

2009

John D. Archer v. April Gaultney : Brief of Appellant

Utah Supreme Court

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JOHN D. ARCHER,

Appellant,

vs.

APRIL GAULTNEY, an individual;
BROWN'S CREW CAR OF WYOMING,
INC. d/b/a ARMADILLO EXPRESS, a
Wyoming Corporation; and UNION
PACIFIC RAILROAD COMPANY, a
Delaware Corporation,

Appellees.

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I. JURISDICTION

The Utah Supreme Court has jurisdiction over this appeal pursuant to Utah Code Ann. § 78A-3-102. This action comes to the Utah Supreme Court from the summary judgment granted to Defendants Brown's Crew Car of Wyoming, Inc. d/b/a Armadillo Express and Union Pacific Railroad Company and the motion to reconsider denied to Plaintiff John D. Archer, both by the Honorable Judith S.H. Atherton of the Third Judicial District Court of Salt Lake County.

II. STATEMENT OF THE ISSUES

A. Whether Appellees Armadillo and/or Union Pacific owed a duty to Appellant Archer to provide transportation equipped with rear seat head restraints (seat head rests).

Standard of Review: The Supreme Court reviews the District Court's grant of summary judgment for correctness. *Davis County Solid Waste Management v. City of Bountiful*, 52 P.3d 1174, 1176 (Utah 2002). In reviewing a grant of summary judgment, the appellate court gives the trial court's legal decisions no deference, reviewing for correctness. *Kearns-Tribune Corp. v. Salt Lake County Commission*, 2001 UT 55, 28 P.3d 686, 688 (Utah 2001).

B. Whether a rear seat head restraint is a safety device which, like other safety devices, is needed for a reasonably safe workplace.

Standard of Review: The Supreme Court reviews the District Court's grant of summary judgment for correctness. *Davis County Solid Waste Management v. City of Bountiful*, 52 P.3d 1174, 1176 (Utah 2002). In reviewing a grant of summary judgment,

the appellate court gives the trial court's legal decisions no deference, reviewing for correctness. *Kearns-Tribune Corp. v. Salt Lake County Commission*, 2001 UT 55, 28 P.3d 686, 688 (Utah 2001).

C. Whether Appellant's Federal Employers' Liability Act (FELA), 45 U.S.C. § 51 *et seq.* claims that Appellees Armadillo and/or Union Pacific should have transported Appellant in one of the many Armadillo vans already equipped with rear seat head restraints, is preempted by federal regulations for automobile manufacturers which make rear seat head restraints optional.

Standard of Review: The Supreme Court reviews the District Court's grant of summary judgment for correctness. *Davis County Solid Waste Management v. City of Bountiful*, 52 P.3d 1174, 1176 (Utah 2002). In reviewing a grant of summary judgment, the appellate court gives the trial court's legal decisions no deference, reviewing for correctness. *Kearns-Tribune Corp. v. Salt Lake County Commission*, 2001 UT 55, 28 P.3d 686, 688 (Utah 2001).

D. Whether orthopedic and spine surgeons have the medical expertise to render medical causation opinions regarding the injuries caused by the failure to provide rear seat head restraints in the vehicle transporting Appellant which was involved in a rear end collision.

Standard of Review: The Supreme Court reviews the District Court's grant of summary judgment for correctness. *Davis County Solid Waste Management v. City of Bountiful*, 52 P.3d 1174, 1176 (Utah 2002). In reviewing a grant of summary judgment,

the appellate court gives the trial court's legal decisions no deference, reviewing for correctness. *Kearns-Tribune Corp. v. Salt Lake County Commission*, 2001 UT 55, 28 P.3d 686, 688 (Utah 2001).

III. STATUTES, RULES, AND REGULATIONS

Utah Court Rules

Utah Rules of Civil Procedure Rule 56. Summary Judgment.

(b) For defending party. A party against whom a claim, counterclaim, or cross-claim is asserted or a declaratory judgment is sought, may, at any time, move for summary judgment as to all or any part thereof.

(c) Motion and proceedings thereon. The motion, memoranda and affidavits shall be in accordance with Rule 7. The judgment sought shall be rendered if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law. A summary judgment, interlocutory in character, may be rendered on the issue of liability alone although there is a genuine issue as to the amount of damages.

Utah Rules of Evidence Rule 702. Testimony of Experts.

(a) Subject to the limitations in subsection (b), if scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness is qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Federal Statutes

The Federal Employers' Liability Act (FELA), 45 U.S.C. § 51 et seq.

Every common carrier by railroad while engaging in commerce between any of the several states . . . shall be liable in damages to any person suffering injury while he is employed by such carrier in such commerce . . . for such injury resulting in whole or in part from the negligence of any of the officers, agents, or employees or such carrier, or by reason of any defect or

insufficiency, due to its negligence, in its cars, engines, appliances, machinery track, road bed, works, boats, wharfs, or other equipment.

Federal Automobile Manufacturer Regulations

The Motor Vehicle Safety Act (MVSA), 49 U.S.C. § 30101. Purpose and policy.

The purpose of this chapter is to reduce traffic accidents and deaths and injuries resulting from traffic accidents. Therefore it is necessary –

- (1) to prescribe motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce; and
- (2) to carry out needed safety research and development.

The Motor Vehicle Safety Act (MVSA), 49 U.S.C. § 30103. Relationship to other laws.

(a) Uniformity of regulations. – The Secretary of Transportation may not prescribe a safety regulation related to a motor vehicle subject to subchapter I of chapter 135 of this title that differs from a motor vehicle safety standard prescribed under this chapter. However, the Secretary may prescribe, for a motor vehicle operated by a carrier subject to subchapter I of chapter 135, a safety regulation that imposes a higher standard of performance after manufacture than that required by an applicable standard in effect at the time of manufacture.

(b) Preemption. – **(1)** When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. However, the United States Government, a State, or a political subdivision of a State may prescribe a standard for a motor vehicle or motor vehicle equipment obtained for its own use that imposes a higher performance requirement than that required by the otherwise applicable standard under this chapter.

(e) Common law liability. – Compliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.

The Federal Motor Vehicle Safety Standards (FMVSS), 49 C.F.R. § 571.202 Standard No. 202; Head restraints; Applicable at the manufacturers option until September 1, 2009

S1. Purpose and scope. This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

S2. Application. This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses with a GVWR of 4,536 kg or less, manufactured before September 1, 2009. Until September 1, 2009, manufacturers may comply with the standard in this § 571.202, with the European regulations referenced in S4.3 of this § 571.202, or with the standard in § 571.202a. For vehicles manufactured on or after September 1, 2009 and before September 1, 2010, manufacturers may comply with the standard in this § 571.202 or with the European regulations referenced in S4.3 of this § 571.202, instead of the standard in § 571.202a, only to the extent consistent with the phase-in specified in § 571.202a.

The Federal Motor Vehicle Safety Standards (FMVSS), 49 C.F.R. § 571.202a Standard No. 202a; Head restraints; Mandatory applicability begins on September 1, 2009

S1. Purpose and scope. This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

S2. Application & incorporation by reference.

S2.1 Application. This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses with a GVWR of 4,536 kg or less, manufactured on or after September 1, 2009. However, the standard's requirements for rear head restraints do not apply to vehicles manufactured before September 1, 2010, and, for vehicles manufactured between September 1, 2010 and August 31, 2011, the requirements for rear head restraints apply only to the extent provided in S7. Until September 1, 2009, manufacturers may comply with the standard in this § 571.202a, with the standard in § 571.202, or with the European regulations referenced in S4.3(a) of § 571.202. For vehicles manufactured on or after September 1, 2009 and before September 1, 2010, manufacturers may comply with the standard in § 571.202 or with the European regulations referenced in S4.3(a) of § 571.202, instead of the standard in this § 571.202a, only to the extent consistent with the phase-in specified in this § 571.202a.

IV. STATEMENT OF THE CASE

A. Nature of the Case.

Archer commenced this lawsuit against Appellees under the Federal Employers' Liability Act (FELA), 45 U.S.C. § 51 *et seq.*, for neck and shoulder injuries caused by a rear-end motor vehicle collision occurring on September 26, 2004, while being transported by Armadillo in the course of his employment with UP.

B. Course of Proceedings.

UP and Armadillo filed a motion for summary judgment on April 3, 2008. Archer filed a motion for reconsideration on October 3, 2008.

C. Disposition in the Court Below.

On December 11, 2008, the Honorable Judith S.H. Atherton of the Third District Court, Salt Lake County, State of Utah, granted Defendants' Motion for Summary Judgment and denied Plaintiff's Motion to Reconsider.

D. Statement of Relevant Facts.

The Motor Vehicle Collision

1. On September 26, 2004, Archer, in the course and scope of his employment with UP, was being transported in a Chevrolet van owned and operated by Brown's Crew Car of Wyoming, Inc. (Armadillo), without the protection of a rear seat head restraint. *R.* 589.

2. On September 26, 2004, April Gaultney rear ended the Armadillo van in which Archer was a passenger. *R.* 589 and 615-616.

3. On June 8, 2006, Archer commenced this lawsuit against UP under the Federal Employers' Liability Act (FELA), 45 U.S.C. § 51 *et seq.*, and negligence claims against Armadillo and April Gaultney, for neck and shoulder injuries caused by the rear-end motor vehicle collision occurring on September 26, 2004. *R. 2-12.*

The UP/Armadillo Contract

4. Effective at the time of the September 26, 2004 incident, Union Pacific Railroad Company (UP) contracted with Armadillo to provide on-the-job transportation for Archer and other train crew members. *R. 203-235.*

5. The contract gave UP the right to specify the safety equipment on Armadillo's vehicles. *R. 230.* UP required the following transportation and safety equipment in Armadillo's vans, prior to the September 26, 2004 incident:

WHEREAS, Company wishes to perform transportation services for Union Pacific Railroad Company and affiliated companies, hereinafter referred to as Railroad...

Section 18. VEHICLE CONDITION, EQUIPMENT AND SAFETY ITEMS

Vehicles used to transport Railroad employees must be capable of transporting seven (7) passengers and their luggage in an efficient and comfortable manner. Vehicles will be required to have a cage or netting between the rear seat and the back doors to provide luggage storage space during transit. All vehicles used in these services must be no more than three years old, in good mechanical condition and must be equipped with the following equipment:

- (a) Air conditioner
- (b) Heater
- (c) Operable safety belts for all passengers
- (d) Properly equipped First Aid Kit
- (e) Operable and inspected 2.5lb. (ABC) fire extinguisher

- (f) Road flares
- (g) Spare tire
- (h) Jack and tools
- (i) Reflective striping
- (j) All mechanical items on the vehicle in good working order, with special attention paid to tires, brakes, and lights
- (k) Back up alarm devices, whether mechanical or electrical, where not specifically prohibited by law.

R. 226 and 230.

6. UP's list of safety equipment for Armadillo vehicles did not include seat head restraints. *R. 230.*

Reasonably Safe Workplace

7. UP admits that it is responsible to provide a reasonably safe workplace and that at the time of Archer's injuries on September 26, 2004, the Armadillo van was Archer's workplace. *R. 892.*

8. UP admits that it is responsible for identifying and reducing reasonably foreseeable hazards in the workplace. *R. 893.*

9. UP admits that rear-end collisions are reasonably foreseeable hazards in the workplace, that it knew before Archer's injury on September 26, 2004, that seat head restraints were important safety devices that reduce the risk of neck injuries in rear end collisions, and that it was safer to have vehicles with rear seat head restraints. *Id.*

10. UP admits that before Archer's September 26, 2004 collision and injuries, it could have required Armadillo to use vehicles with rear seat head restraints. *Id.*

11. Armadillo admits that had it known before Archer's September 26, 2004 injury that seat head restraints reduced the risk of neck injuries then it should have used vehicles with rear seat head restraints for transporting UP passengers. *Id.*

Armadillo Had Vehicles With Rear Seat Head Restraints

12. Armadillo admits that before Archer's September 26, 2004 injury, Armadillo had transported UP crew members in vehicles with rear seat head restraints. *Id.*

13. Armadillo admits that the center seats of its vehicles did not have head restraints and some railroad location passengers were restricted from using the center seats. *R. 894.*

14. Before Archer's September 26, 2004 injury, one third of Armadillo's 200 vehicle fleet had rear seat head restraints. *Id.*

15. Armadillo's fleet had Chevy Suburban vehicles with the capacity to transport up to five passengers with seat head restraints. *Id.*

Armadillo is an Agent of UP

16. Armadillo admits it is a common carrier. *Id.*

17. On June 6, 2007, the district court ruled that for purposes of this case, Armadillo was an agent of UP on September 26, 2004, with respect to Archer's injuries. *R. 346-348; R. 894; and R. 1273-1274.*

18. On June 6, 2007, the district court ruled that Armadillo was performing an operational activity of UP in transporting Archer on September 26, 2004. *R. 346-348; R. 894 and R. 1273-1274.*

NHSTA Reports

19. The National Highway Traffic Safety Administration (NHSTA) reported that there are approximately 272,464 whip lash injuries annually, of which 21,429 involve rear outboard seated passengers. *R. 894.*

20. The NHSTA reported that “[f]ewer rear seat occupants are exposed to risk in rear impacts because rear seats are much less likely to be occupied than front seats.” *Id.*

UP’s Safety Rules

21. UP extensively publishes safety rules governing its employees, such as Archer, in detailed fashion, and UP could have promulgated a safety rule requiring its employees to adjust and use seat head restraints when transported in vans. *R. 896.*

22. UP could require its employees to properly adjust the rear seat head restraints by safety rule and contract, and require the driver to supervise this adjustment. *R. 894.*

23. In 1990, UP’s safety committee reported that numerous accidents and injuries were associated with transporting its crews. *R. 895.*

24. Prior to the September 26, 2004 incident, UP prevented crew haulers from backing up vans when UP employees were in the vehicle. *Id.*

25. Armadillo stated that if UP gave Armadillo enough lead time, it could have used vehicles with head restraints for the outboard passengers. *Id.*

Archer Did Not Have a Seat Head Restraint

26. On September 26, 2004, the Armadillo van was full of passengers, and Archer could not sit in a seat with a head restraint while being transported in the course and scope of his employment with UP. *R. 895.*

27. If the Armadillo van transporting Archer at the time of his injury had had a seat head restraint for him to use, he would have leaned back in the seat and looked forward, with his arms down. *Id.*

28. Before the September 26, 2004 collision, it was Archer's custom to adjust seat head restraints and he would have followed any safety rule promulgated by UP requiring such adjustments. *R. 896.*

Archer's Injury

29. Archer's mechanism of injury was hyper-extension of a neck with stenosis, causing bruising of the spinal cord, resulting in a hollow spot inside the cord. *Id.*

30. According to the NHSTA Report, Archer's biomechanical expert, Paul France, PhD., and UP, before Archer's September 26, 2004 injury, it was common knowledge that seat head restraints prevent or reduce neck injuries from rear end collisions. *Id.*

31. According to Kade Huntsman, M.D., Archer's treating physician and orthopedic surgeon specializing in spine surgery, if a seat head restraint had been

provided to Archer on September 26, 2004, it is unlikely that Archer would have suffered significant injuries because the head restraint would have prevented hyper-extension of the neck, which with stenosis, caused the spinal cord injury. *Id.*

32. According to Dr. France, in rear-end collision accidents of the magnitude of the September 26, 2004 Armadillo van collision (the collision accelerated the van an additional 6 or 7 M.P.H.), with seat head restraints for rear seated passengers, it is unlikely that a spinal cord injury would occur to the general population of passengers. *R. 896-897.*

33. According to Dr. Huntsman and Dr. France, the *Spine* articles Traumatic Myopathy in Patients With Cervical Spinal Stenosis Without Fracture or Dislocation and A Review of the Pathophysiology of Cervical Spondylotic Myelopathy With Insights for Potential Novel Mechanisms Drawn From Traumatic Spinal Cord Injury – attached to Dr. France's Report, express the mechanism of Archer's injury. *R. 897, R. 1201-1202 and R. 1349-1380.*

34. According to Dr. France, there is no difference in risk of neck injury, everything else being equal, to a rear seated adult passenger compared to a front seated adult passenger. *R. 897.*

35. According to Dr. France, the purpose of the Federal Motor Vehicle Safety Standards (FMVSS), with respect to seat head restraints, is not frustrated by installation of optional rear seat head restraints, because the purpose of the FMVSS is to reduce the number and severity of neck injuries, which is achieved with rear seat head restraints. *Id.*

36. Some of the Armadillo vehicles came from the manufacturer with rear seat head restraints. *Id.*

Medical Causation

37. Dr. Huntsman, Archer's treating physician and orthopedic surgeon specializing in spine surgery, stated the following:

That based upon my education and training as a physician, my physical examinations of Archer, my review of the radiological films, including X-ray and MRI, and the surgery I performed upon Archer on December 15, 2004, I make and hold the following opinions with a **reasonable degree of medical probability**:

- a. That the September 26, 2004 rear-end collision involving Mr. Archer as a passenger in a vehicle without a seat head restraint was one of the probable medical causes of the injuries I diagnosed and treated, including contusion to his spinal cord, radicular pain radiating from his neck into his right shoulder along the C5 nerve root distribution, right arm weakness, and changes in spinal reflexes;
- b. It is medically probable that Mr. Archer would not have suffered these injuries from the rear end collision if he had a seat head restraint at the time of the collision; and
- c. It is pure speculation that Mr. Archer would have suffered these injuries even if he had a seat head restraint at the time of the subject rear end collision.

R. 1492 and 1539-1540.

38. Dr. Huntsman testified that the accident caused a contusion to Archer's spinal cord, resulting in a permanent, hollow spot inside the cord. *R. 1492.*

39. Dr. Huntsman further testified that head restraints “prevent flexion/extension-type injury by avoiding excessive extension” and that the “neck doesn’t excessively extend because there is something there to protect it. *Id.*

40. Dr. Huntsman stated that the “fact that [Archer] was then involved in this motor vehicle accident in which his head and neck were not restrained did likely cause the myelopathy and likely caused the subsequent need for surgical intervention.” *Id.*

41. Biomedical expert, Dr. France, stated that a head restraint “would have likely reduced Mr. Archer’s maximum posterior neck motion to be within a range of 15-20 degrees extension of the neck.” *R. 1493 and 1548.*

42. Dr. France quoted *Spine* article, Traumatic Myelopathy In Patients With Cervical Spinal Stenosis Without Fracture Or Dislocation, stating that, “[p]atients with cervical spinal stenosis are uniquely vulnerable to hyper-extension injuries of the cervical spine.” *R. 1493.*

43. Dr. Huntsman stated that, “[t]he 1980 article from *Spine* regarding traumatic myelopathy in patients with cervical spinal stenosis without fracture and dislocation as well as the 1998 *Spine* article which reviewed the pathophysiology of cervical spondylotic myelopathy are accurate and I am in complete agreement with [sic].” *Id.*

44. Dr. Huntsman testified that the *Spine* article was significant to the mechanism of injury in this case. *Id.*

45. The National Highway Traffic Safety Administration (NHTSA), found that seat head restraints help prevent hyperextension. *Id.*

46. Dr France stated that, “[a] properly designed and positioned seat head restraint prevents hyper-extension of the cervical spine when used as intended, and would have likely prevent Mr. Archer’s neck from hyper-extending, if used in such a manner. Preventing hyper-extension significantly reduces the frequency and severity of cervical, upper thoracic, and upper shoulder injuries in the general population.” *Id.*

47. When asked if it was his opinion that the head restraint, or the lack of head restraint in this particular instance, was a causative factor with the shoulder injury, Dr. Dennis H. Gordon, M.D., Archer’s treating physician and orthopedic surgeon, testified, “Yes. I think it contributed to it, yes.” *R. 1493-1494.*

V. SUMMARY OF ARGUMENT

Archer’s neck and shoulder injuries, the subject of this FELA personal injury law suit, were caused by a rear end motor vehicle collision occurring on September 26, 2004. Archer was a passenger in a Chevrolet Van owned and operated by Armadillo. UP through its agent Armadillo was transporting UP employee Archer, in the course and scope of his employment with UP. On September 26, 2004, UP and Armadillo failed to provide Archer with transportation equipped with a rear seat head restraint and Archer suffered bruising and injury to his spinal cord and a rotator cuff and labrum tear in the right shoulder.

The district court's order granting Appellees' motion for summary judgment should be reversed and Appellees' motion denied for the following reasons:

One, FELA imposes, and UP admits that it was responsible for identifying reasonably foreseeable hazards in the work place and for minimizing or eliminating these hazards. UP admits and the district court previously ruled that the subject van was Archer's work place at the time of his injuries. UP admits that rear end collision caused neck injuries are reasonably foreseeable work place hazards. UP admits that head restraints are important safety devices protecting against rear end collision caused neck injuries.

Two, UP could have simply added rear seat head restraints as a mandatory safety feature in its agreement with Armadillo. Prior to the September 26, 2004 incident, UP had contracted with Armadillo to provide on the job transportation for UP employees. Armadillo had transported UP employees in rear seats with head restraints before Archer's injury and one third of Armadillo's 200 vehicle fleet were equipped with rear seat head restraints. UP admits it had the power and the right to require Armadillo to transport Archer in a vehicle equipped with head restraints. UP already had an existing list of required safety equipment for Armadillo vans, in its agreement with Armadillo. UP could have simply added rear seat head restraints to this list. UP negligently failed to exercise this power and right and did not require head restraints to prevent neck injuries, which UP admits was a reasonably foreseeable work place hazard to Archer. There are

genuine issues of material fact as to UP's negligence under FELA and Armadillo's negligence under the heightened standard of care as a common carrier.

Three, there is no conflict preemption between MVSA, FMVSS, and FELA, preventing the transportation of Archer in Armadillo's vehicles with rear seat head restraints. The doctrine of conflict preemption applies when there is an actual conflict between state and federal law. Here, there is no state law to preempt and there is no actual conflict. MVSA and FMVSS govern manufacturers only, and MVSA specifically negates the preemption of state law claims. The purpose of MVSA, FMVSS and FELA, is to promote safety. There can be no irreconcilable conflict between these laws and Archer's FELA claims: 1) that Appellees should have used the vehicles they already had with rear seat head restraints to transport Archer; and 2) that by contract, UP should have required its employees be transported by vehicles with rear seat head restraints.

Four, Archer's orthopedic and spine surgeons have the medical expertise to render medical causation opinions regarding the injuries caused by the failure to provide rear seat head restraints. Dr. Huntsman, Archer's treating physician and orthopedic surgeon, stated that to a reasonable degree of medical probability, the September 26, 2004 rear end collision involving Archer as a passenger in a vehicle without a seat head restraint was one of the probable medical causes of the injuries, and that it is medically probable that Archer would not have suffered these injuries from the rear end collision if he had a seat head restraint at the time of the collision. Dr. Gordon, Archer's treating physician and

orthopedic surgeon, testified that the lack of a head restraint was a causative factor with Archer's shoulder injury.

Five, FELA is a remedial statute and a jury trial is a significant part of the federal remedy protecting rail road workers. A district court is justified in withdrawing a FELA case from the jury's consideration only in those extremely rare instances when there is a zero probability either of employer negligence or that any such negligence contributed to the injury of the employee. Archer has shown substantial evidence – far more than is required for a jury trial. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

VI. ARGUMENT

A. Federal Law Controls.

All questions of law under FELA are governed by federal decisions. *Urie v. Thompson*, 337 U.S. 163, 174 (1949); *New York Central R. Co. v. Winfield*, 244 U.S. 147, 150 (1917). "What constitutes negligence for the statute's purposes is a federal question, not varying in accordance with the differing conceptions of negligence applicable under state and local laws for other purposes. Federal decisional law formulating and applying the concept governs." *Urie*, 337 U.S. at 174. Decisions of state courts construing the Act are not controlling but may be deemed persuasive. *Young v. New York Cent. R. Co.*, 88 N.E.2d 220 (1949).

B. Summary Judgment is Particularly Inappropriate in this FELA Case.

In reviewing a district court's grant of summary judgment, the appellate court gives the trial court's legal decisions **no** deference, reviewing for correctness. *Kearns-Tribune Corp. v. Salt Lake County Commission*, 2001 UT 55, 28 P.3d 686, 688 (Utah 2001). (Emphasis added). The appellate court views the facts and all reasonable inferences drawn therefrom in the light most favorable to the nonmoving party. Utah R.Civ.P. 56; *Wayment v. Clear Channel Broadcasting, Inc.*, 116 P.3d 271, 275 (Utah 2005). Summary judgment is a "drastic remedy" in Utah. *Timm v. Dewsnap*, 851 P.2d 1178, 1181 (Utah 1993). Where there is **any** evidence that raises a question of material fact, no matter how improbable the evidence may appear, judgment as a matter of law is improper. *Kleinert v. Kimball Elevator Co.*, 905 P.2d 297, 300 (Utah App. 1995). (Emphasis added). As stated by the Utah Supreme Court:

We are cognizant of the desirability of permitting litigants to fully present their case to the court and that a summary judgment prevents this. For that reason **courts are, and should be, reluctant to invoke this remedy.**

Brandt v. Springville Banking Co., 10 Utah 2d 350, 354, 353 P.2d 460, 462 (Utah 1960). (Emphasis added). Accordingly, a party seeking summary judgment under Utah R.Civ.P. 56 bears a substantial burden in demonstrating its propriety.

Summary judgment is particularly inappropriate in this FELA case. FELA is a broad remedial statute and is to be liberally construed to further Congress' remedial goal. *Urie*, at 180. It is well established that the role of the jury is significantly greater in FELA cases than in common law negligence actions. *Eggert v. Norfolk & W. Ry. Co.*,

538 F.2d 509, 511 (2nd Cir. 1976). “[T]o deprive railroad workers of the benefit of a jury trial in close or doubtful cases is to take away a goodly portion of the relief, which Congress has afforded them.” *Blair v. Baltimore & O.R. Co.*, 323 U.S. 600, 601 (1945).¹ Federal law controls the kind and amount of evidence necessary to take a case to the jury.

By the Federal Employers’ Liability Act, Congress took possession of the field of employers’ liability by employees in interstate transportation by rail, and all state laws upon that subject were superseded.... The **kind or amount of evidence required to establish it is not subject to the control of the several states.**

Chicago M. & St. Paul Ry. Co. v. Coogan, 271 U.S. 472, 474 (1926)(Emphasis added).

The standard for receiving a jury trial is less stringent in FELA cases than in common law tort cases.

Although Federal Courts have generally rejected the “scintilla rule” that any evidence supporting a tort claim raises a jury question, **courts have applied a rule very much like the “scintilla rule” to FELA cases. In FELA cases, “it is only necessary that the jury conclusion be one which is not outside the possibility of reason on the facts and circumstances shown.”** *Mendoza v. Southern Pac. Transp. Co.*, 733 F.2d 631, 633 (9th Cir. 1984) (citing *Rogers v. Missouri Pac. R.R.*, 352 U.S. 500.... (other

¹ See, also, *Bailey v. Central Vermont. Ry.*, 319 U.S. 350, 354 (1943) (the right to a jury trial “is part and parcel of the remedy afforded to railroad workers” under the FELA.); *Finley v. National R. Passenger Corp.*, 1997 WL 59322 at *2 (E.D. Pa. 1997) (“in a FELA case, the non-moving party can defeat a motion for summary judgment by presenting only a minimum amount of evidence in opposition to the motion.”); *Baltimore and O. R. Co. v. Taylor*, 589 N.E.2d 267, 271 (Ind. Ct. App. 1992) (“in FELA negligence actions, the role of the jury (fact finder) is much greater than in common-law negligence actions; the right of the fact finder to pass upon the question of the employer’s liability must be most liberally viewed.”); *Seeberger v. Burlington Northern R. Co.*, 982 P.2d 1149, 1152 (Wash. 1999) (“in determining whether the worker’s negligence case survives a motion for summary judgment, a significantly reduced evidentiary standard applies in FELA cases.”).

citations omitted). “By enacting FELA, Congress wanted to ‘**secure jury determinations in a larger proportion of cases than would be true of ordinary common law actions.**’ Jury trials were supposed to be part of the FELA remedy.” *Mendoza*, 733 F.2d at 633 (citations omitted). This relaxed standard applies to both negligence and causation determinations. *Pierce v. Southern Pac. Transp. Co.*, 823 F.2d 1366, 1370 (9th Cir. 1987) (“A reviewing court must uphold a verdict even if it finds only ‘slight’ or ‘minimal’ facts to support a jury’s finding of negligence”); *Oglesby v. Southern Pac. Transp. Co.*, 6 F.3d 603, 607 (9th Cir. 1993). (“ ‘Under [the FELA] the test of the jury case is simply whether the proof justifies with reason the conclusion that employer negligence played any part, even the slightest, in producing injury.’ ”) (quoting *Rogers*, 352 U.S. at 506...) (alteration in original).

Mullahon v. Union Pacific Railroad, 64 F.3d 1358, 1363-64 (9th Cir. 1995)(Emphasis added). “The minimal FELA standard for raising a jury question” merely requires a showing of negligence that is “not outside the possibility of reason” *Id.* at 1364.

As described by other courts “[t]he Supreme Court standard is that a district court is justified in withdrawing such issues from the jury’s consideration ‘only in those **extremely rare** instances when there is a **zero probability** either of employer negligence or that any such negligence contributed to the injury of an employee.’” *Eckert v. Aliquippa & Southern R.R. Co.*, 828 F.2d 183, 187 (3rd Cir. 1987) (quoting *Pehowic v. Erie Lackawanna R. Co.*, 430 F.2d 697, 699 (3rd Cir. 1970)). (Emphasis added). The instant case is **not** one of those extremely rare instances. The district court’s ruling should be reversed and Appellee’s motion for summary judgment denied accordingly.

C. **Appellees Owed a Duty to Archer to Provide Transportation Equipped With a Rear Seat Head Restraint.**

1. **Appellees had a non-delegable and continuing duty to provide Archer with a reasonably safe workplace.**

This is a FELA case brought under authority of Title 45 §§ 51-60, of the United States Code. In pertinent part it provides:

Every common carrier by railroad while engaging in commerce between any of the several states . . . shall be liable in damages to any person suffering injury while he is employed by such carrier in such commerce . . . **for such injury resulting in whole or in part from the negligence** of any of the officers, agents, or employees or such carrier, or by reason of any defect or insufficiency, due to its negligence, in its cars, engines, appliances, machinery . . . or other equipment.

