

# Kenai Peninsula Borough School District

## Work Session Report

“Seat Belts on Busses:  
An Overview and Update”  
November 5, 2007

# It is a Safety Issue!



# There Are Always Two Sides To An Issue!

- Pro Seat Belt
- Anti Seat Belt

# Pro Seat Belt Position

- Compartmentalization does not offer side impact and roll over protection
- Seatbelts will keep the kids in the “compartment”
- Severity of injuries will be reduced or eliminated
- Reduced medical treatment costs
- Improved discipline/behavior on buses
- Carryover Value – continued lifelong usage
- Less injured child more able to exit bus
- Low cost to install

# The Anti Seat Belt Position

- Compartmentalization is a passive system requiring no action by children or extra action by driver
- The effectiveness of compartmentalization makes school buses the safest vehicle on the road
- Study findings do not support installing seat belts
- Lap belts may in fact increase head, neck and abdominal injuries
- Structural integrity of buses flawed by addition of belts
- Who will unbuckle during rollover, fire or water incidents
- Reduced seating capacity
- No funding to pay for cost of seat belts
- Dollars should be spent on loading zone education

What Are The Facts?

# NHTSA Bus Safety Package

## 49 CFR 571 -- FEDERAL MOTOR VEHICLE SAFETY STANDARDS

### 4-1-77

- **FMVSS 217 – Bus Emergency Exits and Window Retention**  
To reduce the likelihood of passenger ejection in crashes; and for emergency exits to facilitate passenger exit in emergencies.
- **FMVSS 220 - School Bus Rollover Protection**  
To reduce the number of deaths and the severity of injuries that result from failure of the school bus body structure to withstand forces encountered in rollover crashes.

# NHTSA Bus Safety Package

## (Continued)

- FMVSS 221 - School Bus Body Joint Strength

To reduce deaths and injuries resulting from the structural collapse of school bus bodies during crashes.

- FMVSS 222 - School Bus Passenger Seating and Crash Protection

To reduce the number of deaths and the severity of injuries that result from the impact of school bus occupants against structures within the vehicle during crashes and sudden driving maneuvers.

- FMVSS 301- Fuel System Integrity

To reduce deaths and injuries occurring from fires that result from fuel spillage during and after motor vehicle crashes.

Post-DOT Bus



# FMVSS 222 & “Compartmentalization”

Compartmentalization is a passive occupant restraint system that requires no special act by the occupant, such as buckling up. It works by providing a protective energy absorbing shell around the occupant with closely spaced padded seats, seat frames that bend to absorb crash forces and a vehicle with crash dynamics designed to absorb energy as well. The design is intended to absorb the crash forces before they get to the occupant.

\*\*\*Small busses under 10,000 pounds are not built to large bus standards, and are required to have lap belts as they perform like light trucks in crashes.

# "Crashworthiness of Large Poststandard Schoolbuses," NTSB, Report Number NTSB/SS-87/01, March 18, 1987

- School bus occupant deaths and the serious or worse injuries sustained by survivors were, for the most part, attributable to the occupants' seating position being in direct line with the crash forces. It is unlikely that the availability of any type of restraint would have improved their injury outcome.
- Lap belt use probably would have made no change in the total number of school bus passengers who died in the crashes investigated ... possibly one more death would have resulted.
- Lap belt use probably would have made no change in the number of surviving school bus passengers with severe or worse injuries.
- At best, lap belt use probably would have reduced somewhat the injuries of less than 8 of the 24 surviving school bus passengers with serious injuries. At worst, seat belts might have increased the injury to almost as many passengers with serious injuries as it improved.
- Lap belt use probably would have worsened the outcome for one-fifth [20%] of the 58 school bus passengers with moderate injuries.

# National Academy of Sciences 1989

## Bus Safety Study

- “The overall potential benefits of requiring safety [lap] belts on large school buses are insufficient to justify a Federal requirement for mandatory installation.”
- “Funds used to purchase and maintain seat [lap] belts might be better spent on other school bus safety programs and devices that could save more lives and reduce more injuries.”
- The Academy pointed out that since children are at greater risk of being killed in the school bus loading zone (i.e., while boarding or leaving the bus) than as a passenger in the school bus, “a larger share of the school bus safety effort should be directed to improving the safety of school bus loading zones.”
- “Seat (lap) belts, when properly used on post-1977 ... school buses, may reduce the likelihood of death or injury to passengers involved in school bus crashes by up to 20 percent.” (*Controversial finding based on passenger car data*)

# NHTSA Report To Congress - April 2002

## School Bus Safety: Crashworthiness Research

- School bus transportation is one of the safest forms of transportation in the US. American students are nearly eight times safer riding in a school bus than in their own parents cars.
- This safety record is a result of the DOT's requirements for compartmentalization on large buses
- Lap belts appear to have little, if any, benefit in reducing serious-to-fatal injuries in severe frontal crashes.
- Lap belts could increase the incidence of serious neck injuries and abdominal injury among young passengers in severe frontal crashes.
- The use of the combination lap/shoulder belts could provide some benefit, unless misused. Lap/shoulder belts can be misused and NHTSA's testing showed that serious neck injury and abdominal injury could result when lap/shoulder belts are misused.

