INSTITUTE FOR INJURY REDUCTION
375 PRINCE GEORGE'S BOULEVARD
SUITE 200
UPPER MARLBORO, MARYLAND 20772

(301) 249-0090
800-544-3694
FAX: (301) 249-0656

May 14, 1992

The Honorable Jerry Ralph Curry
Administrator
National Highway Traffic Safety Administration
400 7th Street, S.W.
Room 5220
Washington, D.C. 20590

Dear Administrator Curry:

RE: **Achieving Rear-Impact Crashworthiness**

Your three years as the policy leader of the National Highway Traffic Safety Administration have been marked largely by inaction on needed motor-vehicle safety rules and lack of courage to withstand the pressures of auto manufacturers opposed to safety progress.

Now you have announced that you shortly will be leaving NHTSA. This letter offers you an opportunity to take a step prior to leaving that could prevent an untold amount of needless pain, misery, injury and death in future years - in other words, the chance to leave a legacy behind you of protecting motorists from crash injuries instead of protecting manufacturers from safety imperatives.

Such a step would at least partly offset your failure to require air bags in all new cars (an

initiative which Congress finally had to legislate due to your timidity[1]) as well as your refusal to recall defective, rollover-prone utility vehicles such as the Suzuki Samurai, Jeep CJ and Ford Bronco II.

We direct your attention to your own agency's long-standing knowledge of the need for meaningful regulations to require effective restraint protection for motor vehicle occupants in rear impacts. The restraint systems available to those occupants are their seats and seatbacks. However, these "rear crash restraint systems," unlike well-designed seat belts and air bags in frontal impacts, are routinely failing:

--Their failures - collapses of their structures under even modest loadings - cause loss of control to drivers of rear-ended cars, thus exposing them to otherwise avoidable multiple crashes.

--They cause belted and unbelted occupants to risk ejection, by being thrown rearward out of their failed seats, possibly through rear or side windows.

--They cause belted and unbelted occupants to risk interior impacts, by being hurled into the rigid interior structures of the vehicle or, even worse, into other occupants who then also may be injured.

--They cause blockage of exits when the collapsed seat/seatback structures hinder egress for crash victims from the vehicle's doors - a horrendous defect when, as is most common in rear impacts, the fuel system has ruptured and the car is on fire.

--Their principal results in terms of catastrophic injury are: brain damage, paraplegia, quadriplegia and death. In addition, these seat and seatback failures are a major producer of less lethal but nonetheless painful and disabling upper spinal column trauma.

History Prior to 1989

Federal Motor Vehicle Safety Standard 207, adopted in 1971, sets static loading limits for seats and seatbacks. FMVSS 202, also adopted in 1971, sets static loading limits for head restraints. Although frontal crash restraints now are required to meet dynamic crash tests to insure protection at barrier impact speeds up to 30 mph, no such tests are conducted for seat, seatback and head restraint performance in rear crashes. The static loading provisions of FMVSS 207 and 202 are extremely weak; a seatback which collapses under loadings achievable in rear crashes as low as 12 miles per hour can meet FMVSS 207, for instance.

In 1974, NHTSA published proposed rulemaking to strengthen these standards by combining head restraint and seat performance requirements into a single rule, and then imposing dynamic crash test requirements on the overall "rear impact restraint system" that would incorporate these components.[2] These requirements would have been similar to those in FMVSS 301, which sets test criteria to determine fuel system integrity in rear end crashes.

Faced with manufacturer opposition, NHTSA halted action on its proposal. In April 1979, it terminated the 1974 rulemaking and replaced it with a regulatory plan for overall "significant upgrading" of occupant protection in all directions, including rear, side, front and rollover, and including "new comprehensive standards ...developed in terms of injury levels that occur" in dynamic crashes in all four modes.[3] In addition, in a November 1980 letter to the manufacturers, the then NHTSA Administrator noted "a number of seat track and seatback failures" in NHTSA's New Car Assessment Program crash series, and urged that the companies "review their designs to insure that seats do not fail catastrophically in crashes..."

The 1979 regulatory plan, which would have upgraded seat "restraint" performance in "crash exposures representative of the real world," was abandoned by the incoming Reagan Administration. Nor did NHTSA follow up to determine manufacturer responsiveness to the November 1980 letter.