45 U.S.C. § 51. (Emphasis added).

FELA creates a relaxed standard for negligence. *Williams v. Long Island R.R. Co.*, 196 F.3d 402, 406 (2nd Cir. 1999). **Under FELA, an employer has a non-delegable and continuing duty to provide its employees with a reasonably safe workplace.** *Peyton v. St. Louis Southwestern Ry. Co.*, 962 F.2d 832, 833 (8th Cir. 1992); *Ragsdell v. Southern Pacific Transportation Co.*, 688 F.2d 1282, 1283 (9th Cir. 1982). (Emphasis added). “Because of a ‘myriad of factors’ involved, whether the railroad used reasonable care in furnishing its employees a safe place to work is normally a question for the jury.” *Gallose v. Long Island R. Co.*, 878 F.2d 80, 85 (2nd Cir. 1989), citing *Ragsdell*, 688 F.2d at 1283.

In *Leek v. Baltimore & Ohio Railroad Co.*, 200 F. Supp. 368, 370-71 (D.C.N.D. Va. 1962), railroad employees were passengers in a Yellow Cab Taxi which overturned

in a one car accident. *Id.* at 369. The Court held that the transportation was an integral part of the railroad's job subjecting employees to an inherent risk of injury. *Id.* at 370-71. The Court found that "[w]hile the necessity of transporting workers is not unique to railroading, it is one of the characteristics of the business. It would seem to be consonant with the spirit of the FELA that **the employer should bear the risk of negligent injury to the employee while exposed to this risk.**" *Id.* at 371. (Emphasis added).

In the instant case, UP admits that it is responsible to provide a reasonably safe workplace and that at the time of Archer's injuries on September 26, 2004, the Armadillo van was Archer's workplace. *R.* 892. Like *Leek*, Archer was being transported on September 26, 2004 and it was UP's duty to bear the risk of negligent injury to Archer while he was exposed to that risk. This is the previous trial court ruling in this case. *R.* 346-348; *R.* 894; and *R.* 1273-1274. As held in *Gallose* and *Ragsdell*, whether UP used reasonable care in furnishing Archer a safe place to work is a question for the jury. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

2. Appellees breached their duty to provide a reasonably safe workplace (van) by not providing Archer with transportation equipped with a rear seat head restraint.

"An employer breaches its duty to provide a safe workplace when it knows or should know of a potential hazard in the workplace, yet fails to exercise reasonable care to inform and protect its employees." *Gallose v. Long Island R. Co.*, 878 F.2d 80, 84-85 (2nd Cir. 1989). The railroad has a duty of reasonable care to make inspections, to

discover, and to protect its employees from any hazards in the work place. *Cazad v. Chesapeake & Ohio Ry. Co.*, 622 F.2d 72, 75 (4th Cir. 1980); *Williams v. Atlantic Coast Line R. Co.*, 190 F.2d 744, 748 (5th Cir. 1951).

UP's duty to provide head restraints is clearly established in *Wier v. Soo Line RR Co.*, 1998 WL 474098 (N.D. Ill.).² In *Wier*, the Court held that the railroad could have insisted that its employees be transported in vans with rear seat head restraints simply by listing headrests as a mandatory safety feature in its agreement with the van company. *Wier* at 4. The Court further held that whether the railroad should have taken such steps is a material issue of fact in this case sufficient to defeat the railroad's motion for summary judgment. In *Wier*, the railroad contracted through Mile Post, a minivan owner, to provide transportation for employees, including the plaintiff engineer. *Wier*, at 2. A minivan without headrests was used to transport the railroad employees. *Id.* A FELA action was brought for neck injuries. *Id.* at 2-3. The railroad brought a motion for summary judgment contending that there could be no FELA liability for the absence of a headrest in the minivan. The Court recognizing that transporting railroad employees is a railroad operational activity held:

[T]he record suggests that a prudent employer might have taken steps to ensure that its employees were transported in minivans equipped with rearseat headrests. Soo Line could have insisted that Mile Post provide such a guarantee, simply by listing headrests as a mandatory safety feature in its agreement with Mile Post Whether Soo Line should have taken such steps remains a material issue of fact in this case sufficient to defeat Soo Line's motion for summary judgment.

² *Wier v. Soo Line RR Co.*, 1998 WL 474098 (N.D. Ill.) is attached for the Court's convenience.

Id. at 4. (Emphasis added).

The same is true in this case. UP should have taken steps to ensure that Archer was transported in vans equipped with rear seat head restraints. Like *Wier*, UP could have simply listed rear seat headrests as a mandatory safety feature in its agreement with Armadillo. In fact, UP required the following transportation and safety equipment in Armadillo vans, prior to the September 26, 2004 incident:

Section 18. VEHICLE CONDITION, EQUIPMENT AND SAFETY ITEMS

All vehicles used in these services must be no more than three years old, in good mechanical condition and must be equipped with the following equipment:

- (l) Air conditioner
- (m) Heater
- (n) Operable safety belts for all passengers
- (o) Properly equipped First Aid Kit
- (p) Operable and inspected 2.5lb. (ABC) fire extinguisher
- (q) Road flares
- (r) Spare tire
- (s) Jack and tools
- (t) Reflective striping
- (u) All mechanical items on the vehicle in good working order, with special attention paid to tires, brakes, and lights
- (v) Back up alarm devices, whether mechanical or electrical, where not specifically prohibited by law.

R. 226 and 230.

Like *Wier*, UP could have added rear seat head restraints to the above list in its agreement with Armadillo.³ In fact, UP admits that it could have required rear seat head restraints in its agreement with Armadillo. *R. 893*. UP failed to do so and Archer was transported and injured in a van without rear seat head restraints. *R. 230, 589, 615-616*. UP breached its duty to provide a reasonably safe workplace when it should have insisted its employees be transported in vehicles with rear seat head restraints simply by listing them as a mandatory safety feature in its agreement with Armadillo. Nonetheless, like *Wier*, whether UP should have taken such steps remains a material issue of fact sufficient to defeat UP and Armadillo's motion for summary judgment.

UP admits that it has a responsibility to identify and reduce reasonably foreseeable hazards within the workplace. *R. 893*. UP admits that rear end collisions are reasonably foreseeable hazards in the workplace and that it knew it was safer to have vehicles with rear seat head restraints. *Id.* Armadillo transported UP employees in rear seats with head restraints before Archer's injury and one third of Armadillo's 200 vehicle fleet was equipped with rear seat head restraints. *Id.* Therefore, vehicles with rear seat head restraints were readily available, UP knew it was safer to use those vehicles yet failed to take steps to ensure Archer was transported in a vehicle with rear seat head restraints. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

³ In addition, UP extensively publishes safety rules governing its employees and could have certainly promulgated a safety rule requiring its employees to adjust and use rear seat head restraints when transported in vans. *R. 896*.

3. **An optional regulation for an automobile manufacturer has no bearing on UP's FELA duty and liability.**

Appellees improperly assert that because it is optional for an automobile manufacturer to install rear seat head restraints, then UP has no FELA duty to require them.⁴ This argument was properly rejected by the U.S. Supreme Court in *Urie*, where the railroad argued that the maintenance of trade standards negates negligence. *Urie*, 337 U.S. at 178. The Court held:

[W]e ... reject the premise, for we think that negligence, within the meaning of the Federal Employers' Liability Act, attached if respondent 'knew, or by the exercise of due care should have known,' that prevalent standards of conduct were inadequate to protect petitioner and similar situated employees.

Urie, 337 U.S. at 178 (citing *Hill v. Atlantic Coast Line R. Co.*, 336 U.S. 911 (1949)); *Sadowski v. Long Island R. Co.*, 292 N.Y. 448, 456-57 (1944).

The Court further held in *Urie*, that the railroad's "knowledge, actual or constructive, of the alleged inadequacies of equipment **was a jury question.**" *Urie* at 178. (Emphasis added). The Court explained that:

Evidence that some railroads furnished no such contrivances as plaintiff claimed were necessary for the use of men working under similar conditions or furnished similar places to work for men doing work similar to that required of plaintiff does not establish, as a matter of law, that no such contrivances or no different place in which to work or no different appliances to carry on the work were required in the case at bar in the exercise of ordinary care. The ultimate question of fact was not what particular protective means someone else used in similar work. It was whether or not, under the particular conditions described in this case, the

⁴ 49 C.F.R. §§ 571.202 and 571.202a makes rear seat head restraints optional for automobile manufacturers before September 1, 2010.

defendant furnished plaintiff a reasonably safe place in which to work and such protection in connection with his work ...

Urie at 179 (quoting *Sadowski*, 292 N.Y. at 456-57).

In *Mortensen v. Southern Pacific Company*, 245 Cal. App. 2d 241 (1966), the plaintiff was injured in an accident while being transported in a pickup during the course and scope of his employment with the railroad. *Id.* at 242-43. The accident occurred in 1962 in California, at which time seat belts were not required for manufacturers. *Id.* at 244. The plaintiff brought a FELA claim against the railroad for its failure to equip its motor vehicles with seat belts. *Id.* at 242. The railroad conceded that the plaintiff was covered under FELA and that the pickup was his workplace at the time of the accident. *Id.* at 243. The railroad argued that because it was not required to install seat belts in California, and bus and taxicab companies had not installed seatbelts, the railroad has no duty to install them. *Id.* at 244. The Court held that the fact that there was no seat belt law in effect at the time of the accident, “obviously is **not** conclusive of this federal question[.]” *Id.* at 244. (Emphasis added). The Court further held that:

Nor is defendant aided by evidence that bus and taxicab companies had not installed seat belts. F.E.L.A. liability attaches if defendant knew, or in the exercise of due care should have known, ‘that prevalent standards of conduct were inadequate to protect’ its employees.

Id. (quoting, *Urie*, 337 U.S. at 178).

Finally, the Court held that the defendant’s failure to equip its motor vehicles with seat belts was **a jury question**. *Id.* at 244-45. (Emphasis added).

The same is true in this case. Like *Mortensen*, UP admits Archer is covered under FELA and that the Armadillo van was his workplace at the time of the September 26, 2004 incident. R. 892. Like *Mortensen*, UP and Armadillo argued that because it is optional for an automobile manufacturer to install rear seat head restraints, then UP has no FELA duty to require them. Like was held in *Mortensen*, the fact that rear seat head restraints are optional for automobile manufacturers has no bearing in this FELA case. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

D. A Rear Seat Head Restraint is a Safety Device Which, Like Other Safety Devices, is Part of a Reasonably Safe Workplace.

The U.S. Supreme Court held in *Sinkler v. Missouri Pacific Railroad Co.*, 356 U.S. 326, 331-32 (1958), that “when a railroad employee’s injury is caused in whole or in part by the fault of others in performing, under contract, operational activities of his employer, such others are ‘agents’ of the employer within the meaning of § 1 of FELA.”

Relying on *Sinkler*, federal courts have held that transporting railroad employees from one point to another is an operational activity and as such, any companies transporting railroad employees are considered agents of the railroad. *See, Leek v. Baltimore & Ohio R.R. Co.*, 200 F. Supp. 368 (D.C.W.Va. 1962); *Penn Central Corp. v. Checker Cab Co.*, 488 F. Supp. 1225 (D.C. Mich. 1980); *Hopson v. Texaco, Inc.*, 383 U.S. 262, 263-64 (1966).

In *Pyzynski v. Pennsylvania Cent. Transp. Co.*, 438 F. Supp. 1044 (D.C.N.Y. 1977), the Court held that:

If defendant does delegate and relies upon the services of its agent to carry out its own duty, it may not shift its liability from itself to said agent when an employee seeks to hold it directly liable. Under FELA, the employer is the one owing the duty to the employee. The employee need not look elsewhere for his protection. He has a right under FELA to rely on his employer and none other. When the employer delegates its duty, or abdicates its control, the employer takes the risk, not the employee.

Pyzynski, 438 F.Supp. at 1048.

Moreover, the Armadillo van is constructively considered railroad equipment for purposes of FELA.

Every common carrier by railroad...shall be liable in damages to any person suffering injury while he is employed by such carrier in such commerce...for such injury ... by reason of any **defect or insufficiency, due to its negligence, in its cars, engines, appliances, machinery, track, road bed, works, boats, wharfs, or other equipment.**

45 U.S.C. § 51. (Emphasis added).

A motor vehicle is FELA equipment. *Chapman v. Union Pacific Railroad*, 467 NW 2d 388, 392 (Neb. 1991); *See, Mortensen v. Southern Pacific Co.*, 245 Cal. App. 2d 241, 244 (1966) (FELA negligence case where truck was not equipped with seatbelts and seatbelts were not required for manufacturers at the time); *Lewis v. Norfolk & Western Ry. Co.*, 646 NE 2d 1378, 1380 (Ill. App. 1995) (motor vehicle is equipment under FELA).

UP's duty of care under FELA extends to third party property. In *Carter v. Union Railroad Co.*, 438 F.2d 208, 210-11 (3rd Cir. 1971), the Court summarized the railroads non-delegable duty to provide a safe place to work as follows:

The FELA imposes upon the employer a non-delegable duty to use reasonable care to furnish his employees a safe place to work, *Sano v.*

Pennsylvania R.R. Co., 282 F.2d 396 (3rd Cir. 1960), and **this duty extends beyond its premises and to property which third persons have a primary obligation to maintain.** *Shenker v. Baltimore & Ohio R.R. Co.*, 374 U.S. 1, 82 S.Ct. 1667, 10 L.3d.2d 709 (1963); *Nivens v. St. Louis Southwestern Ry. Co.*, 425 F.2d 114 (5th Cir. 1970), *cert. denied*, 400 U.S. 879, 91 S.Ct. 121, 27 L.3d.2d 116 (1970); *Payne v. Baltimore & Ohio R.R.*, 309 F.2d 546 (6th Cir. 1962), *cert. denied*, 374 U.S. 827 (1963); *Cooker v. Pittsburgh & Lake Erie R.R.*, 258 F.2d 876 (6th Cir. 1958); *Chicago Great Western Ry. v. Casura*, 234 F.2d 441 (8th Cir. 1956). **This duty includes a responsibility to inspect a third party's property for hazards and to take precautions to protect the employee from possible defect ...** *Shenker v. Baltimore & Ohio R.R.*, *supra*; *Nivens v. St. Louis Southwestern Ry.*, *supra*.

(Emphasis added).

In the instant case, UP contracted with Armadillo to provide on-the-job transportation for Archer and other train crew members. *R.* 203-235. On September 26, 2004, Armadillo transported Archer in the course and scope of his employment with UP. *R.* 589 and 894. On June 6, 2007, the district court ruled that for purposes of this case, Armadillo was an agent of UP, and was performing an operational activity of UP in transporting Archer on September 26, 2004. *R.* 346-348; *R.* 894; and *R.* 1273-1274. (Trial court's June 6, 2007 ruling in this case). UP admits that it is responsible to provide a reasonably safe workplace and that at the time of Archer's injuries on September 26, 2004 the Armadillo van was Archer's workplace. *R.* 892.

UP's non-delegable duty to provide a reasonably safe workplace extends to Armadillo's van, including head restraints or lack thereof. UP's duty includes the responsibility to inspect Armadillo's vans for hazards and to take precautions to protect Archer. In turn, a rear seat head restraint is a safety device which, like other safety

devices, is a part of a reasonably safe workplace under FELA. Nevertheless, whether a rear seat head restraint is a safety device as part of a reasonably safe workplace on September 26, 2004 is a question for the jury. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

E. Archer's FELA Claims are NOT Preempted by an Automobile Manufacturer Regulation.

1. The doctrine of conflict preemption does not apply *by definition*.

The district court improperly ruled that Archer's FELA claims are preempted by the doctrine of conflict preemption. *R. 594-603 and R. 1605-1609*. Specifically, the court ruled that MVSA and FMVSS, which make rear head restraints optional for automobile manufacturers, preempt Archer's FELA claim that UP was negligent in failing to transport Archer with a rear seat head restraint. *R. 594-603 and R. 1605-1609*. Contrary to the district court's ruling, the doctrine of conflict preemption applies when "state law is pre-empted to the extent that it actually conflicts with federal law." *English v. General Elec. Co.*, 496 U.S. 72, 79 (1990). (Emphasis added). Here, we have two federal laws – FELA and MVSA/FMVSS. Therefore, with no state law to preempt, the doctrine of conflict preemption does not apply by definition.

2. The doctrine of conflict preemption does not apply – there is no actual conflict.

The district court misinterprets MVSA, FMVSS, and FELA in reaching the absurd conclusion that automobile manufacturer regulations preempt FELA. *R. 594-603 and R. 1605-1609*. Contrary to the court's interpretation, MVSA and FMVSS apply **exclusively**

to manufacturers. *Johnson v. General Motors Corp.*, 889 F.Supp. 451 (W.D.Okl. 1995) (MVSA case against manufacturer for failing to install air bag); *Carden v. General Motors Corp.*, 509 F.3d 227, 229-230 (5th Cir. 2007) (“FMVSS therefore establishes the types of passenger restraint systems which car and truck manufacturers must install in their vehicles”). Conversely, FELA was enacted by Congress in 1908, and is the exclusive remedy for injured railroad workers, imposing a non-delegable and continuing duty on railroad employers to provide their employees with a reasonably safe workplace. *Urie*, 337 U.S. at 181; *Bailey v. Central Vermont Ry.*, 319 U.S. 350, 352-53 (1943); *Peyton*, 962 F.2d at 833; *Ragsdell*, 688 F.2d at 1283.

MVSA and FMVSS do not impose standards for railroad employers, common carriers, or a reasonably safe workplace under FELA. Instead, MVSA and FMVSS impose minimum standards for automobile manufacturers.⁵ It is illogical and unreasonable for a federal automobile manufacturer regulation to preempt FELA and its well defined jurisprudence, which is to be liberally construed in light of its prime purpose – the protection of employees and others by requiring the use of safe equipment. *Lilly v. Grand Trunk Western R. Co.*, 317 U.S. 481, 486 (1943).

3. *Geier* is inapplicable – FELA does not “actually conflict” with MVSA or FMVSS.

Appellees relied heavily on *Geier v. American Honda Motor Company*, 529 U.S. 861 (2000). In *Geier*, the plaintiff brought a claim against the manufacturer of her 1987

⁵ The FMVSS is “a **minimum** standard for motor vehicle or motor vehicle equipment performance.” 49 U.S.C. § 30103(e). (Emphasis added).

Honda, alleging that it was negligently designed. *Geier*, 529 U.S. at 865. The plaintiff alleged that Honda should have installed an airbag when it manufactured the 1987 Accord. *Id.* at 881. The Court held that the plaintiff's claim conflicted with FMVSS 208, which only required that 10% of the manufacturer's fleet be equipped with any passive restraint device, not just airbags. *Id.* The Court specifically held that common law actions are pre-empted **only** to the extent that they **actually conflict** with the federal requirements. *Id.* at 872. (Emphasis added). "Actual conflict between state and federal law exists **where the federal scheme expressly authorizes an activity which the state scheme disallows.**" *Carden v. General Motors Corp.*, 509 F.3d 227, 230 (5th Cir. 2007). (Emphasis added).

Geier is clearly distinguishable from the instant case. Unlike *Geier*, this is not a suit against a manufacturer. Unlike *Geier*, this is not a case of negligent design. This is a FELA case against a railroad for its failure to provide a reasonably safe workplace. Unlike *Geier*, there is no actual conflict. Plaintiff is alleging that UP was negligent under FELA in failing to provide a reasonably safe workplace, when it knew it was safer to use the **existing** Armadillo vehicles equipped with rear seat head restraints, yet failed to take steps to ensure Archer was transported in such a vehicle. Plaintiff is **not** alleging that Chevrolet should have installed rear seat head restraints. MVSA and FMVSS impose minimum standards for automobile manufacturers.⁶ FELA imposes standards for railroad

⁶ FMVSS is "a **minimum** standard for motor vehicle or motor vehicle equipment performance." 49 U.S.C. § 30103(e) (MVSA). (Emphasis added).

employers, common carriers, and a reasonably safe workplace under FELA. FELA and MVSA/FMVSS do not conflict.

Moreover, MVSA safety clause provides that “[c]ompliance with a motor vehicle safety standard prescribed under this chapter **does not exempt a person from liability at common law.**” 49 U.S.C. §30103(e). (Emphasis added). The Court in *Geier* stated that the “saving clause assumes that there are some significant number of common-law liability cases to save.” *Geier* at 868. The instant case, at the very least, is one of the cases the saving clause is meant to save: those that are not in actual conflict with MVSA. The district court’s ruling should be reversed and Appellee’s motion for summary judgment denied accordingly.

4. Statutory construction requires the Court read MVSA, FMVSS and FELA together, not with preemptive or preclusive effect.

This is a matter of statutory construction. When evaluating FELA, MVSA and FMVSS, it is the duty of courts to find coexistence, making each law effective. *Morton v. Mancari*, 417 U.S. 535, 551 (1974) (“The courts are not at liberty to pick and choose among congressional enactments, and when two statutes are capable of co-existence, it is the duty of the courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective.”) “We must read the statutes to give effect to each, if we can do so while preserving their sense of purpose.” *Watts v. Alaska*, 451 U.S. 259, 267 (1981). “[R]epeals by implication are not favored....” *Morton*, 417 U.S. at 549. “The intention of the legislation to repeal must be ‘clear and manifest.’” *Watts*, 451 U.S. at

267, quoting, *Red Rock v. Henry*, 106 U.S. 596, 602 (1883). The presumption against preemption is illustrated by the U.S. Supreme Court's overriding unwillingness to leave injured parties without an adequate judicial remedy to recover damages. See, *Sprietsma v. Mercury Marine*, 537 U.S. 51, 52 (2002); *United Contr. Workers v. Laburnum Constr. Corp.*, 347 U.S. 656, 663-64 (1954).

Federal preemption is a disfavored defense, particularly in the areas of health and safety. *Kemp v. Medtronic, Inc.*, 231 F.3d 216, 222 (6th Cir. 2000) ("In view of the historic importance of federalism in these areas, the states' police powers relating to public health and safety are not preempted by federal law unless Congress' intent to do so is clearly expressed.") MVSA, FMVSS, and FELA can easily be read together. Safety is the object of FELA, MVSA and FMVSS. Head restraints promote safety. FMVSS provides, in relevant part, that:

This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

49 C.F.R. § 571.202.

FELA mandates a safe work place and imposes a specific and remedial statutory duty upon the railroad. *Bailey v. Central Vermont Ry.*, 319 U.S. 350, 352-53 (1943). FELA "was designed to put on the railroad industry some of the cost for the legs, eyes, arms, and lives which it consumed in its operations." *Gottshall v. Consolidated Rail Corp.*, 512 U.S. 532, 543 (1994); quoting, *Wilkerson v. McCarthy*, 336 U.S. 53, 68 (1949).

Appellees and the district court improperly conflate FELA employer's non-delegable and continuous duty of a reasonably safe work place, with the common law duty of ordinary care placed upon a private non-employer consumer, not in the business of transportation. *R. 594-603 and R. 1605-1609*. As described above, Archer has brought a claim against his employer railroad under FELA, a federal remedial right and protection of railroad workers with a well defined jurisprudence. Appellees have not shown any **actual conflict** between FELA, MVSA and FMVSS.⁷ The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

F. Archer's Orthopedic and Spine Surgeons Have the Medical Expertise to Render Medical Causation Opinions Regarding the Injuries Caused by the Failure to Provide a Rear Seat Head Restraint.

Expert testimony is generally required to establish a causal connection between an accident and an injury "unless the connection is a kind that would be obvious to laymen, such as a broken leg from being struck by an automobile. *Moody v. Maine C. R.R. Co.*, 823 F.2d 693, 695-96 (1st Cir. 1987). Utah Rule of Evidence 702 provides the parameters for admission of expert testimony:

... [I]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness is qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Utah R. Evid. 702.

⁷ Federal preemption is an affirmative defense, and Defendant bears the burden of proof in establishing its applicability. *Fort Howard Paper Co. v. Standard Haven, Inc.*, 901

In Utah, the ultimate question is whether, “on balance, the evidence will be helpful to the finder of fact.” *Balderas v. Starks*, 2006 UT App 218, 138 P.3d 75, 81 (Utah App. 2006). Expert testimony is helpful when the subject is not within “the knowledge or experience of the average individual.” The standard for medical causation is that the physician must testify to a reasonable degree of medical probability. *Sohm v. Dixie Eye Center*, 2007 UT App 245, 166 P.3d 614 (Utah App 2007). The expressions “probably,” “more likely than not,” and others of similar import are proper qualifications for a medical expert’s opinion testimony, if taken as a whole, the testimony reflects a professional opinion as to reasonable medical probabilities. *Nunez v. Wilson*, 507 P.2d 329, 448 (Kan. 1973). “Probable” is defined as “likely to be or become true or real.” *Merriam-Webster Online Dictionary* (2009), retrieved from <http://www.merriam-webster.com/dictionary/probable>.

A treating physician is uniquely qualified to give an opinion about his or her diagnosis of a patient and the admissibility of such testimony should be given due deference. *Banks v. INC Kalium Carlsbad Potash Co.*, 77 P.3d 1014, 1019 (N.M. 2003). “The rationale for giving greater weight to a treating physician’s opinion is that he is employed to cure and has a greater opportunity to know and observe his patient ...” *Holbrook v. Lykes Bros. S.S. Co.*, 30 F.3d 777, 783 (3rd Cir. 1996).

In the instant case, Archer’s experts have the medical expertise to render medical causation opinions regarding the injuries caused by the failure to provide a rear seat head

F.2d 1373, 1377 (7th Cir. 1990).

restraint. The trial court ignored the language of Archer's expert reports and entered summary judgment despite Archer establishing questions of fact sufficient to go to the jury.

Dr. Huntsman, Archer's treating physician and orthopedic surgeon specializing in spine surgery, stated that to a **reasonable degree of medical probability**:

The September 26, 2004 rear-end collision involving Mr. Archer as a passenger in a vehicle without a seat head restraint was one of the probable medical causes of the injuries I diagnosed and treated, including contusion to his spinal cord, radicular pain radiating from his neck into his right shoulder along the C5 nerve root distribution, right arm weakness, and changes in spinal reflexes;

It is medically probable that Mr. Archer would not have suffered these injuries from the rear end collision if he had a seat head restraint at the time of the collision; and

It is pure speculation that Mr. Archer would have suffered these injuries even if he had a seat head restraint at the time of the subject rear end collision.

R. 1492 and 1539-1540.

Dr. Huntsman testified that the accident caused a contusion to Archer's spinal cord, resulting in a permanent, hollow spot inside the cord. *R. 1492.* Dr. Huntsman further testified that head restraints "prevent flexion/extension-type injury by avoiding excessive extension" and that the "neck doesn't excessively extend because there is something there to protect it. *Id.* Dr. Huntsman stated that the "fact that [Archer] was then involved in this motor vehicle accident in which his head and neck were not restrained did likely cause the myelopathy and likely caused the subsequent need for surgical intervention." *Id.*

Dr. Huntsman's position is supported by Dr. Gordon, Archer's treating physician and orthopedic surgeon, and biomedical expert Dr. France. When asked if it was his opinion that the head restraint, or the lack of head restraint in this particular instance, was a causative factor with the shoulder injury, Dr. Gordon testified, "Yes. I think it contributed to it, yes." *R. 1493-1494.*

Dr. France stated that a head restraint "would have likely reduced Mr. Archer's maximum posterior neck motion to be within a range of 15-20 degrees extension of the neck." *R. 1493 and 1548.* Dr. France quoted Traumatic Myelopathy In Patients With Cervical Spinal Stenosis Without Fracture Or Dislocation, stating that, "[p]atients with cervical spinal stenosis are uniquely vulnerable to hyper-extension injuries of the cervical spine." *R. 1493.* Dr. Huntsman stated that, "[t]he 1980 article from *Spine* regarding traumatic myelopathy in patients with cervical spinal stenosis without fracture and dislocation as well as the 1998 *Spine* article which reviewed the pathophysiology of cervical spondylotic myelopathy are accurate and I am in complete agreement with." *Id.* Dr. Huntsman testified that the *Spine* articles were significant to the mechanism of injury in this case. *Id.*

Finally, causation is a question of fact and jurors are empowered to weigh expert testimony as they deem appropriate. *Neely v. Bennett*, 2002 UT App. 189, 51 P.3d 724, 728 (UtahApp. 2002); citing *Dixon v. Stewart*, 658 P.2d 591, 597 (Utah 1982); *Nay v. General Motors Corp.*, 850 P.2d 1260, 1264 (Utah 1993).

G. There are Genuine Issues of Material Fact as to Armadillo's Negligence Under the Heightened Standard of Care as a Common Carrier

Armadillo admits that it is a common carrier. *R. 894*. “Common carriers are held to a higher standard of care than the ‘reasonably prudent person’ standard.” *Lamb v. B&B Amusements Corp.*, 869 P.2d 926, 930 (Utah 1993). The Utah Supreme Court stated that “[t]he heightened standard of care required of common carriers is predicated on the principle that ‘[p]ersons using ordinary transportation devices, such as elevators and buses, normally expect to be carried safely, securely, and without incident to their destination.’” *Id.* at 930 (quoting, *Harlan v. Six Flags Over Georgia Inc.*, 297 S.E.2d 468, 469 (Ga. 1982)). The Court further discussed the rationale behind the common carrier standard of care:

The “reasonably prudent person” standard of care is a flexible legal concept requiring a greater or lesser degree of care according to the nature of the circumstances that a reasonably prudent person would consider in assessing possible risks of injury. Common carriers are held to a higher standard of care than the “reasonably prudent person” standard. *See Johnson v. Lewis*, 121 Utah 218, 225, 240 P.2d 498, 502 (1952); *see also, McMaster v. Salt Lake Transp. Co.*, 108 Utah 207, 210, 159 P.2d 121, 122 (1945); *Sine v. Salt Lake Transp. Co.*, 106 Utah 289, 296, 147 P.2d 875, 879 (1944). Passengers entrust common carriers with their personal safety, have little if any opportunity to protect themselves from harm caused by a common carrier, and pay the carrier for safe transportation. In addition, the public has an important stake in having the public transportation of persons be as safe as possible.

Lamb, 869 P.2d at 930.

Judge Learned Hand described the duties of a common carrier as follows:

[H]is very enterprise is to carry passengers safely, and he is bound to a much longer forecast of the dangers which surround them than he is as regards strangers. It is not perhaps important in just what terms this duty is

measured; usually they include the ‘highest human foresight’ possible in the circumstances.

