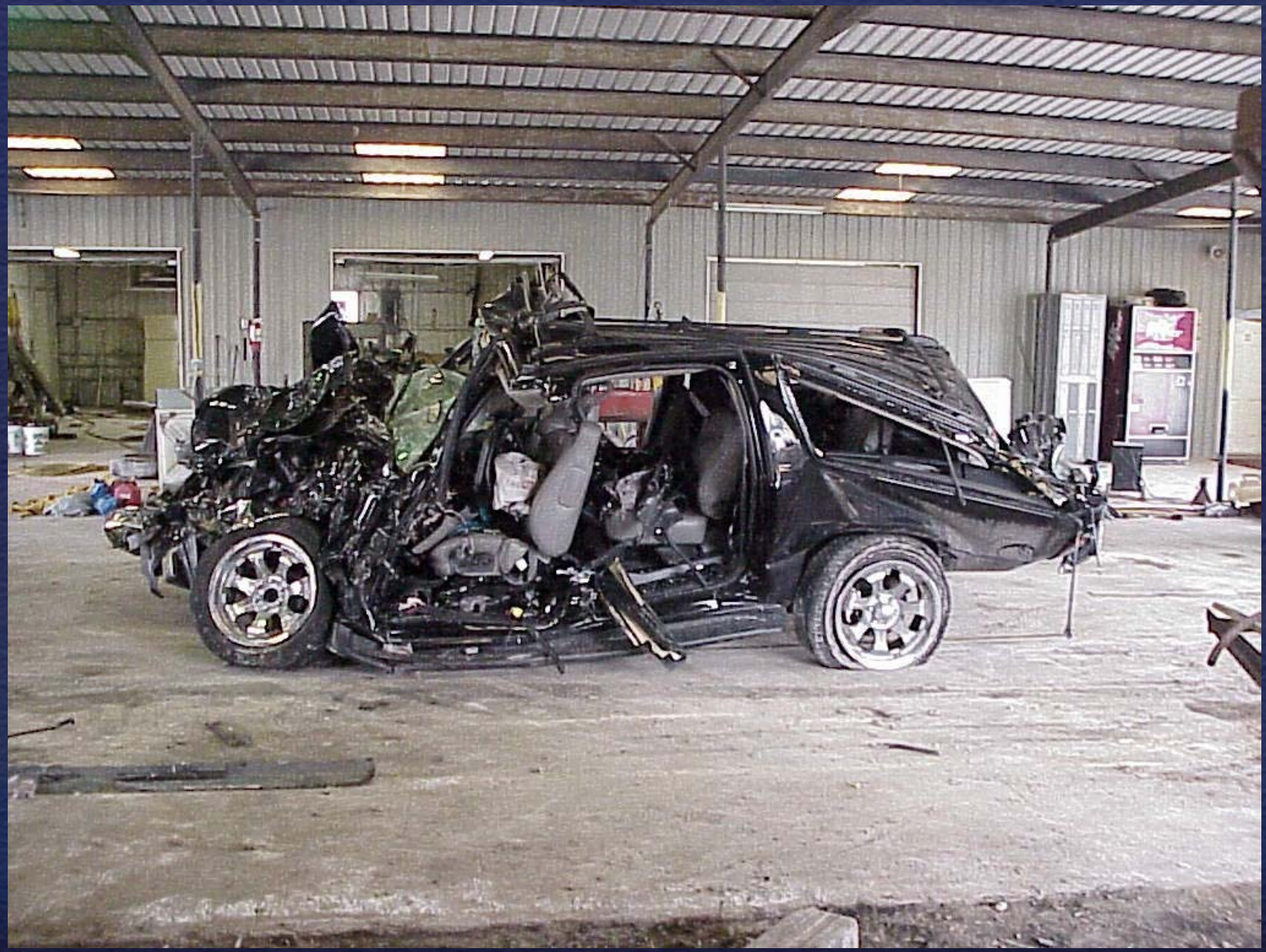
NTSB National Transportation Safety Board