Meanwhile it had been well-established by researchers that production-model seats and seatbacks were failing to provide adequate restraint against injuries in rear impacts, and that alternative designs to provide such restraint were available. The work of Derwyn Severy at UCLA, the development of the Liberty Mutual safety car in the 1960's and, later, NHTSA's own Research Safety Vehicle in the 1970's were examples of programs that both underscored the problem and presented technologies for its solution.[4]

The rear-end barrier crash test series run by the Insurance Institute for Highway Safety in the mid-1970's threw a further spotlight on the problem when, in every one of six impacts in the 30 mph range, seatbacks failed in the struck cars.[5]

If this overwhelming evidence was not sufficient, further evidence has been provided in case after case brought against manufacturers on behalf of people injured because their seats or seatbacks failed in rear impacts. A partial list of such cases is attached. To the best of our knowledge NHTSA has done nothing to contact the involved plaintiffs or their attorneys as a means of obtaining additional information bearing on the problem and pointing to the need for regulatory remedies.

Current Agency Position

In 1989, at the start of your tenure, NHTSA again acknowledged the obvious: that the rear-impact injury problem, which results from weak seat/seatback/head restraint standards, deserves attention. Under your leadership, NHTSA promised the motoring public in 1989, that it would take "prompt" action toward a remedy. Like the heads and spinal columns of people needlessly injured by rear-impact seat failures, that promise has been inexcusably broken.

The record shows that in 1989, NHTSA received two petitions[6] containing detailed descriptions of seat and seatback failure modes in rear-end impacts and offering guidelines for more stringent

crash performance requirements for those components in both moderate and higher-force rear crashes. The petitions requested rulemaking to require adequate rear-impact crashworthiness. The petitioners also asked for dynamic testing of seats and seatbacks, which is not now required.

NHTSA officially granted the petitions within a few months of receiving them. Under NHTSA rules, when a petition is granted, a rulemaking proceeding must be "promptly commenced in accordance with applicable NHTSA and statutory procedures."[7] The law states that if NHTSA grants a petition it "shall promptly commence the proceeding requested in the petition."[8]

Thus NHTSA committed itself in 1989 to moving quickly to initiate rulemaking that could lead to adequate standards for seat and seatback "restraint" performance in rear impacts.

Ironically, this happened as you, Mr. Curry, were pledging during Senate confirmation hearings to move rapidly on safety rulemaking, and were criticizing your predecessors for regulatory footdragging. Specifically, you promised to complete any rulemaking proceeding within 18 months, start to finish, as a condition of winning Senate confirmation. [9]

That was three years ago.

What has happened at NHTSA since then toward providing adequate protection to motorists in rear-end impacts? Essentially, nothing. In October 1989, NHTSA published a catch-all "request for comments" in which it offered no regulatory proposals but instead

invited submissions on a wide range of topics related to seat performance, frontal restraint system performance, side impacts and other crash aspects.[10] Predictably, responses were largely from manufacturers, the vast majority of them opposing a strengthened standard for seats and seatbacks and opposing dynamic crash testing of those components.

But not all responses were negative. Mercedes-Benz supported a dynamic test requirement, and noted the importance of protecting "the front occupants during rear impacts through maintaining a mostly vertical seatback position."[11] Transport Canada, on behalf of the Canadian Government, provided NHTSA with a study of rear-impact seatback collapses and resulting injuries. It concluded:

"For a number of years it has been observed that the existing [U.S.] seatback strength requirement does not prevent seatback collapse. Seatback failure during a crash can not only result in injury to rear occupants but provides an avenue of ejection even when the occupant is using the [belt] restraint system. It has also been observed that during CMVSS 301 rear impact tests, virtually all bucket seats and split bench seatbacks fail."[12] CMVSS 301 is identical to NHTSA's FMVSS 301, which requires rear-end crash testing for fuel system integrity.

General Motors opposed any strengthening of the standard in its comments. "Implementation of proposals to stiffen vehicle seats to the extent proposed would significantly increase cost and mass," it said in a letter to NHTSA dated December 4, 1989. [13] Yet a

General Motors engineer testified at trial during a seatback collapse-injury case in June 1991 that "there are problems associated with a seat back rest that is designed to yield under rear impact."[14] He agreed that when seats and seatbacks collapse, "a potential hazard can exist from the high compressive loads imposed on the cervical spine as the occupant's head is being forced into the rear seat cushion after he has slid up the front seatback rest."

