



NTSB National Transportation Safety Board

The NTSB and Recent Railroad Accidents

Brotherhood of Locomotive
Engineers and Trainmen

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Vice Chairman

NTSB

- Independent agency, investigate transportation accidents
- Make findings, conclusions, determine probable cause(s), and make recommendations to prevent recurrences
- Conduct special studies and investigations
- Assist victims and their families after an accident



Independent

- 5 Members, nominated by the President, confirmed by the Senate
 - Members are not investigators
 - Safeguards for independence
 - Conclusions from facts, not politics

Purpose

- **Single focus is safety**
- **Objective is to determine probable cause, not liability or blame**

The NTSB Investigates:

- Railroad accidents in which there is a fatality, substantial property damage, or that involve a passenger train
- Highway accidents (including certain grade-crossing accidents) that involve issues of wide-ranging safety significance
 - All U.S. aviation accidents (except those of military and intelligence agencies)
 - Pipeline accidents in which there is a fatality, significant environmental or property damage
- Major marine accidents and collisions between a public and a non-public vessel



Railroad Division

The Railroad Division: 17 employees (of about 400) located in the DC headquarters office and three regional offices



Accident Investigation



Accident investigation is the primary tool used by the NTSB to develop recommendations for improvement

NTSB Role in Investigations

- NTSB is usually in charge of accident investigations (except certain maritime mishaps)
- Other federal agencies (such as FRA) may conduct concurrent investigations under applicable provisions
- Exception – Criminal activity: NTSB asks FBI to lead the investigation

Selection of Rail Accidents

- NTSB “launches” on about 10 railroad accidents each year
- Safety issues we evaluate include
 - Passenger Trains
 - Fatalities (Public/Employee)
 - Hazardous Material Releases
 - Methods of Operation

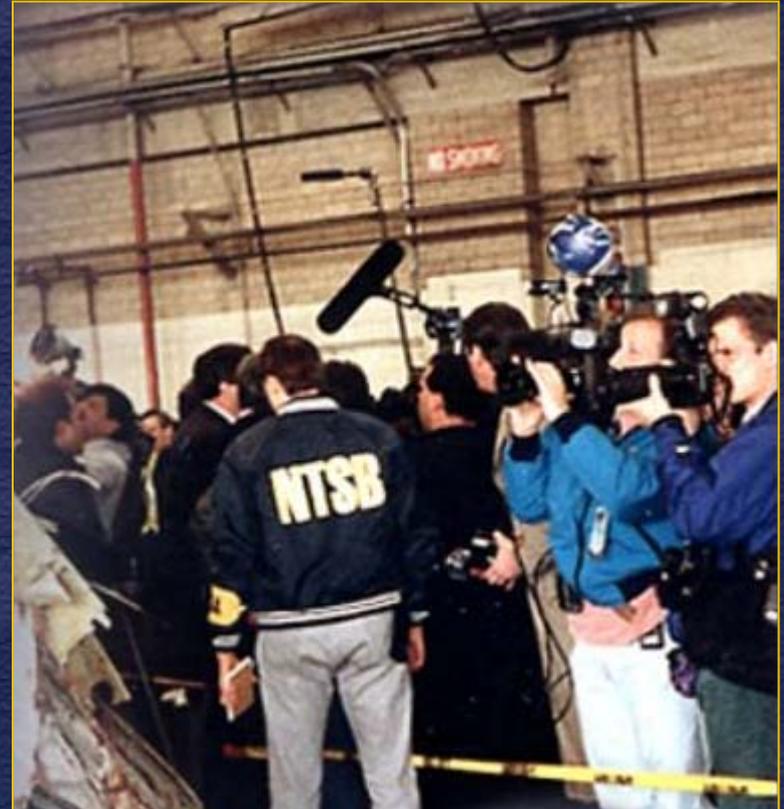
The Party System



The NTSB leverages its resources by designating parties to its investigations “whose employees, functions, activities, or products were involved in the accident or incident and who can provide suitable qualified technical personnel actively to assist in the investigation”

Not Participating

Persons who provide no technical expertise, such as news media, individuals occupying legal positions or insurance personnel, are not permitted to participate in any phase of the investigation, including meetings



Composition of Investigative Team

The on-scene investigative team typically consists of an Investigator in Charge (IIC) and groups in the following disciplines:

- Operations
- Track
- Signal
- Mechanical
- Human performance
- Survival factors

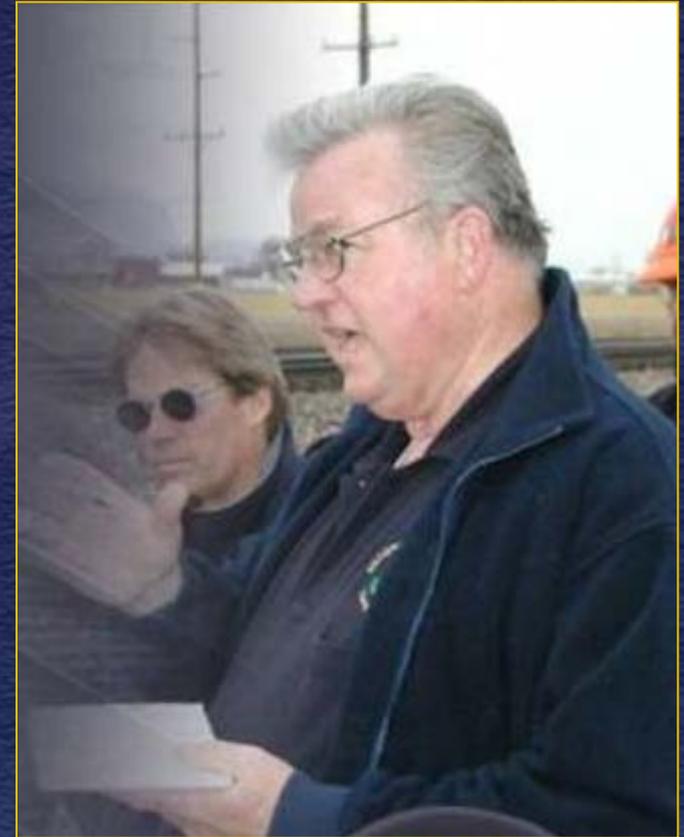
Investigative Team (con't)

Other specialized groups are formed as necessary, including the following:

- Event recorder data
- Crashworthiness
- Hazardous materials
- Fire/explosion
- Witness interviews
- Metallurgical

Group Process

- Several investigative groups may be formed during the accident investigation
- Groups develop a factual account of the on-scene findings that are documented in field notes
- Field notes are prepared by Group Chairmen and signed by all group members
- Groups work closely under the direction of the Group Chairmen and remain intact for the duration of the investigation



On-Scene Board Member



Research and Engineering

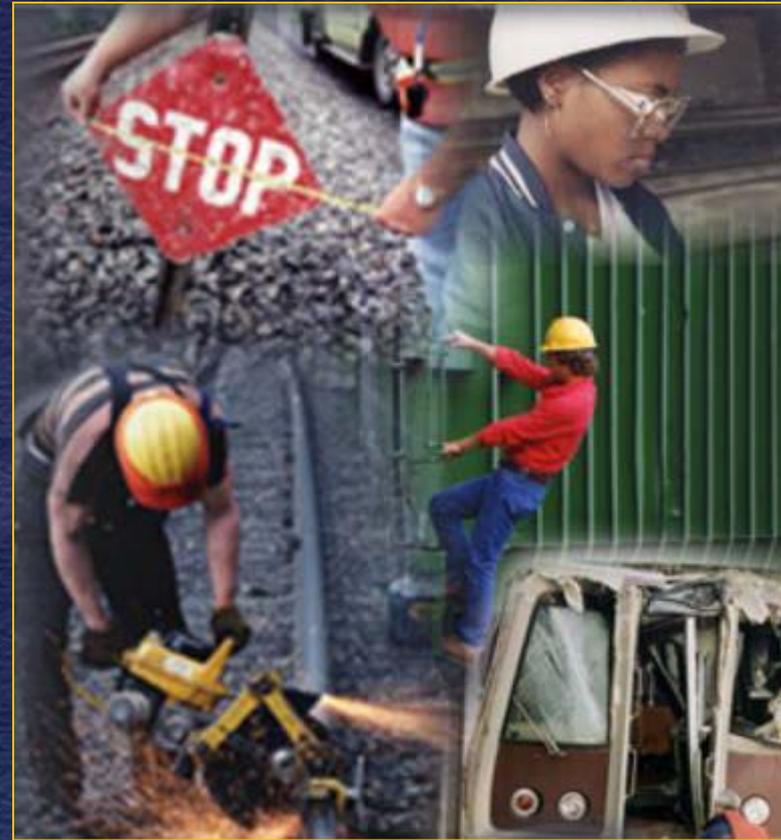
The NTSB Office of Research and Engineering provides technical support to investigations as needed, including

