



# Victor, New York Motorcoach Run-off-Road and Overturn Accident

June 23, 2002

# Parties to the Investigation

- New York State Thruway Authority
- New York State Police
- Federal Motor Carrier Safety Administration
- Motor Coach Industries, Inc.



# Arrow Line, Inc.

- Licensed and registered for-hire passenger carrier
- Based in East Hartford, Connecticut
- Operated in northeast region of United States
- Member of Coach USA network of passenger carrier companies

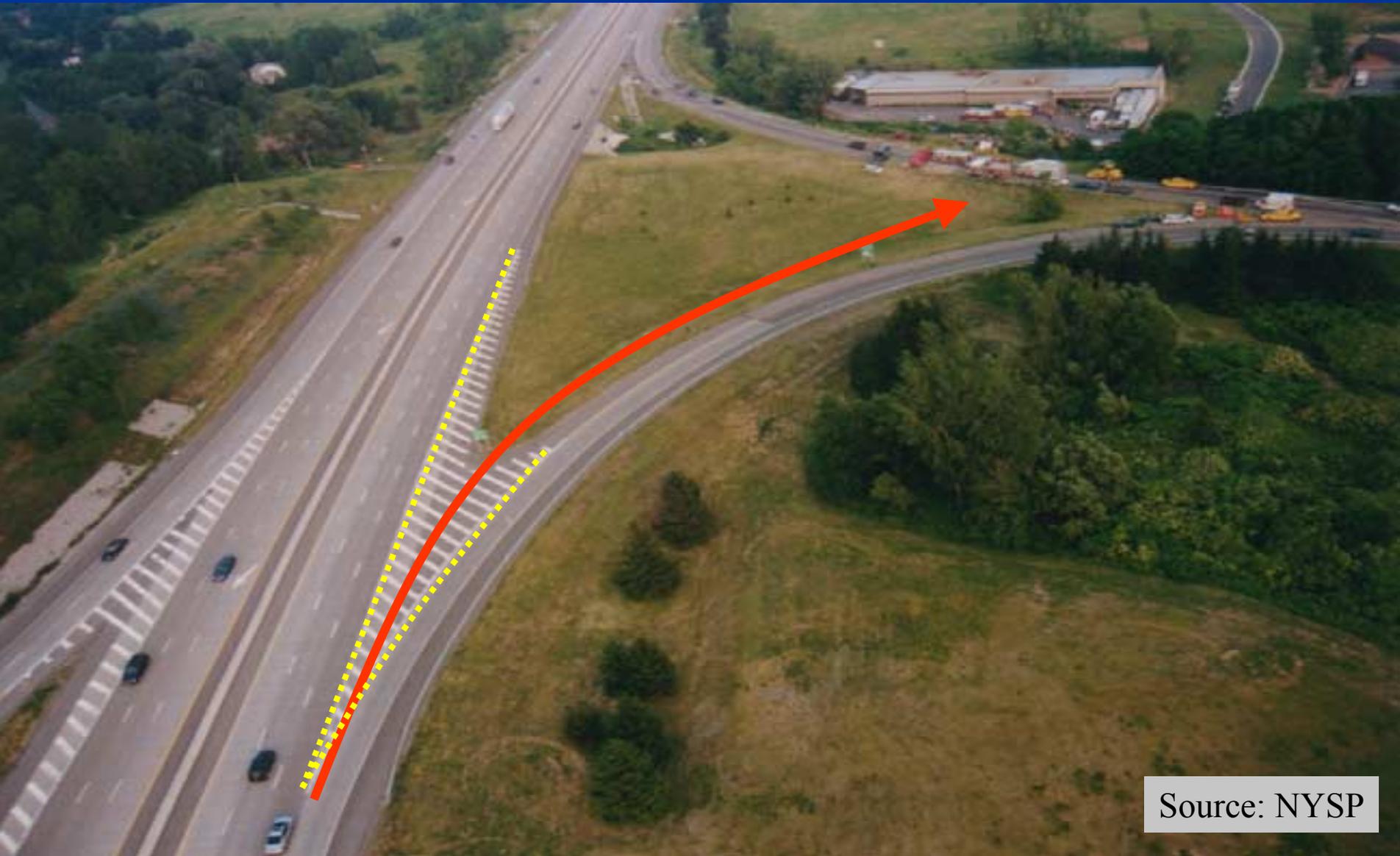


# Accident Vehicle and Occupants

- 1998 55-passenger MCI motorcoach
- No accident-related mechanical defects
- No occupant restraints, except for driver
- 47 passengers onboard
- Returning to Connecticut from Niagara Falls

