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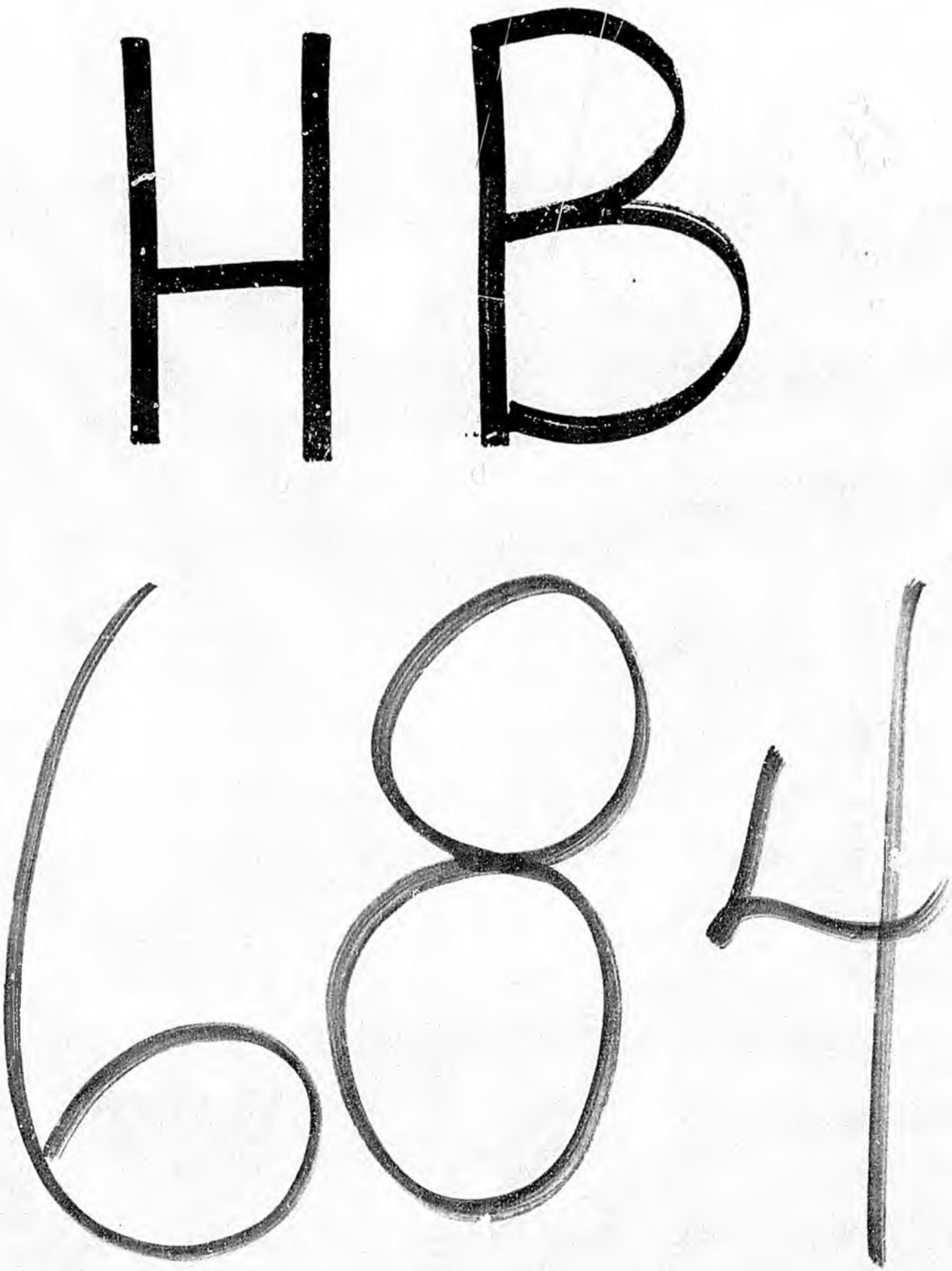
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SAFETY BELTS IN SCHOOL BUSES
JUNE 1985

National Highway Traffic Safety Administration
Traffic Safety Programs
Washington, DC

EXECUTIVE SUMMARY

School buses are the safest form of surface transportation. In 1983, 42,589 people were killed in traffic accidents. Only 17 were school bus occupants. On average for 1981-1983, 11 passengers and 1 driver were killed in school bus accidents and 30 were seriously injured. The subject of occupant protection in large school buses is complex. Based on extensive research and public rulemaking, the National Highway Traffic Safety Administration (NHTSA) concluded by 1977 that the concept of "compartmentalization" - i.e., strong, well-padded seats with high seat backs and better seat spacing to safely retain and cushion students during a crash - would be an 'automatic' system to protect children effectively in large school buses without requiring safety belts. All available test data and real world accident data indicate that this concept has worked extremely well.

NHTSA believes that the occupant protection required in school buses manufactured after April 1, 1977, provides the inherent safety of a highly recognizable vehicle that travels on a regular route, provide a high level of safety. There is insufficient data available to demonstrate whether safety belts would increase occupant protection. The number of school bus occupant deaths and serious injuries is so low that assessing the extent to which safety belts could either prevent deaths or injury, or cause it, is not feasible.

In view of the effectiveness of the current safety standards, and the excellent safety record of school buses generally, we do not believe that a Federal requirement for safety belts in large school buses is warranted. The National Transportation Safety Board reviewed this matter in 1983 and found that current NHTSA standards appear to be effective in eliminating or substantially reducing the majority of school bus passenger injuries.

Small, van type school buses (under 10,000 pounds gross weight) are required to have safety belts for all occupants as standard equipment. The agency believes that safety belts are necessary and effective in providing occupant protection in those vehicles, because of their similarity to cars, and we encourage all passengers to wear their belts whenever the vehicles are in motion.

It is important to emphasize that the Federal standards specify the minimum safety requirements applicable to school buses. Nothing prohibits a State or local jurisdiction from purchasing buses equipped with safety belts.

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It is important to emphasize that the Federal standards specify the minimum safety requirements applicable to school buses. Nothing prohibits a State or local jurisdiction from purchasing buses equipped with safety belts.

SAFETY BELTS IN SCHOOL BUSES

I. INTRODUCTION

School buses are the safest form of surface transportation, transporting some 21 million children to and from school each weekday. Most fatal injuries relating to school buses occur outside the bus, when children as pedestrians are struck by another vehicle or the bus itself--but not as school bus occupants. In 1983, there were 69 school bus related fatalities: 50 deaths were outside the bus as pedestrians; 2 were school bus drivers; and 17 were on-board school bus passengers.

Because of the greatly increased public discussion on the need for occupant protection in automobiles (i.e., safety belts and automatic protection devices), as a result of many States considering and passing mandatory safety belt use laws, and because all 50 States and the District of Columbia now have mandatory child passenger safety laws, the issue of safety belts on large school buses has become a topic of much discussion. Some parents also feel that children who have been taught to use child safety seats and safety belts in automobiles will get out of the habit if they ride regularly in a school bus that has no safety belts.

This paper provides information for decision-making at the State and local levels so they can determine for themselves whether safety belts are desirable in large school buses in their areas.

II. ACCIDENTS, INJURIES, AND FATALITIES

In 1983, 390,000 school buses transported 21,500,000 pupils daily and accumulated three billion miles of travel over the course of the year. Given this tremendous exposure to all types of traffic and weather conditions, it is not surprising that school buses, on occasion, are involved in accidents. Fortunately, the overwhelming majority of these accidents are minor, involving only property damage or minor injury to the bus occupants. For example, from a survey of State departments of education and State traffic authorities, it is estimated that in 1983 there were 48,000 school bus accidents, but 46,000 involved property damage only (Reference #1). Less than half of these accidents were serious enough to warrant a police report, as reported in the table that follows.

From NHTSA's National Accident Sampling System (NASS) and the Fatal Accident Reporting System (FARS), we have estimates of the number of police reported school bus accidents and their injury consequences. FARS gives us absolute counts of the number of people killed in school bus accidents. (See Table 1.)

TABLE 1

AVERAGE ANNUAL ESTIMATES OF THE RESULTS OF SCHOOL BUS ACCIDENTS, 1981-83

(Based on NASS and FARS Statistics for 1981-1983, NCSA)

- o 17,000 - 18,000 police reported accidents
- o 5,000 - 6,000 injured passengers, of which
- o 30 seriously injured (requiring hospitalization) passengers, and only
- o An average of six fatal accidents with at least one passenger fatality
- o An average of 11 passenger and 1-2 driver fatalities
- o An additional 50 fatal accidents where the death occurs to a non-bus occupant: pedestrian, 35; motorcycle, 10; other vehicle, 5.

What these statistics illustrate so dramatically is that very few school bus passengers are killed or seriously injured. In 1983, 42,589 people were killed in traffic accidents (17 were school bus occupants) (Reference #2). In 1983, approximately 166,000 people were seriously injured in traffic accidents, 30 were school bus occupants (Reference #3). For a wide variety of reasons (protective laws, size of the bus, driver selection and training, etc.) school bus transportation is very safe. In the very few accidents where there are bus occupant fatalities, it is often the result of a bus being struck by a much larger vehicle (a heavy truck or a train) or the bus going off the road and striking a large fixed object.

III. NHTSA's AUTHORITY AND POSITION

AUTHORITY

There are two sets of regulations issued under different Acts of Congress that relate to the safety of school buses. The first of these, the motor vehicle safety standards issued by the National Highway Traffic Safety Administration (NHTSA) under the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89-563; U.S.C. 1381-1426), apply to the manufacture and sale of new motor vehicles. In a 1974 amendment to the Act (P.L. 93-492), Congress expressly directed NHTSA to issue standards on specific aspects of school bus safety, including emergency exits, seating systems, windows and windshields, and bus structure.

These NHTSA standards became effective April 1, 1977 and apply to each school bus manufactured on or after that date. In addition, a number of special requirements were made in existing standards. The new standards issued were: "Bus Window Retention and Release" (FMVSS No. 217); "School Bus Rollover Protection" (FMVSS No. 220); "School Bus Body Joint Strength" (FMVSS No. 221); and "School Bus Passenger Seating and Crash Protection" (FMVSS No. 222) (Reference #4).

NHTSA also administers recommended guidelines for the use of State highway safety funds referred to as "section 402 funds," under the authority of the Highway Safety Act (Public Law 89-564; 23 U.S.C. 401-408). These guidelines cover a wide range of subjects, including pupil transportation. Unlike the motor vehicle standards, which impose requirements directly on manufacturers, these guidelines apply to the State highway safety programs, particularly those funded with Federal highway safety grants. The intent of these guidelines is to give the States the latest thinking and state-of-the-art materials on specific highway safety issues.

Highway Safety Program Standard 17 (HSPS 17), "Pupil Transportation Safety," sets forth guidelines for a State highway safety program for pupil transportation, including the identification, operation, and maintenance of school buses; training of personnel; and administration (Reference #5) The intent of guidelines is to provide the latest state-of-the-art thinking on specific highway safety issues rather than place requirements on a program.

NHTSA's POSITION

Federal Motor Vehicle Safety Standard (FMVSS) 222, "School Bus Passenger Seating and Crash Protection," sets requirements for the interior of large school buses which provide children a high level of protection without the need to "buckle up." The standard requires high and strong seats and seat backs, seat back padding, and seat spacing that reduces the chance of the occupant being thrown over the seat in front. The approach taken to bus safety is commonly referred to as compartmentalization. Compartmentalization, as outlined in the standard, requires strength in the entire seating system which includes the floor, the seat frame and the fastening of the frames to the floor while at the same time providing seat system padding and flexibility to absorb energy in a crash. The specific compartmentalization requirements are summarized in the Appendix .

The NHTSA compartmentalization position is based on extensive research, crash testing, and performance history for over 20 years. References 6 thru 11 in the bibliography provide the supporting technical documentation for this policy.

NHTSA believes that the occupant protection required in school buses manufactured after April 1, 1977, plus the inherent safety of a highly recognizable vehicle that travels on a regular route, provides a high level of safety protection.

There is no body of data available to definitively demonstrate whether safety belts in large school buses would increase occupant protection. The number of school bus occupant deaths and serious injuries is so low that assessing the extent to which adding safety belts could prevent death or injury (or cause it) is not feasible.

It is important to emphasize that FMVSS No. 222, "School Bus Passenger Seating and Crash Protection," specifies the minimum safety requirements applicable to school buses. Nothing prohibits a State or local jurisdiction from purchasing buses equipped with safety belts. School districts that want to provide safety belts in their large school buses are free to do so.

Small, van-type school buses (under 10,000 lbs gross vehicle weight) are required, the same as passenger cars, to have safety belts. These small school buses respond in a crash in a similar manner as cars because of their weight and design.

IV. EFFECTIVENESS OF BELTS

There are several technical considerations that have entered the debate of protecting school bus passengers in accidents. These considerations include the effectiveness of safety belts; installation requirements for belts on new buses; and, retrofitting belts on buses. Also, the possibility of belt use on buses increasing belt use in passenger cars has been raised. The discussion in this section will focus on large school buses, as small school buses are already required to have safety belts.