# NHTSA Report To Congress (Continued)

- Assuming 100 percent usage and no misuse, lap/shoulder belts could save one life a year.
- Lap/shoulder belts also could reduce school bus capacity by up to 17 percent because of seat redesign, and add between \$40 and \$50 per seating position to the cost of a new vehicle. The total annual cost would be over \$100 million.
- Other considerations, such as increased capital costs, reduced seating capacities, and other unintended consequences associated with lap/shoulder belts could result in more children seeking alternative means of traveling to and from school. Given that school buses are the safest way to and from school, even the smallest reduction in the number of bus riders could result in more children being killed or injured when using alternative forms of transportation.

# NHTSA Report To Congress (Continued)

- If states or local school districts require seat belts on school buses, they should ensure that passengers wear them correctly.
- NHTSA is continuing its research program, focusing on side impact protection, working with university-based researchers to further study school bus crashworthiness.
- The four-year research effort by NHTSA has pinpointed other improvements that could be made to improve the safety of school buses. The agency is considering the following changes to existing federal safety regulations:

\*Increase seat back height from 20 inches to 24 inches to reduce the potential for passenger override in the event of a crash.

\*Require buses under 10,000 pounds to have lap/shoulder restraints. Currently, passenger seats on these buses must be equipped with lap belts only. The agency also will consider seat redesign so the lap/shoulder belts fit correctly for all passengers aged six through adult.

\*Develop standardized test procedures for voluntarily installed lap/shoulder belts.

# Transportation Research Board

## The Relative Risks Of School Travel

### Special Report 269 - 2002

#### US Crash Related Fatalities Ages 5-19 (1991-1999)

Total of all children 5-19 killed in all traffic crashes in the US	<b>50,844</b>	
Child school bus passenger fatality in school bus related crash	<b>55</b>	<b>.0011%</b>
Child pedestrian fatality in a school bus-related crash	<b>160</b>	<b>.031%</b>
Child bicyclist fatality in a school bus-related crash	<b><u>14</u></b>	<b><u>.0003%</u></b>
Total school bus-related crash fatalities	<b>229</b>	<b>.0045%</b>

# TRB Special Report 269 Recommendations

1. School transportation planners and policy makers at all levels should analyze transportation risks comprehensively in their decision making related to school travel.
2. Using a systematic risk management framework, school districts should identify the risk factors most salient for the modes of school travel used by children in their community and identify approaches that can be used to manage and reduce those risks, including shifts to safer modes and safety improvements within each mode.
3. The U.S. Department of Transportation (USDOT) should disseminate information presented in this study on the relative risks of using various modes of travel for school and school-related activities and on possible ways to mitigate the risks. USDOT should also use this information to assess what role, if any, federal policy makers should have in efforts to improve the transportation safety of school children and the cost-effectiveness of specific safety measures.



# Individual State Adoption of Seat Belt Usage

- New York - Currently requires lap belts (1987)
- New Jersey - Currently requires lap belts (1994)
- Florida - Currently requires a “safety belt” which is a lap belt (2001)
- Louisiana – Will require “occupant restraint systems” (June 30, 2004)
- California – Will require Lap/Shoulder belts
  - \*Small school buses (2004)
  - \*Large school buses (2005)

# KPBSD Contract Requirements

“All school buses used under this contract, including all standby buses, shall meet all federal standards and minimum standards for Alaska school buses applicable on or at date of manufacture of the buses. Buses manufactured after January 1, 2006, must be equipped and operated under the prevailing provisions of the 2005 National School Transportation Specifications and Procedures, Federal Motor Vehicle Safety Standards, National Highway Traffic Safety (NHTSA) standards applicable to school buses on or at date of manufacture of buses. In all cases where conflict occurs, the more stringent provisions will apply.”

# If KPBSD Required Seatbelts?

- Contract cost increase for new/retrofitted busses
- Bus capacity reduction would result in the need for more busses and additional associated costs
- Increased bus attendants to assure proper usage

# It is a Safety Issue!

## Bus Safety Requirements:

- Highly Visible – Size, Color & Strobes
- Flashing Lights, Stop Sign Arm & Crossing Arm
- Bus height raises students above car impact zone
- FMV Safety Standard Requirements
- Compartmentalization
  
- Safest way for children to get to school!

# Bus Drivers Also Make A Difference!

Laidlaw/First Student Contract Includes:

- Safety Training Program Requirements
- Returning Driver “Refresher” Training Required
- Driver Safety Recognition Program
- Driver Experience Requirement
- Pre-Employment Background & Drug/Alcohol Tests
- Random, Reasonable Suspicion & Post Accident Drug and Alcohol Testing

# Conclusion

With our current bus and driver requirements, the KPBSD is providing the safest mode of transportation for students riding to and from school.

# Informational Sites

- National Highway Traffic Safety Administration  
<http://www.nhtsa.dot.gov/>
- National Transportation Safety Board  
<http://www.nts.gov/>
- National Association For Pupil Transportation  
<http://www.napt.org/>
- National Association of State Directors of Pupil Transportation Services  
<http://www.nasdpts.org/paperCrashProtect.html>
- School Bus Information Council  
<http://www.schoolbusinfo.org/>

# Informational Sites (Continued)

- School Transportation News On-Line

<http://www.stnonline.com/stn/occupantrestraint/tableofcontents/>

- National Coalition For School Bus Safety

<http://www.ncsbs.org/>