



NTSB National Transportation Safety Board

Office of Highway Safety

Tallulah, Louisiana

Motorcoach Run-off-the-
Road Accident

October 13, 2003

Eastbound on Interstate 20 near Tallulah, Louisiana



SOURCE: LSP

NTSB



Accident Tractor Semitrailer



SOURCE: LSP

NTSB



Accident Vehicle



- 1992 49-passenger Neoplan USA motorcoach
- No accident-related mechanical defects
- No occupant restraints, except for driver

Occupant Injuries

- Motorcoach
 - Driver seriously injured
 - 8 passengers fatally injured
 - 6 passengers seriously injured
- Tractor semitrailer driver not injured

Parties to the Investigation

- Federal Motor Carrier Safety Administration
- Louisiana State Police
- Louisiana Department of Transportation and Development
- First Baptist Church of Eldorado
- Neoplan USA Corporation
- United Motorcoach Association

Issues

- Driver fatigue
- State and Federal motor carrier oversight
- Speed-restricted tires
- Motorcoach seating anchorages

Recommendation Recipients

- Federal Motor Carrier Safety Administration
- National Highway Traffic Safety Administration
- American Association of Motor Vehicle Administrators
- Commercial Vehicle Safety Alliance
- Neoplan USA Corporation

Motorcoach Driver Factors and Church Operator Issues

Motorcoach Driver

- 66-year-old male
- No medical certificate
- Valid Class “B” commercial driver’s license (CDL)

Fatigue

- Reduced alertness due to fatigue:
 - Physical evidence
 - Witness statements
 - Motorcoach driver's own statement
- Potential fatigue contributors

Medical Conditions

- Preaccident medical conditions
 - Insomnia
 - Chronic degenerative arthritis
 - Joint pain, chronic low back pain
 - Mild Obstructive Sleep Apnea
- Well-documented effect on sleep quality, quantity

Sleep Study Results

- 2000 sleep study:
 - 7 hours in bed, 4.7 hours actual sleep
 - No REM sleep
 - 1-2 hours to fall asleep
 - Awoke 6-8 times nightly, needed 10-15 minutes to fall back asleep

Prescription Medications

- Tramadol
 - Pain reliever, some side effects
 - Low level found postaccident
- Zolpidem
 - Sleep aid, short-term sedation
 - Cautioned against use while driving
- Without medications, less sleep

Dietary Supplements

- Unregulated by FDA
- Difficult to assess potential contribution
- FDA plans final rulemaking soon

Medical Examinations

- 49 CFR 391.41 requires medical examination to operate a commercial vehicle
- Driver had several potentially disqualifying medical conditions
- Knowledgeable examiner *might* have disqualified driver
- Current system lacking guidance

Medical Examination Process

- Examiners not adequately supported by current process
- FMCSA contract to develop registry, certification program
- *Under current system, driver might not have been denied certification*

Church Operator Issues

- Church did not consider its motorcoach a commercial vehicle
 - Texas registration – “Private Bus”
 - Not aware of the FMCSA
- All vehicles require title and registration, most State applications lack commercial vehicle definition and guidance

Operator Issues, Continued

- Churches, colleges, charter schools, associations, and others may not be aware of responsibilities
- “Safe Transportation of Passengers by Motorcoach and What it Means to You”
- Site serves as an educational outreach mechanism

Commercial Vehicle Inspections

MAX. SPEED 55MPH
TUBELESS



Tire Inspection Criteria

- Motorcoach passed Texas inspection
- Speed-limited tires not addressed
- No inspection criteria exist
- Potential for inappropriate use

Required Vehicle Inspections

- Required annually, all commercial vehicles
 - Authorized State inspection program
 - Authorized third party inspection facility
 - Authorized roadside inspection program
 - Self-inspection process

Alpha Trucking Inspections

- Self-inspecting and certifying
- Unqualified inspector
- False annual inspection certification
- False roadside inspection repair certifications
- Missing required vehicle maintenance records

