak press release, ATK-97-209A, November 19, 1997.
104. "Amtrak Seeks New Freight Business," *Railway Age*, April 1997, p. 28.
105. Machalaba, "Amtrak Quietly Hauls Cargo on Its Trains, to the Horror of Rivals," *Wall Street Journal*, July 30, 1997, p. 1.
106. Anna Wilde Matthews, "Amtrak Trims Freight Plan, Projects Huge Loss," *Wall Street Journal*, May 15, 1998.
107. Bob Johnson, "Amtrak Mail-and-Express Balancing Act," *Trains*, December 1998, p. 27.
108. Mead, "Amtrak's Financial Performance and Requirements," Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, 107th Cong., 1st sess., March 21, 2001, p. 18.
109. Mead, "Amtrak's Financial Performance and Requirements," Testimony before the Transportation Appropriations Subcommittee of the House Appropriations Committee, 107th Cong., 1st sess., March 21, 2001, p. 3.
110. "Amtrak Seeks New Sources of \$\$\$," July 8, 2001, www.foxnews.com.
111. "The Market Based Network Analysis of the National Railroad Passenger Corporation," Amtrak report to Congress, February 29, 2000, Introduction, p. 1, and Executive Summary.
112. Tommy G. Thompson, Testimony before the Subcommittee on Ground Group Transportation of the House Committee on Transportation and Infrastructure, 106th Cong., 1st sess., October 28, 1999, p. 3.
113. Tommy G. Thompson, Testimony before the Transportation Appropriations Subcommittee of the Senate Appropriations Committee, 106th Cong., 2nd sess., March 9, 2000, appropriations.senate.gov, p. 3.
114. "Strategic Business Plan, Update, FY 2000-2004," Amtrak, undated, p. 2.
115. Tommy G. Thompson, "Amtrak Allegations Are Blowing Smoke," *Milwaukee Business Journal*, Letter to the editor, August 7, 2000.
116. Outlined at 49 USC 24101 (a)(1)(b).
117. Amtrak Jeffersonville-Chicago schedule, Train 851, August 2, 2001, www.amtrak.com.
118. Pennsylvania Railroad through and local ser-

- vice, Chicago-St. Louis-Pittsburgh, Train 317, 1925, pp. 53-54.
119. Amtrak Janesville-Chicago schedule, Train 344, August 5, 2001, www.amtrak.com.
120. *The Official Guide of the Railways* (New York: National Railway Publication Company, June 1952), pp. 811-12.
121. Larry Sandler, "Amtrak Critic Wants Thompson Ousted," *Milwaukee Journal Sentinel*, July 12, 2000.
122. Fred Francis, "Amtrak: A Great Train Robbery?" NBC News, *Fleeing of America*, May 2, 2001.
123. Sandler, "Amtrak to Drop Janesville Route," *Milwaukee Journal Sentinel*, March 16, 2001.
124. Sen. McCain, Testimony before the Transportation Appropriations Subcommittee of the Senate Appropriations Committee, 107th Cong., 1st sess., June 28, 2001, p. 3.
125. Sandler, "Amtrak Cancels Fond du Lac Plans," *Milwaukee Journal Sentinel*, September 10, 2001.
126. Chris Youngquist, "Amtrak to Forgo Chicago-to-Des Moines Route," *Quad City Times*, August 18, 2001.
127. "The Market Based Network Analysis of the National Railroad Passenger Corporation," Amtrak report to Congress, February 29, 2000, p. 29.
128. Carmichael, Letter to Amtrak Chairman Tommy G. Thompson, November 12, 1999, pp. 2-3.
129. "Intercity Rail Passenger Service in America," p. 9.
130. *Ibid.*, p. 84.
131. "USA: Suit Seeks Detailed Financial Data on Amtrak," Reuters, July 30, 2001; and "Amtrak Sued to Disclose Train Finances," PR Newswire, July 30, 2001.
132. "Trop Peu, Trop Tard, Trop Amtrak," *The Economist*, August 11, 2001.
133. Dukakis, "A Down-to-Earth Solution to Airport Gridlock," *New York Times*, September 1, 2001.
134. Thomas C. Palmer Jr., "Fast Train: Well to Us, but Not to Europeans," *Boston Globe*, October 7, 1999.
135. "High Speed Rail Initiatives," August 5, 2001, www.amtrak.com.
136. John Connor, "CBO Says Amtrak Tax-Credit Bond Financing More Expensive," Dow Jones Newswires, September 25, 2001.
137. Arnold, "Lawmakers Mull Future of Amtrak," Associated Press, July 25, 2001.
138. "Intercity Rail Passenger Service in America," p. 52.
139. Mead, Testimony before the Subcommittee on Railroads of the House Committee on Transportation and Infrastructure, 107th Cong., 1st sess., July 25, 2001, p. 4.
140. John H. Anderson Jr., U. S. General Accounting Office, Letter to Sen. Wayne Allard et al., June 25, 2001, p. 2.
141. *Ibid.*, Enclosure II, p. 31, slide 46.
142. Amtrak press release, ATK-98-22, untitled, February 25, 1998.
143. Arnold, "High-Speed Rail Bill Prepared," Associated Press, September 7, 2001.
144. Quoted in Wes Vernon, "Let's Build a High-Speed Railroad for the Country," *Destination: Freedom*, September 10, 2001, nationalcorridors.org/df09102001.shtml.
145. Carmichael, Response to Questions before the Senate Commerce, Science, and Transportation Committee, September 26, 2000.
146. Quoted in Arnold, "Lawmakers Mull Future of Amtrak," Associated Press, July 25, 2001.
147. Dukakis, "A Down-to-Earth Solution to Airport Gridlock."
148. "Financial Performance of Amtrak's Routes," General Accounting Office, GAO/RCED-98-151, May 1998, p. 2.
149. Cited in Vranich, *Derailed: What Went Wrong and What to Do about America's Passenger Trains* (New York: St. Martin's Press, 1997), p. 42.
150. Sen. Wayne Allard, *Congressional Record*, July 20, 2000, pp. S7341-S7342.
151. Scheinberg, "Amtrak Faces Challenges in Improving Its Financial Condition," Testimony before the Subcommittee on Ground Transportation of the House Committee on Transportation and Infrastructure, 106th Cong., 1st sess., October 28, 1999, p. 3.
152. "Federal Funds Approved to Help PennDOT Buy New Trains," PR Newswire, September 16, 1997.

153. "Vermont Gets Another Train," *Passenger Train Journal*, November 1996, p. 8.
154. Frank Cozzoli, "Rail Line Secures HATS Backing," *Harrisburg Patriot*, February 24, 2001, p. B1.
155. "Transportation Equity Act for the 21st Century, Rebuilding America's Infrastructure," August 6, 2001, www.dot.gov.
156. "Amtrak to Site One of Three National Reservation Sales Call Centers to Philadelphia," *PR Newswire*, February 2, 1998.
157. "A Preliminary Assessment of Amtrak," Amtrak Reform Council, January 24, 2000, p. 6.
158. Amtrak Annual Report, 1983, Notes to Financial Statements, Note 4, p. 25.
159. Andi Esposito, "Mission remains clouded, Challenges remain for Union Station," *Worcester Sunday Telegram*, December 10, 2000, p. E1.
160. Joelle Babula, "All Aboard for Las Vegas," *Las Vegas Review-Journal*, December 15, 1999.
161. Luke Klink, "Sturtevant Railroad Depot Approved," *The Milwaukee Journal Sentinel*, April 22, 2001, p. 4.
162. Cynthia J. Burbank, Program Manager-Planning and Environment, Federal Highway Administration memorandum regarding guidance on CMAQ under TEA-21, April 28, 1999.
163. Dennis Buckley, fire chief of Beach Grove, quoted in Katie DeFreese, "Beech Grove OKs \$7.73 Million Budget," *Indianapolis Star/News*, September 24, 1998.
164. "Cost Estimate on Amtrak Reform and Privatization Act of 1997," Congressional Budget Office, Washington, September 16, 1997, p. 4.
165. Tommy G. Thompson and John Robert Smith, Amtrak board members, Letter to Carmichael, chairman, Amtrak Reform Council, January 14, 2000, p. 2.
166. "Financial Performance of Amtrak's Routes," U.S. General Accounting Office, GAO/RCED-98-151, May 1998, pp. 2-3.
167. "2000 Assessment of Amtrak's Financial Performance and Requirements," CR-2000-121, U.S. Department of Transportation, Office of Inspector General, Washington, September 19, 2000, pp. i-ii.
168. "Amtrak's Progress in Improving Its Financial Condition Has Been Mixed," p. 22.
169. "A Preliminary Assessment of Amtrak," Washington, Amtrak Reform Council, January 24, 2000, p. 8.
170. Carmichael, Testimony before the Subcommittee on Surface Transportation and Merchant Marines of the Committee on Commerce, Science, and Transportation, 106th Cong., 2d sess., p. 9. GAAP requirement also spelled out in the Amtrak Reform and Accountability Act of 1997, PL 105-134-Dec. 2, 1997, § 203(g)(2)(B).
171. 49 USC 24301(a).
172. Amtrak Reform and Accountability Act of 1997 (PL 105-134), Title II—Fiscal Accountability, §§201-205 and § 209(a)(2)(b).
173. Ramstack, "Is Amtrak Off Track?" *Washington Times*, June 15, 2001.
174. Humberto Sanchez, "Should Amtrak Issue?" *Bond Buyer*, August 6, 2001, p. 1.
175. Alan J. Wax, "Amtrak Plans to Split Rail Division, Properties," *Newsday*, August 31, 2001, p. 67.
176. This last requirement became law in the FY 1999 Omnibus Appropriations Act, § 349, and continued in § 331 of the FY 2000 Omnibus Appropriations Act.
177. "Rail Labor Victory! ARC Funding Slashed," *Journal of the Brotherhood of Maintenance of Way Employees*, August 1999.
178. Carmichael, "It's Time for Interstate II," Paper prepared for The Road Gang Transportation Fraternity meeting, Washington, May 20, 1999.
179. "Appointment by the Majority Leader," *Congressional Record*, February 24, 1998, p. S943.
180. ARAA, § 203(g).
181. "A Preliminary Assessment of Amtrak," Amtrak Reform Council, Washington, January 24, 2000, p. 8.
182. "Amtrak Route Closure and Realignment Act of 1997," 105th Congress, HR 1210, introduced March 20, 1997.
183. "Issues Associated with a Possible Amtrak Liquidation," General Accounting Office report to congressional committees, GAO/RCED-98-60, Washington, March 2, 1998, p. 7.
184. Report B-217662, U.S. General Accounting Office, Washington, March 18, 1985.
185. "Issues Associated with a Possible Amtrak

- Liquidation," General Accounting Office report to congressional committees, GAO/RCED-98-60, Washington, March 2, 1998, p. 13.
186. "Intercity Rail Passenger Service in America," p. 18.
187. "Britain's Biggest-Ever Train Contracts," *International Railway Journal*, April 1998, pp. 8-9.
188. Marian C. Harding, Letter to the editor, *Washington Post*, October 1, 2001, p. A20.
189. Joseph Vranich and Robert W. Poole, Jr., "Replacing Amtrak: A Blueprint for Sustainable Passenger Rail Service," Policy Study no. 235, Reason Public Policy Institute, Los Angeles, October 1997, pp. 12-13.
190. "Intercity Rail Passenger Service in America," p. 217.
191. "A Brief History of Conrail," Conrail, Philadelphia, 1996, p. 1.
192. "The Alaska Railroad Historical Summary," Alaska Railroad, Anchorage, undated.
193. Alaska Railroad Annual Report 2000, pp. 3-4.
194. "Financial Performance of Amtrak's Routes," Table II.5, U.S. General Accounting Office, GAO/RCED-98-151, May 1998, pp. 37-38.
195. Cited in Jean Love et al., "Amtrak at Twenty-Five: End of the Line for Taxpayer Subsidies," *Cato Policy Analysis* no. 266, December 19, 1996, www.cato.org, p. 18.
196. "Guilford Makes Offer to Buy Northeast Corridor," *Progressive Railroading*, July 1997, p. 25.
197. "Company Wants to Take over Philadelphia-Harrisburg Railroad Line," Associated Press, January 16, 1998.
198. Larry Higgs, "NJ Transit Increases Service on NE Corridor Line," (*Bridgewater Courier News*, September 22, 2001).
199. Murphy, "State Faults Amtrak for Neglect of Tunnels."
200. Tricia A. Holly, "Debate Swirls over Whether Amtrak Can Stand on Its Own," *Travel Agent*, July 24, 2000.

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Background

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AMTRAK'S IMPENDING COLLAPSE OFFERS ONE-TIME OPPORTUNITY FOR REFORM

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The heated public policy debate about Amtrak's future shifted into overdrive in November 2001 when the Amtrak Reform Council (ARC) reported, as required by Section 204(a) of P.L. 105-134, that Amtrak would not meet the statutory mandate of becoming financially self-sufficient in 2003. On February 7, 2002, ARC submitted to Congress its proposal, as required by Section 204(c) of the same law, that Amtrak be fundamentally restructured and, among other things, recommended pilot projects to test greater private-sector participation in America's passenger rail system.

Although the law also required Amtrak to file a liquidation plan within 90 days of the finding, in December 2001, Congress prohibited Amtrak from spending any money to develop a strategy to do so. Despite that prohibition, a host of thoughtful proposals from the private sector, the research community, and a number of legislators filled the gap to supplement the proposal put forth by the ARC. Among the more innovative legislative proposals are one by Senator John McCain (R-AZ) titled the Rail Passenger Service Improvement Act (S. 1958) and another by Representative John Mica (R-FL) called the Systemic Passenger Infrastructure and Network Overhaul Through Financial Freedom Act (SPINOFF, H.R. 3591). Both would apply to

Amtrak the types of private-sector reforms that have succeeded elsewhere in the world, such as franchising, privatization and competitive contracting.

In contrast with these strategies is the National Defense Rail Act (S. 1991), introduced in the Senate by Senator Ernest Hollings (D-SC) in early 2002, which would reward Amtrak's failure to provide cost-effective and timely transportation services by increasing its annual subsidy by 500 percent from approximately \$600 million to \$3.6 billion over the next five years, plus a one-time payment of \$1.4 billion for security improvements. This bill would also free Amtrak from the self-sufficiency requirement and add two more high-speed rail corridors to the 11 that the federal government pretends it will construct.

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FINANCIAL PERFORMANCE WEAKENS

As ARC's November finding makes clear, Amtrak is nowhere near meeting self-sufficiency as required by P.L. 105-134 and, if anything, is moving in the opposite direction. Despite ongoing federal subsidies of more than \$500 million per year and a one-time special "tax refund" of nearly \$2.3 billion in 1998 and 1999, Amtrak is in worse financial condition than it was before enactment of the 1997 legislation.

Specifically, Amtrak's losses in 1997 were \$763 billion on 20.2 million passengers served, compared with a loss of \$944 million on 22.5 million passengers in fiscal year (FY) 2000 and the \$1.1 billion lost in FY 2001.¹ With few if any unencumbered assets left to borrow against, and with annual losses now vastly exceeding the yearly taxpayer subsidy, Amtrak will likely be insolvent by the summer or fall of 2002 unless it dramatically reduces costs or receives much larger taxpayer subsidies.

Amtrak's management knows better than anyone else how financially troubled the company is and has spent much of the previous year seeking larger subsidies—an effort which included such questionable antics as posing as a victim of terrorism in order to extract more money from Congress. To its credit, Congress has not yet granted larger subsidies to Amtrak, in spite of the introduction of numerous legislative proposals to provide greater funding.

Amtrak now contends that it will have to close down as many as 18 routes by October 2002 unless Congress doubles its annual subsidy to \$1.2 billion.² In presenting this list of prospective service cutbacks, Amtrak's managers have drawn attention to the railroad's most serious problem—excessively high operating costs—and, in doing so, have provided congressional reformers with a valuable list of money-saving options.

Although Amtrak is quick to note that its ridership has recently been increasing—up 1.4 percent since 1990, compared to a 38.5 percent gain for air

travel over the same period—trains serve only six-tenths of 1 percent (0.6 percent) of the intercity passenger market, ranking it below even that of intercity buses.³ But such gains, however modest, may be a burden to Amtrak because of an operating system and cost structure that appear to yield higher losses with more passengers, suggesting that the more it sells, the more it loses.

