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PASSENGER TRAINS ON FREIGHT RAILROADS

Washington Marriott Hotel, Washington, DC

October 16 & 17, 2001

Sponsored by RailwayAge

A SIMMONS-BOARDMAN RAIL GROUP PUBLICATION

PASSENGER TRAINS ON FREIGHT RAILROADS
Presentation Program

October 16 & 17, 2001

MODERATOR: William C. Vantuono, Editor, Railway Age

TUESDAY, OCTOBER 16

8:00 Continental Breakfast sponsored by Jacobs Engineering

9:00 Keynote address: Edward Hamberger, President and CEO, Association of American Railroads

9:30 You Want to Run on My Railroad?: A Mock Negotiating Session on Track Access
Moderator: Kevin Sheys, Kirkpatrick & Lockhart
James Stoetzel, Vice President, Contract Operations-Rail, Connex North America
Bob Leilich, Consultant
E.H. Culpepper, Vice-Chairman, Georgia Regional Passenger Authority

10:30 Coffee Break sponsored by Connex North America

10:45 Can Passenger Rail Add to the Bottom Line?
John M. Gibson, AVP-Operations Planning, CSX Transportation

11:15 What Constitutes an Avoidable Delay?
Sheldon Lustig, Transportation Consultant

12:00 Luncheon cosponsored by ALSTOM Transportation, Inc. and Herzog Transit Services, Inc.
Guest Speaker: William S. Lind, Free Congress Foundation

1:30 Railroading in the Future?
Charles H. Banks, President, R. L. Banks & Associates, Inc.

2:00 TRB High Speed Rail IDEA Program Overview
Chuck Taylor, IDEA Program Officer, Transportation Research Board

2:30 Chicago Union Station Capacity Improvement Study
Dennis Letourneau, Manager Capacity Planning, CANAC INC.
Scott Goehri, Project Manager, HDR Engineering

3:00 Energy Break sponsored by HDR Engineering

3:15 Capitol Hill Controversy: Pending Legislation, and How it Could Affect Passenger/Freight Railroad Relations
Moderator: Steve Rogers, Attorney
Obie O'Bannon, V.P. For Government Affairs, Association of American Railroads
Art Guzzetti, Director-Policy Development and Member Mobilization, APTA
Fred Ohly, Senior Associate General Counsel-Operations and Regulatory Matters, Amtrak
Pete Sklannik, Chief Operating Officer, Virginia Railway Express
Tom Simpson, Vice President, RPI

5:00 Cocktail Reception cosponsored by R.L. Banks & Associates, Inc. and Bombardier Transportation

WEDNESDAY, OCTOBER 17

8:00 **Continental Breakfast sponsored by CANAC**

9:00 **"The Last-Mile Dilemma: Reaching the City's Core"**
Moderator: Kenneth Sislak, Director-Public Transportation, Wilbur Smith Associates
Lonnie Blaydes, Vice President-Commuter Rail & Railroad Management, DART
Mike Franke, AssistantVice President, Amtrak Midwest Regional Rail Initiative

10:00 **Garbage In, Gospel Out: When Modeling Does, or Doesn't, Work**
Mike Holowaty, Senior Project Manager, Parsons Transportation Group

10:30 **Coffee Break Sponsored by Siemens Transportation Systems**

10:45 **What REALLY Happens at the Dispatch Console?**
Bill Burgel, Manager-Rail Operations, HDR Engineering

12:00 **Luncheon cosponsored by Norfolk Southern and CSX Transportation**
Presentation of the Graham Claytor Award for Distinguished Service to Passenger Transportation to U.S. Secretary of Health & Human Services Tommy Thompson

1:30 **Can All Trains be Scheduled?**
Moderator: William C. Vantuono, Editor, Railway Age
Stan Feinsod, Senior Vice President, SYSTRA Consulting
James Stoetzel, Vice President, Contract Operations-Rail, Connex North America
John M. Gibson, AVP-Operations Planning, CSX Transportation
Bill Schafer, Director-Corporate Affairs, Norfolk Southern
Joe Zadel, Assistant Vice President-Operations Planning, Canadian National

2:30 **Infrastructure Financing: What Role for Government?**
Moderator: William C. Vantuono, Editor, Railway Age
Don Itzkoff, Partner, Foley & Lardner
Ray Chambers, Chairman, Chambers, Conlon & Hartwell
Jeff Warsh, Executive Director, New Jersey Transit
Mark Yachmetz, Associate Administrator-Railroad Development, FRA

3:30 **Adjourn**

Program subject to change and/or augmentation

10.11.01

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WASHINGTON MARRIOTT, WASHINGTON, D.C.

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William C. Vantuono
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LIST OF SPEAKERS

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NOVEMBER 29 & 30, 2000
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NOVEMBER 29 & 30, 2000
WASHINGTON MARRIOTT, WASHINGTON, D.C.
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David P. Simpson-Consultants

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LTK Engineering Services

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VA Dept. of Rail & Public Transportation

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Illinois Department of Transportation

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Slattery Skanska

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PASSENGER TRAINS ON FREIGHT RAILROADS
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Robert P. DeMarco
Publisher

William C. Vantuono
Editor

Passenger train operations, including high speed, on the lines of freight railroads offer excellent opportunities to develop new commuter and intercity rail services. But while they offer attractive sources of revenue to freight carriers, they also pose perplexing problems—compensation, liability, grade crossing safety, signaling and train control requirements, right-of-way capacity constraints, maintaining the integrity of freight service.

Railway Age's eighth annual Passenger Trains on Freight Railroads conference will offer a thorough, candid airing of these topics, and an in-depth look at some of the important projects being undertaken in this area. This two-day event will feature recognized experts from both the passenger and freight areas of railroading.

If you have an interest in what's happening with mixed-traffic issues—as a freight railroader, as a passenger train operator, as a federal, state, or regional transportation planner—this is a conference you won't want to miss. If you're a consultant or supplier with a stake in the future of passenger rail, it's one you cannot *afford* to miss. The previous six conferences were sellouts. Early registration will assure you a seat—and a voice—at this year's conference!

CONFERENCE REGISTRATION FORM

Please register me for the **PASSENGER TRAINS ON FREIGHT RAILROADS** Conference in Washington, D.C., on October 16 & 17, 2001. Registration fee is $625 per participant, payable in advance.

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Sheldon Lustig, Transportation Consultant

Luncheon (full or shared sponsorship available)
Guest speaker: Paul Weyrich, President, Free Congress Foundation

Economics of Passenger Trains vs. Intermodal Trains
Charles H. Banks, President, R. L. Banks & Associates

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The registration fee for **PASSENGER TRAINS ON FREIGHT RAILROADS** is $625, which includes admission to all conference sessions, the conference casebook, and social events. The Washington Marriott Hotel, 1221 22nd Street, N.W., Washington, D.C. has set aside a block of rooms at $174 single/double for conference attendees. These will be held until 30 days prior to the conference; those reserving after that date will depend upon room availability. We suggest that you contact the hotel directly at (202) 872-1500 for room reservations. You will receive room confirmation directly from the Washington Marriott Hotel. **CANCELLATION POLICY:** Confirmed registrants who cancel less than one week prior to the conference are subject to a $100 service charge. Registrants who fail to attend are liable for the entire fee unless they notify *Railway Age* in writing prior to the conference.

Passenger and Freight Must Grow Together

By: Arthur Guzzetti
American Public Transportation Association

Overview:

On July 26, 2001 Congressman Bob Clement and a bi-partisan group of co-sponsors introduced H.R. 2654, the Transit Rail Accommodation Improvement & Needs Act for the 21st Century, known as TRAIN 21. This legislation will be critical in enabling the growth of rail passenger service, while assuring that freight railroads get a fair deal for the use of their property. Similar legislation has also been introduced by James Oberstar, Ranking Member of the House Transportation and Infrastructure Committee. House Railroads Subcommittee Chairman Jack Quinn has indicated his intent to hold hearing to begin a public dialogue on these bills.

TRAIN 21 will extend to local and regional passenger rail services the appeal process now available to Amtrak for disputes involving the use of freight railroad corridors. While some passenger rail agreements have been negotiated over the years, there is no process for the public interest to be taken into consideration when such agreements cannot be negotiated. Surely, taxpayer-supported public transit agencies should not be put into an unfair bargaining position wherein passenger rail access can be achieved only through meeting the unilateral financial demands of the freight railroad. While passenger agencies are will to pay a fair price, reasonable stewardship of public funds requires that they pay no more than that. A section-by-section summary of TRAIN 21 and its various provisions is attached.

Legislation such as the Transportation Equity Act for the 21st Century (TEA 21) has helped bring about a passenger rail renaissance in America. About 9.4 *billion* trips were taken on public transportation last year. Public transportation ridership grew 21 percent during the five year period between 1995 and 1999 - four times faster than the U.S. population (4.8 percent), double the growth of highway usage (11 percent), and faster than the growth rate in domestic air travel (19 percent). These favorable trends are continuing, with growth in rail ridership consistently leading the way.

Planning a Future of Growth:

Rail freight and rail passenger providers should be natural allies. Both share common issues and problems. In many cases, both are subject to the same federal laws, including Railroad Retirement, the Railway Labor Act, and the Rail Safety Act. Further, freight and passenger railroads share many research and development goals, and can work together in pursuit of new and improved technologies. And given the energy, environmental, and mobility benefits that rail service provides, both should look forward to a future of considerable promise and growth.

Historically, America's rail corridors have been used for both freight and passenger purposes. At one time, both were operated by the private sector under laws governing public utilities. These laws recognized the public interest in the system. As passenger operations became unprofitable, private railroads were relieved of the obligation to operate passenger service directly. Services were often taken over and supported financially by such public entities as America's commuter rail systems.

Last year, passengers took 411 million trips on U.S. commuter railroads as ridership rose by 5.2 percent A great majority of these trips occurred on publicly owned lines. While the preponderance of Metra's trips (70 million in 1998) were on freight railroad owned lines, none of the other major systems in the Boston, Newark, New York, and Philadelphia metropolitan areas - which with Metra accounted for 92 percent of all commuter rail trips in 1998 - rely more than marginally on freight rights of way. Instead, the promise of the historic transportation corridors under the control of the freight railroads is in their potential for enabling the future growth of the railroad industry.

New operations in Seattle, and Burlington, Vt., and a major extension of the Dallas-Fort Worth Trinity Railway Express brought high quality transportation alternatives to people who had none. Currently, there are about 3,825 route-miles of commuter rail service in operation in the U.S. An additional 134 miles are under construction and 300 miles in design, with over 2,300 miles in planning and 1,100 additional miles under consideration for commuter rail projects. New commuter rail systems are in various stages of development in Nashville, Anchorage, Minneapolis, Salt Lake City, Kansas City, Denver, Houston, Charlotte, and Portland. Major expansions of current operations are underway in Chicago, Miami and many other cities.

How will commuter railroads be able to achieve the expected rate of growth and provide riders the transportation options they clearly want? As a matter of good public policy, it makes sense to use existing transportation corridors for these projects rather than subject communities and businesses to the dislocation that tearing up neighborhoods to construct new rights-of-way brings (paradoxically, many transit agencies are able to exercise eminent domain a built-up community, yet lack any such remedies with railroads). An APTA analysis of the 200 commuter rail and rail transit projects authorized under TEA 21 revealed that about half of these projects involve some type of access to a freight rail right-of-way.

Therein lies the challenge - and the opportunity. Where capacity exists of can be economically provided, we must come up with a better process for using existing rail corridors for passenger operations. No, this is not "forced access" as some may seek to mischaracterize it. Groups as diverse as the National League of Cities, the U.S. Conference of Mayors, the Amalgamated Transit Union, the American Association of State Highway and Transportation Officials, and others have called for a process to help resolve disputes involving use of freight railroad rights-of-way and allow passenger rail projects to advance under fair and reasonable terms.

Finding a Mutually Beneficial Solution:

Passenger rail projects often bring - and pay for - real benefits to freight railroads in terms of improved track and other infrastructure. When investments are made in passenger rail operations in corridors that are shared by freight railroads, such investments bring value and benefit to private sector operators who use the corridor. Some of these benefits are summarized as follows:

- Passenger service on a freight line generally involves an *upgrade of the track structure*, both to permit higher speeds and to insure passenger safety.
- Passenger rail startup generally entails *increasing the allowable speed* on the freight line.
- *Grade crossing safety* is often addressed as part of a passenger rail startup.
- Passenger train operations often *share maintenance expenses* of the freight lines on which they run.

Moreover, by working together, rail passenger and freight railroads can also work together to foster a more positive image of the rail industry in Washington and around the country. Freight railroads often lack a face in many of the communities and regions they serve, many of which do not perceive a positive impact from the presence of the rail line. In contrast, commuter railroads and rail transit service, by their very nature, are the product of local decision making, and the public maintains a sense of ownership, even affection, for passenger trains and stations. Working together, pulling together, we can boost the overall image of the rail industry to everyone's benefit.

TRAIN 21 represents a constructive, good-faith effort to establish a process that can work for all parties. Note that the dispute resolution process currently in place for Amtrak is seldom invoked, but its mere existence is a warning to all parties that they must negotiate in good faith. APTA and the Association of American Railroads were engaged in discussions for several years on voluntary guidelines that could satisfy our objectives, but such discussions did not bring forth the needed progress to advance the growth of passenger rail. We are still willing to discuss constrictive ideas, while APTA supports the adoption of TRAIN 21 as an important component of other railroad legislation.

In these scenarios, it is not the freight railroad that is at fault for any wrong doing, nor is it the passenger rail agency that is at fault. What is at fault is the absence of a fair and workable process to help resolve disputes. TRAIN 21 would establish such a process, and APTA urges its favorable consideration.

The world changed on September 11, 2001, and new views of our national transportation policies are giving increased emphasis on railroads. There continues to be much more that unites us than divides us. We look forward to resolving our differences and working together toward our broader goals.

SECTION-BY-SECTION ANALYSIS AND DISCUSSION

TITLE I -- RAIL TRANSIT ACCESS

§ 28501. Definitions

This Section adds definitions drawn from the Interstate Commerce Act, as amended by the ICC Termination Act of 1995, and from the Federal Transit Act.

§ 28502. Shared use of rail carrier trackage by mass transportation authorities

This Section established the Surface Transportation Board as a forum for resolution of disagreements between mass transit authorities and freight railroads regarding shared use of railroad trackage. Each of the provisions is modeled after similar provisions contained in the Rail Passenger Service Act, as amended.

Subsection (a) provides that if a mass transportation authority and a rail carrier cannot reach agreement regarding use of trackage and provision of services to the mass transportation authority by the rail carrier for fixed guideway transportation, the mass transportation authority or the freight railroad may apply to the Surface Transportation Board for an order making the trackage available for fixed guideway transportation, making services from the rail carrier available to the mass transportation authority and prescribing reasonable and necessary terms and compensation for use of the trackage and provision of the related services. In subsection (b), the Surface Transportation Board is directed to consider alternative cost allocation principles, including incremental cost and fully allocated cost, in promulgating regulations that will prescribe compensation to the freight rail carrier for use of the trackage and provision of the related services. These regulations are to be developed within six months of enactment.

Further, subsection (b) requires the Board to consider quality of service as a major factor when determining when determining compensation for the rail carrier's costs of providing trackage and related services. For example, the Board could proscribe compensation for each month or other period during which the rail carrier enabled the mass transportation authority to achieve 95 percent on-time performance.

Subsection (c) makes clear that the Surface Transportation Board may set terms and conditions regarding the number of trains operated by or for the mass transportation authority, the speed of those trains, and the track maintenance level to be provided by the rail carrier.

Subsection (d) establishes a procedure at the Surface Transportation Board for resolution of disagreements regarding an increase in the number of trains operated by or for a mass transportation authority. This provision would be available to resolve disagreements involving a fixed guideway passenger service originally established pursuant to a Surface Transportation Board order under subsection (a). This procedure also would be available to a mass transportation authority that reached a voluntary agreement with a rail carrier (outside of the Surface Transportation Board process) for the addition of trains, but could not reach an agreement with respect to increased trains.

Subsection (e) establishes a procedure at the Surface Transportation Board for resolution of disagreements regarding increased or improved maintenance on trackage used for fixed guideway transportation. Before invoking this provision, the mass transportation authority must give notice of its concern regarding track maintenance to the rail carrier and allow the rail carrier a sufficient period for maintenance improvements. This provision would be available to resolve maintenance issues involving a fixed guideway passenger service originally established pursuant to a Surface Transportation Board order under subsection (a) or service commenced under a voluntary agreement with a rail carrier. This provision is intended to be in addition to any contractual rights or other remedies the mass transportation authority may have with respect to maintenance issues.

Subsection (f) establishes a procedure at the Surface Transportation Board for resolution of disagreements regarding accelerated speeds and related capital improvements for fixed guideway transportation. This provision would be available to resolve disputes on accelerated speeds and related improvements involving a fixed guideway passenger service originally established pursuant to a Surface Transportation Board order under subsection (a) or service commenced under a voluntary agreement with a rail carrier. Nothing in the bill, including this section, changes the safety jurisdiction of the Federal Railroad Administration.

Subsection (g) provides that, except in an emergency, fixed guideway transportation provided by or for a mass transportation authority pursuant to an order issued under subsection (a) has a preference over freight transportation, unless the Surface Transportation Board orders otherwise. This provision is modeled on a similar provision in the Rail Passenger Service Act, codified at 49 U.S.C. § 24303(c).

Subsection (h) provides that the Surface Transportation Board shall make a determination under this section no later than 120 days after the filing of an application by a mass transportation authority or a rail carrier.

§ 28503. Shared use of rail rights-of-way by mass transportation authorities

This Section established the Surface Transportation Board as a forum for resolution of disagreements between mass transit authorities and freight railroads regarding acquiring an interest in the use of railroad right-of-way for the construction and operation of a segregated fixed guideway project. Rail carriers and mass transportation authorities share right-of-way when each has its own track on the same strip of land, typically 50 to 200 feet in width. The section provides that if a mass transportation authority and a rail carrier cannot reach agreement regarding the mass transportation authority's acquisition of an interest in an existing railroad right-of-way, the mass transportation authority may apply to the Surface Transportation Board for an order requiring a rail carrier to convey an interest to the mass transportation authority. The Board, not later than 120 days after receiving an application, shall order an interest in the right-of-way conveyed if the mass transportation authority assumes a reasonable allocation of costs to relocate the rail carrier's trackage or the mass transportation purpose can't be met by acquiring an interest in any other property. This Section is modeled on a similar provision for the National Rail Passenger Corporation contained in the Rail Passenger Service Act, codified at 49 USC § 24311. However, unlike Amtrak's power under the Rail Passenger Service Act, under this section a mass transportation authority's power to acquire railroad right-of-way would be limited to acquisitions for segregated fixed guideway facilities.

§ 28504. Applicability of other laws

Subsection (a) clarifies that the Surface Transportation Board's jurisdiction under Sections 28502 and 28503 does not make mass transportation authorities or fixed guideway transportation subject to Surface Transportation Board jurisdiction under the Interstate Commerce Act, as amended by the ICC Termination Act of 1995.

Subsection (b) clarifies that mass transportation authorities and rail carriers may allocate financial responsibility for tort liability under existing law.

§ 28505. Standards for Board action

This section directs the Surface Transportation Board to use principles, standards and precedents established under the Rail Passenger Service Act to the extent relevant and feasible in adjudicating issues in proceedings under Sections 28502 and 28503.

Conforming Amendments

The first subsection amends Section 28103 of Title 49, United States Code, by making mass transportation authorities within the scope of that provision.

The second subsection is a conforming amendment to properly reference these provisions in the United States Code.

The third subsection would to change the findings section of the United States Code for rail policy to add a finding regarding the need to encourage and promote the operation of safe, efficient and reliable commuter rail and fixed guideway service, including where there is either shared track or shared right-of-way with a rail carrier.

WAS1 #990245 v1

William C. Vantuono

Editor

Railway Age

William C. Vantuono, 41, is chief editor of *Railway Age*, the oldest transportation trade journal in the world (established 1876). Vantuono joined Simmons-Boardman Publishing Corporation in July 1992 as Assistant Editor of *Railway Age*. He was named Managing Editor in August 1993, Executive Editor in January 1996, and Editor in February 2000.

A native of Newark, N.J., Vantuono was educated at Rutgers University–Newark College of Arts & Sciences, where he received a baccalaureate degree in Theater Arts & Speech in 1981. In 1988, he received a masters degree in Public Media from Montclair State University. Prior to joining Simmons-Boardman, he worked in media and public affairs capacities for Citicorp, the Manchester Township (N.J.) Board of Education, and Stevens Institute of Technology, Hoboken, N.J. He and his wife Karen live in Brick Township, N.J., with their twin sons, Keith and Craig.

Simmons-Boardman Books, Inc., recently published Vantuono's first book, *All About Railroading*, which was written especially for young adults ages 12 and up. He is a contributor to the *1997 Car & Locomotive Cyclopedia*, also published by Simmons-Boardman Books.

Edward R. Hamberger
President and CEO
Association of American Railroads

As President and CEO of the Association of American Railroads (AAR), Edward R. Hamberger manages the world's leading policy, research, and technology organization focusing on the safety and productivity of rail carriers. AAR represents the freight railroads of the United States, Canada, Mexico, plus Amtrak. U.S. members haul 93 percent of the nation's rail freight, and 100 percent of its inter-city rail passengers.

Selected by *Washingtonian* magazine in 1999 as one of the top ten association leaders in the Nation's Capitol, Mr. Hamberger brings to the AAR over 20 years experience in transportation public policy through his work in both the executive and legislative branches of government, and his career as an attorney.

Prior to the AAR, Mr. Hamberger was a managing partner and on the Board of Directors of Baker, Donelson, Bearman, & Caldwell in Washington, D.C., the 117th largest law firm in the country. He came to the firm in the 1980's after being appointed by President Reagan to serve as Assistant Secretary for Governmental Affairs at the Department of Transportation, where he implemented the Administration's legislative strategy on transportation issues. Prior to joining the Department, he was a name partner in a Washington, D.C. law firm which specialized in transportation, energy, trade and defense.

Mr. Hamberger began his career in transportation in 1977 as General Counsel of the National Transportation Policy Study Commission, a presidential advisory committee which made far-reaching recommendations to improve all modes of transportation. He also served as Special Counsel to the Chairman of the Commission, Congressman Bud Shuster who currently chairs the House Transportation and Infrastructure Committee.

In 1985, he was appointed as a member of the Private Sector Advisory Panel on Infrastructure Financing and in 1994 served as a member of the Presidential Commission on Intermodal Transportation.

Mr. Hamberger first worked on Capitol Hill in a variety of positions with Senator Hugh Scott, the Republican leader in the U.S. Senate, serving as his last Administrative Assistant. He complemented his Senate service with a two-year stint as Staff Director of the House Republican Policy Committee, when it was chaired by Congressman Shuster.

Mr. Hamberger received his Juris Doctor, and both a Master of Science and a Bachelor of Science in Foreign Service from Georgetown University. He and his wife Susan have three children.

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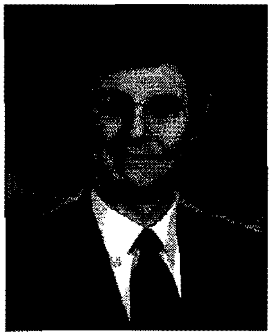

Kevin M. Sheys

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AREAS OF PRACTICE

Mr. Sheys, a partner in the Washington, D.C. office, is a transportation attorney focusing his practice in railroad and public transit regulatory law, and mergers and acquisitions. He represents freight and commuter railroads; public transit systems; railroad and transit equipment manufacturers, suppliers, service companies and state, municipal and special purpose transportation agencies.

Mr. Sheys has substantial experience advising clients on railroad safety matters. He has represented freight railroads, commuter railroads, State Departments of Transportation and rail transit systems in proceedings before the Federal Railroad Administration ("FRA") involving the scope and applicability of the federal railroad safety laws, regulatory waivers, agency rulemakings, compliance issues and penalty settlements. Mr. Sheys has extensive experience working with senior FRA professional staff on a broad range of safety compliance matters, often involving emerging issues of industry-wide importance.

Mr. Sheys also has handled all types of Surface Transportation Board matters including numerous regulated and exempt rail line acquisitions and abandonments, rail line construction cases, control transactions, competitive access disputes, car hire compensation disputes, pooling arrangements and rate disputes for regional and short line railroads.

PROFESSIONAL/CIVIC ACTIVITIES

Association for Transportation Law, Logistics and Policy

PUBLICATIONS/PRESENTATIONS

Mr. Sheys is a frequent speaker on emerging legal and regulatory issues in the railroad and transit industries and has published more than 20 articles on railroad and rail transit mergers and acquisitions, commercial, safety, regulatory, retirement and employment issues.

BAR MEMBERSHIP

District of Columbia

EDUCATION

J.D., University of Minnesota Law School, 1987 (*cum laude*)
B.A., Gustavus Adolphus College, 1984 (*magna cum laude*)

Kevin Sheys
Kirkpatrick & Lockhart

TOWNSVILLE MTA

The City of Townsville is caught in the evil clutches of gridlock. Thankfully, there is help on the way. The Townsville Metropolitan Transit Authority ("MTA"), a successful bus-only transit system, has been studying two potential commuter rail alternatives: a 20-mile corridor between suburban Northfield and the Central Business District of Townsville; and a 14-mile corridor between suburban Westfield and the Townsville CBD.

The Atlantic to Pacific Railroad Company ("A.P. Railroad") owns and operates 23,000-route miles of rail line in 38 states, including a double track main line between Westfield and Townsville. The Westfield-Townsville rail line is a link in one of A.P. Railroad's two lines to/from Sunset City, the largest city on the west coast of the United States and the second busiest port in the country. The A.P. Railroad line between Northfield and Townsville is the remnant of a former north – south through route that was abandoned in the late 1980's in favor of a better parallel route 30-miles to the west. A.P. Railroad retained the Northfield-Townsville segment of the former through-route to serve a large poultry processor located near Northfield. Several other smaller shippers are located on the line. A.P. Railroad is considering a sale of this remaining Northfield line to Small Railway Company ("Small Railway"), an experienced short line operator who plans to build up local freight traffic on the line by marketing it to (among others) a large cat litter producer. (Small Railway, the poultry processor and the cat litter company have already begun a marketing campaign entitled, "Feed Chicken to Your Cats").

The Westfield-Townsville rail line currently handles eight trains per day in each direction. Although this is less traffic than A.P. Railroad's other main line to/from Sunset City, A.P. Railroad anticipates significant growth in freight traffic on this line. A.P. Railroad provides service three days per week on the Northfield-Townsville rail line, with one train in each direction. A.P. Railroad runs a good operation, but its stock price is down from recent levels and railroad earnings are flat. A.P. Railroad is willing to consider sale of rail lines or conveyance of access rights if it can be (i) fairly compensated for what it sells (or the rights it grants) (ii) assured that it will not lose the ability to grow its freight traffic, and (iii) protected from personal injury liability associated with the presence of passenger railroad trains. (Even apart from liability concerns, A.P. Railroad makes safety its first priority in everything it does.)

A.P. Railroad employees are represented by the Brotherhood Of Maintenance Of Way Employees, the United Transportation Union and several other rail unions.

The Townsville MTA conducted a study three years ago regarding the capacity of the above-described A.P. Railroad lines. The study concluded that the Westfield-Townsville rail line, which was then carrying four trains per day in each direction, provided a very good and uncongested corridor for commuter rail operations. The same study found that the Northfield-Townsville line was in need of significant upgrades to accommodate commuter rail operations but provided a very good commuter rail opportunity because of its light freight traffic and access to the Northfield suburbs.

The Townsville MTA believes it is only fair that it take responsibility for any tort liability of A.P. Railroad arising out of the negligence of Townsville MTA employees (or the employees of MTA's operator), and is willing to pay the cost of insurance up to $100 million for this risk. The MTA is willing to pay the appraised value of what it acquires from A.P. Railroad and learned that A.P. Railroad had agreed to value the line at net liquidation value in its discussions with Small Railway. After reaching a definitive agreement for acquisition/access, MTA plans to competitively bid a contract for capital improvements on the Northfield-Townsville and

Westfield-Townsville lines and is prepared to pay its fair share of the costs of these capital improvements. MTA also plans to competitively bid and select an operator of the rail line and hopes that A.P. Railroad will be interested in bidding to operate the service.

MTA plans to seek federal New Start funds for the purchase of or access to rail lines and to fund necessary capital improvements. For the local match and for operating funding, MTA plans in local sale tax referendum for next November's ballot. MTA staff and consultants believe they will need to select one of the two corridors for Phase I of the project and the other for Phase II. The Mayors of Northfield and Westfield have each advocated that the line connecting their community to Townsville is the best line to be designated as Phase I.

Amtrak runs three trains per week on the Westfield-Townsville line under a contract with A.P. Railroad. The contract includes incentive payments to A.P. Railroad for on-time performance, as defined in the contract.

connex

NAME: James Stoetzel

POSITION: Connex North America -
Vice President, Contract Operations - Rail

RAILROAD EXPERIENCE: 29 years

EDUCATION: BS Canisius College
MA University of Virginia

SUMMARY OF EXPERIENCE:

Mr. Stoetzel has over 25 years of professional management experience in the railroad industry. He has extensive experience in both freight, and commuter rail services including holding numerous executive level positions in the railroad industry. His significant accomplishments include:

Connex North America - Vice President Contract Operations - Rail

- Responsible for the development and implementation of new transportation service contracts and businesses for Connex, North America, a wholly owned subsidiary of CGEA Connex. CGEA Connex is the largest provider of contract public transportation services in the world.

Transit Safety Management, Inc. – Rail industry consultant

- Directed the operational and rolling stock elements of a new Commuter Demonstration Project in the Seattle, WA area. This project was intended to demonstrate how the Regional Transportation Authority (RTA) for the Puget Sound region could organize, mobilize and provide a commuter rail service using existing freight trackage. This demonstration was the forerunner of the Sounder Commuter Rail Service.

- Directed the field implementation services for Dallas' Trinity Railway Express commuter rail system and Stockton, CA's Altamont Commuter Express system, including scheduling, training of operating personnel and management planning.

- Developed a Service Implementation Plan for the Los Angeles-Oceanside segment of the Metrolink commuter rail system.

- Responsible for the development of the operational, rolling stock and fare collection elements of the first new start commuter rail system in the United States, South Florida's Tri-Rail System. Served as the first Executive Director of the functioning system after start-up.

Burlington Northern Railroad - Director of Suburban Operations.

- Responsible for the operation of the Burlington Northern's Chicago commuter rail service carrying over 50,000 riders a day on one route.
- Oversaw a reduction in employee injuries by 60% while increasing fare-box revenues to exceed operating expenses.
- Successfully managed the operating contract between Burlington Northern and Metropolitan Rail (METRA), the public agency with the overall responsibility for Chicago's commuter rail service.
- Project Manager for the BN's first international commuter rail venture, the privatization of the subway and commuter rail system in Buenos Aires, Argentina.

Guilford Industries - Vice President, Transportation.

- Responsible for freight rail operations for three railroads, the Maine Central, the Boston and Maine, and the Delaware and Hudson, with annual revenues in excess of $300 million.
- Oversaw the successful consolidation of operational and maintenance activities on these properties increasing efficiencies.

Boston and Maine Railroad - General Manager, Commuter Service.

- Full operational responsibility for this 300 train-a-day service, which encompassed nine lines, almost 100 stations and 300 route miles. Within the general manager's jurisdiction was a work force of 1000 employees, an annual operating budget of $60 million and an annual capital budget of $25-40 million.

METROPOLITAN TRANSIT AUTHORITY
CITY OF TOWNSVILLE, USA

October 10, 2001

Mr. James Stoetzel,
Vice President
AP Railway
Townsville, USA

Dear Mr Stoetzel:

Following our continuing negotiations over the last many months, it is imperative that we meet on the morning of October 16, 2001 to finalize MTA's desire to begin commuter operations over your railroad. I am under great pressure by Mayor Bumblemeister to have a Memorandum of Understanding (MOU) in place for a Phase I project in sufficient time for use in his campaign for reelection on November 6. Also, we need to get a sales tax referendum on the November ballot, else this project will be delayed another year at best. At worst, the mayor's opponent, Bernard B. Bingleberger, will win the election, thereby dooming this project. As you know, Bingleberger is pushing for expanded commuter bus service because protracted negotiations have been going nowhere and is likely that the cost of rail commuter service would be prohibitive. I remain confident that there is benefit to AP and MTA in reaching an agreement ASAP.

The attached exhibit summarizes basic facts. I believe we have reached agreement on the following principles, but perhaps not the details:

- MTA will insure for its negligence and that of its service provider;
- AP railroad is willing to sell only the Northfield to Townsville line to MTA at fair market value, and MTA has agreed to buy at fair market value.

MTA accepts the principal that AP Railroad should make a profit over and above directly attributable cost of providing commuter operations. However, since freight is AP's primary business and commuter operations are an incremental service, we cannot justify AP's desire for pricing on the basis of full cost plus a return on (sunk) investment. AP's fixed costs will not change and they are (and will continue to be) unrelated to the services we are requesting. Your railroad provides many services at less than full cost and readily signs many transportation contracts that are justified only on an incremental cost basis. MTA further reminds AP that it has common carrier obligations under its government charter of public convenience and necessity.

Finally, MTA is concerned that the cost of providing the service could exceed its value. Failure to reach closure on the above issues will not be well received by the public, making AP Railroad look bad and unnecessarily greedy. If we do not succeed in working out a deal, AP gains nothing and foregoes the opportunity for any and all profit from the proposed service.