Because there are very few school bus passenger fatalities or serious injuries in a typical year, there is very little information available to determine the effectiveness of restraint systems. This is especially true of safety belts because less than one percent of all large buses currently are equipped with belts. To attempt to explore the question of effectiveness in greater detail, it is useful to examine the types of accidents in which buses are involved.

Table 2 shows that 50 percent of the occupant fatalities in school buses occur in rollover accidents and 14.7 percent of the occupant fatalities occur in side impact accidents. It is in these types of accidents that safety belts might be most likely to provide additional safety benefits to school bus occupants. One reason for this is ejections, which could be prevented by belts, represent one-fourth of all fatalities. However, some school bus accidents that involve fatalities are catastrophic so that it is unlikely that any type of occupant protection would make a difference. The National Transportation Safety Board (NTSB) investigation of the Jonesboro crash mentioned in Section VII is one example. On the other hand, there is a significant body of automobile accident data that demonstrates that lap belts save lives and reduce injuries. Overall, because of the limited accident data on school buses and extremely sparse data on belted occupants, estimates of how much additional protection might be provided by safety belts on buses in rollover and side impact accidents are, of necessity, conjectural.

Even if the introduction of safety belts would benefit some school bus occupants, especially in side impact or rollover accident situations, it is possible that a few of the occupants of buses involved in accidents would be at <u>greater</u> risk of injury as a result of wearing belts. Current compartmentalization countermeasures are most effective in frontal crashes that still account for 55.9 percent of all school bus fatalities. The high, well padded seats absorb the crash forces across the occupant's entire body. With lap belts, the midsection of the occupant's body remains at the seat while the head and upper portion of the body rotates forward. As a result, the head and face may strike the seat the occupant is facing with greater force than would have occurred in the absence of belts. Also, correct belt position over the pelvis is important as injuries could be caused by the belt being positioned over the abdomen.

TABLE 2

OCCUPANT FATALITIES BY PRINCIPAL DIRECTION OF IMPACT AND ROLLOVER

	PASSENGER CAR			SCHOOL BUS - LARGE (PASSENGERS ONLY)		
PRINCIPAL IMPACT DIRECTION	NO ROLLOVER	ROLLOVER	TOTAL	NO ROLLOVER	ROLLOVER	TOTA
	%	%	%	%	%	%
FRONT	41.5	6.8	48.3	20.6	35.3	55.9
SIDE	25.3	3.2	28.5	14.7	0	14.7
REAR	2.7	0.6	3.3	0	0	0
UNDERCARRIAGE	0.3	0.4	0.7	2.9	0	2.9
NON-COLLISION ROLLOVER	-	7.0	7.0	-	14.7	14.7
NO ROLLOVER	1.0	-	1.0	11.8	-	11.8
OTHER, UNKNOWN	5.3	5.9	11.2	0	0	0
	76.1	23.9	100	50.0	50.0	100
NUMBER OF AVER. ANNUAL EJECTIONS			5557			

PASSENGER CAR - FARS 1981-1983 - 72,376 Fatalities
SCHOOL BUS - FARS 1981-1983 - 34 Fatalities

Source: NHTSA Fatal Accident Reporting System Data Base.

In 1984, Transport Canada (the Canadian Ministry or Department of Transportation) conducted an extensive study of school bus safety which included a frontal crash test program for three different size school buses, comparable to post-1977 buses in the U.S. (Reference #12).

An excerpt from the report summary follows:

> "This School Bus Safety Study indicates that careful deliberation must be exercised before deciding whether or not to add lap belts to existing designs of occupant protection systems found in today's school buses. The barrier crash test results showed that the potential for head injury in frontal collisions increased, when lap belts were employed.
>
> This conclusion was reached after the subject of school bus safety was investigated in considerable detail. The investigation included a review of existing literature, discussions with bus manufacturers and operators, and a dynamic barrier crash program. The crash program provided data and photographic evidence, not before available, to compare the reaction of belted and unbelted test dummies in a frontal collision."

NHTSA has analyzed the results of the Canadian test and found them to be in general agreement with laboratory testing conducted within the United States. It should be recognized that the "compartmentalization" countermeasure was specifically designed to protect the occupant in frontal barrier tests, similar to those conducted by the Canadians. The low head injury readings for the unbelted dummies is indicative that compartmentalization performs as well in production buses as it did in the research tests which perfected the concept. The lap belted dummies also performed in a predictable manner in the Canadian tests. In NHTSA sponsored research on lap belted dummies in the automobile environment, lap belted dummies typically have higher head injury measurements than unbelted dummies.

In examining the Canadian tests, several factors must be considered. A 30 mph barrier crash force for a large bus is an unlikely occurrence. For example, a head-on crash between a large school bus and a full-size car, both traveling at 55 mph, would be less severe to bus occupants than the 30 mph barrier test. Also, only one size dummy was used which typically represents a junior high school student. The geometry for younger children would be significantly different with likely different results. Taken together, the results of the Canadian tests should be viewed with caution.

V. EQUIPPING NEW BUSES WITH SAFETY BELTS

The major school bus body companies offer safety belts in their new buses. Manufacturers report the cost for the addition of lap belts is in the range of $18 to $30 per seating position. The question of how many lap belts to install for a standard 39" bench seat depends on whether large or small children are being transported. The user makes this decision when ordering and manufacturers require that the purchaser specify the number of belts per seat. Consideration should be given to ordering belts equipped with retractors as this encourages proper fit of the lap belt. Alternatively, providing bus monitors would assure correct belt positioning. Because a child's body is less developed than an adult, abdominal injuries could occur if the belt is worn across the stomach, rather than low on the pelvis. An incorrectly installed and positioned safety belt may do more harm than good in low speed crashes.

NHTSA has been petitioned by the Wayne Corporation to amend FMVSS 222, to require that safety belts, when ordered on large school buses, conform to the requirements of FMVSS 208 (Occupant Crash Protection), FMVSS 209 (Safety Belts) and FMVSS 210 (Safety Belt Anchorages) as in passenger cars and small buses. Although FMVSS 222 does not require safety belts in large school buses, purchasers desiring safety belts often have no guidance concerning the installation and manufacturers have been reluctant to quote estimates without definitive specifications. Most manufacturers who install belts and anchorages, when ordered by the purchaser, voluntarily comply with these Standards, although not required to do so. A decision by NHTSA on whether to initiate rulemaking on the Wayne petition is expected this summer.

VI. RETROFITTING SCHOOL BUSES WITH SAFETY BELTS

Seven major companies manufacture large school buses for public, private and parochial schools and for school bus contractors. They are: AmTran, Bluebird, Carpenter, Crown, Superior, Thomas, and Wayne. These companies do not believe it is advisable to retrofit a school bus (pre-1977 or post-1977 construction) with a two point lap belt, nor do they recommend that their dealers do so. The National Coalition for Seat Belts on School Buses supports this industry position.

Several problems prevent successful retrofitting of pre-1977 manufactured buses. Seats may not be well anchored to the floor and, in many cases, have no padding to cover the metal seat frame. Also, the seat construction may be inadequate to withstand the forces generated by lap belts and could collapse with pupils belted to them.

Guidelines for the installation of lap belts in any large school buses, regardless of age, are not provided by the bus dealers or manufacturers. In addition, none of the manufacturers is willing to retrofit post-1977 buses with lap belts.

Industry officials state the primary reason for not retrofitting buses is because the strength of a bus floor is subject to deterioration due to hostile weather conditions and varied maintenance. After only a few years of use, it is possible that the bus floor strength would be less capable of withstanding the forces of the bus seat with belted passengers in a crash situation. If retrofitting is to take place all systems, and especially the floor, must be of the same strength and condition as a new bus.

The National Coalition for Seat Belts on School Buses does not recommend retrofitting post-1977 built buses but does, however, provide some guidelines for those wishing to do so (Reference #13). NHTSA recommends that school districts wanting to retrofit school buses manufactured after 1977, should first make sure that they purchase lap belts that meet FMVSS 209. Also, if the manufacturer sells buses with a lap belt option, school districts should check to see how they are installed and, if possible, follow the manufacturer's installation method. Competent engineering advice should be sought prior to retrofitting safety belts in post-1977 manufactured buses.

VII. RELATED STUDIES

School bus safety issues have been reviewed by a number of other Federal, State, and local government agencies.

In 1983, the National Transportation Safety Board (NTSB), an independent Federal agency which investigates accidents and other transportation safety issues, reviewed the issue of occupant protection in school buses. The Board agreed with a NHTSA analysis which found that the safety standards for post-1977 buses appeared to be effective in eliminating or substantially reducing the majority of school bus occupant injuries. The NTSB report stated:

> "... the Safety Board does not believe there is sufficient justification at this time to recommend extending the mandatory passenger restraint system requirements to large school buses" (Reference #14).

The Board also recommended that school districts which choose to install safety belts on large buses should demonstrate a "strong and continuing commitment" to educate students on the importance of proper belt usage, and that all passengers on small school buses and school vans be required to wear their safety belts.

In 1983, the Los Angeles County Board of Supervisors requested a study on safety belt effectiveness (Reference #15). An ad hoc committee was established by the County Superintendent of Schools to assist in this investigation. It's findings were that school buses are statistically the safest form of ground transportation in the United States today. The compartmentalization concept protects the greatest number of children, both in the variance of age and size, and in most types of school bus accidents. California's requirements for school bus driver training and yearly inspection of vehicles also have contributed to the State's low fatality rate for pupil passengers. For the 1983/84 school year there were no school bus fatalities in California. There were 286 injuries: one severe, 86 moderate, and 199 complaints of pain. This is an excellent safety record for a system comprised of 18,680 buses traveling 245,544,885 miles.

As a result of this study, the Los Angeles County Board of Supervisors: (1) supports the federal position not to require safety belts in large school buses; and (2) upholds its current policy not to install safety belts in school buses.

The Legislative Council of Arkansas examined the feasibility of installing safety belts in school buses following a Jonesboro School District accident in 1983, in which nine people were killed. This accident occurred near Newport, Arkansas. The Council said, "It appears that based on the costs, the lack of data indicating a great fatality decline with the installation of seat belts, the possible dangers which could arise from the installation of the seat belts themselves, the outstanding safety record of school buses in general, the issue of seat belts in school buses could be left as a decision to be made by individual school districts and should not be mandated by the legislature" (Reference #16).

NTSB also investigated the Jonesboro accident and concluded "that is it doubtful that seat belts could have prevented any of the deaths in this case, given the nature of the crash impact" (Reference #14). Further, the school bus in that accident was built before FMVSS 222 became effective in April 1977.

Other studies on safety belt effectiveness include those of the Kentucky Legislative Research Commission (Reference #17) and the California Highway Patrol (Reference #18) both of which reached the same general conclusion as cited above in this report. However, the New York State Legislative Commission on Critical Transportation Choices has recommended that all school buses manufactured after July 1, 1986 for use in New York State be equipped with safety belts (Reference #19).

VIII. EXPERIENCE OF DISTRICTS WITH BELT EQUIPPED BUSES

There are about 22 school districts nationwide with large school buses equipped with safety belts. The table that follows presents information on the number of large buses with belts in each fleet, whether the school district has monitors, the type of belt installation, and buses on order or anticipated.

Two school districts in New York claim 80 percent usage -- with or without bus monitors, as reported by the National Coalition for Seat Belts on School Buses (NCSSB) in 1983 testimony to the New York State Legislative Commission on Critical Transportation Choices (Reference #20). Greenburgh's 36 large buses have no monitors and Ardsley's 11 equipped buses have monitors, yet both report similar belt usage rates.

It should also be noted that this information is anecdotal in nature and is gathered from the small number of school districts with a history of operating belt-equipped large school buses.

IX. LEGISLATION

Congressman Peter Kostmayer (D-Pa.) has introduced a bill (H.R. 749) providing incentive grants to encourage States to adopt and enforce laws requiring the use of safety belts by school children in new school buses. The bill was referred to the House Public Works Committee.

In addition, 20 States have introduced legislation this year concerning the installation and use of safety belts on school buses. Suffolk County, New York passed a local ordinance last year (Resolution No. 1008-1984) requiring that all school buses acquired after January 1, 1986, must "contain safety restraints for each space capable of seating a passenger." In addition, all school buses in the county must be in compliance by December 1996.

X. OTHER CONSIDERATIONS

A question exists over school bus belt use and the possible carryover effects of the students' belt-wearing to their use of belts in private vehicles. Little definitive information is available on this issue and research is complicated by the difficulty of finding groups for appropriate comparison. NHTSA is attempting to examine the relationship that belts on school buses have on habit and behavior reinforcement through selected case studies.