- performing failure analysis on materials and components, and
- recovering and analyzing data from event recorders



Safety Recommendations

Safety recommendations are issued to DOT and its modal administrations, transportation operators, manufacturers, trade associations, labor unions, and state and local governments



Acceptance Rate

**83.7% acceptance rate
for railroad and rail transit safety
recommendations
(as of November 2009)**

Recent Accident



Head-on Collision, Chatsworth, CA

September 12, 2008

Probable Cause

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the Metrolink engineer to observe and appropriately respond to the red signal aspect at Control Point Topanga because he was engaged in prohibited use of a wireless device, specifically text messaging, that distracted him from his duties. Contributing to the accident was the lack of a positive train control system that would have stopped the Metrolink train short of the red signal and thus prevented the collision.

Recommendations to FRA

Require the installation, in all controlling locomotive cabs and cab car operating compartments, of crash- and fire-protected inward- and outward-facing audio and image recorders capable of providing recordings to verify that train crew actions are in accordance with rules and procedures that are essential to safety as well as train operating conditions.

The devices should have a minimum 12-hour continuous recording capability with recordings that are easily accessible for review, with appropriate limitations on public release, for the investigation of accidents or for use by management in carrying out efficiency testing and systemwide performance monitoring programs.

Recommendations (con't)

Require that railroads regularly review and use in-cab audio and image recordings (with appropriate limitations on public release), in conjunction with other performance data, to verify that train crew actions are in accordance with rules and procedures that are essential to safety.