Significantly, and notwithstanding Amtrak supporters' claims to the contrary, Amtrak did not experience an increase in ridership in the immediate aftermath of the September 2001 terrorist attacks. In fact, ridership was down in both September and October and flat in November.

HIGH COSTS DETER USE AND CAUSE LOSSES

One of Amtrak's fundamental operating problems is revealed in a 1998 audit by the U.S. General Accounting Office (GAO) and, more recently, by similar route-by-route performance data that Amtrak provided to Congress. The GAO audit revealed that all but one of the 40 routes then operated by Amtrak lost money, with some losing substantially more than others.⁴ The *Metroliner* running from Washington, D.C., through New York City to Boston (and now largely phased out in favor of the *Acela Express*) was, according to the GAO, the only route allegedly running at a profit under the accounting standards applied, incurring costs of \$0.94 for every \$1.00 earned in ticket sales. The other 39 routes lost money, with the poorest performances recorded for the *Sunset Limited* (Los Angeles–Orlando), the *Cardinal* (Chicago–Washington, D.C.), and the *Chicago–Pontiac* (Michigan) line, all of which lost more than \$3.00 for every \$1.00 in ticket revenue earned.

A more recent report produced by Amtrak documented route-by-route revenue/cost relationships for FY 2001. Although this study's findings were presented in a per-passenger surplus/loss format, it revealed similar patterns for the routes.⁵ Of the 29

1. Amtrak, 2000 Annual Report, pp. 45–47.

2. Laurence Arnold, "Amtrak Threatens to End Service, Associated Press, February 1, 2002.

3. Rosalyn Wilson, *Transportation in America 2000: A Statistical Analysis of Transportation in the United States*, Eno Transportation Foundation, Washington, D.C., 2001, p. 15.

4. U.S. General Accounting Office, *Intercity Passenger Rail: Financial Performance of Amtrak's Routes*, GAO/RCED-98-151, May 1998, p. 32.

routes labeled as "intercity," only one, *The Heartland Flyer*, recorded a surplus (at the rate of \$20 per passenger). All the rest of the routes lost money. Some of the worst performers and their per-passenger losses were the since-discontinued *Lake Country Limited* (\$1,069.97); the *Sunset Limited* (\$290.97); the *Pennsylvanian* (\$248.55); and the *Texas Eagle* (\$212.84). On average, the 29 intercity routes lost \$87.20 per passenger in FY 2001, up from \$73.90 in FY 2000.

While these routes have performed poorly with regard to their per-passenger losses, the number of passengers using Amtrak's intercity service has been flat since 1996—and down from the levels of 1994 and 1995 when Amtrak first began providing separate counts of intercity passenger volumes as well as passenger counts for the East and West Coast corridors. It is in the two coastal corridors that all of the passenger growth has occurred since the mid-1990s, and it is also here that per-passenger losses were the lowest.⁶ On the West Coast corridor, all six services lose money, but their losses average \$12.97 per passenger—about 15 percent of the loss incurred on the intercity routes.

For the eight separate services Amtrak includes as part of the Northeast Corridor, it estimates that it earns a profit of \$0.42 for each passenger, due largely to the estimated per-passenger profit of \$28.51 on the *Metroliner* and *Acela Express*. While the "profit" that Amtrak reports from the *Acela* service along the Northeast Corridor has led some rail reformers to argue that passenger rail service should be cut back to this profitable core, skeptics have noted that even this reported profit may be illusory, since Amtrak does not include depreciation costs in its route-by-route loss/profit calculations.

Depreciation costs for 2001 have not been made available yet, but they are likely to be even higher than the \$359 million incurred by Amtrak in FY 2000.⁷ Because a disproportionate share of these depreciation charges are incurred in the Northeast

Corridor where Amtrak owns the roadbed, tracks, and signals (it leases access on all other lines), and where it has also placed most of its newer train sets imported from Canada, an accurate allocation of depreciation expenses among Amtrak's many routes would likely reveal the greatest negative impact on the *Acela* and *Metroliner* services, and could tip their accounts into the "loss" category.

Even with these losses and the steep per-passenger taxpayer subsidies they entail, Amtrak's ticket prices are no bargain in comparison with alternative intercity modes of travel. The combination of Amtrak's higher prices and longer trip time largely explains why 99.4 percent of intercity passengers choose alternative ways of getting from one city to another. More to the point, as noted by ARC member Wendell Cox in his February 7, 2002, concurring statement on the ARC's action plan, Amtrak fares per passenger-mile are higher than those of both airlines and intercity buses—even when the applicable federally imposed user fees are included in the calculation of the costs of air and bus transportation. One reason for the ticket price disparity despite the subsidies granted to Amtrak is the fact that Amtrak's cost per passenger-mile is four times that of intercity buses and 3.5 times that of the airlines, according to Cox's statement.⁸

The excessive costs of passenger rail operations and the effects costs have on fares were echoed by the head of the U.S. Department of Transportation's Federal Railroad Administration (FRA) in hearings before Congress early in 2002. According to Administrator Allan Rutter:

FRA analysis shows that as of the end of 2000, Amtrak's per-mile fares remained almost two-and-a-half times as high as the perceived cost of driving. The rail fare increases had, in that regard, partially negated the effects of the gas price hikes in recent years. With constant dollar airfare yields declining and Amtrak fares

5. Amtrak, *Profit per Rider of Existing Amtrak Routes, Excluding Depreciation/Non-Cash Items, Capital Contribution to Operating and TRA Interest Income, FY01 vs. FY00*, November 29, 2001.

6. Amtrak, 2000 Annual Report, p. 47.

7. *Ibid.*, p. 45.

8. *Concurring Statement of Wendell Cox, Member, Amtrak Reform Council, on the Amtrak Reform Council Action Plan*, February 7, 2002.

increasing, Amtrak's average fares were approaching fifty percent higher than those of air. These fare comparisons were system averages and will vary among market and service types. Still, nationwide, there was an obvious dissonance between the relatively high—and growing—fares and the declining timeliness of the service provided by Amtrak.⁹

AMTRAK'S FEDERAL SUBSIDIES VS. THOSE FOR HIGHWAYS AND AVIATION

Ignoring the significant cost and price disparities that may deter ridership, Amtrak and its supporters frequently argue that a key reason for Amtrak's manifest deficiencies is the "unfair treatment it receives within the federal budget." A typical example is the statement of Amtrak's former president in recent congressional testimony:

In fact, all we are asking for is fair treatment. In FY 2001, highways received \$33.5 billion in federal funds, aviation received \$12.6 billion, transit received \$6.3 billion—but intercity rail received \$0.5 billion—less than 1 percent of all transportation modal spending in FY 2001.¹⁰

Adjusted for the generous rounding process applied by Amtrak's management in estimating shares, the figures show that Amtrak actually did not fare so badly in comparison with the other modes. In fact, its share of federal money (1.0 percent) is nearly double its intercity passenger market share (0.6 percent), suggesting that it got *more* than its fair share, not less. But even more significant in this skewed comparison is the presumption that all of these subsidies come out of a single, taxpayer funded pot, when in fact they do not.

The \$33.5 billion in federal funds that was spent on highways in FY 2001 was derived entirely from user fees paid only by motorists via the federal fuel tax levied on each gallon of gasoline (18.3 cents) or diesel fuel. In fact, the \$6.3 billion spent on transit that year represents money diverted from the fuel tax revenues paid by motorists. In effect, under the current federal system, motorists pay more than their fair share.

This fact belies the arguments of Amtrak advocates who claim that the federal self-sufficiency requirements are unfair because (1) motorists are not expected to meet the same requirements and (2) the federal highway program is not expected to "make a profit." To the contrary, they are and it does. Each year, motorists see billions of dollars of their fuel tax revenues spent on transit, hiking trails, roads on federal lands, Amtrak-operated commuter rail lines, bicycle paths, historic preservation, train station restoration projects, and other non-automotive functions. Indeed, each year, as much as 30 percent of highway funds is siphoned away from general purpose highway uses.¹¹

Similarly, and taking into account the recently imposed new airport security tax, users of commercial airlines are subject to a total of 11 separate federal user fees/taxes that fund airport construction and operation, air traffic control, and the safety and security of airlines.¹² The revenues generated by these taxes are the source of revenue for any federal funding that is given to commercial aviation.

Collectively, these taxes are now a significant component of the ticket price paid by passengers. For example, a roundtrip fare between Washington, D.C., and Europe posted in late 2001 was \$323.40, an amount that included \$83.40 for FAA-imposed taxes and user fees. Buried in the remaining \$240.00 of the ticket price were additional federally imposed user fees such as fuel taxes and landing

9. Statement of the Honorable Allan Rutter, Federal Railroad Administrator, to the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, U.S. House of Representatives, February 27, 2002, p. 6.

10. Statement of George D. Warrington, President and Chief Executive Officer, Amtrak, before the Subcommittee on Transportation and Related Agencies, Committee on Appropriations, U.S. House of Representatives, March 21, 2001, pp. 4–5.

11. TEA-21: A Summary—Authorization Table, U.S. Department of Transportation, available at www.fhwa.dot.gov/tea21/sum-auth.htm as of 9/14/98.

12. Ronald D. Utt, "FAA Reauthorization: Time to Chart a Course for Privatizing Airports," Heritage Foundation *Backgrounder* No. 1289, June 4, 1999, pp. 2–3.

fees, the costs of which were paid by the airline and then passed on to passengers.

As the federal funding mechanisms for the U.S. transportation system are currently configured, the "fairness" demanded by Amtrak's advocates and modal parity would best be achieved by adding similar fees and taxes to Amtrak tickets. Of course, if such taxes or user fees were added to the already steep prices that Amtrak charges its customers (or "guests" as they are described) to the same extent that such fees are now imposed on airline passengers, Amtrak's market share would likely fall below the 0.6 percent it ekes out today.

Rationale for Costly Route Structure

The reason that Amtrak operates so many costly routes has little to do with an attempt to maintain a cost-effective transportation service but quite a bit to do with an attempt to maintain a politically viable operation. This relationship helps to explain why Amtrak—despite the prospect of substantial losses—continues to propose the establishment of new routes that have even less financial viability than its costly existing routes, which have attracted few passengers even after many years of operation and promotion.

But such a strategy is not economically viable in the absence of ever higher subsidy payments. A system based partly on maintaining politically motivated routes that incur such losses also requires sustained subsidies from government, and ensuring these subsidies often necessitates more political favors in the form of additional money-losing routes, and so on and on. As the losses worsen, Amtrak digs itself—and the taxpayer—deeper into the hole in a vicious circle of enterprise insolvency.

It was essentially this sort of problem that Amtrak's former president George Warrington described when he recently testified that

Our conflicting policy mandates are at the root of our problems. For 30 years, Amtrak's primary mission has been to maintain and operate a national network of rail passenger service. Our charter statute

directs Amtrak to "completely develop the potential of modern rail transportation to meet the intercity and commuter needs of the United States." In 1997, Congress reaffirmed our national public service role, but it also added a requirement that we achieve operational self-sufficiency by December 2002.¹³

It was also in response to this problem that Secretary of Transportation and Amtrak Reform Board member Norman Mineta suggested earlier this year that Amtrak should "look at selective routes rather than blanket the country with rail service that is not...really viable."¹⁴

THE ALLURE OF HIGH-SPEED RAIL

Over the past few years, several pieces of legislation have been introduced to fund the development of some measure of high-speed rail service in the United States. The High Speed Rail Act (S. 250)—which would provide Amtrak with \$12 billion in subsidized loans over the next 10 years—had attracted the most support and discussion. More recently, the National Defense Rail Act (S. 1991) would add \$1.5 billion per year for high-speed rail outside the Northeast Corridor.

Although some supporters may truly believe that enacting this bill would provide Americans with high-speed rail services similar to those of Europe and Japan, it is just a first small step toward that goal. Amtrak admits as much when it describes the \$12 billion in loans as "seed money." In truth, \$12 billion represents only a small fraction of what it would cost to bring U.S. rail passenger service up to the level of the sustainable high speeds that characterize a number of genuinely high-speed rail services that are currently available in a few other countries.

As most rail experts define it, the term "high-speed rail" refers to trains that can hit top speeds of 200 mph and run at average speeds well above 100 mph throughout an entire route. Examples of genuine high-speed rail systems include Japan's *Shinkansen* ("Bullet") train, which runs at average

13. Statement of George D. Warrington, President and Chief Executive Officer, Amtrak, before the Committee on Commerce, Science and Transportation, U.S. Senate, November 1, 2001, p. 2.

14. Don Phillips, "Amtrak Wants to Mortgage Penn Station," *The Washington Post*, June 6, 2001, p. E1.

speeds of 115 mph to 170 mph, depending on the route, and France's TGV, which runs at average speeds of 140 mph to 160 mph, again depending on the route. In contrast, Amtrak's *Acela Express* is capable of top speeds as high as 150 mph only on a very small fraction (about 18 miles) of the track that extends from Boston to Washington.

It would require substantially more funding than the \$12 billion proposed in the High Speed Rail Act to achieve the average speeds reached on the best lines in Europe and Japan on Amtrak's Northeast Corridor and the 10 routes identified by the U.S. Department of Transportation (DOT) as prospective high-speed rail corridors. Last year, Amtrak estimated that \$30 billion might be needed,¹⁵ while a recent proposal introduced in the House of Representatives argues for \$70 billion in subsidized rail loans to support high-speed rail in America.¹⁶ In July 2001, the GAO estimated the cost of improving the Northeast Corridor and the 10 proposed high-speed rail corridors as being between \$50 billion and \$70 billion,¹⁷ and in September 2001, the chairman of the Amtrak Reform Council estimated the cost at \$100 billion.

In fact, even the \$100 billion estimate might be too low when one considers the amounts that have been spent to provide faster and more extensive passenger rail service in countries with substantially smaller land masses than the United States.

The Japanese National Railroad, for example, which serves a land mass that is just 4 percent the size of the United States, had incurred debt of more than \$300 billion and required annual operating subsidies in excess of \$6 billion by the mid-1980s when the Japanese government abandoned its commitment to government-owned and -operated rail service and began to reform, and then to privatize, the system.¹⁸

It is expected that France, whose borders encompass the equivalent of just 6 percent the U.S. land mass, ultimately will spend \$50 billion on its TGV

network, and the entire French rail network is losing \$3.2 billion per year while carrying a long-term debt load equal to about \$20.1 billion.¹⁹

Given the comparatively high costs incurred by others to serve rail markets with land masses that are just a tiny fraction of the United States, the \$50 billion to \$100 billion cost estimates that many have postulated for Amtrak may be far too low in relation to the size of the prospective DOT-endorsed network of 11 routes.

For the sake of illustration, despite the very high costs that would be incurred, suppose that a decision were made to expend many tens of billions of taxpayers' dollars to construct a series of genuinely high-speed rail corridors in which trains average *Shinkansen*-like travel speeds of 150 mph throughout their routes. What would be achieved? Another way of looking at the accomplishment is that the government would have spent billions of taxpayer dollars on a publicly funded intercity transportation system that, under the best of circumstances, operates at speeds that are less than one-third the speed of its chief competitors—the airlines—which provide services with funds provided only by the people who use them.

Those who argue in favor of publicly funded high-speed rail often point to road and airport congestion as the compelling rationale for subsidizing a fourth mode of intercity transport. However, under the circumstances, it would seem that the more cost-effective and consumer-preferred response to such congestion-related problems would be to invest in increasing road and airport capacity.

WHAT CAN BE DONE?

It is apparent from recent Amtrak performance that current management strategies and existing operating practices have not solved the system's problems and are not likely to do so in the future, regardless of how much additional time and public financial support are provided. To deal with this sit-

15. National Railroad Passenger Corporation, *Amtrak 2001 Strategic Business Plan*, February 2001.

16. Rail Infrastructure Development and Expansion Act for the 21st Century, H.R. 2950.

17. U.S. General Accounting Office, *High Speed Rail Investment Act of 2001*, GAO-01-756R, June 25, 2001, p. 1.

18. Louis S. Thompson and Helen Stephan, "Infrastructure Separation: What Have We Learned So Far?" *Business Rail Report*, 1998, p. 14.

19. "World Class in Both Speed and Losses: France's Expensive Toy," *The Economist*, May 31, 2001.

uation, Congress must choose one of the following four options:

1. Endorse the current operating structure but substantially increase annual subsidies just to maintain existing route structure;
2. Endorse the existing operating concept but cut back money for revenue-losing routes until financial self-sufficiency is achieved;
3. Endorse the current system but substantially increase government spending to achieve some measure of "high-speed" rail; or
4. Fundamentally overhaul the existing operating system by imposing new market-based reforms that would allow the system to maintain the maximum number of viable routes by substantially reducing costs and increasing revenues.