It is important that we nail down the following long list of unresolved issues:

- MTA, by law, cannot indemnify AP Railroad against its negligence. MTA is willing to consider AP's cost of insurance as a directly related reimbursable expense, up to $100 million of coverage;
- Which line is most appropriate for Phase I? The City is indifferent in principle, but the cost of implementing service is a major factor;
- What is fair market value for Northfield line? We find AP's price of an appraised across the fence value times a "corridor enhancement factor" to be inconsistent with AP's willingness to sell the same property to Small Ry at NLV. Especially of concern is the relevance of a "corridor enhancement factor";
- We need permission to talk to Small Ry about MTA's plans. This need is immediate if the Northfield line is selected as the Phase I project;
- MTA needs assurance that commuter trains will receive highest operating authority and precedence over freight trains. We believe sufficient capacity exists on both lines to permit rescheduling of what few freight trains might be impacted by the service. MTA is willing to allow some financial consideration for this preference. MTA does not believe additional capacity is required to accommodate the proposed services, though it is willing to consider such additions to the extent AP can demonstrate its services would be harmed without them;
- We need to resolve compensation for operating on AP's Westfield-Townsville tracks. We can accept the same 35 cents per car-mile AP charges other railroads, plus other out of pocket costs that are uniquely and directly attributable and identifiable with the service (we believe anything more is excessive, discriminatory, and represents a subsidy to non-related freight operations). On this basis, we do not believe a joint appraisal of the line is necessary or relevant to establishing a basis of compensation.
- Since adequate capacity exists to serve traffic needs well into the future, we do not understand a need to pay a fee for a fictitious "consumption of capacity" for the four round trips we propose to operate. When the time comes that AP needs the capacity "consumed" by commuter services (which our study shows begins to occur above the operation of 30 freight trains per day), and MTA runs more than four round trips, we are agreeable to hiring a consultant to determine what capital requirements are needed for MTA to free up the capacity its services consume.
- We need to resolve restrictions on the selection of operator for the Westfield-Townsville line. AP's desire to restrict bids to only AP or Amtrak violates city regulations requiring open competitive bidding on city contracts. MTA needs the ability to open bids to all qualified operators, with the caveat that all operating personnel must meet the same operating, health, and safety requirements governing AP employees.

- MTA is willing to hire an outside consultant to examine, resolve, or arbitrate issues on which we cannot agree. The cost, however, should be split between us since AP would be a beneficiary from the proposed services. For us to pay all of the cost introduces the temptation for AP to request frivolous, time wasting, and project delaying studies;

There is much to cover as noted above. We urge you to consider our needs as much as we are sensitive to yours. I hope we can resolve the above in time for us to benefit from the Passenger Trains of Freight Railroads Conference being held that same day.

If we can reach agreement, I would like to invite you and your lovely wife to join us next Sunday in MTA's skybox at FedEx field to see if the Washington Redskins can improve on their miserable 0-4 performance by beating the Carolina Panthers.

Sincerely yours,

Robert H. Leilich
Manager of Operations

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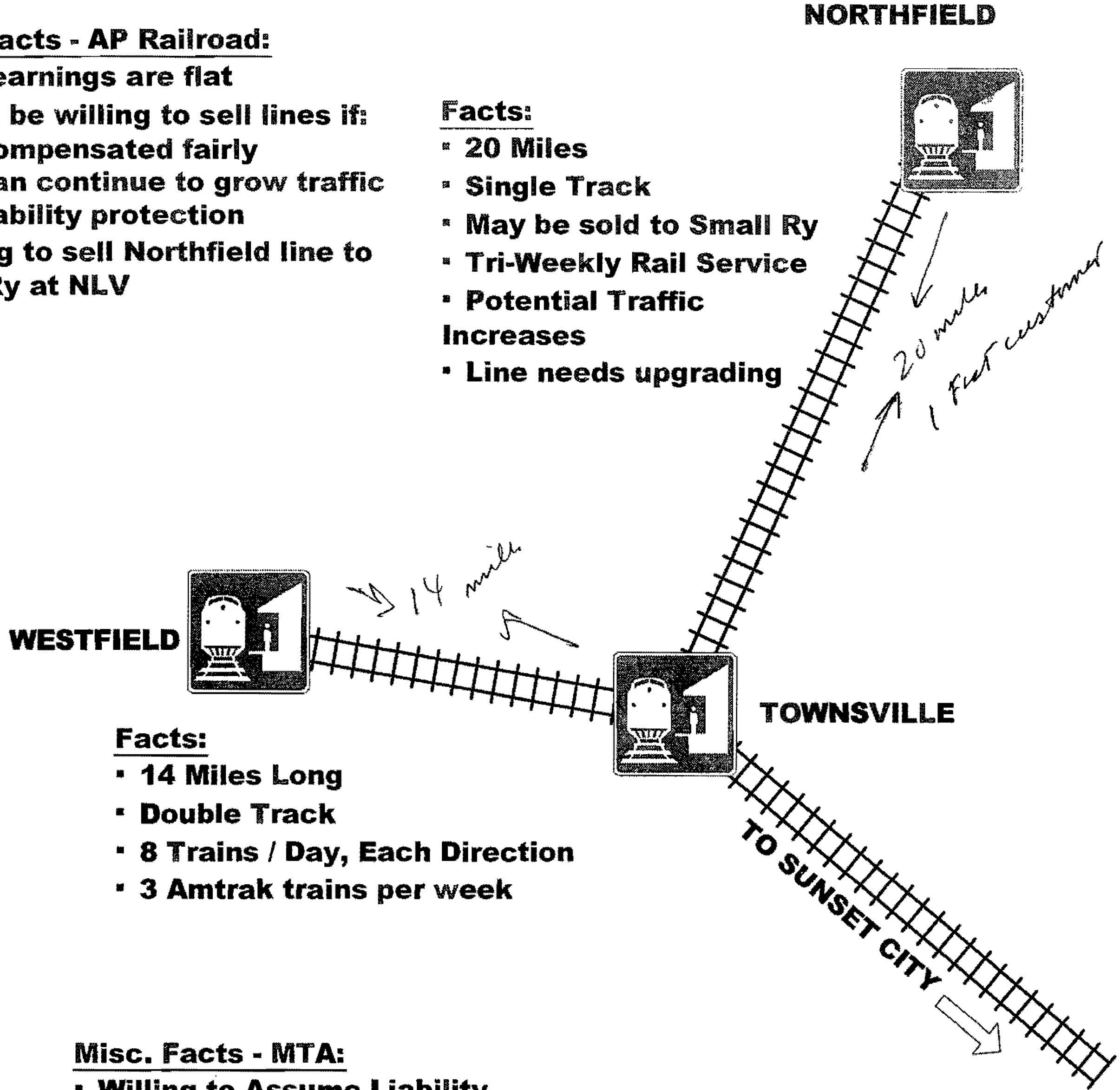
Enclosure

cc: Mayor Edward G. Bumblemeister

Misc. Facts - AP Railroad:

- A&P earnings are flat
- Could be willing to sell lines if:
  - compensated fairly
  - can continue to grow traffic
  - liability protection
- Willing to sell Northfield line to Small Ry at NLV



Facts:

- 20 Miles
- Single Track
- May be sold to Small Ry
- Tri-Weekly Rail Service
- Potential Traffic Increases
- Line needs upgrading

Facts:

- 14 Miles Long
- Double Track
- 8 Trains / Day, Each Direction
- 3 Amtrak trains per week

Misc. Facts - MTA:

- Willing to Assume Liability
- Willing to upgrade both lines
- Will solicit bids for operator - hopefully including A&P
- One corridor will be Phase I, other Phase II

ROBERT H. LEILICH

Mr. Leilich is an Executive Consultant with CANAC. He received a BS in Mechanical Engineering and a MS in Industrial Management from Purdue University, followed by postgraduate studies in Transportation Economics at Yale University. He is a Certified Surface Transportation Board Practitioner.

Mr. Leilich began his railroad career in 1959 as a locomotive fireman with the Santa Fe, where he later became a qualified engineer and conductor. After two years in the Navy as a Destroyer Chief Engineer, he returned to the Santa Fe, working in various staff and line management positions in the Transportation and Operating Departments. In 1969 he joined A.T. Kearney & Co. to help develop their railroad operations consulting practice. In 1974 he joined the former Peat, Marwick, Mitchell & Co. to assume a similar role.

In 1980, Mr. Leilich founded Corporate Strategies, Inc. A primary focus of the company was to develop improved operations modeling and capacity planning tools for railroad planners and managers. He later developed a consulting practice in the startup and expansion of commuter rail and rail passenger services. He has conducted many commuter/passenger rail economic studies, developed operating plans, and participated in negotiations between freight railroads and service operators. In 1999 he sold his company to CANAC, Inc., a major railroad engineering and service provider to the rail industry.

Mr. Leilich is a recognized expert in railroad operations strategic planning and freight and rail commuter/passenger economics. He has published extensively and is a frequent speaker in his areas of expertise.

E.H. Culpepper

Mayor - Toonsville

Graduate of the University of Georgia - School of Law - admitted to the State Bar of Georgia.

An Assistant Attorney General - State of Georgia Department of Law.

Partner in law firm of Fortson, Bently and Griffin, Athens, Georgia. Engaged in private practice specializing in banking and authority financing law.

President and CEO of Clarke Federal Savings and Loan Association, Athens, Georgia.

Director of Development of the Classic Center Authority, developer of mixed use projects around cultural district and site of the Multi-Modal Transportation Center, Athens, Georgia.

Chairman of the Northeast Georgia Surface and Air Transportation Commission - a 13 county regional authority created by the Georgia legislature - its mission is to promote and plan transportation infrastructure in Northeast Georgia.

Chairman of the Northeast Georgia Regional Advisory Council - Created by the Georgia Department of Industry Trade and Tourism - purpose of Council is to develop and implement an economic development strategy for Northeast Georgia.

Vice-Chairman of the Georgia Rail Passenger Authority.

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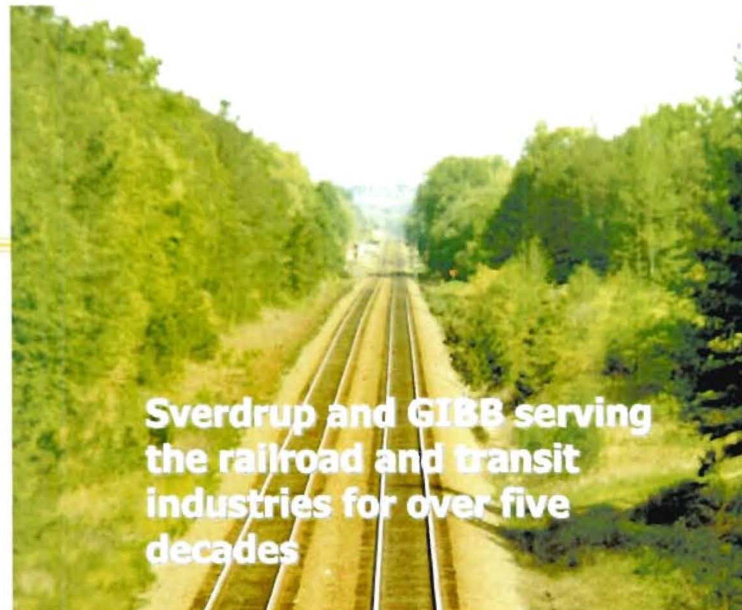

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- Planning, designing and constructing the Amtrak Auto-Train terminal in Lorton, VA
- Rebuilding the Boston Old Colony passenger network to restore passenger service to the South shore.
- Safety Certification of the Amtrak electrification from New Haven to Boston
- Intermodal terminals at the ports of Tacoma, Seattle, Long Beach, and Los Angeles
- Designing and constructing centralized Dispatching Buildings for CSX, Amtrak, and Long Island Rail Road.
- Rebuilding the Market Frankford Elevated structure in Philadelphia.
- Designing and building MofE facilities for BNSF, Amtrak, CSX, and the Irish Railways.
- Supporting the design and implementation of light rail systems in St. Louis, Dallas, Pittsburgh, Baltimore, Minneapolis, Houston, Croydon and Manchester, England.
- Managing the development of modern signaling infrastructure in central London as part of the Thameslink Design and Development team.
- Tunnel inspection and remedial repairs for New Jersey Transit, NY City Transit Authority, and Maryland MTA.
- Environmental studies for Boston MBTA Greenbush line and Chicago-St. Louis HS Rail Corridor.
- Upgrading key interlockings of the East Coast Main Line in the UK.
- Reconfiguring the Stamford CT Railroad station for Conn DOT.
- Designing the East End Concourse at NY Penn Station for NJ Transit.

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BIOGRAPHY

John M. Gibson, Jr.
Assistant Vice Present-Operations Planning

CSX Transportation
500 Water Street
Jacksonville, Fl. 32202

Work History -1996 Present:

- Supervises all computer capacity simulation of freight operations for strategic infrastructure investment at CSX Transportation.
- Leads annual effort to analyze, sponsor and deliver $50-70 million in CSX capacity capital projects a year.
- Analyze, facilitate and negotiate CSX's rail passenger agreements with respect to capacity.
- Developed Conrail merger strategic investments of 75 capital projects totaling $640 million on budget in 24 months, ahead of schedule.

1983 -1996:

Director Business Development and Lines Sales

- Negotiated closed and implemented four acquisitions totaling $180 million .
- Generated $160 million in short line sale proceeds through 96 transactions.

Education:

- 1977 Maser of Business Administrations (Finance)- American University
- 1973 Bachelor of Arts- University of Maryland: Majors: Economics and Public Administration

Volunteerism History:

Board of Directors-Habitat for Humanity of Jacksonville

- Project manage home builds of nations largest affiliate
- Chairs Strategic Planning and Funding Development

Updated 3-05-2001

S. H. LUSTIG - TRANSPORTATION CONSULTANT

Sheldon H. Lustig, 59, has been an independent transportation consultant specializing in railroad operations since 1988.

A native of Cleveland Hts., Ohio, he attended Western Reserve University, receiving his B.A. in 1964 and J.D. in 1967. In a career with the New York Central, Penn Central, and Conrail, he served as Western District / Lake Region Transportation Inspector, Asst. Trainmaster (Fairlane - Toledo Div. and Motor Yard, Cleveland Div.), Asst Trainmaster - Passenger (New Haven - Metropolitan Region), TM - Supervisor of Train and Engine Crews (G.C.T. - Metropolitan Region), and Division Supervisor - Operating Rules (Mohawk-Hudson and Albany Divisions). In addition to his duties as Trainmaster and Supervisor - Operating Rules, he also served as regional trial officer, conducting numerous in-house investigations and disciplinary proceedings concerning fatalities, personal injuries, train accidents, operating rules violations, and other major unusual occurrences. In the territories on which he worked, he had extensive practical experience in the operations of freight trains on mainly passenger trackage as well as the operations of passenger trains over mainly freight trackage.

His consulting practice has a varied client listing, including numerous local political / governmental entities which have railroad operations within their boundaries, including emergency response units which have a vital interest in the passenger and freight traffic through their communities.

He is a member of the International Association of Railroad Operating Officers (IAROO), the National Association of Railroad Safety Consultants and Investigators (NARSCI), the Midwest Highway / Rail Safety Conference, and is a trustee of the New York Central System Historical Society.

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AVOIDABLE DELAYS, THEIR RAMIFICATIONS,

AND HOW TO AVOID THEM

Good morning, and welcome to the "Low Tech" portion of the program.

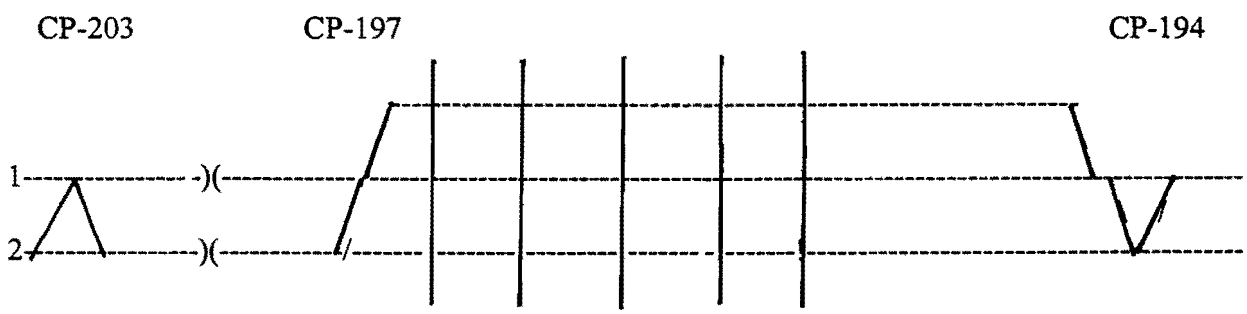
It was a surprise to get a telephone message from Bill Vantuono one morning a few months ago. "Sheldon, I'm working on the agenda for the next Passenger Train on Freight Railroads Conference, and I'd like for you to do a segment on avoidable delays and their ramifications. You can base it on your past correspondence. And, by the way, if you come in early, don't call me right back. It's about 8:40AM, and I hope to be in by 10AM, but we're sitting out here in the Meadows, and the trains are backed up because they only have one open track through the tunnel into Penn Station, and we're not sure just when we'll get in."

WHAT ARE AVOIDABLE DELAYS?

I never did find out what the reason for the loss of the track was, so we cannot say whether this was or was not an avoidable delay. However, for a clear example of what constitutes one type of avoidable delay, return with me to a day shortly before the Conrail split when I was waiting for a friend (who happens to be an Asst. Superintendent with Metro North) riding Amtrak Train No. 49, *The Lake Shore Limited*, to arrive at Sandusky, Ohio. It was a cold and snowy March morning, the train was running hours late, and initially there was only a single other person waiting at the station. With the ring of railroad switch keys and a grip with railroad timetables in it, it was clear that this other person was a railroad employee, probably someone deadheading to work in Toledo. Time dragged on, and several calls were made to the 800-number to try and determine the whereabouts of the missing train. After hearing for the fourth time that the train had departed Cleveland more than two hours previously, we prevailed upon an Amtrak supervisor to find out its exact location since it is only an hour run to Sandusky. Finally, we were advised that #49 was holding at Elyria, 30-miles east, waiting for a relief engineer. At this point, the railroad employee made a call and confirmed the location of the train, adding the comment "You [expletive deleted] told me Sandusky!" In spite of the steady parade of eastward trains, the relief engineer was told to drive to Sandusky even though it was snowing heavily. Nobody with Amtrak or the host railroad considered stopping one of the numerous eastward trains to "taxi" him to #49. As a result, the avoidable delay was extended even further. When he returned to Sandusky with the train, the relief engineer simply pointed at his watch, shook his head disapprovingly, and gave me two thumbs down as he passed.

At this point, let me make it clear that I am not on an Amtrak-bashing rampage. However, as our only national railroad passenger carrier, Amtrak's exposure to avoidable delays - whether caused by its own personnel or by the host railroads over which its trains operate - is necessarily magnified. In some cases, it is unfortunately true that the management of a host railroad has made a decision which had only marginal (if any) benefits for the host railroad but which had serious effects upon Amtrak. One such example is of the decision to evacuate the passengers from a train because of a derailment ahead and bus them to destination even though other personnel from the host railroad advised that the mainline trackage involved either was not blocked or would be passable shortly. By the time the busses arrived and were loaded, train operations were restored, and the now-deadhead passenger train passed the busses within ten miles of the point of transfer.

While the foregoing examples directly involved Amtrak trains, passenger trains can be subject to avoidable delays due strictly to freight-train handling by the host railroads. One of my municipal clients is the Village of Olmsted Falls, Ohio which is located just west of Cleveland and the important junction point of Berea. The Village is trisected by (ex-Conrail, nee-Penn Central and NYC) mainlines of both CSX and NS. Before and after the Conrail split, the combined frequency of trains ranged between 80 and 100 per day, including Amtrak's *Lake Shore Limited, Capitol Limited,* and *Pennsylvanian.* On the triple-tracked Chicago Line, there are five level crossings-at-grade and no under- or overpasses between CP-194 at Berea and CP-197 (one-way crossovers westbound Controlled Siding - Tk. 1 - Tk.2).



The longest usable stretch is about 6500-feet. Obviously, this is not a good location to park trains. Yet, one carrier has actually chopped two trains into 5 pieces each on No. 1 Track and the Controlled Siding and parked them simultaneously, thereby reducing the railroad to single-track from CP-194 at Berea to CP-203. Does this constrict train operations, cause delays to both passenger and freight trains, and have a negative effect on public relations? Keep in mind that in addition to the delays to both freight and passenger trains, all of the public crossings were tied up for extended periods of time not only when the trains were being parked there and but also when they were being re-assembled in order to depart. Without identifying the railroad involved, let me quote the remark of one of the Village officials: "They have the wrong part of the horse on the front of the locomotive!"

At other times, it seems that Amtrak and the host railroads work together to create situations that run contrary to sound operational discipline. There was an occasion when the Chicago Line was closed at Elyria because of a gas main rupture and fire. Amtrak #43 *The Pennsylvanian* had already departed Cleveland and was held at Berea. The obvious choices were: (1) wait out the delay; (2) run over CSX via Greenwich and Fostoria to Toledo as a detour; or (3) bus the passengers and run the train later. Given the fact that the emergency response units at Elyria could not give an estimate for the duration of the closure, the decision was made to bus the passengers and run the train whenever. So far, so good. The bus garage is located about ten minutes from Berea, and by making a move through the junction, #43 could be well positioned to transfer the passengers easily. Instead, the decision was made to make a reverse move and back the train to the Cleveland station, a distance of about 9 miles. While this was not an insurmountable problem, it was complicated by the fact that the rear end of the train consisted of Roadrailers and the movement involved several public crossings, three interlockings (including a movable bridge), and a sustained downgrade.

RAMIFICATIONS OF AVOIDABLE DELAYS.

The common thread throughout these examples appears to be a lack of operational discipline and practical knowledge of basic railroading which results in unnecessary delay to the operation of the passenger trains involved as well as attendant inconvenience to the passengers. Keep in mind that we are not talking about situations which arise due to derailments, grade-crossing collisions, trespassers being struck, weather-related emergencies, or the acts of third-parties. What we are dealing with are those situations where the decisions made by the passenger carrier or the host railroad have a detrimental effect upon the passenger trains involved. It seems that both the host railroads and the passenger carriers are content to allow avoidable situations to develop and even re-occur without taking action to identify the underlying problems, formulate a corrective plan, and assess the results. I realize that it is very easy, as an outsider, to criticize the action or non-action of those involved. However, after viewing the results of the decisions made, I cannot help but wonder just what practical experience some operating decision makers have had. Aside from causing delays to both passenger and freight trains, the net result of many decisions upon passenger and public relations can only be described, charitably, as being negative.

As part of the preparation for this presentation, we kept tabs on the performance of a few selected Amtrak routes. These include longer services (between Chicago and Washington, Philadelphia, New York City, and Boston) and three shorter routes (between Syracuse and New York City, Detroit and Chicago, and St. Louis and Chicago). All of these services utilize the trackage of host railroads, but Amtrak does own portions of two of the routes, New York City / Syracuse and Detroit / Chicago. As you can see from the attachments, the on-time performance has not been very good for the days involved. While the Amtrak publicly-accessible train-status program does not give the reasons for delays, one can surmise from the repetitive results that - given the absence of news stories about train wrecks, grade-crossing collisions, trespasser fatalities, and other major events on these routes -- most of these delays were avoidable. In other words, one or more supervisors of either the passenger carrier or the host railroad made one or more decisions which were not beneficial to the performance of the passenger trains involved.

Unfortunately, some of these decisions may be based on the seeming abundance of "recovery time" which is built into many of the long-haul schedules. In fact, if the schedule segments of many trains are checked closely, some look like they belong to carriers operating in third-world nations. However, the decisions made which adversely effect the on-time performance have tended to be so detrimental that the extended recovery times can only mitigate, not eliminate, the delays involved. Even where a shorter "grace period" is built into the management scoring system for on-time performance, there is a pronounced tendency to use it as a crutch. Consider the 6" which Metro-North allows a train to be late and still considered as "On Time". It makes no difference whether the train involved covers 75-miles on the Poughkeepsie run or 24-miles on the North White Plains run, it still gets a 6" grace period. While this may promote a better "On Time" score, it does not promote good operational discipline.

Even where the "right" decision is made according to company policy, the overwhelming effect can still be negative. Consider the example of the eastbound *Lake Shore Limited* (Train No. 48, Chicago to New York City and Boston) which frequently has been held for hours in Chicago awaiting late connecting passengers from other trains. Aside from the dynamics of delaying not only those aboard at the scheduled departure time but also those awaiting the train at subsequent stations, there is another New York bound train, *The Three Rivers,* which is scheduled to depart Chicago 2' 20" after *The Lake Shore.* Additionally, the Washington-bound *Capitol Limited* departs 45" after The Lake Shore and runs on the same route as far as Cleveland. Could these later trains be used to better advantage? What about the dining and lounge service on *The Lake Shore Limited* during the hold, will it be offered or not? If the train is ready at the scheduled departure time, should the passengers be boarded, or should they be held in the station? When the train is running hours behind schedule, will commissary personnel be ready to re-stock the diner and lounge cars if necessary? Is there a mechanism to advise passengers boarding en route that the train is hours behind schedule? What is the effect upon the assigned utilization of crews and equipment when a train is held? What about the effect at intermediate terminals when a train running late then conflicts with other trains that are on time? Which train will be given priority? What arrangements have been worked out with the host railroads to ensure that late trains are expedited whenever possible? Lastly, has anyone considered the desirability of delaying as many as 400 passengers (counting those entraining en route) in order to protect twenty or thirty late connecting passengers?

Once the decision has been made to hold the train, is there any effort to run an on-time consist from locations where equipment and crews are available? Consider, if you will, the St. Louis / Chicago service in which the 7AM departure is Train No. 22, *The Texas Eagle*, en route from San Antonio. This train has a dismal on-time record for the period reviewed, frequently running many hours late, but there is nothing to indicate that an on-time section has been utilized from St. Louis to Chicago. The same situation exists with the eastbound *Lake Shore Limited* from Buffalo to New York City. If, in fact, the carrier is providing an alternate service, it needs to make this fact known!

WHAT CORRECTIVE ACTION CAN BE TAKEN?

The problem of avoidable delays can be overcome. The carriers involved need to thoroughly document every minute of delay to each train, preferably on a real-time basis. Each minute of delay should be assigned a specific cause, and that cause should be accurately attributed to either the passenger carrier or the host railroad. Once the underlying cause has been identified, prompt action must be taken to develop a workable plan to prevent the re-occurrence of the same cause of delay. Given the nature of our conference, this will frequently require close cooperation between the passenger carrier and the host railroad. Certainly, if the passenger carrier is also the operating carrier, the problem -- and its attendant correction -- should be simplified. However, a successful program of corrective action requires that the performance of all concerned be continuously monitored to insure that the desired results, once achieved, are not lost by future inattention or indecision. Real time monitoring and documentation of performance is vital and can be easily performed. Likewise, the ability to make relatively quick adjustments in the operating procedures and practices of the carriers in order to prevent re-occurrences of avoidable delays requires open lines of communications on the working levels of the management both within and between the carriers involved. The problem is one of education and operational discipline, of being able to restore the degree of operational know-how which allows both carriers to run a service that is consistently on-time and reliable, and – above all – of having the right people in the right management position.

Before concluding, I would like to point out that I find it strange that with all of the advancements made within our industry in the past several years, we cannot operate a passenger train service that matches that offered by the independent railroads of forty and fifty years ago. In your casebook, you will find some notations on the on-time performance of certain selected routes. The record is not good. However, when one considers that *The Lake Shore Limited* of today operates over a shorter route than its predecessor of the New York Central, is allowed speeds as much as 30mph faster over given portions of the route, has no engine change at Croton-Harmon, and makes fewer station stops, one must wonder why this train now takes two hours longer to cover the distance between New York and Chicago. Even with considerable "recovery time" built into the schedule, the train frequently is late. The questions that must be addressed are simply: "What are we doing wrong, and how do we correct it?" The failure to rectify the situation and to eliminate avoidable delays must have a negative effect not only upon our total performance but also upon the way in which the public (including our Federal and state legislators) views our industry.

Thank you for your attention, and we will now open it up to any questions or comments.

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right people in the right management people.

9/11-14 Excluded

AMTRAK PERFORMANCE ON SELECTED ROUTES:

The following tally represents the cumulative on-time performance over the selected routes. The dates reviewed were intermittent during the period Aug. 1st through Sept. 8th.

ROUTE	NO. OF DAYS	NO. OF TRAINS	TRAINS O. T.	O. T. %
CHICAGO / ST. LOUIS	17	52	18	34%
ST. LOUIS / CHICAGO	19	62	3	5%
MEMPHIS / CHICAGO	16	16	2	12%
DETROIT / CHICAGO ✓	19	56	6	11%
CHICAGO / DETROIT	18	53	7	13%
SYRACUSE / NEW YORK ✓	17	67	7	11%
NEW YORK / SYRACUSE	17	68	4	5%
WASHINGTON / CHICAGO *(CAPITOL LIMITED)*	26	26	9	34%
CHICAGO / WASHINGTON *(CAPITOL LIMITED)*	26	26	6	23%
NEW YORK / CHICAGO *(LAKE SHORE LIMITED)*	26	26	2	7%
CHICAGO / NEW YORK *(LAKE SHORE LIMITED)*	26	26	1	3%
ALBANY / BOSTON *(LAKE SHORE LIMITED)*	13	13	3	23%
BOSTON / ALBANY *(LAKE SHORE LIMITED)*	8	8	1	12%

✓ pmt data owned by Amtk.

NEW YORK / CHICAGO *(THREE RIVERS)*	24	13	11	45%	85
CHICAGO / NEW YORK *(THREE RIVERS)*	25	20	5	20%	25
CHICAGO / PHILADELPHIA *(PENNSYLVANIAN)*	25	20	5	20%	25
PHILADELPHIA / CHICAGO *(PENNSYLVANIAN)*	23	13	10	43%	
[TOTALS]		565	100	17%	

Of the 465 delayed trains, 137 were 30" late or less, 157 were between 31" and 1' late, 92 were between 1' and 2' late, and 79 were more than 2' late.

[SOURCE: AMTRAK WEB-SITE TRAIN STATUS SCREEN.]

COMPARATIVE SCHEDULED TRANSIT TIMES OVER SELECTED ROUTES:

A brief comparison of some current Amtrak services versus those of the pre-Amtrak railroad offerings as taken from the April, 1958 *Official Guide of the Railways.*

ROUTE	AMTRAK TIME	1958 TIME & RR
Boston to Albany	5' 30" *(Lake Shore Ltd.)*	4' 30" NYC (RDC) 5' 00" NYC (Std. Eq.)
Boston to New York	3' 30" *(Acela Exp.)* 3' 55" *(Acela Reg.)*	4' 15" NH (To G.C.T.) 4' 30" NH (To Penn Stn.)
New York to Washington	2' 44" *(Acela Exp.)* 3' 05" *(Acela Reg.)*	3' 35" PRR
New York to Chicago	20' 05" *(Lake Shore Ltd.)*	16' NYC or PRR
New York to Buffalo	7' 18"	7' 55" NYC

(Amtrak uses Depew Stn., 3 miles less than Central Terminal.)

Washington to Chicago	18' 33" *(Capitol Ltd.)*	14' 30" B&O
Detroit to Chicago	5' 40"	5' 20" NYC

(This route is being used for high-speed PTC project and is one of the routes on which service was suspended this past winter.)

Chicago to Cleveland	6' 11" *(Pennsylvanian)* 7' 00" *(Lake Shore Ltd.)*	5' 53" NYC 7' 10" NKP
Chicago to Indianapolis	5' *(Cardinal)*	3' 30" NYC / 3' 50" MONON
Chicago to Cincinnati	8' 45" *(Cardinal)*	5' 50" NYC / 6' 50" PRR
Chicago to Louisville	10" 50" *(Ky. Cardinal)*	6' 05" PRR / 8' MONON

(Amtrak terminal is Jeffersonville, Ind.)

Chicago to Memphis	10' 25" *(City of New Orleans)*	9' 17" IC
Chicago to St. Louis	5' 25"	5' 10" IC / 5' 25" GM&O / 5' 30" WAB
Chicago to Minneapolis	8' 15" *(Empire Builder)*	6' 45" CB&Q 7' 00" C&NW 7' 05" MILW

(Amtrak has single station for St. Paul and Minneapolis; railroads had separate stations and stopped first at St. Paul, then Minneapolis.)

RR KEY (IN ORDER OF APPEARANCE):

NYC = NEW YORK CENTRAL
RDC = BUDD CO. RAIL DIESEL CAR
NH = NEW HAVEN
PRR = PENNSYLVANIA
B&O = BALTIMORE & OHIO
NKP = NICKEL PLATE ROAD
MONON = MONON
IC = ILLINOIS CENTRAL
GM&O = GULF, MOBILE & OHIO
WAB = WABASH
CB&Q = CHICAGO, BURLINGTON & QUINCY
C&NW = CHICAGO & NORTH WESTERN
MILW = MILWAUKEE ROAD

William Sturgiss Lind

William S. Lind is a native of Cleveland, Ohio, born July 9, 1947. He graduated magna cum laude, Phi Beta Kappa from Dartmouth College in 1969 and received a Master's Degree from Princeton University in 1971. In 1973 he joined the staff of Senator Robert Taft, Jr., of Ohio, where his responsibilities included transportation policy. In that position, he organized the coalition that restored Amtrak's Lake Shore Limited with service to northern Ohio. From 1977 through 1986, he served on the staff of Senator Gary Hart of Colorado.