Faced with the weight of such evidence - which simply confirms what has been repeatedly shown in research and injury litigation for years - and faced with its own 1989 commitment to take "prompt" regulatory action, what possible excuses can you, Mr. Curry, now offer for further delays in initiating rulemaking leading to rapid implementation of effective standards governing seat and seatback restraining performance in rear-end crashes?

Conclusion

Dynamic crash test standards already apply to restraint performance in frontal impacts, windshield performance in frontal impacts, fuel system integrity in rear impacts and many other crash modes. It is inexcusable that rear crash performance of seats, seatbacks and head restraint protection should be exempted from such standards. NHTSA's mandate is clear. At a minimum, for a start:

--30 mph fixed barrier rear impacts in longitudinal and angled configurations should be required, and parameters should be set to

minimize seat track separation, seatback collapse, maximum rearward seatback deflection and other seat "restraint" failures in these and other foreseeable rear impacts.

--Integration of head restraints and seatbacks should be required, thus eliminating "adjustable" head restraints which can be hazardous when adjusted inappropriately. For example, an adjustable head restraint placed in the "low" position by a short occupant will present a severe hazard to a subsequent, unsuspecting taller occupant whose head and upper spinal column can injuriously flex over the head restraint in a rear impact.

--Anchoring of seat belts on seat structures should be promoted in order to assure that belts remain snugly around their occupants throughout the crash, thereby providing the greatest possible protection against occupant movement out of the belt or seat. At present, in part because of the weak designs of their seats, most manufacturers have chosen to anchor upper and even lower torso belt segments to the car. Thus, when the seat deforms away from the belt and anchorage, the occupant no longer is restrained by the belt, whether in a rear or a frontal impact.

--Defect investigation and recall of vehicles whose seats and seatbacks are found to be needlessly failing in real-world, rear end crashes.

It is never too late to do the right thing. For NHTSA, the right thing is to belatedly keep its 1989 commitment to the motoring public by initiating rulemaking to establish, at the

earliest possible date, stringent standards for seat and seatback performance that will protect as many motorists as possible from death and serious injury in rear-end collisions.

Sincerely,

/S/

Benjamin Kelley, President, IIR

/S/

Joan Claybrook, President, Public Citizen

Attachments

1. H.R. 1351, signed by President Bush December 11, 1991.

2. Federal Register, Tuesday, March 19, 1974, Volume 39, No. 54, p. 10268

3. NHTSA Five Year Plan for Motor Vehicle Safety and Fuel Economy Rulemaking, April 20, 1979.

4. Collision Performance, LM Safety Car, Derwyn Severy, Harrison Brink and Jack Baird, Institute of Transportation and Traffic Engineering, University of California. May, 1967. SAE 670458.
and
The Minicars Research Safety Vehicle Program, Phase III, Minicars, Inc., Goleta, California, September, 1981.

5. Engineering report published by Insurance Institute for Highway Safety in November of 1973.

6. PRM-207-001, submitted April 18, 1989 by Dr. Kenneth Saczalski, and PRM-207-002, submitted December 28, 1989 by Dr. Alan Cantor.

7. Section 552.9, 49 CFR

8. Section 1410(d), Title 15, U.S. Code (National Traffic and Motor Vehicle Safety Act

9. IIHS Status Report, Volume 24, No. 12, December 9, 1989

10. Federal Register, Volume 54, No. 191, p. 40896, Docket No. 89-20, Notice 1.

11. Mercedes Benz, comments to NHTSA Docket 89-20, Notice 1, December 7, 1989.

12. Submission of Transport Canada, January 23 and January 9, 1990, to NHTSA Docket No. 89-20, Notice 1.

13. Submission of General Motors, December 4, 1989, to NHTSA Docket No. 89-20, Notice 1.

14. Testimony of Thomas Ruster, General Motors engineer in
Robert Oakes v. General Motors. et al
Circuit Court of Cook County, Illinois
Cause Number 85 L 2795

NEWS FROM IIR

SAFETY GROUPS UPBRAID NHTSA FOR BREAKING PROMISE TO MOVE ON SEAT COLLAPSE IN REAR-ENDERS

WASHINGTON, D.C., May 14 - Two leading consumer groups, joined by crash injury victims, today warned that the National Highway Traffic Safety Administration has broken its 1989 promise to move quickly toward regulations preventing seat and seatback collapse in rear-end car crashes. As a result, thousands of needless deaths and injuries will continue to occur even in modest rear impacts.