In light of the foregoing discussion, the fourth option is the recommended course of action because it would bring the benefits of competitive contracting and private-sector participation to the troubled railroad. If reform is properly and comprehensively imposed, the cost and service efficiencies unleashed by privatization could very likely put passenger rail service in the United States on the path to resolving Amtrak's seemingly conflicting mandates (covering costs and providing affordable services), which cannot be reconciled under the current management, and the existing operating concept that relies on political advantage rather than the economic benefits of efficiency.

Innovative Solutions Emerge in Congress

Fortunately, some Members of Congress—notably, Senator McCain and Representative Mica—have recognized the need for market-based reform and are calling for new leadership of the railroad and the fundamental restructuring of Amtrak's routes and business operations to bring costs in line with revenues and with customer needs. Their legislative proposals deserve a close review and could serve as the basis of a solution to Amtrak's pervasive deficiencies.

In August 2001, following extensive hearings on Amtrak's problems, Representative Mica, a member

of the House Transportation and Infrastructure Committee, recommended that potentially profitable routes such as the Northeast Corridor be separated from the rest of the system to create a financially viable transportation enterprise that could be free of dependence on taxpayer subsidies and operated by the private sector.²⁰

Representative Mica also suggested that the more scenic coast-to-coast routes be offered on a competitive basis to tour operators that serve the lucrative leisure travel market. As for the rest of the routes that have limited tourist potential and no meaningful intercity mobility value (and where most of Amtrak's financial losses occur), Congressman Mica proposed offering them to the states they serve to fund and operate if they wish, or to private-sector operators who might want to invest in the enterprise.

Representative Mica has since incorporated some of these ideas into a legislative proposal, which was introduced in the House as H.R. 3591 in late December 2001. Focusing only on the operation of the Northeast Corridor and the Autotrain, the bill proposes that the property and operations of the Northeast Corridor be transferred to the U.S. Department of Transportation to operate on an interim basis while DOT initiates, within 90 days, a competitive selection process that will award the operating rights along the Northeast Corridor to the winning contractor, also on an interim basis. The bill stipulates that within two years after its passage, DOT will choose an entity for future operations among the following three options:

1. Transfer operations to an interstate compact;
2. Transfer operations to a new government corporation or to a private-sector corporation; or
3. Retain ownership within DOT, using competitive franchising to select one or more operators.

A similar series of options would be applied to the Autotrain.

On February 15, 2002, Senator McCain introduced S. 1558, a comprehensive proposal to reform and restructure Amtrak. Among the bill's many significant provisions are:

20. Representative John Mica, "It is Time to Cut Taxpayer Losses on Amtrak," *Federal Times.com*, August 13, 2001, at www.federaltimes.com/commentary/main081301.html.

- **Creation of a Rail Passenger Development and Franchising Office within DOT.** Beginning in October 2003, the Secretary of DOT would be authorized to contract out rail passenger service franchises to qualified operators.
- **A requirement that Amtrak be restructured into three separate lines of business** that would be privatized within the next four years.
- **Creation of an independent Amtrak Control Board** to oversee Amtrak's restructuring, reform, financial plans, budget, and privatization. The board would be based on the model of control boards that have been created in the past to assist troubled cities overcome periods of financial difficulty.
- **A requirement that states play a greater role in route decisions and financial contributions.** Routes operating at a loss would be discontinued in October 2003 unless states agreed to subsidize the losses.

In introducing legislative proposals that require privatization, contracting, and franchising, Congressman Mica and Senator McCain are drawing on the model of successful passenger rail reforms accomplished in other countries that turned to the private sector to restructure and operate rail systems that had been inefficient when operated by their governments. Where such reforms have been introduced, subsidies have been reduced, service improved, and ridership increased.

OPTIONS FOR SUCCESS

In anticipation that Amtrak will in fact fail to meet its self-sufficiency goal and may have to cut back routes, Congress and the President should begin the process of instituting reforms that would result in better service and lower-cost operations. As both Representative Mica and Senator McCain suggest, one way to achieve this is by requiring Amtrak to implement some of the privatization techniques that Great Britain, Japan, Australia, Argentina, Sweden, Germany, and New Zealand have applied with considerable success since the 1990s. Japan, for example, began selling off portions of its passenger rail system early in that

decade; all routes are now operating at a profit. Also in the 1990s, Australia and New Zealand privatized passenger rail service, and their systems have likewise become profitable. Sweden has contracted out commuter rail service, and Germany is in the process of doing so in several of its metropolitan areas.

Table 1 provides a sampling of the innovative, privatization-based reforms underway or under active consideration in numerous advanced, industrialized countries as of October 2001. Excluded from the table because of space constraints are scores of privatization projects underway or under consideration in the less-developed countries and in the formerly communist countries of the Commonwealth of Independent States (CIS) or in Eastern Europe.²¹

In reforming their inefficient rail systems, both Great Britain and Argentina adopted the "concession," or franchise, approach under which the government maintains an ownership interest in the system but "sells" the right to operate services over specific routes for specific intervals of time. Private operators compete for these route rights, which are awarded to the entity that offers the highest lease payment or requests the lowest subsidy. As a result of improved service provided by the private-sector operators who are chosen for these concessions, Great Britain in 1999 experienced its highest rate of rail ridership since 1947. Despite a widely publicized fatal accident in 2000 and the subsequent disruption in service that occurred in its aftermath as new safety measures were implemented, passenger boardings continued to increase during FY 2000–FY 2001 and were up by 30 percent from 1995 when the privatization reforms were initiated.²²

While this transformation in passenger rail service has not been problem-free, where it has been applied, costs have been reduced, losses sometimes turned to profits, service improved, and ridership increased. Even in Britain—where early mistakes regarding infrastructure transfer contributed to fatal lapses in safety—the Labor government, which inherited the newly privatized system from the Conservative government, has shown no inclination to reverse course. The original infrastructure

21. These can be found in "2001 International Major Projects Survey," *Public Works Financing*, Vol. 155 (October 2001).

22. *Business Review: Passengers*, Strategic Rail Authority, The United Kingdom, available at www.sra.gov.uk/sra/annual_report/Annual_Report_Default.htm.

Table 1 B1547

Private/Public Rail Projects as of October 2001, Select Countries

Project	Type	Distance in KM	Cost in Millions of U.S. Dollars
Australia			
Brisbane Gold Coast Light Rail	BOT	8.5	\$144
Brisbane Central Business District Light Rail	BOOT	—	\$146
Darwin-Melbourne High Speed Rail Link	BOO or BOOT Concession	4,500.0	\$5,200
Darwin-Geelong Rail Upgrade	Concession	550.0	\$225
Melbourne Transit Airport link	Concession	—	—
Melbourne Rail Regional Lines	5 Concessions	—	\$1,100
Sydney Airport Link	BOT/BTO	10.5	\$540
South Australia Rail Privatization	6 Separate Lines Sold	—	—
Sydney-Canberra Rail Link	Concession	—	\$4,800
Canada			
Montreal-Toronto High Speed Rail	DBFO Concession	—	\$7,700
Pearson Airport Rail Link	Concession Proposed	25.0	\$136
Italy			
Turin-Milan-Bologna-Florence-Rome High Speed Rail	Turnkey	1,000.0	\$18,000
Netherlands			
Amsterdam-Antwerp High Speed Rail	25-Year Concession	100.0	\$1,580
Spain			
Barcelona Tramway	25-Year DBOM	—	\$230
Madrid Commuter Rail	30-Year DBOM	25.0	\$140
Sweden			
Arlanda Airport (Stockholm)	BOT/BTO Concession	45.0	\$500
Stockholm Metro and Tram	10-Year Operating Concession	—	management contract
Göteborg-Malmö	Operating Concession	—	management contract
United Kingdom			
London-Chunnel High Speed Link	99-Year BOO, BTO/BOT	108.0	\$7,000
Croydon Tramway	99-Year DBFO Concession	28.0	\$330
Docklands Light Rail with Tunnel	25-Year, BOO	4.3	\$439
London, Docklands, Airport	DBFO, Concession	4.4	\$172
East London Extension	25-30-Year DBOM	—	\$900
Heathrow Express London Airport	BOO	25.6	\$490
Leeds Supertrain	Concession	28.2	\$725
Manchester Metrolink 3 Extensions	Concession	—	—
Manchester Metrolink	17-Year BOT Concession	32.2	\$357
West Coast Main Line London-Glasgow High Speed	15-Year Franchise	—	\$9,400

Definitions: BOT = build, operate, transfer; BOOT = build, own, operate, transfer; BOO = build, own, operate; BTO = build, transfer, operate; DBFO = design, build, finance, operate (UK term for BOT); DBOM = design, build, operate, maintain; Concession/Franchise = public sector owns the infrastructure asset and leases the right to operate on it, set fees, and collect revenues to private-sector providers for a defined period of time; Turnkey = private sector builds and transfers completed project to public sector to own and operate.

Source: 2001 International Major Projects Survey, Public Works Financing, Volume 155, October 2001.

owner, Railtrack, has been liquidated, and a not-for-profit successor is in place. The United Kingdom plans to increase infrastructure investment from its current \$3 billion per year to a prospective \$81 billion in public and private funds over the next 10 years.²³

Although much of the current discussion of trends toward rail privatization focuses on recent activities occurring abroad, it should be kept in mind that the first successful rail privatization (and the largest privatization initiative until that time) occurred in 1987 in the United States when the federal government sold its 85 percent ownership stake in the freight railroad Conrail to private investors for a combined payment of \$1.9 billion. As a result of the improved management that followed privatization, Conrail's value increased more than fivefold between 1987 and 1998, when it was acquired by CSX and Norfolk Southern for \$10.3 billion.

Although some contend that Amtrak would not receive investor interest that would be on a par with that of Conrail or the rail systems in Europe and Asia that were privatized, there is good reason to believe that many serious proposals from qualified bidders would be received if the federal government earnestly pursued the privatization of its passenger rail system. In fact, a number of U.S.-based investors offered their formal expression of interest

in the system prior to enactment of the Amtrak Reform and Accountability Act in 1997, and renewed interest has emerged as a prospective solution for Amtrak's worsening financial problems.

CONCLUSION

Given the many successes experienced as a result of efforts in the United States, Europe, Asia, and Latin America to reform financially troubled rail systems with varying degrees of private-sector participation, Congress and the Administration should end their 30-year obsession with trying to prove that socialism can be made to work and instead welcome the opportunity to review and consider the many innovative proposals that might be adopted as remedies for America's ailing rail service.

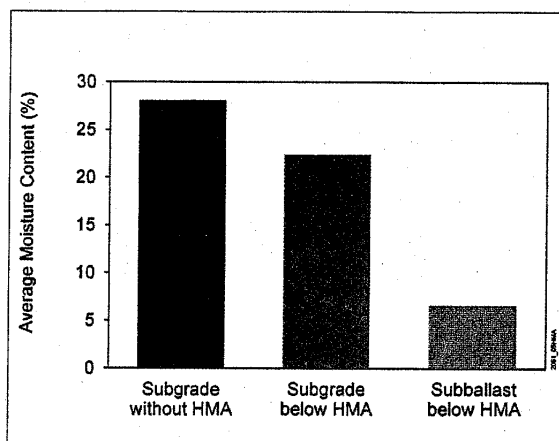
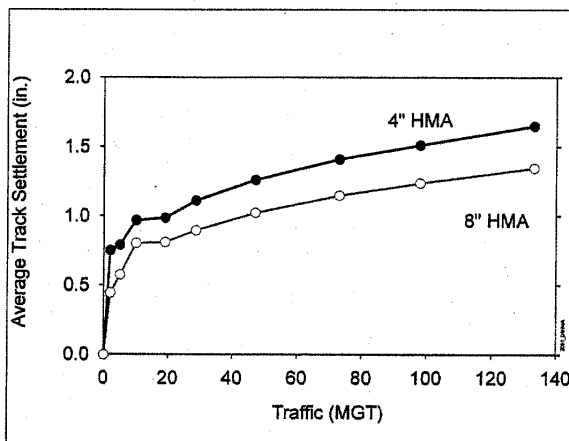
To facilitate the widest possible review and to stimulate the development of innovative solutions from the nation's transportation experts, Congress and the Administration should also encourage interested parties—from the private sector, the financial community, the unionized work force, Congress, passenger associations, and current management—to submit proposals that they believe could lead to better passenger rail service at lower cost, or at no cost at all, to the taxpayer.

—Ronald D. Utt, Ph.D., is Herbert and Joyce Morgan Senior Research Fellow at The Heritage Foundation.

23. "Private Cash Underpins UK Rail Expansion Plans," *Public Works Financing*, Vol. 158 (January 2002), pp. 13–14.

EXHIBIT D

Application and performance of hot-mix-asphalt trackbed over soft subgrade



Properly using hot-mix asphalt as an underlayment can solve many subgrade problems and track geometry deterioration.

Using hot-mix asphalt as an underlayment in a track bed for strengthening soft subgrade is a practice that can help develop adequate track modulus, attenuate loads over the weak subgrade soils, provide an impervious separation layer between the ballast and the subgrade, prevent surface water from entering and weakening the subgrade soils, prevent subgrade mud pumping problems, and improve track geometry performance.

However, as demonstrated during testing, if no measure is used to address an existing ground water drainage problem, or inadequate compaction is given to the subgrade, subballast or hma layers during construction, hma underlayments can crack and shift, thus failing to correct soft subgrade problems.

One of the main causes for track geometry degradation is the deterioration of soft subgrade support. Without remedy, a track built on soft subgrade

support can develop excessive deformation under heavy axle loads, which, in turn, can lead to excessive track maintenance costs, which, in the worst cases, could lead to derailment incidents.

Geometry deterioration due to soft subgrade support can worsen with an increase in train axle loads and operation speeds. In this article, a track is considered to have soft subgrade support when its track modulus is 2000 lbs/in./in. or less. In this range, the soft subgrade will control overall track stiffness. This can be true even on track with heavy rail, good ties and good ballast. Track with modulus of 2,000 lbs/in./in. or less normally cannot economically sustain heavy axle load operations over a long period.

The Transportation Technology Center, Inc., has tested several remedies aimed at improving load-carrying capacity of track built on soft subgrade, including an increase in granular layer thickness, geocell reinforcement, and application of hma underlayments.

Testing was performed under the Heavy Axle Load Research Program,

L-R: Figure 1. The average track settlement as a function of traffic. Figure 2. The benefit of using hma in reducing moisture.

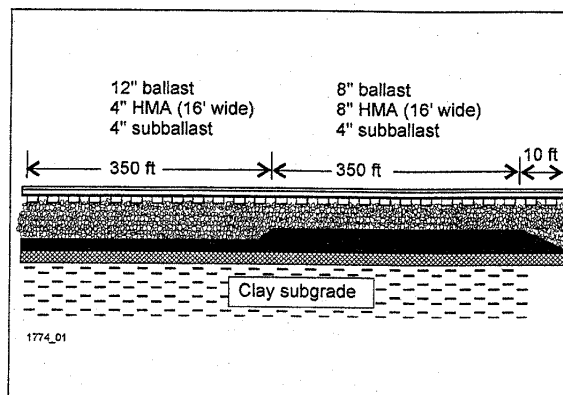
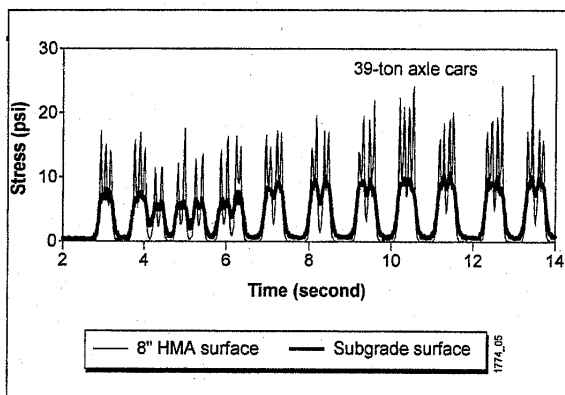
sponsored by the Association of American Railroads and the Federal Railroad Administration. This article discusses the results of the hma applications at two different sites. One test site is located at the Facility for Accelerated Service Testing, Pueblo, Colo., and the other is on a revenue service mainline near Alps, N.M.