Another Recent Accident



Rear-End Collision, Chicago, IL

November 30, 2007

Norfolk Southern
Train 23M

Accident MP 517.34

Amtrak Train 371

MP 518

MP 517



Track 2

Metra

Metra

Englewood
Interlocking

Red over Yellow

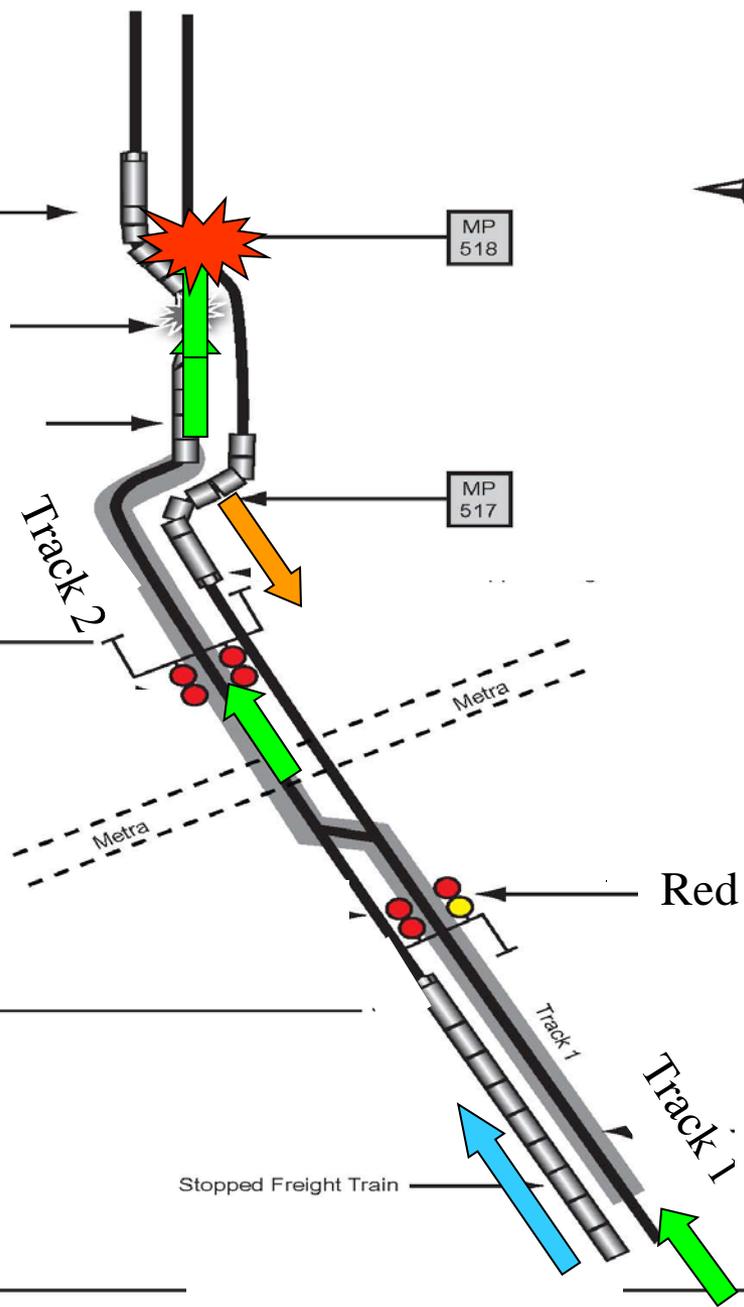
Amtrak Train
371

NOT TO SCALE

Stopped Freight Train

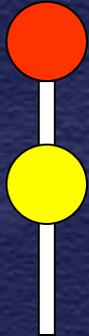
Track 1

Track 1



Different Signal Indications

- Norfolk Southern - *Restricting*



- Be prepared to stop in one-half the range of vision
- Expect the track to be occupied

- Amtrak Terminal - *Slow Approach*



- Stop at the next signal
- Expect a clear track

Probable Cause

The NTSB determined that the probable cause of the November 30, 2007, collision of Amtrak train 371 with the rear of Norfolk Southern Railway Company train 23M near Chicago, Illinois, was the failure of the Amtrak engineer to correctly interpret the signal at Englewood interlocking and Amtrak's failure to ensure that the engineer had the competency to correctly interpret signals across the different territories over which he operated.

Contributing to the accident was the relief engineer's failure to immediately communicate to the engineer that he had miscalled the signal at Englewood and to stop the train when he did not respond to her expressed concern.

Also contributing to the accident was an absence of effective crew resource management between the relief engineer and the operating engineer which led to their failure to resolve the miscalled signal prior to the collision. Further contributing to the accident was the absence of a positive train control system that would have stopped the Amtrak train when it exceeded restricted speed.

Recommendations to FRA

Establish uniform signal aspects that railroads must use to authorize a train to enter an occupied block, and prohibit the use of these aspects for any other signal indication.

Study the different signal systems for trains, identify ways to communicate more uniformly the meaning of signal aspects across all railroad territories, and require the railroads to implement as many uniform signal meanings as possible.

Require that emergency exits on new and remanufactured locomotive cabs provide for rapid egress by cab occupants and rapid entry by emergency responders.

Other Recommendations

To Amtrak:

Identify engineers and engineer trainees who have not consistently demonstrated competency in interpreting signals and provide them with enhanced training, supervision, testing, and evaluation necessary to determine that signal proficiency has been achieved and maintained.

To Amtrak, BLET, UTU, AAR, APTA, ASLRRA, and UTU:

Use the circumstances of [this accident] during crew resource management training to reemphasize the necessity of any qualified person on the leading locomotive or car to immediately communicate any disagreement on a called signal and to immediately take action necessary to ensure that the train is operated safely.