TABLE 3

SAMPLE OF SCHOOL DISTRICTS WITH BELTS IN BUSES

SCHOOL DISTRICT	NUMBER OF LARGE BUSES WITH BELTS	MONITORS USED	RETROFIT OR FACTORY INSTALLED	ON ORDER
Ardsley, NY	10	Yes	retrofit	
Catalian Foothills, AZ	5	No	retrofit	
Comsewogue, NY	26		factory installed	
Dalton, GA	7	Yes	factory installed	
Glencoe District #35, IL	5	Yes	factory	
Greenburgh, NY	55	No	factory	
Hartland, VT	3	No	factory installed	
Klamath Falls, OR	3			
Manchester, MA	5			
Marblehead, MA	5			
Middlebury, VT	1	No	factory installed	
Montgomery County, MD			factory installed	53
Oxford, MI	1	No		
Peacham, VT	1		retrofit	
Rochester, Michigan			factory installed	4
Shelburne, VT				2+
Skokie District #68, IL	11	No	retrofit	
Skokie District #72, IL	4		factory installed	
Waitsfield, VT	1	No	factory installed	
Weathersfield, VT	1		factory installed	
Wentzville, MO				7
West Orange, NJ	9		factory installed	
West Windsor, NJ	3	No	factory installed	
Wilmette District, IL	4	No	retrofit	
Williston, VT				2+
Worcester, VT	1	No	factory installed	

As of April 1985

The pupil transportation industry has raised several questions about potential hazards associated with belts. For example, a school bus driver wrote in the National School Bus Report, (Reference #21) "...my major concern is what would happen in an emergency evacuation, particularly with the little ones. It would be impossible to get them out in a hurry"(speaking about the large 60-66 passenger school bus). While there is no hard data on this for large school buses, a report from Nassau County, New York about a rollover accident involving a small, van-type bus, noted that 4 to 7 year old children were able to unbuckle themselves and escape without panic (Reference #22).

Another version of the problem that has been mentioned is that belts in large buses could leave small children dangling overhead in rollover accidents. The American Academy of Pediatrics is on record as stating, "This is true, but it is still preferable for children to be strapped in rather than thrown out of the seat or the vehicle at the time of an accident" (Reference #23). In NHTSA and NTSB investigations of major school bus accidents, ejections account for one-fourth of all fatalities (Reference #24). Data is currently being analyzed to determine if the age of the bus (pre-1977, post-1977) is a factor in ejection rates.

Transportation providers are also concerned that belts can be fastened easily to another belt across the aisle and act as a tripping hazard to entering or leaving pupils. The National Coalition for Seat Belts on School Buses has issued guidelines to help prevent this, stressing the importance of installing the short end of the belt on the aisle (Reference #13).

The question of how many belts to install on each seat must also be considered. If only young children are being transported, then three belts per seat could be specified. In most cases, however, the same school bus is used to transport both elementary and high school students. In this situation, a school district would have to specify the installation of two or three belts per bus seat.

XI. ALTERNATIVE INVESTMENTS IN SAFETY

Section II provides data that indicate that most school bus related fatalities occur outside the school bus. Many accidents might be avoided with improved driver training or vehicle maintenance. All of these areas might be competing for the same dollars used for installing belts on buses.

Most pupil fatalities occur when students are run over by their own bus or oncoming vehicles during loading and unloading. An educational program for both drivers and pupils should place special emphasis on existing hazards and how to avoid them. For instance, school bus drivers can have

their field of view blocked by the high hood of the bus which prevents them from seeing a small child near the front bumper. A safety education program which explains how to avoid this situation would help drivers save lives. Pupil transportation funds could also be used to purchase, for example, special mirrors which are available to allow the driver to see small children more easily or electro-mechanical sensing devices.

Money spent on good educational programs for school bus drivers pay dividends long after the training is completed. Over half the crashes involving school buses are due to driver error. Recognition of and countermeasures for these errors could reduce crashes and therefore the chance of injury or death to pupil passengers.

In cases where some vehicles are of pre-1977 vintage, funds could also be used to speed up the replacement schedule so that all buses in its fleet would meet the new safety requirements that became effective April 1, 1977.

Although mechanical defects causing accidents are small, funds to upgrade mechanics' skills would reduce the possibility of accidents and could also result in the fleet being maintained in better mechanical condition. Rigorous maintenance schedules for brakes, suspension, tires, etc. could also contribute to improved vehicle safety.

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XIII. APPENDIX

Outline of Safety Standards Pertaining to School Buses

Thirty of the fifty Federal Motor Vehicle Safety Standards (FMVSS) apply to buses, including school buses. Six of these are of special interest:

(1) FMVSS No. 217 Bus Window Retention and Release.

(2) FMVSS No. 220 School Bus Rollover Protection.

(3) FMVSS No. 221 School Bus Body Joint Strength.

(4) FMVSS No. 222 School Bus Seating and Crash Protection.

(5) FMVSS No. 301 Fuel System Integrity

(6) FMVSS No. 302 Flammability of Interior Materials.

Standards (1) thru (5) were mandated by congress in the "School Bus Act of 74" (P.L. 94-346). Number (6), Flammability of Interior Materials, applies to all vehicles, except motorcycles, and is designed to prevent deaths and injuries from fires originating in the interior of vehicles from sources such as matches and cigarettes. This is done by requiring that all interior materials have a low burn rate, (4 inches per minute, horizontal), allowing passengers sufficient time to evacuate the vehicle prior to serious fires involvement. Two of these standards were existing standards that were modified to include school buses:

FMVSS No. 217, Bus Window Retention and Release

This standard prescribes the minimum emergency exits; numbers, dimensions and opening characteristics for school buses in both size categories - under 10,000 pounds and over 10,000 pounds. It also provides for,

- Emergency door/starter interlock that prevents starting the school bus if the emergency door(s) are locked.
- An audible warning mechanism indicating the emergency door release mechanism is not in the "closed" position.
- Emergency exit identification, location, and instruction requirements.

FMVSS No. 301 Fuel System Integrity

This standard was fully effective for all vehicles under 10,000 pounds, except motorcycles, on September 1, 1977. It requires that fuel leakage be no more than one ounce per minute from any part of the fuel system when the vehicle is subject to:

(1) a 30 mph fixed barrier frontal collision at an angle of ± 30 degrees;

(2) a 30 mph rear end moving barrier collision and;

(3) a 20 mph moving barrier lateral collision;

A special test was prescribed for large school buses over 10,000 pounds, and utilizes a moving barrier collision at 30 mph at any point (Other requirements such as fuel leakage limitation are the same).

The remaining three standards apply to school buses only:

FMVSS No. 220 School Bus Rollover Protection.

This standard applies to all school buses, and requires that a force of 1 1/2 times the unloaded vehicle weight be applied to the roof of the vehicle body structure. The downward vertical movement of the test plate cannot exceed 5 1/8 inches at any point, and emergency exits must be capable of being opened as specified in FMVSS No. 217.

FMVSS No. 221 School Bus Body Joint Strength

This standard applies only to large school buses over 10,000 pounds. It requires that"...each body panel joint shall be capable of holding the body panel to the member to which it is joined when subjected to a force of 60% of the tensile strength of the weakest joined body panel..."

FMVSS No. 222 School Bus Seating and Crash Protection

This standard applies to all school buses and is the basis of the "compartmentalization" concept of passenger protection.

School buses under 10,000 pounds must meet the following requirements:

- Conform to the restraint requirements of Standards 208, 209, and 210. (This is essentially the requirements for seatbelts (209) and associated anchorages (210).

All school buses must meet the following requirements except school buses over 10,000 pounds which are not required to comply with standards 208, 209, and 210.

- Conform to certain requirements for seatback height and and surface area.

  Each school bus passenger seat shall be equipped with a seat back that, in the front projected view, has a front surface area above the horizontal plane that passes through the seating reference point, and below the horizontal plane 20 inches above the seating reference point, of not less than 90 percent of the seat bench width in inches multiplied by 20.

- Seat backs must exhibit certain strength and deflection requirements, both forward and rearward:

  (The number of seating positions considered to be a bench seat is expressed by th symbol W, and calculated as the bench width in inches divided by 15 and rounded to the nearest whole number).

Seat performance forward

The following requirements must be met under the stated test conditions.

a) The seat back force/deflection curve shall fall within the zone specified.

b) Seat back deflection shall not exceed 14 inches;

c) The seat shall not deflect by an amount such that any part of the seat moves to within 4 inches of any part of another school bus passenger seat or restraining barrier in its originally installed position;

d) The seat shall not separate from the vehicle at any attachment point; and

e) Seat components shall not separate at any attachment point.

Apply a force of 700W pounds horizontally in the forward direction through the loading bar at the pivot attachment point in any horizontal plane + 4 inches above or below the seating reference point of the school bus passenger seat behind the test specimen.

Apply additional force horizontally in the forward direction through the upper bar until 4,000W inch-pounds of energy have been absorbed in deflecting the seat back (or restraining barrier).

Seat performance rearward

The following requirements must be met under the stated test conditions.

a) Seat back force shall not exceed 2,200 pounds;

b) [In the case of a school bus manufactured on or after April 1, 1978, seat back deflection shall not exceed 8 inches;

c) The seat shall not deflect by an amount such that any part of the seat moves to within 4 inches of any part of another passenger seat in its originally installed position;

d) The seat shall not separate from the vehicle at any attachment point; and

e) Seat components shall not separate at any attachment point.

Position the loading bar so that it is laterally centered forward of the seat back with the bar's longitudinal axis in a transverse plane of the vehicle kand in the horizontal plane 13.5 inches above the seating reference point of the test specimen, and move the loading bar rearward against the seat back until a force of 50 pounds has been applied, then apply additional force horizontally rearward through the loading bar until 2,800W inch-pounds of energy has been absorbed in deflecting the seat back. Apply the additional load in not less than 5 seconds nor more than 30 seconds.

Seat cushion retention

The seat cushion shall not separate from the seat at any attachment point when subjected to an upward force of five times the seat cushion weight, applied in any period of not less than 1 nor more than 5 seconds, and maintained for 5 seconds.

Seat and Restraining barrier requirements

Each vehicle shall be equipped with a restraining barrier forward of any designated seating position that does not have the rear surface of another school bus passenger seat within 24 inches of its seating reference point, measured along a horizontal longitudinal line through the seating reference point in the forward direction.

The horizontal distance between the rear of the front adjacent seat or the restraining barrier's rear surface and the seating reference point of the seat in front of which it is required shall be not more than 24 inches, measured along a horizontal longitudinal line through the seating reference point in the forward direction.

Head and Knee Impact Requirements

When any contactable surface of the vehicle within the zones specified is impacted from any direction at 22 feet per second by the head form, the axial acceleration at the center of gravity of the head form shall be such that the head impact criteria (HIC) value shall not exceed 1,000. The head form force distribution shall be such that the energy necessary to deflect the impacted material shall be not less than 40 inch-pounds before the force level on the head form exceeds 150 pounds. When any contactable surface within such zones is impacted by the head form from any direction at 5 feet per second, the contact area on the head form surface shall be not less than 3 square inches.

The head protection zones in each vehicle are the spaces in front of each school bus passenger seat which are not occupied by bus sidewall, window, or door structure and which, in relation to that seat and its seating reference point, are enclosed by the following planes;

a) Horizontal planes 12 inches and 40 inches above the seating reference point;

b) A vertical longitudinal plane tangent to the inboard (aisle side) edge of the seat;

c) A vertical longitudinal plane 3.25 inches inboard of the outboard edge of the seat, and

d) Vertical transverse planes through and 30 inches forward of the reference point.

The leg protection zones of each vehicle are those parts of the school bus passenger seat backs and restraining barriers bounded by horizontal planes 12 inches above and 4 inches below the seating reference point of the school bus passenger seat immediately behind the seat back or restraining barrier. When any point on the rear surface of that part of a seat back or restraining barrier is impacted from any direction at 15 feet per second by the knee form specified, the resisting force of the impacted material shall not exceed 600 pounds and the contact area on the knee form surface shall not be less than 3 square inches.

Copies to: R. Jones Mason
Final Report
WA File

P.O. BOX 937 AC-912/825-2021
FORT VALLEY, GEORGIA 31030

February 11, 1986

Mr. Don M. Carnahan
State Director, Pupil Transportation
Old Capitol Building, FG-11
Olympia, Washington 98504

Dear Don:

Today I received a copy of your letter to all State Directors of Pupil Transportation, dated January 6, 1986 with your comments to Docket Number 85-14; Notice 1, dated November 29, 1985. Thank you for sending me a copy.

Your comments to docket 85-14 were presented very well and discussed in detail the potential problems of using lap belts in today's compartmentalized school bus. As a major manufacturer of school buses, we have carefully studied the issue of lap belts in large school buses and are aware of the Transport Canada Crash Test results as well as the results of the 1978 NHTSA sled tests and know that there is evidence that the use of lap belts in a compartmentalized bus may result in more severe head and neck injuries for a belted occupant than for an unbelted one in a severe frontal collision. We also considered the fact that other types of accidents can and do occur and that the use of lap belts in these accidents may decrease the potential for injury or death. Federal law requires us to meet FMVSS 222 on all new school buses and we do not know of any type of seat belt other than lap belts that can be provided on school bus seats meeting FMVSS 222. We believe we must not and should not refuse to provide seat belts in large school buses when the user insists on them. Therefore, we have no choice but to provide lap belts as customer specified optional equipment in conjunction with the seat spacing required by compartmentalization.

Because of our concern over the seat belt issue we wrote a letter to NHTSA in March, 1984 urging them to conduct the necessary research to answer this question: "Are occupants of a school bus with a GVWR of more than 10,000 pounds safer with or without seat belts installed at each designated seating position?" To date, NHTSA has not conducted this research nor indicated they intend to. A copy of our letter and the NHTSA response are enclosed.