HMA test at FAST

In the Summer of 1999, two hma underlayments were placed as a course under the ballast but above a soft subgrade installed for test purposes. Figure 4 illustrates the longitudinal cross section of the test track and subgrade. As shown, one segment has a four-inch hma layer, and the other has an eight-inch hma layer.

For the entire test section, a four-inch subballast layer was used between the soft subgrade and the two hma underlayments. At construction,

by Dingqing Li, senior engineer, Joe LoPresti, senior engineer, and David Davis, principal investigator



the ballast thickness above the hma was 12 inches over the four-inch hma, but was eight inches over the eight-inch hma. For both segments, therefore, the total granular/hma thickness was 20 inches.

The design criteria used, design results, and the construction procedure for the hma test track are described in TTCI's *Technology Digest* TD 01-009, April 2001. This was the first test that applied hma underlayment over a soft subgrade under 39-ton axle loads. The use of hma underlayment was intended to reduce traffic-load-induced stresses to the subgrade and to provide a waterproof layer over the underlying soil.

As a benchmark, the earlier test showed that with a conventional 18-inch granular layer, the soft subgrade was highly stressed due to 39-ton axle loads, thus leading to higher levels of subgrade deformation and frequent surfacing operations.

Since the hma installation, the performance of this test track has been evaluated in terms of track geometry degradation with traffic, as well as the amounts of track modulus increase and subgrade stress reduction compared to the conventional granular layer construction.

Figure 5 gives the track modulus test results and the subgrade stress test results under a static wheel load of 40 kips. As shown, the average modulus values for the two hma segments are 2,800 and 3,300 lbs/in./in., respectively. Obviously, the hma application significantly increased track modulus from the 18-inch granular track with an average track modulus of 2,000 lbs/in./in.

As a result, the measured subgrade stresses were lower for the asphalt trackbeds than for the 18-inch granular track. Under 40-kip static wheel load, only seven to eight psi of subgrade stress was generated under the hma underlayments, compared to 12 psi under the 18-inch granular track structure.

To show how stresses induced by wheel loads are reduced from the hma to the subgrade, Figure 3 shows the dynamic stress results under an actual train operation (40 mph) measured on the eight-inch hma surface, as well as on the subgrade surface. As illustrated, use of an eight-inch hma underlayment reduced the subgrade stress approximately by half.

Figure 1 shows average track settlement as a function of traffic for both the segments. As illustrated, after the initial higher rate due to early ballast consolidation, the settlements became gradual, which is characteristic of normal track deformation.

At 135 mgt, about 1.6 inches of total settlement was accumulated for the four-inch hma segment, while about 1.3 inches of total settlement was observed for the eight-inch hma segment. Nevertheless, the settlements (mainly due to ballast deformation) have been uniform along and across the test track. No geometry maintenance has been required to date. As a comparison, this soft subgrade test track, when tested with an 18-inch granular layer track, required surfacing operations at an average cycle of 15 mgt.

HMA trackbeds at Alps, N.M.

TTCI, in conjunction with BNSF and the University of Kentucky,

L-R: Figure 3. The reduction of dynamic stresses from eight-inch hma to subgrade. Figure 4. A longitudinal cross section of hma test track at FAST.

investigated the performance of a section of hma trackbeds on a revenue service mainline near Alps, N. M. Unit coal trains mostly run on this line, with an annual tonnage rate between 40 and 60 mgt. In this area, approximately 2.2 miles of hma trackbeds were installed between 1989 and 1994 as a remedy for soft subgrade problems.

In the 1980s, BNSF made several track alignment changes near Alps to reduce sharp curves. The relocated line, with conventional granular layer construction, was found to be inadequate to carry the increased coal traffic, particularly in the cuts where the relocated track was built on native weak subgrade. Some of these problem track locations required surfacing operations on a daily up to monthly schedule to keep the track in service.

The track was frequently slow ordered, and spot maintenance was required on a regular basis. Sources of the problems include weak clay soils, groundwater, and poor drainage leading to excessive subgrade deformation, subgrade soil attrition, and mud pumping.

To remedy the track instability problems, the railroad applied a roller-compacted eight-inch-thick hma underlayment to the most troublesome section of track. This provided immediate relief to the railroad, allowing cessation of daily surfacing and slow orders.

Following the first application in 1989, additional sections were installed in 1992 and 1994, comprising about 2.2 miles of hma in total. For all the sections, the combined thickness of ballast, hma and

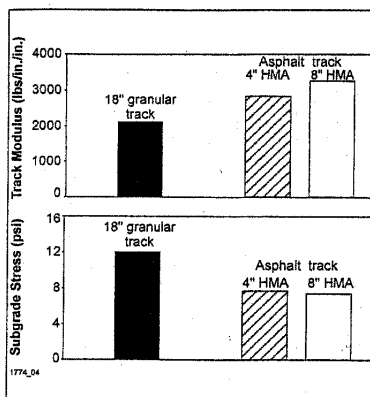


Figure 5. The test results in track modulus and subgrade stress under 40-kip static wheel load.

subballast ranged from 19 to 21 inches.

Interviews with local and regional track maintenance personnel were conducted to determine the extent of changes in surface maintenance at the hma underlayments. Those interviewed reported a significant decrease in the surface maintenance required to operate the railroad at 35 mph with unit coal trains.

The hma installations have been successful in solving track surface problems and mud pumping problems on the soft subgrades. In general, hma application has lengthened surfacing cycles in the problem areas by 10 to 20 times. Currently, out-of-face surfacing on hma track is conducted once a year, with only two isolated locations receiving spot surfacing up to six times per year.

Figure 2 shows the benefit of the hma in reducing moisture content in subgrade. The results include the average moisture contents of the subgrade between the samples collected in the Summer of 2000 and the samples collected prior to the hma installation.

As shown, subgrade moisture content was reduced as a result of the hma application. Also included in this figure is the average moisture content of the subballast samples collected in the Summer of 2000. As illustrated, the average of subballast moisture contents is low (about 6.7 percent), indicating that the hma has provided an impervious layer.

Three isolated problem areas are evident in the 2.2 miles of hma track. At one site, mud pumping occurred when a temporary construction road crossing made

of subballast was not entirely removed.

The second failed hma location involved 120 feet of track in a curved cut section. At this location, groundwater is present almost year-round and there was inadequate provision for drainage. Due to poor soil and ground water condition, a subgrade shear failure occurred within one year following the hma construction. To remedy this problem, a section of hma was removed and a cross-track drain (ballast French drain) was installed.

The third hma failure location involved 30 feet of the hma squeezed out from under the track, primarily due to subgrade shear failure. Subsequent analysis of the hma in this section showed that it was not compacted. It had an air void content of 15-16 percent (as compared to four-to-six percent for the rest of the hma core samples collected, and the recommended range of one-to-three percent to ensure compaction). Thus, the hma was not impervious, but allowed water to pass through and saturate the subgrade fill section. In ad-

dition, a less compacted hma could deform and break more easily.

Future work

The application of hma trackbeds to soft subgrade locations on mainlines with HAL traffic has improved performance dramatically in the cases documented here. However, the use of such procedures in the field is limited to the most problematic spots. TTCI has developed an economic model to evaluate the track rebuild (i.e., subgrade strengthening) versus continued maintenance (i.e., tamping) decision. An analysis of the major factors in this decision will be conducted. □

Acknowledgements

The following people provided advice and assistance in the hma study: Dr. Jerry Rose of the University of Kentucky at Lexington, Jay Hensley and Tom Deddens of Asphalt Institute, and Hank Lees of BNSF. Asphalt Institute also made a financial contribution to part of the study presented in this article.

The Right Tools for the Job!

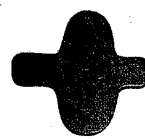


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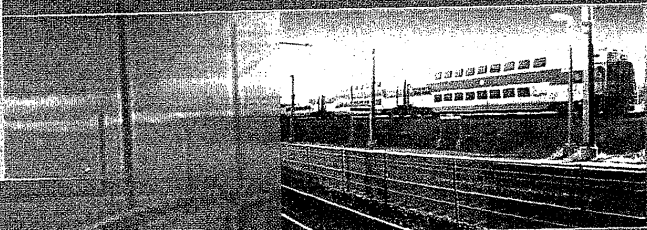
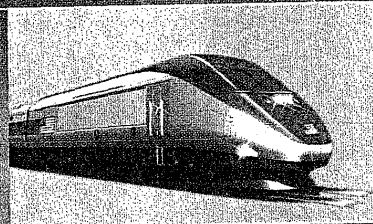
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EXHIBIT E



U.S. Department
of Transportation
Federal Railroad
Administration

Five-Year Strategic Plan for Railroad Research, Development, and Demonstrations



March 2002

right-of-way, and some may require that instrumentation be imbedded in the base layer beneath the track. While generally accurate, the existing systems are costly to install and maintain, and can only provide "spot" measurements of vertical track stiffness, and thus are of limited usefulness in wide-area inspections. Therefore, the FRA has determined that a more cost-effective vehicle-bound measurement system that can make continuous stiffness measurements under load will provide a much needed enhancement to track safety inspections.

A feasibility study commissioned by FRA has identified two potential approaches for obtaining this vertical track stiffness measurement from a moving vehicle. One approach will exploit the relative motion between unloaded and loaded wheels using accelerometers, while the other will attempt a direct measurement of rail deformation using laser transducers. Research currently underway in collaboration with Amtrak will test and evaluate the suitability of both techniques. If further feasibility is concluded, a prototype system will be developed and further tested on the FRA T-16 research car.

Automated Inspection of Roadbed

Track subsurface layers (ballast, sub-ballast, and subgrade) provide the required support to the track structure. Poor subsurface conditions result in poor track performance as well as excessive and uneven track degradation. Uneven degradation results in costly maintenance and adversely affects track safety.

Since ballast, sub-ballast, and subgrade layers are beneath the track structure, they are difficult to properly inspect with purely visual methods. Currently, there is no practical method for rapid subsurface evaluation. However, emerging technologies, such as ground penetrating radar and sonic or vibratory signals, offer promise for developing both improved and automated roadbed inspection capabilities. In collaboration with experts from industry and academia, these technologies will continue to be investigated with further development of the most promising technologies.

Non-Destructive Evaluation (NDE) of Bridges.

As freight car weights increase and bridges age, the need for effective, rapid bridge inspection and strength evaluation methods increases as well. The FRA will work jointly with the FHWA and the AAR to investigate NDE technologies that may be applicable in automated bridge safety monitoring. The intent is to pursue techniques that show a high potential for successful adaptation and deployment. This will be a continuing activity.

Automated Analysis and Interpretation of Inspection Data

A key element in raising inspection speeds and in improving inspection effectiveness is taking better advantage of the large amount of data produced by modern inspection techniques. Efforts in this important but often neglected area of research will focus on innovative and improved ways for real-time viewing and display of inspection results and the production of relevant and meaningful inspection reports and summaries. Automated analysis and interpretation will permit diagnosis of many conditions at the time inspections are being made, taking into consideration more variables than can be practically incorporated into the process by slower, manual methods. A variety of track and structure inspections will benefit from this research.

Probability-Based Inspection Criteria

Many standards for quality control and safety assurance throughout the industrial world are now based on probability theory, data, and estimates. In this group of projects, the sciences of probability and engineering reliability will be applied to develop criteria for inspection scheduling and for characterizing track condition during an inspection. A probability-based inspection schedule would emphasize sections of track with a higher likelihood of having defects. It would also consider the likelihood of missing defects in areas and under conditions

VERIFIED STATEMENT OF PHILLIP D. BRAKE, P.E.

My name is Phillip D. Brake and I am a Professional Engineer licensed in Massachusetts.

I am currently employed as an Assistant Vice President of the Engineering Department for Guilford Rail System. I have been employed by Guilford for the past ten (10) years.

During that time, I have been involved with numerous track construction and rehabilitation projects, including the current rehabilitation of Guilford's line between Portland, ME and Plaistow, NH which involves the restoration of passenger service between these two points. I make this verified statement in support of Guilford's reply to Amtrak's "Motion for Further Clarification of the Board's October 22, 1999 Decision."

My statement is based on the following:

- A. I observed the TTCI testing that is the subject matter of this motion;
- B. I have reviewed the TTCI report and the selected data TTCI and Amtrak forwarded;
- C. I reviewed the prior Amtrak submissions to the STB and the STB decisions;
- D. I was present when Guilford's contractor Zeta-Tech performed track modulus testing on various parts of the line;
- E. I reviewed the Zeta-Tech Report.

A review of the data reveals the following:

1.0 November Dynamic Test Data

TTCI returned in November to perform additional track modulus testing. This included dynamic testing from approximately MP 225 - MP 273 and static testing at 28 Zones. Although provided to Guilford, the test results that were reported by TTCI did not reflect any of the dynamic information that was recorded in the final days of November, yet the static data was utilized. The typical climate in New England is significantly different at the end of November versus that of July when the original testing was to take place and as such is not an appropriate time of year to test for track modulus because the values will

typically increase. However, Guilford's analysis of the November TLV relative deflection data, performed in a manner similar to that used by TTCI for September, reveals significant differences in the test results from the September information. Specifically, the results of this analysis revealed additional locations where the track support modulus does not meet the applicable AREA criteria. The November dynamic data therefore, should be included in the final results of this testing analysis.

2.0 Exception Locations NOT Identified by TTCI Using TTCI Methodology

Notwithstanding Guilford's objections, using the TTCI criteria for determining locations where the track support modulus ('K' value) is less than 2750 lb/in/in, the threshold established by the Surface Transportation Board, Guilford identified multiple locations where the 'K' value was less than 2750 lb/in/in from both the September and November tests that were not listed in the TTCI List of Track Modulus Exception Locations. As seen in Attachment 1, TTCI identified 14 locations over 8 separate miles of track as having track modulus exceptions. However, Guilford's review of the test data using TTCI's methodology for both September and November reveals 26 locations of track modulus exceptions over 14 separate miles of track. Guilford found 17 track modulus exceptions over 10 miles of track using September information only. The additional 12 locations not identified by TTCI are shown both graphically and numerically from information provided by TTCI. This information is shown in Attachment -1.

3.0 TTCI Statistical Relationship is Highly Inaccurate

Static testing at each location where the measured deflection from the TLV dynamic test indicates a potential location where the AREA deflection criteria is exceeded is an important step in accurately determining the actual track support modulus.