Remote Control Operations

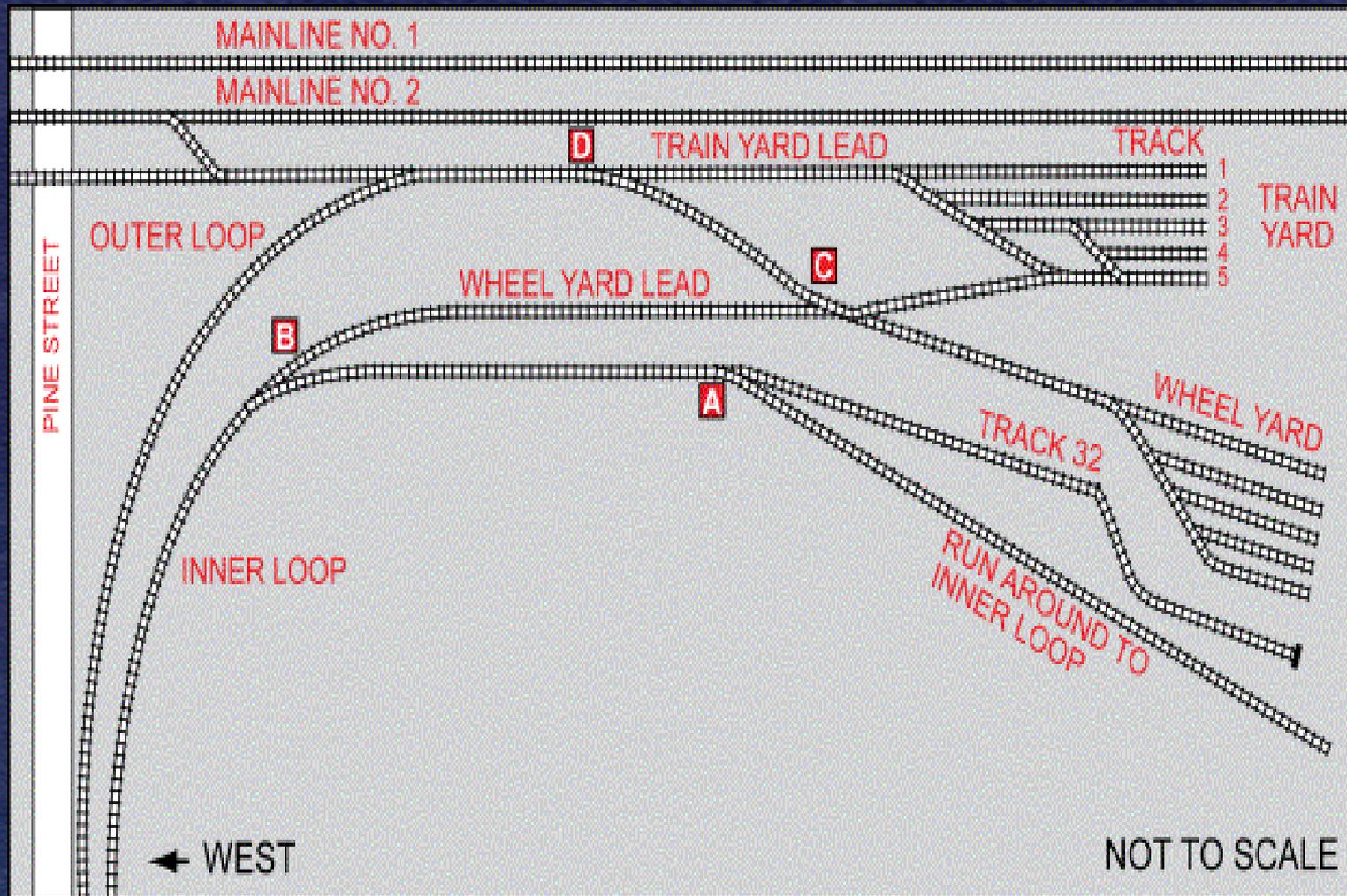
Ongoing Investigations

- Minneapolis, MN, December 29, 2009
- Albany, NY, May 10, 2009
- Walbridge, OH, April 1, 2008