Postaccident Inspections

- Numerous roadside inspection violations prior to accident
- Driver reported smoking brake
- Total of 67 rejection violations
- Multiple disqualifying violations at every brake assembly

Alpha's Mechanical Neglect



- No effective maintenance program
- Habitual, progressive mechanical neglect

Self-Inspection Oversight

- No Federal oversight of Alpha
- No Federal or State oversight
- Alpha abused self-inspection program
- Easily circumvented
- Results in unsafe conditions

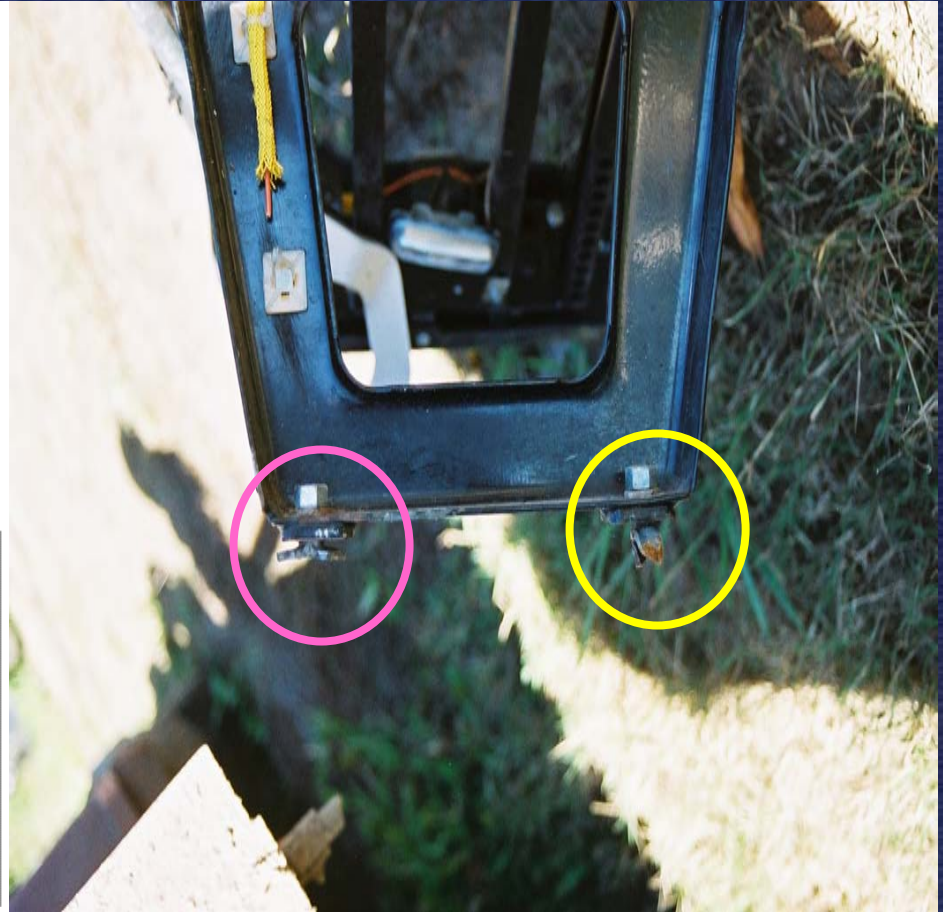
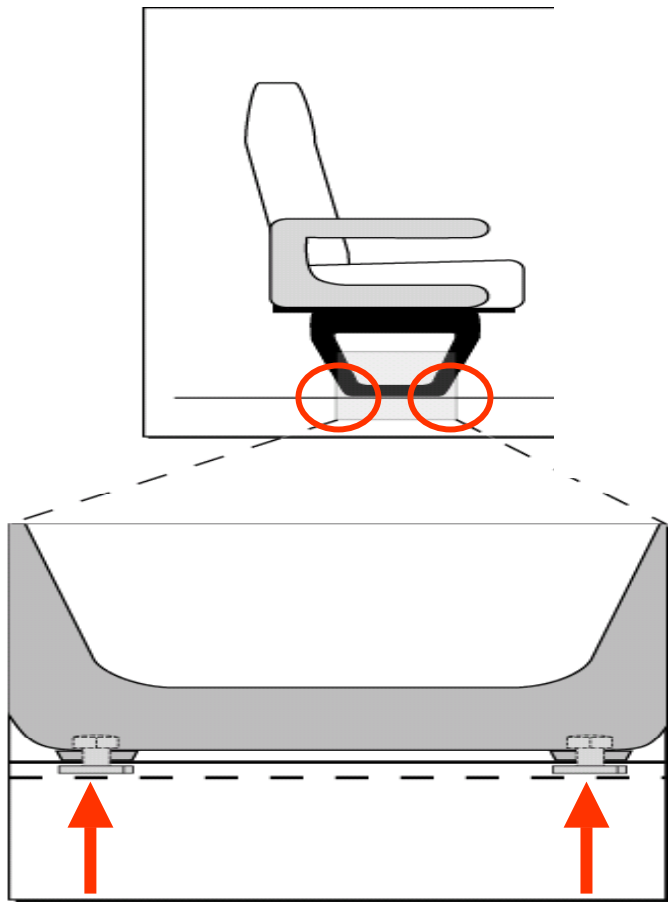
Motorcoach Occupant Protection