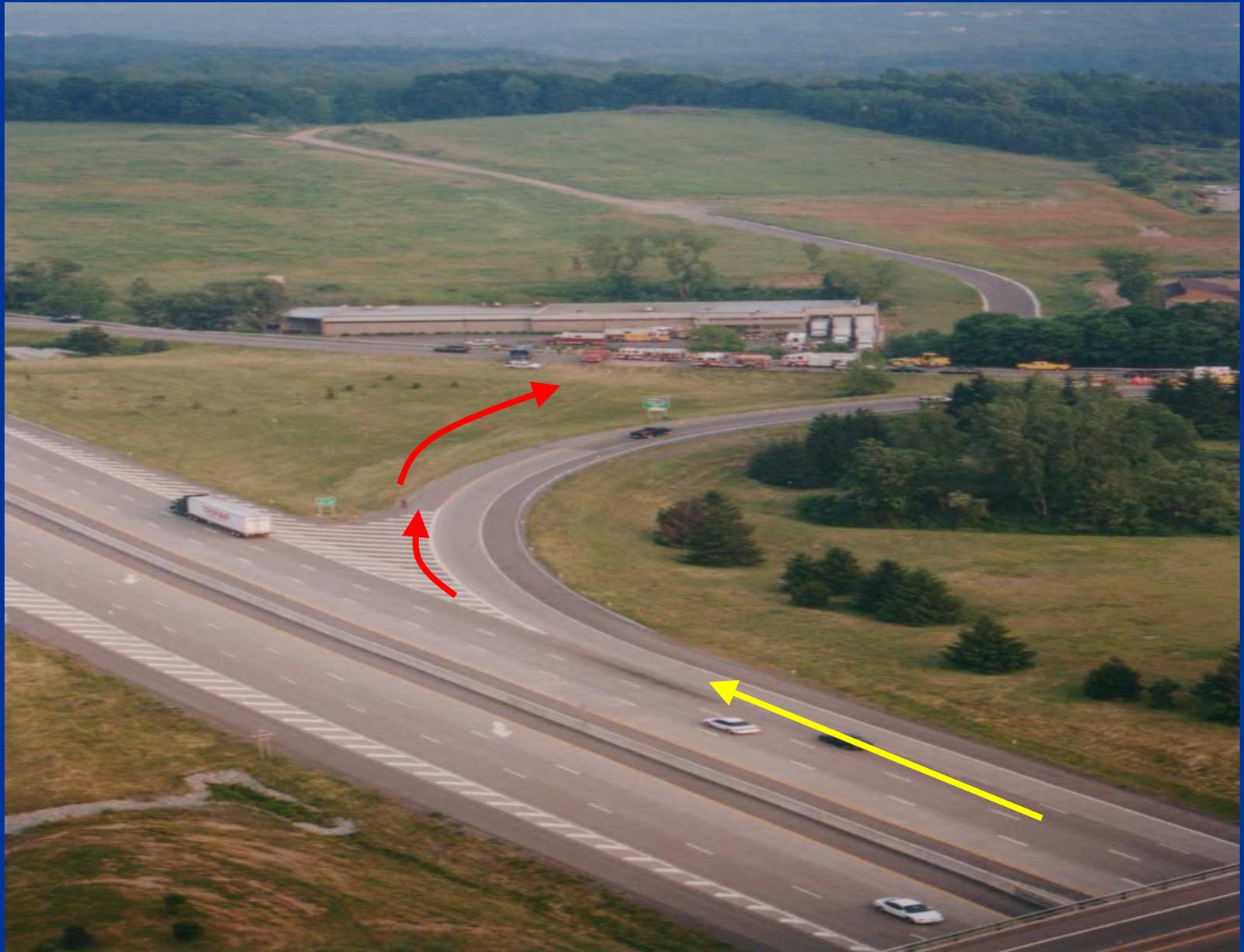


# I-90 Exit 45 Accident Site

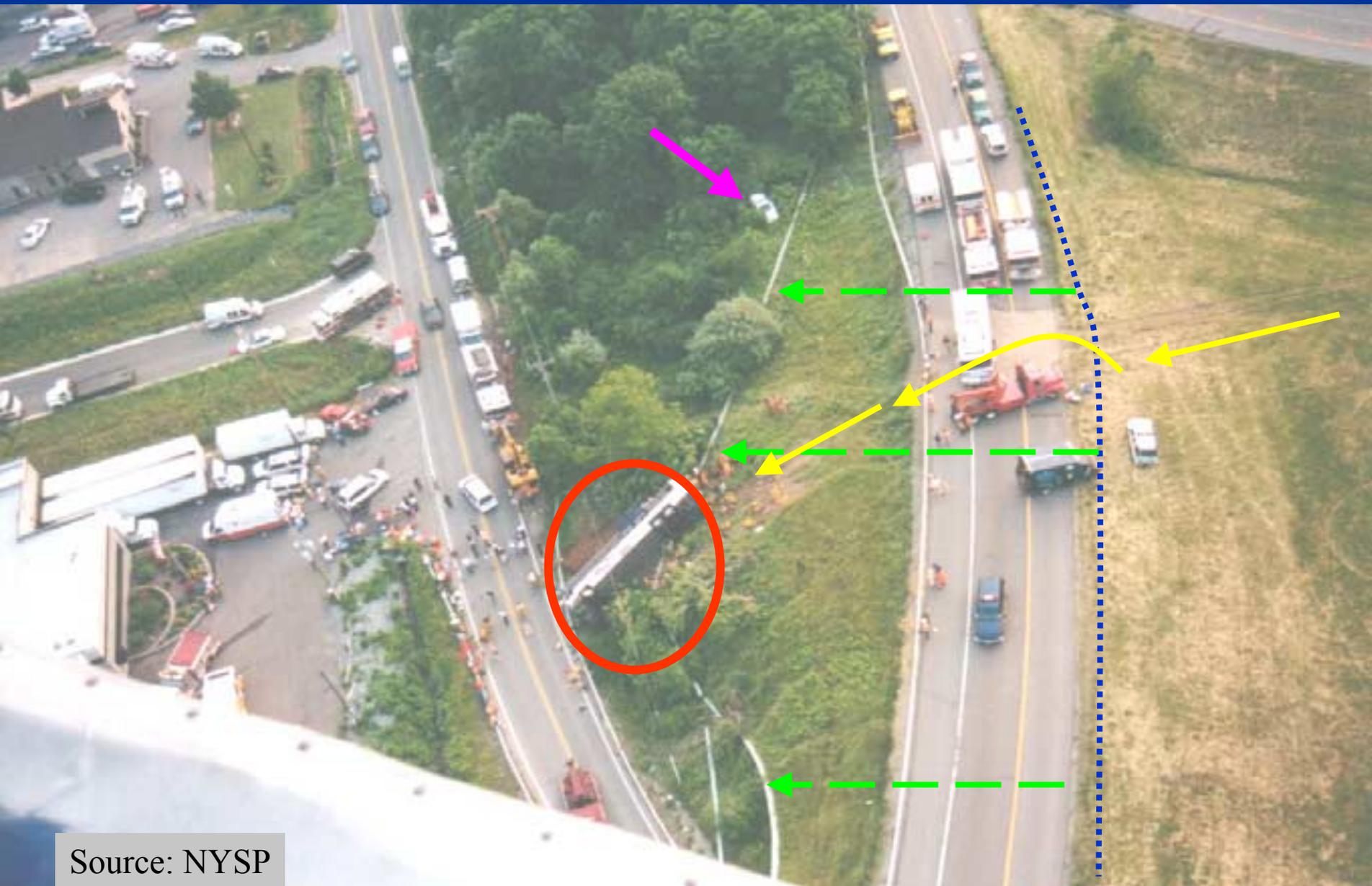


Source: NYSP

# I-90 Exit 45 Accident Site



# Accident Sequence



# Occupant Injuries

- Motorcoach
  - Driver, minor injuries
  - 5 occupants fatally injured, all ejected
  - 7 occupants seriously injured, 1 ejected
  - 34 occupants, minor injuries
- Passenger vehicles
  - 6 occupants, minor injuries
  - 3 occupants uninjured



# Issues

- Motorcoach operator fatigue
- Adequacy of the FMCSA
  - SafeStat rating system for passenger carriers
  - Compliance reviews
- Emergency contact information
- Motorcoach occupant protection



# Proposed Recommendation Recipients

- Federal Motor Carrier Safety Administration
- U.S. Department of Defense Surface Deployment and Distribution Command
- Coach USA
- National Highway Traffic Safety Administration



# Simulations



# Purpose

- To determine motorcoach steering input
- To determine driver's subsequent actions in depressed grassy area
- To determine vehicle dynamics



# Methodology

- Scene developed from New York State Police mapping and aerial photographs
- Interaction of motorcoach and guardrail added
- Motorcoach vault and roll simulated