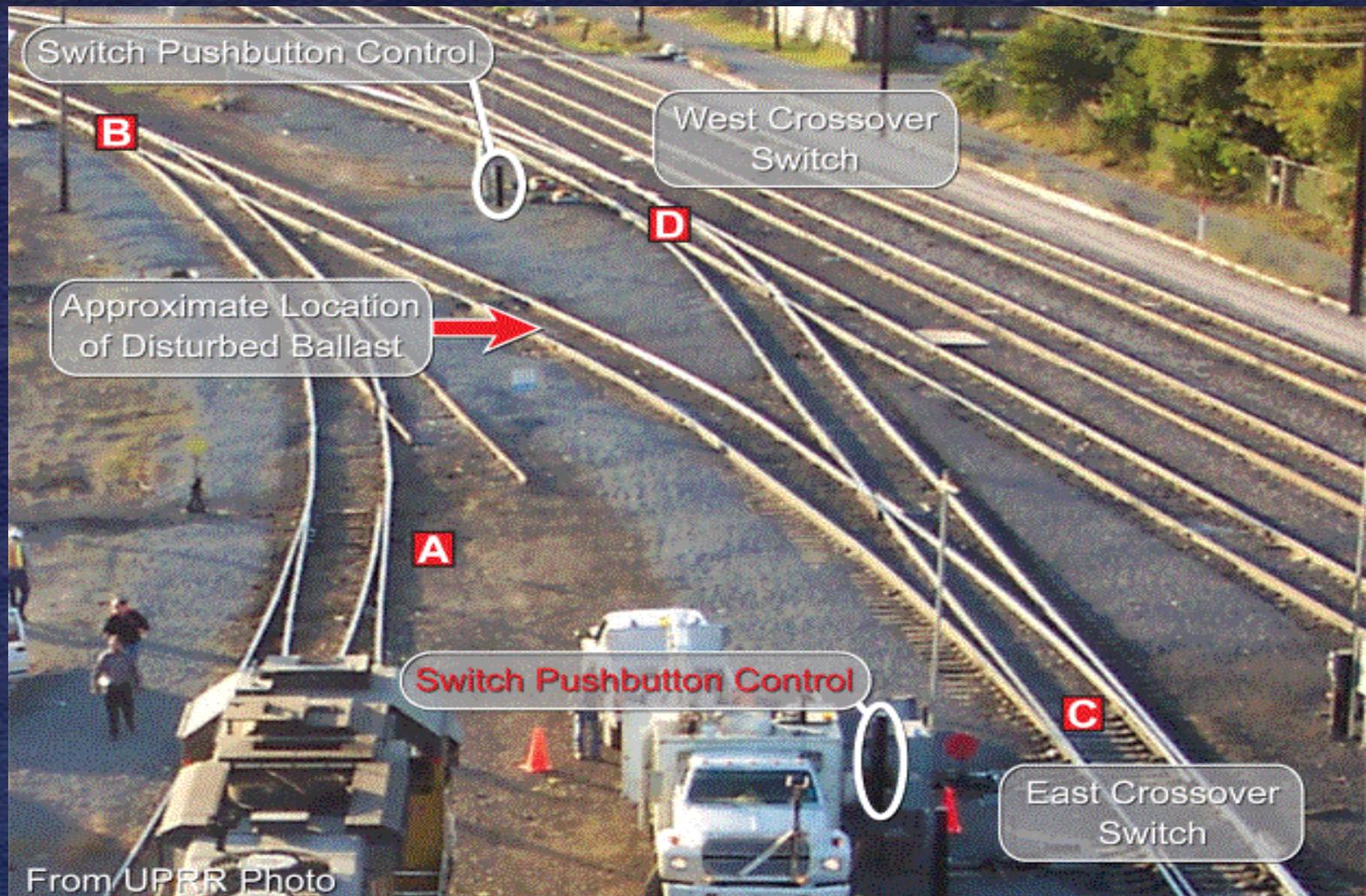
Completed Investigations

- Stockton, CA, August 30, 2007
- Pajaro, CA, October 13, 2006
- San Antonio, TX, December 7, 2003

UP East Yard, San Antonio, TX



Scene of the Accident



Probable Cause

The NTSB determined that the probable cause of the December 7, 2003, yard accident in San Antonio, Texas, was the foremen's inattentiveness to the location of the locomotives and the switch position and the lack of adequate oversight by the Union Pacific Railroad of power-assisted switch installation, maintenance, and operations at its East Yard.

Recommendation to FRA

Require railroads to implement for all power-assisted switch machines, regardless of location, a formal commissioning procedure and a formal maintenance program that includes records of inspections, tests, maintenance, and repairs

Recommendations to UP

Issue written guidance that emphasizes the importance of using specified wire requirements to the employees responsible for installing and maintaining power-assisted switch machines.

Issue written guidance that emphasizes the proper use of the equipment to employees who use power-assisted switch machines. Include any unique operating characteristics, such as auto-reverse, the potential undesired results of midcycle power interruption, and “lock-out” procedures, and require employees to demonstrate an understanding of the guidance.

Thank You!

Questions?

Website: [ntsb.gov](https://www.ntsb.gov)