Giger v. New York, N.H. & H.R. Co., 60 F.2d 63, 64 (2nd Cir. 1932).

The Utah Supreme Court has held that, “the duty owing by the carrier to its passengers for hire is definitely greater than such carrier owes to guests and the general public ... the relationship of carrier to its passengers for hire is a circumstance which requires more foresight and greater caution than it owes to guests or the public generally.” *Johnson v. Lewis*, 121 Utah 218, 225 (1952).

In the instant case, Armadillo breached its duty of care as a common carrier, when it did not exercise more foresight and greater caution in transporting Plaintiff without a head restraint. Before Archer’s September 26, 2004 injury, one third of Armadillo’s 200 vehicle fleet had rear seat head restraints. *Id.* The Chevy Suburban vehicles in Armadillo’s fleet had the capacity to transport up to five passengers with seat head restraints. *Id.* Armadillo admits that before Archer’s September 26, 2004 injury, it had transported UP crew members in vehicles with rear seat head restraints. *R.* 893. Armadillo admits that the center seats of its vehicles did not have head restraints and some railroad location passengers were restricted from using the center seats. *R.* 894.

Armadillo admits that had it known before Archer’s September 26, 2004 injury that seat head restraints reduced the risk of neck injuries then it should have used vehicles with rear seat head restraints for transporting UP passengers. *R.* 893. Armadillo should have known. Before Archer’s September 26, 2004 injury, **it was common knowledge**

that seat head restraints prevent or reduce neck injuries from rear end collisions – according to the NHSTA Report, biomedical expert Dr. France, and UP. R. 896.

Negligence is a question of fact for the jury. *Baczuk v. Salt Lake Regional Medical Center*, 2000 UT App 225, 8 P.3d 1037, 1039 (Utah App. 2000). It is for the jury to decide whether the general field of danger should have been anticipated by common carrier Armadillo in transporting Archer without a head restraint. The district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

VII. CONCLUSION

A district court is justified in withdrawing the foregoing issues from the jury's consideration only in those extremely rare instances when there is a zero probability either of employer negligence or that any such negligence contributed to the injury of an employee. This is not one of those extremely rare instances. The record establishes that John Archer has introduced substantial evidence; far more than that required to bring his FELA and state claims to a jury. For the foregoing reasons, the district court's ruling should be reversed and Appellee's motion for summary judgment denied accordingly.

Respectfully submitted,

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VIII. ADDENDUM

A. Statutes, Rules, or Regulations Not Reproduced Verbatim in Brief

1. 45 U.S.C. § 51
2. Rule 56 of the Utah Rules of Civil Procedure
3. 49 C.F.R. § 571.202
4. 49 C.F.R. § 571.202a
5. 49 U.S.C. § 30101
6. 49 U.S.C. § 30103(e)

B. Court Opinions Not Available to the Court

7. *Wier v. Soo Line RR Co.*, 1998 WL 474098 (N.D. Ill.).

C. Parts of Record of Central Importance to the Determination of the Appeal

8. District Court's June 6, 2007 Order Granting Partial Summary Judgment Regarding Application of FELA Liability to Van Transportation.
9. Motion for Summary Judgment Oral Argument Transcript.
10. Amended Order Granting Defendants Brown's Crew Car of Wyoming, Inc., d/b/a Armadillo Express's and Union Pacific Railroad Company's Motion for Summary Judgment.
11. Epstein, N., Epstein, J., Benjamin, V., Ransohoff, J. (1980). Traumatic Myelopathy In Patients With Cervical Spinal Stenosis Without Fracture Or Dislocation. *Spine*, 5, 6, 489-496.
12. Fehlings, M. G., Skaf, G. (1998). A Review of the Pathophysiology of Cervical Spondylotic Myelopathy With Insights for Potential Novel Mechanisms Drawn From Traumatic Spinal Cord Injury. *Spine*, 23, 24, 2730-2737.

Tab 1



45 U.S.C.A. § 51

Page 1

Effective:[See Text Amendments]

United States Code Annotated Currentness

Title 45. Railroads (Refs & Annos)

Chapter 2. Liability for Injuries to Employees (Refs & Annos)

→ § 51. Liability of common carriers by railroad, in interstate or foreign commerce, for injuries to employees from negligence; employee defined

Every common carrier by railroad while engaging in commerce between any of the several States or Territories, or between any of the States and Territories, or between the District of Columbia and any of the States or Territories, or between the District of Columbia or any of the States or Territories and any foreign nation or nations, shall be liable in damages to any person suffering injury while he is employed by such carrier in such commerce, or, in case of the death of such employee, to his or her personal representative, for the benefit of the surviving widow or husband and children of such employee; and, if none, then of such employee's parents; and, if none, then of the next of kin dependent upon such employee, for such injury or death resulting in whole or in part from the negligence of any of the officers, agents, or employees of such carrier, or by reason of any defect or insufficiency, due to its negligence, in its cars, engines, appliances, machinery, track, roadbed, works, boats, wharves, or other equipment.

Any employee of a carrier, any part of whose duties as such employee shall be the furtherance of interstate or foreign commerce; or shall, in any way directly or closely and substantially, affect such commerce as above set forth shall, for the purposes of this chapter, be considered as being employed by such carrier in such commerce and shall be considered as entitled to the benefits of this chapter.

CREDIT(S)

(Apr. 22, 1908, c. 149, § 1, 35 Stat. 65; Aug. 11, 1939, c. 685, § 1, 53 Stat. 1404.)

Current through P.L. 111-12 (excluding P.L. 111-5, 111-8, and 111-11) approved 3-30-09

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Tab 2



West's Utah Code Annotated Currentness
 State Court Rules
 ¶ Utah Rules of Civil Procedure (Refs & Annos)
 ¶ Part VII. Judgment
 → RULE 56. SUMMARY JUDGMENT

(a) For claimant. A party seeking to recover upon a claim, counterclaim or cross-claim or to obtain a declaratory judgment may, at any time after the expiration of 20 days from the commencement of the action or after service of a motion for summary judgment by the adverse party, move for summary judgment upon all or any part thereof.

(b) For defending party. A party against whom a claim, counterclaim, or cross-claim is asserted or a declaratory judgment is sought, may, at any time, move for summary judgment as to all or any part thereof.

(c) Motion and proceedings thereon. The motion, memoranda and affidavits shall be in accordance with Rule 7. The judgment sought shall be rendered if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law. A summary judgment, interlocutory in character, may be rendered on the issue of liability alone although there is a genuine issue as to the amount of damages.

(d) Case not fully adjudicated on motion. If on motion under this rule judgment is not rendered upon the whole case or for all the relief asked and a trial is necessary, the court at the hearing of the motion, by examining the pleadings and the evidence before it and by interrogating counsel, shall if practicable ascertain what material facts exist without substantial controversy and what material facts are actually and in good faith controverted. It shall thereupon make an order specifying the facts that appear without substantial controversy, including the extent to which the amount of damages or other relief is not in controversy, and directing such further proceedings in the action as are just. Upon the trial of the action the facts so specified shall be deemed established, and the trial shall be conducted accordingly.

(e) Form of affidavits; further testimony; defense required. Supporting and opposing affidavits shall be made on personal knowledge, shall set forth such facts as would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein. Sworn or certified copies of all papers or parts thereof referred to in an affidavit shall be attached thereto or served therewith. The court may permit affidavits to be supplemented or opposed by depositions, answers to interrogatories, or further affidavits. When a motion for summary judgment is made and supported as provided in this rule, an adverse party may not rest upon the mere allegations or denials of the pleadings, but the response, by affidavits or as otherwise provided in this rule, must set forth specific facts showing that there is a genuine issue for trial. Summary judgment, if appropriate, shall be entered against a party failing to file such a response.

(f) When affidavits are unavailable. Should it appear from the affidavits of a party opposing the motion that the party cannot for reasons stated present by affidavit facts essential to justify the party's opposition, the court may refuse the application for judgment or may order a continuance to permit affidavits to be obtained or depositions to be taken or discovery to be had or may make such other order as is just.

(g) Affidavits made in bad faith. If any of the affidavits presented pursuant to this rule are presented in bad faith or solely for the purpose of delay, the court shall forthwith order the party presenting them to pay to the other party the amount of the reasonable expenses which the filing of the affidavits caused, including reasonable attorney's fees, and any offending party or attorney may be adjudged guilty of contempt.

CREDIT(S)

[Amended effective November 1, 1997; November 1, 2004.]

Current with amendments effective April 1, 2009.

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END OF DOCUMENT

Tab 3

Effective: July 3, 2007

Code of Federal Regulations Currentness

Title 49. Transportation

Subtitle B. Other Regulations Relating to Transportation

Chapter V. National Highway Traffic Safety Administration, Department of Transportation

Part 571. Federal Motor Vehicle Safety Standards (Refs & Annos)

Subpart B. Federal Motor Vehicle Safety Standards (Refs & Annos)

→ § 571.202 Standard No. 202; Head restraints; Applicable at the manufacturers option until September 1, 2009.

S1. Purpose and scope. This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

S2. Application. This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses with a GVWR of 4,536 kg or less, manufactured before September 1, 2009. Until September 1, 2009, manufacturers may comply with the standard in this § 571.202, with the European regulations referenced in S4.3 of this § 571.202, or with the standard in § 571.202a. For vehicles manufactured on or after September 1, 2009 and before September 1, 2010, manufacturers may comply with the standard in this § 571.202 or with the European regulations referenced in S4.3 of this § 571.202, instead of the standard in § 571.202a, only to the extent consistent with phase-in specified in § 571.202a.

S3. Definitions.

Head restraint means a **device** that limits rearward displacement of a seated occupant's head relative to the occupant's torso.

Height means, when used in reference to a head restraint, the distance from the H-point, measured parallel to the torso reference line defined by the three dimensional SAE J826 (rev. Jul 95) manikin, to a plane normal to the torso reference line.

Top of the head restraint means the point on the head restraint with the greatest height.

S4. Requirements.

S4.1 Each passenger car, and multipurpose passenger vehicle, truck and bus with a GVWR of 4,536 kg or less, must comply with, at the manufacturer's option, S4.2, S4.4 or S4.5 of this section.

S4.2 Except for school buses, a head restraint that conforms to either S4.2 (a) or (b) of this section must be provided at each outboard front designated seating position. For school buses, a head restraint that conforms to either S4.2 (a) or (b) of this section must be provided at the driver's seating position.

(a) When tested in accordance with S5.1 of this section, limit rearward angular displacement of the head reference line to 45 degrees from the torso reference line; or

(b) When adjusted to its fully extended design position, conform to each of the following:

(1) When measured parallel to the torso line, the top of the head restraint must not be less than 700 mm above the seating reference point;

(2) When measured either 64 mm below the top of the head restraint or 635

mm above the seating reference point, the lateral width of the head restraint must be not less than:

(i) 254 mm for use with bench-type seats; and

(ii) 170 mm for use with individual seats;

(3) When tested in accordance with S5.2 of this section, any portion of the head form in contact with the head restraint must not be displaced to more than 102 mm perpendicularly rearward of the displaced extended torso reference line during the application of the load specified in S5.2 (c) of this section; and

(4) When tested in accordance with S5.2 of this section, the head restraint must withstand an increasing load until one of the following occurs:

(i) Failure of the seat or seat back; or,

(ii) Application of a load of 890N.

S4.3 Incorporation by reference.

The English language version of the Economic Commission for Europe (ECE) Regulation 17: "Uniform Provisions Concerning the Approval of Vehicles with Regard to the Seats, their Anchorages and any Head Restraints" ECE 17 Rev. 1/Add. 16/Rev. 4 (31 July 2002) is incorporated by reference in S4.4(a) of this section. The Director of the Federal Register has approved the incorporation by reference of this material in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. A copy of ECE 17 Rev. 1/Add. 16/Rev. 4 (31 July 2002) may be obtained from the ECE Internet site: <http://www.unece.org/trans/main/wp29/wp29regs/r017r4e.pdf>, or by writing to: United Nations, Conference Services Division, Distribution and

Sales Section, Office C.115-1, Palais des Nations, CH-1211, Geneva 10, Switzerland. A copy of ECE 17 Rev. 1/Add. 16/Rev. 4 (31 July 2002) may be inspected at NHTSA's Technical Information Services, 400 Seventh Street, SW., Plaza Level, Room 403, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

S4.4 Except for school buses, a head restraint that conforms to S4.4 (a) and (b) of this section must be provided at each outboard front designated seating position. For school buses, a head restraint that conforms to S4.4 (a) and (b) of this section must be provided at the driver's seating position.

(a) The head restraint must comply with Paragraphs 5.1.1, 5.1.3, 5.3.1, 5.5 through 5.13, 6.1.1, 6.1.3, and 6.4 through 6.8 of the English language version of the Economic Commission for Europe (ECE) Regulation 17: ECE 17 Rev. 1/Add. 16/Rev. 4 (31 July 2002).

(b) The head restraint must meet the width requirements specified in S4.2(b)(2) of this section.

S4.5 Except for school buses, head restraints that conform to the requirements of § 571.202a must be provided at each front outboard designated seating position. If a rear head restraint (as defined in § 571.202a) is provided at a rear outboard designated seating position, it must conform to the requirements of § 571.202a applicable to rear head restraints. For school buses, a head restraint that conforms to the requirements of § 571.202a must be installed at the driver's seating position.

S4.6 Where manufacturer options are specified

in this section or § 571.202a, the manufacturer must select an option by the time it certifies the vehicle and may not thereafter select a different option for that vehicle. The manufacturer may select different compliance options for different designated seating positions to which the requirements of this section are applicable. Each manufacturer must, upon request from the National Highway Traffic Safety Administration, provide information regarding which of the compliance options it has selected for a particular vehicle or make/model.

S5. Demonstration procedures.

S5.1 Compliance with S4.2(a) of this section is demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) On the exterior profile of the head and torso of a dummy having the weight and seated height of a 95th percentile adult male with an approved representation of a human, articulated neck structure, or an approved equivalent test device, establish reference lines by the following method:

(1) Position the dummy's back on a horizontal flat surface with the lumbar joints in a straight line.

(2) Rotate the head of the dummy rearward until the back of the head contacts the flat horizontal surface specified in S5.1(a)(1) of this section.

(3) Position the SAE J-826 two-dimensional manikin's back against the flat surface specified in S5.1(a)(1) of this section, alongside the dummy with the H-point of the manikin aligned with the H-point of the dummy.

(4) Establish the torso line of the manikin as defined in SAE Aerospace-

Automotive Drawing Standards, sec. 2.3.6, P.E1.01, September 1963.

(5) Establish the dummy torso reference line by superimposing the torso line of the manikin on the torso of the dummy.

(6) Establish the head reference line by extending the dummy torso reference line onto the head.

(b) At each designated seating position having a head restraint, place the dummy, snugly restrained by Type 2 seat belt, in the manufacturer's recommended design seating position.

(c) During forward acceleration applied to the structure supporting the seat as described in this paragraph, measure the maximum rearward angular displacement between the dummy torso reference line and head reference line. When graphically depicted, the magnitude of the acceleration curve shall not be less than that of a half-sine wave having the amplitude of 78 m/s^2 and a duration of 80 milliseconds and not more than that of a half-sine wave curve having an amplitude of 94 m/s^2 and a duration of 96 milliseconds.

S5.2 Compliance with S4.2(b) of this section is demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) Place a test device, having the back plan dimensions and torso line (centerline of the head room probe in full back position), of the three dimensional SAE J826 manikin, at the manufacturer's recommended design seated position.

(b) Establish the displaced torso reference line by applying a rearward moment of 373 Nm about the seating reference point to the

seat back through the test device back pan specified in S5.2(a) of this section.

(c) After removing the back pan, using a 165 mm diameter spherical head form or cylindrical head form having a 165 mm diameter in plan view and a 152 mm height in profile view, apply, perpendicular to the displaced torso reference line, a rearward initial load 64 mm below the top of the head restraint that will produce a 373 Nm moment about the seating reference point.

(d) Gradually increase this initial load to 890 N or until the seat or seat back fails, whichever occurs first.

[54 FR 39187, Sept. 25, 1989; 61 FR 27025, May 30, 1996; 63 FR 28935, May 27, 1998; 69 FR 74883, Dec. 14, 2004; 72 FR 25514, May 4, 2007]

SOURCE: 36 FR 22902, Dec. 2, 1971; 50 FR 21056, June 6, 1985; 51 FR 9456, March 19, 1986; 59 FR 37175, July 21, 1994; 59 FR 38940, Aug. 1, 1994; 60 FR 58524, Nov. 28, 1995; 64 FR 10815, March 5, 1999; 64 FR 47582, Aug. 31, 1999, unless otherwise noted.

AUTHORITY: 49 U.S.C. 322, 30111, 30115, 30166 and 30177; delegation of authority at 49 CFR 1.50.

49 C. F. R. § 571.202, 49 CFR § 571.202
Current through April 2, 2009; 74 FR 15188

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Tab 4



Effective: July 3, 2007

Code of Federal Regulations Currentness

Title 49. Transportation

Subtitle B. Other Regulations Relating to Transportation

Chapter V. National Highway Traffic Safety Administration, Department of Transportation

Part 571. Federal Motor Vehicle Safety Standards (Refs & Annos)

Subpart B. Federal Motor Vehicle Safety Standards (Refs & Annos)

→ § 571.202a Standard No. 202a; Head restraints; Mandatory applicability begins on September 1, 2009.

S1. Purpose and scope. This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

S2. Application & incorporation by reference.

S2.1 Application. This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses with a GVWR of 4,536 kg or less, manufactured on or after September 1, 2009. However, the standard's requirements for rear head restraints do not apply to vehicles manufactured before September 1, 2010, and, for vehicles manufactured between September 1, 2010 and August 31, 2011, the requirements for rear head restraints apply only to the extent provided in S7. Until September 1, 2009, manufacturers may comply with the standard in this § 571.202a, with the standard in § 571.202, or with the European regulations referenced in S4.3(a) of § 571.202. For vehicles manufactured on or after September 1,

2009 and before September 1, 2010, manufacturers may comply with the standard in § 571.202 or with the European regulations referenced in S4.3(a) of § 571.202, instead of the standard in this § 571.202a, only to the extent consistent with the phase-in specified in this § 571.202a.

S2.2 Incorporation by reference.

(a) Society of Automotive Engineers (SAE) Recommended Practice J211/1 rev. Mar 95, "Instrumentation for Impact Test-Part 1--Electronic Instrumentation," SAE J211/1 (rev. Mar 95) is incorporated by reference in S5.2.5(b), S5.3.8, S5.3.9, and 5.3.10 of this section. The Director of the Federal Register has approved the incorporation by reference of this material in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. A copy of SAE J211/1 (rev. Mar 95) may be obtained from SAE at the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096. A copy of SAE J211/1 (rev. Mar 95) may be inspected at NHTSA's Technical Information Services, 400 Seventh Street, SW., Plaza Level, Room 403, Washington, DC, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(b) Society of Automotive Engineers (SAE) Standard J826 "Devices for Use in Defining and Measuring Vehicle Seating Accommodation," SAE J826 (rev. Jul 95) is incorporated by reference in S3, S5, S5.1, S5.1.1, S5.2, S5.2.1, S5.2.2, and S5.2.7 of this section. The Director of the

Federal Register has approved the incorporation by reference of this material in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. A copy of SAE J826 (rev. Jul 95) may be obtained from SAE at the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096. A copy of SAE J826 (rev. Jul 95) may be inspected at NHTSA's Technical Information Services, 400 Seventh Street, SW., Plaza Level, Room 403, Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

S3. Definitions.

Backset means the minimum horizontal distance between the rear of a representation of the head of a seated 50th percentile male occupant and the head restraint, as measured by the head restraint measurement device.

Head restraint means a device that limits rearward displacement of a seated occupant's head relative to the occupant's torso.

Head restraint measurement device (HRMD) means the Society of Automotive Engineers (SAE) (July 1995) J826 three-dimensional manikin with a head form attached, representing the head position of a seated 50th percentile male, with sliding scale at the back of the head for the purpose of measuring backset. The head form is designed by and available from the ICBC, 151 West Esplanade, North Vancouver, BC V7M 3H9, Canada (www.icbc.com).

Height means, when used in reference to a head restraint, the distance from the H-point, measured parallel to the torso reference line defined by the three dimensional SAE J826 (July 1995) manikin,

to a plane normal to the torso reference line.

Intended for occupant use means, when used in reference to the adjustment of a seat, positions other than that intended solely for the purpose of allowing ease of ingress and egress of occupants and access to cargo storage areas of a vehicle.

Rear head restraint means, at any rear outboard designated seating position, a rear seat back, or any independently adjustable seat component attached to or adjacent to a seat back, that has a height equal to or greater than 700 mm, in any position of backset and height adjustment, as measured in accordance with S5.1.1.

Top of the head restraint means the point on the head restraint with the greatest height.

S4. Requirements. Except as provided in S4.4, S4.2.1(a)(2) and S4.2.1(b)(2) of this section, each vehicle must comply with S4.1 of this section with the seat adjusted as intended for occupant use. Whenever a range of measurements is specified, the head restraint must meet the requirement at any position of adjustment within the specified range.

S4.1 Performance levels. In each vehicle other than a school bus, a head restraint that conforms to either S4.2 or S4.3 of this section must be provided at each front outboard designated seating position. In each equipped with rear outboard head restraints, the rear head restraint must conform to either S4.2 or S4.3 of this section. In each school bus, a head restraint that conforms to either S4.2 or S4.3 of this section must be provided for the driver's seating position. At each designated seating position incapable of seating a 50th percentile male Hybrid III test dummy specified in 49 CFR Part 572, Subpart E, the applicable head restraint must conform to S4.2 of this section.

S4.2 Dimensional and static performance. Each head restraint located in the front outboard designated seating position and each head restraint

located in the rear outboard designated seating position must conform to paragraphs S4.2.1 through S4.2.7 of this section. Compliance is determined for the height requirements of S4.2.1 and the backset requirements of S4.2.3 of this section by taking the arithmetic average of three measurements.

S4.2.1 Minimum height.

(a) Front outboard designated seating positions.

(1) Except as provided in S4.2.1(a)(2) of this section, when measured in accordance with S5.2.1(a)(1) of this section, the top of a head restraint located in a front outboard designated seating position must have a height not less than 800 mm in at least one position of adjustment.

(2) Exception. The requirements of S4.2.1(a)(1) do not apply if the interior surface of the vehicle at the roofline physically prevents a head restraint, located in the front outboard designated seating position, from attaining the required height. In those instances in which this head restraint cannot attain the required height, when measured in accordance with S5.2.1(a)(2), the maximum vertical distance between the top of the head restraint and the interior surface of the vehicle at the roofline must not exceed 50 mm for convertibles and 25 mm for all other vehicles. Notwithstanding this exception, when measured in accordance with S5.2.1(a)(2), the top of a head restraint located in a front outboard designated seating position must have a height not

less than 700 mm in the lowest position of adjustment.

(b) All outboard designated seating positions equipped with head restraints.

(1) Except as provided in S4.2.1(b)(2) of this section, when measured in accordance with S5.2.1(b)(1) of this section, the top of a head restraint located in an outboard designated seating position must have a height not less than 750 mm in any position of adjustment.

(2) Exception. The requirements of S4.2.1(b)(1) do not apply if the interior surface of the vehicle at the roofline or the interior surface of the backlight physically prevent a head restraint, located in the rear outboard designated seating position, from attaining the required height. In those instances in which this head restraint cannot attain the required height, when measured in accordance with S5.2.1(b)(2), the maximum vertical distance between the top of the head restraint and the interior surface of the vehicle at the roofline or the interior surface of the backlight must not exceed 50 mm for convertibles and 25 mm for all other vehicles.

S4.2.2 Width. When measured in accordance with S5.2.2 of this section, 65 ± 3 mm below the top of the head restraint, the lateral width of a head restraint must be not less than 170 mm, except the lateral width of the head restraint for front outboard designated seating positions in a vehicle with a front center designated seat-

ing position, must be not less than 254 mm.

S4.2.3 Front Outboard Designated Seating Position Backset. When measured in accordance with S5.2.3 of this section, the backset must not be more than 55 mm, when the seat is adjusted in accordance with S5.1. For adjustable restraints, the requirements of this section must be met with the top of the head restraint in any height position of adjustment between 750 mm and 800 mm, inclusive. If the top of the head restraint, in its lowest position of adjustment, is above 800 mm, the requirements of this section must be met at that position. If the head restraint position is independent of the seat back inclination position, the head restraint must not be adjusted such that backset is more than 55 mm when the seat back inclination is positioned closer to vertical than the position specified in S5.1.

S4.2.4 Gaps.

All head restraints must meet limits for gaps in the head restraint specified in S4.2.4.1. For gaps between the seat and head restraint, adjustable head restraints must meet either the limits specified in S4.2.4.1 or S4.2.4.2.

S4.2.4.1 Gaps within the head restraint and between the head restraint and seat using a 165 mm sphere. When measured in accordance with S5.2.4.1 of this section using the head form specified in that paragraph, there must not be any gap greater than 60 mm within or between the anterior surface of the head restraint and anterior surface of the seat, with the head restraint adjusted to its lowest height position and any backset position, except as allowed by S4.4.

S4.2.4.2 Gaps between the adjustable head restraint and seat using a 25 mm cylinder. When measured in accordance with S5.2.4.2 of this section using the 25 mm cylinder specified in that paragraph, there must not be any gap greater than 25 mm between the anterior surface of the head restraint and anterior surface of the seat, with the head restraint adjusted to its lowest height position and any backset position, except as allowed by S4.4.

S4.2.5 Energy absorption. When the anterior surface of the head restraint is impacted in accordance with S5.2.5 of this section by the head form specified in that paragraph at any velocity up to and including 24.1 km/h, the deceleration of the head form must not exceed 785 m/s^2 (80 g) continuously for more than 3 milliseconds.

S4.2.6 Height retention. When tested in accordance with S5.2.6 of this section, the cylindrical test device specified in S5.2.6(b) must return to within 13 mm of its initial reference position after application of at least a 500 N load and subsequent reduction of the load to $50 \text{ N} \pm 1 \text{ N}$. During application of the initial 50 N reference load, as specified in S5.2.6(b)(2) of this section, the cylindrical test device must not move downward more than 25 mm.

S4.2.7 Backset retention, displacement, and strength.

(a) Backset retention and displacement. When tested in accordance with S5.2.7 of this section, the described head form must:

(1) Not be displaced more than 25 mm during the application of the initial reference moment of $37 \pm$

0.7 Nm;

(2) Not be displaced more than 102 mm perpendicularly and posterior of the displaced extended torso reference line during the application of a 373 ± 7.5 Nm moment about the H-point; and

(3) Return to within 13 mm of its initial reference position after the application of a 373 ± 7.5 Nm moment about the H-point and reduction of the moment to 37 ± 0.7 Nm.

(b) Strength. When the head restraint is tested in accordance with S5.2.7(b) of this section with the test device specified in that paragraph, the load applied to the head restraint must reach 890 N and remain at 890 N for a period of 5 seconds.

S4.3 Dynamic performance and width. At each forward-facing outboard designated seating position equipped with a head restraint, the head restraint adjusted midway between the lowest and the highest position of adjustment must conform to the following:

S4.3.1 Injury criteria. When tested in accordance with S5.3 of this section, during a

$$HIC = \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a, dt \right]^{2.5} (t_2 - t_1)$$

S4.3.2 Width. The head restraint must have the lateral width specified in S4.2.2 of this section.

S4.4 Folding or retracting rear head restraints non-use positions. A rear head restraint may be adjusted to a position at which its height does not comply with the requirements of S4.2.1 of

forward acceleration of the dynamic test platform described in S5.3.1, the head restraint must:

(a) Angular rotation. Limit posterior angular rotation between the head and torso of the 50th percentile male Hybrid III test dummy specified in 49 CFR part 572, subpart E, fitted with sensors to measure rotation between the head and torso, to 12 degrees for the dummy in all outboard designated seating positions;

(b) Head injury criteria. Limit the maximum HIC_{15} value to 500. HIC_{15} is calculated as follows--

For any two points in time, t_1 and t_2 , during the event which are separated by not more than a 15 millisecond time interval and where t_1 is less than t_2 , the head injury criterion (HIC_{15}) is determined using the resultant head acceleration at the center of gravity of the dummy head, a , expressed as a multiple of g (the acceleration of gravity) and is calculated using the expression:

this section. However, in any such position, the head restraint must meet either S4.4(a), (b) or (c) of this section.

(a) The head restraint must automatically return to a position in which its minimum height is not less than that specified in S4.2.1(b) of this section when a test dummy representing a 5th percentile female Hybrid III test dummy specified in 49

CFR part 572, subpart O is positioned according to S5.4(a); or

(b) The head restraint must, when tested in accordance with S5.4(b) of this section, be capable of manually rotating forward or rearward by not less than 60 degrees from any position of adjustment in which its minimum height is not less than that specified in S4.2.1(b) of this section.

(c) The head restraint must, when tested in accordance with S5.4(b) of this section, cause the torso reference line angle to be at least 10 degrees closer to vertical than when the head restraint is in any position of adjustment in which its height is not less than that specified in S4.2.1(b)(1) of this section.

S4.5 Removability of head restraints. The head restraint must not be removable without a deliberate action distinct from any act necessary for upward adjustment.

S4.6 Compliance option selection. Where manufacturer options are specified in this section, the manufacturer must select an option by the time it certifies the vehicle and may not thereafter select a different option for that vehicle. The manufacturer may select different compliance options for different designated seating positions to which the requirements of this section are applicable. Each manufacturer must, upon request from the National Highway Traffic Safety Administration, provide information regarding which of the compliance options it has selected for a particular vehicle or make/model.

S4.7 Information in owner's manual.

S4.7.1 The owner's manual for each vehicle must emphasize that all occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the

head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.

S4.7.2 The owner's manual for each vehicle must--

(a) Include an accurate description of the vehicle's head restraint system in an easily understandable format. The owner's manual must clearly identify which seats are equipped with head restraints;

(b) If the head restraints are removable, the owner's manual must provide instructions on how to remove the head restraint by a deliberate action distinct from any act necessary for upward adjustment, and how to reinstall head restraints;

(c) Warn that all head restraints must be reinstalled to properly protect vehicle occupants.