- Ford Expedition and Pontiac Vibe rollovers animated



# Simulated Driver Inputs

- The driver could have maintained slight steer to the right for about 10.8 seconds prior to the gore
- Additional right steer needed to leave tire marks in simulation
- Steering wheel turned left as motorcoach went onto grass



# Simulations

- Depicts best fit to physical evidence
- Representative of accident sequence but may not show actual accident
- Shown at real time
- Represents weather and lighting conditions
- Four simulation views will be shown



# Show simulations



# Summary

- Motorcoach was going about 60 to 63 mph at the gore
- Guardrail slowed motorcoach
- Driver could have held a slight right steer for over 10 seconds and been headed toward the gore where tire marks occurred
- Steering wheel had to be turned to the right to leave tire marks and to the left to redirect



# Human Performance Issues



# Driver's Sleep Deprivation

- Off duty 16.5 consecutive hours before trip
- Driver stated he had been awake for 2 nights
- Consistent with hotel staff statement, casino surveillance tapes, and taxi driver's statement



# Driver's Sleep Deprivation

- Three brief naps (totaling less than 4 hours) in 51-hour period preceding accident
- Naps occurred as driver sat in motorcoach awaiting passengers
- Compelling sleepiness



# Driver's Behavior and Performance

- Drifting within lane and onto shoulder
- “Restless” and “irritable”
- Rubbing his eyes, wiping his face, resting elbows on steering wheel
- Driver denied falling asleep
- Driver's behavior showed obvious sleepiness



# Sleep Deprivation's Effects on Performance

- Degraded judgment, decision-making, and memory
- Slowed reaction time
- Lack of concentration
- Mental fixation
- Irritability and restlessness



# Fatigue Education Efforts

- Provide training and recognition essential to reduce fatigue threat
- U.S. Department of Transportation: Develop educational materials regarding shift work, scheduling, health, diet, and rest
- Federal Highway Administration worked with industry to educate drivers on fatigue and drowsy driving



# The Driver

- Driver spent off-duty hours gambling, not resting; not fit for duty
- The trip's coordinators and passengers realized there was a problem
- Help requested from second bus driver
- Passengers tried to keep accident driver awake
- Unsuccessful in preventing fatigued driver from unsafely operating motorcoach