Blue Bird commends your efforts in addressing the potential problems regarding the seat belt issue and in recommending that other's provide their input to NHTSA. Blue Bird is hopeful that input like yours will encourage NHTSA to do the research that is so desperately needed to resolve the safety issues that have been raised.

Thank you for your interest in safety and in Blue Bird.

Have a Safe Day!

Very truly yours,

Thomas D. Turner

Thomas D. Turner
Manager
Engineering Services

fvc/1268

enclosure

c: Wilbur Rumph

Tom

BLUE BIRD BODY COMPANY

P.O. BOX 937 AC-912/825-2021
FORT VALLEY, GEORGIA 31030

March 1, 1984

Ms. Diane Steed
Administrator
National Highway Traffic Safty Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Reference: 49CFR PART 571.222, School Bus Seating and Crash Protection

Dear Ms. Steed:

The National Highway Traffic Safety Administration and others have on several occasions made statements to the effect that school bus seats manufactured in compliance with Federal Motor Vehicle Safety Standard Number 222 School Bus Seating and Crash Protection, effective April 1, 1977, have sufficient strength to support the after-market installation and effective use of passenger seat belts. Blue Bird Body Company in the interest of promoting safety, would like to discuss the history of the NHTSA calculations on which the above statement is based in order to show that seats manufactured in compliance with FMVSS 222 are not necessarily and automatically strong enough to support seat belt loading.

Based on our records and knowledge of the history of FMVSS 222, the preamble to Docket 73-3; Notice 05, F.R. Volume 41-Number 19-Wednesday, January 28, 1976, first contained the statement that the seats specified by FMVSS 222 provide the strength necessary to absorb seat belt loads. The preamble contained the following statement:

> NHTSA calculations demonstrate that the strength characteristics of the seat specified by the standard to provide the correct amount of compartmentalization also provide the strength necessary to absorb seat belt loads. This means that an operator or school district may safely attach seat belts to the seat frame, even where anchorages are not installed as original equipment. The seat is strong enough to take the force of occupants against the seat back if no belts are utilized, or the force of occupants against seat belts if occupants are restrained by belts attached to the seat frame through the anchorage provided.

This preamble presented and discussed comments received on previous proposals including 40 FR 17655, April 23, 1975, which proposed a lower loading bar force of 1700 W (5100 pounds for a three passenger school bus seat) for the seat performance forward requirements of Section S5.1.3.2, and a seat belt anchoraged force of 1500 W (4500 pounds for a three passenger school bus seat) for the seat belt anchorage performance requirements of Section S5.1.1.3. Since these forces would not be applied simultaneously to the seat frame in the forward direction, it was logical that a seat designed to withstand a force of 5100 pounds applied to the frame at any horizontal plane between 4 inches above and 4 inches below the seating reference point, could withstand a 4500 pound force applied to the frame near the bottom rear edge of the seat cushion where seat belt anchorages would logically be located. We believe that this April 1975 proposal and the earlier proposals are the basis for the belief that seats meeting FMVSS 222 strength performance requirements can withstand seat belt loading.

The final version of FMVSS 222 that was published and became effective April 1, 1977 specified a lower loading bar force of 700 W (2100 pounds for a three passenger school bus seat), did not include the seat belt anchorage requirements for large school buses (GVWR greater than 10,000 pounds), but did include seat belt requirements FMVSS 208, 209, and 210 for small school bus seats (10,000 GVWR and less). FMVSS 222, 208, 209 and 210 and subsequent NHTSA interpretations establish the requirements that small school buses must have seat belts at each seating position capable of withstanding a force of 5000 pounds. Although these requirements do not by law apply to large school buses, they are the only current FMVSS that address seat belts in school buses and must be considered state of the art and, therefore, also applicable to large school buses. Thus, a three passenger school bus seat in a large school bus that is designed to withstand a lower loading bar force of only 2100 pounds is not necessarily and automaticlly strong enough to withstand a 5000 pound seat belt force. (Note: A seat with seat belts with common anchorages must withstand the seat belt loading at each seating position simultaneously which is 15000 pounds for a three passenger seat.)

In summary, it is our conclusion that the statement that seats manufactured in compliance with FMVSS 222 have sufficiant strength to support the after-market installation of seat belts, is based on the compatibility of the lower loading bar force of 5100 pounds and total seat belt forces of 4500 pounds proposed in April of 1975. In actuality the seats manufactured in compliance with the final version of FMVSS 222 must only be designed for a lower loading bar force of 2100 pounds while the required seat belt forces are from 5000 pounds to 15000 pounds depending on the anchorage arrangement. This major disparity in strength requirements of the large school bus seats should strongly discourage after-market installation of seat belt anchorages attached to the seat frames.

In further support of the above position, let me add that from personal observation, school bus seats designed for seat belt loading, such as those required in small school buses with 10,000 pounds GVWR and less, have a substantially different design with more massive lower frame components and stronger floor attachments than the standard school bus seats used in larger school buses.

Blue Bird Body Company wishes to go on record as stating that we offer school bus seats with seat belts that are specifically designed to meet FMVSS 222 requirements for both small school buses (10,000 pounds GVWR and less) and large school buses (GVWR greater than 10,000 pounds). The school bus seats without seat belts that are designed for use in large school buses are not designed to withstand seat belt loading. Blue Bird strongly discourages the after-market installation of seat belts on these seats if the belts are to be anchored to the seat frames.

Blue Bird Body Company neither recommends nor discourages the use of seat belts in school buses or non-school buses, or the after-market installation of seat belts in buses in service. We recommend to our customers that they study NHTSA R & D Report #DOT HS-804 985, and consult with NHTSA and their own legal and insurance counsel before ordering seat belts in new school buses that are not required to have seat belts, or before deciding to install after-market seat belts. We are forced to take this position due to the lack of any concrete or positive information regarding the desirability of seat belts from a strictly safety point of view. We urge NHTSA to conduct the necessary research to answer the following basic question:

> Are the occupants of a school bus with a GVWR of more than 10000 pounds safer with seat belts or without seat belts installed at each designated seating position?

An answer to this question must be obtained before the seat belt issue in buses and school buses can be resolved.

Thank you for your consideration of these most important matters. If we can be of any assistance to the agency concerning these or other safety related matters, please do not hesitate to call on us.

Very truly yours,

Thomas D. Turner
Manager
Engineering Services

fvc
(0611)

U.S. Department
of Transportation
National Highway
Traffic Safety
Administration

The Administrator

MAY 1 1984

Thomas D. Turner, Manager
Engineering Services
BLUE BIRD BODY COMPANY
P. O. Box 937
Fort Valley, Georgia 31030

Dear Mr. Turner:

This is in response to your letter which outlined the position of Blue Bird Body Company in the area of safety belts and seat strength as related to large school buses. Your discussion was most valuable and supplied a needed perspective to this complex and confusing issue.

As you know, this area of concern has received considerable attention from the public, the school bus transportation administrators, and the industry. Our present posture is to recommend a careful examination of specific needs and potential problems to anyone contemplating ordering school buses with safety belts. Part of this examination must entail an analysis of whether the addition of safety belts in a bus not originally designed for such belts, will properly restrain bus occupants.

In regard to your statement that the Federal Standards applicable to safety belts in small school buses (FMVSS No. 222, 208, 209 and 210) are considered "state-of-art" and applicable to the installation of safety belts in large school buses, we emphasize, as you have noted, that large school buses have no such requirement. This was emphasized in a response from our Chief Counsel to Thomas Built Buses, Inc., on January 19, 1984. I have enclosed a copy of this letter for your information.

We are currently examining the technical basis of strength evaluation which you quoted from the preamble of FMVSS No. 222, Notice 5, January 28, 1976. As you point out, there has been some confusion concerning the basis of National Highway Traffic Safety Administration's (NHSTA) comments that school bus seats built to conform with FMVSS No. 222 will also provide the strength necessary to absorb seat belt loads.

With respect to the issue whether the occupants of a large school bus that meets the Federal Motor Vehicle Safety Standards (FMVSS) No. 222 "compartmentalization" requirements are safer with or without seat belts, we do not believe that an adequate research program can be developed at this time to definitely answer that question for all crash types and severities for all sizes of children. FMVSS No. 222 relies on children of all sizes being " caught" by a relatively high padded surface that is strong enough to withstand most crashes, but that yields enough to absorb the energy of a child being thrown against it. The new seats are, in effect, relatively sophisticated automatic restraints that compensate for a wide range of occupant sizes and seating postures. From accident investigations over the past several years, the large school buses that meet FMVSS No. 222 seem to be protecting the occupants extremely well.

Lap belts are most effective in preventing ejection, which is a very frequent hazard in smaller vehicles such as passenger cars or small school buses. Particularly in large buses which meet the improved structural and restraint requirements of FMVSS Nos. 220, 221, and 222, ejection is not as severe a problem. The design of padded seat and lap belt systems that optimize occupant kinematics (i.e., the interaction of the occupant with the padded seats) for all sizes of children is extremely difficult. Further, assuring that lap seat belts are snugly and properly adjusted on the pelvic bone structure and not loosely worn in the abdominal region is very difficult without automatic locking retractors and/or careful (and constant) monitoring of the children. Since the overwhelming majority of crashes of larger school buses do not involve high crash severities, we must be particularly concerned about the lap belt positioning on the pelvis (or abdomen), and on lap belted occupant kinematics for these vehicles. Nontheless, while the injury record of the new large school buses that employ the automatic crash protection concepts of FMVSS's Nos. 220, 221, and 222 is good, about 85 percent of Americans do not wear their safety belts in cars and smaller vehicles where safety belts are definitely needed and have proven extremely effective. It may be that supplying lap belts and assuring their use in the larger school buses would help to develop a safety belt habit that will carry-over into the cars and smaller vehicles.

Accordingly, NHTSA is planning to conduct research in the near future in school districts that have lap belts in their large buses to try to measure this carry-over effect. This latter effect may be more important than the difficult task of trying to quantify the exact safety impact of seat belts in the large school buses. For improving directly the safety of the children riding in school buses, our accident data tells us that child pedestrian fatalities are now much more frequent than bus occupant fatalities. Accordingly, the purchase of additional or better cross-view mirrors and swing arm stop signals could provide a definite safety improvement.

Your thoughtful examination of these issues and your interest in school bus safety are deeply appreciated.

Sincerely,

Diane K. Steed

Diane K. Steed

Enclosure:
Letter to Thomas Built Buses, Inc.

U.S. Department of Transportation
National Highway Traffic Safety Administration

400 Seventh St., S.W.
Washington, D.C. 20590

JAN 19 1984

Mr. Ron Marion
Specifications Engineer
Thomas Built Buses, Inc.
P.O. Box 2450
1408 Courtesy Road
High Point, North Carolina 27261

Dear Mr. Marion:

This responds to your letter of December 2, 1983, regarding the installation of seat belts on passenger seats for school buses with a GVWR over 10,000 pounds. As discussed below, seat belts installed on passenger seats in larger buses need not comply with any present seat belt requirements.

As correctly stated in your letter, there are presently no Federal safety standards concerning the installation of seat belts and anchorages for passenger seats in school buses with a GVWR over 10,000 pounds. Thus, a manufacturer may install seat belts for passenger seats on such school buses without having to certify that the belts and anchorages comply with Standards Nos. 208, 209 and 210. However, the National Highway Traffic Safety Administration encourages you to use seat belts and anchorages that will adequately restrain passengers in sudden stops and crashes.

Sincerely,

Frank Berndt
Chief Counsel

SPI

DR. FRANK B. BROUILLET — Superintendent of Public Instruction

January 6, 1986

TO: All State Director's of Pupil Transportation

FROM: Don M. Carnahan, State Director, Pupil Transportation

RE: Testimony on Seat Belt Standards

Enclosed for your information is a copy of testimony that I submitted in opposition to Wayne's request for seat belt standards on large school buses. My position (as you can see from my comments) is that these rules do not go far enough to protect belted students in compartmentalized school buses.

If you feel the same, don't hesitate to let NHTSA know. If you have any other questions, please write or give me a call.

DMC:nab

Enclosure

Old Capitol Building FG-11 Olympia, Washington 98504

SPI

DR FRANK B BROUILLET — Superintendent of Public Instruction

November 29, 1985

Docket Section, Room 5109
National Highway Traffic
Safety Administration
400 Seventh Street SW
Washington, DC 20590

Reference: Docket No. 85-14, Notice 01

The State of Washington's Office of the Superintendent of Public Instruction and the Governor's Traffic Safety Commission are opposed to the proposed amendment to Federal Motor Vehicle Safety Standard No. 222. This proposed change will not improve the public safety on school buses because it represents the current practice in the industry (in the absence of such regulations). Presently it is a simple task to add to bid specification language which references the requirements of FMVSS Nos. 208, 209 and 210 when a purchaser wants lap belts installed in their school buses. Our position is stated in the attached "position paper". On page 2, recommendation number two states "School districts should have the choice of compartmentalized or a safety belt equipped large school bus, each of which should meet strict and separate occupant protection standards."