Static tests are performed at select locations and are absolute. The dynamic test measures

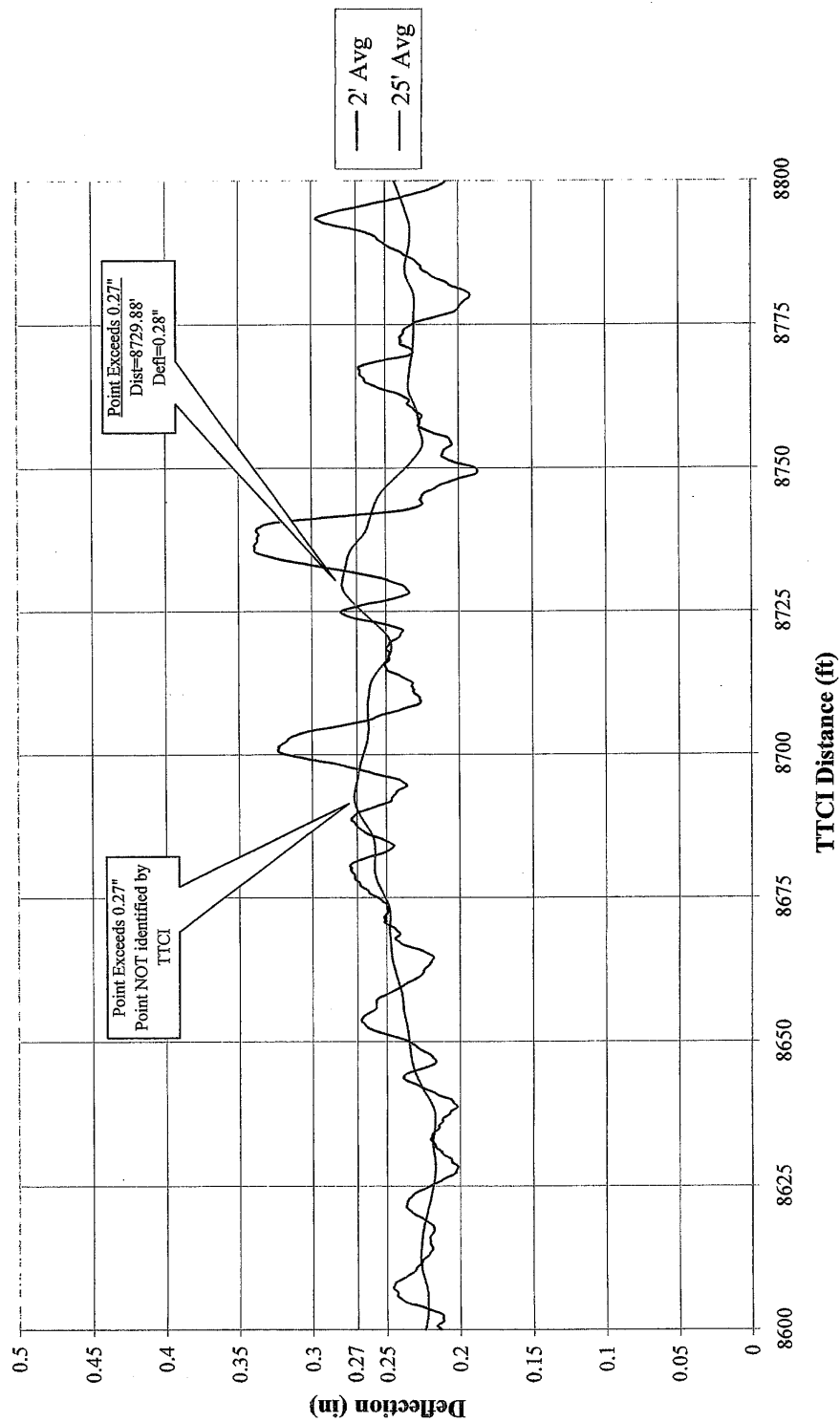
ATTACHMENT 1

Table 1: Exception Locations Not Identified by TTCI Using TTCI Method of Analysis

Milepost > 60 mph	TTCI Report Results (0.27)	DYNAMIC		COMBINED
	25' AVG	Defl. Criteria (.27) Sept. 25' AVG	Defl. Criteria (.27) Nov. 25' AVG	
201-202			NA	
202-203			NA	
203-204	1	2	NA	2
204-205			NA	
205-206	1	1	NA	1
206-206.77			NA	
207.8-208			NA	
208-209	1	1	NA	1
209-210			NA	
210-211			NA	
212.7-213			NA	
213-214	1	1	NA	1
214-215			NA	
215-216			NA	
216-217			NA	
217-218			NA	
218-219			NA	
219-220			NA	
220-221	7	7	1	7
221-222			NA	
222-223			NA	
223-224			NA	
224-225			NA	
225-226				
226-227				
227-228				
228-229		1		1
229-230				
230-231				
231-232				
232-233				
233-234				
234-235				
235-236				
236-237				
237-238				
238-239				
239-240				
240-241	1	1		1
241-242	1	1		1
242-243				
243-243.6				
244-245				
245-246				
246-247				
247-248			3	3
248-249				
249-250			1	1
250-251				
251-252				
252-252.6				
254.1-255			4	4
255-256				
256-257				
257-258				
258-259				
259-260				
260-261			1	1
261-262		1		1
262-263				
263-264				
264-265				
265-266				
266-267				
267-268				
268-269				
269-270				
270-271				
271-272				
272-272.9	1	1		1
Locations	14	17	10	26
Miles	8	10	5	14

September Track Deflection

MP 203 - MP 204

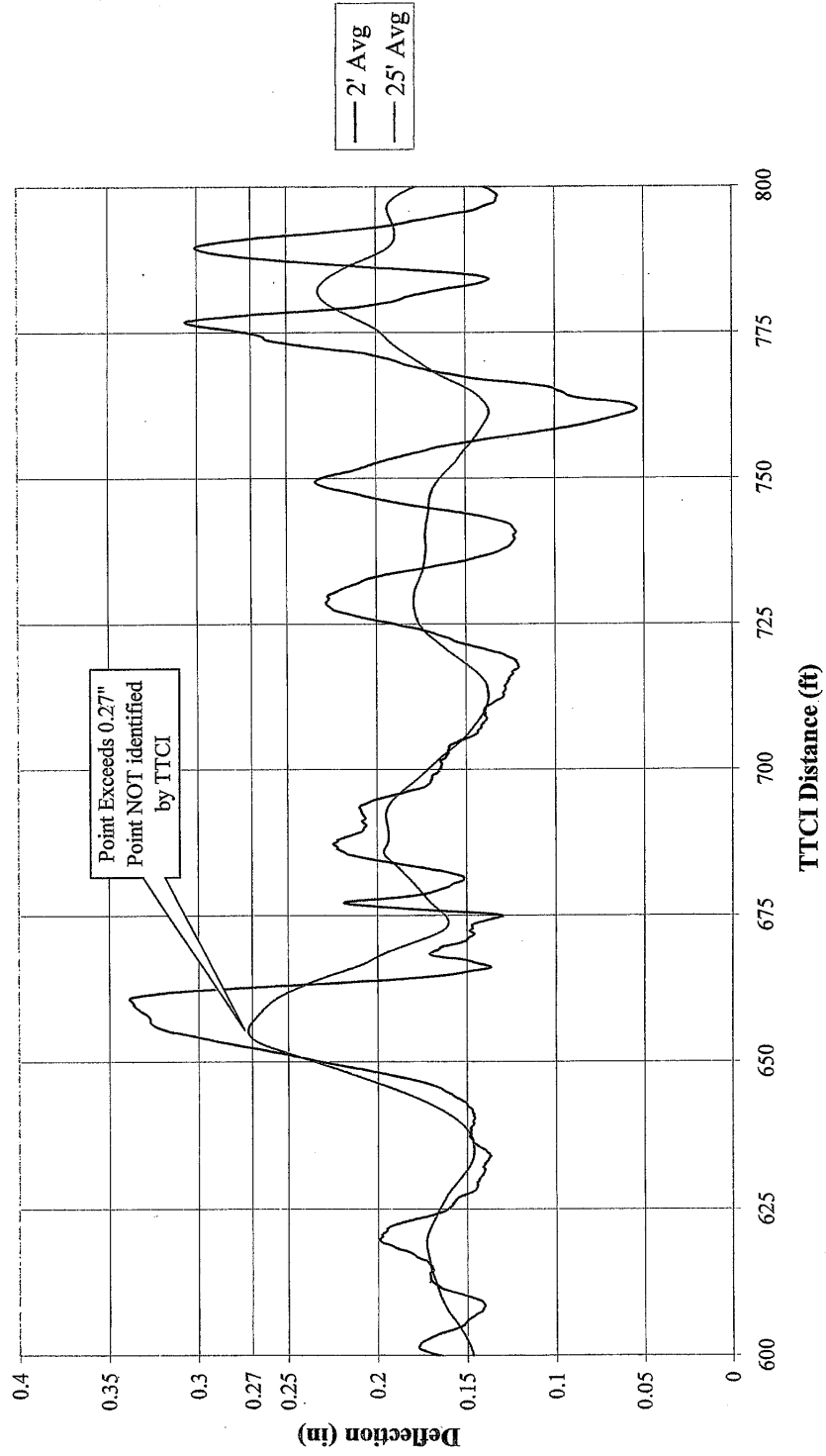


Distance (TTCI - ft)	Distance (ft)	Distance (miles)	MP	2' Avg	25' Avg
8690.24	491.52	0.093090909	203	0.265734	0.2689048
8690.39	491.67	0.093119318	203	0.2638359	0.2691716
8690.53	491.81	0.093145833	203	0.2619378	0.2694291
8690.68	491.96	0.093174242	203	0.2600397	0.2696757
8690.83	492.11	0.093202652	203	0.2584413	0.269909
8690.98	492.26	0.093231061	203	0.2568429	0.2701273
8691.13	492.41	0.09325947	203	0.2553444	0.2703294
8691.28	492.56	0.093287879	203	0.2536461	0.2705154
8691.43	492.71	0.093316288	203	0.2516481	0.2706845
8691.58	492.86	0.093344697	203	0.2496501	0.2708358
8691.73	493.01	0.093373106	203	0.2479518	0.2709669
8691.87	493.15	0.093399621	203	0.2466531	0.2710766
8692.02	493.3	0.09342803	203	0.2458539	0.2711638
8692.17	493.45	0.093456439	203	0.2455542	0.2712285
8692.32	493.6	0.093484848	203	0.2454543	0.2712712
8692.47	493.75	0.093513258	203	0.2454543	0.2712944
8692.62	493.9	0.093541667	203	0.2452545	0.2712984
8692.77	494.05	0.093570076	203	0.2448549	0.2712845
8692.92	494.2	0.093598485	203	0.2442555	0.2712533
8693.07	494.35	0.093626894	203	0.2436561	0.2712048
8693.22	494.5	0.093655303	203	0.2430567	0.2711413
8693.36	494.64	0.093681818	203	0.242757	0.2710639
8693.51	494.79	0.093710227	203	0.2425572	0.270975
8693.66	494.94	0.093738636	203	0.2422575	0.2708774
8693.81	495.09	0.093767045	203	0.2415582	0.2707775
8693.96	495.24	0.093795455	203	0.2404593	0.2706695

Distance (TTCI - ft)	Distance (ft)	Distance (miles)	MP	2' Avg	25' Avg
8728.41	529.69	0.100320076	203	0.2332665	0.2777751
8728.55	529.83	0.100346591	203	0.2336661	0.2780795
8728.7	529.98	0.100375	203	0.2342655	0.2783486
8728.85	530.13	0.100403409	203	0.234765	0.2785836
8729	530.28	0.100431818	203	0.2351646	0.2787868
8729.14	530.42	0.100458333	203	0.2355642	0.278956
8729.29	530.57	0.100486742	203	0.2360637	0.2790911
8729.44	530.72	0.100515152	203	0.236763	0.2791888
8729.58	530.86	0.100541667	203	0.2378619	0.2792465
8729.73	531.01	0.100570076	203	0.2392605	0.279265
8729.88	531.16	0.100598485	203	0.2410587	0.2792482
8730.02	531.3	0.100625	203	0.2429568	0.2792026
8730.17	531.45	0.100653409	203	0.244755	0.2791362
8730.32	531.6	0.100681818	203	0.2463534	0.2790542
8730.46	531.74	0.100708333	203	0.2476521	0.2789606
8730.61	531.89	0.100736742	203	0.2490507	0.2788561
8730.76	532.04	0.100765152	203	0.2508489	0.2787406
8730.9	532.18	0.100791667	203	0.2530467	0.2786136
8731.05	532.33	0.100820076	203	0.255744	0.2784767
8731.2	532.48	0.100848485	203	0.2586411	0.2783329
8731.35	532.63	0.100876894	203	0.2616381	0.2781875
8731.49	532.77	0.100903409	203	0.2644353	0.2780442
8731.64	532.92	0.100931818	203	0.2672325	0.2779068

September Track Deflection

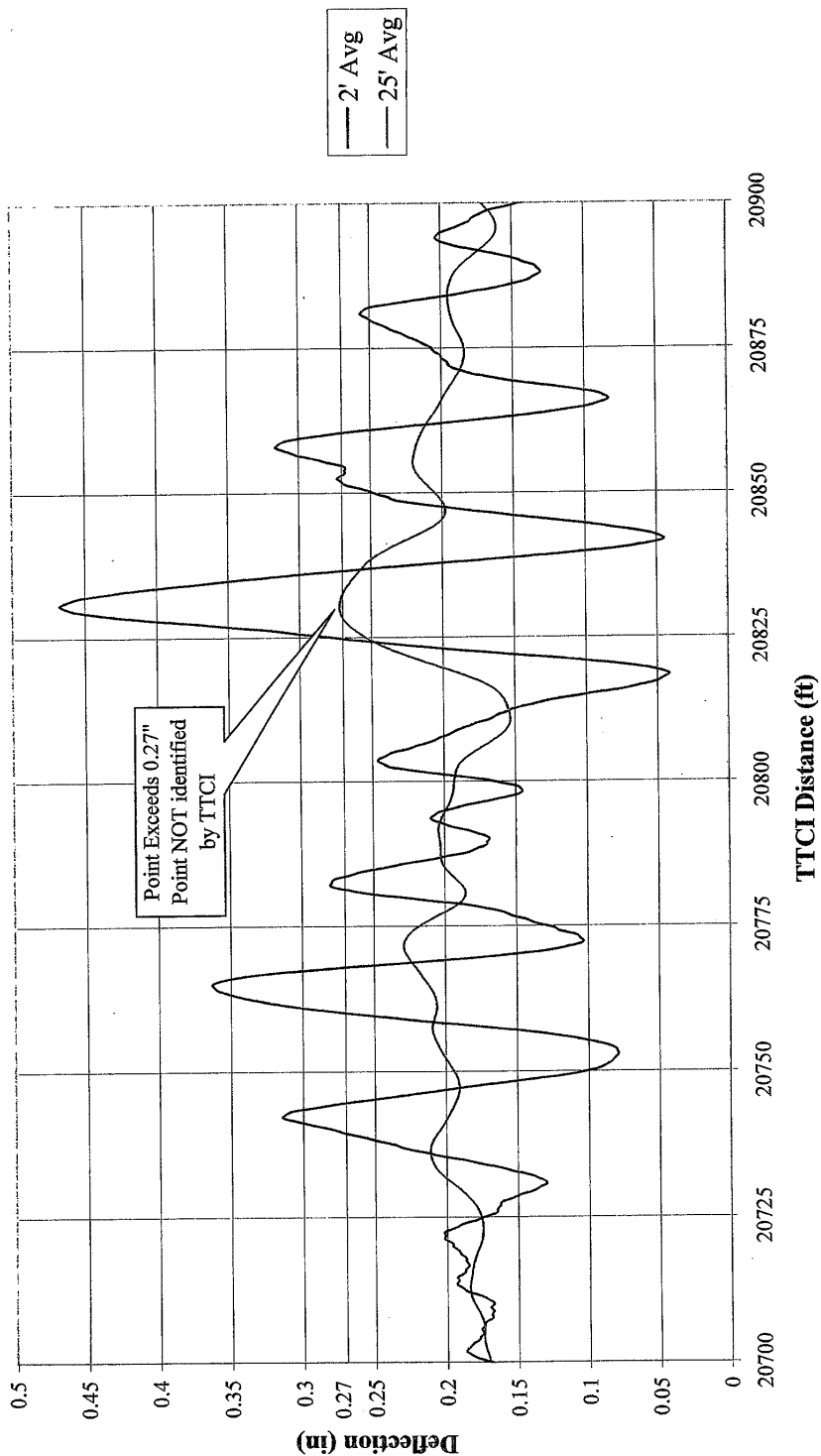
MP 228 - MP 229



TIC1 Dist	MP	Z Avg	Z5 Avg
654.3	228	0.300399	0.270452
654.41	228	0.301998	0.270765
654.51	228	0.303496	0.27104
654.62	228	0.305095	0.27128
654.73	228	0.306793	0.271467
654.84	228	0.308491	0.271623
654.95	228	0.310389	0.271749
655.05	228	0.312088	0.271845
655.16	228	0.314785	0.271911
655.27	228	0.316283	0.271946
655.38	228	0.317382	0.271951
655.49	228	0.318481	0.271927
655.6	228	0.31938	0.271876
655.7	228	0.320379	0.271801
655.81	228	0.321378	0.271704
655.92	228	0.322277	0.271589
656.03	228	0.323177	0.271458
656.14	228	0.323876	0.271309
656.25	228	0.324475	0.27114
656.35	228	0.324975	0.27095
656.46	228	0.325474	0.270737
656.57	228	0.325974	0.2705

September Track Deflection

MP 261 - MP 262



TR1 DIST	MP	Z' AVG	Z5 AVG
20828.26	261	0.408092	0.26925
20828.39	261	0.413586	0.26959
20828.52	261	0.418581	0.26991
20828.65	261	0.423077	0.270206
20828.78	261	0.427372	0.270476
20828.91	261	0.431668	0.270716
20829.04	261	0.435864	0.270929
20829.17	261	0.440159	0.271115
20829.3	261	0.444355	0.271279
20829.43	261	0.448351	0.271425
20829.56	261	0.451848	0.271556
20829.69	261	0.454945	0.271673
20829.82	261	0.457542	0.271775
20829.95	261	0.45954	0.271861
20830.08	261	0.461338	0.271926
20830.21	261	0.462837	0.271967
20830.34	261	0.464235	0.271983
20830.47	261	0.465434	0.271975
20830.6	261	0.466433	0.271948
20830.73	261	0.467033	0.271905
20830.86	261	0.467132	0.27185
20830.99	261	0.466633	0.271786
20831.12	261	0.465534	0.27171
20831.25	261	0.464535	0.271622
20831.37	261	0.463136	0.271519
20831.5	261	0.461638	0.271401
20831.63	261	0.460139	0.271266
20831.76	261	0.458541	0.271117
20831.89	261	0.456843	0.270953
20832.02	261	0.454745	0.270778
20832.15	261	0.452347	0.270593