In 1987, Mr. Lind joined the Free Congress Foundation, where from 1986 to 1994 he served as Associate Publisher of The New Electric Railway Journal. He has since co-authored, with Paul M. Weyrich, a series of studies on conservatives and public transit. The third study in that series, Twelve Anti-Transit Myths: A Conservative Critique, was released by the American Public Transportation Association in July of this year.

In addition to his work on rail passenger transportation, Mr. Lind is widely known as a writer and lecturer in the fields of military theory and doctrine and politics and culture. He is currently a Center Director of the Free Congress Foundation in Washington, D.C.

Biosketch
Chuck Taylor

Chuck Taylor is the Program Officer responsible for the Transportation Research Board's High-Speed Rail IDEA Program. From 1970 to 1997 he was with the Association of American Railroads and managed the Washington office of the AAR's Research and Test Department. His responsibilities there included research programs in freight equipment management, diesel exhaust emissions, environmental and hazmat transportation issues, human factors, advanced train control systems, and the analysis of the costs and benefits of new technology. Prior to joining AAR, he worked for what is now CSX. He has an undergraduate degree in electrical engineering, and a graduate degree in Industrial and Systems Engineering.

TRB HIGH-SPEED RAIL IDEA PROGRAM OVERVIEW
Chuck Taylor, High-Speed Rail IDEA Program

INTRODUCTION

The major challenges to the implementation of new high-speed passenger rail service in the United States are more economic than technological. Nevertheless, technological improvements, especially breakthrough developments, have the potential to dramatically change the economics of new passenger service. Many, if not most, such improvements in technology benefit freight rail operations as well as passenger rail.

The traditional sources for most such research and development have been the railroads, through such mechanisms as the Association of American Railroads (AAR), railroad suppliers, and the FRA. The process for establishing research needs, priorities, and funding for such organizations and institutions tends to be very conservative in nature. The benefit-risk ratio for a candidate research project must typically be very high for it to receive funding.

I spent a significant portion of my railroad industry career in what used to be called the Research and Test Department of the AAR. I vividly recall the discussions at the meetings of the AAR Research Committee over whether our success rate for projects was too low or too high. Too few failures can equate to too high an aversion to risk. The result can often be that candidate research projects with a high potential payoff, but a low probability of success don't get funded. And, such projects can often be the ones that spawn technological breakthroughs.

This dilemma is by no means unique to the railroad industry.

Fortunately, there are programs to provide support for high risk, but high potential investigations of unproven technical concepts or novel applications of proven technologies. This afternoon, I'm going to describe one whose objective is to improve the safety and efficiency of high-speed passenger travel.

BACKGROUND

Back in 1992 the Transportation Research Board launched the first IDEA program. IDEA stands for Innovations Deserving Exploratory Analysis. This was the Highway IDEA Program to provide start-up funding for promising, but unproven, innovations for improving the design, construction, safety and maintenance of highway pavements and structures. Funding for the program was provided by the FHWA. In subsequent years Intelligent Transportation Systems (ITS), and Transit IDEA programs were added.

These Programs proved to be a very effective mechanism for the development of innovative technology. Based on their success, the High-Speed Rail IDEA Program was initiated in 1998. Funded by FRA, HSR-IDEA projects are selected for their potential to upgrade the existing U.S. rail system to accommodate operations up to 125 mph and beyond in support of FRA's next-generation HSR technology development program.

RESEARCH AREAS

The Program supports research and development in such areas as train control systems, grade crossing safety, track and equipment technology, and environmental impact. The following are examples of the kinds of research proposals the Program seeks in each of six areas:

Operations, Communications and Train Control Systems

- Low-cost locomotive navigation systems for precise train location, separation, and navigation
- Advanced systems and concepts for communication links between adjacent trains and track work vehicles and for integrating train location information with highway traffic management systems
- Advanced concepts for closer tracking of train movements to increase capacity and prevent collisions
- Human/machine interface considerations related to high-speed train operations, including train crew comfort and safety, improved alertness, reducing fatigue, and ergonomic criteria for the design, operation, maintenance, and training for advanced train control systems.

Railroad Crossing Safety

- Advanced on-board or wayside surveillance and warning systems to ensure that crossings are clear and barriers are in place for safe high-speed train passage.
- Integrated warning systems and low-cost, in-vehicle alert systems to warn drivers of proximity to railroad crossings and to provide train position status specifically for emergency vehicles, hazardous materials carriers, school buses, and transit vehicles.
- Alternatives to conventional track circuits for detecting train presence and predicting train arrival time to reliably activate grade crossing warning systems.
- Concepts for automated collection of data and information on intrusions and near misses that will lead to improved design and operation of grade crossing warning systems.
- Improved design and operation of grade crossing barrier systems for high-speed train operations to prevent vehicle and trespasser intrusion into the railroad right-of-way.

Upgrading Infrastructure Technology

- Automated sensing and alert systems to monitor the condition of railroad infrastructure and to provide advance warning of functional or physical failure such as weakened bridges and tunnel linings, broken rails, track buckling, washouts, obstacles, misaligned switches, defective wayside detectors, and defective railroad crossing warning systems.

- Structural hardening technologies, including advanced material technologies for retrofitting existing track, bridge and tunnel systems for train operations at 125 mph and beyond.
- Advanced technologies for automated inspection and maintenance of track geometry and track bed integrity.
- Improved rail flaw detection systems.
- Advanced systems to warn track workers of approaching trains.
- Improved techniques and technologies for field welding of rail.

Rolling Stock Improvements

- Lightweight, high-strength material technologies to increase the life-cycle performance and safety of rolling stock.
- Advanced design concepts for train trucks and suspension systems, brakes, and other components to improve ride quality and safety.
- Concepts to enhance the motive power and traction of high-speed train systems.
- Advanced and cost-effective methods for inspecting rolling stock equipment such as wheel sets, bearings, and traction motors, including wayside and onboard performance-monitoring systems.
- Human/technology interface considerations related to the design and maintenance of high-speed rolling stock.
- Improved methods for the maintenance of high-speed rail vehicles that address such areas as vehicle servicing, inspection, health monitoring and diagnostics, maintenance management, maintenance training, and related human/technology interface conditions.

Fixed High-Speed Rail Facilities

- Human/technology interface improvements including such areas as train boarding and deboarding, and issues related to the Americans with Disabilities Act.
- Improved systems and processes for the management and operations of stations and maintenance shops.

Reducing Environmental and Operational Impacts

- Passenger comfort and safety.
- Wheel-rail noise abatement and control.
- Reduced noise, dynamic structural and aerodynamic impact on adjacent communities, facilities and structures.
- Improved ergonomic considerations for passengers.

THE IDEA PROCESS

The Program does not issue requests for proposals, but relies on unsolicited proposals. We utilize various methods to communicate information on the kinds of proposals we seek, how proposals are evaluated, and how to prepare and submit proposals. These communication methods include various TRB publications, the TRB web site, the recent Railway Age article on the Program, and presentations by people like me at forums like this.

Governance for the Program is provided by a Committee whose members have expertise in such areas as railroad operations and technology, both passenger and freight, strategic planning, public policy, safety, and research. The Committee members from freight railroads perceive their stake in this Program is just as important as the passenger rail representatives. Much, if not most, of the research and development addresses needs every bit as important to freight as to passenger operations. Some examples include HSR-IDEA projects to investigate low-cost alternatives to conventional grade crossing warning systems, innovative technologies for rail flaw and rail break detection, high-precision GPS locomotive navigation systems, and an on-board, real time locomotive exhaust emissions analyzer.

A major role of the Committee is to evaluate the research proposals submitted to the Program and determine which deserve to be considered for a contract. Proposal evaluation criteria include whether it addresses a significant need, whether the technology and application is unique and innovative, and whether it is technically, operationally, and economically feasible.

Due dates for proposals submitted to the Program are March 1 and September 1 each year. The Committee meets twice a year, and its primary agenda item is the review of these proposals. Funds available for projects has been averaging about $500,000 a year. This isn't a huge pot of money by today's standards, and there are always many more proposals than funds to support them. Nevertheless, we have yet to encounter a situation where we were unable to support a project the Committee strongly supported.

SELECTED IDEA PROJECTS

The following are summaries of six HSR-IDEA projects recently completed or underway. These were selected from among over 30 HSR-IDEA projects that have been funded since the Program's inception, and should provide a good indication of the scope of the Program.

A Neural Network Video Sensor Application for Railroad Crossing Safety
Contractor: Nestor Corporation, Providence, Rhode Island

Concept and Product

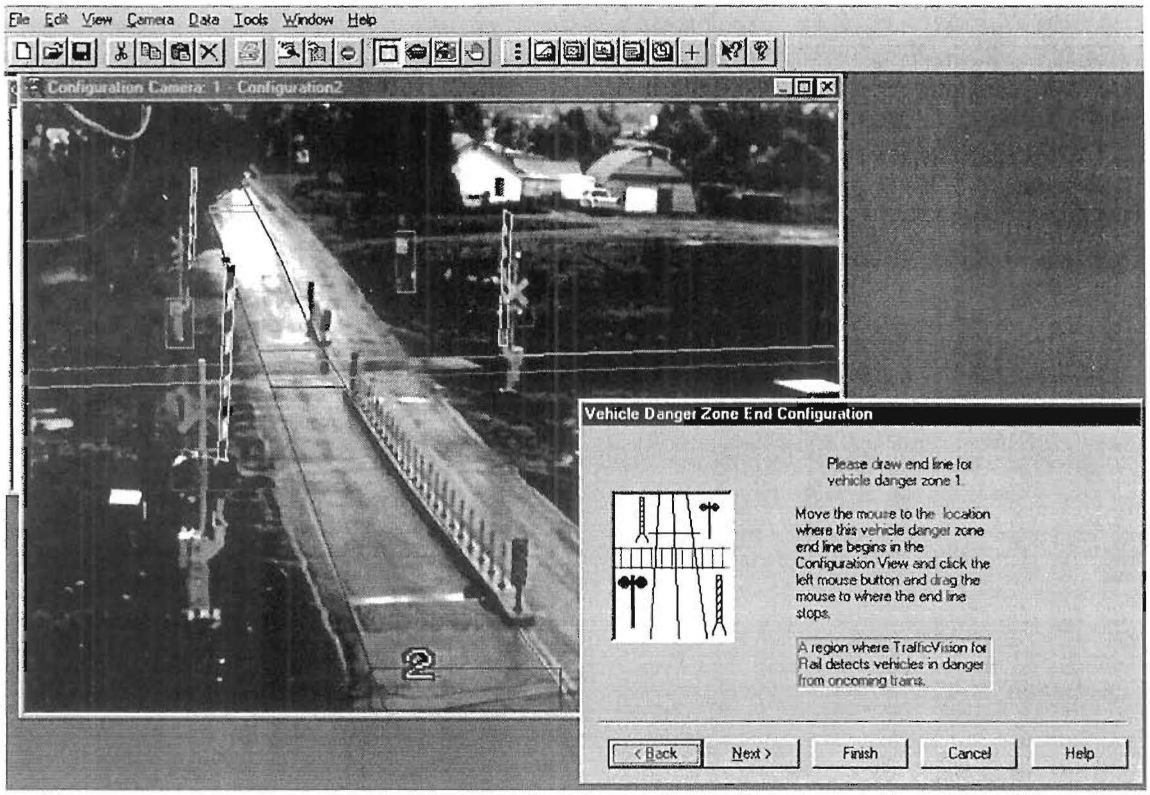
The introduction of four-quadrant gate systems that block both the entrance and exit of traffic lanes to railroad grade crossings has resulted in the need for information regarding highway vehicles within the crossing area when these systems become activated by approaching trains. In addition, there is a widespread and growing need for a low-cost crossing surveillance system that could be used for such functions as observing motorist behavior at crossings; detecting the presence of pedestrians and bicyclists in the crossing area; the raised, lowered, or altered condition of crossing arms; and the functional status of signal crossing lights.

The objectives of this project were to determine the feasibility of an automated, real-time video imaging system for the detection of the presence of vehicles and trains at railway grade crossings, and to monitor crossings equipped with gates and signal lights to determine whether these devices are functioning properly. This surveillance system uses a neural network-based video detection technology. The neural network must be able to accurately interpret the objects that move across a grade crossing as well as the condition and functioning of the crossing warning system components. The system could be used for such functions as providing alarm signals to motorists in extreme danger, messages to maintenance personnel regarding damaged or malfunctioning crossing system components, data for assessing grade crossing risk, and enforcement of grade crossing violations.

Project Status

Project tasks included the definition of specific functional requirements for an automated video surveillance system, compiling a library of videotapes of grade crossing activity from a variety of crossings representing a range of crossing configurations, highway and railroad operating, weather, and ambient light conditions.

The software to apply the neural network and other image processing technologies to the interpretation of the grade crossing video data was then developed. Specific technical issues addressed included detection accuracy (e.g., incidence of false negatives and false positives), number and configuration of video cameras required, speed of operation and effects of visibility conditions. A desktop demonstration that can showcase the system was also developed. The system is now being installed at several crossings in Florida under contracts with the Florida DOT and FRA. Another system was installed in the Chicago area for crossing enforcement. FRA also funded the contractor for development of a mobile surveillance system to evaluate crossing hazards and driver behavior.



Example of the graphical user interface for initializing the system at each crossing.

Fiber Optical Sensors for High-Speed Rail Applications
Contractor: University of Illinois

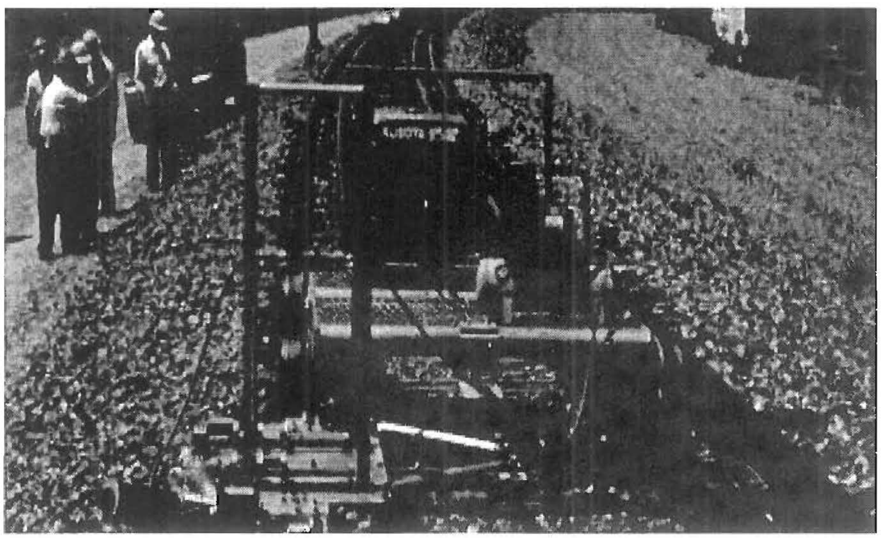
Concept and Product

This research is investigating the feasibility of using fiber-optic filaments bonded to the rail to detect track buckling and broken rail. The underlying concept is if the rail should break, the fiber bonded to the rail also breaks and light transmission through the fiber drops dramatically. This drop can be easily detected and used to send an alarm. An optical time domain reflectometry unit, which acts as an optical radar, is used to detect the exact location of the rail break. Similarly, if the rail buckles, the bonded fiber also bends and an amount of light proportional to the bend escapes the fiber. The objective is a low-cost, reliable alternative to conventional track circuits for near real-time detection and location of rail break and track buckling events that can be commercially developed for application to the railroad. If successful, this technology could also facilitate the railroad industry movement toward communications-based train control systems and provide an alternative to track-circuit based train control. In addition to rail break and track buckling detection, this technology has the potential to detect and discriminate among various in-train defects, such as flat wheels, dragging equipment, and stuck brakes.

The project is investigating the best types of optical fibers for these applications, optimum location of fibers on the rail, fiber attachment and removal methods, development of a fiber installation device, development of a computerized optical time-domain reflectometry measurement system, and fabrication and testing of a prototype system.

Project Status

A prototype system was designed, fabricated, and subjected to preliminary laboratory testing. The system was then installed on a section of test track at the Transportation Technology Center in Pueblo, Colorado. These tests demonstrated that the technology has significant potential for both rail break and buckling detection. A follow-on contract with University of Illinois is about to get underway to develop a production prototype system. Tasks will include test and evaluation of improved epoxy and adhesives for faster installation and that can better withstand the full range of track maintenance operations, and development of improved procedures for fiber installation over rail joints, and development of field diagnostics and maintenance procedures.



Device for application of optical fiber to rail

High-Strength Lightweight Car Bodies for High-Speed Rail Vehicles
Contractor: Surface Treatment Technologies

Concept and Product

The main goal of this project is to increase the operational efficiency and reduce the life-cycle costs of passenger rolling stock for high-speed rail vehicles by developing high-strength lightweight structural components. The project will evaluate an innovative approach for building lightweight high-speed passenger train vehicles. This approach consists of three synergistic concepts. The first involves the use of aluminum scandium alloys. These alloys are unique in that they are high-strength and readily weldable, allowing the main structural components to be lighter. The second concept involves the novel monocoque car body designs developed and implemented on the TurboTrain III. The final concept involves the use of net-shaped fabrication processes to build the train sets. This approach would replace mechanical fasteners currently used to fabricate passenger rolling stock with welded net-shaped structural components.

The project will begin with an analysis to identify the optimum aluminum-scandium alloy composition to fabricate the main structural components of train vehicles. This analysis will include an assessment to determine whether the increased cost per pound of adding scandium to aluminum is offset by lower fabrication costs, reduced life-cycle costs, and increased performance. A net-shaped extrusion process will be developed for fabricating car body shells used in the TurboTrain III vehicle. The approach is to fabricate the main structural shell of the vehicle by joining three net-shaped extruded panels, which make up the top and sides of the car body. The appropriate alloy to use in these extrusions will be based on the cost and performance analysis. The project team will then modify the TurboTrain III design to take advantage of this approach. The potential improvements in performance and life-cycle costs associated with this approach will also be evaluated.

Project Status

Project tasks will include the casting of billets for each of five candidate alloy compositions, and design and fabrication of the tooling for the extrusions. The billets will then be extruded and the extrusions solution heat treated. Optimal heat treatments for extrusions will be developed, welding trials of extrusions will be conducted, and weldment tensile properties tested and their microstructures evaluated. The structural design of the car body shell will be developed, and the structural requirements for extrusions determined. Initial design modifications based on characteristics of aluminum-scandium alloys will be performed. A trade-off study to evaluate the cost and performance of candidate alloys will also be performed. An alloy for the car shell will be selected based on the results of the trade-off study. The car shell will be redesigned based on fabricating it from three large extruded panels, and a production path developed to extrude and form the roof and sidewall panels for the car body shell. This contract was executed in June 2001 and the initial tasks are just getting underway.

Low-Cost, Drift-Free DGPS Locomotive Navigation System
Contractor: Seagull Technologies, Inc.

Concept and Product

There is growing interest and activity among railroads, suppliers, and government agencies in the development of communications-based train control systems. These systems rely on sophisticated computers on board locomotives and at central train control centers, combined with train location and navigation systems, and digital data communications links for the control of train operations. They have the potential to increase the utilization of railroad track and equipment and improve safety and service reliability. These systems would replace the conventional track-circuit-based signal systems and thereby allow safe operations with much shorter headways between trains to improve system throughput and increase track capacity. They would also enable the monitoring of train crews for compliance with computer-generated train movement authorities using the on-board computers, and enforce compliance with automatic brake applications if these authorities are violated.

A key component of such systems is the locomotive navigation system. In order for the computer system to determine whether the train is in compliance with movement authorities, precise, real-time train location data is required, including identification of which track the train is on. GPS or DGPS alone does not provide the accuracy required, as trains often operate in multiple-track territory with track centers as close as 13 feet. Accordingly, there is a need for a low-cost alternative to conventional rate gyros or laser fiber optic gyros for precise navigation.

The objective of this project is to investigate the use of a three-receiver three-antenna GPS heading reference system, as illustrated in Figure 1. A low-cost, drift-free highly accurate navigation system hardware design and parallel-track resolution software will be designed. Using differential GPS (DGPS) corrections, the same three-GPS receiver system will provide DGPS positions and velocities. For robustness, the system is augmented with a low-cost heading gyro and the odometer output from the locomotive. Both the gyro and the odometer will be calibrated by the GPS receiver system. When GPS satellite coverage is temporarily interrupted the calibrated gyro and odometer will be used to augment the GPS-derived position, velocity, and heading.

If successful, this project will provide railroads with a low-cost option for locomotive navigation systems that should help reduce the cost of communications-based train control systems.

Project Status

An initial concept exploration contract was awarded to Seagull to develop and field test a design prototype of the system. The prototype system was mounted in a locomotive and testing conducted on a main line and in a large rail yard. Main line testing was conducted in territory that included turnouts and switchovers as well as overhead bridges, tunnels, and other obstructions. Yard testing determined whether accurate location could be determined in ladder tracks and a shutdown and restart of the system. Analysis of the test results compared the DGPS, odometer, and heading gyro data with reference location data to determine accuracy. A parallel track resolution algorithm was developed and a simulation of the algorithm used to evaluate the performance of the algorithm using the field data. Test results indicated that the three-antenna configuration was sufficiently accurate that GPS could be used in lieu of DGPS to provide acceptable location and parallel track resolution. Based on these results, a follow-on contract to develop and test a production prototype system is about to be awarded.

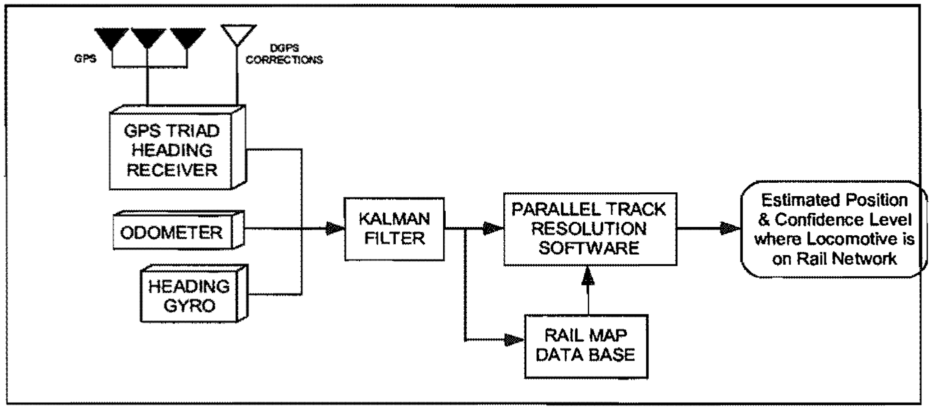
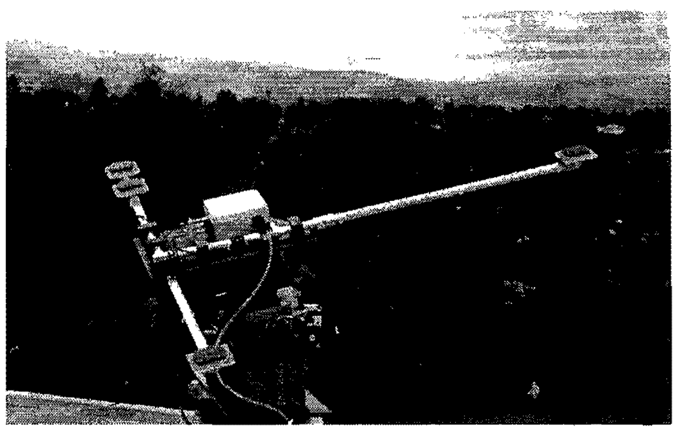


Figure 1. Low-Cost HSR Train Navigation System



GPS Attitude System on Roof-top Motion Simulator

Improved Reliability of Thermite Field Welds
Contractor: University of Illinois

Concept and Product

Field welded rail joints are a significant source of rail flaws in the North American railroad industry. As such, they have a major impact on rail service reliability and are a significant cause of derailments and train delay. The increasingly heavy axle loads characteristic of current and future railroad freight operations will only make this problem worse. Moreover, since most high-speed passenger operations are on track shared with heavy-haul freight operations, the search for improvements in field weld technology is important to both freight and passenger operators.

This project is investigating techniques for improving the fatigue performance of thermite weldments by diminishing the likelihood of initiating fatigue cracks in two critical locations: 1) rail web locations; and 2) rail base locations where cracks develop at weld toes because of local geometric irregularities (notches). The project will develop and test new designs that improve the local notch-root geometry of welds, and new types of sealant between the rail and the mold used in thermite welding that will produce smoother surfaces in these fatigue-critical notch-roots. Alternatives to the currently used fluxes and techniques to coat the interior weld molds to produce a smoother cast surface will also be investigated. The effectiveness of these techniques will be evaluated through full-scale testing of thermite welds using modified molds with improved weld geometries, mold sealants, and internal coatings.

The final product will be recommended revisions to the equipment, materials, and technique used by track maintenance personnel when they perform thermite welding in the field.

Project Status

An investigation of candidate flux systems and mold modification materials and techniques has been completed, and a test fixture for 3-point bend tests of thermite welds was constructed. Methods of modifying thermite weld molds to reduce severity of the weld profile of the base and web regions have been developed. Alternative fluxes, such as those used in submerged arc welding, were investigated. Techniques to coat the interior of weld molds to produce a smooth cast surface were also developed, and alternative materials to enhance the properties of the mold sealant were investigated. These potential improvement schemes were tested using a small-scale thermite welding apparatus. Fatigue tests were then conducted to compare conventional thermite-welded rail with thermite-welded rail on which the excess weld reinforcement has been ground smooth. In the final stage, full-size thermite welds will be fabricated using modified molds with improved weld geometries and mold sealants and internal coatings, and 3-point bend tests will be performed on three different improved thermite welds with improved weld profiles and surface conditions.

Continuous Locomotive Emissions Analyzer
Contractor: Scentczar Corporation

Concept and Product

This is a project to develop, test and evaluate a continuous exhaust emissions analyzer to determine its applicability for diesel locomotives. The analyzer output would be evaluated to determine its potential as the basis of a control system to optimize diesel-electric locomotive fuel economy while ensuring that the locomotive stays within EPA NOx emissions standards. The system will use Ion Mobility Spectrometry to measure NOx in the exhaust stream and, based on the instantaneous measurements, provide input for the control of injector settings to achieve the optimum balance between engine efficiency and exhaust emissions.

Ion Mobility spectrometry systems consist of a reaction tube where ions are formed and a drift tube where ions drift through an electric field. Exhaust gas enters the reaction tube where it is ionized. These ions are gated into the drift tube through a shutter grid. When ions enter the drift tube they are drawn down the tube toward a Faraday cup where they impact a metal plate and transfer their charge creating an electric current. This current is digitized and analyzed to for the signatures characteristic of gases such as NO_2.

Project Status

A prototype IMS analyzer has been developed and tested using mixtures of NO and NO_2. The IMS performance will be compared with an EPA wet chemical reference method. The next step will be to test the analyzer using a stationary diesel engine. The test engine will have a chemiluminesence analyzer to enable a comparison of the prototype data with the standard EPA method.

CONCLUSIONS

Of the 30 HSR-IDEA projects funded to date, 15 have been completed or terminated. Six of these proved to be successful enough to warrant further investment to develop commercial prototypes by the contractor. In some cases, further funding for such development is being cost shared by the contractor, the IDEA Program and, in some cases, by third parties that are investing in the commercial potential of the product. Six out of 15 is forty percent, which is unusually high for a research program whose charter is to fund high-risk proposals. Whether we can continue this kind of a success rate remains to be seen. Most of the credit for the successes to date goes to the Program Committee. They have provided the technical insights, the practical perspective, and the vision that formed the basis for the decisions as to which proposals should be supported.

In order to continue our success, we need to continue or increase the flow of quality proposals to the Program. This means that we need to get the word out about the Program to all potential sources of good ideas. This includes small and large R&D and manufacturing businesses, both within and outside the railroad community, academic institutions, individuals, and any other source of good ideas and the capability to assess and develop them. If you are interested in more information about the Program, I encourage you to talk with me or visit our web site at:

www.nationalacademies.org/trb/idea

DENNIS R. LETOURNEAU, is a licensed professional engineer with 12 years of experience. He is currently Manager of Capacity Planning CANAC Inc., a railway engineering and consulting company. He holds a Bachelor of Engineering Degree in Mechanical Engineering from McGill University in Montreal, Quebec. Mr. Letourneau began his career in the field testing of motive power and passenger equipment, moving on to braking analysis, signal design, yard layout, work block planning and railway operations simulation. He has provided simulation expertise to Class I railroads and their partners throughout North America with clients that include the BNSF, UP, CN, CSX, and to commuter agencies that include Metra, Amtrak, VRE and GO Transit. He has also consulted in Asia and Australia and specializes in adapting simulation tools to the specific operating characteristics of each client. For the Chicago Union Station Project. Dennis is responsible for the development of sound train operating and allocation plans for Metra and Amtrak trains and translating this demand into required physical infrastructure needs within the station complex.

Introductory Bio for R. S. Goehri

Mr. Goehri is presently the Director of Rail and Transit Engineering for HDR Engineering in the Kansas City, Missouri, Office and the HDR Director of Program Services for the Burlington Northern Santa Fe Railway Company. Mr. Goehri began his career in 1979 with the Missouri Pacific Railroad Company in St. Louis. With HDR his is responsible for the preparation of construction plans, specifications and estimates for all railroad related projects in the Kansas City office. He is currently the Project Manager for the Chicago Union Station Capacity Study.

Mr. Goehri holds his undergraduate degree in Civil Engineering from the University of Missouri- Rolla. He also holds post-graduate degrees in Business Management and Computer Science. He is an active member of AREMA, ASCE and NSPE and has published articles in ASCE's "Computing in Civil Engineering" Journal and at ASCE's Ports '98 conference. Mr. Goehri has been recognized by HDR as a "Professional Associate." He is registered as a professional engineer in the states of California, Nevada and Missouri.

RailwayAge

Chicago Union Station Capacity Improvement Study

R. Scott Goehri, P.E.
HDR Engineering, Inc.

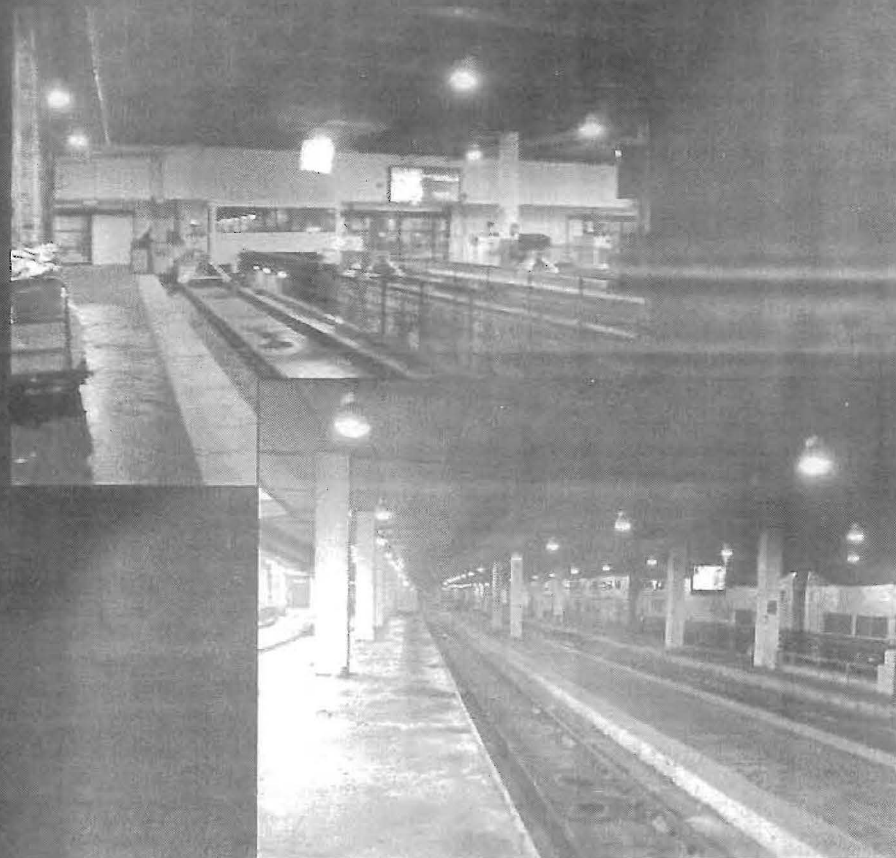
Dennis Letourneau, P.E.
CANAC, Inc.