(d) Describe in an easily understandable format the adjustment of the head restraints and/or seat back to achieve appropriate head restraint position relative to the occupant's head. This discussion must include, at a minimum, accurate information on the following topics:

(1) A presentation and explanation of the main components of the vehicle's head restraints.

(2) The basic requirements for proper head restraint operation, including an explanation of the actions that may affect the proper functioning of the head restraints.

(3) The basic requirements for proper positioning of a head re-

straint in relation to an occupant's head position, including information regarding the proper positioning of the center of gravity of an occupant's head or some other anatomical landmark in relation to the head restraint.

S5. Procedures. Demonstrate compliance with S4.2 through S4.4 of this section with any adjustable lumbar support adjusted to its most posterior nominal design position. If the seat cushion adjusts independently of the seat back, position the seat cushion such that the highest H-point position is achieved with respect to the seat back, as measured by SAE J826 (July 1995) manikin, with leg length specified in S10.4.2.1 of § 571.208 of this Part. If the specified position of the H-point can be achieved with a range of seat cushion inclination angles, adjust the seat inclination such that the most forward part of the seat cushion is at its lowest position with respect to the most rearward part. All tests specified by this standard are conducted with the ambient temperature between 18 degrees C. and 28 degrees C.

S5.1 Except as specified in S5.2.3 and S5.3 of this section, if the seat back is adjustable, it is set at an initial inclination position closest to the manufacturer's design seat back angle, as measured by SAE J826 manikin. If there is more than one inclination position closest to the design angle, set the seat back inclination to the position closest to and rearward of the design angle.

S5.1.1 Procedure for determining presence of head restraints in rear outboard seats. Measure the height of the top of a rear seat back or the top of any independently adjustable seat component attached to or adjacent to the rear seat back in its highest position of adjustment using the scale incorporated into the SAE J826 (July 1995) manikin or an equivalent scale, which is positioned laterally within 15 mm of the

centerline of the rear seat back or any independently adjustable seat component attached to or adjacent to the rear seat back.

S5.2 Dimensional and static performance procedures. Demonstrate compliance with S4.2 of this section in accordance with S5.2.1 through S5.2.7 of this section. Position the SAE J826 (July 1995) manikin according to the seating procedure found in SAE J826 (July 1995).

S5.2.1 Procedure for height measurement. Demonstrate compliance with S4.2.1 of this section in accordance with S5.2.1 (a) and (b) of this section, using the headroom probe scale incorporated into the SAE J826 (July 1995) manikin with the appropriate offset for the H-point position or an equivalent scale, which is positioned laterally within 15 mm of the head restraint centerline. If the head restraint position is independent of the seat back inclination position, compliance is determined at a seat back inclination position closest to the design seat back angle, and each seat back inclination position less than the design seat back angle.

(a)(1) For head restraints in front outboard designated seating positions, adjust the top of the head restraint to the highest position and measure the height.

(2) For head restraints located in the front outboard designated seating positions that are prevented by the interior surface of the vehicle at the roofline from meeting the required height as specified in S4.2.1(a)(1), measure the clearance between the top of the head restraint and the interior surface of the vehicle at the roofline, with the seat adjusted to its lowest vertical position intended for occu-

pant use, by attempting to pass a 25 mm sphere between them. Adjust the top of the head restraint to the lowest position and measure the height.

(b)(1) For head restraints in all outboard designated seating positions equipped with head restraints, adjust the top of the head restraint to the lowest position other than allowed by S4.4 and measure the height.

(2) For head restraints located in rear outboard designated seating positions that are prevented by the interior surface of the vehicle at the roofline or the interior surface of the rear backlight from meeting the required height as specified in S4.2.1(b)(1), measure the clearance between the top of the head restraint or the seat back and the interior surface of the vehicle at the roofline or the interior surface of the rear backlight, with the seat adjusted to its lowest vertical position intended for occupant use, by attempting to pass a 25 mm sphere between them.

S5.2.2 Procedure for width measurement. Demonstrate compliance with S4.2.2 of this section using calipers to measure the maximum dimension perpendicular to the vehicle vertical longitudinal plane of the intersection of the head restraint with a plane that is normal to the torso reference line of SAE J826 (July 1995) manikin and 65 ± 3 mm below the top of the head restraint.

S5.2.3 Procedure for backset measurement. Demonstrate compliance with S4.2.3 of this section using the HRMD positioned laterally within 15 mm of the head restraint

centerline. Adjust the front head restraint so that its top is at any height between and inclusive of 750 mm and 800 mm and its backset is in the maximum position other than allowed by S4.4. If the lowest position of adjustment is above 800 mm, adjust the head restraint to that position. If the head restraint position is independent of the seat back inclination position, compliance is determined at each seat back inclination position closest to and less than the design seat back angle.

S5.2.4 Procedures for gap measurement.

S5.2.4.1 Procedure using a 165 mm sphere.

Demonstrate compliance with S4.2.4.1 of this section in accordance with the procedures of S5.2.4.1 (a) through (c) of this section, with the head restraint adjusted to its lowest height position and any backset position, except as allowed by S4.4.

(a) The area of measurement is anywhere on the anterior surface of the head restraint or seat with a height greater than 540 mm and within the following distances from the centerline of the seat--

(1) 127 mm for seats required to have 254 mm minimum head restraint width; and

(2) 85 mm for seats required to have a 170 mm head restraint width.

(b) Applying a load of no more than 5 N against the area of measurement specified in subparagraph (a), place a 165 ± 2 mm diameter spherical head form against any gap such that at least two points of

contact are made within the area. The surface roughness of the head form is less than $1.6 \mu\text{m}$, root mean square.

(c) Determine the gap dimension by measuring the vertical straight line distance between the inner edges of the two furthest contact points, as shown in Figures 2, 3 and 4.

S5.2.4.2 Procedure using a 25 mm cylinder.

Demonstrate compliance with S4.2.4.2 of this section in accordance with the procedures of S5.2.4.2 (a) through (c) of this section, with the head restraint adjusted to its lowest height position and any backset position, except as allowed by S4.4.

(a) The area of measurement is between the anterior surface of the head restraint and seat with a height greater than 540 mm and within the following distances from the centerline of the seat--

(1) 127 mm for seats required to have 254 mm minimum head restraint width; and

(2) 85 mm for seats required to have a 170 mm head restraint width.

(b) Orient a 25 ± 1 mm diameter cylinder such that its long axis is perpendicular to the seat back angle and in a vertical longitudinal vehicle plane. Applying a load of no more than 5 N along the axis of the cylinder, place the cylinder against any gap within the area of measurement specified in subpara-

graph (a). The surface roughness of the cylinder is less than $1.6 \mu\text{m}$, root mean square.

(c) Determine if at least 125 mm of the cylinder can completely pass through the gap.

S5.2.5 Procedures for energy absorption. Demonstrate compliance with S4.2.5 of this section in accordance with S5.2.5 (a) through (e) of this section, with adjustable head restraints in any height and backset position of adjustment.

(a) Use an impactor with a semispherical head form with a 165 ± 2 mm diameter and a surface roughness of less than $1.6 \mu\text{m}$, root mean square. The head form and associated base have a combined mass of 6.8 ± 0.05 kg.

(b) Instrument the impactor with an acceleration sensing device whose output is recorded in a data channel that conforms to the requirements for a 600 Hz channel class as specified in SAE Recommended Practice J211/1 (March 1995). The axis of the acceleration-sensing device coincides with the geometric center of the head form and the direction of impact.

(c) Propel the impactor toward the head restraint. At the time of launch, the longitudinal axis of the impactor is within 2 degrees of being horizontal and parallel to the vehicle longitudinal axis. The direction of travel is **posteriorly**.

(d) Constrain the movement of the head form so that it travels linearly along the path described in S5.2.5(c) of this section for not less than 25 mm

before making contact with the head restraint.

(e) Impact the anterior surface of the seat or head restraint at any point with a height greater than 635 mm and within a distance of the head restraint vertical centerline of 70 mm.

S5.2.6 Procedures for height retention. Demonstrate compliance with S4.2.6 of this section in accordance with S5.2.6(a) through (e) of this section. For head restraints that move with respect to the seat when occupant loading is applied to the seat back, S5.2.6(a) through (e) may be performed with the head restraint fixed in a position corresponding to the position when the seat is unoccupied.

(a) Adjust the adjustable head restraint so that its top is at any of the following height positions at any backset position--

(1) For front outboard designated seating positions--

(i) The highest position; and

(ii) Not less than, but closest to 800 mm; and

(2) For rear outboard designated seating positions equipped with head restraints--

(i) The highest position; and

(ii) Not less than, but closest to 750 mm.

(b)(1) Orient a cylindrical test device having a 165 ± 2 mm diameter in plan view (perpendicular to the axis of revolution), and a 152 mm length in profile (through the axis of revolution)

with a surface roughness of less than $1.6 \mu\text{m}$, root mean square, such that the axis of the revolution is horizontal and in the longitudinal vertical plane through the longitudinal centerline of the head restraint. Position the midpoint of the bottom surface of the cylinder in contact with the head restraint.

(2) Establish initial reference position by applying a vertical downward load of 50 ± 1 N at the rate of 250 ± 50 N/minute. Determine the reference position after 5.5 ± 0.5 seconds at this load.

(c) Increase the load at the rate of 250 ± 50 N/minute to at least 500 N and maintain this load for 5.5 ± 0.5 seconds.

(d) Reduce the load at the rate of 250 ± 50 N/minute, until the load is completely removed. Maintain this condition for not more than two minutes.

(e) Increase the load at the rate of 250 ± 50 N/minute to 50 ± 1 N and, after 5.5 ± 0.5 seconds at this load, determine the position of the cylindrical device with respect to its initial reference position.

S5.2.7 Procedures for backset retention, displacement, and strength. Demonstrate compliance with S4.2.7 of this section in accordance with S5.2.7(a) and (b) of this section. The load vectors that generate moment on the head restraint are initially contained in a vertical plane parallel to the vehicle longitudinal centerline.

(a) Backset retention and displacement. For head restraints that move with respect to the seat when occupant

loading is applied to the seat back, S5.2.7(a)(1) through (8) may be performed with the head restraint fixed in a position corresponding to the position when the seat is unoccupied.

(1) Adjust the head restraint so that its top is at a height closest to and not less than:

(i) 800 mm for front outboard designated seating positions (or the highest position of adjustment for head restraints subject to S4.2.1(a)(2)); and

(ii) 750 mm for rear outboard designated seating positions equipped with head restraints (or the highest position of adjustment for rear head restraints subject to S4.2.1(b)(2)).

(2) Adjust the head restraint to any backset position.

(3) In the seat, place a test device having the back pan dimensions and torso reference line (vertical center line), when viewed laterally, with the head room probe in the full back position, of the three dimensional SAE J826 (July 1995) manikin;

(4) Establish the displaced torso reference line by creating a posterior moment of 373 ± 7.5 Nm about the H-point by applying a force to the seat back through the back pan at the rate of 187 ± 37 Nm/minute. The initial location on the back pan of the moment generating force vector has a height of $290 \text{ mm} \pm 13 \text{ mm}$. Apply the force vector normal to the torso

reference line and maintain it within 2 degrees of a vertical plane parallel to the vehicle longitudinal centerline. Constrain the back pan to rotate about the H-point. Rotate the force vector direction with the back pan.

(5) Maintain the position of the back pan as established in S5.2.7(a)(4) of this section. Using a 165 ± 2 mm diameter spherical head form, with a surface roughness of less than $1.6 \mu\text{m}$, root mean square, establish the head form initial reference position by applying, perpendicular to the displaced torso reference line, a posterior initial load at the seat centerline at a height 65 ± 3 mm below the top of the head restraint that will produce a 37 ± 0.7 Nm moment about the H-point. After maintaining this moment for 5.5 ± 0.5 seconds, measure the posterior displacement of the head form during the application of the load.

(6) Increase the initial load at the rate of 187 ± 37 Nm/minute until a 373 ± 7.5 Nm moment about the H-point is produced. Maintain the load level producing that moment for 5.5 ± 0.5 seconds and then measure the posterior displacement of the head form relative to the displaced torso reference line.

(7) Reduce the load at the rate of 187 ± 37 Nm/minute until it is completely removed. Maintain this condition for not more than two minutes.

(8) Increase the load at the rate of 187 ± 37 Nm/minute until a $37 \pm$

0.7 Nm moment about the H-point is produced. After maintaining the load level producing that moment for 5.5 ± 0.5 seconds, measure the posterior displacement of the head form position with respect to its initial reference position; and

(b) Strength. Increase the load specified in S5.2.7(a)(7) of this section at the rate of 250 ± 50 N/minute to at least 890 N and maintain this load level for 5.5 ± 0.5 seconds.

S5.3 Procedures for dynamic performance. Demonstrate compliance with S4.3 of this section in accordance with S5.3.1 through S5.3.9 of this section with a 50th percentile male Hybrid III test dummy specified in 49 CFR Part 572 Subpart E, fitted with sensors to measure head to torso rotation. The dummy with all sensors is to continue to meet all specifications in 49 CFR Part 572 Subpart E. The restraint is positioned midway between the lowest and the highest position of adjustment.

S5.3.1 Mount the vehicle on a dynamic test platform at the vehicle altitude set forth in S13.3 of § 571.208 of this part, so that the longitudinal centerline of the vehicle is parallel to the direction of the test platform travel and so that movement between the base of the vehicle and the test platform is prevented. Instrument the platform with an accelerometer and data processing system. Position the accelerometer sensitive axis parallel to the direction of test platform travel.

S5.3.2 Remove the tires, wheels, fluids, and all unsecured components. Remove or rigidly secure the engine, transmission, axles, exhaust, vehicle frame and any other vehicle component necessary to assure that all points on the acceleration vs. time plot measured by an accelerometer on the dy-

amic test platform fall within the corridor described in Figure 1 and Table 1.

S5.3.3 Place any moveable windows in the fully open position.

S5.3.4 Seat Adjustment. At each outboard designated seating position, if the seat back is adjustable, it is set at an initial inclination position closest to 25 degrees from the vertical, as measured by SAE J826 (July 1995) manikin. If there is more than one inclination position closest to 25 degrees from the vertical, set the seat back inclination to the position closest to and rearward of 25 degrees. Using any control that primarily moves the entire seat vertically, place the seat in the lowest position. Using any control that primarily moves the entire seat in the fore and aft directions, place the seat midway between the forwardmost and rearmost position. If an adjustment position does not exist midway between the forwardmost and rearmost positions, the closest adjustment position to the rear of the midpoint is used. Adjust the seat cushion and seat back as required by S5 and S5.1 of this section. If the head restraint is adjustable, adjust the top of the head restraint to a position midway between the lowest position of adjustment and the highest position of adjustment. If an adjustment position midway between the lowest and the highest position does not exist, adjust the head restraint to a position below and nearest to midway between the lowest position of adjustment and the highest position of adjustment.

S5.3.5 Seat Belt Adjustment. Prior to placing the Type 2 seat belt around the test dummy, fully extend the webbing from the seat belt retractor(s) and release it three times to remove slack. If an adjustable seat belt D-ring anchorage exists, place it in the adjustment position closest to the mid-

position. If an adjustment position does not exist midway between the highest and lowest position, the closest adjustment position above the midpoint is used.

S5.3.6 Dress and adjust each test dummy as specified in S8.1.8.2 through S8.1.8.3 of § 571.208 of this Part. The stabilized test temperature of the test dummy is at any temperature level between 69 degrees F and 72 degrees F, inclusive.

S5.3.7 Test dummy positioning procedure. Place a test dummy at each outboard designated seating position equipped with a head restraint.

S5.3.7.1 Head. The transverse instrumentation platform of the head is level within 1/2 degree. To level the head of the test dummy, the following sequence is followed. First, adjust the position of the H-point within the limits set forth in S10.4.2.1 of § 571.208 to level the transverse instrumentation platform of the head of the test dummy. If the transverse instrumentation platform of the head is still not level, then adjust the pelvic angle of the test dummy. If the transverse instrumentation platform of the head is still not level, then adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting to ensure that the transverse instrumentation platform of the head is horizontal within 1/2 degree. The test dummy remains within the limits specified in S10.4.2.1 of § 571.208 after any adjustment of the neck bracket.

S5.3.7.2 Upper arms and hands. Position each test dummy as specified in S10.2 and S10.3 of § 571.208 of this Part.

S5.3.7.3 Torso. Position each test dummy as specified in S10.4.1.1, S10.4.1.2, and S10.4.2.1 of § 571.208 of this Part, except that the midsagittal plane of the dummy is aligned within 15 mm of the head restraint centerline. If the midsagittal plane of the dummy cannot be aligned within 15 mm of the head restraint centerline then align the midsagittal plane of the dummy as close as possible to the head restraint centerline.

S5.3.7.4 Legs. Position each test dummy as specified in S10.5 of § 571.208 of this Part, except that final adjustment to accommodate placement of the feet in accordance with S5.3.7.5 of this section is permitted.

S5.3.7.5 Feet. Position each test dummy as specified in S10.6 of § 571.208 of this Part, except that for rear outboard designated seating positions the feet of the test dummy are placed flat on the floorpan and beneath the front seat as far forward as possible without front seat interference. For rear outboard designated seating positions, if necessary, the distance between the knees can be changed in order to place the feet beneath the seat.

S5.3.8 Accelerate the dynamic test platform to 17.3 ± 0.6 km/h. All of the points on the acceleration vs. time curve fall within the corridor described in Figure 1 and Table 1 when filtered to channel class 60, as specified in the SAE Recommended Practice J211/1 (March 1995). Measure the maximum posterior angular displacement.

S5.3.9 Calculate the angular displacement from the output of instrumentation placed in the torso and head of the test dummy and an algorithm capable of determining

the relative angular displacement to within one degree and conforming to the requirements of a 600 Hz channel class, as specified in SAE Recommended Practice J211/1, March 1995. No data generated after 200 ms from the beginning of the forward acceleration are used in determining angular displacement of the head with respect to the torso.

S5.3.10 Calculate the HIC_{15} from the output of instrumentation placed in the head of the test dummy, using the equation in S4.3.1(b) of this section and conforming to the requirements for a 1000 Hz channel class as specified in SAE Recommended Practice J211/1 (March 1995). No data generated after 200 ms from the beginning of the forward acceleration are used in determining HIC.

S5.4 Procedures for folding or retracting head restraints for unoccupied rear outboard designated seating positions.

(a) Demonstrate compliance with S4.4 (a) of this section, using a 5th percentile female Hybrid III test dummy specified in 49 CFR Part 572, Subpart O, in accordance with the following procedure--

(1) Position the test dummy in the seat such that the dummy's midsagittal plane is aligned within the 15 mm of the head restraint centerline and is parallel to a vertical plane parallel to the vehicle longitudinal centerline.

(2) Hold the dummy's thighs down and push rearward on the upper torso to maximize the dummy's pelvic angle.

(3) Place the legs as close as possible to 90 degrees to the thighs. Push rearward on the dummy's knees to force the pelvis into the seat so there is no

gap between the pelvis and the seat back or until contact occurs between the back of the dummy's calves and the front of the seat cushion such that the angle between the dummy's thighs and legs begins to change.

(4) Note the position of the head restraint. Remove the dummy from the seat. If the head restraint returns to a retracted position upon removal of the dummy, manually place it in the noted position. Determine compliance with the height requirements of S4.2.1 of this section by using the test procedures of S5.2.1 of this section.

(b) Demonstrate compliance with S4.4 (b) of this section in accordance with the following procedure:

(1) Place the rear head restraint in any position meeting the requirements of S4.2 of this section;

(2) Strike a line on the head restraint. Measure the angle or range of angles of the head restraint reference line as projected onto a vertical longitudinal vehicle plane. Alternatively, measure the torso reference line angle with the SAE J826 (July 1995) manikin;

(3) Fold or retract the head restraint to a position in which its minimum height is less than that specified in S4.2.1 (b) of this section;

(4) Determine the minimum change in the head restraint reference line angle as projected onto a vertical longitudinal vehicle plane from the angle or range of angles measured in S4.4(b)(2). Alternatively, determine the change in the torso reference line angle with the SAE J826 (July 1995) manikin.

S6. Vehicles manufactured on or after September 1, 2009, and before September 1, 2010 (Phase-in of § 571.202a).

(a) For vehicles manufactured for sale in the United States on or after September 1, 2009, and before September 1, 2010, a percentage of the manufacturer's production, as specified in S6.1, shall meet the requirements specified in this § 571.202a without regard to any option to comply with the standard in § 571.202 or with the European regulations referenced in S4.3(a) of § 571.202. So long as this percentage requirement is met, a vehicle may comply with the standard in this § 571.202a, with the standard in § 571.202, or with the European regulations referenced in S4.3(a) of § 571.202.

(b) Notwithstanding S6(a), vehicles that are manufactured in two or more stages or that are altered (within the meaning of 49 CFR 567.7) after having previously been certified in accordance with Part 567 of this chapter may comply with the standard in this § 571.202a, with the standard in § 571.202, or with the European regulations referenced in S4.3(a) of § 571.202.

S6.1 Phase-in percentage. For vehicles manufactured by a manufacturer on or after September 1, 2009, and before September 1, 2010, the amount of vehicles complying with S6(a) shall be not less than 80 percent of:

(a) If the manufacturer has manufactured vehicles for sale in the United States during both of the two production years prior to September 1, 2009, the manufacturer's average annual production of vehicles manufactured on or after September 1, 2007, and before September 1, 2010, or

(b) The manufacturer's production on or after September 1, 2009, and before September 1, 2010.

S6.2 Vehicles produced by more than one manufacturer.

S6.2.1 For the purpose of calculating average annual production of vehicles for each manufacturer and the number of vehicles manufactured by each manufacturer under S6.1, a vehicle produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S6.2.2.

(a) A vehicle that is imported shall be attributed to the importer.

(b) A vehicle manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer that markets the vehicle.

S6.2.2 A vehicle produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified by an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR Part 585, between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S6.2.1.

S7. Vehicles manufactured on or after September 1, 2010, and before September 1, 2011 (Phase-in of rear seat requirements of § 571.202a).

(a) For vehicles manufactured for sale in the United States on or after September 1, 2010, and before September 1, 2011 a percentage of the manufacturer's production of vehicles equipped with rear outboard head restraints, as specified in S7.1, shall meet the requirements specified in this § 571.202a for rear head restraints.

(b) Vehicles that are manufactured in two or more stages or that are altered (within the meaning of 49 CFR 567.7) after having previ-

ously been certified in accordance with Part 567 of this chapter are not subject to the requirement specified in S7(a).

S7.1 Phase-in percentage. For vehicles manufactured by a manufacturer on or after September 1, 2010, and before September 1, 2011, the amount of vehicles equipped with rear outboard head restraints complying with S7(a) shall be not less than 80 percent of:

(a) If the manufacturer has manufactured vehicles for sale in the United States during both of the two production years prior to September 1, 2010, the manufacturer's average annual production of vehicles equipped with rear outboard head restraints manufactured on or after September 1, 2008, and before September 1, 2011, or

(b) The manufacturer's production of vehicles equipped with rear outboard head restraints on or after September 1, 2010, and before September 1, 2011.

S7.2 Vehicles produced by more than one manufacturer.

S7.2.1 For the purpose of calculating average annual production of vehicles for each

manufacturer and the number of vehicles manufactured by each manufacturer under S6.1, a vehicle produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S7.2.2.

(a) A vehicle that is imported shall be attributed to the importer.

(b) A vehicle manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer that markets the vehicle.

S7.2.2 A vehicle produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified by an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR Part 585, between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S7.2.1.

Table 1 of 571.202a – Sled pulse corridor reference point locations.

Reference Point	Time (ms)	Acceleration (m/s ²)
A	0	10
B	28	94
C	60	94
D	92	0
E	4	0
F	38.5	80
G	49.5	80
H	84	0

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Figure 1 of §571.202a - Sled pulse acceleration corridor. The target acceleration with time expressed in milliseconds is $a = 86 \sin(\pi t/88) \text{ m/s}^2$, for $V = 17.3 \pm 0.6 \text{ km/h}$. The time zero for the test is defined by the point when the sled acceleration achieves 2.5 m/s^2 (0.25 G's).

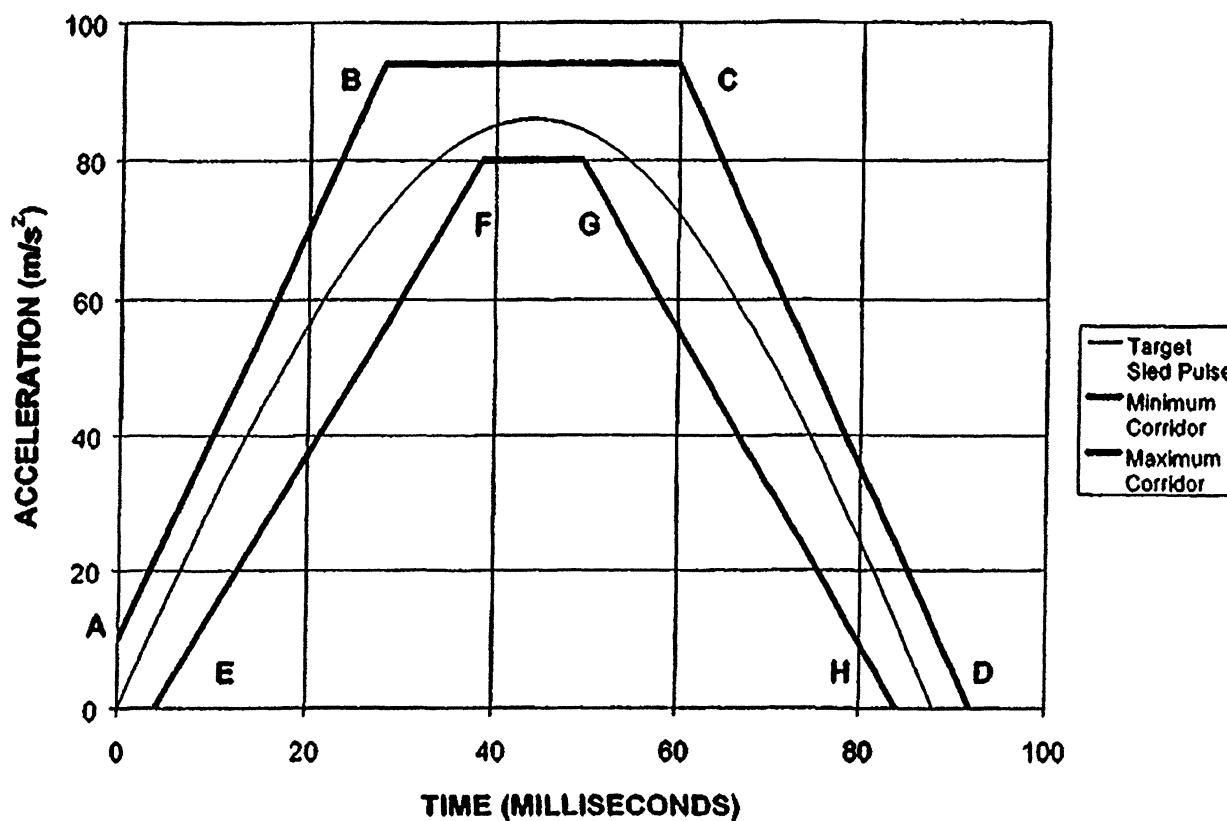


Figure 2 of §571.202a - Measurement of a vertical gap “a”.