**MAP WILL BE SCANNED
AT A LATER DATE**

TTCI Distance (ft)	Distance (ft)	Distance (miles)	MP	2' Avg	25' Avg
11303.01	286.28	0.05	247	0.453047	0.340526
11303.08	286.35	0.05	247	0.458341	0.341024
11303.15	286.42	0.05	247	0.461738	0.341472
11303.22	286.49	0.05	247	0.463236	0.34189
11303.29	286.56	0.05	247	0.463236	0.342257
11303.36	286.63	0.05	247	0.467632	0.342595
11303.43	286.70	0.05	247	0.467632	0.342881
11303.5	286.77	0.05	247	0.471528	0.343136
11303.57	286.84	0.05	247	0.471528	0.343337
11303.64	286.91	0.05	247	0.473926	0.343509
11303.71	286.98	0.05	247	0.473926	0.343628
11303.78	287.05	0.05	247	0.476024	0.343718
11303.85	287.12	0.05	247	0.476024	0.343757
11303.92	287.19	0.05	247	0.477722	0.343762
11304	287.27	0.05	247	0.477722	0.343713
11304.07	287.34	0.05	247	0.479021	0.34363
11304.14	287.41	0.05	247	0.479021	0.34349
11304.21	287.48	0.05	247	0.47992	0.343318
11304.28	287.55	0.05	247	0.47992	0.343087
11304.35	287.62	0.05	247	0.48002	0.342813
11304.42	287.69	0.05	247	0.48002	0.342492
11304.49	287.76	0.05	247	0.47992	0.34213
11304.56	287.83	0.05	247	0.47992	0.341723
11304.63	287.90	0.05	247	0.47962	0.341272
11304.7	287.97	0.05	247	0.47962	0.340774
11304.77	288.04	0.05	247	0.478821	0.340233
11304.84	288.11	0.05	247	0.478821	0.339642
11304.91	288.18	0.05	247	0.477222	0.339008
11304.98	288.25	0.05	247	0.477222	0.338309

TTCI Distance (ft)	Distance (ft)	Distance (miles)	MP	2' Avg	25' Avg
11325.3	308.57	0.06	247	0.493706	0.4121
11325.37	308.64	0.06	247	0.495005	0.413073
11325.44	308.71	0.06	247	0.496403	0.413997
11325.5	308.77	0.06	247	0.497502	0.414903
11325.57	308.84	0.06	247	0.497502	0.415737
11325.64	308.91	0.06	247	0.4996	0.416553
11325.7	308.97	0.06	247	0.4996	0.417303
11325.77	309.04	0.06	247	0.501398	0.418035
11325.84	309.11	0.06	247	0.501398	0.418699
11325.91	309.18	0.06	247	0.503296	0.419344
11325.97	309.24	0.06	247	0.504195	0.419912
11326.04	309.31	0.06	247	0.504695	0.420461
11326.11	309.38	0.06	247	0.505494	0.420933
11326.17	309.44	0.06	247	0.505894	0.421386
11326.24	309.51	0.06	247	0.506793	0.421762
11326.31	309.58	0.06	247	0.507092	0.422115
11326.37	309.64	0.06	247	0.508191	0.422396
11326.44	309.71	0.06	247	0.508191	0.422657
11326.51	309.78	0.06	247	0.508191	0.422842
11326.58	309.85	0.06	247	0.508791	0.423007
11326.64	309.91	0.06	247	0.50949	0.423097
11326.71	309.98	0.06	247	0.50919	0.423164
11326.78	310.05	0.06	247	0.50979	0.423156
11326.84	310.11	0.06	247	0.508991	0.423126
11326.91	310.18	0.06	247	0.50939	0.423027
11326.98	310.25	0.06	247	0.508291	0.422904
11327.05	310.32	0.06	247	0.508291	0.422708
11327.11	310.38	0.06	247	0.507092	0.422489
11327.18	310.45	0.06	247	0.506993	0.422198
11327.25	310.52	0.06	247	0.505694	0.421886
11327.31	310.58	0.06	247	0.505494	0.421501
11327.38	310.65	0.06	247	0.504095	0.421093
11327.45	310.72	0.06	247	0.503396	0.420615
11327.52	310.79	0.06	247	0.501798	0.420116
11327.58	310.85	0.06	247	0.500999	0.419548
11327.65	310.92	0.06	247	0.4993	0.418955
11327.72	310.99	0.06	247	0.498401	0.418294
11327.79	311.06	0.06	247	0.496603	0.41761
11327.85	311.12	0.06	247	0.495704	0.416858
11327.92	311.19	0.06	247	0.493806	0.416085
11327.99	311.26	0.06	247	0.492607	0.415246
11328.05	311.32	0.06	247	0.490309	0.414386
11328.12	311.39	0.06	247	0.488811	0.41346
11328.19	311.46	0.06	247	0.486413	0.412514
11328.26	311.53	0.06	247	0.484715	0.411504
11328.32	311.59	0.06	247	0.482117	0.410472
11328.39	311.66	0.06	247	0.480219	0.409379
11328.46	311.73	0.06	247	0.477622	0.408265

**MAP WILL BE SCANNED
AT A LATER DATE**

PTCI DIST

MP Z'AVG ZS'AVG

1214.35	247	0.111289	0.268935
1214.53	247	0.112687	0.269971
1214.72	247	0.113886	0.270925
1214.9	247	0.114485	0.271792
1215.08	247	0.114186	0.272569
1215.26	247	0.113486	0.273261
1215.45	247	0.112987	0.273869
1215.63	247	0.113486	0.274391
1215.81	247	0.115085	0.27482
1215.99	247	0.117482	0.275151
1216.18	247	0.11978	0.275377
1216.36	247	0.121678	0.275502
1216.54	247	0.123377	0.275531
1216.72	247	0.126873	0.275471
1216.91	247	0.131768	0.275327
1217.09	247	0.137862	0.275096
1217.27	247	0.144855	0.274773
1217.46	247	0.151848	0.274353
1217.64	247	0.158741	0.273839
1217.82	247	0.165734	0.273237
1218	247	0.173327	0.27256
1218.19	247	0.182018	0.271816
1218.37	247	0.192008	0.271007
1218.55	247	0.202697	0.270134
1218.73	247	0.213486	0.26919
1218.92	247	0.222377	0.268179
1219.1	247	0.230669	0.267107
1219.28	247	0.238961	0.265986
1219.46	247	0.247752	0.264825
1219.65	247	0.256943	0.263629
1219.83	247	0.266333	0.262398
1220.01	247	0.275125	0.261129

**MAP WILL BE SCANNED
AT A LATER DATE**

TTCI Distance (ft)	Distance (ft)	Distance (miles)	MP	2' Avg	25' Avg
11967.97	2600.91	0.49	249	0.236264	0.270515
11968.13	2601.07	0.49	249	0.237862	0.270671
11968.29	2601.23	0.49	249	0.23946	0.27082
11968.45	2601.39	0.49	249	0.240759	0.270959
11968.61	2601.55	0.49	249	0.241858	0.271084
11968.77	2601.71	0.49	249	0.242857	0.271195
11968.93	2601.87	0.49	249	0.244056	0.271296
11969.09	2602.03	0.49	249	0.245354	0.271389
11969.25	2602.19	0.49	249	0.246753	0.27148
11969.41	2602.35	0.49	249	0.248152	0.271569
11969.57	2602.51	0.49	249	0.249251	0.271651
11969.73	2602.67	0.49	249	0.24995	0.271716
11969.89	2602.83	0.49	249	0.25025	0.271761
11970.05	2602.99	0.49	249	0.25025	0.271788
11970.21	2603.15	0.49	249	0.24995	0.271802
11970.37	2603.31	0.49	249	0.24965	0.271812
11970.53	2603.47	0.49	249	0.24945	0.271822
11970.69	2603.63	0.49	249	0.249251	0.271835
11970.85	2603.79	0.49	249	0.249151	0.271846
11971.01	2603.95	0.49	249	0.249151	0.271849
11971.17	2604.11	0.49	249	0.24935	0.271839
11971.33	2604.27	0.49	249	0.24975	0.271814
11971.49	2604.43	0.49	249	0.250449	0.271777
11971.65	2604.59	0.49	249	0.251548	0.271734
11971.81	2604.75	0.49	249	0.253047	0.271693
11971.97	2604.91	0.49	249	0.254845	0.271652
11972.13	2605.07	0.49	249	0.256843	0.271606
11972.29	2605.23	0.49	249	0.258741	0.271544
11972.45	2605.39	0.49	249	0.260739	0.271457
11972.61	2605.55	0.49	249	0.263037	0.271341
11972.77	2605.71	0.49	249	0.265534	0.271197
11972.93	2605.87	0.49	249	0.268431	0.271032
11973.09	2606.03	0.49	249	0.271328	0.27085
11973.25	2606.19	0.49	249	0.274126	0.270656
11973.41	2606.35	0.49	249	0.276523	0.270445
11973.57	2606.51	0.49	249	0.278521	0.270212
11973.73	2606.67	0.49	249	0.28002	0.26995
11973.89	2606.83	0.49	249	0.281418	0.269657
11974.05	2606.99	0.49	249	0.282717	0.269331

**MAP WILL BE SCANNED
AT A LATER DATE**

VTC1 DIST	MP	Z AVG	Z5 AVG
11822.73	254	0.043756	0.256741
11822.91	254	0.043656	0.258313
11823.08	254	0.044456	0.259799
11823.25	254	0.046853	0.261198
11823.42	254	0.050649	0.262506
11823.59	254	0.055345	0.263722
11823.76	254	0.060004	0.264846
11823.93	254	0.064336	0.265874
11824.1	254	0.068432	0.266819
11824.28	254	0.073027	0.267685
11824.45	254	0.078821	0.268473
11824.62	254	0.085814	0.269187
11824.79	254	0.093706	0.269829
11824.96	254	0.101498	0.270402
11825.13	254	0.108791	0.270913
11825.3	254	0.115584	0.271365
11825.47	254	0.122477	0.271764
11825.65	254	0.12957	0.272113
11825.82	254	0.137263	0.272412
11825.99	254	0.145155	0.272662
11826.16	254	0.152747	0.272863
11826.33	254	0.15944	0.273006
11826.5	254	0.165335	0.27309
11826.67	254	0.170729	0.273117
11826.84	254	0.176224	0.273087
11827.01	254	0.182318	0.273001
11827.19	254	0.189311	0.272858
11827.36	254	0.196603	0.272657
11827.53	254	0.203796	0.272398
11827.7	254	0.21029	0.272081
11827.87	254	0.216084	0.271709
11828.04	254	0.221678	0.271282
11828.21	254	0.227972	0.270805
11828.38	254	0.235464	0.270279
11828.56	254	0.244156	0.269709
11828.73	254	0.253446	0.269098

TTC DIST	MP	Z'AVG	ZS'AVG
11842.73	254	0.172328	0.269509
11842.9	254	0.163037	0.270062
11843.07	254	0.153846	0.270571
11843.24	254	0.144655	0.271032
11843.41	254	0.135864	0.271437
11843.58	254	0.127872	0.271782
11843.75	254	0.121079	0.272075
11843.92	254	0.115484	0.272318
11844.09	254	0.11029	0.272509
11844.26	254	0.105095	0.272649
11844.43	254	0.099301	0.272732
11844.6	254	0.093007	0.272753
11844.77	254	0.086813	0.272711
11844.94	254	0.081019	0.272605
11845.11	254	0.076124	0.272435
11845.28	254	0.071528	0.272205
11845.45	254	0.066733	0.271912
11845.62	254	0.061339	0.271557
11845.79	254	0.055245	0.271135
11845.97	254	0.048951	0.270636
11846.14	254	0.042657	0.270058
11846.31	254	0.036863	0.2694
11846.48	254	0.031668	0.268662
11846.65	254	0.026673	0.267848
11846.82	254	0.021578	0.266961
11846.99	254	0.016184	0.266003
11847.16	254	0.010689	0.264978
11847.33	254	0.005295	0.263888
11847.5	254	0.000699	0.262738
11847.67	254	-0.002797	0.261533
11847.84	254	-0.005395	0.260278
11848.01	254	-0.007692	0.258975
11848.18	254	-0.01009	0.25763
11848.35	254	-0.012687	0.256245
11848.52	254	-0.014985	0.254822
11848.69	254	-0.016583	0.253366

TTCI DIST	MP	Z AVG	ZS AVG
12005.61	254	0.035864	0.266813
12005.79	254	0.035764	0.268027
12005.96	254	0.035265	0.269151
12006.13	254	0.034266	0.270187
12006.3	254	0.032967	0.271128
12006.48	254	0.031768	0.271963
12006.65	254	0.031469	0.272685
12006.82	254	0.032468	0.273292
12007	254	0.034665	0.273791
12007.17	254	0.038761	0.274187
12007.34	254	0.042957	0.274484
12007.51	254	0.047153	0.274688
12007.69	254	0.051449	0.274794
12007.86	254	0.056743	0.274796
12008.03	254	0.063736	0.274691
12008.21	254	0.072428	0.274485
12008.38	254	0.082318	0.274187
12008.55	254	0.092507	0.273805
12008.73	254	0.102098	0.273334
12008.9	254	0.111189	0.272776
12009.07	254	0.11998	0.272131
12009.25	254	0.12947	0.271402
12009.42	254	0.138961	0.270596
12009.59	254	0.149051	0.269722
12009.77	254	0.159141	0.268787

TZ1 Dist	AP	Z'AVG	Z5'AVG
12022.53	254	0.312987	0.267404
12022.7	254	0.2994	0.268402
12022.88	254	0.285314	0.269367
12023.06	254	0.271129	0.270294
12023.23	254	0.257842	0.271173
12023.41	254	0.245854	0.271999
12023.59	254	0.234665	0.272768
12023.76	254	0.222577	0.273476
12023.94	254	0.21019	0.274124
12024.12	254	0.197702	0.274712
12024.29	254	0.185414	0.27524
12024.47	254	0.174126	0.275704
12024.65	254	0.164036	0.276107
12024.82	254	0.154945	0.276444
12025	254	0.146154	0.276713
12025.18	254	0.137163	0.276914
12025.36	254	0.128072	0.277046
12025.53	254	0.11948	0.277111
12025.71	254	0.112188	0.277106
12025.89	254	0.107592	0.277031
12026.06	254	0.104396	0.276881
12026.24	254	0.101399	0.276655
12026.42	254	0.098102	0.27635
12026.6	254	0.094505	0.275967
12026.77	254	0.091209	0.27551
12026.95	254	0.089011	0.274983
12027.13	254	0.088511	0.274386
12027.31	254	0.089211	0.273721
12027.48	254	0.09011	0.272985
12027.66	254	0.09041	0.27217
12027.84	254	0.08971	0.271279
12028.02	254	0.088412	0.270315
12028.19	254	0.087413	0.269283
12028.37	254	0.087213	0.268188
12028.55	254	0.088012	0.266994
12028.73	254	0.088811	0.26573
12028.91	254	0.089211	0.264394