# Driver's Alert Program

- 1-800-number used to report driver's erratic lane keeping
- Anecdotal reports not investigated
- Passengers felt powerless to stop driver
- Means for contacting motor carrier



# Motor Carrier Oversight



# Motor Carrier Issues

- Adequacy of FMCSA compliance review process identifying unsafe passenger carriers
- FMCSA and military passenger carrier inspection information exchange
- SafeStat rating system for passenger carriers



# Arrow Line, Inc.

- Subsidiary of Coach USA
- Based in Connecticut
- Charter and tour service
- 92 buses and 206 drivers
- Sold to Peter Pan in May 2003



# Postaccident Compliance Review

- Postaccident on-site inspection
- Conditional rating
- Vehicle category unsatisfactory
- Violations in almost all areas of operation
- Many driver- and vehicle-related violations



# Previous Compliance Reviews

- 1989 to 1994: 7 compliance reviews
- Discrepancies found, corrections recommended
- Not all discrepancies corrected
- 1994: Top 500 Worst Carriers List
- 1995: Congressional complaint
- No further compliance reviews, safety ratings, or enforcement followup



# Compliance Review Process

- Carriers rated Unsatisfactory given 45 days to correct or cease operations
- Arrow rated Satisfactory or Conditional
- Continued operations with repeated safety violations uncorrected
- Violations not rated Acute or Critical
- Awaiting action from FMCSA



# MTMC

- Compliance audits with inspection
- Carriers rated 1 (best) to 5 (worst)
- Carriers rated 4 or 5 prohibited from carrying military personnel
- Arrow rated 4
- Serious violations and operational deficiencies



# MTMC

- Did not notify FMCSA about the safety deficiencies
- No requirement to do so
- Lack of safety management controls
- Now Surface Deployment and Distribution Command



# Safety Status Measurement System (SafeStat)

- FMCSA program to prioritize motor carriers for safety improvement
- Carriers rated in four Safety Evaluation Areas
  - Accidents
  - Vehicle
  - Driver
  - Safety Management
- Percentile rank relative to all carriers



# SafeStat

- 678,000+ motor carriers
- 30,100 or 4 percent are passenger carriers
- Passengers rely on safety ratings
- Passenger carriers are rated with all registered motor carriers



# Occupant Safety



# Crash Survivability



- Motorcoach interior remained intact
- Adequate survival space for passengers
- 6 ejected (5 fatal)
- 7 serious injuries
- Unrestrained passengers exposed to injury and ejection



# U.S. Bus Crashworthiness

- Occupant ejection a major cause of death in automotive crashes
- Restraint systems prevent ejection
- No Federal regulation or standard requiring seat belts in motorcoaches



# Crashworthiness in Other Countries

- European Union working towards mandatory compliance for motorcoach seat belts
- United Kingdom and Australia require seat belts in all new intercity buses
- Australia introduced regulations to address motorcoach crashworthiness



# 1999 NTSB Bus Crashworthiness Report

- Recommended that NHTSA develop performance standards for occupant protection
- Once developed, require new motorcoaches meet standards
- NTSB continuing to investigate motorcoach accidents that include multiple injuries and fatalities



# New Orleans, Louisiana



- May 9, 1999, motorcoach accident
- 22 fatal, 10 ejected, 15 serious injuries
- Reiterated motorcoach crashworthiness recommendations to NHTSA



# Other NTSB Motorcoach Investigations

- Loraine, Texas (June 9, 2002)
  - 3 fatalities
  - Lack of restraints contributed to injuries
- Hewitt, Texas (February 14, 2003)
  - 5 fatalities, 14 ejections
  - Passengers thrown from seating area
- Tallulah, Louisiana (October 13, 2003)
  - 8 fatalities
  - Passengers thrown from seating area



# Summary

- Recent accidents underscore urgent need for action by NHTSA for occupant protection systems in the United States
- NHTSA has done little to address 1999 bus crashworthiness report recommendations