We believe that adopting such an amendment will mislead the general public into believing that this change will provide improved performance levels of belts in large school buses. NHTSA's own statement "Amending Standard No. 222 as proposed in this notice would provide performance requirements for safety belts in large school buses which would ensure that the safety belt assemblies and anchorages used in those buses are capable of providing an acceptable level of safety." This statement infers that current lap belt performance in large buses will be improved by this change and that current industry practice is to provide lap belts not meeting FMVSS Nos. 208, 209 and 210. Both inferences are incorrect. In summary, the proposed amendment to FMVSS No. 222 accomplishes nothing.

We feel that it is irresponsible to establish standards that have the potential of increasing life threatening injuries in frontal school bus collisions. Especially when such potential has been repeatedly documented in crash studies. The change is ineffective and counterproductive because it does not go far enough.

Old ... Building FG-11, Olympia, Washington 98504

The problem of adding lap belts to a compartmentalized large school bus has been well documented in numerous studies. The most recent, the 1985 study conducted by Transport Canada. The jackknife effect in frontal collisions while wearing only a lap belt, as opposed to a 3 point restraint as required in front seats of multi-purpose passenger vehicles, tremendously increases the passenger's risk of life threatening head injuries. Attached is the Insurance Institute for Highway Safety Status Report, Vol. 20, No. 5, May 11, 1985. The table on page 7, which summarizes Transport Canada's Crash Study, graphicly displays the tremendous increases in the values for head injury criterion for passengers that are lap belted in a "compartmentalized" school bus.

On page 5 of the same publication, a NHTSA official, Dr. Kennerly Diggs, references 1978 NHTSA sled tests which yielded similar findings related to head impacts with seat backs.

Seat spacing on large school buses is controlled by FMVSS No. 222 and this standard limits the space that may be provided between the seats and between the seats and barriers. This system of occupant protection works fine until the lap belt is added. With the lap belt added and the resultant jackknife effect during frontal collisions, the head violently strikes the seat back causing more life threatening injuries than if lap belts were not used. The seats are much too close together to use lap belts. We do not believe that NHTSA should degrade the existing level of safety for school bus passengers by simply passing the proposed amendment.

We contend that the proposed change does not go far enough! And unless adequate standards are established with the change, no change should be made. Adequate passenger protection is not provided against potential head injuries with this proposed amendment. In fact, existing passenger protection is compromised with regard to life threatening head injuries.

We believe that school districts that want buses equipped with lap belts should have that opportunity. However, we believe that the interior design of such an equipped bus should meet a separate set of standards. Don't mix FMVSS No. 222 "compartmentalization" with lap belts.

When lap belts are added to the seats in a school bus, there should be minimums established for how close the seats may be spaced and not a maximum distance on how far apart the seats may be spaced as is currently required in FMVSS No. 222. Perhaps at least a 40 inch center-to-center seat spacing should be required if lap belts are added. No FMVSS No. 222 standard change should be made which might provide an illusion of safe performance for lap belts in school buses until it has been established that the adopted change is actually "SAFE". If adequate data cannot be found to establish this minimum distance between seats, if lap belts are used, a study should be completed prior to making any change.

If you are going to make a change, please do it to protect the passengers and not because of any manufacturer's desire for liability protection. The problem is not the strength of the lap belt. The problem is mixing the use of a lap belt in a compartmentalized school bus.

Sincerely,

Don M. Carnahan
State Director
for Pupil Transportation

and

Technical Advisory Committee Member
for Washington Traffic Safety Commission

DMC:nab

Attachments
WTSC Position Paper
IIHS Status Report

cc: Chuck Hayes, WTSC

WASHINGTON TRAFFIC SAFETY COMMISSION

POSITION PAPER

Purpose: To express the Washington Traffic Safety Commission's position on the need for safety belts in school buses.

Background: Every school day throughout the U.S., 390,000 school buses log some three million miles transporting 21,500,000 youngsters to and from classes, athletic events, and field trips. Almost always the trip is routine, and the children arrive without mishap. But is school bus travel safe enough? A growing number of parents, aware of the safety advantages of wearing seat belts in passenger cars and trucks, are questioning why most school buses are not equipped with seat lap belts for their children's protection. Now a grassroots movement wants to require school districts across the country to add lap belts to their shopping lists when purchasing new buses. Others contend such an action is unwarranted and may create more injuries in bus crashes. (IIHS Status Report.) Persons on both sides of the argument are in general agreement that retrofitting existing school buses with lap belts should be approached with a great deal of caution.

School buses manufactured after April 1, 1977 must comply with Federal Motor Vehicle Safety Standard (FMVSS) 222, "School Bus Passenger Seating and Crash Protection." The standard requires high and strong seats and seat backs, seat back padding, and seat spacing that reduces the chance of the occupant being thrown over the seat in front. This approach taken to bus occupant protection is commonly referred to as compartmentalization. Compartmentalization, as outlined in the standard, requires strength in the entire seating system which inclues the floor, the seat frame, and the fastening of the frames to the floor while at the same time providing seat system padding and flexibility to absorb energy in a crash.

Small, van-type school buses (under 10,000 lbs. gross vehicle weight) are required, the same as passenger cars, to have safety belts. These small school buses respond in a crash in a similar manner as cars because of their weight and design.

There is no body of data available to definitively demonstrate whether safety belts in large school buses would increase occupant protection. The number of school bus occupant deaths and serious injuries is so low (one in ten years) that assessing the extent to which adding safety belts could prevent death or injury (or cause of it) is not feasible.

Position: Based on extensive research, crash testing, and 20 years of performance history, the effectiveness of the current safety standards, and the excellent safety record of school buses generally, we do not believe that a requirement for safety belts in large school buses is warranted. The National Transportation Safety Board reviewed this matter in 1983 and found that current NHTSA standards appear to be effective in eliminating or substantially reducing the majority of school bus injuries.

Recommendation: Since studies have indicated the mixing "safety belts" and compartmentalization causes more severe and life threatening injuries; and, since there are no standards for manufacturers to meet when installing safety belts on large school buses of 10,000 lbs. gross vehicle weight and over, it is recommended that:

1. NHTSA establish standards for occupant restraint systems in large school buses which do not increase the potential for life threatening injuries for any size passenger.

2. School districts should have the choice of compartmentalized or a safety belt equipped large school bus, each of which should meet strict and separate occupant protaction standards.

3. School districts should not purchase safety belt equipped compartmentalized school buses until NHTSA establishes appropriate and separate school bus passenger seating and crash protection standards for safety belt equipped large school buses.

4. The WTSC recommends that all passengers occupying seats in any school bus equipped with safety belts be mandatorily required to have the safety belts fastened and properly adjusted any time the bus is in motion.

WTSC 7/85

PROTECTION FOR SCHOOL BUS OCCUPANTS

ISSUE PAPER

P.2

U.S. Department of Transportation
National Highway Traffic Safety Administration
Traffic Safety Programs

September 1981

PROTECTION FOR SCHOOL BUS OCCUPANTS

ISSUE

Seat belts are required in all passenger cars, and in small buses, but they are not required in the large buses that transport the great majority of the nation's school children. A recurrent issue, particularly among parents of school aged children, is whether large school buses should also be required to have seat belts.

DISCUSSION

An early experiment by the Harran Transportation Company of North Merrick, N.Y., in 1960, revealed that safety belts were used more as weapons than as safety devices. Fleet supervisors viewed them as more trouble than they were worth. Also, an assessment of school bus usage reveals that school bus seats are often occupied by various sized and numbers of students. For example, it is common practice for three students between the ages of 5 and 12 years to occupy a 39-inch wide school bus seat. This same sized seat is used by two high school students. This use pattern presents a problem of effectively protecting all occupants of the school bus without adding undue cost to school districts.

The first formal tests conducted on seat belts for pupil passengers were conducted by the University of California at Los Angeles (UCLA) in the mid-1960s. This study recommended that seat belts not be used unless the low seat back height was increased to 28-inches measured from the base of the seat to the top of the seat back. It was further recommended that all seats be padded.

The NHTSA 1972 "School Bus Seat Restraint and Seat Anchorage Systems" study found that there seemed to be a "jack knife" effect resulting from the use of seat belts. In many instances a child's face would be aimed at the unpadded steel seat frame of the seat ahead when the bus made a sudden stop.

The crash tests conducted by UCLA were carefully reviewed by NHTSA, and then a series of school bus passenger seat and lap belt sled tests were initiated in the mid-to-late 1970s. Basic design changes were recommended for the bus seat. These seats were found to be the greatest contributor to occupant injuries. The low unpadded seats increased the chances of injury to a child's head, neck, and chest. The UCLA study recommended a 28-inch high back seat and NHTSA's tests confirmed that well padded seat backs higher than the conventional 20-inches would provide substantial additional protection to pupil passengers. NHTSA determined that within certain limits of seat spacing, compartmentalizing the pupil between high-strength, high-backed, well-padded seats would avoid a number of the problems posed by seat belts.

STANDARD INITIATION AND IMPLEMENTATION RATIONALE

While NHTSA was still engaged in school bus research, the Congress enacted the School Bus and Motor Vehicle Safety Amendments of 1974, which directed the agency to issue standards on several aspects of school bus safety. Bus seating was among the standards to be issued, so the agency duly undertook rulemaking and on February 22, 1973, issued Federal Motor Vehicle Safety Standard (FMVSS 222) School Bus Passenger Seating and Crash Protection which became effective on April 1, 1977.

The Standard addresses principally three aspects of seating occupant protection: (a) seat and seat anchorage strength, (b) seat and restraining barrier height and surface area, and (c) padding on contactable surfaces within the occupant's seat space. FMVSS 222 relies on the concept of compartmentalization between well-padded and well-constructed seats to provide occupant protection on buses over 10,000 pounds. (Type I)*

The requirements of the Standard provide the essential elements for the compartmentalization concept. These elements also provide the impetus for NHTSA's position relative to occupant protection in school buses. This position reflects the results of seat and vehicle construction research as well as assessment of actual use of school buses.

POSITION

The National Highway Traffic Safety Administration agrees that children should be protected on school buses but does not support a requirement for seat belts for passengers in large school buses. Improving the seating compartment eliminates the need for seat belts and provides sufficient crash protection.

*The buses under 10,000 pounds are required to have belts. Seat belts are required in the lighter buses because they experience more severe crashes than larger vehicles when involved in similar collisions.

ACCOMPANYING MATERIAL

School Bus Accident Problem

Almost 22 million pupils are transported daily to and from schools in the U.S. The annual mileage for some 400,000 school buses has reached 3 billion miles.

During 1979* there were 150 accidents involving large school buses in which fatalities occurred. Eighty-three were frontal crashes and 17 were rear-end crashes. Of the 205 persons killed, 18 were occupants of the bus and 78 were pedestrians run over by the bus or by a passing vehicle. There were 60,000 additional crashes in which approximately 4,500 pupils were injured. Most of these injuries occurred inside the bus. About 10 percent of these crashes were rollover accidents.

Federal Motor Vehicle Safety Standard 222, School Bus Passenger Seating and Crash Protection (FMVSS)

This Standard applies differently to school buses with gross vehicle weight ratings of over 10,000 lbs. and those under 10,000 lbs. The buses under 10,000 lbs. are required to have seat belts, because they experience more severe crashes than larger vehicles when involved in similar collisions.

FMVSS 222 prescribes passive protection for school bus passengers. The requirements fix principally on three aspects of seating occupant protection: (a) seat and seat anchorage strength, (b) seat and restraining barrier height and surface area, and (c) padding on contactable surfaces within the occupant's seat space. FMVSS 222 relies on the concept of compartmentalization between well-padded and well-constructed seats to provide occupant protection on buses over 10,000 lbs. (Type I).

The seat spacing requirements of FMVSS 222 have proven to be the most controversial aspect of the standard, largely because the reduced space between seats leaves less room for the legs of adults and older children.

The 20" school bus seat spacing distance (from seating reference point (SRP) to back of seat) became effective on April 1, 1976, due in part to the 1975 school bus strength testing project by the AMF Corporation (DOT-HS-801-714). The tests were conducted at the 25" seat spacing distance because it most closely reflected the industry's measurement practice. (The 25" measurement was taken from one seat back center to another and was approximately equivalent to the 20" distance from SRP with 1" thick seats.)

*Latest data available

Two major recommendations were developed from the seat strength integrity testing. They were: (1) reducing the maximum allowable seat spacing for school buses of Gross Vehicle Weight Rating (GVWR) greater than 10,000 lbs, and (2) amending the loading requirements on school bus seats. The test results yielded the 20" seat spacing which was recommended by NHTSA's technical staff.

When the standard went into effect, the padding industry was underdeveloped. The standard had produced seat back padding protection against injuries which took up as much as 3-inches of space, thus reducing seat space on normal buses to about 18" from SRP to seat back. Over the past few years the relatively small number of suppliers have improved the energy absorption quality of their product somewhat by experimenting with different material and densities. However, the product is still relatively underdeveloped, particularly in the area of deformation. There appears to be ambiguity regarding the amount of padding necessary; it has not yet been addressed nor specified.