At a press conference the Institute for Injury Reduction and Public Citizen called on NHTSA to move "promptly, as it pledged to do in 1989," toward setting standards requiring adequate seat strength so that occupants in rear-end crashes will be protected against ejection, loss of control and other injury-causing results of flimsy seats.

"In frontal crashes, NHTSA requires 30 mile per hour crash test performance for belts and air bag restraints," IIR President Benjamin Kelley said. "Yet in rear crashes, where the seat and seatback must provide restraint protection, current federal standards allow these components to fail at impact speeds as low as 12 miles per hour." IIR films of General Motors production seats in rear impact tests confirmed the failures.

The resulting injuries, Kelley said, include: brain damage, paraplegia, quadriplegia, painful upper spinal column trauma and, in too many cases, death. In 1989 NHTSA pledged to take "prompt" action toward toughening rear-impact standards but since then has "sat on its hands as the injuries mounted," Kelley added.

Also urging NHTSA to act at today's press conference were two people whose lives have been painfully impacted by injuries resulting from rear-crash seat back collapse.

Jerry Gray's mother, Gloria, lost control of her Renault Alliance when the seatback collapsed in a very moderate rear-ender. The out-of-control car was hit by a tractor-trailer and, when its fuel tank failed, was consumed in flames. Mrs. Gray died as a result of the fire.

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Junior C. Day, a retired General Motors executive, suffered spinal column injuries when his Oldsmobile Toronado was struck at a low speed in the rear. He also lost control of the car when the seatback collapsed and his head and upper torso impacted the rear seat.

IIR member Edward Ricci, a prominent Florida attorney for people injured by unsafe products, represented Mr. Gray against Renault in a case that settled two years ago. He noted today that, "It has been demonstrated in lawsuit after lawsuit that many cars on the roads today provide defectively weak seat and seatback protection in rear crashes, yet NHTSA has done nothing to have these cars recalled and corrected.

"Auto manufacturers who complain about being sued for causing injuries in car crashes could serve themselves and their customers by equipping their new cars with crashworthy seats, and recalling and fixing the weak seats in their older cars."

Also participating in today's press conference were Joan Claybrook, president of Public Citizen; John Toerge, M.D., Medical Director of the Spinal Cord Injury Program at the National Rehabilitation Hospital; and engineering experts Dr. Nicholas Perrone and Alan Cantor. Mr. Cantor's petition to NHTSA for tougher seat and seatback crash standards was "granted" in 1989, but since then the agency has taken no action on it.

(For more information, please contact Cindy Raffles at (301) 249-0090.)

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FAX: (301) 249-0956

SEAT, SEAT BACK FAILURE TEST REPORT

IIR has completed a series of drop tests to determine seat and seat back performance in low-level impacts.

The tests were conducted for us by The Institute for Safety Analysis (TISA) at its Maryland facility, using late-model General Motors seats.

Using a drop sled, the tests applied predetermined impact forces to the seats and dummy occupants through the acceleration-deceleration effects of gravity--a common and widely recognized test method for generating impact forces. Notice that because of post-impact gravity, the dummy's legs tend to go up and back around the lap belt, thus retarding their possible rearward ejection from the collapsed seat.

Comparison tests were also run showing the excellent contrasting performance of seat belts in frontal impacts in the same speed ranges as the rear tests.

The central point of this project is to show that the levels of protection being provided in higher-speed frontal crashes by belted restraint systems are completely absent even in low-level rear impacts--even though seat and seat back restraint systems, given their potential for energy distributing structures and materials, should provide even better protection at higher loadings than belts can provide.

The tests are as follows:

1. November 20, 1991: Test #1, Rear Impact Simulation. Driver's seat obtained from used vehicle. "Dry run" validation test, 1988 Olds Calais. Seat was dropped 5 feet into 15-16" of sand to snub the impact and attenuate the forces. Impact equalled a 12.8 mph fixed barrier equivalent. Seat back failed to approximately 60 degree rearward collapse.

2. November 20, 1991: Test #2, Rear Impact Simulation. Front passenger seat from same vehicle as in Test #1, "dry run" validation test. Seat was dropped 10 feet into 15-16" of sand. Impacted equalled a 17.3 mph fixed barrier. Seat back failed to "flat" position.