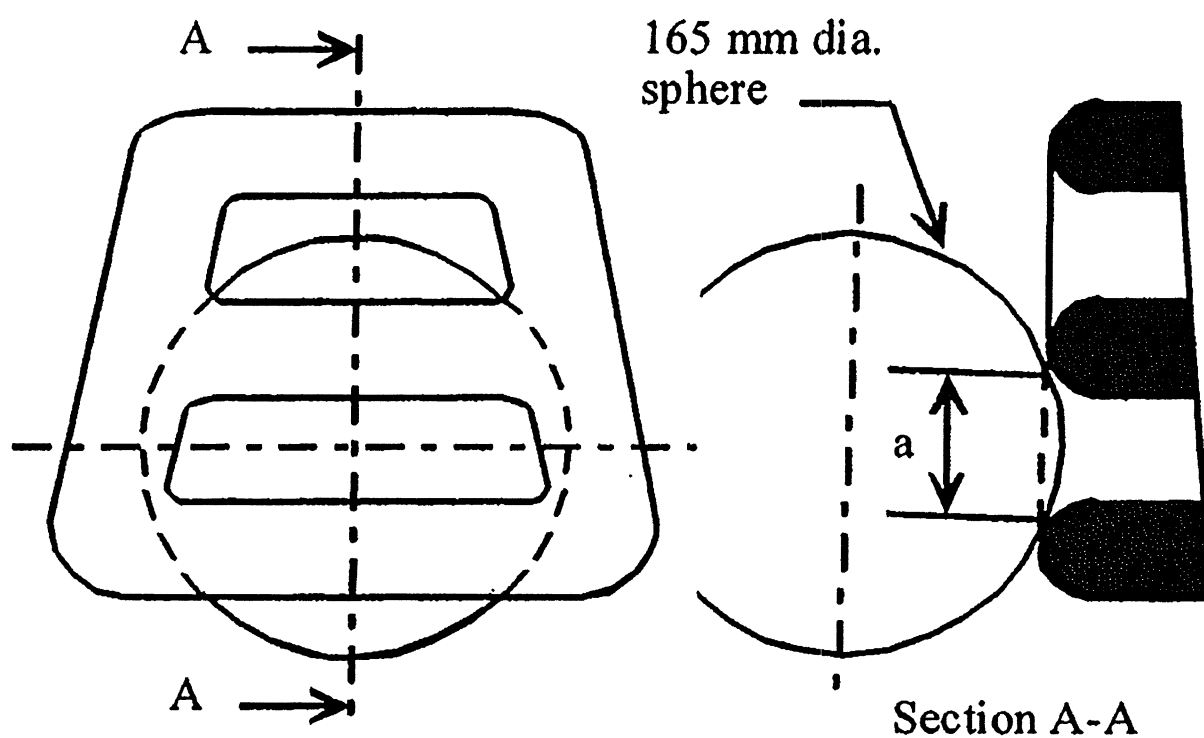


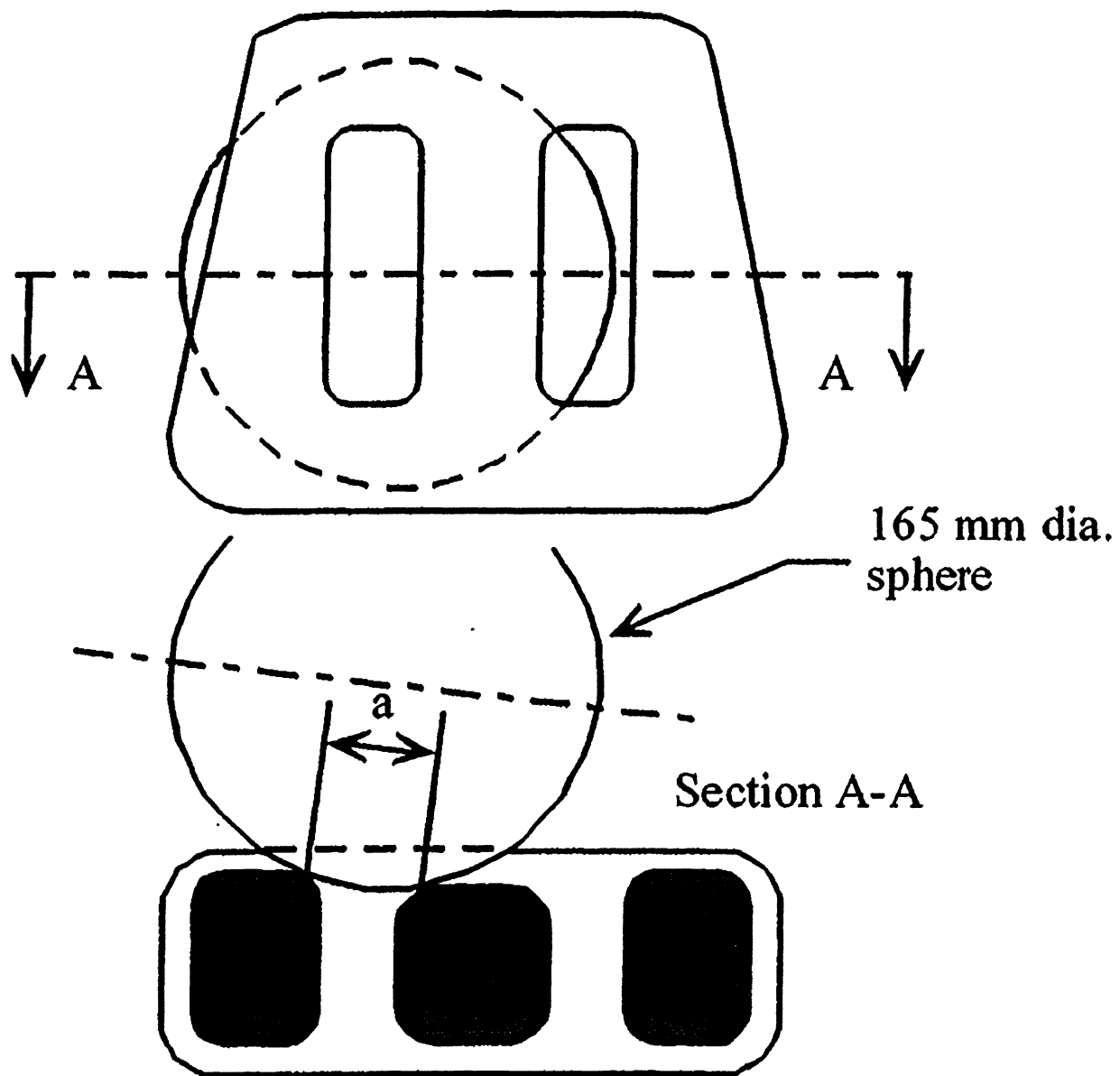
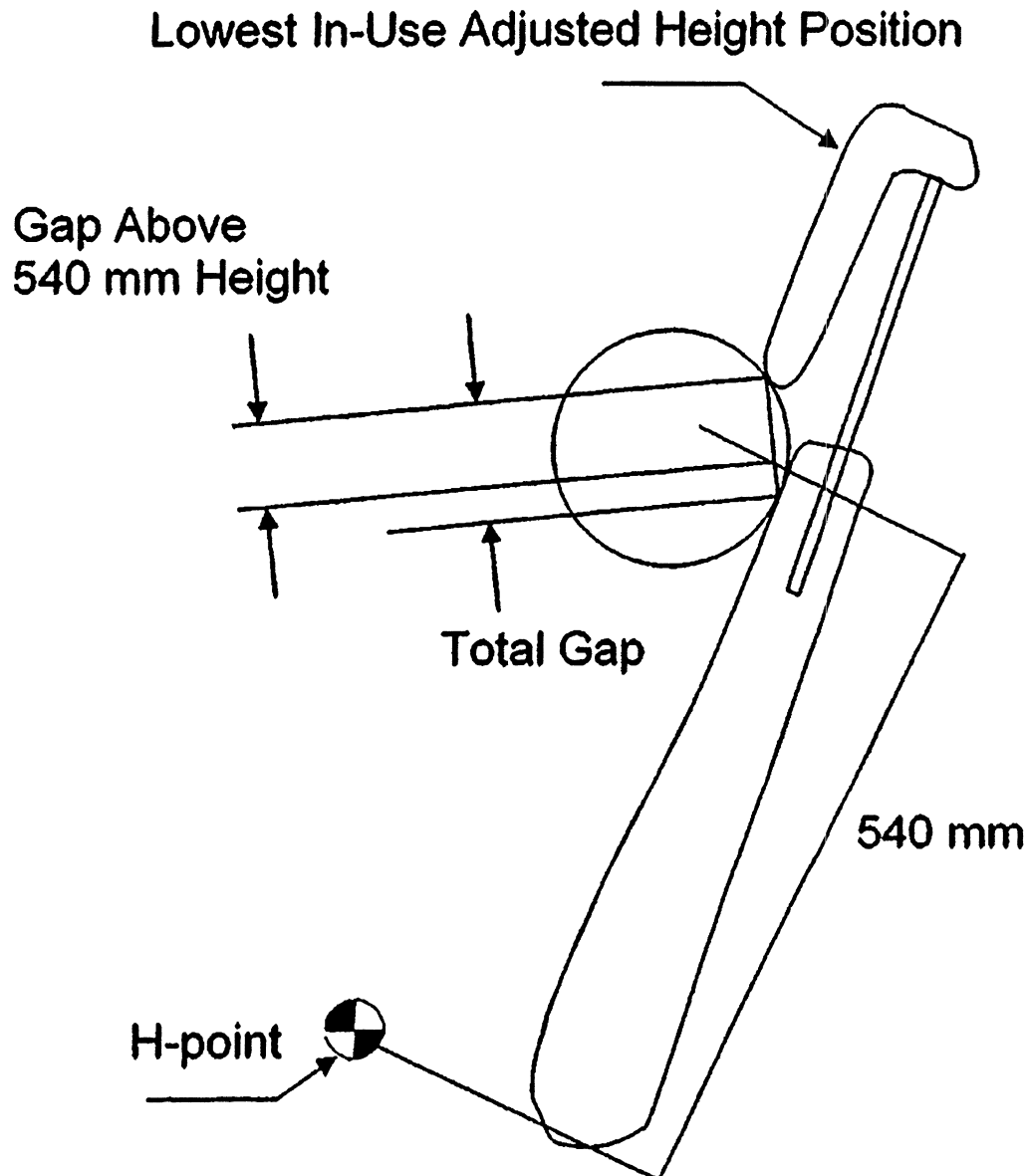
Figure 3 of §571.202a - Measurement of a horizontal gap “a”.

Figure 4 of §571.202a – Portion of gap above 540 mm height.

[69 FR 74884, Dec. 14, 2004; 71 FR 12148, March 9, 2006; 72 FR 25514, May 4, 2007]

SOURCE: 36 FR 22902, Dec. 2, 1971; 50 FR 21056, June 6, 1985; 51 FR 9456, March 19, 1986; 59 FR 37175, July 21, 1994; 59 FR 38940, Aug. 1, 1994; 60 FR 58524, Nov. 28, 1995; 64 FR 10815, March 5, 1999; 64 FR 47582, Aug. 31, 1999, unless

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49 C.F.R. § 571.202a

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otherwise noted.

AUTHORITY: 49 U.S.C. 322, 30111, 30115, 30166 and 30177; delegation of authority at 49 CFR 1.50.

49 C. F. R. § 571.202a, 49 CFR § 571.202a
Current through April 2, 2009; 74 FR 15188

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Tab 5

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49 U.S.C.A. § 30101

Page 1

Effective:[See Text Amendments]

United States Code Annotated Currentness
Title 49. Transportation (Refs & Annos)
Subtitle VI. Motor Vehicle and Driver Programs
Part A. General
 [⌘] Chapter 301. Motor Vehicle Safety (Refs & Annos)
 [⌘] Subchapter I. General
 → § 30101. Purpose and policy

The purpose of this chapter is to reduce traffic accidents and deaths and injuries resulting from traffic accidents. Therefore it is necessary--

(1) to prescribe motor vehicle safety standards for motor vehicles and motor vehicle equipment in interstate commerce; and

(2) to carry out needed safety research and development.

CREDIT(S)

(Added Pub.L. 103-272, § 1(e), July 5, 1994, 108 Stat. 941.)

Current through P.L. 111-12 (excluding P.L. 111-5, 111-8, and 111-11) approved 3-30-09

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Tab 6



Effective:[See Text Amendments]

United States Code Annotated Currentness
 Title 49. Transportation (Refs & Annos)
 Subtitle VI. Motor Vehicle and Driver Programs
 Part A. General
 Chapter 301. Motor Vehicle Safety (Refs & Annos)
 Subchapter I. General
 → § 30103. Relationship to other laws

(a) Uniformity of regulations.--The Secretary of Transportation may not prescribe a safety regulation related to a motor vehicle subject to subchapter I of chapter 135 of this title that differs from a motor vehicle safety standard prescribed under this chapter. However, the Secretary may prescribe, for a motor vehicle operated by a carrier subject to subchapter I of chapter 135, a safety regulation that imposes a higher standard of performance after manufacture than that required by an applicable standard in effect at the time of manufacture.

(b) Preemption.--(1) When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter. However, the United States Government, a State, or a political subdivision of a State may prescribe a standard for a motor vehicle or motor vehicle equipment obtained for its own use that imposes a higher performance requirement than that required by the otherwise applicable standard under this chapter.

(2) A State may enforce a standard that is identical to a standard prescribed under this chapter.

(c) Antitrust laws.--This chapter does not--

(1) exempt from the antitrust laws conduct that is unlawful under those laws; or

(2) prohibit under the antitrust laws conduct that is lawful under those laws.

(d) Warranty obligations and additional legal rights and remedies.--Sections 30117(b), 30118-30121, 30166(f), and 30167(a) and (b) of this title do not establish or affect a warranty obligation under a law of the United States or a State. A remedy under those sections and sections 30161 and 30162 of this title is in addition to other rights and remedies under other laws of the United States or a State.

(e) Common law liability.--Compliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.

CREDIT(S)

(Added Pub.L. 103-272, § 1(e), July 5, 1994, 108 Stat. 943, and amended Pub.L. 104-88, Title III, § 308(j), Dec. 29, 1995, 109 Stat. 947.)

49 U.S.C.A. § 30103

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Current through P.L. 111-12 (excluding P.L. 111-5, 111-8, and 111-11) approved 3-30-09

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Tab 7

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Not Reported in F.Supp.2d
 Not Reported in F.Supp.2d, 1998 WL 474098 (N.D.Ill.)
 (Cite as: 1998 WL 474098 (N.D.Ill.))

Page 1

Only the Westlaw citation is currently available.

United States District Court, N.D. Illinois.
 John E. WIER and Linda M. Wier, Plaintiffs,
 v.
 SOO LINE RAILROAD COMPANY, d/b/a CP
 Rail Systems, Mile Post Inns, Inc., and David
 Castaneda, Defendants.
 SOO LINE RAILROAD COMPANY, d/b/a CP
 Rail Systems, and Mile Post Inns, Inc.,
 Crossclaimants,
 v.
 David CASTANEDA, Crossdefendant.
 No. 96 C 2094.
 Aug. 3, 1998.

MEMORANDUM OPINION AND ORDER

HART, District J.

*1 Plaintiffs, husband and wife, John Wier ("Wier") and Linda Wier, bring this personal injury action against Wier's employer, the Soo Line Railroad Company ("Soo Line"). The action arises out of a two-vehicle traffic accident which occurred during the course of Wier's employment. Also named as defendants are Mile Post Inns, Inc. ("Mile Post"), the owner and manager of the minivan in which Wier was traveling as a passenger, David Jones ("Jones"), the driver of the minivan, and David Castaneda ("Castaneda"), the driver of the other vehicle. On March 13, 1997, Jones moved for summary judgment. The court ordered judgment in his favor and dismissed him as defendant. Presently pending is the motion of defendants Soo Line and Mile Post for summary judgment.

On a motion for summary judgment, the entire record is considered with all reasonable inferences drawn in favor of the nonmovant and all factual disputes resolved in favor of the nonmovant. *Valance v. Wisel*, 110 F.3d 1269, 1274 (7th Cir.1997); *Patel*

v. Allstate Insurance Co., 105 F.3d 365, 367 (7th Cir.1997). The burden of establishing a lack of any genuine issue of material fact rests on the movant. *Essex v. United Parcel Service, Inc.*, 111 F.3d 1304, 1308 (7th Cir.1997). The nonmovant, however, must make a showing sufficient to establish any essential element for which he or she will bear the burden of proof at trial. *Celotex Corp. v. Catrett*, 477 U.S. 317, 322, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986); *Wintz v. Northrop Corp.*, 110 F.3d 508, 512 (7th Cir.1997). The movant need not provide affidavits or deposition testimony showing the nonexistence of such essential elements. *Celotex*, 477 U.S. at 324. Also, it is not sufficient to show evidence of purportedly disputed facts if those facts are not plausible in light of the entire record. *See NLFC, Inc. v. Devcom Mid-America, Inc.*, 45 F.3d 231, 236 (7th Cir.), *cert. denied*, 515 U.S. 1104, 115 S.Ct. 2249, 132 L.Ed.2d 257 (1995); *Covalt v. Carey Canada, Inc.*, 950 F.2d 481, 485 (7th Cir.1991); *Collins v. Associated Pathologists, Ltd.*, 844 F.2d 473, 476-77 (7th Cir.), *cert. denied*, 488 U.S. 852, 109 S.Ct. 137, 102 L.Ed.2d 110 (1988). As the Seventh Circuit has summarized:

The moving party bears the initial burden of directing the district court to the determinative issues and the available evidence that pertains to each. "[A] party seeking summary judgment always bears the initial responsibility of informing the district court of the basis for its motion, and identifying those portions of 'the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any' which it believes demonstrate the absence of a genuine issue of material fact." *Celotex Corp. v. Catrett*, 477 U.S. 317, 323, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986); *id.* at 325 ("the burden on the moving party may be discharged by 'showing'-that is, pointing out to the district court-that there is an absence of evidence to support the nonmoving party's case"). Then, with respect to issues that the non-moving party will bear the burden of proving at trial, the non-moving

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 Not Reported in F.Supp.2d, 1998 WL 474098 (N.D.Ill.)
 (Cite as: 1998 WL 474098 (N.D.Ill.))

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party must come forward with affidavits, depositions, answers to interrogatories or admissions and designate specific facts which establish that there is a genuine issue for trial. *Id.* at 324. The non-moving party cannot rest on the pleadings alone, but must designate specific facts in affidavits, depositions, answers to interrogatories or admissions that establish that there is a genuine triable issue. *Id.* The non-moving party "must do more than simply show that there is some metaphysical doubt as to the material facts." *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586, 106 S.Ct. 1348, 89 L.Ed.2d 538 (1986). "The mere existence of a scintilla of evidence in support of the [non-moving party's] position will be insufficient; there must be evidence on which the jury could reasonably find for the [non-moving party]." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 252, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986).

*2 *Selan v. Kiley*, 969 F.2d 560, 564 (7th Cir.1992).

Resolving all genuine disputes and drawing all reasonable inferences in plaintiffs' favor, the facts are as follows. At all relevant times, Wier was employed as an engineer for Soo Line, a railroad operator. On May 29, 1994, Wier was injured in a traffic accident while being transported between employment locations. The accident occurred when, while stopped at a traffic signal, the minivan in which Wier was traveling was struck in the rear by Castaneda's vehicle. Wier, who was seated on the right side of the minivan's rear seat, sustained whiplash injuries on impact and currently suffers from posttraumatic vertigo related to the accident.^{FN1}

FN1. This diagnosis was made by Dr. Timothy Hain ("Hain"), an otolaryngologist at Northwestern University Medical School. See Exhibit H to Plf. Mem.

The minivan was owned and operated by Mile Post, a common carrier. At all relevant times, Mile Post provided transportation services for Soo Line, pursuant to an agreement brokered by a third

^{FN2}By the terms of that agreement, Mile Post was obliged to supply Soo Line with vehicles capable of transporting seven passengers and their luggage in an efficient and comfortable manner. The vehicles were required to be in good mechanical condition and furnished with specified equipment including seat belts for all passengers, fire extinguishers and road flares.^{FN3}Mile Post had not made any structural alterations to the minivan after purchasing it from the manufacturer.

FN2. See Exhibit B to Def. Stm. The agreement was concluded by Mile Post and Crew Transportation Services, Co., acting as broker.

FN3. Agreement, § 17, at Exhibit B to Def. Stm.

Wier offers the expert opinion of Dr. Daniel Pacheco ("Pacheco"), a mechanical engineer and expert in safety and accident investigation. Pacheco concludes that Wier sustained whiplash injuries as a result of the minivan not being equipped with headrests for the rearseat passengers. In his opinion, the minivan should have been so equipped given the intended occupancy of the minivan and the foreseeability of a rear-end collision. Pacheco relies in part on Federal Motor Vehicle Safety Standard No. 202, 49 C.F.R. § 571.202, which states that headrests reduce the frequency and severity of neck injuries in rear-end collisions. However, in his deposition, Pacheco conceded that Standard No. 202 does not require the installation of headrests on seats in the rear of minivans.^{FN4}

FN4. Exhibit E to Def. Stm.

Defendants produced their own expert engineer, Stanley Sangdahl ("Sangdahl"). He opines that while headrests are designed to diminish the likelihood of injury in rear-end collisions, they cannot prevent injury in all instances. In Sangdahl's opinion, it is impossible to predict the effect of headrests on the likelihood or severity of injury to individual occupants in rear-end collisions.^{FN5}It is un-

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disputed that, at all relevant times, there were other brands of minivans on the market that were equipped with rearseat headrests.

FN5. Sangdahl's Affidavit at Exhibit F to Def. Stm.

Count I of the complaint contains claims by Wier against Soo Line pursuant to the Federal Employers' Liability Act ("FELA"), 45 U.S.C. § 51 *et seq.* The remaining claims come within the court's diversity jurisdiction.^{FN6} Wier alleges common law negligence against Mile Post in Count II and against Castaneda in Count III. Counts IV and V set out claims for loss of consortium against Mile Post and Castaneda, respectively. Soo Line and Mile Post crossclaim for contribution against Castaneda.^{FN7} Plaintiffs complain principally that defendants were negligent in failing to provide Wier with a safe means of transportation. Specifically, it is alleged that the van should have been equipped with rear headrests or other restraining devices to prevent or reduce injury in a foreseeable rear-end collision.

FN6. John and Linda Wier are citizens of Wisconsin. Mile Post is incorporated and has its principal place of business in Nevada. Castaneda is a citizen of Illinois. The complaint, which was filed on April 10, 1996, alleges that the amounts in controversy with respect to the claims of John Wier and the claims of Linda Wier, respectively exceed \$50,000.

FN7. The pleadings refer to this claim as a counterclaim although it is in fact a crossclaim.

*3 Defendants depict this lawsuit as "a products liability cause of action masquerading as a FELA violation or common negligence cause of action." Def. Mem. at 3-4. Defendants describe themselves as consumers or end-users of the minivan, owing no special duties to Wier, a fellow consumer. They seek summary judgment on grounds of breach of

duty and causation.

The first issue to be considered is the extent of Soo Line's duty to guarantee the safety of the minivan. FELA creates a tort remedy for railroad employees injured on the job. *Lancaster v. Norfolk & Western Ry. Co.*, 773 F.2d 807, 812 (7th Cir.1985), *cert. denied*, 480 U.S. 945, 107 S.Ct. 1602, 94 L.Ed.2d 788 (1987). The statute provides in relevant part:

Every common carrier by railroad ... shall be liable in damages to any person suffering injury while he is employed by such carrier ... resulting in whole or in part from the negligence of any of the officers, agents or employees of such carrier, or by reason of any defect or insufficiency, due to its negligence, in its cars, engines, appliances, machinery ... or other equipment.

45 U.S.C. § 51.

In light of its broad remedial purpose, FELA is liberally construed in favor of railroad employees. *Consolidated Rail Corp. v. Gottschall*, 512 U.S. 532, 543, 114 S.Ct. 2396, 129 L.Ed.2d 427 (1994); *Lisek v. Norfolk & Western Ry. Co.*, 30 F.3d 823, 831 (7th Cir.1994), *cert. denied*, 513 U.S. 1112, 115 S.Ct. 904, 130 L.Ed.2d 787 (1995). To establish negligence, a plaintiff must prove duty, breach, foreseeability and causation. *Fulk v. Illinois Central R.R. Co.*, 22 F.3d 120, 124 (7th Cir.), *cert. denied*, 513 U.S. 870, 115 S.Ct. 193, 130 L.Ed.2d 125 (1994). However, that burden is significantly lighter than it would be in an ordinary negligence case. A plaintiff need only show that the employer's negligence "played any part, even the slightest in producing the injury". *Harbin v. Burlington Northern R.R. Co.*, 921 F.2d 129, 131 (7th Cir.1990) (quoting *Rogers v. Missouri Pacific R.R. Co.*, 352 U.S. 500, 506, 77 S.Ct. 443, 1 L.Ed.2d 493 (1957)). This lightened burden of proof means that a FELA plaintiff can survive a motion for summary judgment provided there is even slight evidence of negligence. *Lisek*, 30 F.3d at 832; *Harbin*, 921 F.2d at 131.

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Under FELA, a railroad employer has a duty to provide its employees with a reasonably safe workplace and safe equipment. *Shenker v. Baltimore and Ohio R.R. Co.*, 374 U.S. 1, 7, 83 S.Ct. 1667, 10 L.Ed.2d 709 (1963); *Williams v. National R.R. Passenger Corp.*, 1997 WL 754175 *2 (N.D.Ill. Nov.20, 1997). Courts have recognized that unsafe conditions in railroad vehicles may give rise to liability under the statute. See, e.g., *Finley v. National R.R. Passenger Corp.*, 1997 WL 59322 *8 (E.D.Pa. Feb.12, 1997) (defective window collapsed injuring employee); *George v. Burlington Northern R.R. Co.*, 1994 WL 523713 *3 (N.D.Ill. Sept.26, 1994) (trainman injured when attempting to align defective drawbar); *Korte v. New York, N.H. & H.R. Co.*, 191 F.2d 86, 87 (2d Cir.), cert. denied, 342 U.S. 868, 72 S.Ct. 108, 96 L.Ed. 652 (1951) (ticket collector injured when opening defective trap door); *Sullivan v. Aliguippa & S.R.R. Co.*, 57 F.Supp. 353, 354 (W.D.Pa.1944) (defective handbrake resulted in injury to brakeman).

*4 The employer's duty is nondelegable and applies even when the employee is required to go onto the premises of a third party over which the employer has no control. *Shenker*, 374 U.S. at 7. Moreover, the concept of agency is broadly defined for the purposes of FELA. Liability extends to the acts of others contractually bound to perform operational activities on behalf of the employer. *Sinkler v. Missouri Pacific R.R. Co.*, 356 U.S. 326, 331-32, 78 S.Ct. 758, 2 L.Ed.2d 799 (1958). Specifically, transporting railroad employees has been recognized as one such operational activity. *Austin v. Soo Line R.R. Co.*, 1996 WL 539123 *3 (N.D.Ill. Sept.20, 1996) (quoting *Leek v. Baltimore & Ohio R.R. Co.*, 200 F.Supp. 368, 370-71 (N.D.W.Va.1962)).

To establish breach of duty, the employee must show that the employer failed to act as a reasonable and prudent person would ordinarily act under the circumstances. *Tiller v. Atlantic Coast Line R.R. Co.*, 318 U.S. 54, 67, 63 S.Ct. 444, 87 L.Ed. 610 (1943). However, liability is limited to hazards

which the employer could have reasonably foreseen. *Gallick v. Baltimore & Ohio R.R. Co.*, 372 U.S. 108, 117, 83 S.Ct. 659, 9 L.Ed.2d 618 (1963); *Dukes v. Illinois Central R.R. Co.*, 934 F.Supp. 939, 945 (N.D.Ill.1996) (citing *Gallose v. Long Island R.R. Co.* 878 F.2d 80, 85 (2d Cir.1989)).

It is undisputed that Soo Line is a common carrier by railroad for the purposes of FELA and that Wier was employed by Soo Line at all relevant times. By virtue of Soo Line's duty to provide a safe means of transportation for its employees, Wier contends that Soo Line was required to provide a minivan equipped with rearseat headrests. Since it was not involved in the manufacture of the minivan, Soo Line disputes that it was under any duty to guarantee the safety of the minivan. It argues that an employer cannot be liable under FELA merely for permitting an employee to ride in one type of mass produced passenger vehicle as opposed to another.

Soo Line's position would be more tenable if all mass produced passenger vehicles (in this case, minivans) were identical. However, Wier has shown that, at all relevant times, there were other brands of minivans available which were equipped with rearseat headrests. Wier contends that the benefits of headrests are well known and are recognized by federal safety standards. In these circumstances, a factfinder might reasonably conclude that Soo Line knew or ought to have known of the hazard posed by the absence of headrests. This conclusion is underscored by the fact that Soo Line's agreement with Mile Post specifically addressed the issue of safety, although it did not include headrests in the list of mandatory safety features. Thus, Soo Line is precluded from simply relying on the judgment of the manufacturer as to the adequacy of the minivan's safety features.

Read in the light most favorable to Wier, the record suggests that a prudent employer might have taken steps to ensure that its employees were transported in minivans equipped with rearseat headrests. Soo Line could have insisted that Mile Post provide such a guarantee, simply by listing headrests as a

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mandatory safety feature in its agreement with Mile Post. Alternatively, it was open to Soo Line to find another transport service that adequately addressed vehicle safety concerns. Whether Soo Line should have taken such steps remains a material issue of fact in this case sufficient to defeat Soo Line's motion for summary judgment.

*5 As an additional matter, for the reasons stated below, Wier has presented enough evidence to suggest that Mile Post may have been negligent in failing to provide transportation in a vehicle equipped with rearseat headrests. Since Mile Post was acting at the behest of Soo Line, it was acting as Soo Line's agent for these purposes. *Austin*, 1996 WL 539123 *3; *Servais v. T.J. Management of Minneapolis, Inc.*, 973 F.Supp. 885, 893 (D.Minn.1997) (distinguishing, for purposes of an indemnity claim, an employer's own negligence from the negligence of a transportation agent attributable to the employer under FELA). Thus, for this reason also, summary judgment in favor of Soo Line is inappropriate.

Soo Line also moves for summary judgment on the issue of proximate cause. It disputes Wier's contention that his injuries were caused by the lack of a headrest. The parties present conflicting expert testimony in this regard. Pacheco, plaintiffs' expert, concludes that the lack of a headrest was a direct cause of Wier's injuries. Sangdahl, defendants' expert, opines that it is impossible to quantify the effect headrests may have on the likelihood or degree of injury in rear-end collisions.

As a preliminary matter, defendants question Pacheco's expertise by pointing out that he is not an expert in biomechanics. However, Pacheco is a mechanical engineer with expertise in the areas of design and test engineering and product safety. Moreover, he works for an engineering consultancy firm that specializes in accident investigations.^{FN8} Expert testimony may be offered when scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue.

Fed.R.Evid. 702; *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 590, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993); *Gruca v. Alpha Therapeutic Corp.*, 51 F.3d 638, 643 (7th Cir.1995). The district court has wide discretion in determining the competency of a witness as an expert and the relevancy of his or her testimony with respect to a particular subject. *Roback v. V.I.P. Transport, Inc.*, 90 F.3d 1207, 1215 (7th Cir.1996); *United States v. Stevenson*, 6 F.3d 1262, 1267 (7th Cir.1993). In his deposition, Pacheco emphasized that he could not speak to the injury itself.^{FN9} Rather, he stated that his testimony was based on engineering expertise, having regard to mechanics and dynamics. Pacheco's testimony relates to these subjects and his knowledge distinguishes him from the ordinary person. *Downes v. Volkswagen of America, Inc.*, 41 F.3d 1132, 1143 (7th Cir.1994); *Stevenson*, 6 F.3d at 1267. Defendants have failed to explain why Pacheco is not an expert for the purposes of the proffered testimony.

FN8. Exhibit E to Def. Stm.

FN9. Wier presents the testimony of Hain regarding the nature and extent of Wier's injuries. See Exhibit H to Plf. Mem.

When the testimony of experts conflicts, it is the exclusive province of the jury to determine the weight to be given to the opinion of each expert, based on an assessment of their respective credibility. *United States v. Scop*, 846 F.2d 135, 142 (2d Cir.1988); *Perfection Spring & Stamping Corp. v. Exacto Spring Corp.*, 1998 WL 142424 *5 (N.D.Ill. March 26, 1998); *Van Houten-Maynard v. ANR Pipeline Co.*, 870 F.Supp. 206, 209 (N.D.Ill.1994). For the purposes of this motion, it is sufficient to note that Wier has produced an expert willing and able to testify as to proximate cause. In the view of that expert, the lack of rearseat headrests in the minivan in which Wier was traveling contributed to the injuries he sustained. Thus, whether the lack of a headrest on Wier's seat proximately caused his injuries remains a material issue in this case. Accordingly, Soo Line's motion for summary judgment

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will be denied with respect to the issue of proximate cause.

*6 Mile Post moves for summary judgment on the same grounds as Soo Line. The parties implicitly agree that Wier's Count II negligence claim is governed by Illinois law. It is undisputed that, at all relevant times, Mile Post was a common carrier of passengers for hire. Mile Post contends that it was under no duty at common law to provide a minivan equipped with rearseat headrests. Additionally, it argues that the lack of a headrest was not the proximate cause of Wier's injuries. It fails to cite any legal precedent in support of either of these propositions.

