



NTSB National Transportation Safety Board

*Office of Railroad, Pipeline and
Hazardous Materials Safety*

**Collision of Two WMATA
Metrorail Trains Near Fort
Totten Station, June 22, 2009**

Opening Statement

James A. Southworth
Chief – Railroad Division

NTSB Staff

- Ed Dobranetski Investigator-in-Charge (Retired)
- Jim Southworth Chief, Railroad Division
- Mark Jones Deputy Chief, Railroad Division
- Ruben Payan Signal & Train Control
- Jim Remines Operations (Retired)
- David Watson Mechanical
- Cy Gura Track & Structures
- Rick Downs Crashworthiness
- Rick Narvell Human Performance
- Dana Sanzo Survival Factors
- Stephen Klejst Operations and Oversight
- Meg Athey Editor
- Kathleen Curry Editor
- Joe Scott Presentations

- Chairman Hersman Member on scene
- Nancy Lewis Member's assistant



NTSB Staff

- **Hank Hughes** Survival Factors (Retired)
- **Courtney Liedler** Survival Factors
- **Cassy Johnson** Recorders
- **Joe Gregor** Recorders
- **Dennis Crider** Vehicle Performance
- **Loren Groff** Safety Culture
- **Jim Cash** Electrical Engineering
- **Sarah McComb** Chief, Vehicle Recorder Division
- **Christy Spangler** Animations
- **Alice Park** Animations
- **Sally Bennett** Presentations Editor

NTSB Staff

- **Bridget Serchak** **Public Affairs**
- **Ted Lopatkiewicz** **Public Affairs**
- **Terry Williams** **Public Affairs**
- **Peter Knudson** **Public Affairs**
- **Eric Grosf** **Transportation Disaster Assistance**
- **Elias Kontanis** **Transportation Disaster Assistance**
- **Pat Sullivan** **Safety Recommendations**
- **Nancy Mason** **Administrative**
- **Denise Whitfield** **Administrative**



Parties to the Investigation

- **Federal Transit Administration**
- **Federal Railroad Administration**
- **Washington Metropolitan Area Transit Authority**
- **Amalgamated Transit Union**
- **Tri-State Oversight Committee**
- **District of Columbia Fire Department**
- **Alstom Signaling Inc. (General Railway Signal)**
- **Ansaldo STS USA (Union Switch & Signal)**
- **Assisting**
 - **Federal Bureau of Investigation**

Accident Summary

- June 22, 2009
- WMATA Metrorail
- Near Fort Totten Station
- Nine fatalities, 52 injuries
- \$12 million in damages



Events Preceding Accident

- Ongoing Upgrade Program
 - Impedance bond replacement
 - Track circuit replacement
 - Additional upgrades to be made in the following days