**MAP WILL BE SCANNED
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TTC DIST	DIST (ft)	DIST (Miles)	MP	Z' AVG	ZS' AVG
19585.16	3306.04	0.626144	260	0.32967	0.32967
19585.2	3306.08	0.626152	260	0.32967	0.32967
19585.25	3306.13	0.626161	260	0.333067	0.333067
19585.29	3306.17	0.626169	260	0.333067	0.333067
19585.33	3306.21	0.626176	260	0.334765	0.334765
19585.38	3306.26	0.626186	260	0.336763	0.336763
19585.42	3306.3	0.626193	260	0.338561	0.338561
19585.46	3306.34	0.626201	260	0.340459	0.340459
19585.51	3306.39	0.62621	260	0.342357	0.342357
19585.55	3306.43	0.626218	260	0.344156	0.344156
19585.6	3306.48	0.626227	260	0.345854	0.345854
19585.64	3306.52	0.626235	260	0.347952	0.347952
19585.68	3306.56	0.626242	260	0.34955	0.34955
19585.72	3306.6	0.62625	260	0.34955	0.34955
19585.77	3306.65	0.626259	260	0.353047	0.353047
19585.81	3306.69	0.626267	260	0.353047	0.353047
19585.85	3306.73	0.626275	260	0.356044	0.356044
19585.9	3306.78	0.626284	260	0.356044	0.356044
19585.94	3306.82	0.626292	260	0.358741	0.358741
19585.98	3306.86	0.626299	260	0.358741	0.358741
19586.02	3306.9	0.626307	260	0.361139	0.361139
19586.06	3306.94	0.626314	260	0.361139	0.361139
19586.11	3306.99	0.626324	260	0.361838	0.361838
19586.15	3307.03	0.626331	260	0.363436	0.363436
19586.19	3307.07	0.626339	260	0.363936	0.363936
19586.23	3307.11	0.626347	260	0.365434	0.365434
19586.27	3307.15	0.626354	260	0.366034	0.366034
19586.31	3307.19	0.626362	260	0.367332	0.367332
19586.36	3307.24	0.626371	260	0.368132	0.368132
19586.4	3307.28	0.626379	260	0.36933	0.36933
19586.44	3307.32	0.626386	260	0.36933	0.36933
19586.48	3307.36	0.626394	260	0.370329	0.370329
19586.52	3307.4	0.626402	260	0.371928	0.371928
19586.56	3307.44	0.626409	260	0.372727	0.372727
19586.6	3307.48	0.626417	260	0.374026	0.374026
19586.64	3307.52	0.626424	260	0.375224	0.375224
19586.68	3307.56	0.626432	260	0.376223	0.376223
19586.72	3307.6	0.626439	260	0.376223	0.376223

ATTACHMENT 2

Table 2
Dynamic Deflections >.28 in. VS. Static Measurements
Portland, ME - Plaistow, NH
06/07/02

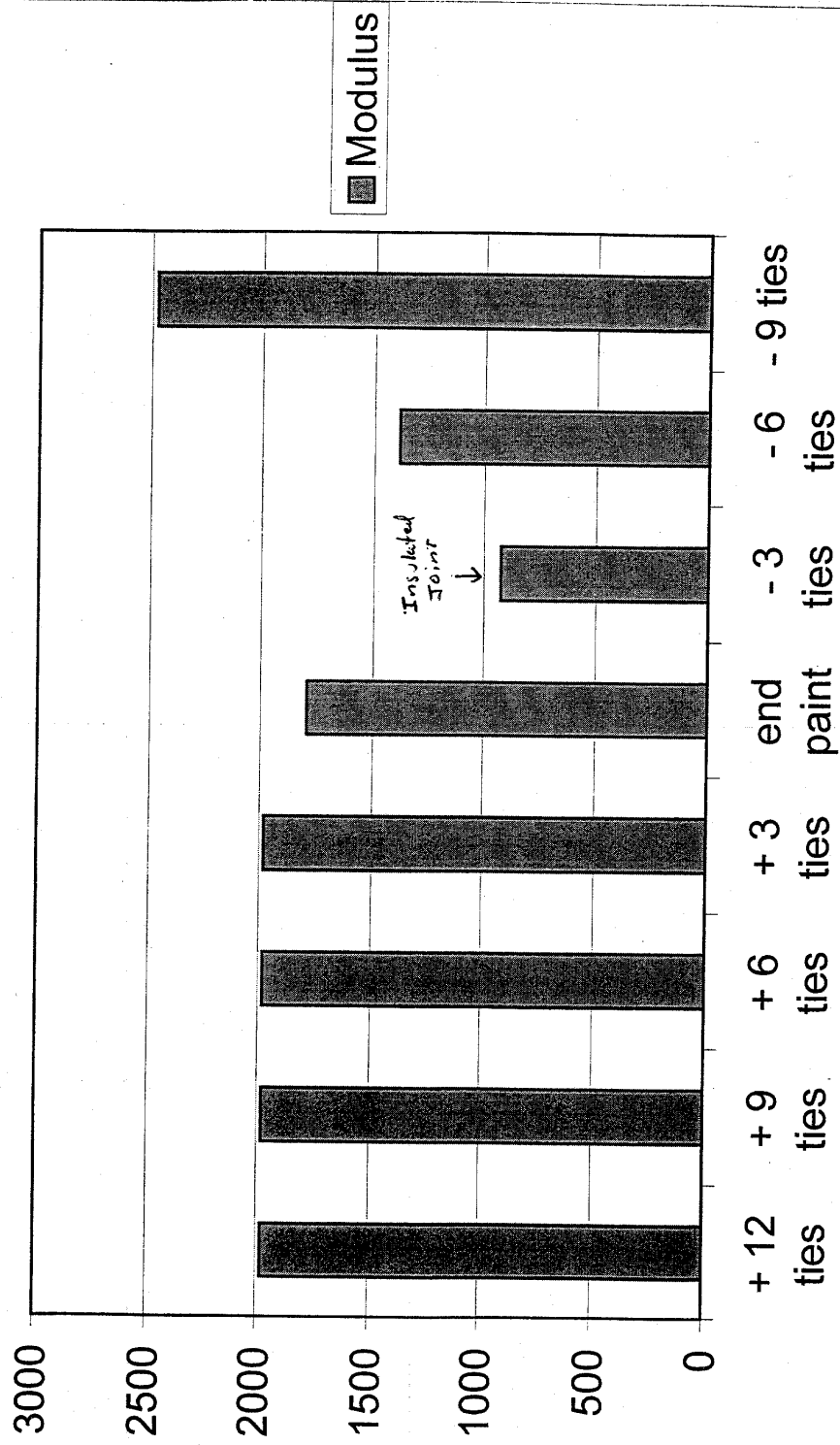
Milepost > 60 mph	DYNAMIC			STATIC	
	Defl. Criteria (.28) Sept. 25' AVG	Defl. Criteria (.28) Nov. 25' AVG	Defl. Criteria Combined Sept /Nov 25' AVG	Static Zones measured .28" Defl. or above	Static Zone Number
201-202		NA			
202-203		NA			
203-204	1	NA	1	1	Zone 1
204-205		NA			
205-206		NA			
206-206.77		NA			
207.8-208		NA			
208-209	1	NA	1		
209-210		NA			
210-211		NA			
212.7-213		NA			
213-214	1	NA	1		
214-215		NA			
215-216		NA			
216-217		NA			
217-218		NA			
218-219		NA			
219-220		NA			
220-221	7	1	7		
221-222		NA			
222-223		NA			
223-224		NA			
224-225		NA			
225-226					
226-227					
227-228					
228-229					
229-230					
230-231					
231-232					
232-233					
233-234					
234-235					
235-236					
236-237					
237-238					
238-239					
239-240					
240-241					
241-242	1		1		
242-243					
243-243.6					
244-245					
245-246					
246-247					
247-248		2	2	1	Zone 28
248-249					
249-250					
250-251					
251-252					
252-252.6					
254.1-255		1	1		
255-256					
256-257					
257-258					
258-259					
259-260					
260-261		1	1		
261-262					
262-263					
263-264					
264-265					
265-266					
266-267					
267-268					
268-269					
269-270					
270-271					
271-272					
272-272.9	1		1		
Locations	12	5	16	2	
Miles	6	4	9		

ATTACHMENT 3

**MAP WILL BE SCANNED
AT A LATER DATE**

ATTACHMENT 4

Zone 1



Stationary Vertical Log

115 BE

Date: 9/28 Time: 10:35

Zone info: Zone #2 MP 203.43 (1228' Post - 3 of Zone 1) Part 9.

tie #	+6	+3	0	-3	-6	
OK	0	0	0	0	0	
10K	.04	.03	.04	.05	.08	
33K	.12	.10	.13	.15	.19	

115 RE

Date: 9-28 Time: 9:25a

Zone info: ZONE 1

tie #	+12	+9	+6	+3	0	-3	-6	-9
OK	0	0	0	0	0	0	0	0
10K	.08	.07	.06	.05	.06	.16	.06	.04
33K	.210	.200	.190	.180	.20	.39	.230	.150

note:

-3 and
-6 had
insulation
Joints
on adja
10.1

Date: 9/28 Time:

Zone info:

tie #						
OK						
10K						
33K						

Date:

Time:

Zone info:

tie #						
OK						
10K						
33K						

ATTACHMENT 5

**MAP WILL BE SCANNED
AT A LATER DATE**

**MAP WILL BE SCANNED
AT A LATER DATE**

**MAP WILL BE SCANNED
AT A LATER DATE**

**MAP WILL BE SCANNED
AT A LATER DATE**

ATTACHMENT 6

MAP WILL BE SCANNED
AT A LATER DATE

ATTACHMENT 7

Table 4 - TTCI Table 2 Analysis

TLV Deflection (in)	Zone	Static Deflection (in)	Static Modulus	Static Modulus Range	Static Modulus % Difference	TLV Calculated Track Modulus	TLV Calculated Modulus % Error
0.12	33	0.06	5555			7441	34%
0.13	24	0.05	7073			6756	4%
0.14	6	0.06	5555			6178	11%
0.14	14	0.06	5555			6178	11%
0.15	26	0.05	7073			5684	20%
0.15	34	0.05	7073			5684	20%
0.15	8	0.06	5555			5684	2%
0.15	36	0.06	5555			5684	2%
0.15	30	0.07	4516	4516-7073	36.15%	5684	26%
0.19	31	0.08	3780			4273	13%
0.23	15	0.07	4516			3393	25%
0.23	5	0.08	3785			3393	10%
0.23	29	0.1	2811	2811-4516	37.75%	3393	21%
0.27	4	0.08	3785			2796	26%
0.29	7-40	0.13	1981			2565	29%
0.3	22	0.1	2807			2462	12%
0.3	3	0.1	2811			2462	12%
0.3	2	0.11	2476	2476-2811	11.92%	2462	1%
0.31	16	0.12	2205			2367	7%
0.33	27	0.09	3230			2195	32%
0.33	7-20	0.1	2811			2195	22%
0.33	25	0.12	2201	2201-3230	31.86%	2195	0%
0.34	32	0.08	3780			2117	44%
0.35	28	0.18	1282			2044	59%
0.36	13	0.11	2472			1976	20%
0.37	20	0.15	1635			1912	17%
0.38	18	0.11	2472			1851	25%
0.38	7	0.12	2205			1851	16%
0.38	21	0.14	1792			1851	3%
0.38	10	0.16	1502	1502-2472	39.24%	1851	23%
0.39	23	0.2	1114			1794	61%
0.4	12	0.14	1792			1740	3%
0.41	17	0.16	1500			1689	13%
0.49	35	0.21	1044			1362	30%
0.5	1	0.23	926			1329	44%
0.52	11	0.16	1500			1268	15%

**VERIFIED STATEMENT
OF
ALLAN M. ZAREMBSKI, Ph.D., P.E.
President**

1. My name is Allan M. Zarembski, Ph.D., P.E. I am the Principle of ZETA-TECH Associates, Inc., 900 Kings Highway N., Cherry Hills, NJ 08034. ZETA-TECH has reviewed information, in the form of testing data from TTCI, submitted by Guilford, discussing the subject rail line between Portland, ME and Plaistow, NH as referred to in the attached memo dated February 19, 2002.

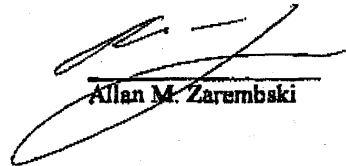
2. ZETA-TECH was also retained by Guilford to perform Track Modulus Testing at various locations along this rail line. My analysis of this data was included with this memo dated June 4, 2002.

VERIFICATION

I, Allan M. Zarembski, declare under the penalty of perjury that the foregoing is true and correct.

I further certify that I am qualified and authorized to make this Verified Statement.

Executed: June 7, 2002


Allan M. Zarembski

ATTACHMENT - 1



ZETA-TECH
Associates, Inc.
900 Kings Highway N.
P.O. Box 8407
Cherry Hill, NJ
08002
(609) 779-7795
FAX: (609) 779-7436

FACSIMILE TRANSMITTAL SHEET

ZETA-TECH ASSOCIATES, INC.

To: Phillip D. Brake, P.E.
Company: Guilford Rail Systems
Phone: (978) 663-1057
Fax: (978) 663-6907

From: Allan M. Zarembski, Ph.D., P.E.
Company: ZETA-TECH Associates, Inc.
Phone: (856) 779-7795
Fax: (856) 779-7436
e-mail: zarembski@zetatech.com
Date: February 19, 2002

Pages including this cover page: 3

Dear Phil:

Following up on our discussions and my review of the January 10, 2002 TTCI Report on Track Modulus Testing, I would like to make the following observations:

1. The 25' moving average approach taken by TTCI is inappropriate¹ and in fact serves to "disguise" location of low track modulus, such as the ones at issue here. Since, the modulus values have been obtained by field testing (both moving and stationary), the actual deflection of the track under the test load already accounts for any variation in modulus in the influence zone of the test (i.e. the region where the track deflects under the test load). Thus, the testing already "averages" the track modulus in this zone. To further apply a 25 foot moving average to the test results serve to average an average, thus "disguising" locations where the modulus was measured to be under 2750 lb/in/in. This is clearly illustrated in TTCI test sites; Zone 2, Zone 7 -40', Zone 7, Zone 11, Zone 12, Zone 13, Zone 16, Zone 17, Zone 18, Zone 20, Zone 21, Zone 23, Zone 25, Zone 28, and Zone 35. In fact, in Zones 11 and 23, 67% or 2/3 of the measurement points were BELOW 2750 lb/in/in, yet the average of 100% of the points came to a value above 2750 lb/in/in (because

¹ The 25' moving average is not supported by AREMA nor used in the published literature.

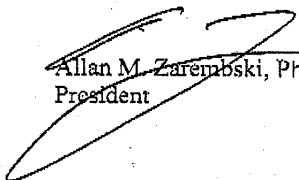
the one remaining measurement value was so high as to bring the "average" value over 2750).

The inappropriateness of this approach is clearly illustrated in the case of TTCI Test Zone 1, where a total of 6 static modulus measurements were taken over a length of 25'. In this Zone, ALL SIX (6) test locations had modulus values LESS than 2750 lb/in/in, ranging from a low of 926 to a high of 2476, with an average of 1758 lb/in/in. Yet, this location was NOT identified by TTCI as a track modulus exception location, based on their 25' moving average approach.

2. The 25' moving average approach is fundamentally wrong when applied to analysis of rail stresses, since rail failure (fatigue, fracture, etc.) is a point process. Rail failure develops and occurs at a single location on the rail, NOT over a 25' (or any other) length. Therefore, averaging the track modulus over 25' (when the measured modulus values are obtained by testing that already reflects any actual local variation in track modulus) results in a value that significantly distorts (and reduces) the calculated (but not the actual) stresses in the rail. Since modulus values of approximately 1800 lb/in/in or less result in rail stresses that are below the AREMA allowable value of 25,000 psi² (see Figure 1), it is critical that these locations of high rail stress not be "averaged" out by an artificial averaging process that has no justification in either theory or in the published literature. [In fact, it should be noted that the AREMA "permissible calculated rail stress due to flexure and fatigue" is 18,000 psi.¹] When the rail stress values exceed the allowable AREMA stress values, the potential exists for the development of rail fatigue defects which could result in a potential safety issue.

If you have any questions, please give me a call.

Sincerely,


Allan M. Zarembski, Ph.D., P.E.
President

² Section 10.2.2.5, Allowable Bending Stresses in Rail, AREMA Manual for Railway Engineering, 2001.