October 16, 2001

HDR Engineering, Inc.
CANAC, Inc.
T.Y. LIN INTERNATIONAL/BASCOR
Muller & Muller

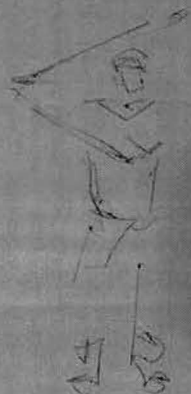
Agenda

- Project Overview
- Project Approach
- Detailed Analysis
- Q & A



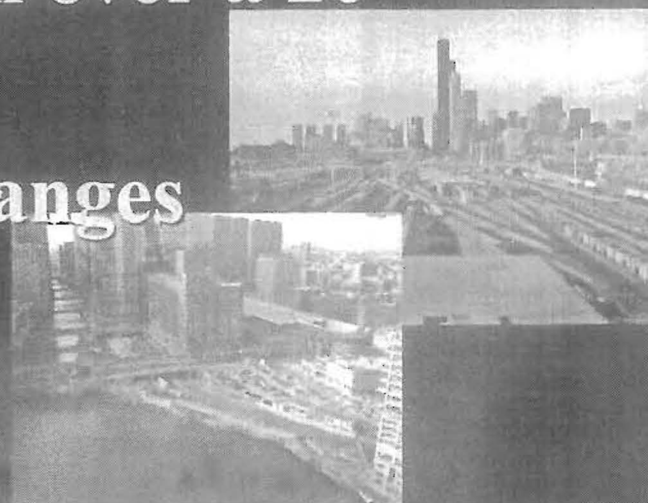
Vision

"Ensure that all terminal facilities at Chicago Union Station support the service goals of Metra and Amtrak"



Project Goals

- Understand the importance of the project
- Determine remaining CUS capacity
- Identify feasible changes that will support anticipated growth over a 20-year time horizon
- Prioritize the identified changes
- DEVELOP A PLAN!



Project Approach

- Reliable Workplan
- Research existing plant and operations
- Build a verifiable system model
- Add immanent changes to base case 0
- Identify and prioritize improvements
- On-time and within budget

Project Parameters

- Phase I vs. Phase II
  - Consider this the "initial descent" with ph. II the "final descent"
- "Terminal" approach only
  - North – to Morgan Street interlocker (excluding)
  - South – to switches 51 & 69 south of bridge
  - West – to the BNSF Union Ave. Interlocker (Tks B-1, B-2, B-3, BN#1, BN#2 and first 3 x-overs west of Canal street)
- Focus on operations then plant
- Passenger flow modeling on Platforms

Project Organization

PROJECT STAKEHOLDERS

Steering Committee
Bill O'Dea - Amtrak
Don Orseno - Metra

Project Team
HDR Engineering
Scott Goehri, P.E.
Project Manager

Operations and Trackwork	Terminal Simulations	Pedestrian Flow Analysis	Drawing Production
HDR Engineering	CANAC	TYLIN/BASCOR	Muller & Muller
Jim Conway, P.E.	Andy Cebula, P.E.	John LaPlante, P.E.	Jay Muller

Communications

Direct Communication Between Stakeholders And all Points of Contact (POC)

STAKEHOLDERS

STEERING COMMITTEE
Bill O'Dea (POC)
Don Orseno (POC)

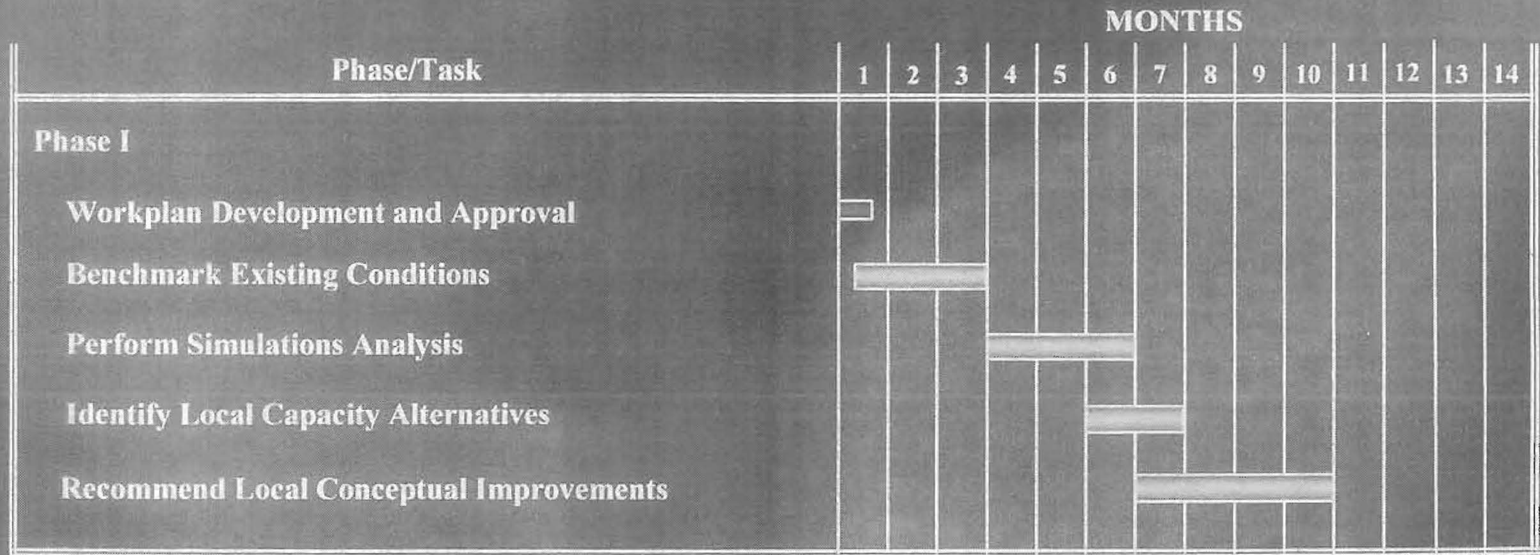
HDR PROJECT TEAM
Scott Goehri (POC)

- **HDR Engineering**
- **CANAC**
- **TYLIN/BASCOR**
- **Muller & Muller**

Key Information Resources:

- Amtrak
- Metra
- BNSF
- MWRRI

Project Schedule



Final Report Due — **December 7, 2001**

Base Case 0 Process

Collect Data, Interview and Observe

Build Base Case -1

QC Base Case -1

Validation Criteria — FAILS → Modify Base Case -1 → QC Base Case -1

Present to Steering Committee — FAILS → Modify Base Case -1

Archive Base Case 0

Base Case I Development

- Implement imminent facility changes
- 24 month vision
- Acts as a foundation for analysis
- "Reasonableness" validation

"What-if" Analysis

Candidate Idea → Candidacy Criteria

Candidacy Criteria — FAILS → Archive Candidate Idea

Candidacy Criteria — PASSES → Steering Approval

Steering Approval — FAILS → Archive Candidate Idea

Steering Approval — PASSES → Steering Evaluate Improvement

Steering Evaluate Improvement → Simulate Improvement

Simulate Improvement → Meets Goals

Meets Goals — FAILS → Steering Evaluate Improvement

Meets Goals — FAILS → Archive Candidate Idea

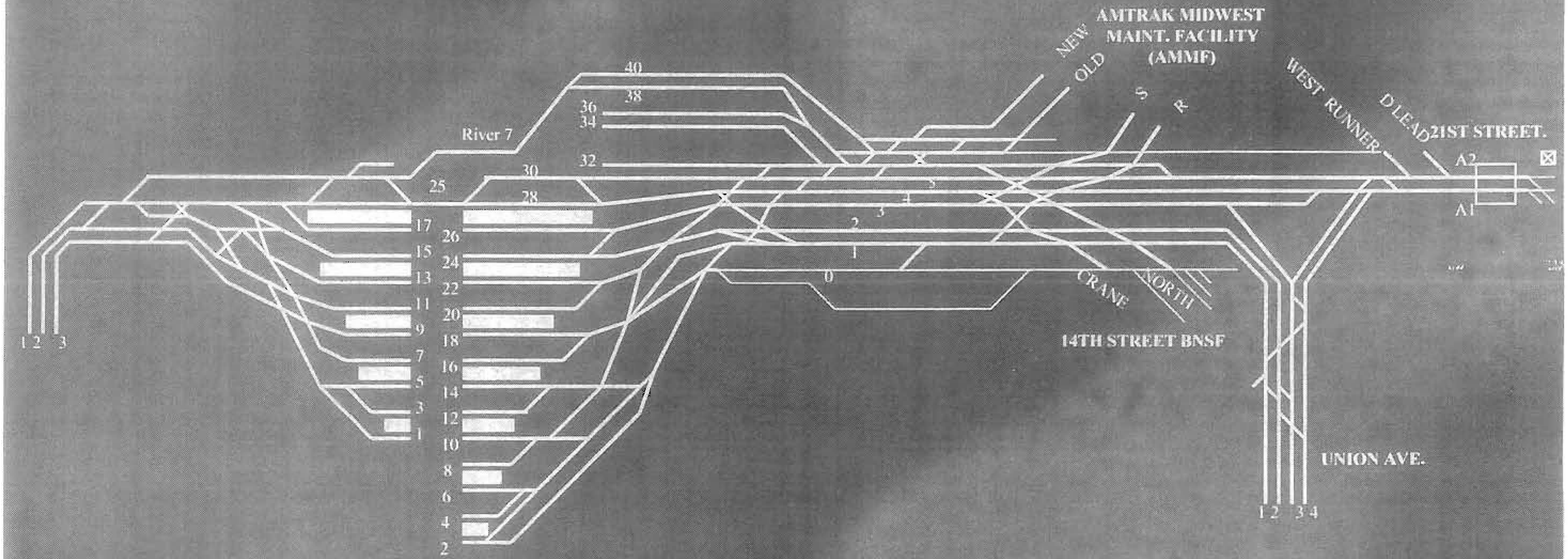
Meets Goals — PASSES → Prioritize and Report

This Process Applies to all Operational and Physical suggested modifications.

An "Improvement" May be a collection Of suggested ideas Working 'in-concert'!

*(**Operational** then Physical)*

CUS Traffic Flows

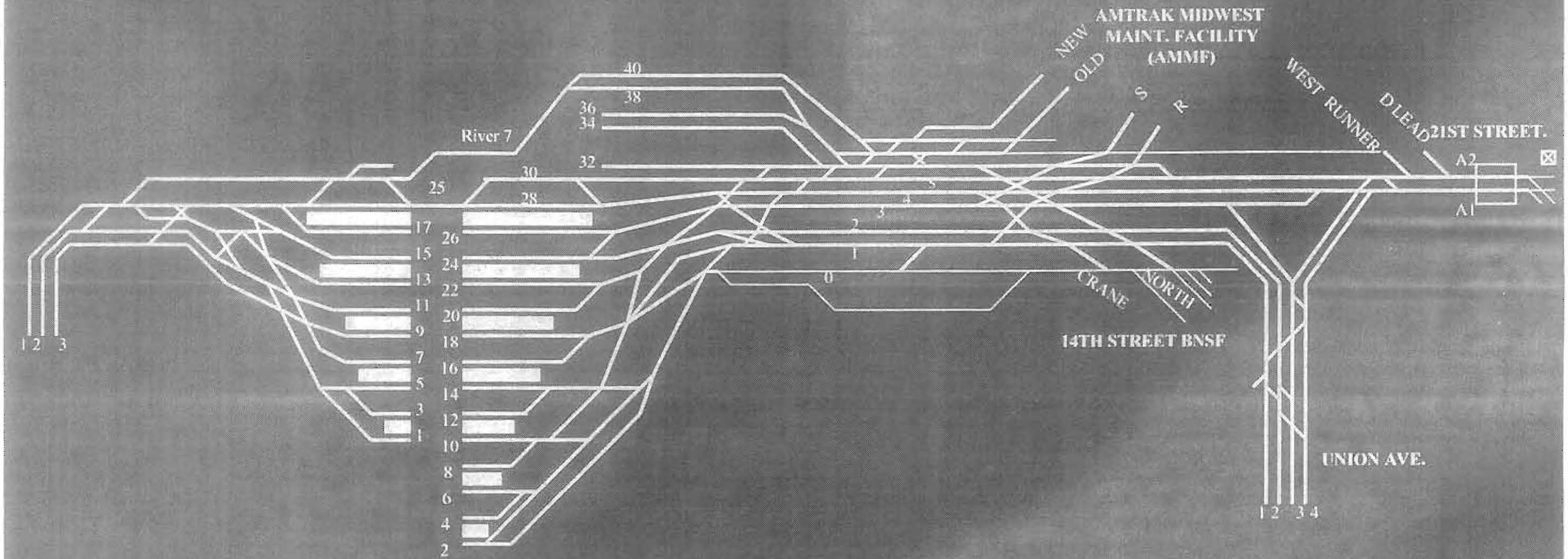


HDR Engineering/CANAC

Chicago Union Station Capacity Improvement Study

RailwayAge – Passenger Trains of Freight Railroads

CUS Train Control



HDR Engineering/CANAC

Chicago Union Station Capacity Improvement Study
RailwayAge – Passenger Trains of Freight Railroads

Base Case 0 - Goals

- Gather information on the operation of traffic within the study limits
- Translate this into a process that can be simulated with available tools
- Ensure that realistic operating performance is reflected in the simulation

Data Collection

- Select a representative data period
- Locate Data Sources
  - A2 Tower sheets
  - Lumber St. Record of Train Movement sheets
  - Metra Yardmaster Sheets
  - Amtrak Glasshouse Arrival/Departure sheets
  - Metra CD8 Sheets
  - 21st St. Record of Train Movement sheets
- Experience the Operations
- Confirm the Operating plans
- Video Log Verification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Data Conversion to Simulation

- Two concurrent capacity studies within study limits
  - Mainline Capacity Study
  - Station Track Capacity Study
- Close interconnections

Data Conversion to Simulation

Two-step process

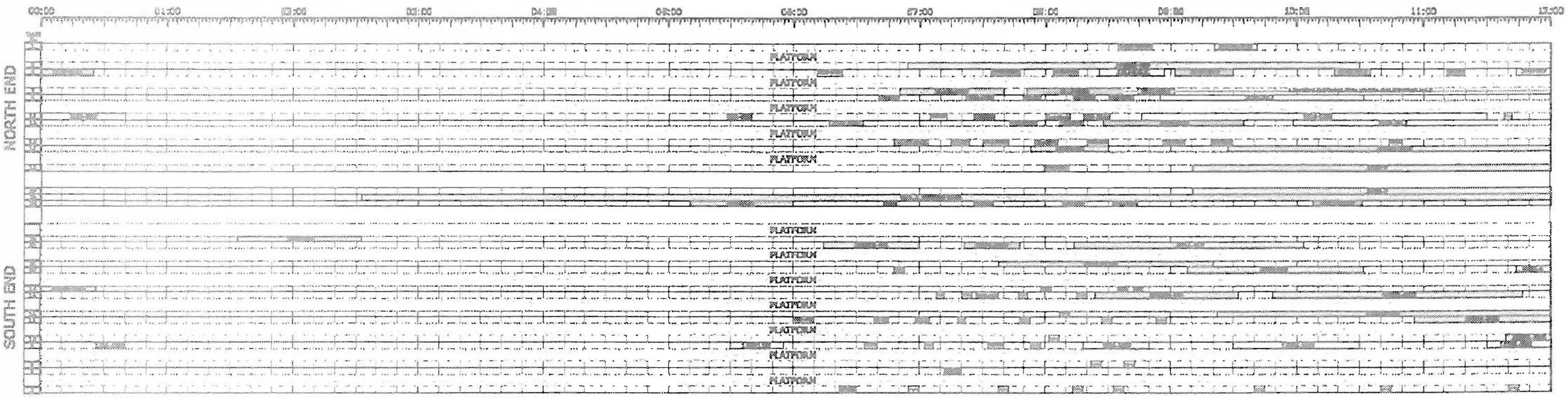
- **Allocation of CUS tracks**
  - Inbound lineup, train length, estimated arrival and dwell
  - Track preferences for each train ID
  - Track lengths and limitations
  - Priorities in allocating tracks
- **CUS target tracks fed into RAILS dispatch program which then allocates mainline tracks in real-time**

CHICAGO UNION STATION TRACK OCCUPANCY
Y2001 BASE (0) SERVICE (DAY 1)

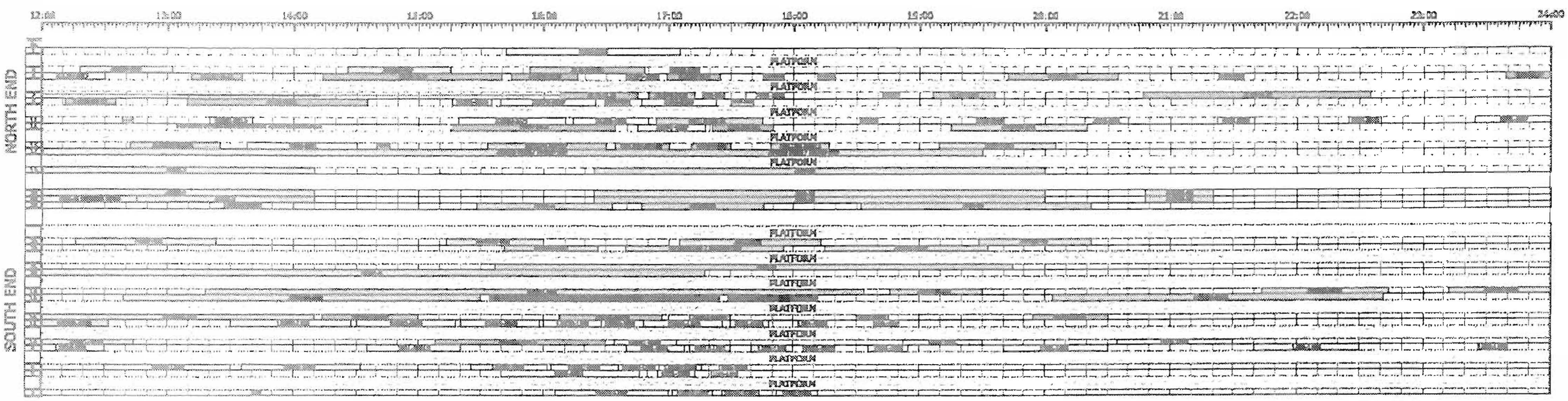
Amtrak
Metra (Milwaukee District / North Line)
Metra (Milwaukee District / West Line)
Metra (North Central Service)
Metra (SouthWest Service)
Metra (Heritage Corridor)
Metra (Burlington Northern Santa Fe)

AMTRAK APPROVED: ______ Date: ______
METRA APPROVED: ______ Date: ______

TIME FRAME: MIDNIGHT (00:00) TO NOON (12:00 pm)



TIME FRAME: NOON (12:00 pm) TO MIDNIGHT (24:00)



Date Revised: June 13, 2001

Verifiable Results

- Two-step process is used to create 5 representative weekdays
- Each train ID represented by 5 trains
- Each train represents 20% of actual recorded traffic Jan.15-Feb.15

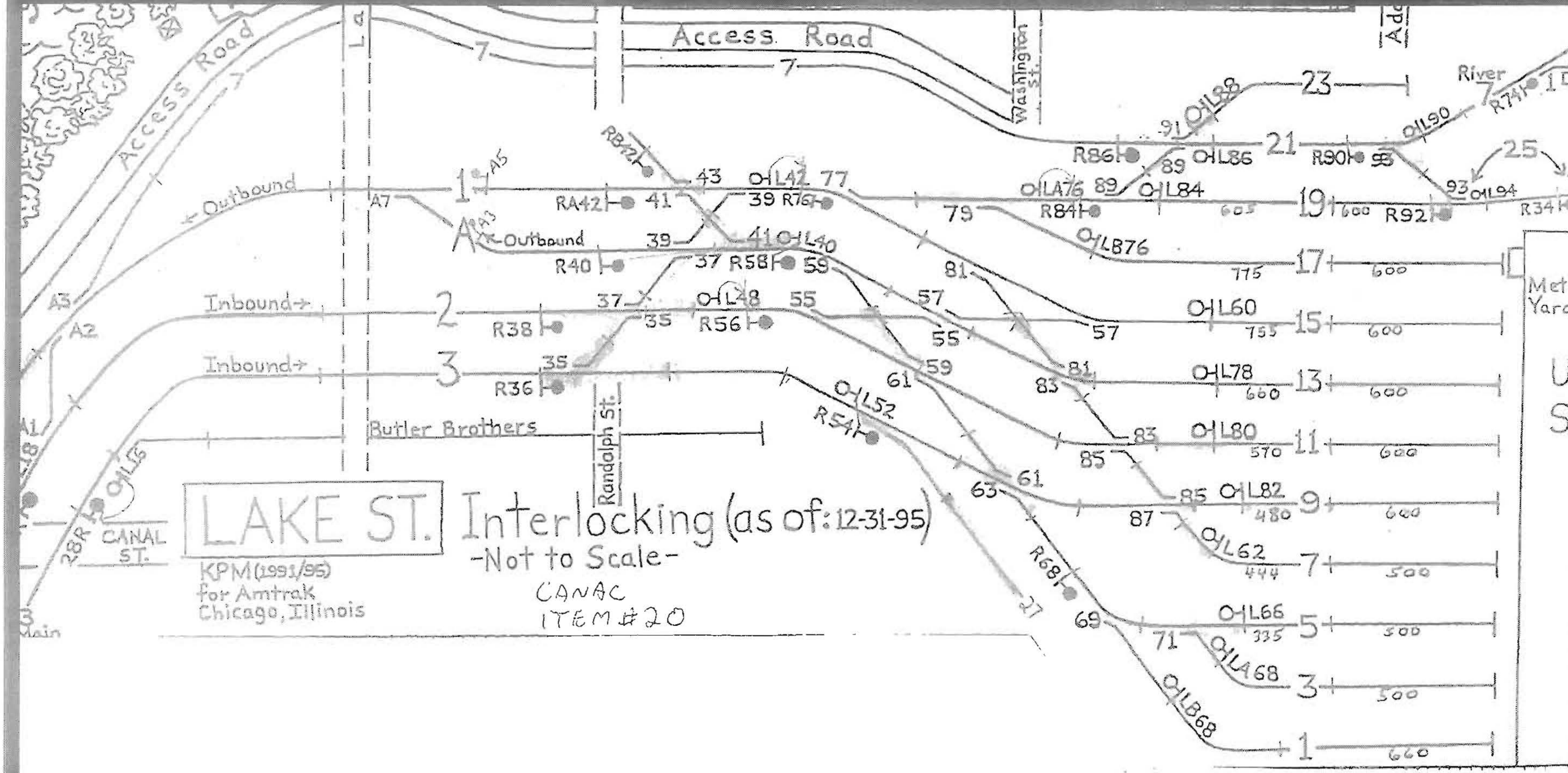
Verifiable Results

- Track allocation charts show the variability of station track usage each day
- RAILS simulation visually confirms the viability of the CUS track allocations and traffic flow on the mainline

Verifiable Results

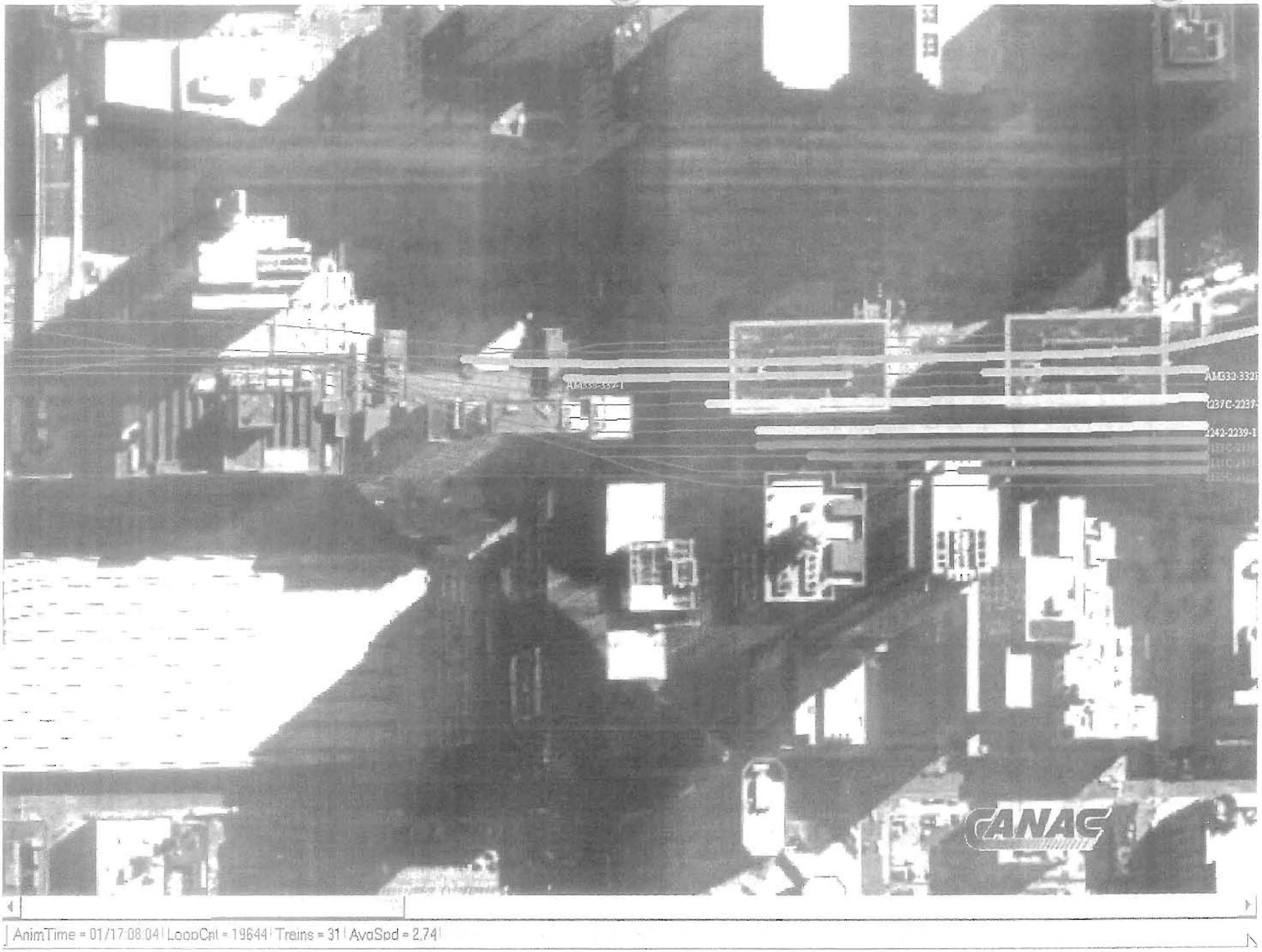
- **Calibration example: Metra 7412 and 2141C**
  - Source Tower A2 sheets
  - Variable arrival times created
  - Fed into RAILS dispatch program
  - 7412 waiting outside CUS for 2133 to depart track 7
  - 2141C waiting outside CUS for 2237 to depart track 13
  - Confirm through video log

Verifiable Results



HDR Engineering/CANAC

Chicago Union Station Capacity Improvement Study
RailwayAge – Passenger Trains of Freight Railroads


CANAC
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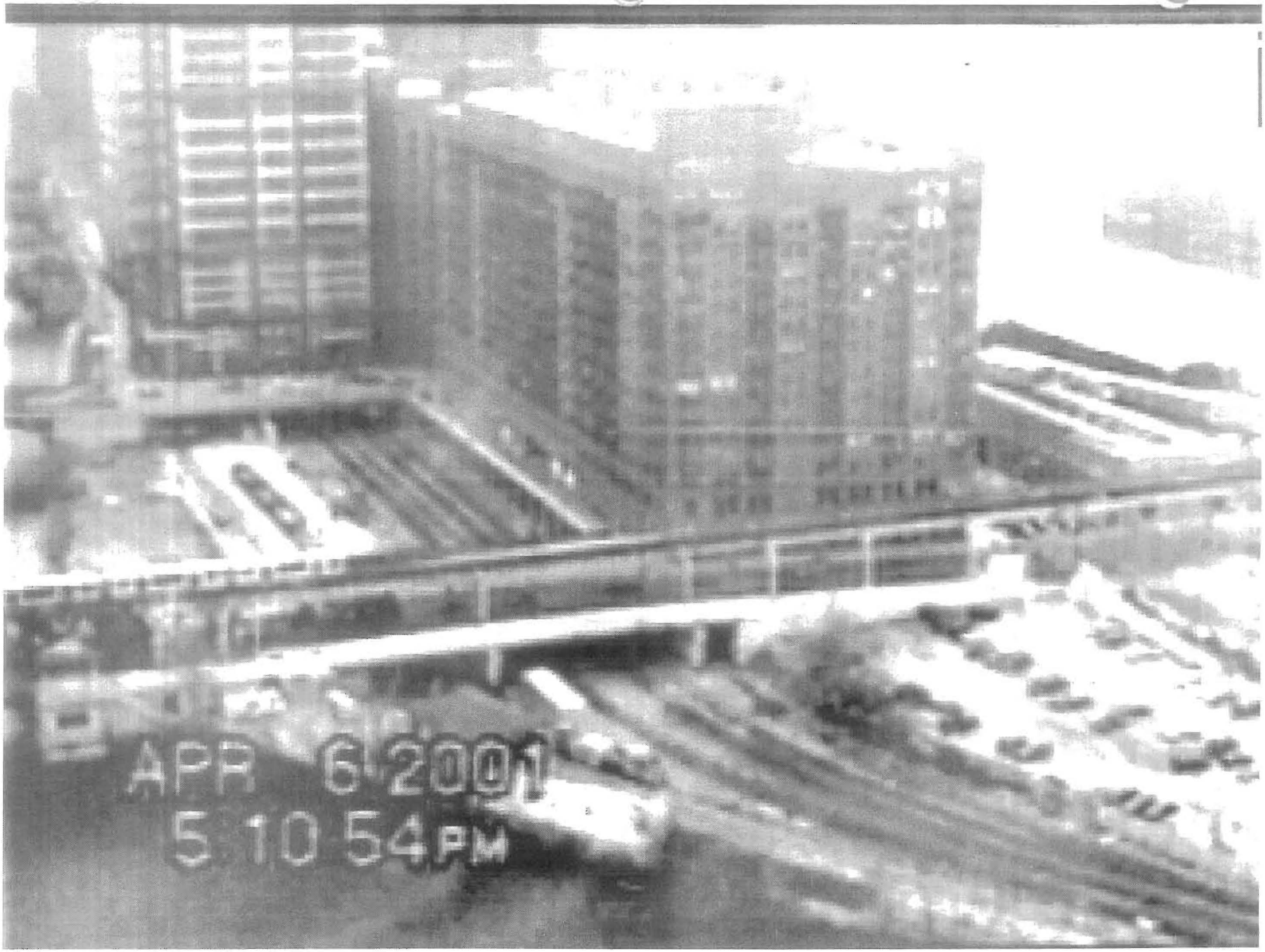
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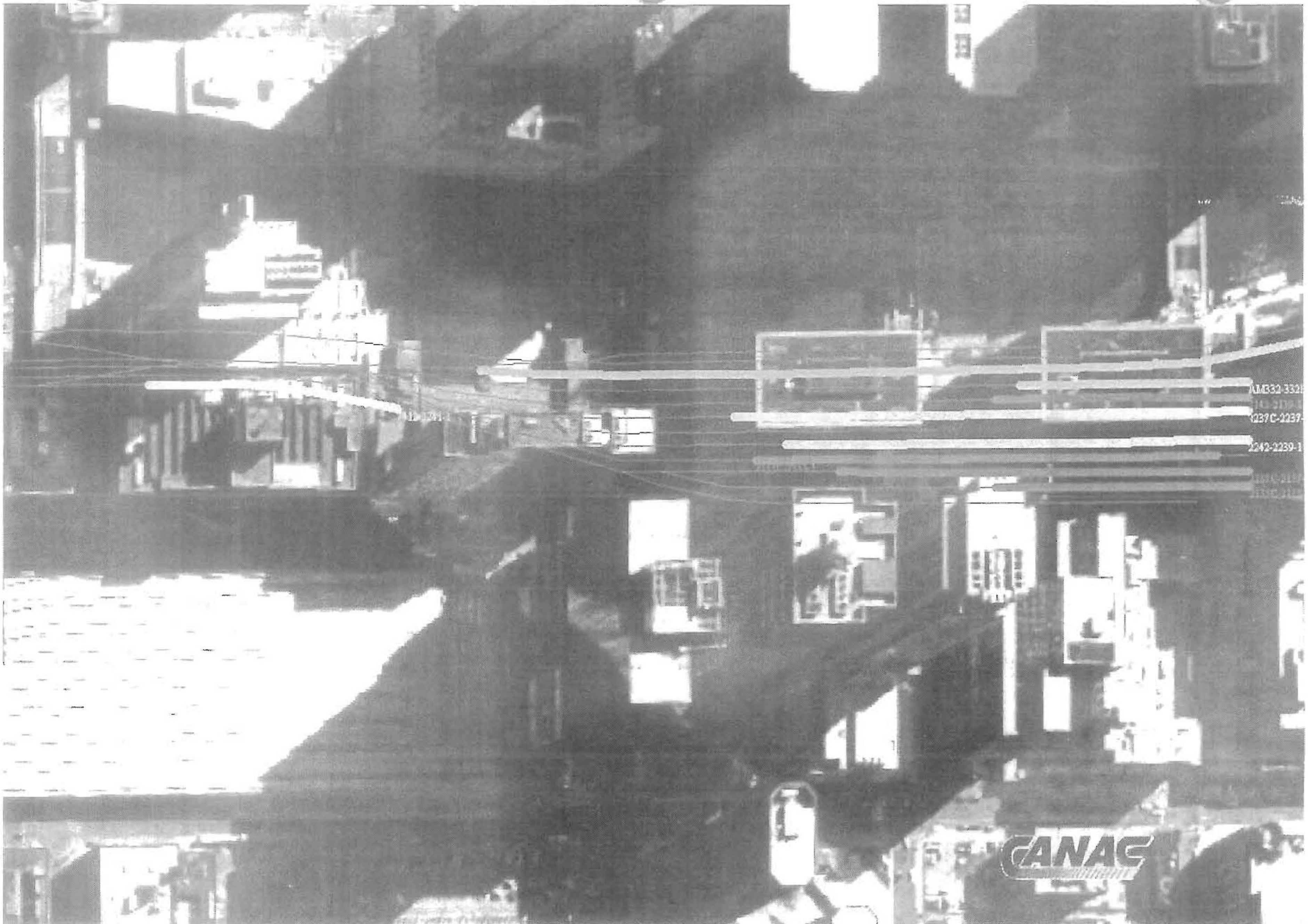