The elements of a common law action for negligence are (1) a duty owed by the defendant to the plaintiff; (2) a breach of that duty by the defendant; and (3) an injury to the plaintiff proximately resulting from that breach. *Mieher v. Brown*, 54 Ill.2d 539, 301 N.E.2d 307, 308 (1973). In Illinois, a common carrier must exercise the highest degree of care for the safety of its passengers consistent with the practical operation of its conveyances. *Katamay v. Chicago Transit Authority*, 53 Ill.2d 27, 289 N.E.2d 623, 625 (1972); *Rotheli v. Chicago Transit Authority*, 7 Ill.2d 172, 130 N.E.2d 172, 175 (1955). Specifically, a carrier must take all reasonable action to avoid foreseeable accidents and consequential injuries to passengers. *Wasserman v. City of Chicago*, 190 Ill.App.3d 1064, 138 Ill.Dec. 319, 547 N.E.2d 486, 488 (1st Dist.1989), *appeal denied*, 129 Ill.2d 573, 140 Ill.Dec. 681, 550 N.E.2d 566 (1990); *Gordon v. Chicago Transit Authority*, 128 Ill.App.3d 493, 83 Ill.Dec. 743, 470 N.E.2d 1163, 1169 (1st Dist.1984).

Mile Post asserts that, while rearseat headrests may be desirable, common carriers are not obliged to use them. But reading the record in the light most favorable to Wier, a reasonable factfinder could conclude that by transporting Wier in a vehicle that lacked rearseat headrests, Mile Post was not exercising the highest degree of care consistent with its practical operations to guarantee his safety. This

genuine issue of material fact is sufficient to defeat Mile Post's claim for summary judgment with respect to Mile Post's duty of care.

On the issue of proximate cause, the standard of proof required of Wier with respect to his claim against Mile Post is higher than that pertaining to his FELA claim against Soo Line. Wier must show that, but for Mile Post's failure to provide seats equipped with headrests, he would probably not have been injured. *Smith v. Chicago Limousine Service, Inc.*, 109 Ill.App.3d 755, 65 Ill.Dec. 289, 441 N.E.2d 81, 85 (1st Dist.1982) (quoting *Kincl v. Hycel, Inc.*, 56 Ill.App.3d 772, 14 Ill.Dec. 374, 372 N.E.2d 385, 396 (1st Dist.1977)). In this regard, for the reasons stated above, Wier has produced sufficient evidence to survive Mile Post's motion for summary judgment. The proximate causal relationship between Mile Post's selection of a vehicle without rearseat headrests and Wier's subsequent injuries is an issue of material fact in this case. Accordingly, summary judgment in favor of Mile Post will be denied with respect to the issue of proximate cause.

*7 Finally, Mile Post does not expressly address Linda Wier's Count IV loss of consortium claim in its motion for summary judgment. To the extent that the motion may be construed as implicitly seeking summary judgment with respect to Count IV, the motion is denied for the reasons stated above.

IT IS THEREFORE ORDERED that defendants' motion for summary judgment [31] is denied. In open court on September 15, 1998 at 9:15 a.m., the parties shall file an original and one copy of a top-bound, final pretrial order in full compliance with Local Rule 5.00.

N.D.Ill.,1998.

Wier v. Soo Line R. Co.

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END OF DOCUMENT

Tab 8

FILED DISTRICT COURT
Third Judicial District

James F. Mewborn, Minnesota Bar No. 72370
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500 Young Quinlan Building
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JUN 07 2007

SALT LAKE COUNTY

By Deputy Clerk

E. Scott Savage, Esq. (2865)
Casey K. McGarvey, Esq. (4882)
Berman & Savage, P.C.
170 South Main Street, Suite 500
Salt Lake City, UT 84101
(801) 328-2200/Fax - (801) 531-9926

ATTORNEYS FOR DEFENDANTS UNION PACIFIC
RAILROAD COMPANY AND BROWN'S CREW
CAR OF WYOMING, INC.

IN THE THIRD JUDICIAL DISTRICT COURT
SALT LAKE COUNTY, STATE OF UTAH

JOHN D. ARCHER,

Plaintiff,

vs.

APRIL GAULTNEY, an individual;
BROWN'S CREW CAR OF WYOMING, INC.
d/b/a ARMADILLO EXPRESS, a Wyoming
Corporation; and UNION PACIFIC RAILROAD
COMPANY, a Delaware corporation,

Defendants.

PROPOSED ORDER

Civil No. 060909436

Honorable Judith S.H. Atherton

The matter of Plaintiff's Motion for Partial Summary Judgment Regarding Application of
FELA Liability to Van Transportation having come before the Honorable Judith S.H. Atherton,

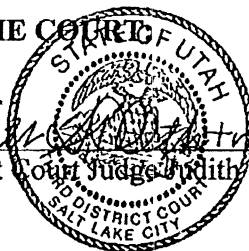
IT IS HEREBY ORDERED:

1. That said Motion is GRANTED in the following respects.
2. That for purposes of this case, Defendant Brown's Crew Car of Wyoming, Inc. is deemed to be an agent of Defendant Union Pacific Railroad Company in connection with transportation of Plaintiff.
3. That at the time of the accident at issue, Defendant Brown's Crew Car of Wyoming, Inc. was performing an operational activity of Defendant Union Pacific Railroad Company in transporting Plaintiff John Archer.
4. That said motion is DENIED in connection with Plaintiff's request for a finding that the vehicle owned and operated by Defendant Brown's Crew Car of Wyoming, Inc. was the constructive property of Defendant Union Pacific Railroad Company.

Dated this 6 day of June, 2007.

BY THE COURT


District Court Judge S.H. Atherton



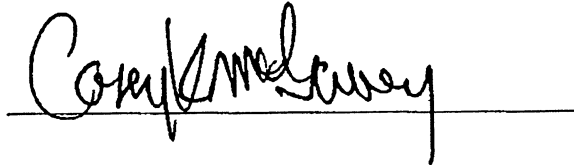
CERTIFICATE OF SERVICE

I hereby certify that on this 11th day of April, 2007, I caused a true and correct copy of the within and foregoing PROPOSED ORDER to be mailed, postage prepaid, to the following:

Philip G. Arnold
Bahareh Samanian
ROSSI, COX, VUCINOVICH, P.C.
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Ralph C. Petty
10 West Broadway Suite 800
Salt Lake City. Utah 84101

Peter H. Christensen
Ryan P. Atkinson
STRONG & HANNI
3 Triad Center Suite 500
Salt Lake City, Utah 84180

A handwritten signature in black ink, appearing to read "Corey Melaney", is written over a horizontal line.

Tab 9

IN THE THIRD JUDICIAL DISTRICT COURT, SALT LAKE
SALT LAKE COUNTY, STATE OF UTAH

JOHN D. ARCHER,

Plaintiff,

vs.

APRIL M. GAULTNEY, et al.,

Defendant.

: Case No. 060909436 PI

:

: Appellate Case No. 20090008-SC

:

:

:

:

:

: With Keyword Index

MOTION FOR SUMMARY JUDGMENT SEPTEMBER 22, 2008

BEFORE

JUDGE JUDITH S. ATHERTON

RECEIVED

FEB 23 2009

ROSSI COX VUCINOVICH PC

CAROLYN ERICKSON, CSR
CERTIFIED COURT TRANSCRIBER

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APPEARANCES

For the Plaintiff:

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Attorney at Law

For the Defendant:

JAMES F. MEWBORN
Attorney at Law

RYAN ATKINSON
Attorney at Law

* * *

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RULING

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1 SALT LAKE CITY, UTAH - SEPTEMBER 22, 2008

2 JUDGE JUDITH S. ATHERTON

3 P R O C E E D I N G S

4 THE COURT: Let's take the matter of John D. Archer
5 vs. April Gaultney and others. Case No. 060909436. Will
6 counsel state their appearances?

7 MR. MEWBORN: I'm James Mewborn for the defendants,
8 Brown's (inaudible) of Wyoming, Union Pacific Railroad.

9 MR. ATKINSON: Ryan Atkinson, Your Honor, for April
10 Gaultney.

11 THE COURT: Okay. And you're just sitting in
12 right?

13 MR. ATKINSON: Yes, I am.

14 THE COURT: Okay.

15 MR. ARNOLD: Phil Arnold for plaintiff, John
16 Archer.

17 THE COURT: Okay, thank you. All right, Mr.
18 Mewborn, this is your motion.

19 I'll tell you, counsel, that I've reviewed a rather
20 substantial number of pages in preparation so I believe that
21 I'm pretty well up to speed and just then, Mr. Mewborn, it
22 appears that the issues then are three, the negligence
23 against Armadillo based on failure to install rear seat head
24 restraints; negligence against Armadillo's driver, Casey
25 Sorensen; and the FELA claim against Union Pacific; is that

1 correct?

2 MR. MEWBORN: That's correct, Your Honor.

3 THE COURT: And it's true then, Mr. Arnold, that
4 you did conceded in your briefs the breach of third party
5 contract and concerning the uninsured, under insured motorist
6 and the off-track vehicle accident?

7 MR. ARNOLD: Yes, we have, Your Honor.

8 THE COURT: Okay. So that's where we are, is that
9 right, just those three claims?

10 MR. MEWBORN: Yes.

11 THE COURT: Okay, so I will entertain some argument
12 but I think I really am pretty familiar with what's going on.

13 MR. MEWBORN: I'm glad you had a chance to look at
14 all that paper, Your Honor. It's quite a lot I understand
15 and I'll try to kind of get through it fairly quickly then.
16 Basically we're moving for Summary Judgment here because the
17 plaintiff is seeking to impose liability on all of my clients
18 because they didn't require head restraints on all of your
19 transport vehicles. The undisputed evidence is that we got a
20 rear-end accident in September 2004 where the pretty simple
21 facts, one driver, Ms. Gaultney, admittedly dozed off at the
22 wheel and the next thing she knew she was waking up and
23 realized that she had been in a rear-end collision, had rear-
24 ended the Armadillo van. That's undisputed.

25 It's also undisputed that there are no complains to

1 either defendant about the lack of rear head restraints prior
2 to this incident and the National Highway Traffic Safety
3 Administration does not in fact require such head restraints
4 and one of the documents that we've submitted to Your Honor
5 is the regulatory discussion by the NITSA from 2004 where
6 they considered and rejected a rule requiring head restraints
7 and they pointed out that existing head restraints were
8 largely ineffective at protecting rearward movement of
9 passengers.

10 So we've got that and frankly, there's no evidence
11 of any carrier or transport company, whether it's railroad
12 shuttle companies or taxi companies or airport shuttles being
13 required to only purchase vehicles with these rear head
14 restraints and there's nothing unique about the business that
15 Armadillo is in and nobody is required to have those head
16 restraints. In fact, as we know NITSA doesn't require it and
17 essentially what the plaintiff is seeking to do in this case
18 is to have the Court impose this requirement on my client and
19 in effect this particular industry when the federal
20 government has not seen fit to require manufacturers to
21 install these head restraints.

22 In their opposition, the plaintiff challenges just
23 a handful of the long list of undisputed facts that we have
24 listed in our moving papers and the points that the plaintiff
25 does not object to or contravene is that neither Archer nor

1 Gaultney have knowledge of anything that Sorensen did, that
2 our driver that caused or contributed to the accident, that
3 at the time this 2001 van was manufactured, NITSA did not
4 require installation of rear head restraints and that in
5 March of 2005 NITSA considered and rejected a proposed change
6 to the requirement of rear head restraints or the lack of a
7 requirement of rear head restraints and NITSA found that the
8 use of properly manufactured head restraints reduces the
9 possibility of neck injuries in rear-end collisions but
10 doesn't eliminate or prevent all such injuries.

11 Plaintiff doesn't dispute that prior to the
12 accident neither Union Pacific nor Armadillo had received any
13 complaints or concerns about the absence of head restraints.
14 They don't dispute that there's a variety of these type of
15 devices out there, some of which are better than others.
16 Although there is an adjustable head restraint available as
17 an option for this particular 2001 van. Neither plaintiffs
18 expert nor our expert, mechanical experts were able to locate
19 such a van within 100 mile radius of Salt Lake City and also,
20 the effectiveness of the head restraint system can be
21 affected by the position of the person sitting in the van.

22 The real issue here, Your Honor, is whether there's
23 a duty on the part of Armadillo to provide vans,
24 transportation with rear head restraints and the fact is -
25 and that's a legal issue, of course, it's not a matter to be

1 determined by experts, it's one for the Court and under -
2 well, foresee ability would be one of the issues that would
3 go into whether there's a duty and again, there's no
4 particular, there is no evidence of foresee ability that the
5 head restraint would have done anything. In fact the
6 evidence accumulated by the federal agency is that these head
7 restraints are really kind of hit or miss proposition.

8 We've touched on the issue also of conflict
9 prevention as a kind of an interesting, I thought kind of an
10 interesting argument that's applicable to this case. It
11 hasn't been, as far as I can tell, hasn't been applied in
12 this particular case, the U.S. Supreme Court case, the Guyer
13 vs. American Honda Company case dealt with a suit against the
14 manufacturer for not having air bags and the Court rejected a
15 requirement, rejected enforcing the plaintiff's request to
16 find liability on the part of the manufacturer and the same
17 rationale really applies here that where you're got NITSA
18 never requiring the head restraints on rear seats and that
19 basically you have a consumer here that is being, the
20 plaintiff is asking to impose a rule on consumer when the
21 manufacturer itself has no such obligation to install head
22 restraints.

23 THE COURT: And your argument to apply this
24 conflict preemption is that a state court is equivalent to
25 state regulation?

1 MR. MEWBORN: Yes.

2 THE COURT: And that's what plaintiff took issue
3 with?

4 MR. MEWBORN: Yes, that's my -

5 THE COURT: And you're just saying that the state
6 court action really is the equivalent of applying state law
7 whether it's through the courts in adjudicating or the
8 legislature by passing statute?

9 MR. MEWBORN: Yes, whether it's statute or
10 regulation or court decision.

11 And again, there is no evidence, they've
12 acknowledged as much by not contesting the fact that there's
13 no evidence that Mr. Sorensen, the driver, did anything wrong
14 and Ms. Gaultney couldn't point to anything, Mr. Archer in
15 his deposition couldn't point to anything. There's just
16 nothing to support that.

17 The plaintiff in opposition to our motion has
18 submitted a number of affidavits from Mr. Archer himself and
19 from a couple of doctors and from Mr. France, the plaintiff's
20 expert and as Your Honor knows from our reply brief, you
21 know, we're taking the position that they can't have reports
22 and deposition testimony saying one thing and then come up on
23 a summary judgment motion and say just conclusory statements
24 that yes a head restraint would have made a difference. In
25 the case of the two doctors, they've already disqualified

1 themselves in their depositions saying they don't have any
2 particular biomechanical training and they're not head
3 restraint experts but yet they come up with very similarly
4 worded affidavits saying, yes, it would have made a
5 difference when the agency that performed that investigation
6 in 2004 (inaudible) concluded otherwise.

7 With regard to the specific head restraint system
8 that was available as an option, our expert, Mr. Ashmead, Dr.
9 Ashmead, has opined that he doesn't think that head restraint
10 would have made any difference and Dr. France, plaintiff's
11 expert, from his deposition testimony, he went to a dealer to
12 see what was available. The dealer was actually surprised
13 that there was a head restraint available as an option. Dr.
14 France has not done any particular study or testing of that
15 particular head restraint system, to determine even if it
16 were installed it would have been one of the more effective
17 head restraint systems.

18 Basically, Your Honor, the plaintiff has a case
19 where the driver itself, himself, didn't do anything wrong
20 and plaintiff is looking for a theory to hang some liability
21 on Armadillo and the U.P. Railroad and the evidence just
22 isn't there either that a head restraint would have made a
23 difference, there's no causation. It's asking the jury to
24 speculate about a number of factors as to had there been head
25 restraint, they have to speculate would it have been

1 effective and that Mr. Archer would have been sitting in a
2 fashion that it would have made it effective and all of that
3 is speculation. Basically that's it, Your Honor, unless you
4 have any questions.

5 THE COURT: So essentially what you're saying is
6 that the duty is not owed based - essentially you argued that
7 foresee ability is really the critical issue here, that there
8 is no duty since Dyer didn't impose a duty on a manufacturer,
9 essentially bootstrapping it to a consumer, can't be done
10 either. But if I were to find a duty, the causation is
11 lacking also.

12 MR. MEWBORN: That's right. The plaintiffs claim
13 fails on multiple levels, Your Honor.

14 THE COURT: Okay. No, I think that's all I - I
15 don't have any further questions at the moment.

16 Mr. Arnold?

17 MR. ARNOLD: Thank you.

18 THE COURT: And also, I know I focused on Mr.
19 Mewborn but I've also reviewed of course your response and
20 attachments as well.

21 MR. ARNOLD: Thank you, Your Honor. This case is a
22 rear-end motor vehicle accident. John Archer went to work,
23 the van that he was injured in was his workplace. He didn't
24 have any prior neck or shoulder complaints or symptoms or
25 history.

1 I'll address first the issue of the Federal Motor
2 Vehicle Safety Standards which obviously apply only to
3 manufacturers. They don't apply to consumers or other users.
4 In this case we're not simply alleging that the defendant
5 should have retrofitted the van that Mr. Archer was a
6 passenger in, they had a choice. They could have used the
7 200 vehicles that they did have, one-third of the fleet of
8 Armadillo had rear seat head restraints. They could have
9 used those vehicles if they wanted to. If they didn't want
10 to use one of those 200 vehicles then they could have
11 retrofitted the van. There's no prohibition against that.

12 This is in part a Federal Employer's Liability Act
13 case. The standard for negligence and for causation is
14 different than the state standard for negligence for a common
15 carrier. FELA causation is based upon proving in whole or in
16 part, even the slightest part of causation. It's a remedial
17 statute and part of the remedy as has been articulated by the
18 Supreme Court is a jury trial. More cases in the FELA avenue
19 go to trial than in normal negligence cases. I say that but
20 I think we have a very strong case here. Defendant claims a
21 lack of foresee ability. We provided the Court a number of
22 admissions where Union Pacific has admitted that it has a
23 responsibility to provide a safe workplace. The van that Mr.
24 Archer was riding in on the day of his injury was his
25 workplace. They admit they had a responsibility to identify

1 reasonably foreseeable hazards. They admitted that rear-end
2 collisions were reasonable foreseeable hazards. In 1990 the
3 Union Pacific had a safety committee with noted that there
4 was a large number of accidents occurring when they
5 transported their crews. The Union Pacific admits they have
6 a responsibility to reduce the risk of any foreseeable hazard
7 and more importantly, the Union Pacific knew before this
8 motor vehicle accident that seat head restraints were
9 important safety devices and reduced the risk of neck
10 injuries in rear-end collisions. That was the Bryzitis
11 deposition. He was the speaking agent on behalf of the U.P.
12 That's our Exhibit 10, Pages 12, Line 6 through 17, Pages 25,
13 Line 12 through 24. They admit the function of a seat head
14 rest before Mr. Archer's injury. They admit they could have
15 required Armadillo to have a seat head restraint in the rear
16 seat or they could have had Armadillo provide one of the
17 vehicles that already had a seat head restraint.

18 Armadillo takes the position that they didn't know
19 what a seat head restraint was which is inconsistent with the
20 common public knowledge of seat head restraints. We provided
21 the Court in our material fact No. 35, the information that
22 seat head restraints way before, for 30 years before Mr.
23 Archer's injury, was a subject of congressional testimony,
24 safety literature, medical literature. It had been put into
25 insurance company, consumer publications and the

1 manufacturers themselves had put the purpose and use of seat
2 head restraints in their automobile owner's manuals.

3 Armadillo, through its speaking agent, admits that
4 they had transported Union Pacific crews and vehicles with
5 rear seat head restraints. They also admitted that some of
6 the vehicles that rear seat head restraints, the rear seat
7 head restraints were adjacent to the windows and that the
8 center rear seat did not have a head restraint and at certain
9 railroad locations, railroaders were restricted from using
10 those center seats without the rear seat head restraints when
11 transported by Armadillo. This is before Mr. Archer's
12 injury.

13 THE COURT: And where is that in the deposition?

14 MR. ARNOLD: That is in material statement of fact
15 No. 14, 15 and 16.

16 THE COURT: In the affidavit though, where is it in
17 the deposition, not the affidavit, but the deposition?

18 MR. ARNOLD: It's in Mr. Brown's deposition,
19 Exhibit 11 and it's on Page 17. I can read that to the Court
20 if the Court would like me to.

21 THE COURT: I've got it here.

22 MR. ARNOLD: Page 17, Line 14 and it states,
23 question, this is Mr. Brown, "Well, what would prevent you
24 from purchasing a September 26, 2001 Suburban that had five
25 seat head rests for passengers?"

1 Answer, "No, you see you just said five. Your
2 previous question said all passengers. I was looking at the
3 center seat and to my knowledge there's never been a head
4 rest for the center seat."

5 Question, "Part of the contract between Armadillo
6 and (inaudible) Transportation Services, Inc. operating on
7 behalf of U.P., must provide vehicles that were no more than
8 three years of ago; is that correct?"

9 "Yes."

10 And he goes on to say that given enough lead time,
11 they could have all their fleet have rear seat head
12 restraints.

13 Going onto Page 10, Line 15, question, "So you're
14 saying that some Armadillo vehicles purchased, the
15 manufacturer put the head rests for all the passengers on the
16 outward seats in the rear and in some vehicles they did not?"

17 Answer, "Varying by make and model."

18 Then on Page 7, Line 20. Answer, "And that, well,
19 there are some railroad locations have limited it to five
20 passengers where we did no use the center seats. It could
21 hold seven passengers."

22 Putting that together, what they're saying is that
23 in those vehicles that didn't have head rests in the center
24 seats, railroad crews were restricted from using those seats
25 before Mr. Archer's injury. And as I have said, they had

1 over 200 vehicles before Mr. Archer's injury that had rear
2 seat head restraints.

3 Your Honor, there is a recognition by Union Pacific
4 that rear seat head rest is an important safety device they
5 knew that before this incident, before Mr. Archer's injury.
6 They knew what the purpose of it was. They had the power to
7 require vehicles that had rear seat head rests to be used.
8 They existed. The public had that knowledge as indicated as
9 I said by the entering the public domain and all of the
10 literature and the congressional testimony and insurance
11 company publications and the manufacturer publications.

12 **THE COURT:** But what about NITSA specifically
13 rejecting the requirement? How does that affect your
14 argument?

15 **MR. ARNOLD:** Well, it says that manufacturers are
16 not required to put in rear seat head restraints but they may
17 voluntarily do so and if they do so, there's certain
18 restrictions that have to be made.

19 **THE COURT:** But there were certain findings about
20 the value of those head rests and NITSA rejected the
21 requirement and so the requirement is not there on the part
22 of the manufacturer. How does that create a duty to a
23 consumer? It seems that if there was a complaint, it would
24 be the manufacturer, and this is more attenuated. You have a
25 consumer buying a vehicle from a manufacturer who is in

1 compliance with NITSA requirements and so how does that duty
2 then go to Union Pacific or Armadillo, Union Pacific really
3 under FELA, to impose a greater requirement than is required
4 by federal regulatory and imposed upon the actual
5 manufacturer?

6 MR. ARNOLD: This is the argument that the van
7 should have been retrofitted because we do have the argument
8 that there was vehicles that had rear seat head rests.

9 THE COURT: But not retrofitted, they were
10 different vehicles.

11 MR. ARNOLD: They were different vehicles.

12 THE COURT: They were Suburbans, not vans?

13 MR. ARNOLD: They were different vehicles that
14 could have been used.

15 THE COURT: Right.

16 MR. ARNOLD: Well, it's a complicated discussion.
17 Dr. France points out that most adults sit in the front seat.
18 In the back seat you tend to have children and there's less
19 injuries occurring in the back seat because of non-adult use.
20 He says in his affidavit though is that for an adult, the
21 risk of a whiplash type injury is the same whether you're
22 seated in the front seat or the rear seat and so the National
23 Highway Traffic Safety Agency is just looking at the numbers
24 and a cost and that's when they made that decision. Now -

25 THE COURT: But did Dr. France look at this

1 vehicle? Couldn't (inaudible).

2 MR. ARNOLD: Yes, he looked at this vehicle -

3 THE COURT: He couldn't look at this vehicle with
4 head rests because they're aren't any.

5 MR. ARNOLD: That's correct. He looked at, he
6 could look at similar vehicles.

7 THE COURT: So I've got Dr. France on one hand and
8 I've got NITSA on the other and NITSA says that an average
9 adult -

10 MR. ARNOLD: Well, that's not correct. They say
11 that but that's a nuance and that's why the summary judgment
12 I think a difficult (inaudible) question of fact for the
13 jury. If you look carefully at what the National Highway
14 Traffic Agency was saying, it was saying, in the past we
15 based our standard for head rests on the prevention of a
16 hyper extension injury and that's what Mr. Archer had was a
17 hyper extension injury. Then they said in our Exhibit 3,
18 they say, Well, you know, that doesn't prevent all whiplash
19 injuries. Whiplash injuries is a continuum. You can have
20 sore neck muscles. You can go beyond that and have some
21 ligament damage. You could have some disc damage and some
22 nerve damage. Well, hyper extension injuries will cause
23 nerve damage. He had a spinal cord contusion. National
24 Highway Safety Agency was saying, Well gee, if we changed our
25 standards to prevent all neck movement then we could prevent

1 all whiplash injuries, the sore neck that might last a day.
2 So there's two different injuries being contemplated here,
3 hyper extension for the spinal cord injury and the sore neck
4 muscles for preventing all rearward neck movement. So that's
5 a nuance and Dr. France and the neurosurgeon point out
6 there's a hyper extension injury that occurred to Mr. Archer
7 and the hyper extension injury is what contused his spinal
8 cord. So yes, the standard that Mr. Archer would have been
9 subjected to, would have prevented hyper extension but would
10 not perhaps have prevented sore neck muscles that could have
11 lasted a day or two or three.

12 The duty for the railroad is different than the
13 ordinary consumer. The duty of the railroad is to provide
14 Mr. Archer a reasonably safe place to work is a continuing
15 non-delible duty. They have a duty to investigate potential
16 hazards in the workplace and to take reasonable action to
17 remedy those hazards. It's remedial statute. It's not as
18 ordinary consumers such as perhaps Mr. Mewborn or I taking a
19 friend to a movie in our vehicle. This is a duty growing
20 from the relationship of an employer owing safety duties and
21 responsibilities to an employee, Mr. Archer. Armadillo Van
22 is an agent of the Union Pacific as the Court has previously
23 ruled. So the rear seat head restraint is analogous to any
24 other safety device and here it was an important safety
25 device to prevent hyper extension. It was foreseeable that

1 you could have rear-end motor vehicle collisions as admitted
2 by Union Pacific and that's what the seat head restraint is
3 used to address specifically, the reduction of neck injuries.

4 Mr. Archer's, the head restraint perhaps a standard
5 at the time of Mr. Archer wouldn't prevent all injuries to
6 the neck, but it would have prevented the spinal cord injury.
7 He may have had transitory soft tissue aches and pains that
8 would have left because there was some movement of the neck
9 and that's, I think, a complexity in this case, what will
10 these head restraints do as the original designer or the
11 prior design, and what was NITSA trying to address under the
12 present standard? They didn't say that head restraints were
13 ineffective in the past that they promulgated the standard
14 for, they said we're more interested in hyper-extension and
15 we have learned now that whiplash injuries can be caused,
16 neck soreness from any movement. So we'd like to prevent any
17 movement of the neck. We don't have to prove in this case
18 that no injury would occur to Mr. Archer with the rear seat
19 head restraints, we're here to prove that the spinal cord
20 contusion which necessitated his spinal and cervical
21 operation, was a likely medical cause from the absence of a
22 seat head restraint.

23 THE COURT: And it's the physicians who are
24 testifying?

25 MR. ARNOLD: That's correct.

1 THE COURT: And what do they know about vehicles?

2 MR. ARNOLD: What do they know about vehicles? I
3 think that rear-end motor vehicle collision's are a common
4 occurrence in our society and in the medical practice. I
5 know that the defense in its opening brief made that argument
6 without citing any authority that a doctor, a medical doctor
7 is not qualified to testify to medical causation with respect
8 to a rear-end motor vehicle collision but that -

9 THE COURT: Certainly the doctors can speak to the
10 cause of the injury which is a contusion, but can a doctor
11 really speak to the presence of absence of equipment in a
12 vehicle that might have intervened?

13 MR. ARNOLD: Well, yes, because in this case the
14 issue is could hyper-extension have been prevented? And Dr.
15 France and the NITSA say yes, you could prevent hyper-
16 extension with the standard that was then prevalent and it's
17 the hyper-extension mechanism. Dr. Huntsman related in his
18 affidavit as well as Dr. France, an article published in the
19 medical journal, Spine, that talked about hyper-extension
20 causing these types of neck, cervical cord contusions. So it
21 was in the medical literature and that is what is relevant in
22 this case. Now whether, you know, a head rest provides
23 protection against all injury and how much rear displacement
24 of the head is there with headrest A and B, no, they wouldn't
25 know that but they do know it prevents hyper-extension

1 because, you know, NITSA tells them that, Dr. France tells
2 them that and that's the issue there.

3 This argument of preemption doesn't apply to the
4 railroad because the railroad is governed by another federal
5 law, the Federal Employer's Liability Act. That federal law
6 is a co-equal law to, you know, the Federal Motor Vehicle
7 Standards and there's no preemption in that sense. You look
8 at statutory construction and whether there is an actual
9 inherent conflict - and there is no inherent conflict here,
10 all that the NITSA said is that doing cost benefit - a dollar
11 cost and the dollar benefit of putting in rear seat head
12 rests when those seats are more likely occupied by children
13 who are shorter anyway, it doesn't pan out. They didn't say
14 that seat headrests would be ineffective for adults in the
15 rear seat at all. They're looking at it as a matter of
16 having the consumer buy this car who may not need a rear seat
17 head rest because adults don't tend to ride in those seats.
18 Well, this is not an ordinary consumer we're talking about
19 with Union Pacific or Armadillo, a common carrier. They're
20 in the business of transporting passengers, transporting
21 adults. They don't transport children, that's totally apart.
22 They have a special niche so you have that to consider. If
23 there is to be any statutory conflict, it would have to be a
24 direct one and there is no direct conflict between the
25 Federal Employer's Liability Act and the Federal Highway

1 Traffic Safety Agency which says manufacturers do not have to
2 put in rear headrests in the rear seat, they can if they want
3 and the Federal Employer's Liability Act says that you're
4 suppose to provide a reasonably safe place to work and
5 investigate potential hazards and reduce reasonable
6 foreseeable risks with safety devices in essence is our
7 argument and the seat headrest is a safety device.