RAIL STRESSES vs SPEED

115 RE RAIL

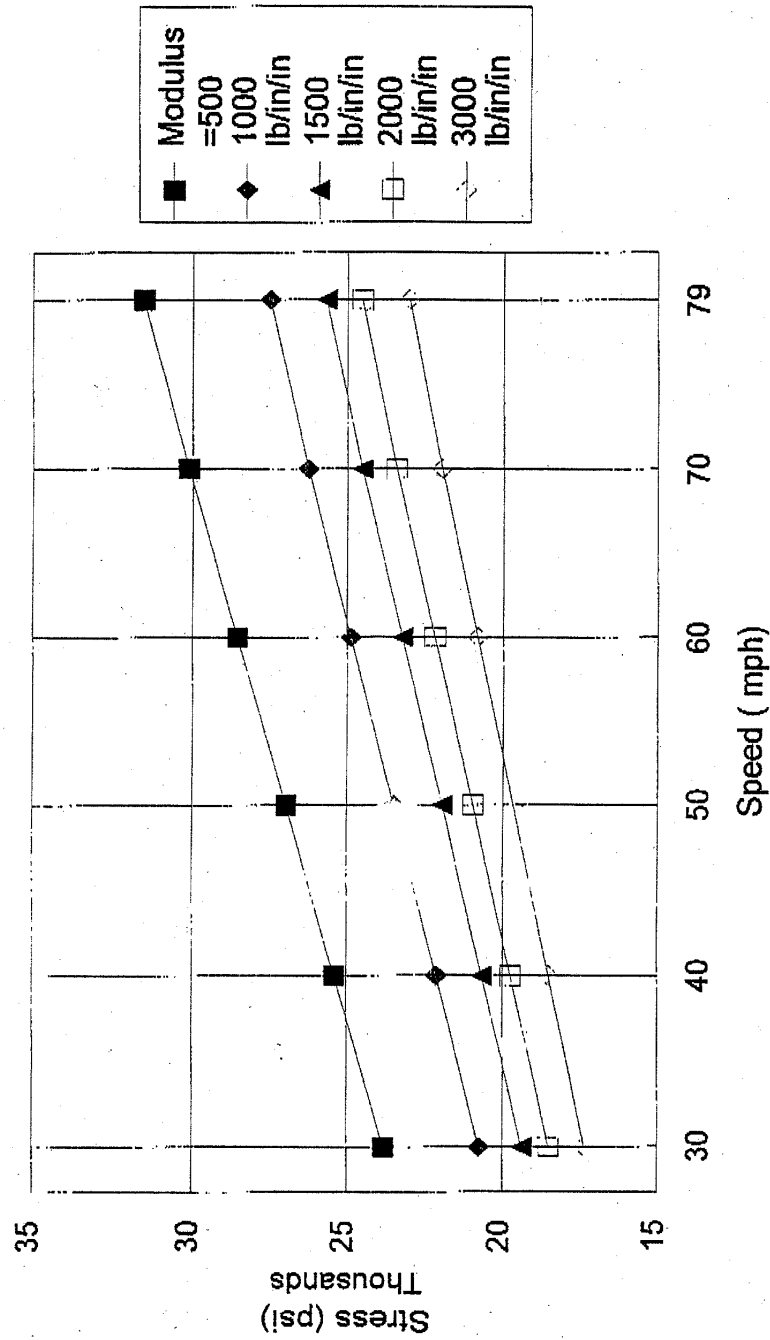


FIGURE 1

ATTACHMENT - 2



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Survey Method Track Modulus Data Analysis

6/4/02

Introduction

Deflection measurements were taken (5/21/02-5/22/02) in accordance with the procedure defined in the AREMA Manual for Railway Engineering listed in Chapter 16.10.11.1, under the first truck of a MEC 502 locomotive, and the last truck of a tanker car ACFX 76646. Using the wheel loads, wheel spacing, rail section properties, and recorded deflections the track modulus can be calculated by superimposing the single-axle solutions for a point load applied to a beam on an elastic foundation. Making the first axle the reference point $x = 0$, the deflection under a two-axle truck is calculated using the following equation:

$$w(0) = \frac{P\beta}{2k} + \frac{P\beta}{2k} e^{-\beta l_2} (\cos \beta l_2 + \sin \beta l_2)$$

where P is the wheel load, k is the track modulus, l_2 is the wheel spacing and $\beta = \sqrt[4]{\frac{k}{4EI}}$.

ZETA-TECH's track modulus software calculates the AREMA track modulus based on the input parameters mentioned above. This methodology applies to the calculation of track modulus for multiple wheel loads. Track modulus values were also calculated using the TTCI methodology of eliminating slack in the rail, which is discussed in the following section. Note, this methodology is different from that defined in the AREMA manual.

Modulus Calculations

The AREMA method for calculating track modulus was utilized for both for the heavy load (deflection under locomotive wheel loads) and the light load (deflection under tanker car wheel loads). In addition, the TTCI methodology, which is supposed to eliminate deflections due to slack between the rail base and tie plate, was used to calculate a modulus based on the change in deflections and wheel loads. Since the axle spacing of the two test vehicles varies, a modified approach must be taken. This approach involves calculating a heavy and light single-axle effective displacement from the actual deflections and wheel loads. Using the difference in the effective deflections and actual wheel loads, the modulus can be calculated.

To calculate the TTCI "slack-less" track modulus the following equation was employed:

$$k = \frac{1}{4} \sqrt[3]{\frac{\Delta P_{act}^4}{EI \Delta w_{eff}^4}}$$

where ΔP_{act} is the difference in the actual wheel loads and Δw_{eff} is the difference in single-axle effective deflections,

Data Analysis

The tests were conducted with a MEC 502 Locomotive and tanker car ACFX 76646 at a testing speed of 3 mph on the south rail. The wheel loads, obtained by weighing the locomotive and tanker car on a railroad scale, were 32012.5 and 8212.5 lbs respectively. The measured axle spacing for the locomotive and car were 108.5 and 70.5 respectively.

For each of the 12 test sites, the AREMA two-axle modulus and the TTCI "slack-less" track modulus values were calculated. Between 3 and 16 measurements were taken at each site, over a distance of 25'. Table 1 shows the AREMA modulus under the heavy wheel load and the less conservative "slack-less" modulus. Also shown is the corresponding 25' averages for both. The shaded cells represent 25' averages below the 2750 lbs/in/in threshold established by the Surface Transportation Board. The full data set, including the single axle effective deflections, and site descriptions are given in Appendix A.

TABLE 1.

Site	Location	AREMA Modulus	25' AVG	"Slack-less" Modulus	25' AVG
1	-12.5	813		1069	
	-6.25	821		1309	
	0	761		912	
	6.25	921		1091	
	12.5	973	858	1187	1114
2	-12.5	1165		1475	
	-6.25	1337		1554	
	0	921		1240	
	6.25	1165		1730	
	12.5	1447	1287	1753	1558
3	-12.5	833		1260	
	0	1243		1781	
	12.5	1243	1188	1384	1478
4	-13	2438		3772	
	0	921		1646	
	12	2438	1932	3772	3063
5	-12.5	2790		3449	
	0	697		1085	
	12.5	1337	1508	2245	2260
6	-12	1092		1991	
	0	2140		2986	
	13	726	1328	1545	2174
7	-12.5	4791		5194	
	0	1901		2755	
	12.5	2790	3161	3713	3888
8	-12.5	1243		2150	
	0	3632		4894	
	12.5	1566	2247	2205	3083
9	-12.5	1027		1497	
	-10.71	1027		1755	
	-8.92	1027		1755	
	-7.13	1027		1549	
	-5.34	1092		1673	
	-3.55	1092		1536	
	-1.79	1243		1781	
	0	1447		1928	
	1.56	1447		1928	
	3.14	1566		2206	
	4.7	1337		1854	
	6.26	1337		1884	
	7.82	1447		1928	
	9.38	1901		2755	
	10.94	2140		2986	
	12.5	2438	1417	3217	2883
10	-12.5	1165		1592	
	-6.25	1165		1891	
	0	645		1249	
	0	800		1135	
	6.25	580	598	1031	1517
11	-18.75	1566		1986	
	-12.5	761		1137	
	-6.25	833		1260	
	0	833		1346	
	6.25	833		1346	
12	-12.5	1243	901	1510	1320
	-12.5	2790		3449	
	-6.25	1901		2449	
	0	3276		4486	
	6.25	1165		1891	
	12.5	728		1179	
	18.75	1901	1794	3154	2632

Notes: (-) direction is west

Site 9 was an area made up of pumping ties. To see the variation in track modulus, 16 tests were conducted (one in every crib starting 12.5' west to 12.5' east of location 0) at this site. As seen in Figure 9, 13 of the 16 measurements were below the 2750 lb/in/in threshold value. The 25' average of 2003 lb/in/in is also well below the threshold.

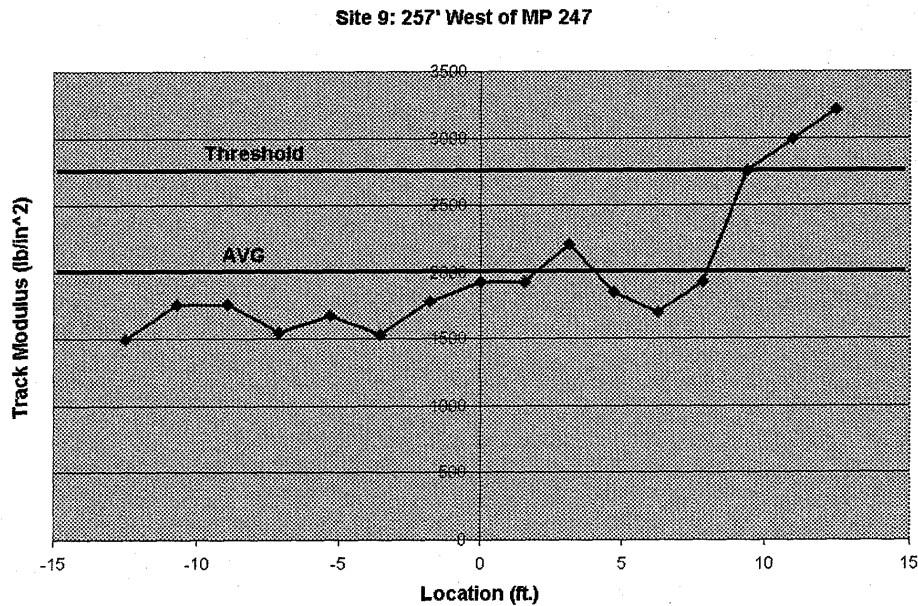


Figure 1. Variation in Track Modulus at Site 9.

The most significant deflection measured under the locomotive's first truck occurred at site 10. A deflection of .531" (AREMA modulus of 560 lb/in/in) was measured at the +6.25' location. The observation of the track response to a passing passenger train and the two >.5 in. deflection measurements caused the Guilford maintenance personnel to call in an immediate speed restriction.

Conclusions

Sixty-two track modulus tests in accordance with the AREMA Manual for Railway Engineering were conducted on 12 sites. The sites were tested to see if they met the threshold track modulus value of 2750/in/in established by the Surface Transportation Board. At each site, multiple measurements were taken and a 25' average was calculated and compared to the threshold. Using the AREMA modulus calculations, the 25' average in 11 out of 12 sites was below this value. Using the TTCI "slack-less" modulus methodology, 9 of 12 sites showed the 25' average below 2750 lb/in/in.

APPENDIX A

Track Modulus Testing Site Descriptions

Site 1.

Location: 368' east of Winnocks Neck Road Crossing between MPs 203-204, south side rail.

Characteristics: No paint from TLV run. 5 survey tests run (6.25' spacing), two on each side of location 0 in 6.25' spacing. No joints in vicinity.

Site 2.

Location: 60' west of Winnocks Neck Road Crossing between MPs 203-204, 26' from insulated joint, south side rail.

Characteristics: Marked by paint, 5 survey tests run (6.25' spacing).

Site 3.

Location: 1248' west of MP 205, south side rail.

Characteristics: No paint spray, 3 survey tests run (12.5' spacing), no joints.

Site 4.

Location: 1927' west of MP 215, south side rail.

Characteristics: 3 survey tests run (12.5' spacing), no paint, no joints.

Site 5.

Location: 220' east of MP 224, south side rail

Characteristics: 3 survey tests run (12.5' spacing), no paint, no joints.

Site 6.

Location: 1540' east of MP 227, south side rail.

Characteristics: 3 survey tests run (12.5' spacing), marked by paint, no joints.

Site 7.

Location: 401' East of MP240, west side Foundry Street crossing

Characteristics: Close to crossing, paint from TLV, 3 survey tests run (12.5' spacing), no joints.

Site 8.

Location: 141' east of MP 240

Characteristics: paint, 3 survey tests run (12.5' spacing), no joints.

Site 9.

Location: 257' west of MP 247

Characteristics: bad pumping ties, 16 tests conducted, no paint, no joints

Site 10.

Location: 194' West of MP 247

Characteristics: huge deflections, speed restriction called in, painted, south rail deflection > than north, 6 survey tests run (6.25' spacing), no joints.

Site 11.

Location: 1363' west of MP 245

Characteristics: huge dip in rails, no paint, 6 survey tests run (6.25' spacing), no joints.

Site 12.

Location: 2298' east of MP 245

Characteristics: 6 survey tests run (6.25' spacing), marked by paint, no joints .

ZETA-TECH Associates, Inc.

ATTACHMENT - 3



ZETA-TECH
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900 Kings Highway
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Suite 208
Cherry Hill, NJ
08034

FACSIMILE TRANSMITTAL SHEET

ZETA-TECH ASSOCIATES, INC.

To: Phillip D. Brake, P.E.
Company: Guilford Rail Systems
Phone: (978) 663-1057
Fax: (978) 663-6907

From: Allan M. Zarembski, Ph.D., P.E.
Company: ZETA-TECH Associates, Inc.
Phone: (856) 779-7795
Fax: (856) 779-7436
e-mail: zarembski@zetatech.com
Date: June 4, 2002

Pages including this cover page: 2

Dear Phil:

I have reviewed the results of the Vertical Track Modulus tests performed by Greg Grissom of ZETA-TECH last month between MP 203 and 247. As stated in the report submitted on May 31, 2002, the tests were conducted in accordance with the procedure described in the AREMA Manual for Railway Engineering in Chapter 16.10.11.1. Likewise the analysis was conducted in accordance with the analysis defined in the same chapter of the AREMA manual.

The results of the modulus testing showed that 56 out of 62 measurement locations (distributed over 12 sites) or over 90% had track modulus values less than 2750 lb/in/in when calculated in accordance with Chapter 16 of the AREMA Manual for Railway Engineering. If the modulus values per site were averaged over the 25 foot length defined by TTCI (a

questionable practice- see my memo of February 18, 2002) then 11 out of the 12 sites or 92% had an average track modulus value less than 2750 when calculated in accordance with Chapter 16 of the AREMA Manual for Railway Engineering.

If the TTCI method of calculating track modulus was used (which eliminated "slack" in the track through the use of a lightly loaded and heavily loaded vehicle), then 48 out of 62 measurement locations or 77% had track modulus values less than 2750 lb/in/in. Again, if these modulus values per site were averaged over the 25 foot length defined by TTCI then 9 out of the 12 sites or 75% still had an average track modulus value less than 2750.

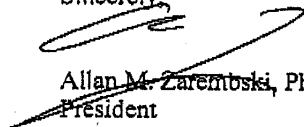
Furthermore, of these sites, including the 9 sites that were calculated using the TTCI analysis methodology, approximately 90% were not identified by the TLV test report¹ where the 25 foot moving average was employed. This in spite of the fact that the calculations noted here represent 25 foot averages. However, the TLV analysis based on the 2 foot moving average, in fact located in many of these sites².

This supports my previous statement of February 18, 2002 where I stated that "The 25' moving average approach taken by TTCI is inappropriate and in fact serves to "disguise" locations of low track modulus, such as the ones at issue here."

Finally, the test results show significant number of locations with excessive rail stress, as defined in my memo of February 18, 2002, which showed that a modulus of 1800 lb/in/in or less results in rail stresses that are above the AREMA allowable value of 25,000 psi. In this case, 47 out of the 62 measurements locations (76%) had track modulus values of less than 1800 lb/in/in when calculated in accordance with Chapter 16 of the AREMA Manual for Railway Engineering. Using the TTCI "slack-less" modulus calculation approach, 34 out of the 62 measurement locations of more than half (55%) still had track modulus values less than the more restrictive 1800 lb/in/in. None of these locations were identified as having a modulus of less than 1800 lb/in/in in the TTCI report³, though examination of the local data (2 foot moving average data as well as static tests) clearly show the presence of these high rail stress locations.

If you have any questions, please give me a call.

Sincerely,


Allan M. Zarembski, Ph.D., P.E.
President

¹ TTCI Report "Vertical Track Deflection Measurements Using the TLV P-02-001, dated January 10, 2002.

² Six (6) of the sites could not be properly located in the TLV data files because of incorrect MP information recorded by the TLV.

³ One site, at MP 203.14, which corresponds to Guilford Site 1, was identified as a "soft spot" but with a modulus of 2,676 lb/in/in.