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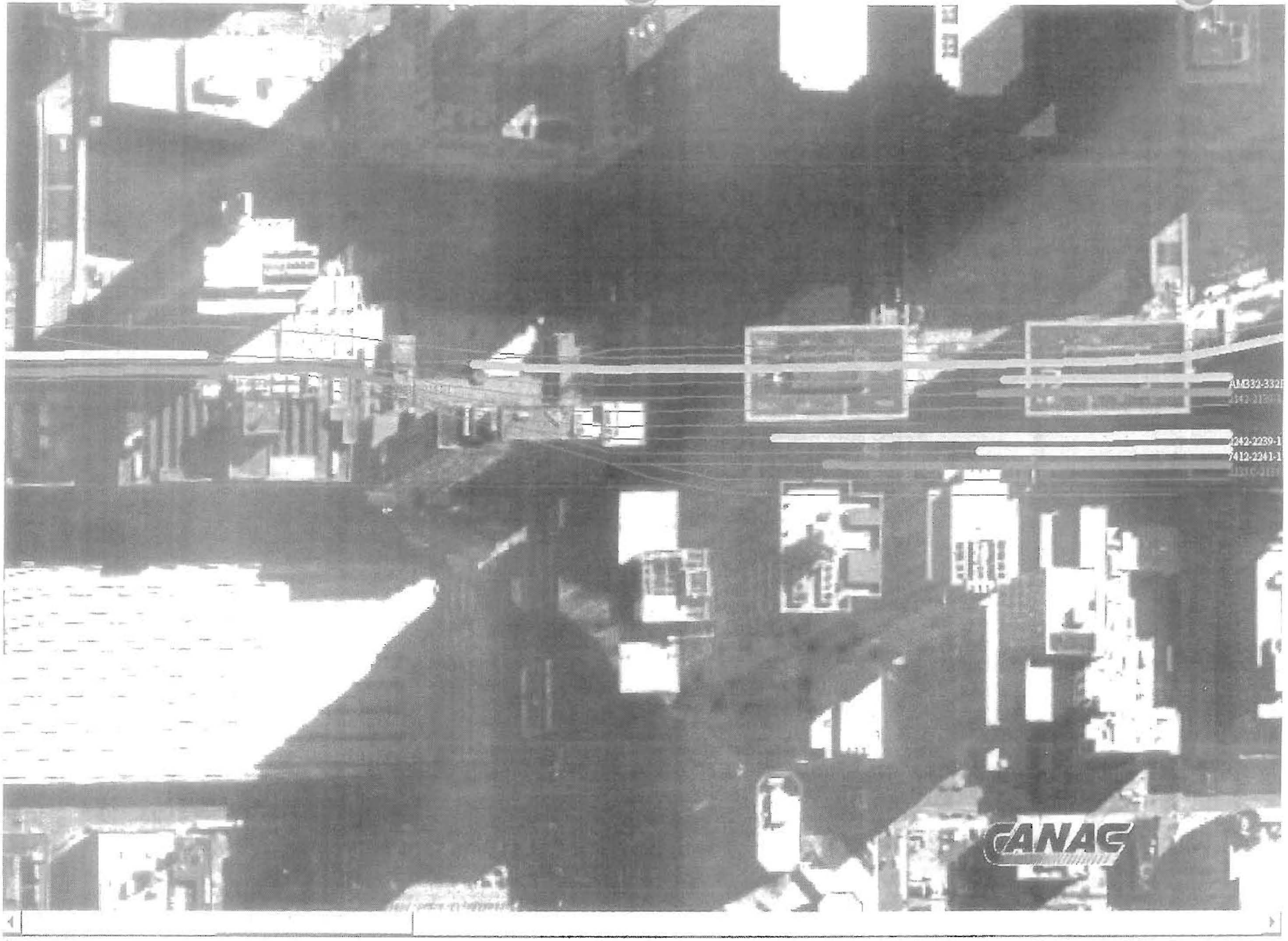

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Next Steps

- Year 2005 Scenario completed (key)
  - Operating adjustments/concessions
  - Infrastructure requirements
- Years 2010-2020 in-progress

Stephen C. Rogers

Stephen C. Rogers is a practicing attorney and commercial arbitrator in Washington, DC, with extensive experience involving rail passenger operations on the lines of freight railroads. Mr. Rogers spent 13 years as a member of Amtrak's Law Department, including five years as Amtrak's General Counsel and chief legal officer. At Amtrak, he regularly handled the legal aspects of Amtrak's nationwide passenger operations over freight railroads and of operations over Amtrak's Northeast Corridor by both commuter and freight railroads. Before joining Amtrak, Mr. Rogers served as General Counsel of the U.S. Railway Association, practiced law with Covington & Burling in Washington, DC, and was law clerk to a prominent federal judge in San Francisco, CA.

Since leaving Amtrak in 1995, Mr. Rogers has represented suppliers to the rail industry and arbitrated disputes within the rail industry involving both Class I and short line railroads. He is Vice Chair of the Transportation Committee of the American Bar Association and a frequent speaker at programs for the transportation community, including two appearances at previous *Railway Age* conferences on "Passenger Trains on Freight Railroads."

Mr. Rogers is a member of the Roster of Neutrals (Commercial Panel) of the American Arbitration Association. He is a graduate of Harvard College and Georgetown University Law Center.

Capitol Hill Controversy: Pending Legislation, And How It Could Affect Passenger/Freight Railroad Relations

This panel will focus on "TRAIN 21," the bill introduced in July by Rep. Bob Clement, D-Tenn., that would extend to "mass transportation authorities" powers with respect to passenger operations on existing freight railroad lines comparable to those possessed by Amtrak.

When Congress created Amtrak in 1971, it conferred on it special legal powers intended to ensure that Amtrak could operate its intercity passenger service on freight railroad lines. In the Rail Passenger Service Act, Congress gave Amtrak the right to have the Interstate Commerce Commission (now Surface Transportation Board) require a railroad to make facilities or services available to it where the parties could not voluntarily reach agreement on such an arrangement. It also gave Amtrak power to condemn a freight railroad's property in an ICC proceeding where it could establish a need for the property for intercity rail passenger transportation. The RPSA further gave Amtrak certain other rights vis-à-vis its "host" freight railroads, including a general preference for passenger over freight traffic in the use of rail lines.

For some time, transit authorities that operate or propose to operate commuter service on the lines of freight railroads have sought legal powers comparable to Amtrak's, arguing that they need a way to resolve disputes involving commuter rail's use of freight railroad rights-of-way. On July 26, 2001, Rep. Bob Clement, D-Tenn., introduced "TRAIN 21," known formally as H.R. 2654, the "Transit Rail Accommodation Improvement and Needs Act for the 21st Century." TRAIN 21 would confer on mass transportation authorities the same kinds of powers outlined above that are possessed by Amtrak.

The American Public Transportation Association supports TRAIN 21, but the Association of American Railroads does not. In a statement issued in response to Rep. Clement's bill, AAR President Edward R. Hamberger said that "freight railroads should not be forced to allow passenger operators to use their assets any more than any other private business should be forced to allow another company to use its assets." A spokesman for the National Industrial Transportation League, which represents freight shippers, has also expressed concern about the potential for service disruptions that could be created by increasing passenger operations on busy freight lines.

This panel, which is composed of representatives of commuter and freight railroads, Amtrak and other interested parties, will discuss the practical, political, operational and other issues raised by TRAIN 21.

Hubert K. "Obie" O'Bannon

Vice President – Government Affairs Department
Association of American Railroads

Mr. O'Bannon joined the Association in 1988 as Assistant Vice President – Legislation. He was promoted to Vice President – Government Affairs in January 1999. He has over 27 years experience promoting the rail industry and railroad objectives on Capitol Hill.

Prior to joining the AAR, Mr. O'Bannon was Director of Federal Relations with the Consolidated Rail Corporation. He also served as Special Representative with the Penn Central Transportation Company and as a legislative assistant with the Democratic Study Group.

Mr. O'Bannon received his Bachelor of Arts degree from Pomona College, Claremont, CA.

Arthur L. Guzzetti: Bio

Art Guzzetti, a twenty-two year veteran of public transportation, is the Director of Policy Development and Member Mobilization for the American Public Transportation Association (APTA), Washington, DC. Through this position, Mr. Guzzetti directs the policy and advocacy aspects of APTA's government affairs activities, focusing on ideas and programs for keeping APTA's membership informed and energized on federal policy and legislative issues. Prior to coming to APTA in June, 1997, Mr. Guzzetti was Assistant Manager, Government Affairs for the Port Authority of Allegheny County (Pittsburgh, Pennsylvania) where he worked closely with current APTA President William W. Millar, on grants, government relations, policy and capital programming issues. Art also held various government relations positions at New Jersey Transit from 1981 through 1987, and with the New Jersey Department of Transportation from 1979 through 1981. He has a Political Science degree from Edinboro State University and a Master of Public Administration degree from the University of Pittsburgh. Art is married and is the father of four teenagers!

4 / 13 / 01

FREDERICK C. OHLY

Current Position - Senior Associate General Counsel-Operations and Regulatory Affairs, National Railroad Passenger Corporation (Amtrak)

Education

Stanford Law School - JD 1968
Williams College - BA 1965

Member - Bars of the District of Columbia, U.S. Court of Appeals for the District of Columbia, and the U.S. Supreme Court

Employment History

Amtrak - 1973-current
Urban Mass Transit Administration - 1970-1973
Federal Aviation Administration - 1969-1970

In his 28 years in the Amtrak Law Department, Fred Ohly has participated in the following significant areas of railroad law and business:

- Negotiation and implementation of access agreements for 1) Amtrak use of rail lines of freight railroads and commuter authorities and 2) use of Amtrak Northeast Corridor properties for freight and commuter service. Most significant issues have been cost, performance, and apportionment of risk of damage and liability.

- Litigation before the Surface Transportation Board (and the former Interstate Commerce Commission) concerning Amtrak access to rail lines of others and access by others to Amtrak's Northeast Corridor.

- Negotiation and implementation of agreements whereby Amtrak provides operating services to seven commuter authorities nationwide.

- Rulemaking and compliance programs involving federal regulations, with extensive involvement in safety rules of the Federal Railroad Administration. Most substantial direct participation in rulemakings concerning control of alcohol and drug use, grade crossing safety, passenger equipment, and engineer certification.

- State administrative proceedings concerning specific local operating and safety issues.

- Codification of the Rail Passenger Service Act (now 49 U.S.C. § 24101 et seq.).

- Rulemaking and compliance program for Interstate Commerce Commission Regulations governing quality intercity rail passenger train service (1973-1979).

AMTRAK'S STATUTORY RIGHT OF RAILROAD ACCESS

Frederick C. Ohly
Senior Associate General Counsel-Operations and Regulatory Affairs
October 16, 2001

Background And Current Statutory Rights

- In 1971, Amtrak was totally dependent on host freight railroads for access to facilities and provision of operating services.
- Amtrak received the statutory right of access now codified at 49 U.S.C. § 24308(a).
- This subsection has been amended 4 times subsequent to its original enactment.

Background and Current Statutory Rights (cont.)

- The statute and its implementing decisions have addressed the following most significant issues:
  - access to rail lines nationwide
  - incremental cost compensation
  - additional payments based on quality of service
  - risk of liability and damage

How Amtrak Has Implemented Access To Rail Lines

- 25-year standard agreement in 1971 with all major freight railroads provided for periodic renegotiation of compensation.
- There were some ICC cases beginning in 1973 and beyond.
- Most cases have involved smaller railroads that did not have extensive experience with Amtrak.

How Amtrak Has Implemented Access To Rail Lines (cont.)

- Cost reimbursement and performance have been the major issues involved in exercise of re-negotiation right under the existing agreements.
- Access rights and the risk of liability have been major additional issues in negotiation and litigation with new railroads.

How Amtrak Has Implemented Access To Rail Lines (cont.)

- Most of Amtrak's operating relationships have been established through voluntary negotiation.
- Amtrak's original agreements expired in 1996 and most have been replaced without litigation.

Individual Railroad Relationships And Legal Proceedings

- Negotiation of agreements requires shared understandings of the parties' objectives and the facts and law that apply to the proposed relationship.
- Amtrak's statutory rights have always been the basis for its access negotiations, but Amtrak and railroads have not always agreed on the scope of Amtrak rights.

Potential Legal Issues Under Section 24308(a)

- Cost of rail line maintenance -- WSAC v. SFGT
- Performance measured by aggregate on-time performance v. minutes of delay
- Rail line capacity and Amtrak's impact on freight operations

Conclusions

- The statute has ensured that Amtrak intercity rail passenger services can be operated.
- The incremental cost standard has helped keep Amtrak costs down.
- The time, cost, and friction associated with legal proceedings do not generate good business relationships.

Conclusions (cont.)

- Amtrak and its host railroads have developed mutual understanding and respect so that there is limited reliance on STB proceedings.
- Negotiation of agreements has been essential for most of Amtrak's operations.
- Performance of Amtrak's trains can and should be better.

Conclusions (cont.)

- Amtrak still needs to improve its business relationship with host railroads but reliance on the statute may not be the most effective way to achieve that goal.
- Because of the complex projects involved, the statute may be of limited benefit to Amtrak in its efforts to implement major capital improvements on host railroads.

BIOGRAPHY
PETE SKLANNIK, JR.
CHIEF OPERATING OFFICER
VIRGINIA RAILWAY EXPRESS

Pete has an extensive background in transportation, and specifically railroads, having worked in the business since the summer he graduated high school.

During that time he secured his Bachelor of Science degree from the New Jersey Institute of Technology. He later went on to achieve his graduate degree in Urban Management and Policy Analysis from the New School for Social Research, as well as a diploma in Construction Management from New York University. He also is in possession of several post-graduate certificates in advanced specialized studies from New York University and Penn State University.

While an undergraduate student at NJIT, Pete was an Industrial Engineering intern at the Port Authority of New York and New Jersey, conducting management studies of the PATH operation as well as maintenance functions at the World Trade Center.

In 1983, Pete took a post with New Jersey Transit as an Equipment Engineer, in which he was responsible for rolling stock procurements. From there he was promoted to Special Assistant to the Executive Director.

He later accepted a position with the MTA as Project Coordinator for Long Island Rail Road's Capital Program Development in 1990. There he coordinated and managed work on projects such as the Harold Interlocking, the busiest interlocking in North America, and construction activities associated with the Penn Station Improvement Project, one of the most successful Capital Projects in MTA's history. Upon the completion of this project Pete was promoted to Director of Market Development, overseeing the core market for the Long Island Rail Road, the busiest commuter railroad in North America.

In August of 2000, Pete accepted the position as Chief Operating Officer for the Virginia Railway Express. During his first year he has grown ridership by approximately 20%, while raising on-time performance to 92%. Moreover, he has taken the reins to oversee 67 million dollars in capital improvements to the corridor, which will improve the scope and quality of service offered to the people of Northern Virginia.

THOMAS D. SIMPSON

Thomas D. Simpson joined the Railway Progress Institute as Vice President in January 1988.

As vice president, Mr. Simpson develops and implements RPI's lobbying goals and strategies. He staffs RPI's passenger, train control technologies, freight intermodal, equipment leasing, and maintenance-of-way committees.

From 1988 to 1992 he was Vice President, and from 1992 to 1996, President of the Operation Lifesaver, Inc. Board of Directors. He currently is RPI's representative on the OLI Board, and lobbies Congress for that volunteer grade crossing safety organization. He was a member of DOT's Blue Ribbon Panel, formed to investigate highway-rail grade cossing safety issues in the aftermath of the Fox River Grove, Illinois grade crossing accident.

Prior to joining RPI, Mr. Simpson was deputy director of the Federal Railroad Administration's Office of Public Affairs. In that position he served as spokesman for FRA on a variety of topics including rail safety, Amtrak, and the sale of Conrail. He also served as FRA's liaison to Capitol Hill.

Mr. Simpson has also held positions with the Transportation Association of America, the Slurry Transport Association, and the U.S. House of Representatives.

A graduate of Lafayette College in Easton, PA, Mr. Simpson holds a Masters Degree in Public Administration from American University in Washington, D.C. He currently resides in Arlington, VA with his wife Ann.

GARBAGE IN, GOSPEL OUT

THE WORD...

According to the Model

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Modeling

The subject of this paper is train operations simulation to analyze the physical and operational improvements required for improved high-speed intercity passenger service in rail corridors owned by freight railroads. As we all know, a simulation exercise models reality. Simply stated, a model is a conceptual representation of reality. When used properly, simulation modeling can be a powerful tool. In less experienced hands, the resulting model can be misleading. A variety of models are available to provide decision-making input to public officials. These include:

- Ridership,
- Traffic Flow,
- Revenue,
- Operating and Maintenance, and
- Train Operations Simulation.

The planning process is interactive, requiring the cooperation of the owner-railroad, Amtrak, and any commuter agencies that will operate trains in the corridor. Once the initial study is complete and a determination made to implement, the sponsoring agency and the railroad(s) owning the corridor negotiate must reach agreements on a variety of issues. All agreements should enable freight and passenger trains to operate without delay to either, and to allow for the growth of both. To this end, freight railroads normally will perform their own assessments of the effectiveness of the recommended capacity improvements, at the expense of the agency.

Operations simulation is a data-intensive process; the success of the entire process depends on the validity of its methods and the soundness of the data inputs. The quality of the results depends on the soundness on the data used as input, the validity of the assumptions contained in the model, the methods and procedures used, AND the skills and knowledge of the analysts involved.

GIGO

GIGO is an acronym that has been part of our vernacular for decades. It stands for: ***Garbage In, Garbage Out***, in recognition of the potential for failures in decision making due to faulty, incomplete, or imprecise data. Recently, however, an expanded definition has been ***Garbage In, Gospel Out***, in recognition of the trend to blindly accept data generated by a computer.

Simulation modeling is an expert process, with a limited number of practitioners. The process can be fraught with the potential for reaching conclusions based on incorrect data or assumptions. In addition, it's possible to reach an incorrect conclusion due to a faulty analysis of a valid simulation. This is called ***Gospel In, Garbage Out.***

The expertise and knowledge necessary to successfully implement the operations simulation modeling process is unique, requiring the integration of railroad engineering, railroad operations, and computer programming expertise. Consequently, the number of qualified Practitioners is limited. Numerous operations simulation programs have been created over the last 30-plus years. While their ultimate goal of conceptually replicating potential real-world situations is similar, **most modeling programs are unique**.

Operations simulation modeling is a cost effective analytical tool. It is much less expensive to simulate the proposed improvements than to build and test them on a live operating railroad. Simulation programs generate numerous analytical reports and the results are displayed either as time vs. distance stringlines or as two-dimensional animations of the rail line modeled.

The Glitter of Graphics

Quick results, presented with animated, detailed, full-color graphical interfaces tend to give users a false sense of security in the model's "answers," adding to this blind acceptance of the results. Additional examples of this phenomenon include:

Blind Acceptance of Information Provided by Web Sites

Many people have the tendency to unquestionably accept data obtained through search engines. However, consider that:

- It's often difficult to determine the author of a site,
- There's a lack of basic quality standards – anyone can create a site and publish,
- Most information available is unfiltered, and
- Quite frequently the web often functions as a soapbox to proselytize personal opinions.

A more jaundiced approach should be taken prior to accepting and utilizing data obtained as the result of an Internet search.

Blind Acceptance of the Results of Spell Checker

All of us have fallen under the spell of the tools incorporated in modern word processing programs; we have developed a tendency to have blind faith in the correctness of anything that does not have a red line under it on the screen. However, when you consider that the dictionary incorporated in the word processor has been manually entered with an unknown level of checking, this might be ill advised. Furthermore, spell check does not correct incorrectly used words, i.e., from instead of form.

Operations Simulation Modeling

Simulation modeling is a valuable tool in the high-speed rail decision-making process. But, judgment and experience are required to properly develop the data input, evaluate the assumptions incorporated in the model, analyze the results of the simulation, and develop conclusions as to the acceptability of the results and/or the development recommendations to be further tested.

The simulation modeling process requires the following steps:

- Acquire and analyze data,
  - Physical and operational;
  - Become familiar operations and facilities;
- Identify and document constraints to existing and proposed operations;
- Design and develop the simulation;
- Verify and validate the model;
- Define alternatives to be tested;
- Run the model and analyze the results; and as necessary
- Revise and re-run the model; and finally
- Document the model, results, methodology, and recommendations.

The simulation model requires high-quality, appropriate input data relative to the facility enhancements to be tested and the level of passenger and freight service to be supported. Most importantly, the various models incorporate:

- A decision-making capability intended to optimally move all types of trains over the system model, and
- Tools to generate reports to assess the output generated by the model.

Train simulation modeling has a variety of applications, including:

- Evaluating the effect of changes to train operations in existing corridors,
- Testing the effectiveness of improvements,
- Evaluating the reliability of proposed timetables, and
- Assisting in the signal system design process.

Mitigate Existing Problems

Operations simulation modeling can be used to test and evaluate infrastructure and/or operational changes to eliminate or minimize the affect of existing reliability problems.

Evaluate Effect Of Changes

Operations simulation modeling can be used to evaluate the effect of changes, such as:

- Introduction of new train service(s)
  - Freight,
  - Commuter,
  - Intercity;
- Increases in existing service levels; and
- Introduction of incremental high-speed service.

The options to be tested have to be thoroughly documented and the testing process established to identify the cause-effect relationships of the alternatives.

Effectiveness Testing

The models will test the effectiveness of a variety of physical and operational changes to the system being modeled, including:

- The construction and location of additional sidings;
- The construction of additional tracks;
- The construction of new or the revision of existing interlockings;
- The construction of enhancements to the signal system;
- The implementation of new or revised operating plans; and
- Proposed timetable changes.

The High-Speed Rail Planning Process

The high-speed planning process historically has been initiated by federal, state, or regional public agencies. Amtrak also has been active in the planning and analysis of high-speed lines. Generally, considering the highly specialized nature of the process and staffing limitations, consultants perform the facility and operations improvement analyses. The input and cooperation of freight railroads, Amtrak, and commuter agencies is essential to the success of the process. The FRA has developed *Recommended Corridor Planning Guidelines* to ensure uniformity of the process. The planning process results in the development of a recommended set of improvements, complete with estimates and a rank ordering of priorities. The recommendations are then evaluated by the appropriate agencies and serve as the basis for a business plan, the implementation of which requires negotiation with the freight railroad(s) that owns and operates the corridor.

Negotiating With The Freight Railroads

The negotiating process usually is protracted. Successful completion results in a plan to implement physical and operational changes that enable high-speed, and other passenger improvements, to proceed. Over the years, the freight rail industry and individual railroads have developed positions relative to the initiation of high-speed rail operations.

Briefly, my interpretation of their intent is as follows: the freight railroads objective is to protect their ability to conduct and grow their business of delivering reliable, competitive, high-quality transportation of freight by rail. In turn their success will benefit customers, employees, and shareholders.

For a variety of reasons, the freight railroads generally have concluded that the initial findings or conclusions developed by the corridor planning process are hypothetical and subject to more rigorous analysis by their staff railroad operations planners. These individuals are responsible of the validation of the appropriateness of improvements to their railroad facilities. Therefore, prior to initiation of construction and subsequent improved passenger service, the railroad(s) reserve the right to perform their own assessment (at the expense of the agency) of their needs to protect their freight operating capacity. Their position is that they alone are the final authority on any capacity-related issues.

Evaluating The Effectiveness Of Analysis Of The Planning Process

The operations simulation-modeling process is complex, time consuming and costly, but still is cost effective. The evaluation of the operational effectiveness, the practicality of the results, and the reasonableness of the recommendations is a complex matter, best accomplished by an impartial professional.

Garbage? Gospel?

Simulations developed by apparently reasonable approaches, incorporating facility and traffic level assumptions agreed by a study advisory group, that appear quite good to the inexperienced reviewer, could in reality be faulty and in need of reconsideration.

The creditability and critical acceptance of a simulation, at a minimum, is dependent upon the:

- Validity of supporting data;
- Soundness of the decision making logic incorporated in the model;
- Level of railroad cooperation in the development of the input data;
- Capability of the facility and operations analysts;
- Objectivity of the analysis;
- Availability of adequate funding to acquire data, develop model, and analyze data; and
- Adequacy of the documentation supporting the analysis.

Ultimately, **the wrong approach gets the wrong answer**.

Three Hypothetical Analyses

Three hypothetical situations are presented and analyzed in the following subsections. They portray the unintended consequences of shortcomings in the simulation process.

Simulation No. 1

Goal: Identify requirements to initiate and support 3 levels of incremental high-speed rail.

Assume: Freight service increases with each level of high-Speed rail.

Result: Significant level of facility modifications required.

Conclusion: Impossible to define which increases resulted in need for individual modifications.

Simulation No. 2

Goal: Verify requirements to initiate and support high-speed rail service.

Assume: Significant modification to rail line to accommodate high-Speed rail and protect freight capacity

Result: Animation and stringlines indicate smooth, trouble-free operation

Conclusion: Alternatives to achieve acceptable level of delay were not tested. Simulation inadequate to support business case and funding decision.

Simulation No. 3

Goal: Verify requirements to initiate and support high-speed rail service on a rail line with centralized traffic control installed. The line is a combination of single and double track; has three significant freight yards located adjacent to it. Sizable level of local freight service along the line.

Assume: The yard capacity and track availability within them are undefined. Yards are assumed to be infinite capacity sinks. Since industries served and service patterns are not known to study team, time of operation is input as a series of constant time vs. distance operations.

Result: Animation and stringlines indicate smooth, trouble-free operation

Conclusion: Facility improvements understated; consequently alternatives to achieve acceptable level of delay were not tested.

Garbage? Gospel?

On the surface, the simulation assumptions would appear to be reasonable based on the data available to the study team. The reports would have recommended a level of improvements that appeared feasible based on the assumptions built into the analysis. The output of the simulation would have concluded that the public agency should invest in the addition of capacity to the rail lines involved. The business plan based on the process would have been prudent and the railroad/owner should have been satisfied, based on level of delay that would have resulted from implementation of the improvements.

However, Upon Further Review

A detailed, professional, unbiased analysis of the operations simulation would have concluded that each of the business cases was unjustified, and significant additional review of the assumptions, facility recommendations, and conclusions is justified.

Avoiding The Pitfalls - Lessons learned

Operations simulation modeling is a powerful tool that can establish the basis for a successful business plan. Building upon the recommendations developed by the modeling analysis, state, regional, and local agencies can develop effective strategies to invest in the nation's private rail network. Experience gained from 25 years of evaluating the feasibility of high-speed rail corridors has identified several guiding principles that will assist in the successful analysis of alternatives and the development of a cost effective program of improvements. These "lessons learned" are as follows.

Cooperation Of Railroads Is Essential

Involve the freight railroads early in the planning process. Institutional relationships require consistent and constant attention. Cooperation and involvement will ultimately minimize distrust, avoid turf wars, and thereby contribute to successful negotiations.

Unfortunately the freight railroads are not staffed to support the magnitude of ongoing light rail, commuter rail, and high-speed rail studies that are ongoing at any one time. Recognize this from the start and use this limited resource wisely, paying for it if necessary.

Data Acquisition Must Be Exhaustive

Cooperation is two-way street. Rail planning studies generally request the same data on physical facilities, existing operations, and best guess forecasts for the short-, mid-, and long-term. Provision of the data, participation in strategy development and the review of the modeling process should be regarded as a prudent investment on the part of railroads and the public agencies. Funding of that investment is, of course, subject to negotiation. However, it is in the best interests of all parties to avoid doing the study twice, first by the agency and then by the railroad. Do it once, do it cooperatively, and avoid the pitfalls of faulty input and conclusions.

Detailed Assessment Of Facilities And Operations Is Critical

Modeling is not the only expert process involved. The expertise and judgment of experienced facility and operations analysts is the key to the development of appropriate alternatives to be evaluated by the simulation process. Human, not artificial, intelligence identifies the issues and constraints, and develops practical solutions.

While main line capacity and operations are critical, don't overlook terminal and local train operations. The setting off and picking up of cars at yards and terminals adjacent to the main line often requires trains to occupy the main track for extended periods of time. At many locations, very often a second train, frequently headed in the opposite direction, will attempt to perform the same function. Local trains frequently work when passenger trains want to operate. On single, and even multiple, track railroads their operation consumes capacity and cannot be overlooked. Devising successful strategies to avoid delaying through passenger trains requires a time-consuming, thorough analysis by experts.

The Power Of *Why*

Question everything – the validity of the input data, the logic within the "black box" model, and the rationale for the conclusions. Don't accept: "we've done it that way for the past 20 years." Quite often, a subtle operating change can avoid an expensive facility alteration.

The Ripple Affect Of Change

Never forget - each corridor is part of a regional /system wide network. Railroads should not be expected to alter a schedule of a through freight to avoid a conflict in your corridor. The affect of an apparently minor change can have a serious ripple affect on the railroads operations. For example, our recent analyses of operations between Washington, D.C. and Petersburg, VA had to be performed in the context of CSX's operations between the states of New York and Florida.

Simulation Is Only A Tool, Not A Substitute For Good Judgment

Simulation is an expert process, which must be viewed with an informed skepticism. Always ask, "Does it pass the common sense test?" In particular, always understand the assumptions underlying black box solutions. Is the model's logic appropriate for the operation being simulated? For 20 years until 1995, our simulation practice had concentrated on the Northeast Corridor; our program had functioned extremely well as a multiple track analytical tool. Starting with the Washington – Richmond corridor, and continuing through the Richmond – Charlotte corridor, we adapted our decision-making logic, and revised the manner in which we wrote our models to reflect the predominantly freight, and often, single-track environment we analyzed.

The Need for Objectivity

It is essential that the analysis be objective, whether the client is the public agency or the railroad company. An effective rail operations simulation must not reflect the specific political or economic goals of either party. If results are manipulated in any way for the benefit of one party or the other, achieving an agreed solution will not be easy.

Thoroughly Document Work Performed

Final reports frequently are brief and intended as documents to be comprehended by the non-railroader. This is all well and good, however, it is essential that the supporting documentation be made available through additional volumes or appendices. We need to sell our product to the freight railroads as well as to decision makers and the general public.

Public agencies should allow for adequate time in a study's schedule to enable the analytical process to be well documented. The technical documentation should include, as a minimum, a thorough discussion of:

- Problems identified and analyzed;
- Site-specific alternatives considered to mitigate these problems;
- The simulation methodology;
- Alternatives tested, those that had passed the common sense test and been selected for detailed simulation;
- Performance measures and tools used to evaluate the simulation results; and
- The conclusions reached and the rationale for them.

Adequately Fund the Corridor Analysis and Simulation Effort

There is a distinct dichotomy between the limited availability of public funding for the study process and the fact that the simulation process is costly. There also is an element of suspicion - we the consultants can be seen as driven more by the profit motive than the public welfare. It is difficult to establish a unit cost to undertake a simulation study. The cost varies with the complexity of the operation to be analyzed, the configuration of the existing rail structure, the level of cooperation received, and the level of participation by other agencies required.

Overall, it is advisable that the sponsoring agency spends its money wisely upfront; negotiates a fair contract value, clearly defines the work to be performed and deliverables to be received, provides adequate time to perform the analyses, and sets aside adequate reserves to compensate the consultant, or railroad, for justifiable, reasonable cost increases. The reward of a well-managed operations analysis is a viable, cost-effective improvement program that the railroads will buy into. The public and the railroads will reap the benefits of cost effective, efficient train operations.

It is essential that the study process acquires, and prudently uses, the data necessary to make well-informed, cost effective decisions.

What Will It Be?

The operations simulation modeling process can and should result in meaningful data that will support the development of a mutually acceptable corridor development plan. A limited number of previous efforts have been successful. Many have not avoided the pitfalls discussed in this paper. What will it be?

- Garbage in, garbage out
- Garbage in, gospel out
- Gospel in, garbage out
- Gospel in, gospel out

The choice is clear. Achieving clarity requires powerful tools used with experience, judgment, and collaboration.

EXAMPLES OF SCHEDULE "PADDING" (AKA "RECOVERY TIME"):

TRAIN NO. / NAME	FROM / TO	MILES	MINUTES	AVG. SPEED
30 *Capitol Ltd.*	Alliance / Pittsburgh	84	125	40.3
29 *Capitol Ltd.*	Hammond / Chicago	16	100	9.6
48 *Lake Shore Ltd.*	Elyria / Cleveland	25	63	23.4
49 *Lake Shore Ltd.*	Albany / Schenectady	18	65	16.2
49 *Lake Shore Ltd.*	Hammond / Chicago	16	80	12.0
43 *Pennsylvanian*	Hammond / Chicago	16	97	9.6
44 *Pennsylvanian*	Elyria / Cleveland	25	56	26.4
352 *Twilight Ltd.*	Dearborn / Detroit	8	37	12.6
303 *Ann Rutledge*	Alton / St. Louis	27	75	21.6
58 *City of New Orleans*	Homewood / Chicago	25	76	19.2

SOURCE: AMTRAK NATIONAL PUBLIC TIMETABLE, 4-29-01

AMTRAK PERFORMANCE ON SELECTED ROUTES, UPDATED:

The following tally represents the cumulative on-time performance over the selected routes. The dates reviewed were intermittent during the period Aug. 1st through Oct. 12th.