Office of Highway Safety

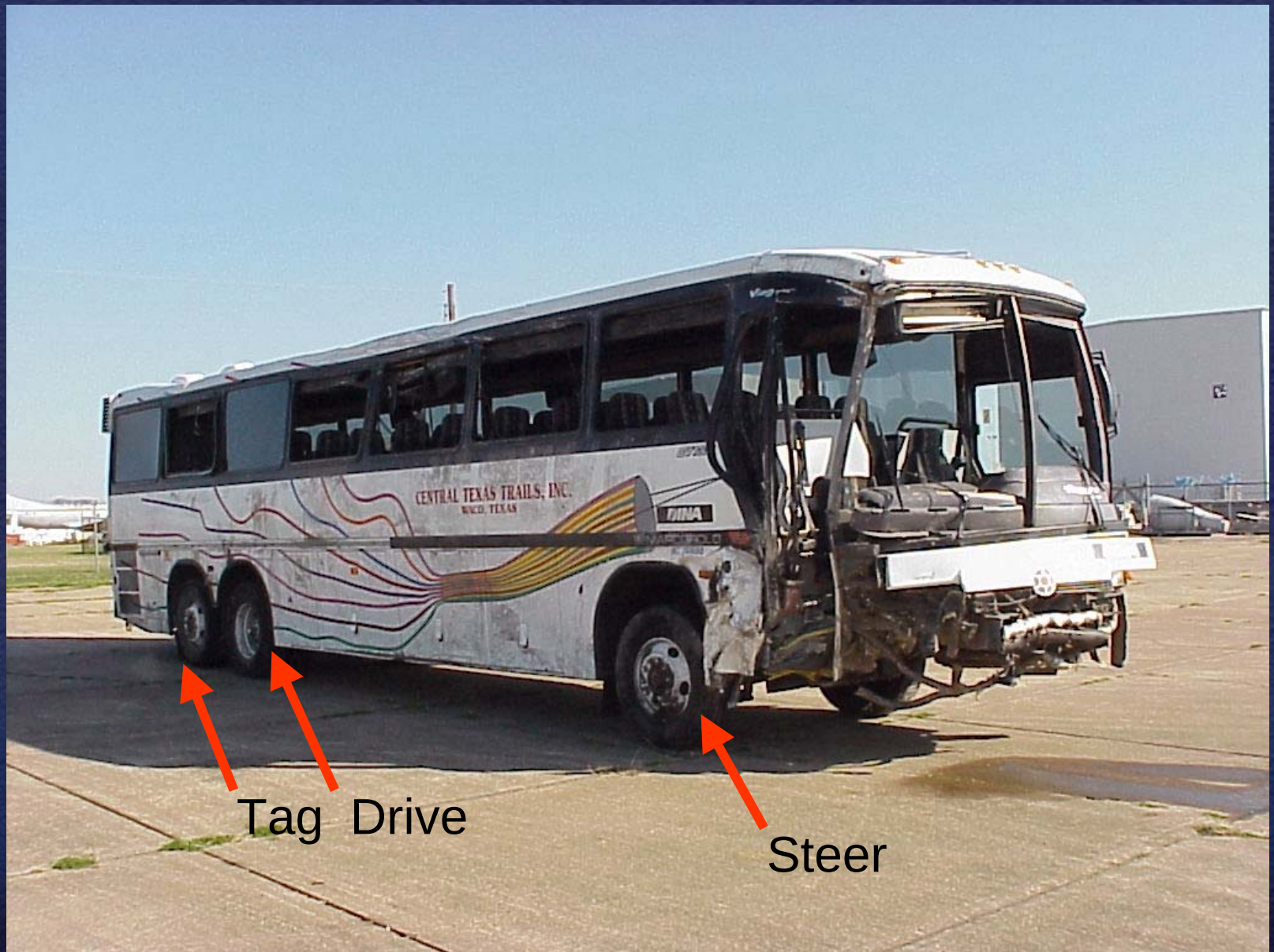
Commercial Vehicle Tires and Testing

Jennifer Russert

2002 Chevrolet Suburban



1996 Dina Viaggio Motorcoach



Minimum Tire Tread Depths (inches)

	Left	Right	FMCSA	CVSA
Steer axle	14/32	15/32	4/32	2/32
Drive axle	3/32 2/32	6/32 5/32	2/32	1/32
Tag axle	8/32	5/32	2/32	1/32

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Motorcoach Tires – Tread Depth

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Motorcoach Tires – Tread Depth

- Low Tread Depth
  - Decreases ability for tires to channel water
  - Limits the ability of tire to maintain contact with the roadway
- Effect on friction and handling
- Tire testing
  - All drive axle tires (2/32, 3/32, 5/32, 6/32)
  - Right steer axle tire (15/32)
- Testing and simulation

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Tire Friction

- Testing at 60 mph, all tested water depths
  - Steer axle tire friction = 0.28 to 0.30
  - Right drive axle tire friction = 0.12 to 0.16
  - Left drive axle tire friction = 0.10 to 0.15
- Speed, water depth, and tread depth affect friction
- **Drive axle tire friction equivalent to ice (0.12 to 0.25)**

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Effect on Motorcoach Handling

- Lower friction available for rear tires
- Passenger car testing
  - Friction reduced when tires worn
  - Handling changes when worn tires are in rear
- Differing friction on front and rear tires creates instability
- Results in rotation and loss of control
- Differing friction on left and right tires increases instability

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Tire Friction

- Drive axle brakes locked sooner than other axles due to friction available
- Earlier lock up of drive axle contributes to loss of control
- If drive axle had same tread depth as steer axle, it would not have locked up
- Driver would likely have been able to maintain control

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