On December 20, 1977, the NHTSA issued an interim final rule and an NPRM that would increase the maximum allowable seat spacing in large school buses from 20 to 21 inches. The Standard states that the "seats shall be spaced no more than 21-inches from the back of the front seat to the seating reference point (SRP)." The SRP is the manufacturer's design reference point which establishes the rearmost normal design riding position of a designated seating position in a vehicle. Prior to NHTSA's standard, measurements were taken from the interior center of the seat back. (Approximately 25-inches between seat backs was the distance most frequently used.)

NHTSA was unable to obtain critical information on the safety effects of various seat spacings through the results of the 1978 Engineering Test Facility (ETF) frontal impact school bus passenger seat and lap belt sled tests (DOT-HS-804-985). The main objective was to acquire data for possible rulemaking actions in response to docket petitions against FMVSS 222.

The sled tests were conducted at various speeds (10, 15, or 20 mph), seat spacing (20", 22", and 24"), seat configurations (route or activity bus seats), belted and unbelted, and dummy size (adult and child). The results of the tests showed that seat spacing had only a minor effect on the response characteristics of the adult dummy and only a slightly higher effect on the child dummy. The compartmentalization data showed that the six year old child dummy had 100 percent containment at all spacing and the adult dummy had partial ejection. These tests were frontal impacts with two dummies per seat, however, if the tests were oblique or angle impact the containment data would be somewhat less favorable as seat spacing increased. The major finding of the tests proved that compartmentalization in frontal crashes appeared to be more sensitive to seat back height than spacing.

Due to manufacturing tolerances, some school bus manufactur were, and still are, spacing their seats at lesser distance to ensure that spacing did not exceed that prescribed maximu (to date there is not a prescribed minimum). A seat spacing specification of 21 inches permitted the 20-inch spacing of seats by taking manufacturing tolerances into account. A ra review of compliance testing showed that the 1977 manufactur school buses complied with the 20" requirement. The range w from 17 3/4" to 19 7/8" demonstrating variance of 2". A 20 inch distance should accommodate the upper leg (hip to knee) length of a 95th percentile adult male.

A recent solicitation of comments from manufacturers showed that approximately half of the manufacturer seat backs have tapered padding (Wayne, Carpenter, and Superior). Of those who taper, the average measurement of padding thickness was 2½" on the frame and 1" in the knee impact area. The signifi of restricting the maximum width of the padding is not a vita issue to seat spacing.

Special Activity Buses:

The conventional route school bus has had a dual utility for many of its users. Both public schools and contractors use conventional route buses for the transportation of students both to and from school, and special activities. The new redu seat spacing created severe problems for these users. They found the seats to be extremely uncomfortable for long distance travel and in the transportation of its large students, such as athletic teams. In response to this problem, the School Bus Manufacturers Institute (SBMI) petitioned NHTSA on March 7, 1977, to amend part 571.3 Definitions, by adding a separate definition for a subclassification of school bus to be called "school activity bus" and to amend FMVSS 222 as it would apply to a school activity bus. SBMI proposed that these buses have recliner-type or other type seats appropriate for long distance and activity trips. The seat spacing was to be anywhere up to 32-inches, the maximum used on commercial passenger buses, to ensure a comfortable trip. Their intention was that the bus be used only for special activity trips and not route trips.

The special use of activity buses has caused a great deal of concern to many. Most actively involved in this issue are the School Bus Manufacturers Institute (SBMI) and the National School Transportation Association (NSTA). SBMI's primary reasons for wanting a special category for activity buses is related to the comfort factor of the seating within the bus, the colors of the bus and the special needs for carrying athletic equipment and band instruments. On the otherhand, it is NSTA's view that permitting activity trips to be taken on special activity buses would place an economic burden on the already diminishing financia resources of school districts. In some cases dissatisfaction

with FMVSS 222 has caused school districts to avoid using buses built to the new specifications as activity buses. The older equipment does not conform to safety standards, resulting in an increase in the possibility of injury with its continued use. Further, as the buses get older, maintenance problems and equipment failures will present a greater hazard.

Accidents and user information is fragmented regarding this issue. On the average each school district's activity buses transport roughly 32,000 pupils per year traveling an average distance of 45 miles per trip. Although the average distance is relatively short, some trips are hundreds of miles, often in darkness, and travel speeds are relatively high--i.e., highway speeds. NSTA conducted a survey in 1979 in an attempt to obtain information on usage. Their respondees included State Directors of Education, contractors, and public school fleet supervisors; each with a different perspective on activity trips. Through the NSTA survey it appears very little recordkeeping is done on the State and local level regarding accidents, miles traveled, environmental conditions during the trip, and driver training. In a review of the types of vehicles used for the activity trips, the older pre-standard buses were used more frequently than the post FMVSS 222 buses. These pre-standard buses give the passengers 25" or more of knee spacing making the ride much more comfortable.

SUMMARY

An analysis of the Engineering Test Facility (ETF) tests indicated that seat spacing in front impact accidents is not as critical, up to a point, as seat height. The accident data and research data do not support the assumption that increasing the seat spacing to the ETF maximum testing distance (24") will necessarily mean that "relief" or "pre-standard" comfort will be immediately noticeable in all school bus transportation. For rural passengers and activity trip users, however, this will be a welcome relief. School districts could then be able to continue dual utility using route buses as activity buses. However, this seat spacing will not permit reclining type seats.

Fairbanks Child Passenger Safety Association

500 First Avenue
Fairbanks, Alaska 99701
(907) 456-6935

April 2, 1986

Representative Cato:

Thank you for the opportunity to testify in support of HB 684.

The following is an example of an actual accident where seat belts on a large school bus were life saving (Child Passenger Protection Report, Spring/Summer 1985):

NHTSA Campaign Update
Bus Accident
Shows Belts Protect

On April 15, 1985, in Palmetto, Florida, a heavily laden dump truck struck a large school bus, flipping the bus onto its roof. Four of its six occupants—the ones wearing belts—walked away from the crash. The other two, an adult monitor who was not wearing a belt, and a handicapped child restrained in his wheelchair with straps with velcro closures were admitted to the intensive care unit of the local hospital with head injuries. One other child restrained in a wheelchair with a safety belt was among the uninjured. The bus was equipped with belts because it was used for transportation of the handicapped. The Florida Highway Patrol has issued an affidavit stating that the use of belts prevented injuries to those using them.

I urge the State of Alaska to make seat belts on school buses a priority as a positive step, rather than in reaction to a serious accident.

I disagree with the gentleman who stated that putting seat belts on our school buses may not save a single life. Motor vehicle accidents remain the numer one killer of children and adults (up to the age of 38). It has been statistically proven that seat belts can reduce fatalities and serious injuries by 50-60%. The carry over effect of buckling up twice a day on the school bus is immeasurable. Seat belts on school buses will not only keep our children safe while being transported to and from school, it provides an opportunity to reinforce a habit that may keep the same persons safe into adulthood.

(1)

The School Bus Committee of the Fairbanks Child Passenger Safety Association has received the following local endorsements in support of seat belts on school buses:

Fairbanks Medical Association.
MADD, Norther Lights Chapter
Alaska Nurses Association, Fairbanks Chapter
North Central Alaska Dental Society

We have also collected over 700 signatures in support of this issue.

I would like to thank you and the Committee again, for the opportunity to address this important issue via teleconference. Please call upon our organization if we can be of further assistance.

Beth H.K. Lauesen
Project Director
Fairbanks Child Passenger
Safety Association

enclosure

NHTSA Campaign Update

Bus Accident Shows Belts Protect

On April 15, 1985, in Palmetto, Florida, a heavily laden dump truck struck a large school bus, flipping the bus onto its roof. Four of its six occupants—the ones wearing belts—walked away from the crash. The other two, an adult monitor who was not wearing a belt, and a handicapped child restrained in his wheelchair with straps with velcro closures were admitted to the intensive care unit of the local hospital with head injuries. One other child restrained in a wheelchair with a safety belt was among the uninjured. The bus was equipped with belts because it was used for transportation of the handicapped. The Florida Highway Patrol has issued an affidavit stating that the use of belts prevented injuries to those using them.

Canadian Study Rebutted

The National Coalition for Seatbelts on School Buses has published a position paper on the 1983 Canadian school bus crash study which has been causing a stir around the country. It is available from the Coalition, PO Box 781, Skokie, IL 60076.

More Communities Get Belt Pupils

The number of school districts with belts on their buses in Westchester County, NY, will grow from two this year to 14 in upcoming school year. Eighty-seven buses in Fairfax County, VA, will have belts, and the Montgomery County, MD, board of education is reviewing the equipping of its new buses with belts.

The Price is Right

Barbara Russell, Connecticut Regional Coordinator for the National Coalition for Seatbelts on School Buses surveyed the major school bus manufacturers in March, 1985, regarding factory installation costs of belts on new buses. Here are her findings:

Wayne, Inc.	$1,175
Carpenter Body, Inc.	$1,650
Ward	(approx.) $2,000
Blue Bird	$1,870
Thomas-Built Bus, Inc.	$1,400

Fix for Locking Belts, from p. 5

The agency is therefore proposing that lap belts or the lap portion of lap-shoulder belts that utilize ELRs in any designated seating position other than the driver's "shall be equipped with a locking means to permit secure restraint of child restraint devices." This is feasible, as there are devices now available that would serve this purpose.

The ruling makes a crucial exception for *right front-seat manual lap-shoulder belts in passenger cars*, because the agency reasons that it should not require manufacturers to modify belts that are going to be phased out as automatic restraints are phased in. This means that all the passenger cars made between now and 1989 (or after, should the automatic restraint requirements be cancelled), which are required by the same standard to be equipped with ELRs for their front seat belts, will come off the assembly line with the same compatibility problems that parents face today.

This rule also would apply *only* to lap belts that are installed for compliance with FMVSS 208, meaning that those used in air-bag equipped cars to meet lateral and roll-over requirements would have to comply, while those installed in conjunction with a single diagonal automatic belt would not have to, as the automatic belt would, itself, fully meet the 208 requirements. This appears contradictory, because child restraints placed in the front seat of either type of automatic restraint-equipped car would need the same lockable belt (see previous story, p. 5).

The bottom line is that the rear seat lap belts of cars made after September 1, 1986 and front seat lap belts will have locking mechanisms added. While this will be of some benefit, it does not go far enough. NCPSA has responded to the proposal by calling on the agency to expand the requirement to include front seat manual lap/shoulder belts and manual lap belts used with automatic belts. The association has also notified all child restraint manufacturers of the rule-making and its potential significance for the compatibility of child safety seats and safety belts.

Congressional Flack for Safety Agency

Both Senate and House members are showing their irritation at the National Highway Traffic Safety Administration's (NHTSA's) handling of the occupant protection standard, FMVSS 208. When questioned during recent authorization hearings in the House, NHTSA Administrator Diane Steed was unable to cite any precedent for states' action causing rescision of a federal rule, as 208 allows. Steed said that NHTSA would not certify any of the state mandatory belt use laws for compliance with FMVSS 208 at this time, saying that the agency wants to see how the laws will be enforced. Rep. John Bryant (D-TX) called the agency's position "preposterous" and decried the situation in which NHTSA could "rig" the rules to accept any law and cancel the automatic protection rule.

In the Senate, a bill requiring manufacturers to install air bags has been introduced by Senator Jack Danforth (R-MO), co-sponsored by Frank Lautenberg (D-NJ), Slade Gorton (R-WA) and Daniel Moynihan (D-NY). Danforth called the kind of weak seat belt use law passed in Missouri "a hoax [that] breeds contempt for the law." He does not want the Department of Transportation to "bury air bags for good by approving toothless state safety belt laws."

Status Report, May 25, 1985

American Academy of Pediatrics

T E S T I M O N Y

BEFORE THE

SUBCOMMITTEE ON TRANSPORTATION

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ON

MANDATORY SEAT BELTS IN SCHOOL BUSES

PRESENTED BY

Joseph R. Zanga, M.D., F.A.A.P.

MAY 1, 1985

Office of Government Liaison
1331 Pennsylvania Avenue, N.W.
Suite 721 North
Washington, D.C. 20004-1703
202-662-7460 / 800-336-5475

(4)

Mr. Chairman:

I am Joseph R. Zanga, M.D., Director of the Child and Adolescent Emergency Unit at the Children's Medical Center of the Medical College of Virginia. I am also President of the Virginia Automotive Safety Alliance and a Fellow of the American Academy of Pediatrics. My appearance here today is on behalf of the Academy, a national and international organization of more than 25,000 pediatricians. Those pediatricians and that organization have, as their overriding concern, the health, well-being, and safety of children and youth.

We are a cautious organization which studies issues in great detail before making public pronouncements. It was, therefore, with a great deal of confidence, based on more than 15 years of study, that in February, 1985, we issued a policy statement on school bus safety. During all of those years we looked at school buses, their design and construction, school bus drivers, their qualifications and training, and children who are the passengers on those vehicles. We studied accident reports and the investigations of individuals and organizations interested in school bus safety. We corresponded with school bus manufacturers, local, state and federal transportation safety agencies, consumer groups and the like. I come before you today to reinforce our February statement and tell you what we have learned.

That school buses have an enviable safety record is difficult to dispute unless, of course, you are the parents of one of the 10 or so children killed each year. In Virginia alone, there are 100-200 children injured each year as passengers on buses involved in accidents. Because my emergency room is a trauma center, I have occasion every year to examine 30-40 children injured in relatively minor bus accidents. Not

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one of those injured children would have required my services had safety belts been in use on those vehicles. The experience of my colleagues in pediatrics around the country is very much the same.