3. December 10, 1991: Test #3, Rear Impact Simulation. Unused driver's seat, 1990 Olds Cutlass Calais. Seat was dropped 5 feet into 15-16" of sand. Impact equalled 12.8 mph fixed barrier. Entire seat failed into tip-back position due to separation of track retention system braces from seat mounting.

4. December 10, 1991: Test #4, Rear Impact Simulation. Driver's seat from used 1987 Pontiac 6000. Seat was dropped 5 feet into 15-16" of sand at 12.8 mph foxed barrier equivalent impact. Seat back collapsed to roughly 60 degrees. Dummy did not come out of seatbelt due to gravity flipping his leg over his head; dummmy's buttocks slid back 2" from flush against the seat.

5. December 10, 1991: Test #5, Front Impact Simulation. Unused driver's seat, 1990 Olds Calais. Seat dropped 5 feet into 15-16" of sand at 12.8 mph fixed barrier equivalent. Seat did not deform and the belt performed as intended.

6. December 10, 1991: Test #6, Front Impact Simulation. Seat and belt from Test #5. Seat dropped 10 feet into 15-16" of sand at 17.3 mph fixed barrier equivalent. Seat did not deform and the belt performed as intended.

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SEAT BACK CHRONOLOGY

1963 -- SAE J879 Automotive engineers set a minimum standard of 4250 in.-lb. about the rear seat attachment.

1965 -- GSA 515/6 Federal Standard for purchase of Government owned vehicles used the SAE 4250 in.-lb.

1966 -- Initial Federal Motor Vehicle Safety Standards are proposed to provide minimum safety standards for the automobile buying public. FR 31-15212.

1967 -- FMVSS 207 Provides for minimum standards for automobile seating systems: 3300 in.-lb. about the "H" point, 20 times weight of seat only (less than the 1963 and 1965 standards). FR 32-2408.

Collision Performance, LM Safety Car, Severy, Brink, Baird. SAE 670458.

"... a car seat which does not act as a motorist's inner protective shield against collision forces is failing in its most vital role."

"The automobile seat is a restraining device. A poorly designed seat and seat anchorage system becomes an injury-producing agency during collision; contrariwise, a properly designed integrated seat system represents the most important safety feature that may be provided for the motorist."

Preliminary Findings of Head Support Designs, Severy, Brink, Baird. SAE 670921.

Literature attests to the fact that injuries sustained by rear ended motorists can almost entirely be prevented through proper design of the seats in which they ride.

1968 --

Vehicle Design for Passenger Protection from High-Speed Rear-End Collisions, Severy, Brink, Baird. SAE 680774.

"An adequately designed full support system should be provided with an exceptionally rigid seat back and head support structure to restrain the motorist in his normal seated posture so that adequate accelerative support can be provided throughout the collision."

"The more rigid the seat back, the less the tendency of head and torso displacement up the plane of the seat back during a rear-end collision."

"Seatback yield is not required to provide force moderation during rear end collisions."

Backrest and Head Restraint Design for Rear-End Collision Protection, Severy, Brink, Baird. SAE 680079.

"These experiments indicate that a 28 inch rigid seatback will provide adequate protection against the injury producing forces of most rear-end collisions, even for the tall adult male motorist."

"If seatbacks have adequate strength and height (at least 28 inches), the seat belt tends to reduce the torso sliding up the inclined plane of the seatback during rear-end collision acceleration."

"Seatback yield is primarily the cause of torso shift up the plane of the seatback."

"Front seat passenger protection against the injury producing forces of rear end collisions using the current design technique of seat back failure is unsatisfactory. Not only is the passenger subjected to the random chance of critical injuries sustained from striking the rear surfaces of the car interior or the rear seat passengers, the driver is so adversely positioned that he loses all opportunity of regaining control of his vehicle in time to avert potentially more serious secondary collisions. This explains the reason a weak seatback is not recognized as an acceptable solution for motorist protection from rear end collisions."

"Rigid seatbacks assure more effective support of the occupant during rear-end collisions, providing the seatback support is high enough to also resist rearward movement of the head."

"The more rigid the seatback, the less the tendency of head and torso displacement up the plane of the seatback during a rear end collison..."

"Increasing seatback rigidity reduces rebound of motorists following peak accelerative forces of a rear end collision..."