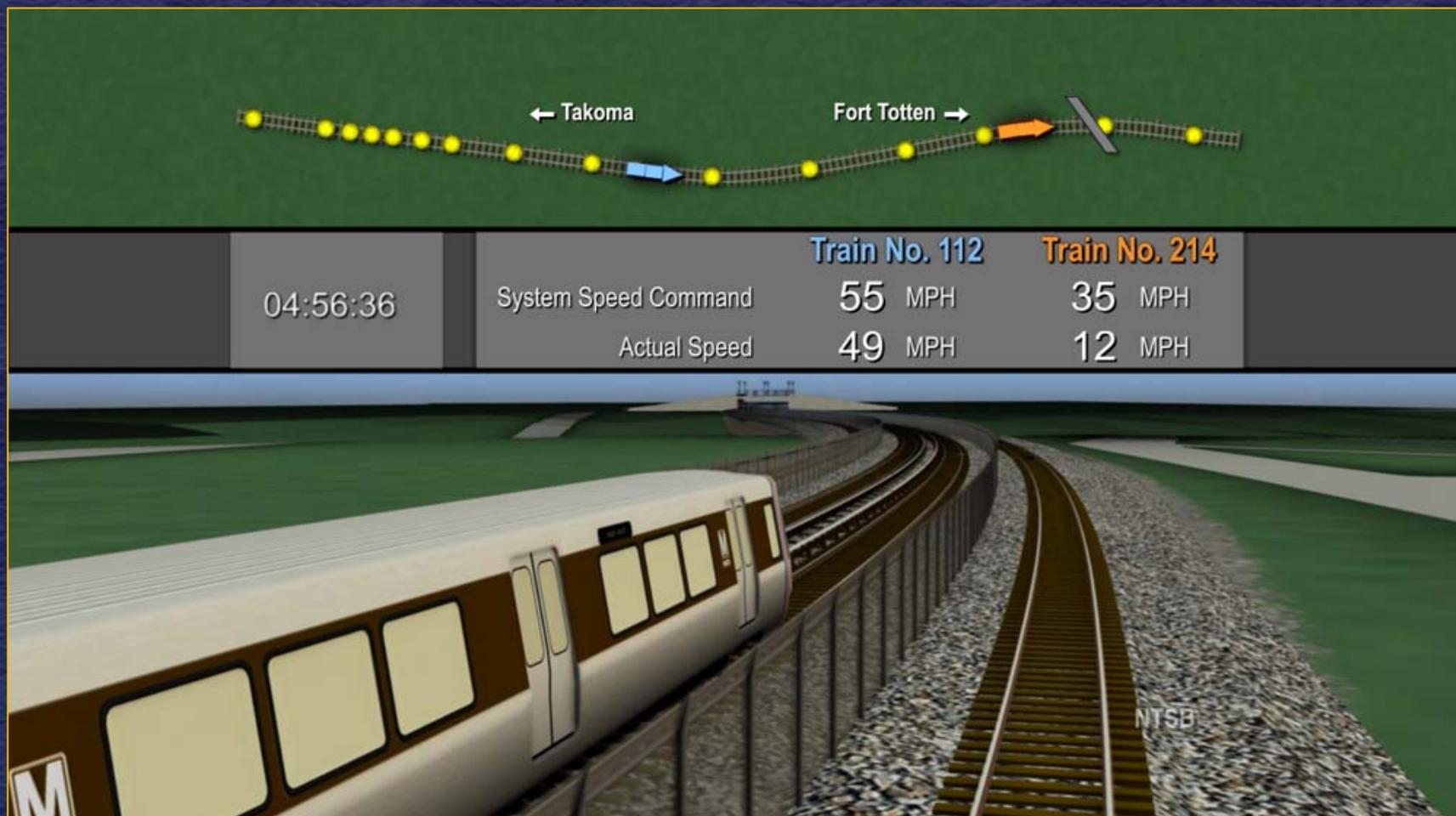
Accident Chronology

- Train 214 (the struck train)
 - Operating in manual mode
 - Was following train 110
 - Lost speed commands between Takoma and Fort Totten, which caused train to stop
 - Operator attributed loss of speed command to the proximity of train 110 ahead