ROUTE	NO. OF DAYS	NO. OF TRAINS	TRAINS O. T.	O. T. %
CHICAGO / ST. LOUIS	42	125	47	38%
ST. LOUIS / CHICAGO	43	143	9	6%

MEMPHIS / CHICAGO	42	42	10	24%
DETROIT / CHICAGO	44	130	18	14%
CHICAGO / DETROIT	43	126	12	10%
SYRACUSE / NEW YORK	43	170	19	11%
NEW YORK / SYRACUSE	43	169	35	21%
WASHINGTON / CHICAGO *(CAPITOL LIMITED)*	50	50	17	34%
CHICAGO / WASHINGTON *(CAPITOL LIMITED)*	50	50	8	16%
NEW YORK / CHICAGO *(LAKE SHORE LIMITED)*	50	50	6	12%
CHICAGO / NEW YORK *(LAKE SHORE LIMITED)*	50	50	3	6%
ALBANY / BOSTON *(LAKE SHORE LIMITED)*	34	34	5	15%
BOSTON / ALBANY *(LAKE SHORE LIMITED)*	39	39	9	23%
NEW YORK / CHICAGO *(THREE RIVERS)*	37	37	25	66%
CHICAGO / NEW YORK *(THREE RIVERS)*	45	45	15	33%
CHICAGO / PHILADELPHIA *(PENNSYLVANIAN)*	44	44	14	32%
PHILADELPHIA / CHICAGO *(PENNSYLVANIAN)*	36	36	26	72%
[TOTALS]		1340	278	21%

Of the 1062 delayed trains, 374 (35%) were 30" or less late, 319 (30%) were between 31" and 1' late, 212 (20%) were between 1' and 2' late, and 157 (15%) were more than 2' late.

The best performing train of those reviewed was #303 *(Ann Rutledge)* which was on time 38 of 41 dates, or 93%. The average delay was 32".

The worst performing train of those reviewed was #22 (Texas Eagle) which had a zero on-time performance for the days checked. The average delay for this train was 4' 34".

For comparison, the average delays of other trains / services were:

NEW YORK / SYRACUSE	37"	
SYRACUSE / NEW YORK	54"	(Increased by the inclusion of #48 and #64).
DETROIT / CHICAGO	43"	
CHICAGO / DETROIT	45"	
BOSTON / ALBANY	34"	(200-mile run; has a negative impact on #49.)
MEMPHIS / CHICAGO (*CITY OF NEW ORLEANS*)	55"	(Total run of 926 miles is comparable to *Lake Shore Limited.*)
WASHINGTON / CHICAGO (*CAPITOL LIMITED*)	54"	
CHICAGO / WASHINGTON (CAPITOL LIMITED)	1' 20"	
NEW YORK / CHICAGO (*LAKE SHORE LIMITED*)	1' 31"	(Adversely effected by performance of #449, Boston section.)
CHICAGO / NEW YORK (*LAKE SHORE LIMITED*)	1' 55"	

[SOURCE: AMTRAK WEB-SITE TRAIN STATUS SCREEN]

Kenneth G. Sislak
Wilbur Smith Associates

BIOGRAPHY

Ken Sislak is a Vice President of Wilbur Smith Associates with worldwide responsibility for managing the public transportation practice within the Firm. Ken has over 25 years of experience in the public transit industry and has been involved in a variety of consulting assignments involving feasibility assessments of potential rail transit and bus rapid transit service initiatives throughout the world. He is managing a feasibility study of metro rail rapid transit in Dubai and is currently working on the Cleveland Airport Area Transit Options Study. Ken recently assisted in the completion of the Draft Environmental Impact Report of the BART-Oakland Airport Connector and was the project manager for the preparation of the Greater Cleveland RTA Red Line Extension Draft Environmental Impact Statement.

In addition to these current assignments, Ken managed several commuter rail feasibility studies in Minnesota, Florida, Iowa and Ohio and assisted in the preparation and review of reports for intercirty rail passenger service in Ohio, South Carolina and Mississippi. Ken also recently completed light rail feasibility studies in Rochester, New York and Nashville, Tennessee.

Ken's international experience includes managing a transit improvement study in Kingston, Jamaica for the World Bank and was a project economist for the privatization of government sector enterprises in Egypt for United States Agency for International Development (USAID).

Prior to joining Wilbur Smith Associates, Ken held various executive management positions in private industry and public transit. Ken is the former Director of Rail Operations with the Greater Cleveland Regional Transit Authority and had the responsibility for managing two railcar procurements.

Ken has a BA *(cum laude)* in Economics from John Carroll University, an MBA from Case-Western Reserve University and completed all course requirements for an MPA in Public Finance from Cleveland State University. Ken is a member of *Omicron Delta Epsilon*, International Honor Society in Economics and *Beta Gamma Sigma*, the National Scholastic Honor Society in Business and Administration.

Ken is a Vietnam veteran and served as a combat infantry officer with the 9th Infantry Division where he was decorated for valor. After completing an assignment in Germany, Ken was discharged with the rank of Captain and was decorated for meritorious service.

LONNIE E. BLAYDES, JR.

Mr. Blaydes began his career in 1977 as Attorney Advisor for the Interstate Commerce Commission in Washington, D.C., where he worked on a variety of rail, bus, and trucking regulatory issues.

In 1979, Mr. Blaydes moved to the Office of Special Counsel, which is an office established by Congress and the Commission to assist communities, small shippers, and others that normally do not have the ability to effectively present their views to the Commission. His primary focus areas were rail abandonment/consolidation/construction; intercity bus rates; and independent truckers.

Mr. Blaydes' tenure at Dallas Area Rapid Transit (DART) began in September 1985 as Assistant General Counsel, where he was responsible for governmental issues such as open meetings and open records; interpreting DART's enabling legislation and advising on changes to that legislation; interlocal agreements with municipalities in the DART service area; negotiations, purchase, and administration of DART's rail corridor acquisitions; as well as general legal administrative responsibilities.

In October 1994, Mr. Blaydes became Vice President of DART's new Commuter Rail and Railroad Management Department. Phase I of the commuter rail service between South Irving (near DFW Airport) and downtown Dallas began operation on December 30, 1996. Expansion service to downtown Fort Worth is planned for October 2001.

In April 1998, Mr. Blaydes was elected by his peers as Chair of the American Public Transit Association (APTA) Commuter Rail Committee. This Committee takes the industry lead in developing and presenting commuter rail issues to Congress, Federal Railroad Administration (FRA), Federal Transit Administration (FTA), and North American freight railroads.

Mr. Blaydes and his wife, Kathleen, have a daughter and two sons. The family is very active in church and school activities.

Michael W. Franke, P.E.
Amtrak
Chicago, Illinois

CAREER EXPERIENCE

08/2000 - Current	**NATIONAL RAILROAD PASSENGER CORPORATION (AMTRAK)** *Assistant Vice President & Program Director – Midwest Regional Rail Initiative*
1999	**WISCONSIN CENTRAL TRANSPORTATION COMPANY** *Executive Vice President*
1993 – 1999	**THE BURLINGTON NORTHERN AND SANTA FE RAILWAY COMPANY** *Vice President & Chief Engineer*
1990 – 1992	**THE SANTA FE RAILWAY COMPANY** *Vice President Maintenance (ATSF), Mechanical and Engineering*
1985 – 1990	**CHICAGO SOUTH SHORE & SOUTH BEND RAILROAD** Regional Commuter and Freight Railroad *Vice President Operations*
1969 – 1985	**NORFOLK & WESTERN RAILWAY COMPANY (NW)** Various operating and engineering/maintenance positions of increasing responsibility, including system assignments.

EDUCATION

- M.S. Railway Civil Engineering, University of Illinois
- B.S. Civil Engineering, Washington University, St. Louis, MO

AFFILIATIONS AND MEMBERSHIPS

- American Railway Engineering and MW Association (Former President; currently Treasurer and Finance Committee Member)
- American Association of Railroad Superintendents
- American Society of Civil Engineers
- Registered Professional Engineer in Two States
- National Academy of Science, High Speed Rail Committee

Portrait of - MICHAEL HOLOWATY, P.E.
SENIOR PROJECT MANAGER, Parsons Transportation Group
Author of: ***Garbage In – Gospel Out: When Modeling, Does, Or Doesn't Work***

Michael Holowaty, P.E., is a civil engineer and transportation planner. He has spent the last 36 years in the planning, programming, design, and maintenance management of railroad, rapid transit, and commuter rail facilities. He is a specialist in high-speed railroads. His Masters from Polytechnic Institute of New York is in Transportation Planning.

Michael has been with Parsons Transportation Group (PTG) for 28 years. Prior to that he was with PATH and the Pennsylvania Railroad.

His most recent projects have been the development of Corridor Transportation Plans for the Charlotte - Richmond, Philadelphia - Harrisburg, Washington - Richmond, and Richmond – South Hampton Roads corridors. These efforts identify the long-range improvements required to ensure the viability of intercity, commuter, and freight services anticipated for the years 2015-2020. Modeling of train operations is an integral element in the systematic identification and validation of cost-effective improvements to accommodate projected levels of intercity passenger, commuter, and freight trains.

Michael managed PTG=s effort in support of the FRA=s High-Speed Rail *Commercial Feasibility Study*. This work included the development of models to estimate operating and maintenance expenses for High-Speed Ground Transportation systems, their external costs and benefits, income from ancillary revenue sources (parking, concessions, high-speed freight, etc.) and review and analysis of liability provisions for HSGT.

From 1990 to 1992 Michael was **Chief Engineer, Transportation Systems** for the Joint Venture team of international engineering consultants acting as Technical Adviser to the Banking Syndicate financing the **Channel Tunnel Project**. He monitored design and construction and published Transport System and Risk Analysis Reports, detailing performance progress.

October 1, 2001

William D. Burgel

Mr. Burgel has more than 28 years of experience in the areas of engineering and railway operations, for both passenger rail and freight rail applications. He is manager of railway operations for HDR and serves as project manager/project engineer for railway and transportation engineering projects throughout the nation. Mr. Burgel understands the importance of the total integration of the light rail transit system into the corridor it is intended to serve, throughout the planning, design and implementation phases.

Education
M.S., Geology, Idaho State University, 1986
B.S., Engineering, University of Michigan, 1971

Registration
Professional Geologist, OR, ID

Professional Endeavors
HDR Engineering, Inc. 1997 – Present

BRW, Inc. 1993 – 1997

RZA, AGRA, Inc. 1989 – 1993

Union Pacific Railroad 1973 – 1989
Conrail 1971 – 1973
Norfolk Southern 1970

Professional Activities
American Railway Engineering and Maintenance Association
Pacific Northwest Association of Rail Shippers
Transportation Research Board
Puget Sound Freight Mobility Roundtable

WILLIAM D. BURGEL, R.G.

Education
M.S., Geology, Idaho State University, 1986
B.S., Engineering, University of Michigan, 1971

Registration
Professional Geologist, OR, ID

EXPERIENCE

Mr. Burgel has more than 28 years of experience in the areas of engineering and railway operations, for both passenger rail and freight rail applications. He is manager of railway operations for HDR and serves as project manager/project engineer for railway and transportation engineering projects throughout the nation. Mr. Burgel understands the importance of the total integration of the light rail transit system into the corridor it is intended to serve, throughout the planning, design and implementation phases. .

PROJECT EXPERIENCE

Passenger Rail

South Metro Amtrak Station Siting Study, Clackamas County, Oregon. Member of a team that established a new train station on the southern edge of the Portland Metropolitan area. Mr. Burgel coordinated the interface effort with Union Pacific representatives who wanted to make sure that the station was placed in a location that would minimize impact to their on-going train operations. Dispatch modeling was also used to minimize delay to passenger trains stopping at the station.

Pacific Northwest High Speed Passenger Rail, Design Services for the State of Oregon Department of Transportation, Salem, OR. Member of the team working on the Environmental Assessment of the State of Oregon portion of the federally designated passenger rail corridor which extends from Vancouver, BC to Eugene, OR. Mr. Burgel is involved with the interface between ODOT and the Union Pacific Railroad, on whose tracks the intercity passenger trains will operate. Factors considered critical in the selection of the appropriate track and signal improvements to be recommended for construction include: daily freight schedules, both through trains and locals, yard design, siding spacing and location, track speed, and at-grade highway crossing locations. Other environmental impacts are also being addressed such as: proximity to the Willamette River, air quality, noise impacts, and land use. Also critical is the fact that Union Pacific is still in the process of integrating the Southern Pacific Railroad into its system and as a result, the study team must incorporate changes in what was considered the traditional operating plan.

Station Location Analysis – Pacific Northwest Intercity Passenger Rail Program – Oregon Department of Transportation, Salem, OR. Working with agency officials, conducted an alternatives analysis study for the Cascades West region of the Willamette Valley that included the communities of Albany, Corvallis and Lebanon. Participated in several public meetings involving the steering committee as well as interested citizens. Mr. Burgel focused on the interface with the Southern Pacific (SP) and ensuring that SP remained informed during the analysis.

Commuter Rail Systems

Commuter Rail Feasibility Study – LYNX, Orlando, Florida. LYNX is investigating the feasibility of implementing a limited-service commuter rail network between Deland and Kissimmee through Orlando's central business district. This system would operate on CSX's mainline that currently supports over Amtrak passenger and CSX freight trains daily. Mr. Burgel is interfacing the modeling efforts being developed by CSX with LYNX as well as Amtrak. Schedule refinements are then incorporated to establish the track and signal improvements

necessary to minimize delay to existing and contemplated train schedules.
Commuter Rail Interface – Virginia Railway Express – Arlington, VA Mr. Burgel is assisting VRE in their on-going negotiations with CSX. Recently, VRE has requested a 7-10 train per day service expansion. This increase in train service was modeled by CSX and their consultant, CANAC. These results were analyzed to determine staging both in terms of funding as well as when these new trains could be placed in service.

Commuter Rail Study, Fatal Flaw Analysis - Washington County, OR. Sponsored by various Washington County communities, Mr. Burgel managed the first commuter rail study in the Portland area along the Wilsonville-Beaverton corridor. This study focused on (1) understanding the interface between the freight rail operator (Portland & Western RR) with the underlying Class 1 railroads: Union Pacific and Burlington Northern Santa Fe, (2) developing ridership data, and (3) determine track capacity based on ridership data. This effort resulted in a follow-on preliminary engineering study intended to result in a "new start" designation by FTA. Mr. Burgel is rail operations manager for the next phase of the work effort.

Commuter Rail Feasibility Study - Regional Transit Council, Vancouver, WA. Managing the rail operations aspect of this bi-state study, Mr. Burgel is assisting the Regional Transportation Council in its analysis of assessing the feasibility of in initiating commuter rail service from Vancouver, WA to Portland OR. Study issues include: freight rail interface with BNSF and UP, intercity passenger train interface with Amtrak, WSDOT and ODOT, Columbia River bridge opening frequency, ridership figures derived by the agency, station siting analysis, and an operation plan.

Commuter Rail Planning Charette, Austin-San Antonio Business Coalition, Austin, TX. This 3-day work session involved the Union Pacific Railroad (UPRR), Capitol Metro, members of the Austin Transportation Study (ATS), and Texas Department of Transportation included a group of consultants selected for their expertise in developing a workable commuter rail implementation strategy. The charette concluded with a three-phased approach that involved a collaboration of ideas between HDR, the business coalition, and UPRR.

Commuter Rail Feasibility Study – Alaskan Railroad Corporation, Anchorage, AK. As part of a team, Mr. Burgel is managing the rail operations and equipment selection of two related studies for the Alaskan Railroad. One portion of the study is focused on the equipment and run-time for a proposed passenger rail service between Seward and the new rail terminal that is scheduled to be constructed at Anchorage International Airport. The second aspect of the study seeks to incorporate the equipment chosen for the Seward-Anchorage corridor in a potential commuter rail corridor between communities just to the north of Anchorage and the Central Business District.

Commuter Rail Study, System Level Analysis – Tri-Met, Portland, OR. As part of a team assembled by Tri-Met, conducted a feasibility study of a potential commuter rail service between Portland through Oregon City to Canby. Three levels of service were developed. Costs associated with the various levels were determined through an examination of the existing Union Pacific (UP) trackage and through discussion with local UP representatives. Equipment utilization schedules, developed to reflect the levels of service, were used to determine equipment costs, maintenance facility location, storage track capacity and location, and track and signal improvements.

Freight Rail Interface Issues Analysis - Regional Transit Authority (RTA), Seattle, WA. Assisted in examining the impacts the proposed commuter service might have on the existing freight operations of Burlington Northern Santa Fe (BNSF) and UP Railroads. Factors both internal and external to the railroad were analyzed in terms of the potential impact these factors might have on the ability of BNSF to accommodate the increased levels of passenger train service. Also assessed the track and signal improvement package submitted by BN for the use of their main line to handle commuter and increased through-passenger train service. Recommendations were submitted to RTA staff for review.

Light Rail Projects

Negotiations and Design Review for the siting of Sound Transit's Maintenance Facility – Seattle, WA. Mr. Burgel recently assisted Sound Transit in their effort to locate a maintenance facility in conjunction with the establishment of a minimal operable segment (MOS) for the first phase of their LRT system. As part of the negotiating team, Bill's role was to work with several rail shippers who might have been potentially displaced by one or more of the alternatives under consideration. He also worked with maintenance facility's (LTK) design engineer in establishing a minimal footprint for the maintenance facility. These designs were in turn integrated with the various LRT corridors under consideration.

Negotiations and Design Review related to Tri-Met's proposed South/North LRT alignment for the portion adjacent to the Union Pacific Railroad – Union Pacific Railroad, Portland, OR. Manager of the team responsible for representing the interests of Union Pacific Railroad as they pertained to the proposed alignment of Tri-Met's South/North LRT system. Right-of-Way, clearance issues, interface with the Pacific Northwest Passenger Rail corridor, issues related to the integration of the Southern Pacific railroad into the Union Pacific as well as long range freight capacity issues all affected the negotiations initiated by Tri-Met. The talks centered on the needs of Union Pacific in regards to a large classification yard that could potentially be affected by the LRT alignment.

Environmental Impact Statement - Railroad Interface for Tri-Met's South/North LRT System, Portland, OR. Compiled and analyzed the various impacts of the proposed South/North LRT alignment would have on the Portland Metropolitan Area's railroad network. This analysis focused on rights-of way issues, at-grade crossing impacts which involved shared crossings, and sight-distance issues. Also considered were the LRT impacts on truck access for the Albina and Brooklyn intermodal yards.

Geotechnical Interface for Tri-Met's Westside LRT System, Portland, OR. Managed the interface between Tri-Met and the numerous geotechnical issues that faced the design team daily. Responsible for defining work scopes and budget amounts as well as negotiating with the geotechnical firms on contractual issues. Scope items included subsurface explorations involving both test pits and borings, slope stability analysis, and surcharge calculations for highly compressible soils.

On-Call (Railroad-Related) Design Services for Tri-Met, Portland, OR. Assisted Tri-Met in the conceptual level planning of various designs involving the interface of the light rail system with freight railroads. Included under this work effort was a conceptual analysis of the best approach to construct a grade separated crossing of the South/North (S/N) LRT alignment with BNSF's Vancouver to Pasco Mainline. Several scenarios were analyzed and presented to the railroad for their input. This analysis resulted in the adoption of a construct-in-place ballast decked bridge which was then included in the S/N alignment package as the preferred method to intersect with the BNSF.

Freight Interface Issues for Utah Transit Authority, Salt Lake City, Utah. Assisted UTA in the design and procurement of materials for the SLC to Sandy portion of the Light Rail Transit System now under construction. Mr. Burgel's involvement included the (1) sequencing of construction in order to provide rail service to rail-served customers along the alignment, design issues surrounding clearance requirements, and (3) procurement of rail for the twinned portion of the existing branch main.

Railroad Negotiations - Tri-Met's Westside LRT System, Portland, OR. Assisted Tri-Met in the preparation of a four-party agreement involving the acquisition of a portion of BNSF's Oregon Electric Branch Main for inclusion in the Westside LRT Corridor. The BNSF corridor was identified during the previously performed alternatives analysis as being the preferred alternative for the Westside LRT alignment. Negotiations involved Union Pacific, Southern Pacific, as well as BNSF.

Quality Control - Tri-Met's Westside LRT System, Portland, OR. Managed Quality Control/Quality Assurance for the 65% and 95% engineering design efforts on trackwork issues for Tri-Met's Westside LRT. This review focused on an integration of the various disciplines including trackwork that must mesh together for a system to operate successfully. In addition, Mr. Burgel reviewed specifications and procurement contracts for track components, ballast and other track related items.

Capacity/System Studies/Negotiations

Functional Review – Network Operations Center – Burlington Northern Santa Fe, Fort Worth, TX. Mr. Burgel recently completed a functional review of BNSF's centralized dispatching center in Fort Worth. The purpose of this study was to evaluate various software packages that are currently being used by BNSF's dispatchers. Interviews were conducted with train dispatchers, corridor directors, and support staff in order to gain a sense of direction for future network integration efforts.

Conrail Acquisition – Surface Transportation Board, Washington DC. HDR conducted the review of the Environmental Impact Statement as submitted to the Surface Transportation Board (STB) by CSX and Norfolk Southern in their effort to acquire Conrail. Under this assignment, Mr. Burgel was one of the rail operations manager responsible for understanding rail operations issues affecting the various railroads involved in the Acquisition, as well as numerous communities along the corridors that might be impacted by rail traffic changes initiated by the Acquisition. In addition, Mr. Burgel has analyzed the train capacities cited by the Applicants, developed alternative solutions, and has performed Quality Control review of the Final EIS issued and approved in June 1998.

TEA-21 Work Session – CSX Corporation, Jacksonville, FL. Member of a team that analyzed and explained the differences between the recently completed funding package (ISTEA) and the recently initiated TEA-21. The team was assigned a case study where the benefits to the railroad were quantified and then compared to the public benefits. The analysis took on the flavor of a "mini-EIS" in that factors such as air quality, noise, vehicle safety & delay, system reliability, emergency response, and environmental justice issues were quantified, then assigned a cost. Then the Return-on-Investment (ROI) for both private and public benefit was calculated and the results balanced in an attempt to pro-rate the anticipated contributions.

Intermodal Management System, Oregon Department of Transportation, Salem, OR. Involved in the development of the Intermodal Management System. Responsible for on-site interviews, assessment of railroad freight operations and strategy development for this statewide plan, one of the mandatory system plans under Intermodal Surface Transportation Efficiency Act (ISTEA).

Regional Chief Dispatcher, Union Pacific Railroad, Portland, OR. Responsible for management of 50 employees and ensuring that trains met performance criteria (Amtrak and freight schedules, customer's request). Also responsible for recommending schedule and track changes to improve traffic flow. Managed the movements of UP trains to and from the Pacific Northwest, interfacing with the Burlington Northern RR between Portland and Seattle and at Spokane. Also managed train activity as far east as Green River, Wyoming, and to and from the Ogden, Salt Lake City areas. In this capacity, assisted in negotiation with the unions representing train crews that operate in this region. Mr. Burgel also implemented a training program for train dispatchers, who are considered the first-line of a railroad's defense in the event of an emergency. The program focused on testing the ability of dispatchers to respond to emergency situations and to correctly identify whether hazardous materials (hazmat) were involved in the emergency. He is also familiar with the computer methods utilized to retrieve hazmat information

Design and implementation of installation of first totally computer-aided train dispatching office in the United States. One of two key designers/implementers. Innovative techniques included use of front display video projection to illustrate train movement information; development of completely automated train dispatching; and integration of many train dispatching functions, including track warrants, slow orders and tonnage calculations. This facility was a demonstrated success and has spawned similar designs throughout the world.

Southwest Washington Port Access Study - Port of Kalama, Port of Longview, and Port of Vancouver - Washington Legislative Transportation Committee, WA. Member of a team analyzing port access for the export terminal facilities along the Columbia River. The goal of the study was to identify factors affecting transportation of bulk cargo (grain) and merchandise. Key elements of the study included identifying key projects that may be eligible for state and federal funding; analyzing existing rail connections and rail-to-barge facilities, and making recommendations for improvements; describing the typical movement of train from elevators to export terminal facilities and identifying potential impacts of inter-city passenger trains on freight trains, identified obstacles to the efficient movement of grain; and recommending a range of funding strategies for making necessary improvements to the system.

Rail Access Study - Port of Longview, WA. Project manager. This investigation incorporated the results of a highway traffic study, interviews with port and railroad officials and rail traffic flow information to determine the impacts of a proposed change in rail service. The study identified several items that would mitigate the impact of a 110-car unit train service scheduled to begin within two years. Key to successful mitigation was the development of an alternative rail corridor which is now being funded in a partnership involving the state, county, city, port and the two railroads (BNSF, UP) that service the port.

Siding Location Study, Kenton Main Line, Union Pacific Railroad (UP), Portland, OR. This study was in response to a tremendous increase in the flow of bulk commodities en route to the Lower Columbia ports. This study focused on locating the siding (based on rate of growth, type of commodity, length and type of train, crew requirements, and methods to close at-grade crossings.

Grain Initiative, Port of Portland, OR. Project manager. Evaluated several different sites to load/unload bulk commodities via unit train operation. Sites were evaluated for current and future operations, capacity, constructibility, and feasibility. Designs included multiple loop track scenarios for various sites and sequencing to show where trains would be at critical times during the unloading operations.

Design review, Tunnel No. 4 (El Mexicano), Ferrocarriles Nacionales de Mexico (FNM), Mexico. Review involved a 3,000-meter tunnel on the Mexico City to Veracruz line of the FNM. The study concentrated on the engineering and operation of a proposed ventilation system to be installed to eliminate locomotive overheating. Temperature and air pressure monitors were installed to obtain data to aid in the analysis. Also addressed was a zone of excessive seepage inside the recently built tunnel. Recommendations for remedial solutions were submitted in the final report.

Capacity Analysis – Cascade Tunnel, Burlington Northern Railroad, King & Chelan Counties, WA. Project manager. The project involves four phases: (1) the enhancement of the tunnel's ventilation system including the conceptual design of a new portal door at the cast end of the tunnel, (2) a capacity study intended to develop a series of action steps with the end result an increase in train speed through the tunnel combined with a decrease in the amount of time necessary to flush the tunnel following the passage of a train, (3) the initiation of the SEPA checklist with Chelan County in order to acquire the required environmental permits to construct the improvements designed in Phase 1, and (4) final design of the portal door and related structures intended to increase system reliability through this important corridor. The Phase 2 capacity study involves a comprehensive view of the entire corridor to minimize the restriction to traffic flow caused by the tunnel. As part of the study, Mr. Burgel monitored the tunnel for selected environmental factors, interviewed trainmasters, personnel assigned to the tunnel, dispatchers, and train crews so as to fully understand the issues involved in operating the 7.78 mile long railroad tunnel.

Traffic Feasibility Study, Nampa-Hinkle Railroad, ID and Northwest OR. The study reviewed grade and curve reductions for a 165 mile rail corridor. The investigation concentrated on the geologic and environmental conditions along this route that might affect the proposed alignment. The cornerstone of the project investigation was the layout of a 23-mile line change that bypassed a difficult stretch of steep railroad grade.

Geologic Investigations

System-wide seismic notification system, Union Pacific Railroad. As Project manager, assisted in efforts to obtain a real-time seismic monitoring network intended to alert railroad officials with the location and magnitude of a potentially damaging earthquake. Initial results indicated that the Union Pacific now receives seismic event information within seven to nine minutes, as compared to the previous process which often took 45 minutes or longer.

Blue Mountain Tunnel Feasibility Study, Union Pacific Railroad, OR. Served as project manager. If constructed, Blue Mountain is potentially the longest railroad tunnel in North America. The study concentrated on the selection of several tunnel alignments based on regional railroad operations. The ultimate selection of tunnel alignment was dependent on surface and subsurface geology, tunnel design, ventilation requirements and cost considerations. The study culminated in providing Union Pacific with a feasibility level tunnel design and cost estimate.

Construction Management

Phase One Reconstruction, Tillamook Bay Railroad, OR. Project manager. This project restored service to a segment of the railroad that had been damaged or destroyed in approximately 80 locations by high water during the February 1996 flood. The project included handling major amounts of construction material by rail in very constrained, remote mountainous areas. Also completed in Phase One was an instream portion of the embankment restoration.

Construction Management – Union Pacific Railroad, Resident Engineer & Roadmaster. Responsible for the installation of track components into yards and Mainlines throughout the Union Pacific system. A factor critical to the smooth implementation of the various track changes was Mr. Burgel's ability to understand operations thereby devising a construction plan and schedule that allowed the construction to proceed with minimal train delay.

Professional Endeavors

HDR Engineering, Inc. 1997 – Present

BRW, Inc. 1993 – 1997

RZA, AGRA, Inc. 1989 – 1993

Union Pacific Railroad 1973 – 1989
Conrail 1971 – 1973
Norfolk Southern 1970

Professional Activities

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Puget Sound Freight Mobility Roundtable

Tommy G. Thompson

Secretary of Health and Human Services

Health and Human Services Secretary Tommy G. Thompson is the nation's leading advocate for the health and welfare of all Americans. He is the 19th individual to serve as Secretary of the department, which employs more than 60,000 personnel and has a fiscal year 2001 budget of $429 billion.

Secretary Thompson has dedicated his professional life to public service, most recently serving as governor of Wisconsin since 1987. Secretary Thompson made state history when he was re-elected to office for a third term in 1994 and a fourth term in 1998.

During his 14 years as governor, Secretary Thompson focused on revitalizing Wisconsin's economy. He also gained national attention for his leadership on welfare reform, expanded access to health care for low-income people, and education.

In 1996, Secretary Thompson enacted Wisconsin Works, or "W-2," the state's landmark welfare-to-work legislation, which served as a national model for welfare reform. The program required participants to work, while at the same time providing the services and support to make the transition to work feasible and permanent. W-2 provided a safety net through child care, health care, transportation and training assistance. Wisconsin's monthly welfare caseload declined by more than 90 percent, while the economic status of those taking part in W-2 improved. The average family on AFDC had been 30 percent below the federal poverty line. However, at the average wage of people leaving W-2, families were 30 percent above the poverty line.

More recently, Secretary Thompson worked to extend health insurance to many low-income children and families. As of November 2000, The BadgerCare program - Wisconsin's Medicaid/State Children's Health Insurance Program for uninsured families - had enrolled more than 77,000 individuals. In addition, Wisconsin's Pathways to Independence was the nation's first program to allow the disabled to enter the workforce without the fear of losing health benefits. The program provides ready access to a coordinated system of services and benefits counseling. As governor, Thompson also created FamilyCare, designed to help elderly and disabled citizens, and allow them to receive care in their homes for as long as possible.

Also as governor, Thompson created the nation's first parental school choice program in 1990, allowing low-income Milwaukee families to send children to the private or public school of their choice. He also created Wisconsin's Council on Model Academic Standards, which implemented high academic standards for English language arts, math, science and social studies. Thompson also made unprecedented investments in the University of Wisconsin System through building projects and initiatives to attract and retain world-class faculty while keeping tuition affordable for students.

Secretary Thompson began his career in public service in 1966 as a representative in Wisconsin's state Assembly. He was elected assistant Assembly minority leader in 1973 and Assembly minority leader in 1981. Secretary Thompson has received numerous awards for his public service, including the Anti-Defamation League's Distinguished Public Service Award. In 1997, the Secretary received Governing Magazine's Public Official of the Year Award, and the Horatio Alger Award in 1998. The Secretary has also served as chairman of the National Governors'Association, the Education Commission of the States and the Midwestern Governors' Conference. Secretary Thompson also served in the Wisconsin National Guard and the Army Reserve.

Additional Information

- Born: November 19, 1941 in Elroy, Wisconsin
- Senate Confirmation: January 24, 2001
- Sworn in: February 2, 2001
- Education: B.S. 1963, J.D. 1966, University of Wisconsin-Madison
- Family: Married to Sue Ann with three children -- Tommi, Kelli and Jason

Stan Feinsod - Biography

Stan Feinsod is Senior Vice President of SYSTRA Consulting, Inc. headquartered in San Francisco, California and responsible for directing SYSTRA's Western public transportation engineering and planning practice.

Stan has managed passenger rail planning and program development efforts in Northern and Southern California, Vermont, San Juan, Georgia and New Jersey. He was responsible for the development of an Atlanta, Georgia regional commuter rail and statewide intercity rail system plan for the Georgia DOT, for helping the Capitol Corridor Joint Powers Board and its managing agency, BART, to develop and carry out plans for the future of Intercity Passenger rail service in Northern California, for advising the Southern California Intercity Rail Group on its analysis of the San Diegan Intercity Passenger Rail corridor and in its effort to coordinate with Amtrak and Caltrans and for the development of a strategy to initiate passenger rail service "Around the Bay" between Monterey and Santa Cruz with connections to San Francisco.

Stan has developed Caltrain's comprehensive System Safety Program Plan, its Station Design Guideline, and a Caltrain five-year Service and Fleet Management Plan. Currently he is coordinating a detailed operations analysis of Caltrain's plans for Express Trains. He provided assistance to the Puget Sound RTA on its negotiation for the introduction of passenger rail service in the Seattle metropolitan area, provided input to SYSTRA's Penn Station Business Plan for the Tri-Venture, and has worked on the Corridor Evaluation and Program Environmental Documentation for the California's High Speed Rail Authority.