Crash Survivability



- Adequate survival space outside intrusion area
- Passengers trapped between seats
- Increased injury severity

T-bolt Anchorages



Anchorage Installation

- Design permits seat movement by owner
- Owner's manual lacked installation information
- Lack of information leads to improper installment, improper maintenance

Seat Anchorage Inspection

- Seats not properly secured
- Passed Texas inspection
- No inspection criteria available
- Improper securement unlikely to be identified during inspections

Comparison Accident

- Lack of design standardization
- Seat anchorage failure in six previous accident investigations
- Similar accidents, different postaccident seat conditions

Similar Accidents



Burnt Cabins, PA



Tallulah, LA

Vehicle Intrusion Comparison



Burnt Cabins, PA

/

Tallulah, LA

Seat Anchorage Failure



Seat attachment T-bolts from the accident

Metallurgical T-bolt Testing

- Hardness of 3 out of 4 accident T-bolts was below SAE Grade 1, the lowest industry-rated bolt
- Hardness of steel correlates with yield stress and tensile strength
- Hardness of floor track was higher than hardness of T-bolts
- No standards or industry requirements

Seat Anchorage Systems



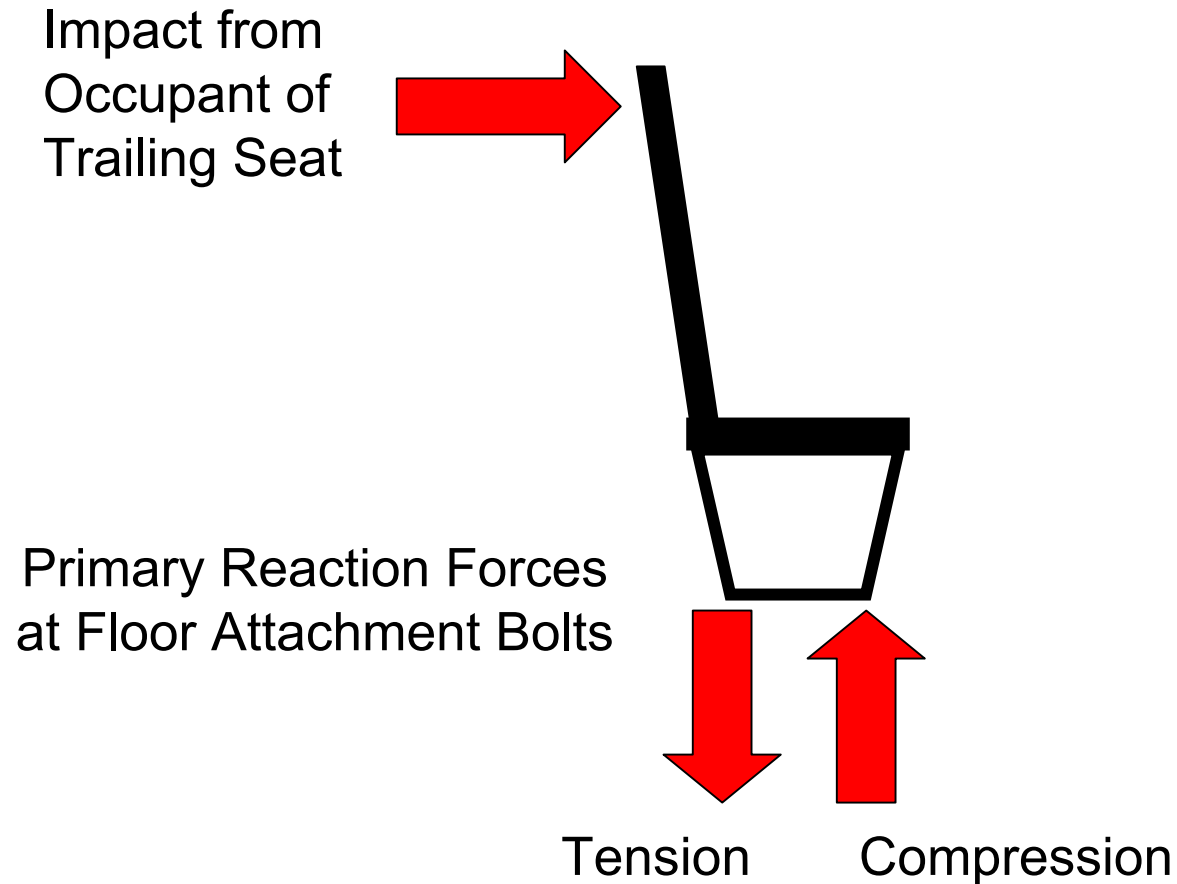
Neoplan

National Seating

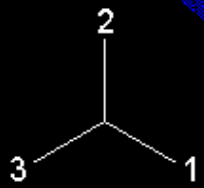
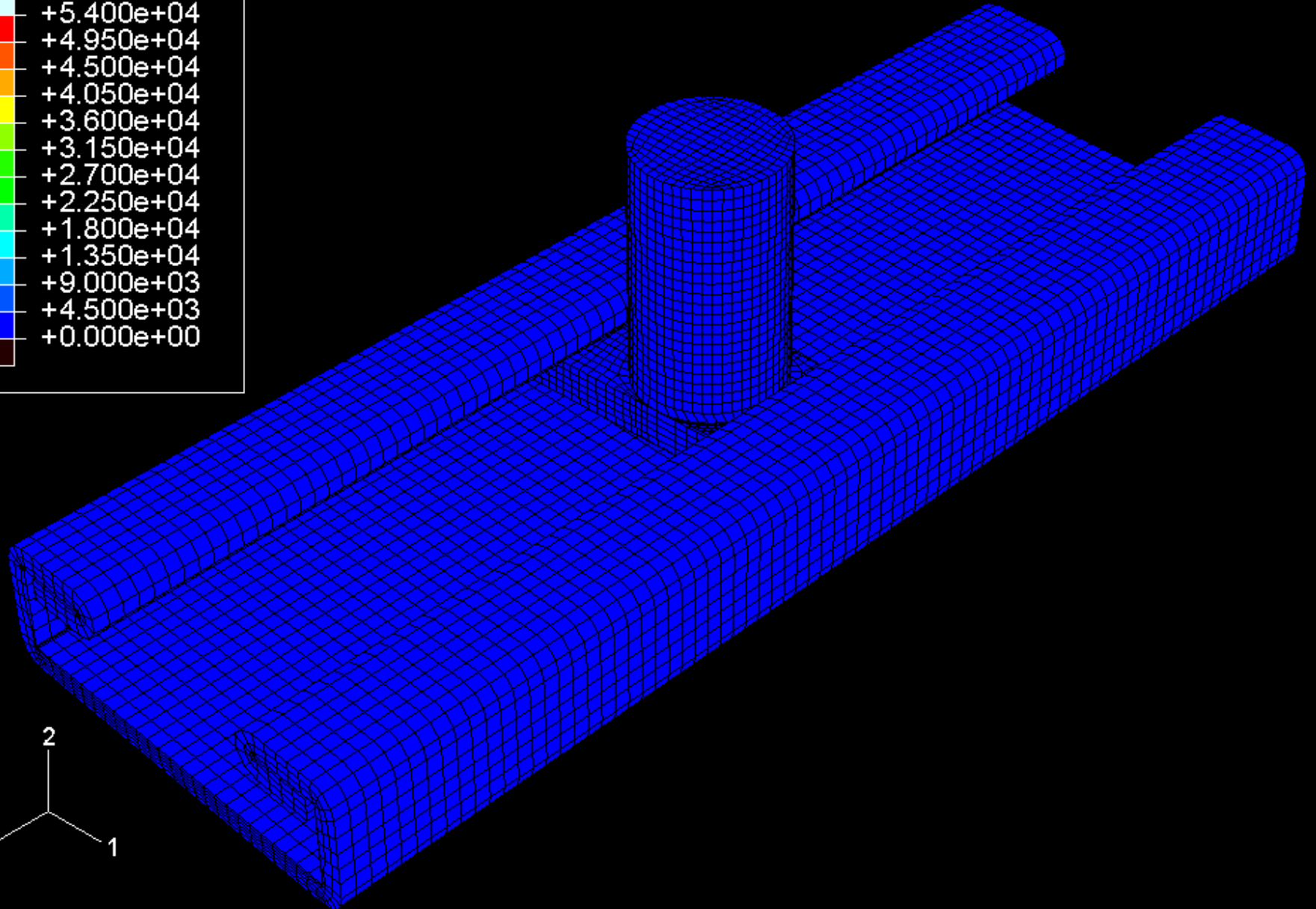
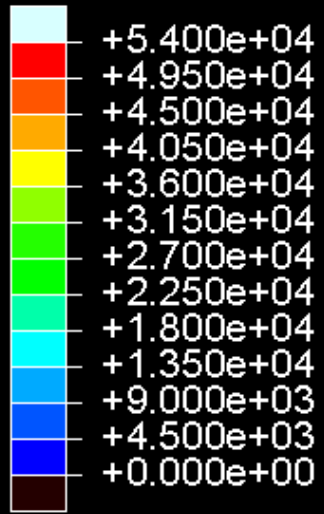
Finite Element Modeling

- Investigate pullout of Neoplan T-bolts
- Compare to National Seating hardware
- Determine forces applied to the T-bolts in the accident
- Understand why Neoplan seating anchorages unable to withstand crash forces