8 You have a common carrier, Armadillo, in this
9 business that had vehicles that had rear seat head restraints
10 and that should have known constructively, you know, based
11 upon the public domain information that seat head restraints
12 are there for a purpose, that the manufacturers in the
13 owner's manual provides information why they're there and
14 that they just simply can't duck their head in the sand and
15 claim ignorance. We don't have to prove actual notice to
16 Armadillo subjectively, we just have to say that there's
17 enough there to take it to a jury and I think there's
18 substantial information to take it to a jury.

19 THE COURT: So you're not accepting, you just
20 reject defendant's argument that the state court
21 determination is the equivalent of state legislation statute
22 so that the preemption applies?

23 MR. ARNOLD: No -

24 THE COURT: You're saying simply no?

25 MR. ARNOLD: No. I don't go that far. I think

1 state action or state court action is equivalent to state
2 legislative action.

3 THE COURT: Okay, so why doesn't it fall under that
4 conflict preemption?

5 MR. ARNOLD: Well, because the law, the federal law
6 governs manufacturers, it doesn't govern secondary common
7 carriers, railroads. It's specific. Now if we were suing a
8 manufacturer, absolutely, I think preemption potentially
9 could come in but then you get into that complicated
10 statutory scheme that says, okay, you know, you have to have
11 direct conflict. There has to be an actual direct conflict
12 in order for preemption and here there isn't even that.
13 Hypothetically let's say, you know, that the analysis applies
14 to Armadillo, I don't believe it does because it implies many
15 factors but let's say if it does, there's still no direct
16 conflict because you're not requiring the manufacturer to do
17 anything. You're saying Armadillo, common carrier in the
18 special niche, special duties in our society, different than
19 just an average consumer such as we here in this courtroom.
20 There's no actual conflict there and that's the retrofit
21 argument, that's the retrofit argument. We also have the
22 argument is that there was vehicles to be used that had seat
23 headrests that they didn't have to retrofit and that U.P.
24 could require them to do so.

25 The issue on medical causation and this concept of

1 sham affidavits I think is an unfortunate one. If you look
2 at - and I'd like to go specifically and look at the evidence
3 and direct the Court's attention to Exhibit 7 which is the
4 deposition of Dennis Gordon, an orthopedic surgeon, on Page
5 45, Line 23, there the question is "Therefore, it's your
6 opinion that the head restraint or the lack of head restraint
7 in this particular instance was a causative factor with the
8 shoulder injury?"

9 Answer, "Yes, I think it contributed to it, yes."

10 Then when you go to his affidavit, Exhibit 15,
11 Paragraph B, it's consistent. In his affidavit he says, "The
12 absence of a seat head restraint is one of the probable
13 medical causes of the aforementioned injuries." There's no
14 inconsistency there.

15 We go to Dr. Huntsman and his deposition, Exhibit 5
16 on Page 33, Line 9, the question says, "I'm looking at the
17 bottom paragraph of page 1 of this June 6, 2007 letter. You
18 were asked whether or not the absence of a seat or head
19 restraint was one of the medical causes of the neck injury
20 that you treated Mr. Archer for, correct."

21 Answer, "Correct."

22 Question, "What's your understanding as to what the
23 intent of the head restraint is in an automobile?"

24 Answer, "To prevent flexion, extension type injury
25 by avoiding excessive extension."

1 Question, "Is it your understanding that a properly
2 adjusted head restraint would result in a passenger or
3 driver's head being up against the restraint or is there a
4 space between the back of the head and the restraint?"

5 "Typically there's a small space between the head and the
6 restraint but the idea here again being that the neck doesn't
7 excessively extend because there's something there to protect
8 it."

9 Then there's some questions to him and this is an
10 answer that he's giving, "The question is if there had been a
11 head restraint there?"

12 Question, "Yes."

13 Answer, "Would it have made a difference in?"

14 Question, "Yes, no."

15 Well, that is the question we're trying to address
16 here but that was not the question that the defense counsel
17 wanted to hear. He goes on and says, defense counsel
18 question, "The question really is had there been a head
19 restraint there, could that have been an (inaudible) event
20 even with the head restraint with a sudden jolt with the head
21 going back into the head restraint."

22 Answer, "Yes, it would be possible."

23 Well, it would be possible. He can't rule out that
24 possibility but he states in his letter that he referred to
25 in Exhibit 6, in his letter before the deposition, he says,

1 "The fact that he was then involved in this motor vehicle
2 accident in which his head and neck were not restrained, did
3 likely cause the myopathy and likely caused a subsequent need
4 for surgical intervention."

5 Likely, that's before the deposition. The
6 depositions never asked him in the terms of medical
7 probability. The defense counsel didn't ask him, well, gosh,
8 I mean, can you rule out the possibility? No, I can't.

9 Then Dr. Huntsman in his affidavit in Exhibit 14
10 consistently states in Paragraph 5(b) "It is medically
11 probable that Mr. Archer would not have suffered these
12 injuries from a rear-end collision if he had a seat head
13 restraint at the time of the collision."

-14 Those are all consistent. Those aren't sham
15 affidavits, those aren't a neurosurgeon who is impeaching
16 himself and testifying falsely or an orthopedic surgeon who
17 is impeaching himself or testifying falsely. They're
18 consistent with their pre-deposition statements, they're
19 consistent with the questions that were asked at the
20 deposition and consistent with the affidavit.

21 Your Honor, this case really is about the absence
22 of a simple safety device, a seat head restraint to prevent
23 hyper-extension of the neck posing factual questions for the
24 jury with respect to the Union Pacific and the common carrier
25 Armadillo.

1 With respect to Armadillo's driver's negligence,
2 Sorensen, the other defendant, Gaultney driving the vehicle
3 which ran into the van, claimed, and it's made a cross
4 complaint that Mr. Sorensen was negligent in his driving.
5 All we did in our amended complaint was to say, well, if
6 there is such negligence, we'll plead that too. We don't
7 know of any such negligence so if Mr. Sorensen is to be
8 dismissed, he should be dismissed from the lawsuit entirely.

9 If you have any questions, I'd be happy to take
10 them.

11 THE COURT: No, thank you, Mr. Arnold.

12 MR. MEWBORN: May I respond briefly Your Honor?

13 THE COURT: Yes.

14 MR. MEWBORN: Is it okay just to stand here at the
15 table?

16 THE COURT: It's fine.

17 MR. MEWBORN: Just a few points I want to respond
18 to, Judge. As to the different burdens under common law and
19 the FELA, yes, the FELA has a reduced standard of negligence
20 but there's still got to be some and there's still got to be
21 causation. It's not a strict liability statute and our point
22 is that even under FELA, there's not a enough for the case to
23 go forward against the Union Pacific or Armadillo for that
24 matter.

25 Essentially the argument as I'm hearing it here,

1 kind of stepping back and listening to it is that a motor
2 vehicle manufacturer who has the expertise and employees,
3 auto design engineers, you know, government regulations
4 specialists, probably biomechanical engineers, they do these
5 testing, crash testing, while they don't have an obligation
6 under federal regulations to provide rear head restraints in
7 vehicles of this type, a consumer company like Armadillo who
8 has none of those resources available or on board, has a
9 higher duty than does a Chevrolet or a General Motors and I
10 mean, it strikes me that to require a company like Armadillo
11 or a company like an airport shuttle service which basically
12 uses the same kind of vehicles, basically you're saying, the
13 plaintiff is saying that they need to have orthopedic
-14 surgeons and head restraint experts and motor vehicle design
15 engineers in order to make vehicle design decisions about
16 what features to add on and whether the particular feature is
17 appropriate. You know, it's not enough just to say, okay,
18 General Motors has an optional head restraining that not even
19 a dealer was aware of until he looked it up at Dr. France's
20 request, but you know, we've also got to make a
21 determination, you know, that just because GM provides it,
22 that's not good enough, we've got to look at it and make sure
23 it's an adequate whiplash control device which strikes me as
24 really, really backwards and it kind of ties into the
25 preemption argument.

1 Plaintiff argues that this regulatory history,
2 document attached to our Motion for Summary Judgment, Exhibit
3 I, the lengthy NITSA discussion document, it talks about,
4 well, it's hyper-extension is what they were focused on and
5 defendant is just talking about in general whiplash but if
6 you look at Page 7 of that document, down the third paragraph
7 from the bottom, I'll just refer you to what it says there,
8 "With respect to impact speeds, research and injury rate data
9 indicate that whiplash may occur as a result of head and neck
10 movements insufficient to cause hyper-extension. Staged, low
11 speed impacts indicate that mild whiplash symptoms can occur
12 without a person's head exceeding the normal range of motion.
13 This means that our previous focus on preventing neck hyper-
14 extension is insufficient to adequately protect all rear
15 impact victims from risks of whiplash injuries; instead to
16 effectively prevent whiplash, the head restraint must control
17 smaller amounts of rapid head and neck movement relative to
18 the torso."

19 So again, the federal agency was considering all of
20 this in 2004 and they still came out, they still came down on
21 the side of we're not going to require these head restraints.
22 I mean, they're just not demonstrably effective enough, the
23 ones that are out there now to require them. So...

24 Oh, and a point was made well, there are some, Mr.
25 Brezitis I think it was from the U.P. mentions some instances

1 where the company would tell passengers not to ride in the
2 middle seat. I don't think that it specifically dealt, his
3 testimony dealt with anything to do with the existence or
4 non-existence of a head restraint. I mean, there's certainly
5 other possibilities for that, explanations for that such as
6 not, you know, trying not to block the rear view of the
7 driver or perhaps lack of a shoulder harness in some of those
8 seat positions.

9 With respect to the doctor's opinions, I mean,
10 orthopedic doctors certainly have lots of expertise but at
11 least the particular doctors that we're dealing with in this
12 case have indicated that they aren't experts in head
13 restraints. There's no evidence that they've made any
14 particular study of head restraints or this particular
15 vehicle and head restraint system in particular. The only
16 evidence with respect to this particular head restraint is
17 that of Dr. Ashby, our expert who says it doesn't think it
18 would have made any difference. There's nothing to
19 contradict that, Your Honor, and I guess for all those
20 reasons as for the reasons set forth in our filings, that's
21 why we're looking for summary judgment.

22 THE COURT: What about really, that gets down to
23 the last arguments really we've been talking about, what a
24 jury might consider and that's not where summary judgment is.
25 What I need to determine is again, those tort elements, the

1 duty, foresee ability -

2 MR. MEWBORN: And again, like I think the evidence
3 is uncontradicted, there is no - the evidence is that there's
4 nobody at Brown's (inaudible) Car or the (inaudible) that had
5 any particular specialized knowledge about head restraints
6 more than, you know, a person walking down the street that
7 you had some general sense that, yeah, head restraints are a
8 good idea but there's nothing beyond that and there's nothing
9 to show that this particular head restraint system available
10 on this vehicle would have made any difference and, you know,
11 the government agency charged with examining such things,
12 NITSA, has not required head restraints and if they can't
13 find the justification to do it, it's hard to see how
-14 imposing in litigation that duty on a private company makes
15 any sense.

16 THE COURT: All right, thanks. Okay.

17 MR. MEWBORN: Okay, thank you.

18 THE COURT: Starting with the issue of disputed
19 facts. There were four facts designated in plaintiff's
20 response that were disputed, 3, 23, 26 and 32. No. 3 really
21 simply wasn't a dispute; No. 23, I find not to be material;
22 No. 26 I find is cited really out of context; and No. 32
23 regarding the doctor's opinions of causation. First, I am
24 agreeing with counsel for the defendant with regard to the
25 affidavits submitted with plaintiff's response. I'm not

1 going to consider them. I don't believe that area of
2 expertise is part of an M.D. So I have not considered those
3 affidavits and accordingly, I find that there is no genuine
4 issue of material fact in this case. Moreover, I'm persuaded
5 in all areas by defendant's position and I find that the
6 defendant is entitled to judgment as a matter of law. So I'm
7 granting the Motion for Summary Judgment in each instance.

8 Mr. Mewborn, if you will prepare then an order
9 consistent with my ruling.

10 MR. MEWBORN: Yes Your Honor.

11 THE COURT: All right, thanks. Thank you for the
12 arguments.

13 MR. MEWBORN: Thank you.


14 THE COURT: Thanks for coming to sunny Utah.

15 (Whereupon the hearing was concluded)
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CERTIFICATE

I HEREBY CERTIFY that the foregoing transcript in the before mentioned proceeding held before Judge Judith S. Atherton by me from Record Player recording and is a full, true and correct transcription of the requested proceedings as set forth in the preceding pages to the best of my ability.

Signed this 20th day of February, 2009 in Sandy, Utah.



Carolyn Erickson
Certified Shorthand Reporter
Certified Court Transcriber

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Tab 10

**AMENDED ORDER GRANTING
DEFENDANTS BROWN'S CREW
CAR OF WYOMING, INC., d/b/a
ARMADILLO EXPRESS'S AND
UNION PACIFIC RAILROAD
COMPANY'S MOTION FOR
SUMMARY JUDGMENT**

This matter came before the Court for hearing on Defendants Brown's Crew Car of Wyoming, Inc., d/b/a Armadillo Express's and Union Pacific Railroad Company's Motion for Summary Judgment on September 22, 2008. Attorney Philip G. Arnold appeared on behalf of the Plaintiff John D. Archer. Attorney James F. Mewborn appeared on behalf of the Defendants Brown's Crew Car of Wyoming, Inc., d/b/a Armadillo Express ("Armadillo") and Union Pacific Railroad Company ("Union Pacific"). Attorney Ryan Atkinson appeared on behalf of the Defendant April Gaultney.

The Court having read the memoranda filed with respect to the Motion and having heard oral argument and being full advised in the premises, hereby GRANTS Defendants' motion for summary judgment based upon the following grounds:

1. Neither Armadillo nor Union Pacific owed Plaintiff a duty to provide transportation equipped with rear seat head restraints.
2. The National Highway Traffic Safety Administration does not impose a duty on vehicle manufacturers to install rear seat head restraints and specifically considered and rejected imposing such a duty upon manufacturers. Imposing such a duty upon consumers such as Armadillo or Union Pacific would be inconsistent with the NHTSA manufacturing requirements, particularly in light of the absence of specialized knowledge of head restraints on the part of defendants in this case Plaintiff's claims against Armadillo and Union Pacific based upon failure of

Armadillo and Union Pacific to provide transportation with rear seat head restraints are therefore barred by the doctrine of conflict preemption.

3. Even if Armadillo and/or Union Pacific owed Plaintiff a duty, and Plaintiff's claims were not barred by the doctrine of conflict preemption, Plaintiff is unable to prove by a preponderance of the evidence that Plaintiff would not have suffered his injuries if there had been rear seat head restraints installed in the subject van. Indeed, Plaintiff's experts are unable to offer any opinions as to whether the existence of a rear seat head restraint would have prevented the Plaintiff's injuries.

4. There are no disputed material facts demonstrating any negligence on behalf of Armadillo's driver, Casey Sorensen.

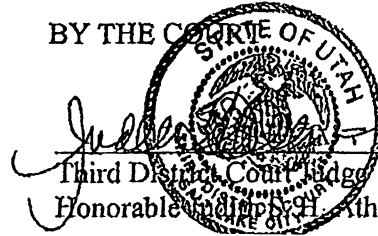
Based upon the foregoing, Counts II and IV of the Amended Complaint against Defendants are dismissed with prejudice and on the merits. Plaintiff has conceded Defendants' arguments on summary judgment pertaining to Counts V and VI of the Amended Complaint, and those claims are therefore dismissed with prejudice and on the merits.

The Court hereby ORDERS that all of the Plaintiff's claims against the Defendants Brown's Crew Car of Wyoming, Inc., d/b/a Armadillo Express and Union Pacific Railroad Company are dismissed with prejudice and upon the merits.

Pursuant to Rule 54(b) of the Utah Rules of Civil Procedure, the Court expressly determines that there is no just reason for delay and expressly directs entry of final judgment in favor of Brown's Crew Car of Wyoming, Inc., d/b/a Armadillo Express, and the Union Pacific Railroad Company.

DATED this 10 day of Dec., 2008.

BY THE COURT OF UTAH



Third District Court Judge

Honorable Philip S. Atherton

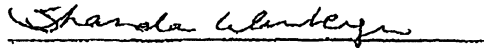
CERTIFICATE OF SERVICE

I hereby certify that on this 13th day of November, 2008, I caused a true and correct copy of the within and foregoing **[PROPOSED] AMENDED ORDER GRANTING DEFENDANTS BROWN'S CREW CAR OF WYOMING, INC., d/b/a ARMADILLO EXPRESS'S AND UNION PACIFIC RAILROAD COMPANY'S MOTION FOR SUMMARY JUDGMENT** to be mailed, postage prepaid, to the following:

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Tab 11

Traumatic Myelopathy in Patients With Cervical Spinal Stenosis Without Fracture or Dislocation

Methods of Diagnosis, Management, and Prognosis

NANCY EPSTEIN, MD,* JOSEPH A. EPSTEIN, MD,†
VALLO BENJAMIN, MD,* and
JOSEPH RANSOHOFF, MD*

The New York University Spinal Cord Trauma Center recently completed an evaluation of 200 patients seen over a period of four years, from 1974 to 1978. A unique group of 23 patients with cervical spinal stenosis and myelopathy without fracture or dislocation was isolated. The presence of a narrow canal significantly influenced morbidity and prognosis. Based on a review of plain roentgenograms and myelograms, there were seven patients with an average age of 41 who had absolute low levels of narrowing of the spinal canal without evidence of degenerative changes. The remaining 16 patients, averaging 61 years of age, had superimposed spondylosis. In both groups, patients with the lowest anteroposterior diameters of the spinal canal had the most severe myelopathy after trauma. Patients with absolute stenosis were more susceptible to traumatic myelopathy than were those with relative stenosis. Varying the dose of steroids to maximal levels had no effect on prognosis. Patients showing improvement during the initial 48 hours had the greatest degree of eventual recovery. [Key words: Traumatic myelopathy, cervical spinal stenosis, surgery]

THE NEW YORK University Spinal Cord Trauma Center recently completed an evaluation of 200 patients seen over a period of four years, from 1974 to 1978. A unique

group of 23 patients with cervical spinal stenosis and myelopathy without fracture or dislocation was isolated. These patients had unusual clinical findings, which had a specific impact on methods of treatment, morbidity, and prognosis.

All patients arriving at the Center were assessed on the basis of a complete neurologic evaluation followed by roentgenographic examination of the spine to identify and to document the presence of fracture and subluxation. Patients were then randomly assigned to differing steroid dose schedules currently being evaluated. For patients with cervical trauma, myelography was performed within the first 48 hours by means of a C1-2 puncture after institution of tong traction to reduce dis-

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locations and to maintain vertebral alignment. Studies of spinal evoked sensory potential were carried out for the majority of patients.

In the comprehensive management of all 200 cases, myelographic evidence of external compression upon the spinal cord in patients with partial or complete cord lesions justified operative decompression. However, in the 23 patients with asymptomatic cervical spinal stenosis prior to injury who did not have fracture or dislocation, myelographic evidence of complete block was infrequent (Table 1), and new criteria regarding treatment had to be developed. These 23 patients were randomly assigned to receive differing doses of steroids, depending on the current protocols. Surgical decompression was utilized only for patients whose conditions deteriorated clinically.

For such patients, if the myelogram showed relevant ventral defects, an anterior discectomy and fusion were performed. If the defects were posterior, laminectomy was done with duroplasty and fusion. Myelotomy was considered on a randomized basis only if significant cord swelling was present below C5 in the presence of myelopathy.

The neurologic status of each patient was evaluated periodically throughout the period of hospitalization. Motor power was quantitated in the following manner: 0 to 5 points were assigned for each extremity, with 0 representing total absence of function and 5 representing normal strength. The sum of the points for the four extremities rendered a possible maximum of 20/20 points. The four-extremity totals for the entire group were then added up. This sum was divided by the number of patients in the various groups, to provide an average figure for the motor ability of each patient in a particular category (Tables 2 and 3). The sensory examination was conducted according to customary charting patterns. The selected steroid dose was continued for each patient for a ten-day period and then discontinued. These schedules were changed as data during the current study was evaluated. The regimens used were as follows: The first 104 patients were randomly assigned to treatment with steroids with or without Amicar.* Fifty-one cases were treated with Solu-Medrol,† iv, or Medrol,‡ po, given in dosages of 20 to 40 mg every six hours. Amicar was used in a dose of 1–2 g hour for 63 patients. The last 86 patients were given either high doses* or low doses† of steroids. Treatment of the 23 patients with cervical spinal stenosis and myelop-

Table 1. Myelographic Data for Patients with Absolute and Relative Narrowing of the Spinal Canal

Group	No block	Partial block	Total block	Total number of patients
Absolute narrowing of the canal	5	1	1	7
Relative narrowing of the canal with spondylosis	6	7	3	16
Total number of patients	11	8	4	23

athy without fracture or dislocation was evenly distributed among variable dosage schedules.

CASE MATERIAL

On the basis of the findings of the plain roentgenographic studies of the spine, there were 7 patients with evidence of absolute stenosis showing low levels of narrowing of the spinal canal without evidence of degenerative arthropathy. The remaining 16 patients had relative stenosis with narrowing of the spinal canal and superimposed developmental changes associated with spondylosis (Figure 1). The anatomic alterations were similar to those described by Verbiest¹⁸ who distinguished between patients with relative and patients with absolute stenosis of the lumbar spinal canal and for whom absolute stenosis implied a ventrodorsal diameter of 10 mm or less, while relative stenosis implied a canal of greater depth. In the absolute group, small intrusions normally not producing symptoms became clinically significant. In our patients, remarkably similar measurements of the cervical spinal canal conformed to the range of normal and abnormal already reported for the lumbar region. A diameter of less than 10 mm was considered to be indicative of absolute narrowing. Measurements less than 13 mm were placed in the category of relative stenosis, the anteroposterior diameter of the canal being measured from the most prominent vertebral osteophytes to the posterior laminar line. The considerable variation in landmarks of the spondylotic spine made interpretation of the measurements vulnerable to effects of changes in projection and posture.

Myelographic evidence of abnormal widening of the spinal cord to 2.5 cm was related to pathologic swelling

Table 2. Results of Motor Examination of Patients with Partial or Complete Deficits According to the Type of Canal Narrowing

Group	At admission	At 3 days	At 6 weeks
Patients with absolute narrowing of the canal (7)	4.9	4.0	5.5
Patients with relative narrowing of the canal (16)	8.3	8.5	10.0
Total group	7.2	6.0	8.6

* 6-Aminocaproic acid, Lederle Laboratories, Pearl River, New York.

† Methylprednisolone sodium succinate, The Upjohn Company, Kalamazoo, Michigan.

‡ Methylprednisolone tablets, The Upjohn Company, Kalamazoo, Michigan.

* High dose: 1 g Solu-Medrol iv daily.

† Low dose: 160 mg Solu-Medrol iv daily.

Table 3. Results of Motor Examination of 16 Surgically and Nonsurgically-Treated Patients with Partial Neurologic Deficits

Group	At admission	At 3 days	At 6 weeks
Patients with narrow canals			
Surgically treated (5)	8.0	8.2	10.2
Nonsurgically treated (11)	10.7	10.5	13.9
Total group (16)	8.8	9.5	11.7

caused by trauma, including intramedullary hemorrhage and edema (Figures 2 and 3). Clinically, evidence of myelopathy was most severe for patients with absolute congenitally narrow canals, as compared with those with relatively narrow canals with superimposed developmental changes.

The majority of patients were injured in falls (Table 4). The estimated neurologic levels of injury were: four at C3-4, nine at C4-5, nine at C5-6, and one at C6-7 (Table 5). Myelographic data for the 23 patients showed that only four (17%) of the 23 patients had a complete block. Eleven (48%) had no block, and eight (35%) had a partial block (Table 1). In addition, myelographic evidence of swelling of the cord was seen for 15 (65%) cases, 10 of which had relatively narrow canals with spondylosis. No finding suggestive of an anteriorly situated disc was encountered. Plain films and myelograms at C3-4, C4-5, and C5-6 of the 16 patients with relative narrowing of the canal and spondylosis demonstrated numerous levels of ridging. The maximal cord swelling that occurred at or below the highest level of radiographic change was possibly related to greater mobility of the vertebral segments above the area of spondylosis.

The greatest neurologic deficit was seen for the seven patients in the group with absolute narrowing. At admission three (42%) had evidence of partial cord lesions, and four—complete. Of the 16 patients in the group with relative narrowing of the canal and spondylosis, 12 (72%) had partial cord lesions, and four—complete.

In both groups, patients who improved neurologically within 48 hours of admission showed the greatest degree of eventual recovery. Rapid, intermediate, and no improvement were defined in terms of the degree of motor or sensory recovery that occurred within 48 hours of injury. Of the 23 patients, eight showed rapid improvement, seven showed intermediate improvement, and eight with total lesions at admission were unchanged (Tables 2 and 6).

The neurologic parameters included an evaluation of long tract signs, plantar responses, deep tendon reflexes, and evidence of flaccidity and spasticity, as well as signs of bowel and bladder dysfunction. At six weeks, in the combined groups, long tract signs with spastic paralysis were found in 10/23 instances. Nine patients showed evidence of flaccid paralysis, and the remaining patients had unilateral spasticity. With regard to bowel and bladder function, 19/23 (78.2%) were incontinent at admission, and the number had declined to 17/23 (60%) by six weeks.

Of the five deaths, only one occurred in the group of five surgically treated patients.

The operations performed were three anterior Cloward fusions at one or two interspaces and two laminectomies from C2-7 (Table 7). Of the five patients undergoing surgery, all had significant neurologic defects.

SPONDYLOCHONDROSIS OF THE CERVICAL SPINE

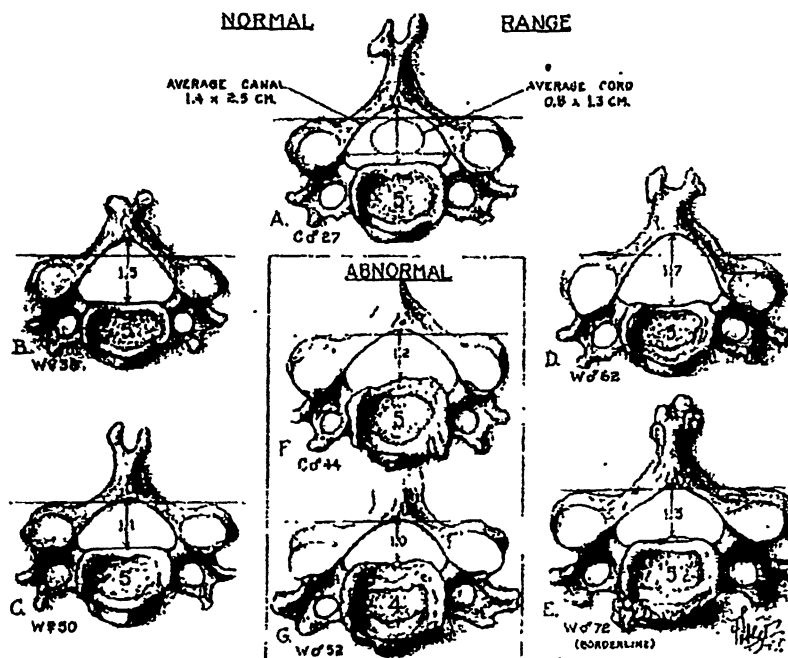


Fig 1. Variations of the spinal canals of 100 cervical spines studied by Arnold.¹ In A, the ventro-dorsal diameter of the spinal cord at the maximum cervical enlargement averages 0.8 cm. The average canal measures 1.4 cm in the same diameter. The total normal and abnormal ranges are illustrated in the remaining drawings. The horizontal lines illustrate the relations between the posterior, superior border of the articular facets and the leading inferior surface of the lamina and base of the spinous process. In the presence of a narrow canal, the laminar arch is frequently shallow, and the incised line will pass through the posterior tips of the facets and the base of the lamina. The lateral view (see Figure 2A) illustrates this finding and is helpful in establishing the presence of stenosis. Variations in the height of the pedicle are also reflected by changes in the dorsoventral diameter of the spinal canal.



Fig 2. Roentgenographic studies of a 63-year-old man who sustained a hyperextension injury to the spinal cord when he fell from a ladder. He showed evidence of severe central cord injury and a C4-5 neurologic level of involvement. Only minimal leg movements and positional sense were retained. The presence of posterior column function was confirmed by somatosensory evoked cortical potentials. Plain cervical spinal films (A) show spondylotic changes at C4, C5, and C6, with minimal posterior osteophytes. However, the posterior margins of the facets closely approximate the base of the spinous process and lamina at all levels (arrow), suggesting an underlying stenosis. In the myelogram (B), the spinal cord is widened at the C4-5 level (arrows) to a diameter of 2.5 cm. The ventrodorsal diameter of the spinal canal in A averages 1.3 cm. After anterior cervical decompression and fusion at C4-5, there was no change in the patient's clinical status. At follow-up five days after surgery, evoked potentials showed some increase in amplitude. The patient subsequently died of sepsis and renal failure.

Four had partial cord injuries, and one had completed cord injury. Postoperatively, one patient died of renal failure and sepsis. Neurologically, two improved and two remained unchanged (Figures 2 and 3).

DISCUSSION

The value of surgical decompression and fusion in aiding recovery remains conjectural. For patients with presumed instability, early rehabilitation is facilitated by fusion. While the information derived from a study of this small number of patients has no statistical value, the improvement in the neurologic status of two of the five patients operated upon cannot be disregarded. The spontaneous improvement in the conditions of the patients not operated upon reflects the importance of cautious delay to permit vital signs to stabilize and to allow the effects of corticosteroids to become apparent. The use of a firm, molded cervical support and tong traction is mandatory until evidence of stability has been confirmed and while the effects of medical management are being assessed. As Table 3 indicates, for this small group, there was no significant difference between the neurologic recovery of patients not operated upon and

that of patients treated with a decompressive procedure by either approach.