Prior to joining SYSTRA Consulting in 1988, Stan was Deputy General Manager, Operations and Maintenance for the NJ Transit Commuter Railroad. He was responsible for daily operations and maintenance. Stan had been with NJ Transit since 1980 with responsibilities for developing a multi-modal, multi-billion dollar capital program to revitalize and improve statewide public transportation in New Jersey. He was also responsible for developing and implementing the restoration of the Atlantic City Rail Line between Philadelphia and Atlantic City.

Stan had come to New Jersey after a decade in Washington, D.C. where he had first been with the Urban Mass Transportation Administration, responsible for initiating and directing the new formula operating and capital assistance program in 1974, and then with the American Public Transit Association, where he was responsible for Congressional and Administration relations, publications, and policy development.

Prior to Washington, Stan had worked as a transit consultant in New York, Boston and Albany and as a planner for the Tri-State Regional Planning Commission in New York. He is a graduate of Columbia University and the Polytechnic Institute of Brooklyn. He and his wife, Leslee, have three children, and three grandchildren in the Bay Area.

connex

SERVING PASSENGERS THE WORLD OVER

Connex, a Vivendi Environment subsidiary, is the only operator in the world to provide a complete range of surface travel options :

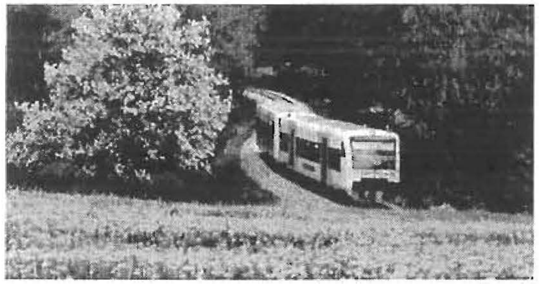
- commuter rail
- intercity / regional rail
- heavy rail
- light rail
- bus
- tramways
- trolley bus networks
- taxis
- boats
- integrated urban networks

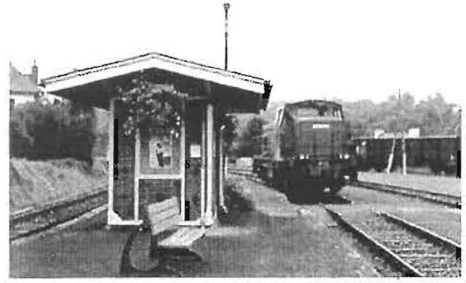
connex

- Is the worldwide leader in providing contract rail passenger, transit and bus services to more than 5,000 public authorities.

- Operates more than 7,000 passenger trains and 14,000 buses perday and transports more than 1 billion passengers per year, safely, comfortably, reliably.

Principal rail operations are in the United Kingdom, Sweden, Australia, Germany and France.





All of these operations are conducted on « shared track » with a mixture of passenger and freight trains

UK « SHARED TRACK » operation

- Connex South Eastern
- 1,700 daily commuter trains, 20-30 freight trains - freight have equal access - no peak hour prohibition
- 5 suburban lines, 2 regional lines
- minimum headways of 2 minutes
- all trains scheduled (in « slots »)
- if a train misses a slot, it waits for the next available slot
- both real trains and « shadow » trains are « slotted »
- current OTP is approaching 90% and improving
- majority of delays are infrastructure related, not due to congestion

Connex 's Operating Principles

1. The Passenger Charter :

- Time
- Safety
- Ease of Access
- Information
- Listening
- Comfort
- Training of personnel
- Value for money
- Contribution to the local economy
- Respect for the environment

Connex 's Operating Principles

2. Detailed Operational Planning and Execution :

- Scheduling
- Infrastructure Planning
- Service coordination and integration
- Communications
- Operational competency
- Local management responsibility and autonomy

Biographical Sketch

Bill Schafer
Director – Corporate Affairs
Norfolk Southern Corporation
Two Commerce Square
2001 Market Street, Suite 29
Philadelphia, PA 19103

Office: (215) 209-4287
Fax: (215) 209-4286

Bill Schafer is a native of Maryland, whose railroad career began in 1967 with the Baltimore & Ohio Railroad at the Mt. Clare Shops in Baltimore.

After graduating from Davidson College in 1970, he joined the Southern Railway's management training program, and progressed through positions in the Operating, Accounting, Purchasing and Strategic Planning departments.

Following the Conrail acquisition, Bill transferred to Philadelphia as Director – Corporate Affairs, and assumed his present responsibilities, which include development and administration of Norfolk Southern's passenger policy. In this role, he coordinates proposed passenger train operations with commuter and transit authorities, Amtrak, MPOs, and state and local governments.

He lives in Paoli, Pennsylvania, with his wife, Linda; leisure time activities include travel, reading, and photography.

May 7, 2001

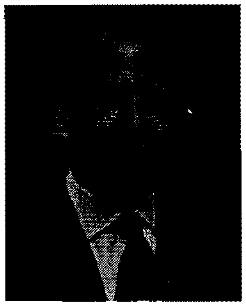
Joseph L. ZADEL
Assistant V.P. Operations Planning – Network Operations
Canadian National Railways
935 de La Gauchetiere Street West
Montreal, Quebec
H3B 2M9
Office - 514-399-4933
Fax - 514-399-4666
Email – joe.zadel@cn.ca

- Civil Engineer - University of Western Ontario - 1971
- Member of the Association of Professional Engineers of Ontario (In Canada each province has its own association for professional engineers)
- Entire career has been with Canadian National Railways in Canada in various positions across the country. Have worked for CN as a summer student while attending school from 1963 to 1970 and have been a full time CN employee from 1971 to present.

- 1963 - 1970 worked for CN as a student employee during the summers
    - Duties
        - Section man doing track maintenance
        - Crossing watchman
        - Surveyor on relocation of the Welland canal
        - Draftsman
        - Student engineer in the Area Engineering office

- 1971 - 1975 Engineer in the Area Engineering office in London, Ontario
    - Duties included track layout and design, engineering maintenance projects, general engineering office work, surveying, construction supervision.
- 1975 – 1977 - Assistant Transportation Engineer
    - Duties included Transportation planning projects, track train dynamics analysis, accident investigation simulation and analysis, yard and main line capacity analysis projects.
- 1977 – 1978 – Analyst - Mac Millan Yard hump yard.
    - Duties - Managed hump productivity projects, analyzed yard operations and implemented productivity improvements.
- 1978 – 1980 – Regional Transpiration Engineer, Great Lakes Region, CN Toronto
    - Duties – Managed all Regional transportation engineering projects including all capacity analysis, track-train dynamics issues and projects, managed design and development of major Regional plant improvement projects.
- 1980 – 1981 – Project Manager, Vancouver plant expansion project, Vancouver, BC
    - Duties – Managed development of concept, design, economics and implementation of the Thornton Yard expansion project. This included both flat switching yard expansion and development of CN's Vancouver Intermodal terminal

- 1981 – 1983 – Sr. Transportation Engineer in H.Q. office, Montreal
  - Duties – Responsible for major system capacity projects (main line and yards) and transportation engineering analysis. Participated in development of TRIM (Terminal Interactive Model) which was used extensively on CN to assist in determining yard capacities, put-through capabilities and plant enhancements.
- 1983 – 1986 – Co-Coordinator Transportation Planning, CN Edmonton
  - Duties Responsible for all Transportation Planning in Western Canada (four Western Provinces) including plant capacity concepts, development, economic justification and implementation strategy. Also responsible for all track – train dynamic issues development, analysis and application. Also coordinated development of plans to enhance CN's Jasper to Prince Rupert main line
- 1986 – 1987 – Manager Terminal Planning, H.Q., Montreal
  - Responsible for design, capacity, productivity enhancements and modification of CN's yards and terminals across the System. Made extensive use of computer simulations models including TRIM.
- 1987 – 1993 – Manager Line & Terminal Planning, H.Q., Montreal
  - Responsible for strategy, design, capacity, productivity enhancements and modification of CN terminal and main line plant across the System. Led CN main line capacity rationalization and enhancement projects. Made extensive use of yard and main line capacity simulation models such as RCM (Route Capacity Model), TDSM (Train Dispatching Simulation Model) and RAILS (Railway Interactive Line Simulation Model). Participated in senior Transportation cabined meetings and decision making
- 1993 – 1996 - Director Transportation planning
  - Responsibility – same as 1987 – 1993
- 1996 – 1997 – Assistant Chief of Transportation – Planning
  - Responsibility – same as 1987 – 1993 with more emphasis on operations productivity and plant rationalization.
- 1997 – 1999 - Assistant Chief of Transportation – Interline Management
  - Responsible for railway plant strategy, capacity and productivity on the system plus responsible for Operations interline agreements with CN's short lines and Class 1's in North. Also coordinated development of the operating plan for CN – IC merger.
- 1999 – present – Assistant V.P. Operations Planning, CN Montreal
  - Responsible for (1) strategy and development of VIA Rail Canada plant requirements in the Quebec City – Windsor Corridor ensuring efficient co-existence of freight traffic and passenger train operations on this critical corridor. (2) Coordinating development of the CN – WC integration Operating plan and (3) providing strategic input into development of Marketing initiatives to enhance CN market position.



Donald M. Itzkoff

Donald M. Itzkoff is a partner in the Washington D.C. office of Foley & Lardner and a member of the firm's Regulatory Department. Mr. Itzkoff focuses his practice on rail and surface transportation law and legislation, including innovative finance initiatives, intermodal infrastructure development, and safety assurance.

From 1994 to 1999, Mr. Itzkoff was deputy administrator of the Federal Railroad Administration in the U.S. Department of Transportation. Mr. Itzkoff served as FRA's chief operating officer, and helped to pioneer the agency's new safety assurance partnerships and rulemaking initiatives which improved rail safety by 20 to 40 percent in key categories over five years. He also played a significant role in promoting high-speed rail development and advanced major surface transportation infrastructure and finance efforts.

Prior to serving at FRA, Mr. Itzkoff was senior majority counsel to the Senate Committee on Commerce, Science, and Transportation, where he handled matters before the Surface Transportation Subcommittee. Working for then-chairman Senator Fritz Hollings, he was responsible for all areas of subcommittee jurisdiction, including Amtrak, freight railroads, high-speed ground transportation, commercial motor carriers, and hazardous materials transportation.

During his initial tenure in private practice, Mr. Itzkoff also served as general counsel to the High-Speed Rail/Maglev Association. An accomplished writer and expert on the transportation industry, Mr. Itzkoff is the author of *Off the Track: The Decline of the Intercity Passenger Train in the United States*, published in 1985. He has been a contributing editor to *Railway Age* magazine and is quoted frequently on rail issues in major news media.

Mr. Itzkoff received his law degree from the University of Michigan (J.D., 1986) and his undergraduate degree from Brown University (A.B., 1983, *magna cum laude*). He is admitted to the bar in the District of Columbia and New York.

Mr. Itzkoff's email address is dmitzkoff@foleylaw.com.

Last update May 17, 2001

RAY B. CHAMBERS

Ray Chambers is Chairman of Chambers, Conlon & Hartwell, Inc., a leading government relations firm specializing in transportation matters. He also serves as Chairman of the Seneca Group, a consulting firm specializing in project management and railway restructuring. Mr. Chambers is a former Director of Congressional Relations for the U.S. Department of Transportation (USDOT). He is also a former Deputy and Acting Assistant Secretary of Health, Education and Welfare. He served for eight years as an Administrative Assistant in the U.S. House of Representatives.

Mr. Chambers is considered one of the leading experts on rail infrastructure funding. On behalf of his shortline railroad clients, he played a key role in developing and securing passage of the RRIF Federal Loan Program included in TEA-21. While with USDOT, Mr. Chambers was also responsible for all legislative strategy associated with the passage of the Regional Rail Reorganization Act of 1973 and the Railroad Revitalization and Regulatory Reform Act of 1976. These laws were responsible for restructuring the major bankrupt railroads in the United States, including the creation of Conrail, and providing the federal funding necessary to salvage many of the bankrupt lines. During his tenure at U.S. DOT, he also led the effort to secure passage of the Unified Transit Assistance Program, the first multiple year funding package enacted for passenger transportation systems across the country. On behalf of transportation clients, he has been heavily involved with all major railroad legislation since leaving the USDOT in 1976. He served as a key industry negotiator in the passage of the Staggers Act, authored a number of amendments that embodied important compromises between large and small railroads, and facilitated the final passage of the Act. He has secured numerous legislative amendments on behalf of specific clients, including amendments that led to the rehabilitation of the bankrupt Boston & Maine Railroad, the transfer of Conrail trackage rights to the Delaware Otsego Corporation and the transfer of bankrupt lines to various low cost operators. On behalf of the Chicago & NorthWestern Transportation Company, he coordinated the government relations strategy for a congressional settlement of their 1989 freight and commuter strike and led to 2-man crews on large freight railroads.

Mr. Chambers is Transportation Fellow of the Discovery Institute of Seattle Washington. As Discovery Fellow he authored a study of options to privatize intercity rail passenger operations.

Mr. Chambers has a BA from Redlands University, and a MA from Rutgers University.

JEFFREY A. WARSH

Jeffrey A. Warsh is the Executive Director of the New Jersey Transit Corporation, the third largest and only statewide transit agency in the nation. Appointed July 14, 1999, Mr. Warsh is responsible for a workforce of more than 10,000 employees, a fleet of 3,200 buses, 800 commuter rail cars, and 24 light rail vehicles. The $3 billion corporation carries more than 200 million passengers annually with service into New York City and Philadelphia.

Prior to joining NJ TRANSIT, Mr. Warsh was Senior Vice President of The MWW Group in East Rutherford — the sixth largest public relations firm in the US. Mr. Warsh directed the agency's national transportation consulting practice involving various aspects of policy formation, governmental affairs and public/community/media relations. He helped to launch the $1 billion Hudson-Bergen LIGHT RAIL project and helped to develop the Union County light rail public-private partnership for Raytheon Infrastructure Services Inc. In this capacity, Mr. Warsh also served as governmental affairs/policy advisor to the Canadian National Railway during the Conrail merger negotiations. Mr. Warsh worked extensively for Continental Airlines and for International Terminal Operators (ITO).

A strong advocate for public transportation, Mr. Warsh was a New Jersey Assemblyman from 1992 to 1996, where he served on the Assembly Transportation and Communications Committee and as Chairman of the Assembly Regulatory Oversight Committee with the authority to veto regulations found to be inconsistent with legislative intent. As an Assemblyman, Mr. Warsh successfully fought to avoid NJ TRANSIT fare increases, spearheaded new capital investments, sponsored legislation allowing bicycles on trains, and secured funds for the Metropark parking decks and a new train station in Edison, NJ.

Mr. Warsh is an attorney with close to 15 years of experience including four years with Ansell, Zaro, Bennett, Kenney & Grimm in Eatontown (1992-1995); he conducted a solo broad-based general practice of law from 1990 to 1992; he was a Senior Associate of ICF Kaiser Engineers, Inc., a transportation and environmental consulting and engineering firm in 1990; was Regulatory and Legislative Counsel to the Deputy Commissioner, NJ Department of Human Services from 1988 to 1990, and a Staff Attorney at the NJ Division of Alcoholic Beverage Control from 1985 to 1987. Prior to joining the Kean Administration, Mr. Warsh served as Chief of Staff to Senator Peter P. Garibaldi in 1987.

A native of New Jersey, Mr. Warsh received the Legislator of the Year Award from the Utility and Transportation Contractors Association, and the "Good Guy of the Year" Award from the New Jersey Women's Political Caucus — both in 1995. He was recently elected to the board of trustees of the New Jersey Organ and Tissue Sharing Network.

Mr. Warsh was graduated from Franklin and Marshall College, Lancaster, Pa., and Emory University in Atlanta, Ga., where he received his Doctor of Law Degree. He was admitted to the New Jersey State Bar and the Federal District Court Bar in 1985. In 1997, Mr. Warsh received his Diplomate in New Jersey Municipal Law from Rutgers University.

Mr. Warsh, 40, and his wife Amy have two children, and live in Westfield.

(revised 5/2001)

Mark E. Yachmetz
Associate Administrator for Railroad Development

As Associate Administrator for Railroad Development, Mark Yachmetz leads a staff of 47 that are responsible for direct federal investment in the railroad industry, railroad research and development, the demonstration and deployment of advanced railroad technologies, and promotion of passenger and high-speed rail initiatives including serving as the Federal Railroad Administration's (FRA) liaison with Amtrak, the Amtrak Reform Council and the Pennsylvania Station Redevelopment Corporation. Programs managed by the Office of Railroad Development regularly account for approximately 85 percent of FRA's annually appropriated financial resources.

Mr. Yachmetz joined FRA in September 1978 as a program manager in the Office of Freight Assistance. He then held a number of assignments in FRA including Chief of the Community and Shipper Assistance Staff, Executive Director of the National Maglev Initiative, Director of the High-Speed Rail Staff, Chief of the Passenger Programs Division, and Director of the Office of Passenger Programs.

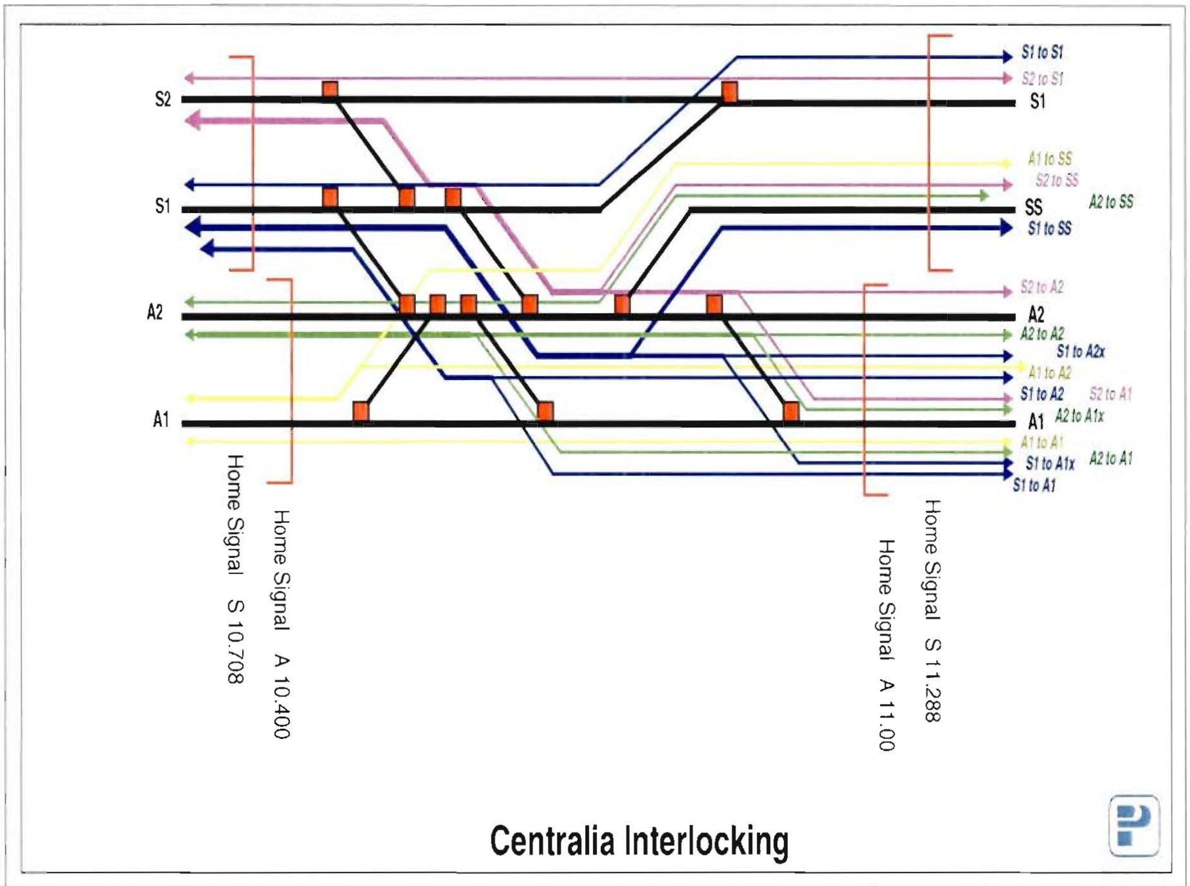
He also served as Special Assistant to Administrators John Riley (1987 – 1988) and Gilbert Carmichael (1990 – 1991). In 1989, he was selected by the Office of Personnel Management as a Legis Congressional Fellow and served as a member of the Senior Professional Staff of the Subcommittee on Transportation and Hazardous Materials, Committee on Energy and Commerce of the U.S. House of Representatives. Prior to joining FRA, he was with the Office of Proceedings of the Interstate Commerce Commission and was a consulting engineer in private practice.

Mark Yachmetz is a civil engineering graduate of the University of Maryland, where he also undertook extensive graduate studies in transportation and environmental planning. He is a member of the Committee on Guided Intercity Passenger Transportation of the Transportation Research Board, National Academy of Sciences.

He has received numerous performance and honorary awards including the Secretary's Award for Meritorious Achievement, FRA's Administrator's Award (FRA employee of the year), the Administrator's Team Award and FRA's Superior Achievement Award (five times).

INCREASING RAIL CAPACITY ALONG THE CHARLOTTE TO RICHMOND RAIL CORRIDOR

MAINTAINING COMPETITIVE FREIGHT RAIL SERVICE AND ELIMINATING FREIGHT AND PASSENGER RAIL TRAIN OPERATING CONFLICTS



Ernest Clausing

Michael Holowaty

Carl Wood

March 2001

PTG's Rail/Transit Division recently completed an analysis of the proposed Richmond to Charlotte Rail Corridor to identify the infrastructure, capital, operating conditions, and modifications that would be necessary to support high-speed passenger rail service between the Richmond and Charlotte city centers

The Charlotte – Richmond rail line is a multiple-use freight and intercity passenger rail corridor. Providing intercity rail passenger service in four hours and twenty minutes between the city centers of Charlotte and Richmond will require that approximately 3-hours and 25-minutes be shaved from the current schedule of Amtrak's "Carolinian" that operates between Penn Station, in New York, and Charlotte, through Richmond's Staples Mill Road Station.

Preserving capacity for competitive freight train operations is an essential component of the draft plan recently submitted to the stakeholders. Achieving the trip time goal for passenger rail service on a consistent basis – while preserving and enhancing the dependability of the important and growing freight traffic and the potential for commuter services also to share the line – requires improvements that would increase rail capacity at strategic locations. Reduced trip times and improved capacity would enable the high-speed service to operate reliably without adversely affecting or being delayed by the large number of long freight train consists; and if service is implemented, frequently stopping commuter trains between Concord and Charlotte, NC.

Conflicts are likely when several services coexist on the same trackage. The reliability of all services can be jeopardized by the time lost as a result of these conflicts. Simulation of the entire interrelated system of the SEC between Richmond and Charlotte is the only valid methodology that can measure the impact of these conflicts. .

Therefore, a model of the corridor using the LOGSIM and MONTE CARLO™ simulation packages was developed and modified to include the projects initially considered necessary to achieve the trip time and reliability goals.

The purpose of the simulations was to provide information as to:

- Where delays may occur;
- Where schedule changes can eliminate conflicts; and
- Where facility changes can eliminate conflicts.

Ultimately a recommended set of improvements was established to upgrade the capacity of the existing corridor, which prior to upgrading would be approximately 70 percent single-track with sidings. The remainder is double-tracked or is double-track with short segments of single-track. The speed differential between the proposed high-speed trains and the freight trains required that unique dispatching logic be generated. The rationale for the logic is described in this paper[1].

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[1] The paper is distributed with the permission of the Federal Railroad Administration. The draft final report is undergoing review and will be published later this year.

Dispatching Single Tracked Lines

Dispatching single tracked lines is often a difficult task for train dispatchers as speed differentials between trains create the biggest headache for dispatchers. The fastest of all trains are the passenger trains, which are to have preference over all other trains. The next in the speed ranking are the intermodal trains. Following the intermodal trains in speed are the merchandize trains. Next in the speed ranking are the drag freight and mineral freight trains. Last are the local freight trains, which often consume much time switching industries.

Siding lengths or lack of sidings also are a problem for dispatchers. Train lengths have often outgrown the length of many sidings. Meeting two trains at a siding that is not long enough to accept either train is a major mistake. The dispatcher's task is to weave all of the different train types through an often-inadequate facility to minimize delay to all classes. The faster trains are often delayed. The facility proposed for this study has been designed to ensure that a dispatcher has an adequate but not an excessive facility to work with.

Local freight trains must work between through-running trains. If sufficient time cannot be provided on a single track between through trains to accomplish the switching work, a non-signaled siding with hand-operated switches must be provided so the local freight train can switch industries without occupying the main track. Often local freight trains are scheduled to do their work when no or few through trains are operating. That may not always be acceptable to certain industries. In this study it was assumed that local freight trains would operate at the same time of day that they currently operate.

Long sidings to minimize delays and optimize train meets have been recommended. Through passenger and freight trains operating at three maximum speeds on the S Line between Richmond and Raleigh were assumed: 110 mph high-speed passenger trains; the Silver Star at a maximum of 90 mph because it will be handling express cars and possibly Roadrailers; and CSX freight trains operating at 60 mph, grades and curves permitting. The manner in which single tracked lines were dispatched in the project simulations is presented in the following sections.

Facility Planning and Operational Analyses Considerations

Several critical siding spacing and length, track capacity, and train dispatching issues were addressed during the planning process, to ensure that sufficient operating flexibility and capacity to support reliable and efficient timely mixed freight and passenger operations are provided. Issues related to single and multi-track operations in are discussed in this paper.

Length and Spacing of Sidings

The spacing of the sidings on a single tracked system determines the capacity of the system and also the length of the delays when meets do occur. Facility and operational analyses of the proposed Richmond to Charlotte high-speed passenger operations concluded that sidings necessary to support reliable freight and passenger operations should be 3.5 to 4 miles long and spaced approximately every15 miles, center-to-center, i.e., the length of single-track between sidings should not exceed 11 miles. Number 20, 45-mph turnouts should be installed at the ends of each siding[2]. The size and spacing of the sidings would minimize delay to the train entering the siding and increase the probability of meets that would allow it to continue out of the other end, without stopping.

Dispatching A Single Track Railroad

Signal system upgrades to enable to corridor to efficiently handle increased train traffic and to permit improved intercity passenger service with greater safety has been recommended. These improvements would enable freight service, and any potential commuter service, to safely and efficiently operate on the same tracks. New block layout and signal aspects would accommodate speeds up to 110 miles per hour[3]. The signal system would use microprocessor-based track circuits and control/indication equipment. Block spacing would anticipate increased train speeds. Cab signals would be installed and all locomotives operating on the line would be equipped with Automatic Train Control (ATC). Reverse signaling would be installed throughout the corridor. Interlockings in the corridor would be remotely controlled by CSXT and NS dispatchers.

The new signal system would improve the reliability of train operations for all services, contribute to maintenance-related operating costs, and would be a component critical to enabling higher speed train operations.

MEETS AND OVERTAKES INVOLVING THREE OR MORE TRAINS

When evaluating the status of southward freight train approaching the north end of *Siding A* and making the decision whether to release the southward freight train, a train dispatcher would:

- Look ahead of the southward freight train (train 1) for opposing northward freight or passenger train (train 2);
- Look behind the southward freight train for an overtaking southward passenger train (train 3); and
- Look beside the freight train while it is waiting in a siding.

The following example illustrates the complex decision making process the train dispatcher would employ.

Siding B is the next siding south of *Siding A*. The answers to the following questions must be **negative** for the train dispatcher to authorize the southward freight train to continue to *Siding B*. An affirmative answer to any one of the questions would require the southward freight train to enter *Siding A*.

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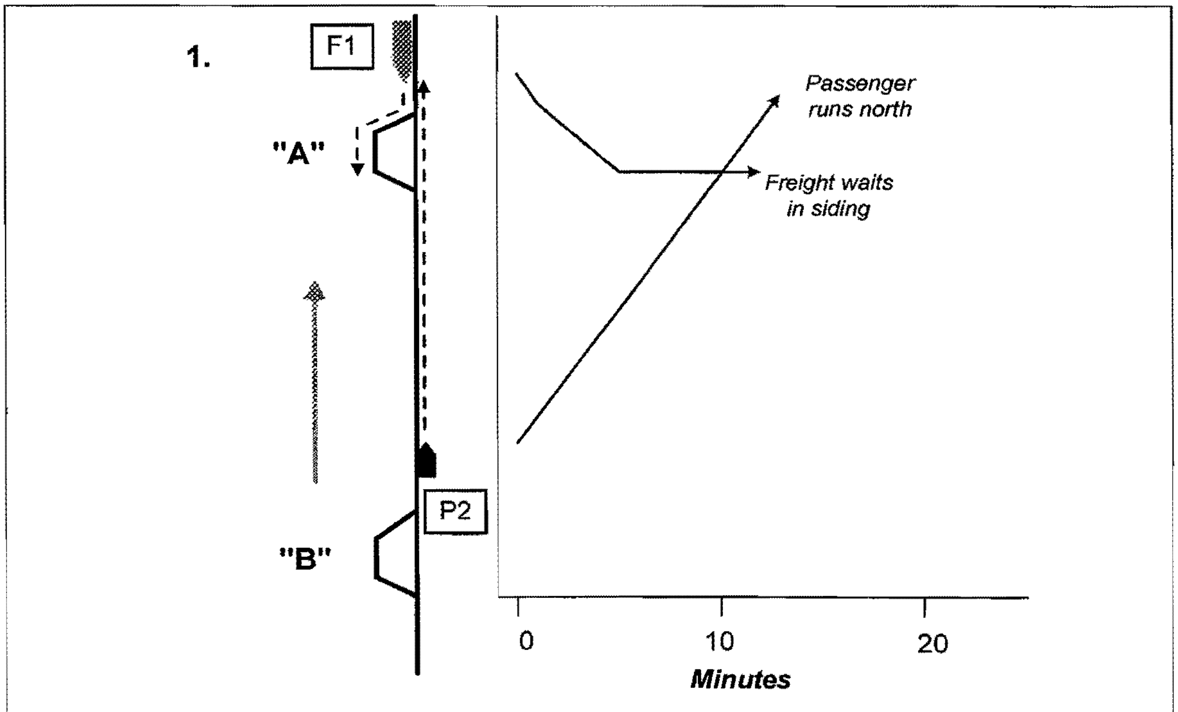
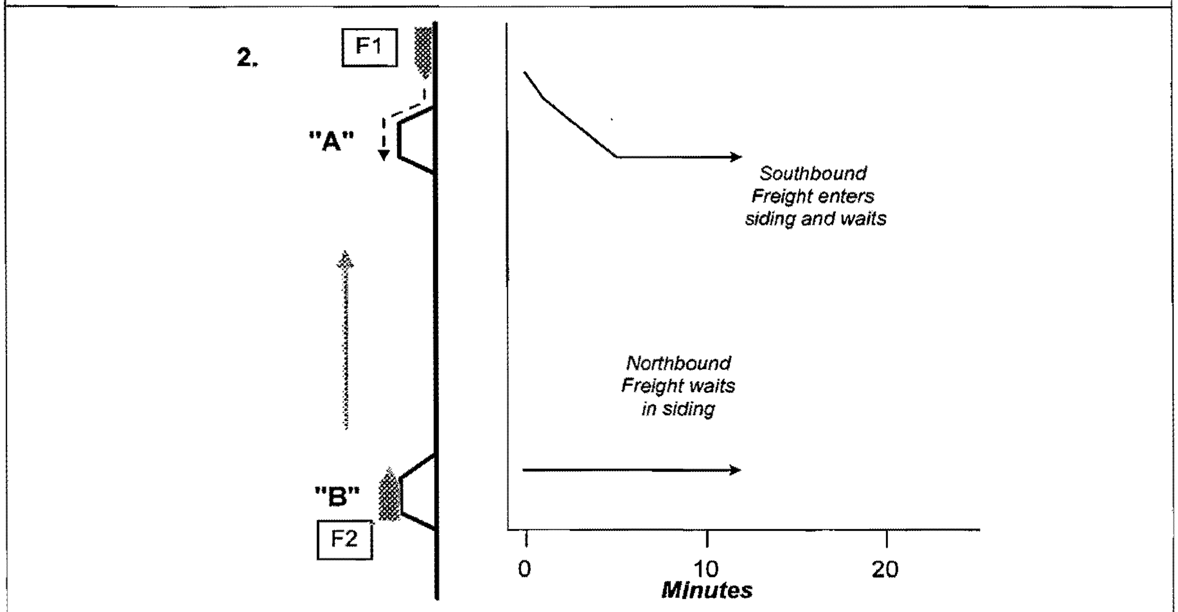
[2] The installation of No. 32, 80-mph turnouts to increase capacity and minimize delays at a few locations is discussed in a subsequent section of the report. The higher the switch number, the smaller the diverging angle of the switch, and the faster a train may operate safely over the diverging route. A No. 15 turnout is limited to 30 mph, a No. 20 to 45 mph, and a No. 32 turnout can be operated at 80mph.

[3] The braking distance for a 110 mph passenger train is essentially equal to that of a 60 mph freight train.



1. Is an opposing (northward) train occupying the main track between the north end of* Siding B *and the north end of* Siding A*?

*If **Yes**, the southward freight train enters the north end of Siding A to avoid a conflict between locations* B *and* A.



2. Is a northward opposing train occupying* Siding B*?

*If **Yes**, the southward freight train will be routed into* Siding A *because* Siding B *is unavailable for the southward freight train at location* A.

3. Is there a northward opposing passenger train at some point about 50 miles south of location B that will arrive at the south end of* Siding B *before the southward freight train at location A can run to and clear into* Siding B*?