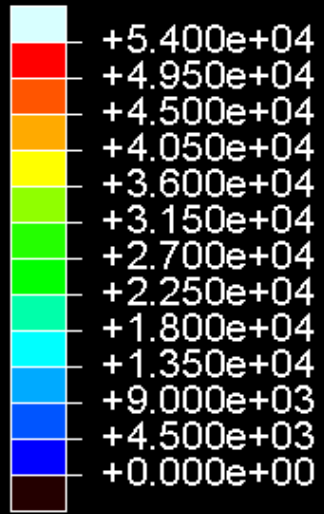
Impact and Reactions



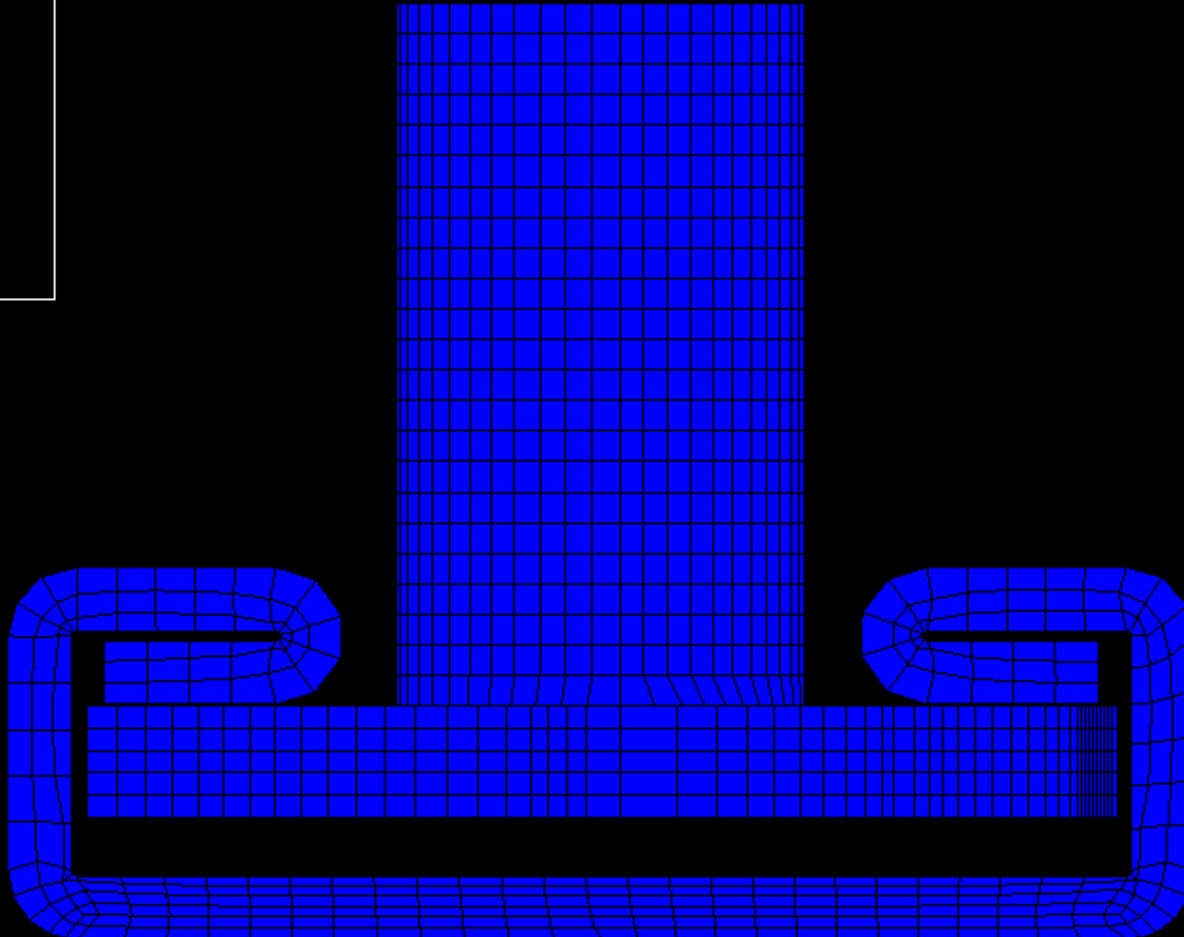
S, Mises
(Ave. Crit.: 75%)