Lest someone tell you that despite what I have said, the buses themselves are intrinsically safe, and that by "compartmentalization" protect children from the harm of crash events, please recognize that current design safety standards were intended primarily to protect children from the forces of a front end crash (and even there they do an inadequate job). Unfortunately the majority of accidents involving buses have little to do with the front end of the vehicle. Buses are, more commonly, struck from the side at intersections or experience rear end or rollover collisions. These are precisely the accidents in which safety belts would unquestionably be life savers.

We have learned some other things as well. We've learned, for example, that buses manufactured in accordance with Federal Motor Vehicle Safety Standard #222, are fully capable of safely supporting the use of seat belts. As noted in the "Federal Register," Volume 41, #19, January 28, 1976, page 4017, "The strength characteristics of the seats specified by the standard. . . provide the strength necessary to absorb seat belt loads." We learned from school bus manufacturers' testimony that several of them indicated, as early as 1980, a willingness to install safety belts in newly manufactured school buses if those belts were among the specifications in the order they received. The Wayne Company indicated that the seats used on their large buses are identical to those used in the small buses in which belts are required by law. Seat frames have pre-drilled holes to accommodate belt assemblies so that "after market" installation of belts by school districts is easily accomplished., It is interesting to note that in that same 1980 review, two companies, Thomas and

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Bluebird, both indicated that the design on their seats did not lend itself to belt installation. For these companies, it would seem that retooling would be necessary should safety belts be required. Also please note that the Thomas Company is one of the industry leaders in opposition to safety belts.

One of the most interesting things we learned is that there are actually people out there who actively oppose the use of safety belts on school buses. We do not understand that opposition. We have examined the same studies they have and have found different words in those studies than they have quoted. We, therefore, have drawn different conclusions. Even the most recent Canadian study about which I'm sure you will hear, indicated that in an unusually high speed (for a school bus — 65 MPH) front end crash, "even belted children appeared to fare okay." The American Academy of Pediatrics maintains that had the test mimicked a more real-world event, at speeds more usually maintained by school buses with more life-like (non-stiff neck and spine) test dummies, and with instrumented child, rather than adult-size, dummies, there would have been a clear advantage shown for the safety of restrained subjects. Further, if our recommendation on increased seat back height had been followed, the safety advantage of the restrained dummies would have been unquestionably demonstrated. The school bus industry, however, is touting this study as "proving" the "danger" inherent in the use of safety belts on school buses.

Let's move away, though, from the issue of primary injury in school transportation to the broader issue of child safety. Among the things the members of the American Academy of Pediatrics know more about than school buses is school children. We, of course, spend our lives working with, studying and learning more about children. We have observed that children, particularly the young ones, are avid learners; but for those young ones, learning is concrete, not abstract. Children, unfortunately,

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can not rationalize the way we adults often do. For them, most issues have no shades of gray.

It has taken 8 years, but fortunately in our country all 50 states in some way protect young motor vehicle passengers by mandating the use of safety seats or belts in private passenger automobiles. Many of our children are thus growing up with the habit of riding safely secured. That habit safely persists, enforced by law, until the first day of school where we literally and figuratively lose these children to an educational system that says it is proper to ride unsecured in a moving motor vehicle. Two trips a day, every weekday, for about 9 months of the year is a powerfully negative learning experience. Our older children, our teenagers and our young adults are killed in massive numbers each year because they have not learned the importance of using a safety belt for every motor vehicle excursion. The potential for powerfully reinforcing the education inherent in the child safety seat laws is also inherent in any federal or state legislative effort which would seek to encourage or mandate the use of safety belts on all of our school buses.

Ladies and gentlemen of this committee, the American Academy of Pediatrics, its members and the children whom we serve, urge you, for reasons of safety and safety education, to consider what we have said today, to review our February statement on school bus safety and the other attached information.

We urge the Committee to request the National Highway Traffic Safety Administration to initiate rulemaking or other programs to mandate seatbelts in school buses. As individual members we ask that you vote in favor of measures such as that introduced by Representative Kostmayer which would provide incentive grants to states to adopt and enforce laws requiring the use of safety belts in school buses.

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TABLE III

SCHOOL BUS OCCUPANT FATALITIES BY TYPE OF IMPACT

FOR ACCIDENTS INVOLVING SMALL, MID-SIZED AND LARGE SCHOOL BUSES

1977-1983

Type of Impact	Total No. Fatalities	Secondary Overturn	Ejection
Head-On	11 (8%)	2	1
Hit tree, pole	11 (8%)	2	1
Culvert, Ditch	23 (17%)	12	0
Embankment	4 (3%)	3	3
Shoulder	1 (.8%)	0	0
Rear-End	16 (12%)	2	1
Side-Swipe	10 (8%)	3	1
Side Impact	26 (20%)	8	6
Railroad Train	3 (2%)	2	1
Fell From Bus	12 (9%)	0	5
Injured in Bus	1 (.8%)	0	0
Primary Overturn	16 (12%)	-	7
Total	133	34	26 (20%)
		Primary Overturn 16	
		Total Overturn 50 (38%)	

Source:

Fatal Accident Reporting System Data Base
For Accidents Involving a School Bus or Vehicle Used As a
School Bus When An Occupant Died in the Accident File (1977-1983)
National Highway Traffic Safety Administration
U.S. Department of Transportation, Washington D.C.

Sherman & Howard

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RODNEY D. KNUTSON

February 11, 1986

Denver Board of Education
Denver Public Schools Administration Building
900 Grant Street
Denver, Colorado 80204

Re: School Bus Seat Belts

Ladies and Gentlemen:

We have been asked by our client, Coloradans for Seat Belts on School Buses, to address certain liability issues relating to the installation of seat belts in the new school buses to be purchased this year. We understand that earlier administrators' recommendations to include seat belts have been questioned because of the Board's concern that the fact belts were installed could expand the District's potential liability if students failed to wear the belts properly.

Two Colorado Court of Appeals cases have triggered this concern. One involved a child injured while riding a bicycle home from school contrary to a school policy that permitted only older students to bicycle to and from school.[1] The second involved a kindergarten student injured as she crossed a sometimes guarded intersection that was unguarded at the time of injury.[2] In each of these cases the trial judge found so little merit in the claims against the school district involved that he did not allow the case to be determined by the jury. The Court of Appeals decision in each was <u>not</u> a decision to impose liability upon the school district; rather, that Court merely decided that the trial court should have permitted the question of liability to be determined by the jury.

It is certainly possible that juries would find liability against school districts under the facts such as those presented in these two cases. Both involved the application of school safety policies: a policy restricting the ages of students allowed to bicycle to school and a policy concerning guarding of crosswalks. Both also involved students among the youngest in

the school system: a kindergartner and a first grader. It is important to realize, however, that lawsuits likely would have been brought and liability possibly imposed as a result of these accidents even in the absence of these school policies on the theory that safety policies should have been in place.

If a child is killed or injured in a school bus accident, an ambitious personal injury lawyer might attempt to find some way of holding the school board liable. He might assert that when a school district transports pupils it has a duty to do so with reasonable safety.[3] Despite the unworkability of doing so, the District might be held to a standard of care commensurate with the age and experience of each of the pupils riding a bus.[4] The plaintiff's attorney might try to find fault with the way the bus was driven, designed and maintained, with the quality of supervision on the bus and with the way in which students were instructed in the use of safety equipment. If the bus is lacking in safety equipment, that fact could well be raised as an issue in the suit (as it has been raised many times before).

We have conducted a computerized search of reported cases from around the country and have found none in which a school district was held liable because a student failed to buckle a seat belt which was provided.[5] Further, none of the articles we have consulted describes such a case.[6] Several cases have held airlines negligent when pilots failed to warn passengers to buckle up because of turbulent weather ahead.[7] A California appellate court has held that a taxicab company could be held negligent when seat belts installed in its cab slipped behind the seat so that the passenger could not use them.[8] However, common carriers such as taxicab companies and bus lines may also be subject to liability if they fail to install seat belts and the jury decides that such failure amounts to negligence.[9] In other words, where scrutiny is very strict, failure to provide seat belts leads to a question of negligence just as failure to make people buckle up may.

Although a school district may not be held to the high standards to which a common carrier is held,[10] if the court allows the jury to decide the amount of care that should be taken, a case could just as well be based on the question of whether seat belts should have been installed when they were not as on failure to insist on proper use if they were installed.[11] The two Colorado cases that have caused the Board concern suggest that courts are willing to allow increasingly close jury scrutiny of school district actions, both in terms of that which was done

and that which was left undone. In a case of injury that reaches the jury, we believe it would be persuasive to argue that the school installed safety equipment, taught students how to use such equipment, and urged them to do so. Further, it would not be in the District's best interest for the jury to perceive that safety equipment was omitted because the school district felt that policy would lessen liability or costs.[12]

It also appears likely that the District would decrease its liability exposure if it equipped new buses with seat belts. First, the children wearing seat belts may be less likely to be injured, thereby reducing the total number of plaintiffs. Second, the trend across the country appears to require buses to be equipped with seat belts. If this becomes the standard practice, the argument for liability on a non-equipped bus would be primarily that the District had failed to meet this standard. Since any such standard would surely first arise with respect to new buses, any minimal protection the district might achieve for old buses by leaving belts out of new ones would almost certainly be outweighed by increased exposure were a new, unequipped bus to be involved in a crash. It would, we feel, be much better to argue to a jury that safety devices were being added in a rational and orderly way than to be perceived, whether correctly or not, as omitting them in an effort to avoid liability on a somewhat dubious legal argument.

In sum, we find it difficult to imagine the Board adopting a policy not to use safety goggles in laboratory or shop classes merely because a small number of students occasionally do not use or misuse the equipment. Similarly it seems unlikely that safety equipment such as helmets or face masks for students involved in sports would be eliminated for fear that occasional misuse or nonuse of these items could somehow expand school district liability. Clearly the potential liability for failure to provide the safety equipment has always been perceived to outweigh any concerns over potential school district exposure for isolated abuses of the policies requiring the safety equipment. We are not aware of any legal reason to treat seat belts on school buses differently.

Sincerely,

Rodney D. Knutson

RDK:ld

Attachment: Footnotes

BOARD OF EDUCATION

WEST ORANGE, NEW JERSEY 07052

TELEPHONE: 201-736-7900

Ext. 344

179 EAGLE ROCK AVENU

Robert M. Brown
Transportation Coordinator

March, 1985

TO WHOM IT MAY CONCERN:

My name is Robert Brown, Transportation Coordinator for the West Orange Board of Education. I have had the experience of using school buses with seat belts, 28" high seat backs and roof hatches for the past school year.

I enthusiastically endorse the concept and urge school boards to implement seat belts, 28" high seat backs and roof hatches on all new school buses purchased in New Jersey.

I have heard all of the arguments offered in opposition to these important safety features and from experience on the road with the children in normal use we have experienced none of these imagined difficulties:

1. Seat belts are not being used as weapons. Fingers are not being caught as the buckles are push-button release type.
2. The children have learned to use them rapidly and free themselves with a flick of the wrist.
3. Discipline has simultaneously improved.
4. Insurance costs have not gone up.
5. In regard to the 28" high seat back, our drivers report no vision problem.

We are very pleased with seat belts, 28" high seat backs and roof hatches, more important is the knowledge that we are offering our children a far safer ride back and forth to school.

Very truly yours,

Transportation Coodinator

ROCHESTER GENERAL HOSPITAL
UNIVERSITY OF ROCHESTER
SCHOOL OF MEDICINE AND DENTISTRY

JOHN D. STATES, M.D.
CHAIRMAN AND PROFESSOR
DEPARTMENT OF ORTHOPAEDICS

DOCTORS OFFICE BUILDING
1345 PORTLAND AVENUE
ROCHESTER, N.Y. 14621
(716) 338-4706

December 26, 1984

Mrs. Carol Fast, Director
National Coalition for Seatbelts on School Buses
11 Orlando Avenue
Ardsley, N.Y. 10502

Re: Seat Strength for Safety Belt Installation in School Buses Meeting FMVSS 222

Dear Mrs. Fast:

Contractors providing school buses to users are currently objecting to the installation of safety belts in buses meeting Federal Motor Vehicle Safety Standard 222 because they believe the seats are not sufficiently strong to accept the loads imposed by the belts in a collision. I have reviewed the federal motor vehicle safety standards including 208, 209, 210 and 222, and have examined buses manufactured by Wayne, Thomas and Carpenter which meet FMVSS 222. It is noteworthy that FMVSS 222 requires that the seats provide restraint for the occupants in a headon collision configuration. This restraint is provided by the seat backs which are impacted by the forward moving passengers in a headon impact collision. Based on this strength and performance requirement and my examination of the actual seats in buses manufactured by Wayne, Thomas and Carpenter, I find that the seats are sufficiently strong enough to take the loads imposed by safety belts because they are all ready required to provide restraint through the seat backs for the passengers. The loads may be actually reduced somewhat by the use of safety belts because the moment arm with respect to the floor mounts is shorter thus reducing the peak loads imposed on the seat structures and floor mounts. I can only conclude that the seats in school buses meeting FMVSS 222 have sufficient strength to permit the installation of safety belts.