The rationale for the second question now becomes clearer:

a. The southward freight train would have had nowhere to go upon arrival at *Siding B*.

b. The northward freight train would still be in *Siding B* waiting for the southward train.

c. The northward passenger train would have arrived at *Siding B* and would be standing on the main track beside the northward freight train, and

d. The southward freight train that had been released from *Siding A* would be standing at the switch at the north end of *Siding B* facing both trains.

The option of routing the northward passenger train behind the northward freight train in *Siding B* would be undesirable[4].

Therefore, the southward freight train would be routed into *Siding A*.

The rationale for the southward freight train being routed into *Siding A*, if a northward passenger train was a minimum of 50 miles away is as follows:

- If the north end of *Siding A* were 14 miles north of the north end of Siding B, the southward freight train would have to:

  a. Traverse those 14 miles, and

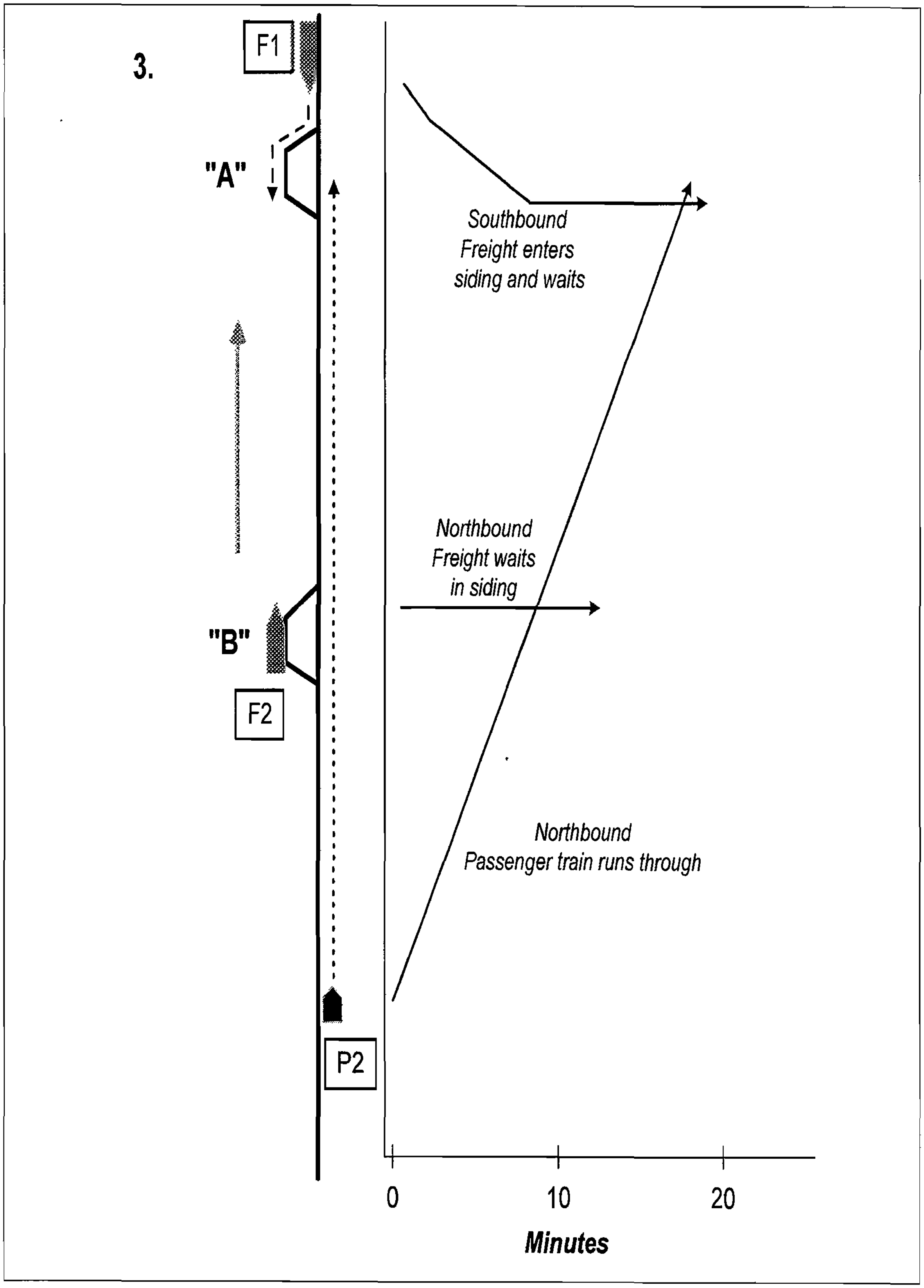
  b. At least one train length to clear into *Siding B.*

The CTC would have to restore the turnout to enable the northward passenger train to receive a clear signal to proceed on the main track.

Location of the first locomotive of the southward freight train	*Location of the first locomotive of the northward passenger train*
At time 0	
Passes the turnout at the north end of *Siding A*.	Passes a point 50 miles south of the south end of *Siding B*.
At time 18[5]	
Arrives at the north end of Siding B, and begins to enter *Siding B* at 45 mph.	Has traveled 27 miles at an average speed of 90 mph.
At time 21	
Has entered into *Siding B*, and ▪ The rear of the train would just have cleared the turnout at the north end of the siding, the switch had been reset, and the northward signal set to clear.	Has traveled 32 miles at an average speed of 90 mph, and: ▪ Would be passing the south end of *Siding B* with a clear signal.
At time 24	
Stopped at the south end of Siding B.	Has traveled 36 miles and is passing the north end of *Siding B*.

[4] The northward passenger train would either have to back out of Siding B to proceed ahead of the northward freight train or follow the northward freight train north of Siding B at a reduced speed.

[5] Time rounded to nearest minute.



3.
F1
"A"
"B"
F2
P2
Southbound Freight enters siding and waits
Northbound Freight waits in siding
Northbound Passenger train runs through
0
10
20
Minutes

- The northward passenger train, averaging 90 mph, must not be any closer than 24 minutes/36 miles from north end of Siding B to ensure time separation between trains at siding B.

Therefore, the northward passenger train, averaging 90 mph, would have to be a minimum of 49 miles south of the north end of Siding A to enable the southward freight train to proceed beyond the north end of Siding A. This distance would enable the northward passenger train to maintain suitable spacing and not have to decelerate approaching the north end of Siding B. **Fifty miles is the absolute minimum distance.** The southward freight train would be routed into Siding A when:

- A northward passenger train was 50 miles away, or closer, or
- An opposing freight train was already in or routed to Siding B.
- The northward passenger would have to be more than 50 miles south of Siding B if the average speed of the northward passenger train had been higher, or the speed of the southward freight train lower.

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4. Is there a southward following passenger train at some point about 21 miles north of* Siding A *that would catch up to the southward freight train before it could run to, and clear, into* Siding B*?

If Yes - The southward freight train would be routed into *Siding A*.

The 21-mile criterion applies to the determination of the distance the southward passenger train would have to be behind the southward freight train, to enable the freight train to proceed to *Siding B* and clear the main track without delaying the southward passenger train. The rationale for the 21 miles is as follows:

Location of the first locomotive of the southward freight train	*Location of the first locomotive of the southward passenger train*
At time 0	
Passes the turnout at the north end of *Siding A*.	Passes a point 21 miles north of the north end of *Siding A*.
At time 18[6]	
Arrives at the north end of *Siding B*, and begins to enter *Siding B* at 45 mph.	Has traveled 26 miles at an average speed of 90 mph and is on the single-track between Sidings A and B.
At time 21	
Has passed into *Siding B*, and • The rear of the train would just have cleared the turnout at the north end of the siding; and • The CTC system has restored the turnout to enable the southward passenger train to receive a clear signal to proceed on the main track.	Has traveled 32 miles at an average speed of 90 mph, and: • Would be 3 miles from the north end of *Siding B*, and • Within 40 seconds (1 mile) would have to begin to decelerate approaching *Siding B*, ***if a clear signal had not yet been displayed***.

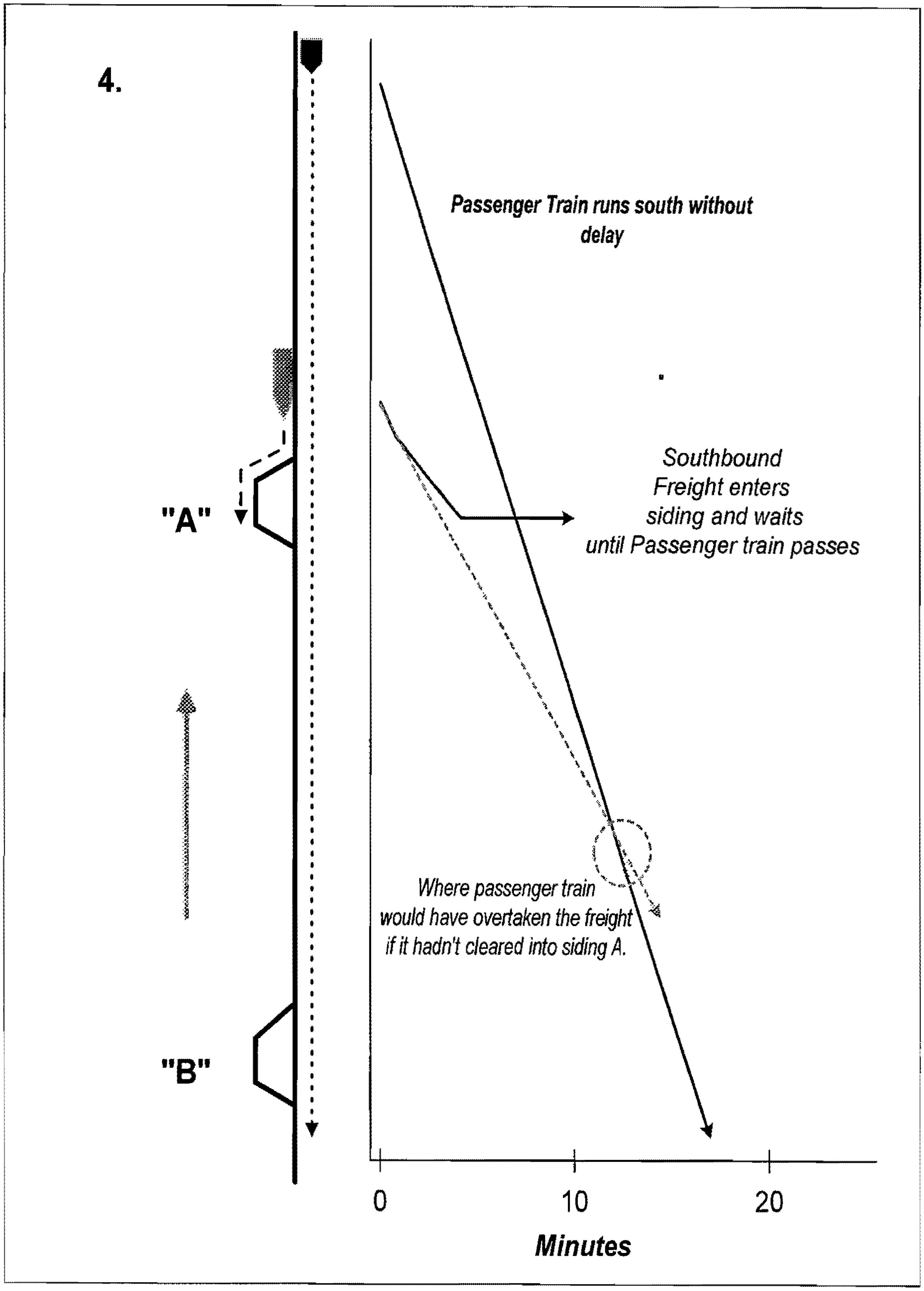
The southward passenger train would have traveled 32 miles, at an average speed of 90 mph, in the time it took the southward freight train, at an average of 45 mph, to travel 16 miles into the clear at *Siding B*.

Therefore, the southward passenger train would have to be:

- At least 36 miles north of *Siding B*, or
- A minimum of twenty-one miles behind the northward freight train when it passed *Siding A*, to be able to maintain suitable spacing and not have to decelerate approaching *Siding B*.

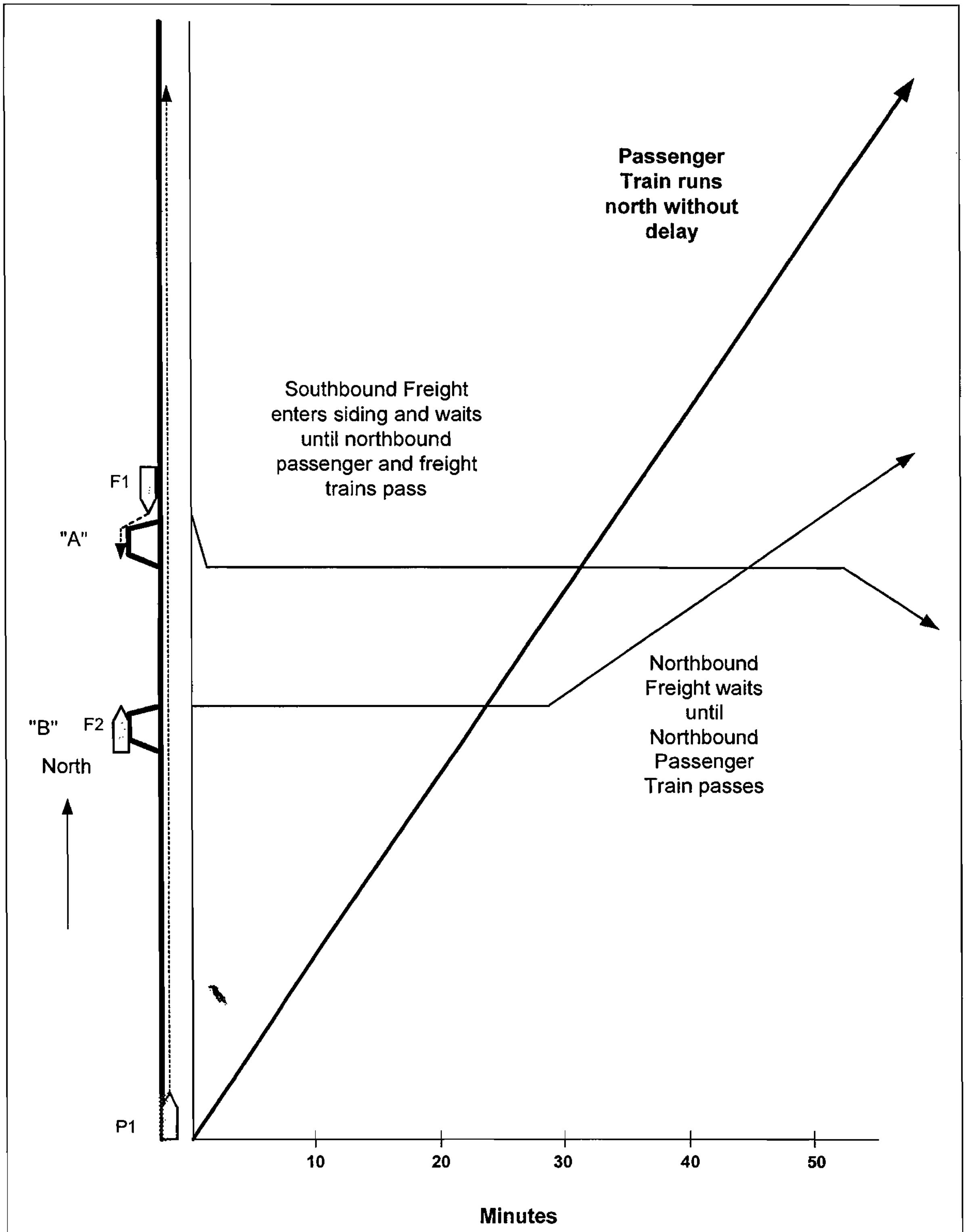
Twenty-one miles is the absolute minimum distance. If the average speed of the southward passenger train had been higher, or the average speed of the southward freight train been lower, the southward passenger would have to be even farther north of *Siding A*.

[6] Time rounded to nearest minute.


4.
"A"
"B"
Passenger Train runs south without delay
Southbound Freight enters siding and waits until Passenger train passes
Where passenger train would have overtaken the freight if it hadn't cleared into siding A.
0
10
20
Minutes

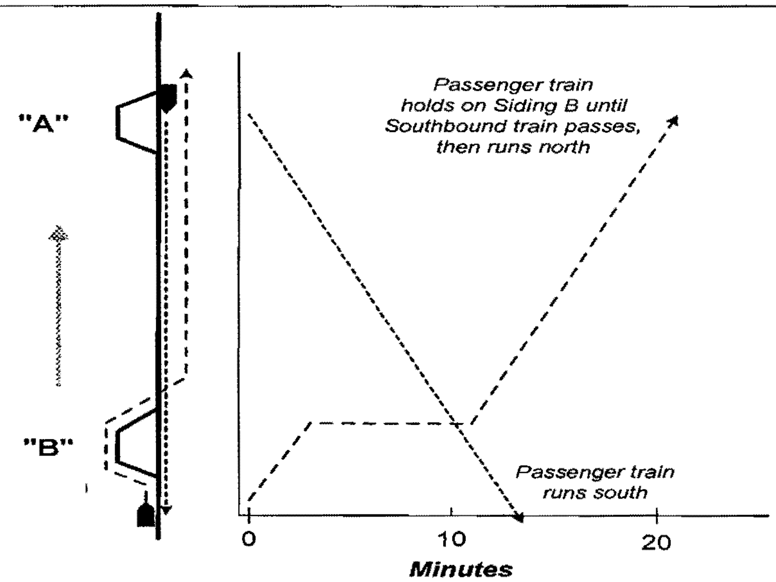
Referring to Question 2 above, if a northward freight train were located in *Siding B*, the southward freight train north of Siding A would enter the siding and wait for both the northward passenger train and the northward freight train to pass the south end of *Siding A*, before exiting the siding to head towards *Siding B*. The time sequence of the train moves would be as follows:

Location of the first locomotive of northward freight train B	Location of the first locomotive of the northward passenger train	Location of the first locomotive of southward freight train A
Time 0		
North end of *Siding B*	Passes a point 50 miles south of the north end of *Siding A*.	North of *Siding A*, on main track
Time 24 minutes		
North end of *Siding B*	Passes south end of *Siding B*	Standing at south end of *Siding A*
Time 29 minutes		
Leaves Siding B, following the northward passenger train	North of Siding B	Standing at south end of Siding A
Time 50 minutes		
Head end clears south end of *Siding A*	20 miles north of the north end of *Siding A*	Standing at south end of *Siding A*
Time 55 minutes		
Approaching north end of Siding A	28 miles north of the north end of *Siding A*	Leaves south end of Siding A
A southward freight train, having entered Siding A, would not depart the siding until the answers to the four questions are negative.		



Time Sequence of Moves – Northbound Passenger Train Overtaking Northbound Freight in Siding B and Meeting Southbound Freight in Siding A

There are times that a passenger train would take a siding. For example:



Location of southward passenger train[7]	Location of northward passenger train
Time 0	
On the main track passing the north end of *Siding A*	On the main track south of the south end of *Siding B*
Time 5 minutes	
Four miles south of the south end of *Siding A*	On *Siding B*, at the south end of the siding
Time 10 minutes	
Passing south end of the north end of *Siding B*	North end of *Siding B*, preparing to depart
Time 15 minutes	
Seven miles south of the south end of the north end of *Siding B*	On main track, between *Siding B* and *Siding A*

The amount of delay encountered by the northward passenger train would vary according to how far south of the south end of *Siding B* at Time 0.

[7] Both trains assumed to be averaging 90 mph.

Dispatching A Double Track Railroad

Traffic flow on a double tracked railroad is analogous to the operation of a two-lane highway.

1. Faster, lighter traffic - passenger trains and automobiles - catch up to slower heavier traffic - freight trains and trucks.
2. The faster, lighter traffic may use the opposite track, or lane, to overtake and pass the slower, heavier traffic when there is a break in the opposing traffic flow, and sight distances permit.
3. When traffic is heavy the breaks between oncoming vehicles are fewer and farther between, and the opportunities to pass are more limited.
4. Occasionally a third passing lane, or siding, is provided on hills or at other locations to enable automobiles (passenger trains) to pass trucks (freight trains).
5. At the end of the passing lane (siding) the trucks (freight trains) must merge back into the automobile (passenger train) flow.
6. At times when a lane is closed for repair work or other reasons, (a track is closed for maintenance or a local freight train to work), all traffic must use the remaining lane (track).

Double-track railroads and two-lane highways have two major differences:

- On two-lane highways, the locations where automobiles may cross to the opposite lane are unlimited, assuming adequate sight distances exist and the opposing lane is clear; however railroads require fixed locations (crossovers) where trains may move to the opposite track, and these locations may be many miles apart[8].
- Automobile drivers and truck drivers make their own decisions when to use the opposite lane, however trains are directed when to use the opposite track by train dispatchers.

With these limitations in mind, the following paragraphs describe the primary considerations for dispatching passenger and freight trains in multi-track segments.

[8] Typically railroad crossovers are spaced five to ten miles apart, sometimes greater.

Passenger Trains Overtaking Freight Trains

A train dispatcher evaluating the status of a northward passenger train (P1) following a northward freight train (F1) would look ahead of the trains for southward freight/passenger trains on the opposing track to determine whether the northward passenger train (P1) would be allowed to pass the northward freight train (F1). The amount of clear distance[9] a northward passenger train (P1), moving at 100 mph (0.6 minutes per mile), requires to overtake a northward freight train (F1), moving at 50 mph (1.2 minutes per mile), by diverting to the opposite (southward) track and back is:

- 30 miles, if the southward train approaching on the opposite track is a freight train, and
- 45 miles, if the southward train approaching on the opposite track is a passenger train.

The minimum distance required by the northward passenger train (P1) to ideally overtake and pass a preceding freight is determined by the time to accomplish a number of moves, including:

- 3 minutes - The time separation between the northward freight (F1) and the northward passenger train (P1) to ensure that the northward passenger train (P1) obtains an optimal signal to crossover over to the opposite (southward) track at location A;
- 1.5 minutes - The time for the northward passenger train (P1) to crossover to the opposite track and accelerate to MAS (100 mph to 45 mph back to 100 mph);
- 1.5 minutes - The time for the northward passenger train (P1) to decelerate and cross back to its original track at location B; and
- 3 minutes - The time separation between the northward passenger train (P1) and the northward freight train (F1), which is now behind it, to ensure that the northward freight train (F1) obtains an optimal signal to proceed without slowing down and thereby being delayed.

Consequently, at a minimum, the northward passenger train (P1) must gain nine minutes relative to the freight train. At 0.6 minutes per mile, it would take a northward passenger train (P1) a minimum of fifteen miles to complete the pass of a northward freight train (F1).

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[9] The equivalent to "sight distance" in the highway analogy.

Meets and Overtakes Involving Three Trains: Northward Passenger Train (P1) Overtaking Northward Freight Train (F1), and Approaching Southward Passenger Train (P2)

The time sequence of events of an ideal overtake of northward freight train (F1) by northward passenger train P1, being approached by southward passenger train P2, is as follows:

Time zero -

Rear of northward freight train (F1) passes interlocking 1 on track 1;

Southward passenger train (P2) may pass Point C on track 2, eighteen minutes north of Point B;

Time 3 minutes –

Passenger train (P1) crosses from track 1 to track 2 at Point A to run around the freight train;

Time 15 minutes –

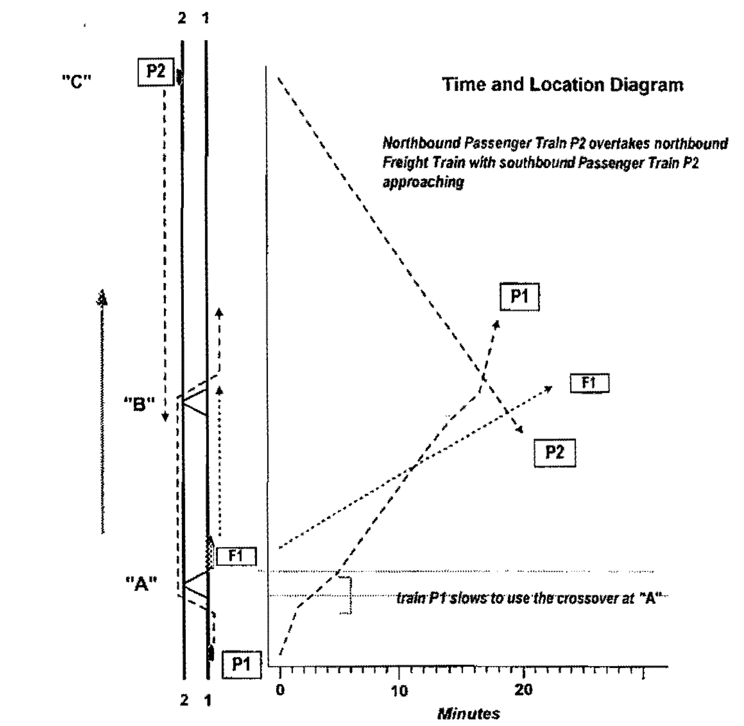
Passenger train (P1) returns to track 1 ahead of the freight train at Point B fifteen miles north of Point A;

Time 18 minutes –

The freight train may pass Point B on track 1, presumably without being slowed;

Opposing southward passenger train (P2) also may pass Point B on track 2, presumably without being slowed.

At 100 mph the passenger train would have covered 30 miles in eighteen minutes.



As the table indicates, a clear distance of 45 miles is needed for a northward passenger train (P1) moving at 100 mph to overtake a northward freight train (F1) moving at 50 mph –

- The sum of the distance of
  - i. Point C to Point B (30 miles), and
  - ii. Point B to Point A (15 miles).

If southward passenger train (P2) is within 45 miles of northward passenger train (P1), and northward passenger train (P1) still uses the opposite track, southward passenger train (P2) would be slowed or stopped to enable the northward passenger train (P1) to run around the northward freight train (F1).

Southward Train is a Freight Train (F2)

If the opposing train was a southward freight train (F2), it would cover 15 miles in 18 minutes, and a clear distance of 30 miles would be needed for a northward passenger train (P1) moving at 100 mph to overtake a northward freight train (F1) moving at 50 mph –

- The sum of the distance of

i. Point C to Point B (15 miles), and

ii. Point B to Point A (15 miles).

Thus, if southward freight train (F2) is within 30 miles of northward passenger train (P1), and northward passenger train (P1) still uses the opposite track, southward freight train (F2) would be slowed or stopped to enable the northward passenger train (P1) to run around the northward freight train (F1). If the interlockings were not ideally spaced, the required clear distances would be greater.

2020 Operations Between Greensboro and Charlotte

With approximately 50 freight trains projected to operate daily between Greensboro and Charlotte in 2020 it will be difficult to find forty-mile, or even thirty-mile, clear "gaps" in opposing trains to enable overtakes to occur. An eighteen-minute gap would not be available nearly 30 percent of the time. Consequently if further improvements were not implemented, passenger trains would have to follow freight trains for many miles before a clear distance would be available. The following passenger train would lose 0.6 minutes per mile for each mile it followed a freight train.

Oncoming highway traffic generally does not slow down to create at gap to let a car pass a truck, but a train dispatcher, having overall control of the traffic, **can** slow the opposing train to enable a passenger train to pass a freight train.

If the distance between Point A and Point B in the example above is less than fifteen miles, the freight train being overtaken may have to be slowed or stopped to let the passenger train overtake it. It is possible that allowing a passenger train to overtake a freight train would result in three or more trains losing time or being required to operate at a reduced speed. The three trains would be:

1. The freight train being overtaken,
2. The passenger train overtaking the freight train, and possibly
3. One or more opposing trains.

Center Sidings – The Recommended Solution in Densely Trafficked Double Tracked Rail Operations

A very large number of trains can be operated on two tracks when the speed of the trains is uniform. For example, commuter agencies can operate well over 100 trains per day on two tracks.

However, when the speed of trains is not uniform, the transit time differentials, not the number of trains, create the need for overtakes.

A double track railroad with reverse signaling on both tracks would not adequately handle the projected density of normal operations when great speed differentials exist without slowing some trains or perhaps delaying many, trains. Reverse signaling would facilitate use of the second track, when necessary, to run around slower trains, maintenance work, local freight trains, or disabled trains. Reverse signaling would provide minimal added capacity during normal operations. Consequently, the installation of additional tracks in certain areas is essential. A continuous four-track, or even a three-track system, cannot be justified in this corridor, but in limited instances, a third track is justified.

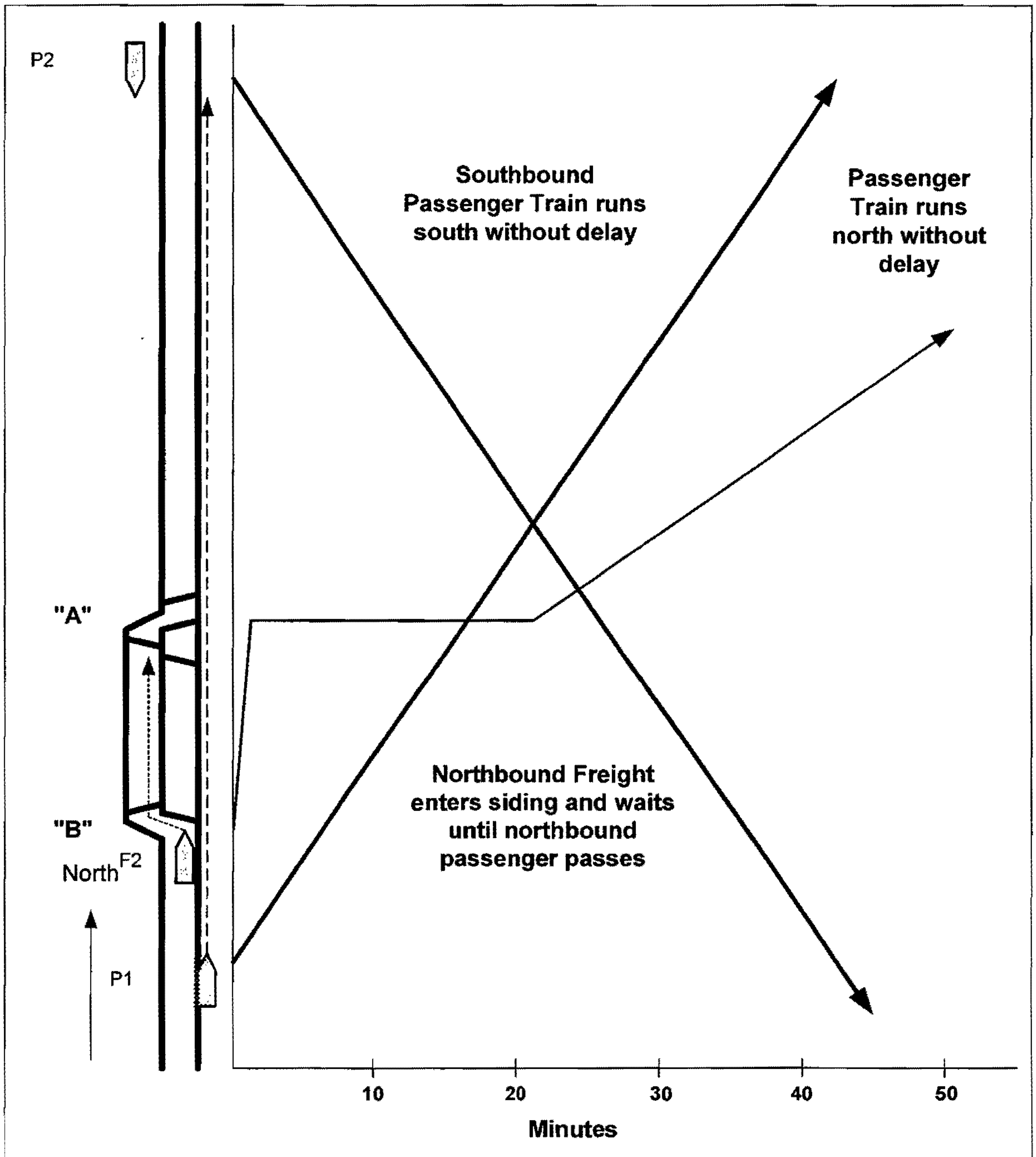
The center sidings will enable freight trains to be passed by passenger trains when clear distances aren't available on the other track. The figure on the next page illustrates the effect of the center siding on the three trains (a northward passenger train overtaking a northward freight train, and the southward passenger train previously described.

Normally, only one train would be slowed or stopped when the overtaking maneuver occurs. However, the center sidings do not eliminate the possibility that:

- Passenger trains may have to divert to the opposite track to overtake freight trains, or
- Freight trains may be unable to use a center siding because another freight train of the opposite direction is occupying the siding.

If a freight train were unable to occupy a center siding it would proceed, and a following passenger train would operate at a reduced speed until it reached a location (interlocking) where the opposite track was clear. The passenger train would then divert to the opposite track to overtake the freight train. Diverting a freight train to the other track, to enable a passenger train to overtake it, is not recommended. The diverted freight train would occupy the opposite track longer than a passenger train would, thereby reducing capacity.

Each time a center siding is used by a freight train, a passenger train would not have to divert, thereby saving a minimum of about three minutes for a passenger train each time a diversion was avoided. However, the passenger train may have been following the freight train for a number of miles before the freight train arrived at the siding. Therefore the delay to the passenger train could be significantly greater than the three minutes lost in diverting from one track to another.



Time Sequence of Moves – Northbound Passenger Train Overtaking Northbound Freight in Center Siding "B to A," Southbound Passenger Train on opposing track