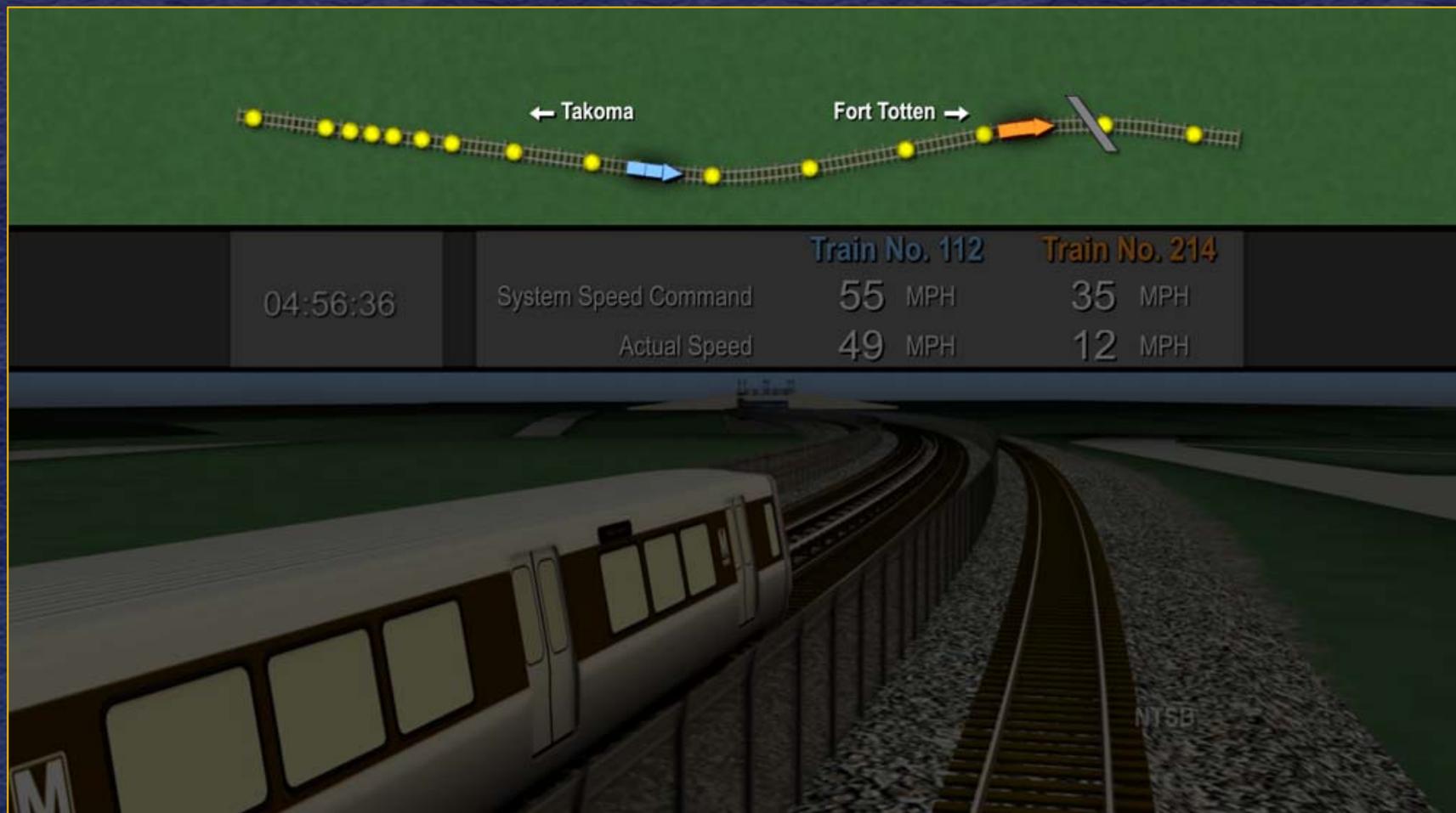
Accident Chronology

- Train 112 (the striking train)
 - Operating in automatic mode
 - Followed train 214
 - Train separation should be maintained by automatic train control system
 - ATC lost detection of train 214
 - ATC issued commands to train 112 to move forward until it collided with standing train 214

Animation



Animation



Animation



Animation



Train Operation

- Operator of train 112 reacted to the emergency, but there was not enough time to stop the train and avoid the collision
- The train control system failed to detect train 214
- Operator of train 214 would have had no reason to suspect the train control system had malfunctioned



Emergency Response

- DC Fire Department
- County mutual aid resources: Fairfax, Arlington, Prince George's, and Montgomery
- DC Metropolitan Police and Metro Transit Police
- Well coordinated and managed effectively



On-Scene Investigation



Post-Accident Onscene Activities



Site distance testing



Train control system testing

Further Activity

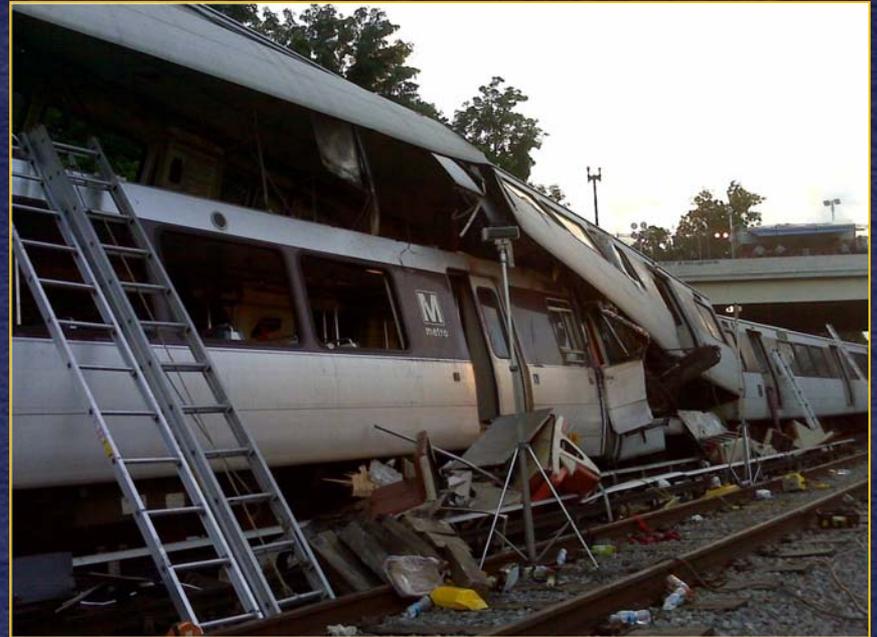
- 2 urgent recommendations issued July 13, 2009
 - To WMATA and FTA
- 9 additional recommendations issued September 22, 2009
 - 6 of these were urgent
- Public hearing
 - February 23 - 25, 2010

Safety Issues

- Rail Car Issues
 - Crashworthiness
 - Event recorders
- Train Control System
 - Loss of train 214 detection
- Safety Culture
- Safety Oversight

Rail Car Issues: Crashworthiness

- Lead car of striking train (a 1000 series car) had catastrophic damage due to carbody telescoping
- Lost 63 feet (84%) of survival space



Significant loss of survival space in lead car of train 112

Rail Car Issues: Crashworthiness

- A previous accident showed 1000 series cars to have the least crashworthiness
- NTSB issued recommendation in 2006 to accelerate replacement of 1000 series cars (closed-unacceptable action)



Collision at Woodley Park Station,
November 3, 2004

Rail Car Issues: Crashworthiness

- “Bellying” places 1000 series cars in the middle of a train
- West Falls Church Yard collision involved “bellied” 1000 series cars
- “Bellying” is ineffective
- WMATA continues to use 1000 series cars



Significant damage to bellied 1000-series car (West Falls Church yard accident)

Rail Car Issues: Event Recorders

- Train 112 (striking train) had no recorder
- 1000 and 4000 series cars have no recorders
- 2 of the 3 recorders on train 214 were not functioning properly
- Only cars in the lead position record train control data



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