Very truly yours,

John D. States, M.D.

JDS/rmk

xc: Mrs. Laura G. Schwarz
Mrs. Martha Spital
Dr. Arthur Yeager

Testimony Given In Favor of House Bill 684

Alaska Legislative Teleconference--April 2, 1986

by Laurel Osborne

I am a mother of two girls who ride a school bus every day. I became affiliated with the National Coalition for Seatbelts on School Buses in an effort to make our school bus safer.

I am very concerned by statements made by the pupil transportation industry that "compartmentalization provides ADEQUATE protection and has been PROVEN effective in crash tests. This statement is INCORRECT.

Compartmentalization, as it exists today, has little resemblance to the original concept created by UCLA in 1968. That seat had a 28 inch high back for whiplash protection, padded side walls and side arms AND seatbelts. The compartmentalized seat specified in the Federal Standard of 1977 is little more than a padded bench seat and may NEVER have been adequately tested. In tests conducted by the United States Department of Transportation in 1978, the seats of all 6 makes of buses FAILED the injury criteria for the child dummy.

The author stressed that more testing was IMPERATIVE. Unfortunately these crash tests were the last ever done on school buses by the United States government.

The National Highway Traffic Safety Administration stated in 1985 that school buses which were compliance tested in 1977 passed the Federal standards. However this agency cannot or will not provide a schedule

of compliance testing of school buses SINCE 1977 and it is likely that none has occurred.

It is unrealistic to expect that the Federal Goverment will crash test school buses to determine the effectiveness of seatbelts, if they have not crash tested ANY school buses to determine the effectiveness of the standard in EIGHT YEARS.

Data shows that 30 students and drivers have died in compartmentalized school buses since 1977. Most of the accidents involved side impacts and/or rollovers (Table I and Table II). Compartmentalization failed to protect the occupants.

Compartmentalization also did not work in tests performed by the Canadian Government in 1984.
Three out of 11 unrestrained dummies landed in the aisle and one was thrown through a restraining barrier and landed upside down on the door opening mechanism.

Uncertified dummies with exceptionally stiff necks were used in these tests. Seatbelts were fastened but never tightened, thus allowing belted dummies to slide 10 INCHES on the seat before contacting the seatbelt. This slide may have contributed to the head injuries experienced in the smaller buses.

Despite the built-in biases of these tests, the belted dummies in the LARGE school bus outperformed their unrestrained counterparts, one of which received a fatal chest injury.

The most serious question raised by the Canadian tests is WHY DID ALL 3 BUSES TESTED SUFFER MAJOR STRUCTURAL FAILURES? Fuel systems failed, the driver space was obliterated, windows shattered, and restraining barriers tore loose. These buses were all post-1977 buses and SHOULD have met Federal standards.

The intense opposition to seatbelts on school buses by the pupil transportation industry MAY BE MORE OF AN OPPOSITION TO THE SCRUTINY OF SCHOOL BUS STRUCTURAL INTEGRITY which could accompany the installation of seatbelts. If a school bus fails to meet the standards, the Federal Government may ask a manufacturer to recall and fix all buses produced since the previous compliance testing. If the previous compliance testing was in 1977, a recall could have a serious financial impact upon the industry.

I would like to remind legislators that seatbelts are required equipment in all cars and trucks. The Federal Government has required seatbelts in SMALL AND MID-SIZED SCHOOL BUSES SINCE 1977. In these smaller buses, seat spacing is the SAME as in large school buses. The combination of lap belts and closely spaced seats has proved compatible for nearly 10 years on small and mid-sized school buses.

I thank the members of the House Transportation Committee for giving me the opportunity to speak to you. You CAN make the difference. You can decide to provide seatbelts in school buses--and so provide the restraints which are available in EVERY OTHER type of vehicle on the road--and which are ESSENTIAL to the survival of a child in a school bus crash.

TABLE I

SCHOOL BUS OCCUPANT FATALITIES

TYPE I LARGE SCHOOL BUSES--PRE-1977 AND POST-1977

	1977	1978	1979	1980	1981	1982	1983
Drivers	0	3	5	1	2	0	2
Passengers	15	16	12	13	10	10	15
Total	15	19	17	14	12	10	1

Grand total: 104 fatalities

SCHOOL BUS OCCUPANT FATALITIES

TYPE I LARGE SCHOOL BUSES--POST-1977 "COMPARTMENTALIZED" BUSES

	1977	1978	1979	1980	1981	1982	1983
Drivers	0	2	1	0	2	0	1
Passengers	0	1	3	4	4	6	6
Total	0	3	4	4	6	6	7

Total: 30 fatalities

Source:

Fatal Accident Reporting System Data Base
For Accidents Involving a School Bus or Vehicle Used As a School Bus When An Occupant Died in the Accident File
U.S. Department of Transportation, Washington, D.C.

Conclusions:

30/104 or 29% of all large school bus fatalities have occurred on "compartmentalized" buses.

TABLE II

SCHOOL BUS OCCUPANT FATALITIES BY TYPE OF IMPACT

FOR ACCIDENTS INVOLVING "COMPARTMENTALIZED" POST-1977

LARGE SCHOOL BUSES

Year of Accident	Year of Bus	State	Occupant	Type of Accident
1978	1977	NC	Driver	Side Impact
1978	1977	PA	Driver	Head-On
1978	1977	TX	Passenger	Sideswipe/Overturn
1979	1977	IL	Driver	Railroad Train
1979	1977	LA	Passenger	Hit Tree
1979	1977	MN	Passengers(2)	Rear-End/Overturn
1980	1978	GA	Passenger	Fell From Bus
1980	1978	OH	Passengers(2)	Rear-End
1980	1978	TX	Passenger	Hit Utility Pole
1981	1978	PA	Driver	Side Impact
1981	1978	TX	Passengers(3)	Overturn
1981	1977	AL	Passenger	Overturn
1981	1978	MI	Driver	Side Impact/Overturn
1982	1978	GA	Passenger	Side Impact
1982	1982	GA	Passenger	Head-On/Rollover
1982	1978	LA	Passenger	Side Impact
1982	1981	MO	Passenger	Hit Culvert/Overturn
1982	1977	TX	Passenger	Sideswipe/Overturn
1982	1981	MS	Passenger	Side Impact
1983	1982	NY	Driver/ Passengers(4)	Sideswipe
1983	1977	OH	Passenger	Overturn
1983	1978	TX	Passenger	Head-On

Source:

Fatal Accident Reporting System Data Base
For Accidents Involving a School Bus or Vehicle Used as a
School Bus When an Occupant Died in the Accident File (1977-1983)
National Highway Traffic Safety Administration
Department of Transportation, Washington, D.C. 20590

REFERENCES

Severy, Derwyn M., Brink, Harrison M,, and Baird, Jack D. "School Bus Passenger Safety." Institute of Transportation and Traffic Engineering, University of California at Los Angeles, Society of Automotive Engineers, Inc., Transactions Vol. 76, paper 67004, New York, 1967.

Transport Canada, "School Bus Safety Study", Volume I, Report. Prepared by G. M. Farr, Automotive Safety Engineer, Crashworthiness Section, Ottowa, January 1985.

U. S. Department of Transportation, National Highway Traffic Safety Administration, "School Bus Passenger Seat and Lap Belt Sled Tests, DOT HS-804 985. Washington D. C. 1978.

TABLE III

SCHOOL BUS OCCUPANT FATALITIES BY TYPE OF IMPACT

FOR ACCIDENTS INVOLVING SMALL, MID-SIZED AND LARGE SCHOOL BUSES

1977-1983

Type of Impact	Total No. Fatalities	Secondary Overturn	Ejection
Head-On	11 (8%)	2	1
Hit tree, pole	11 (8%)	2	1
Culvert, Ditch	22 (17%)	12	0
Embankment	4 (3%)	3	3
Shoulder	1 (.8%)	0	0
Rear-End	16 (12%)	2	1
Side-Swipe	10 (8%)	3	1
Side Impact	26 (20%)	8	6
Railroad Train	3 (2%)	2	1
Fell From Bus	12 (9%)	0	5
Injured in Bus	1 (.8%)	0	0
Primary Overturn	16 (12%)	-	7
Total	133	34	26 (20%)
		Primary Overturn 16	
		Total Overturn 50 (38%)	

Source:

Fatal Accident Reporting System Data Base
For Accidents Involving a School Bus or Vehicle Used As a
School Bus When An Occupant Died in the Accident File (1977-1983)
National Highway Traffic Safety Administration
U.S. Department of Transportation, Washington D.C.

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RODNEY D. KNUTSON

February 11, 1986

Denver Board of Education
Denver Public Schools Administration Building
900 Grant Street
Denver, Colorado 80204

Re: School Bus Seat Belts

Ladies and Gentlemen:

We have been asked by our client, Coloradans for Seat Belts on School Buses, to address certain liability issues relating to the installation of seat belts in the new school buses to be purchased this year. We understand that earlier administrators' recommendations to include seat belts have been questioned because of the Board's concern that the fact belts were installed could expand the District's potential liability if students failed to wear the belts properly.

Two Colorado Court of Appeals cases have triggered this concern. One involved a child injured while riding a bicycle home from school contrary to a school policy that permitted only older students to bicycle to and from school.[1] The second involved a kindergarten student injured as she crossed a sometimes guarded intersection that was unguarded at the time of injury.[2] In each of these cases the trial judge found so little merit in the claims against the school district involved that he did not allow the case to be determined by the jury. The Court of Appeals decision in each was not a decision to impose liability upon the school district; rather, that Court merely decided that the trial court should have permitted the question of liability to be determined by the jury.

It is certainly possible that juries would find liability against school districts under the facts such as those presented in these two cases. Both involved the application of school safety policies: a policy restricting the ages of students allowed to bicycle to school and a policy concerning guarding of crosswalks. Both also involved students among the youngest in

the school system: a kindergartner and a first grader. It is important to realize, however, that lawsuits likely would have been brought and liability possibly imposed as a result of these accidents even in the absence of these school policies on the theory that safety policies should have been in place.

If a child is killed or injured in a school bus accident, an ambitious personal injury lawyer might attempt to find some way of holding the school board liable. He might assert that when a school district transports pupils it has a duty to do so with reasonable safety.[3] Despite the unworkability of doing so, the District might be held to a standard of care commensurate with the age and experience of each of the pupils riding a bus.[4] The plaintiff's attorney might try to find fault with the way the bus was driven, designed and maintained, with the quality of supervision on the bus and with the way in which students were instructed in the use of safety equipment. If the bus is lacking in safety equipment, that fact could well be raised as an issue in the suit (as it has been raised many times before).

We have conducted a computerized search of reported cases from around the country and have found none in which a school district was held liable because a student failed to buckle a seat belt which was provided.[5] Further, none of the articles we have consulted describes such a case.[6] Several cases have held airlines negligent when pilots failed to warn passengers to buckle up because of turbulent weather ahead.[7] A California appellate court has held that a taxicab company could be held negligent when seat belts installed in its cab slipped behind the seat so that the passenger could not use them.[8] However, common carriers such as taxicab companies and bus lines may also be subject to liability if they <u>fail to install</u> seat belts and the jury decides that such failure amounts to negligence.[9] In other words, where scrutiny is very strict, failure to provide seat belts leads to a question of negligence just as failure to make people buckle up may.

Although a school district may not be held to the high standards to which a common carrier is held,[10] if the court allows the jury to decide the amount of care that <u>should be taken</u>, a case could just as well be based on the question of whether seat belts should have been installed when they were not as on failure to insist on proper use if they were installed.[11] The two Colorado cases that have caused the Board concern suggest that courts are willing to allow increasingly close jury scrutiny of school district actions, both in terms of that which was done

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It also appears likely that the District would decrease its liability exposure if it equipped new buses with seat belts. First, the children wearing seat belts may be less likely to be injured, thereby reducing the total number of plaintiffs. Second, the trend across the country appears to require buses to be equipped with seat belts. If this becomes the standard practice, the argument for liability on a non-equipped bus would be primarily that the District had failed to meet this standard. Since any such standard would surely first arise with respect to new buses, any minimal protection the district might achieve for old buses by leaving belts out of new ones would almost certainly be outweighed by increased exposure were a new, unequipped bus to be involved in a crash. It would, we feel, be much better to argue to a jury that safety devices were being added in a rational and orderly way than to be perceived, whether correctly or not, as omitting them in an effort to avoid liability on a somewhat dubious legal argument.

In sum, we find it difficult to imagine the Board adopting a policy not to use safety goggles in laboratory or shop classes merely because a small number of students occasionally do not use or misuse the equipment. Similarly it seems unlikely that safety equipment such as helmets or face masks for students involved in sports would be eliminated for fear that occasional misuse or nonuse of these items could somehow expand school district liability. Clearly the potential liability for failure to provide the safety equipment has always been perceived to outweigh any concerns over potential school district exposure for isolated abuses of the policies requiring the safety equipment. We are not aware of any legal reason to treat seat belts on school buses differently.

Sincerely,

Rodney D. Knutson

RDK:ld

Attachment: Footnotes