1969 -- NPRM to extend FMVSS 207 to multi-purpose vehicles, trucks and buses. FR 34-14661

A Survey of Automotive Occupant Restraint Systems: Where We've Been, Where We Are and Our Current Problems, R.G. Snyder. SAE 690243.

The concept of integrated seat/seat belt systems is as old as 1903 and would offer many advantages and solve many of the problems of the current systems. It must be strong enough to protect against 40 G loads.

Safer Seat Designs, Severy, Brink, Baird, Blaisdell. SAE 690812.

"In general, seats, when structured for collision safety, represent the most important single life saving device available to the motorist."

Rigid Seats with 28-in. Seatback Effectively Reduce Injuries in 30+ mph Rear-End Impacts, Severy, Brink, Baird. SAE Journal, April, 1969.

"A rigid seat with a 28 in. high seatback satisfactorily protects its occupant from injury in most rear end collisions."

"The seatbacks must be sufficiently rigid to resist deflection rearward."

1972 --

Occupant Protection in Rear-End Collisions, Melvin and McElhaney, SAE 720033.

"The basic seat structure and the attendant substructure tying it to the vehicle chassis should be a rigid load carrying structure which exhibits very little elastic energy storage capability and only a limited amount of inelastic deformation under the most severe design load conditions. The height of the seatback must be sufficient to give protection against hyperextension for the upper seated height range of the occupant population."

1974 -- 74-13-No. 1 Proposes barrier crash testing

Automotive Rear End Collision Tests, Scheuerman, Hugo, et al., National Aviation Facilities Experimental Center. Prepared for NHTSA, September, 1974.

Barrier testing urged for seatbacks and fuel systems.

1976 --

Automotive Seat Design and Collision Performance, Severy, Blaisdell and Kerkhoff. SAE 760810.

"The 1965 GSA 515-6 Standard, which was actually the SAE Recommended Practice of 1963, was adopted by DOT in January 1968 as Federal Motor Vehicle Safety Standard (FMVSS) 207. The FMVSS 207 established backrest strength for standard passenger vehicles at 3300 in.-lb., differing insignificantly from the GSA/SAE 4250 in.-

lb. value, owing to a change in reference systems."

"Although 3300 in.-lbs. may appear to be an impressive value, production seats from the nineteen forties and fifties tested by the authors were found to substantially exceed this standard."

"The presence of an inadequate, seldom upgraded standard limits initiative of automotive manufacturers because of the implication that satisfactory conditions prevail."

Designing Safer Seats, D.M. Severy and J.F. Kerkhoff, Automotive Engineering, Vol. 84, No. 10, Oct. 1976.

In the past 20 years, with the exception of head restraints, automotive seats have shown little improvement with respect to safety. One criterion for safety is the measure of backrest strength. Of 85 production seats tested for large, small, foreign and domestic vehicles, 30 years old to new, all had backrest strengths remarkably alike. Severy researchers feel that no seat tested is fully capable of resisting occupant inertial forces for any but light impact exposures.

Severy found that seatback strengths varied from 4,000 to 17,000 in.-lb., well over the 3300 in.-lb. standard. Nevertheless, it can be restated that they feel no current seat provides adequate protection under more than moderate collision induced forces.

1979 --

Seat Design - A Significant Factor for Safety Belt Effectiveness, Dieter Adomeit, Institute for Automotive Engineering, Technical University, Berlin. SAE 791004

The seat is the decisive element in the overall protection system to perform functions of guidance of occupant kinematics. In this manner, the seat decisively contributes to the effectiveness of the protective system.

1989 -- Petitions by Dr. Kenneth Saczalski of Environmental Research and Safety Technologists (PRM-207-001, April 18, 1989) and Dr. Alan Cantor of ARRCA (PRM-207-002, December 28, 1989) to improve FMVSS 207. Both are granted, on 10-4-89 and 2-28-90 respectively.

89-20-No.1 FR-54-40896. Seeks comments on above petitions for rulemaking. No further activity to date.

Mercedes-Benz Comments to Docket 89-20, Notice 1. Recommends dynamic testing of seat backs and a greater stiffness than contained in the present standard. December 7, 1989.

Accidents Involving Seat Back Failures, prepared for Transport Canada, December, 1989.

"The passenger seat and restraint system in a vehicle act together to retain the occupant during the accelerations a vehicle experiences in the course of an accident. When one of these fails, it is not always possible for the other to fully restrain the occupant."

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