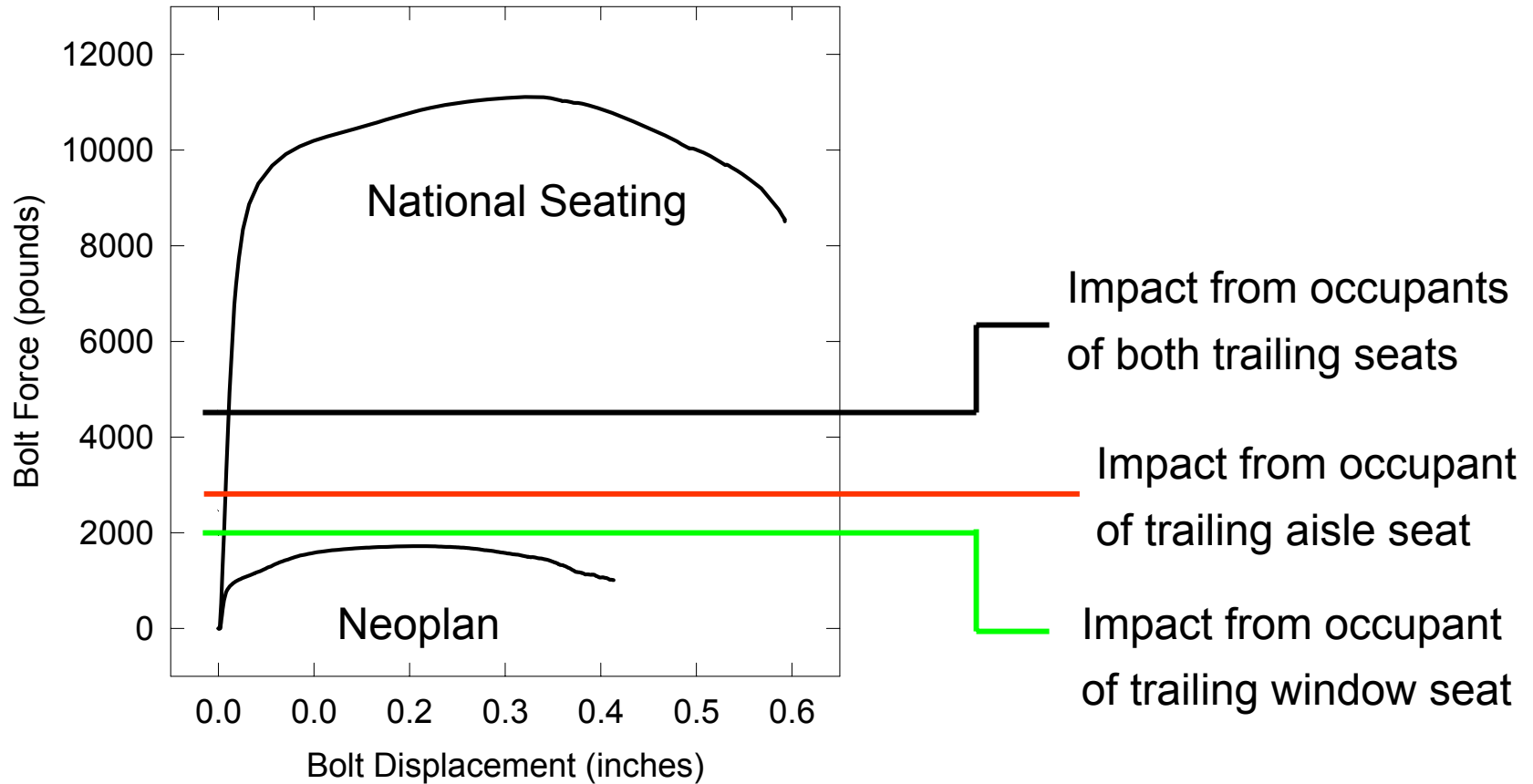
S, Mises
(Ave. Crit.: 75%)



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Force Comparison



Seat Anchorage Summary

- National Seating anchorages were more robust than Neoplan anchorages
- National Seating anchorages would have retained the seats in the Tallulah accident
- Neoplan hardware was inadequate to retain the seats in the Tallulah accident

Motorcoach Occupant Protection

- No Federal regulations or standards
- Europe's ECE80, Australia's ADR66
- More robust hardware currently available
- Occupant safety paramount in design
- Inadequate Neoplan hardware failed
- Increased passenger injuries resulted

Summary

- Anchorage failures by passenger impact or intrusion
- Different seating system designs
- Inconsistent occupant protection
- Inadequate to withstand crash forces



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