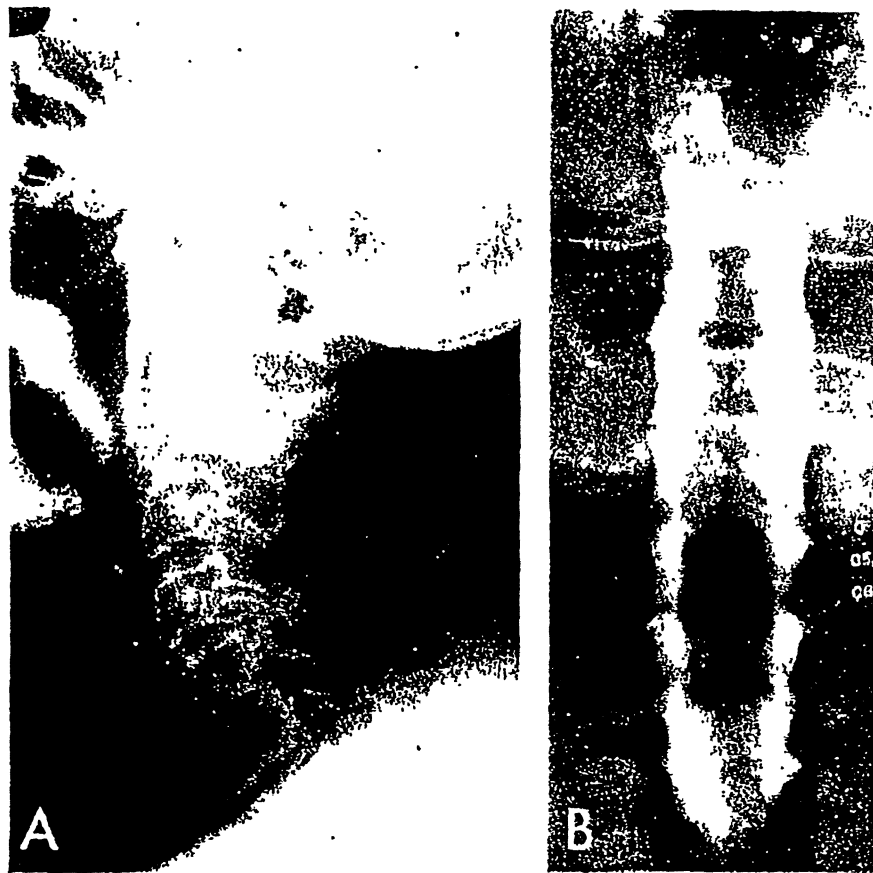
No particular steroid schedule was superior to any of the others in so far as the degree of recovery was concerned. Variations in the time interval between injury, admission, and institution of steroid treatment made no difference.

Throughout all phases of recovery, patients with relative narrowing of the canal and spondylosis had greater improvement in neurologic status, with twice the quantitated motor ability of patients with absolute stenosis.

Patients with the lowest anteroposterior diameter of the canal suffered the greatest degree of trauma to the spinal cord because of the absence of available space. Since hyperextension results in maximal narrowing of the spinal canal, all margins of safety are abruptly depleted with consequent crushing of the cord.

The spinal columns in older patients with spondylosis and relative narrowing are less mobile than those of younger patients. The less mobile column would be more resistant to hyperextension andolisthesis, factors which contribute to further narrowing of the anteroposterior diameter of the spinal canal. Such individuals re-

Fig 3. Roentgenographic studies of a 79-year-old woman who sustained an acute hyperextension injury with severe central cord trauma. The patient had no hand function, minimal bilateral leg movements, and preservation of positional sense. A. In the lateral exposure, degenerative changes are minimal. However, the anteroposterior diameter of the spinal canal in the mid- and lower cervical area averages only 1.3 cm. Notice that the base of the spinous process as it joins the leading margin of the lamina is in close approximation to the projections of the articular facets. B. In the myelogram, the spinal cord is slightly widened to 2 cm in the lower and midcervical areas. The lateral gutters remain patent. The patient was not treated surgically and showed no improvement in condition.



main unusually susceptible to cord injury because of various intrusions into the spinal canal caused by infolded yellow ligaments and hypertrophied arthrotic joints and lamina. The abnormal movements of the vertebral bodies above and below portions of the spine fused by spondyloarthrosis add to destruction of the cord.

Many authors have constructed tables of the dimensions of the normal spinal canal on the basis of findings in cervical spinal roentgenograms of living subjects and cadavers. The result has been considerable variation in the measurements obtained.^{1-3,6,7,11,12,20} Arnold's¹ data demonstrated an average C5 anteroposterior diameter of 14 mm, the values ranging from 10 to 18 mm (see Figure 1). Hinck⁷ evaluated roentgenograms of children: the measurements at C3-5 were from 14.8 mm to 15.1 mm. When the 18-year-olds were considered as adults, the adults' canal at C3-4 and C4-5 measured 17.3 mm and 16.7 mm, respectively. From age 3 to 18, there had been an increase in the anteroposterior diameter of the canal of less than 3.3 mm. Wolfe et al²⁰ found an average diameter of 17 mm, with a range of 12-20 mm. Patients with an anteroposterior diameter of 10 mm or less had symptoms of cervical spondylotic myelopathy. Normal and abnormal values must be related to clinical findings in order to be significant, empha-

sizing the basic defect in measurements where the landmarks are obscure at best. Under no circumstances should such data replace a most critical and thoroughgoing neurologic evaluation as the basis for proper management.

Spinal stenosis associated with the narrowed anteroposterior diameter of the canal is rarely accompanied by a concomitant decrease in the size of the neural foramina.⁷⁻⁹ The nerve root in a normal foramen is usually displaced, rather than compressed, and surgical decompression by laminectomy for these patients does not require extensive foramenotomy.

Myelography shows evidence of changes in the internal dimensions of the spinal canal caused by thickened

Table 4. Causes of Injuries to Patients with Absolute Narrowing of the Canal or with Relative Narrowing of the Canal with Spondylosis

Group	Falls	Sports accidents	Auto accidents	Motor- cycle accidents
Absolute narrowing (7 patients)	5	0	1	1
Relative narrowing with spondylosis (16 patients)	11	3	2	0
Total (23 patients)	16	3	3	1

Table 5. Neurologic Levels of Injury for Patients with Absolute Narrowing of the Canal Versus Patients with Relative Narrowing of the Canals with Spondylosis

Group	C3-4	C4-5	C5-6	C6-7	Total
Absolute narrowing of the canal	2	4	1	0	7
Relative narrowing of the canal with spondylosis	2	5	8	1	16
Total	4	9	9	1	

ligamenta flava and lamina, hypertrophied posterior facets, and, often, spurs insufficiently calcified to be recognized on plain films.

During myelography of patients with cervical spinal stenosis, there is delayed movement of iophendylate into narrowed lateral gutters, with poor filling of deformed axillary pouches, varying degrees of block, and a widened cord with scant subarachnoid space (Figures 2 and 3).³⁻⁵

Widening of the cord similar to that of patients with spinal stenosis may be found in many pathologic states. Robertson¹³ described myelographic studies of two patients with spinal cord necrosis and wide spinal cords resembling intramedullary tumors. Similar myelographic changes can be seen in patients with central disc herniations, spondylosis, arterial thrombosis, demyelinating disease, syringomyelia, hydromyelia, abscess, and arteriovenous malformations. A good lateral roentgenogram aids in the differential diagnosis.

The significance of soft-tissue investments of the dural sac can be dealt with both in static and biodynamic terms. These investments include the yellow and the posterior longitudinal ligaments, the epidural fat, and the blood vessels. Arnold¹ cited the following data based on studies of cadavers: the average diameters of the canals measured 1.4-2.5 cm, the cords measured 0.8 by 1.3 cm, and the soft tissues measured 3 mm, leaving a reserve of space of 3 mm (see Figure 1). The ligamentum flavum could bulge inward by 4-6 mm in extension and could increase to 6-8 mm in thickness. In an autopsy study of 42 cadavers, Brieg² demonstrated that the spinal cord slides 2-3 mm and adapts itself to the length of the canal. In flexion, it elongates, and in

extension, it shortens and thickens in cross-sectional diameter. In extension, the posterior portion of the cord exhibits greater relative shortening with respect to the anterior portion. In eight of 11 patients with spondylosis studied in full extension, the cord appeared to be deeply grooved posteriorly by the bulging of the ligamentum flavum. With neck flexion, the cord widened and there was ventral ridging. In extension, ridging, discal intrusion, and infolding of the ligamentum flavum would contribute to cord compression, as well as to ischemia. Such changes can be devastating for patients with narrow canals, in whom an epidural fat cushion is minimal or absent.

On the basis of studies of 21 cadavers of persons aged 41-96, Waltz¹⁹ found that the transverse area of the spinal canal from C3-4 to C7-T1 was smaller in extension (1.9 cm) than in flexion (2.2 cm). The average transverse area was diminished by 15% in extension. In extension, the annulus fibrosis bulged posteriorly into the canal to cause a 14-16% reduction in the transverse diameter. In addition, the shortened cord was 7-19% thicker, emphasizing its unique vulnerability in this posture. Altogether, the vertebral structures in flexion and in extension showed a relative shortening of the anterior margins of the spinal canal during hyperflexion of 3%. A 25% shortening of the posterior structures occurred during hyperextension. Hyperextension resulted in a 25% reduction in the size of the foramina. Since flexion is limited by the approximation of the chin to the sternum, an automatic check exists in this position.

Where available space is concerned, the stenotic canal has a reduced, if not absent, margin of safety, rendering the cord maximally susceptible to minimal trauma, especially during hyperextension.^{4,9}

Moel¹⁰ described two patients with cervical hyperextension injuries without evidence of fracture or dislocation. The myelopathy was consistent with a central cord syndrome. Both patients were immediately made quadriplegic. Results of the tomograms were normal. Myelograms showed a widened cord consistent with cord concussion and contusion. The absence of fracture and subluxation was explained as a "recoil" phenomenon wherein temporary subluxation causing injury was followed by spontaneous reduction.

Taylor^{16,17} documented hyperextension cord injury of patients at autopsy, showing ruptured anterior longitudinal ligaments in the presence of normal spinal films. Pathologically, contused cord with or without hematomyelia was found with or without the presence of a widened cord observed by myelography (see Figure 3).

Ohwada¹¹ studied 12 patients, with an average age of 30 years, who had cervical stenosis and myelopathy and in whom a widened spinal cord resembling an intramedullary tumor was evident by myelography. Computerized and transverse axial tomography showed maldevelopment of the neural arches resulting in flattening

Table 6. Degrees of Resolution for Patients with Absolute Narrowing of the Canals as Compared to Those with Relative Narrowing of the Canal and Spondylosis (48 Hours After Admission)

Group	Rapid change	Intermediate change	No change/slow change	Total
Absolute narrowing of the canal (7 patients)	2*	1*	4*	7*
Relative narrowing of the canal (16 patients)	6*	6*	4*	16*
Totals (23 patients)	8*	7*	8*	23*

Table 7. Neurologic Deficits and Operative Procedures for Patients with Absolute Narrowing and with Relative Narrowing of the Canals with Spondylosis

Group	Number of patients	Partial deficit	Complete deficit	Surgical treatment* and anterior fusion	Laminectomy and fusion
Absolute narrowing of the canal	7	3 (43%)	4 (57%)	2	1
Relative narrowing of the canal with spondylosis	16	12 (75%)	4 (25%)	1	1
Totals	23	15 (65%)	8 (35%)	3	2

* With partial deficit only.

of the spinal canal in the transverse plane (see Figures 2 and 3).

In support of Ohwada's¹¹ findings, Epstein et al⁵ cited results for six cases. Two of these patients had hyperextension injuries with acute myelopathy, one demonstrating hematomyelia at operation. On the basis of plain lateral roentgenograms, Ohwada¹¹ found that the neural arches were hidden behind the articular processes, making the diagnosis of stenosis indicated by such films possible (see Figure 1). In his 12 cases, the diagnosis of narrowed canal syndrome was made using four criteria: (1) a small anteroposterior diameter of the canal; (2) absence of spondylosis; (3) maldevelopment or flattening of the neural arches; and (4) presence of a motor, dominant cervical myelopathy. The patients' conditions improved symptomatically after laminar decompression had been done.

Schneider^{14,15} observed a group of patients who had preservation of light touch and vibratory sensation after receiving cervical cord injuries with myelographic evidence of widening of the cord. The patients' neurologic deficit showed rapid and spontaneous resolution within 48 hours after injury. Laminectomy often made the condition worse. Schneider thought that the patients with central cord injuries had a good prognosis for recovery because of the reversibility of the effects of concussion, contusion, and cord swelling. Conservative management was used, unless myelographic block or radiographic bony impingement on the canal was demonstrated. When there was spontaneous improvement, the use of aggressive measures was delayed. These principles remain a noteworthy guide for the management of patients with spinal stenosis without fracture or dislocation.

CONCLUSIONS

Patients with cervical spinal stenosis are uniquely vulnerable to hyperextension injuries of the spinal cord. Trauma to the cord is often manifested by evidence of central cord injury and a motor, dominant myelopathy. Treatment consists of immobilization and the use of steroids with proper respiratory, biochemical, and metabolic support. Early improvement in the neurologic status is an excellent prognostic sign and makes conservative care mandatory. Results of appropriate plain

films and myelography soon after admission establish criteria for surgical intervention, depending on the patient's neurologic status. The presence of a myelographic block and a failing or poorly sustained neurologic status in five of our most seriously injured patients justified surgical decompression by either an anterior or posterior approach.

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NEUROLOGICAL SCIENCE MEETING

The meeting of the Federation of Western Societies of Neurological Science will be held at the Stanford Court Hotel, San Francisco, California, February 19-22, 1981.

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Tab 12

■ A Review of the Pathophysiology of Cervical Spondylotic Myelopathy With Insights for Potential Novel Mechanisms Drawn From Traumatic Spinal Cord Injury

Michael G. Fehlings, MD, PhD, FRCSC, and Ghassem Skaf, MD, FRCSC

Cervical myelopathy is the most serious complication of cervical spondylosis and is the most common acquired cause of spinal cord dysfunction. This disorder was originally described by Stookey in 1928 and was attributed to compression of the cord by cartilaginous nodules of degenerated disc material.⁶⁴ The definition of cervical spondylotic myelopathy (CSM) as a distinct clinical entity began to evolve in 1956 when Clarke and Robinson distinguished this condition from cervical myelopathy caused by acute disc prolapse.¹⁹ The pathophysiology of CSM has not been fully elucidated and is of particular relevance, given the failure in some patients of the condition to respond to appropriate medical and surgical therapy.

The first part of this review will examine the neuropathologic course of CSM with an emphasis on features that provide potential insight into underlying mechanisms (Table 1). Next, the pathophysiology of CSM will be discussed in the context of static and dynamic mechanical factors and ischemia (Table 2). The third part of this review will examine selected cellular and molecular mechanisms of traumatic spinal cord injury including glutamatergic toxicity, free radical- and cationic-mediated cell injury, and apoptosis, all of which may be of relevance to the pathophysiology of CSM (Table 3).

■ Neuropathologic Course of Cervical Spondylotic Myelopathy

Key Pathologic Features of Cervical Spondylotic Myelopathy

The pathologic features of CSM are summarized in Table 1. Histologic analysis of the spinal cord of patients with CSM characteristically shows that the central gray and medial portions of the myelinated long

tracts are affected most severely and show evidence of cystic cavitation, gliosis, and demyelination.^{38,40} Wallerian degeneration of the posterior columns and posterolateral tracts occurs cephalad to the site of compression. Anterior horn cell dropout occurs at the site of compression, and the corticospinal tracts undergo degeneration, with loss of myelin staining caudal to the site of compression.^{48,15}

Temporal Evolution of Pathologic Changes

Ogino et al³³ conducted a clinicopathologic study in which nine patients with CSM were observed clinically, radiographically, and, at time of death, neuropathologically. The severity of pathologic changes in the cord correlated well with the extent of spinal cord compression, measured by the anteroposterior compression ratio. The posterolateral white matter fibers, including the lateral corticospinal tracts, were most susceptible to minor degrees of compression. In contrast, anterior horn cell loss and localized infarction of the gray matter was associated with more severe degrees of compression. With an anteroposterior compression ratio of less than 20%, extensive infarction of all the gray matter occurred. Although the lateral white matter tracts were involved in cases of severe compression, the anterior columns were remarkably resistant to degeneration, a finding consistent with other clinical and experimental reports.⁹ Degeneration of the dorsal columns, particularly medially, was seen only in cases of severe compression. The pathologic changes showed an excellent correlation with clinical neurologic findings. The four patients in this series with mild to moderate cord compression exhibited mainly long-tract signs in the lower extremities consistent with early involvement of the corticospinal tracts. Four patients with severe cord compression had spastic quadriparesis and showed marked disability of the hands and fingers accompanied by severe intrinsic hand muscle wasting, caused by a combination of corticospinal tract degeneration and anterior horn cell loss.

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Table 1. Pathology of Cervical Spondylotic Myelopathy

Central gray and medial white matter most severely affected
 Wallerian degeneration of posterior columns cephalad to site of compression and of corticospinal tracts caudal to site of compression
 Relative sparing of anterior columns
 Progression of pathological changes varies with severity of compression
 Lateral corticospinal tracts most vulnerable to compression
 Anterior horn cell loss or localized infarction of gray matter associated with severe compression
 Extensive infarction of gray and white matter associated with anterior/posterior compression ratios of <20%

Role of Axial Tension on Ischemia and Axonal Degeneration

Breig et al¹⁴ observed that the anterior columns and the subpial axons in the dorsal columns were relatively preserved, even in advanced cases of CSM. The blood supply of the subpial portion of the dorsal columns was thought to be resistant to ventral compression, because the posterior spinal arteries "zigzag" and are not put under tension when the cord elongates in cervical flexion. Similarly, the arteries supplying the anterior columns run in an anteroposterior direction so that the stresses that flatten the cord do not narrow them. In contrast, the vascular supply of the gray matter and medial white matter arises from transverse perforating vessels that arborize from the anterior sulcal arterial system. Accordingly, Breig et al concluded that the most probable cause of gray matter degeneration and medial white matter degeneration was mechanical distortion and occlusion of the transverse penetrating vessels of the spinal cord arising from the anterior sulcal arteries. In particular, the medial aspect of the dorsal columns and lateral corticospinal tracts were vulnerable to injury from ischemia and axial tension. These pathologic observations,

Table 2. Pathophysiology of Cervical Spondylotic Myelopathy

Mechanical factors
 Static
 Canal stenosis
 Severity of spinal cord compression
 Dynamic
 Changes in flexion
 In flexion, the spinal cord lengthens causing increased tension on dorsal fiber tracts
 Changes in extension
Role of ischemia
 Pathological evidence
 Pathological changes in cord predominantly in the distribution of anterior spinal artery
 Hyalinization and thickening of walls of anterior spinal artery and perforating vessels
 Possible role of periradicular fibrosis
 Experimental evidence
 Compression of cord with Fogarty balloon catheter causes ischemia due to compression/stretching of transversely placed intramedullary vessels
 Microangiographic, autoradiographic, and hydrogen clearance evidence of ischemia due to compression
 Pathophysiological effects of ischemia are additive with compression

Table 3. Mechanisms of Traumatic Spinal Cord Injury of Potential Relevance to Cervical Spondylotic Myelopathy

Mechanical factors (static/dynamic)
 Ischemia
 Free-radical mediated cell injury
 Cation-mediated injury ($\text{Na}^+/\text{Ca}^{++}$)
 Linked to protease activation (calpain)
 Glutamatergic cell injury
 Ionotropic glutamate receptors
 NMDA (anterior horn cell injury)
 AMPA/kainate (white matter injury)
 Metabotropic receptors (coupled to G proteins)
 Group 1 mGluRs (linked to rises in Ca^{++} through PLC)
 Group 2,3 mGluRs (negatively coupled to cAMP)
 Apoptosis (programmed cell death)
 Proapoptotic genes: Bax, Bcl-xS, c-fos, c-jun, p75NGFR, and ICE-like proteases
 Genes that block apoptosis: Bcl-2 and Bcl-xl

which suggest a significant role for ischemia, have been validated in experimental models discussed later.

■ Pathophysiology of Cervical Spondylotic Myelopathy

Static Mechanical Factors

Spinal Canal Size. The presence of cervical spondylosis alone does not usually result in myelopathy. Normally, there is ample tolerance of the spinal cord to encroachment of spondylosis, and the development of myelopathy is more likely to occur in patients with a developmentally narrow spinal canal. The normal cervical canal diameter from C3 to C7 in whites is 17–18 mm,^{17,37} with slight variation between sexes. It is noteworthy, however, that the normal dimensions of the cervical canal are considerably smaller in Asians.⁴²

Arnold⁵ demonstrated a high correlation between sagittal diameter of the cervical spinal canal in cervical spondylosis and the development of myelopathy. A sagittal diameter of 12 mm or less was a critical factor in the development of cervical spondylotic myelopathy. Similarly, Adams and Logue¹ identified three groups of patients with spondylosis, and in group 3 (with cervical myelopathy), the sagittal diameter was 11.8 mm (range, 9–15 mm).

The cervical cord varies little in size from C1 to C7, measuring approximately 10 mm in diameter (range, 8.5–11.5 mm).⁵⁶ Accordingly, in a normally sized cervical spinal canal, up to two thirds of the canal is unoccupied by the spinal cord from C1 to C3, compared with one quarter from C4 to C7. Thus, the normal spinal canal has sufficient space to accommodate the development of spondylotic changes without cord compression, and CSM is more likely to develop in a congenitally narrowed cervical canal, where additional narrowing by spondylotic changes results in spinal cord compression.⁵⁵

Progressive Cervical Spondylosis. Although a decreased sagittal diameter is essential to the development of CSM, progressive cervical spondylotic changes are clearly also

a key feature in the pathogenesis of this disorder. These changes, which can include disc degeneration and osteophytosis anteriorly, uncovertebral joint hyperostosis anterolaterally, and facet hypertrophy and ligamentum flavum buckling posteriorly, result in circumferential narrowing of the cervical canal.⁵⁵

Burrows¹⁷ studied the sagittal diameter of the spinal canal in cervical spondylosis radiographically and noted three distinct types of degenerative encroachment in the cervical spinal canal. The first type involved obliteration of the neuroforamens by osteophytic overgrowth at the posterolateral margin of the vertebral body. The second type involved encroachment on the neural canal of an osteophytic spur or "bar" across the back of the degenerated disc, producing an impression on the spinal cord by direct compression. The third encroachment was caused by degeneration, hypertrophy, and buckling of the ligamentum flavum. Burrows concluded that the initial size of the canal was a key underlying factor in the eventual development of cervical spondylotic myelopathy. Similar conclusions were reached by Murone⁵¹ in a study of 51 Japanese men.

Edwards and LaRocca²⁴ measured the developmental sagittal diameter and the spondylotic sagittal diameter in patients with symptomatic and refractory cervical spondylosis. The difference between the two measurements was termed the spondylosis index and represented the degree of spondylotic narrowing for each cervical segment. It was found that patients with preexisting narrowed cervical canals became symptomatic at an index of 2 mm *versus* 3.45 mm in the patients with normal cervical dimensions. The patients with more severe symptoms of myelopathy had the narrowest sagittal diameters. C5–C6 had the greatest frequency and extent of involvement in both groups. These investigators suggested the existence of a premyelopathic group of patients with midcervical sagittal diameters between 10 mm and 13 mm. In this group, spondylotic narrowing of approximately 2 mm would result in CSM. In contrast, patients with sagittal diameters of 17 mm or more were thought to be at low risk for the development of CSM.

Ball et al⁶ examined genetic influences on the development of spondylotic changes in twins and found a statistically significant concordance of radiologic features in monozygous and, to a lesser extent, dizygotic twin pairs. Patients older than 50 years with normal cervical spine radiographs were significantly more likely to have a sibling with normal or only mildly abnormal radiographs.

Severity of Spinal Cord Compression. There is evidence that symptoms of cord compression appear after the cord has been reduced in size by 30% or to a transverse area of less than 60 mm².⁵⁷ Moreover, Ogino et al observed that the severity of pathologic changes in the spine of patients with CSM correlated significantly with the extent of compression.⁵³ Similar morphometric studies were per-

formed by Fujiwara et al using radiographic techniques including computed tomographic myelography.²⁹ The transverse area of the spinal cord was measured to determine the severity of cervical cord compression and was related to prognosis with surgical intervention. Although the transverse area did not correlate well with the preoperative neurologic status, this measurement was found to be the most significant factor in determining the response to surgery. In patients with a transverse area greater than 30 mm², functional recovery after decompression was favorable. In contrast, there was a poor response to surgery when the transverse area was less than 30 mm². Thus, 30 mm² proved to be the critical size of area compression, below which the cervical spinal cord could not recover.

Dynamic Mechanical Factors

It is intuitive that the extent of mechanical compression of the spinal cord could be significantly influenced by movement of the cervical spine. As reviewed by White and Panjabi,⁷⁰ several investigators have observed that the functional diameter of the cervical spinal canal may be reduced to a critical level or less with flexion and extension.

In flexion, the spinal cord must lengthen or take a more anterior path in the canal, resulting in axial tension and, potentially, ischemia.¹⁴ In the presence of anterior osteophytes, the spinal cord can be stretched over the anterior bars.⁵⁴ Chronic changes have been documented at the sites of these areas of compression in autopsy studies.¹⁴

As the neck extends, the ligamentum flavum buckles inward,⁵⁵ which results in the greatest decrease in cross-sectional area of the cervical canal. Moreover, in extension, the spinal cord shortens, and its cross-sectional area increases.¹⁴ The combination of a maximum reduction in canal area along with an increase in spinal cord transverse area, places the cord at significant risk in extension in CSM. A pincer effect is seen in this condition, in which the spinal cord is compressed in extension between the posteroinferior margin of one vertebral body and the lamina or ligamentum flavum of the next caudal level.^{58,70,72}

Role of Ischemia

There is considerable evidence to indicate that interruption of the vascular supply to the spinal cord, caused by several factors, may be a significant component in the origin and pathophysiology of CSM. Histopathologic observations support the concept of ischemic injury to gray matter and medial white matter tracts in patients with CSM.^{14,40} Spinal cord ischemia as a potential mechanism in the pathophysiology of CSM was first proposed by Brain in 1948^{8,12} and later supported by Mair and Druckman,⁴⁸ who observed hyalinization and thickening of the walls of the anterior spinal artery and the parenchymal arterioles; by Taylor,⁹⁸ who suggested that radicular arteries to the cervical spinal cord were inter-

rupted by fibrosis in the intervertebral foramina; and by Nurick⁵² in his classic treatise.

Several experimental observations support the vascular hypothesis of CSM. For example, several investigators have reported evidence of ischemia in animal models of CSM based on microangiography,³⁸ autoradiography,³³ and hydrogen clearance.⁴ In other studies, investigators have examined the additive effects of ischemia and compression on spinal cord dysfunction and disease. Gooding et al³² published an experimental study in dogs in which the combined effects of anterior spinal cord compression and ligation of segmental arteries was examined. Ischemia clearly exacerbated the pathologic effects of compression on the spinal cord. Moreover, the corticospinal tracts were the most vulnerable to injury, a finding that correlates well with clinicopathologic observations in patients with CSM.⁵³ Similarly, Shimomura⁶¹ studied the effect of ischemia in conjunction with compression of the cervical cord in dogs and demonstrated that obstruction of the peripial arterial plexus could cause intramedullary cavitation.

Doppman et al²³ studied compression of the spinal cord using a Fogarty balloon catheter to compress the anterior, posterior, and lateral cord. Anterior compression compromises perfusion through the transverse arterioles arising from the anterior sulcal arteries. When the cord is compressed posteriorly, perfusion is reduced to the intramedullary branches in the central gray matter. Accordingly, stretching of the cord laterally or flattening of the cord causes interruption of the transversely placed intramedullary arteries by elongation and narrowing, with inadequate perfusion of the gray matter in adjacent lateral columns.

There is evidence that oligodendroglia may be particularly vulnerable to ischemic injury and that this mechanism may particularly account for the demyelination that occurs in chronic CSM.³¹ This observation is of particular relevance, given more recent evidence that oligodendroglia undergo delayed programmed cell death or apoptosis after traumatic spinal cord injury.⁶² Accordingly, the effects of chronic ischemia may account for the observation that demyelination of the corticospinal tracts is one of the first pathologic changes in CSM.⁵³

■ Novel Mechanisms of Spinal Cord Injury of Potential Significance in Cervical Spondylotic Myelopathy

The pathophysiology of spinal cord injury involves a primary mechanical injury caused by dynamic and static forces including compression, shear, and distraction followed by a secondary injury involving several mechanisms including ischemia, glutamatergic toxicity, free radical activation, peroxidative injury to cell membranes, and programmed cell death or apoptosis.^{2,3,21,22,26,27,35,44,67,74} There are sufficient histopathologic and pathophysiologic similarities between cervical spondylotic myelopathy and traumatic spinal cord injury¹⁵ to warrant a brief discussion of novel

mechanisms of traumatic central nervous system (CNS) injury that may be of relevance in CSM.

Glutamatergic Toxicity

Excitotoxicity caused by increases in extracellular levels of glutamate has been proposed as a mechanism of neuronal death in acute and chronic neurologic diseases including stroke, traumatic CNS injury, and prolonged seizure activity.^{8,25} The potential sources of glutamate include neurons, the terminals of descending and ascending tracts, and glia.^{3,66} As summarized in Table 3, glutamate receptors are classified into those that gate entry of Na^+ and Ca^{++} (ionotropic)³ and those coupled to guanosine triphosphate-binding proteins and secondary messenger systems (metabotropic).²⁰ Ionotropic receptors are further subclassified into those gated by α -amino-3-hydroxy-5-methyl-4-isoxazolepropionate (AMPA), kainate, and *N*-methyl-D-aspartate (NMDA). In the spinal cord, NMDA receptors are expressed in gray matter, whereas AMPA/kainate receptors are present in white and gray matter.³

Increasing evidence suggests that impairment of intracellular energy metabolism increases neuronal vulnerability to glutamate which, even when present at physiologic concentrations, can damage neurons.¹⁸ This mechanism of slow excitotoxicity may be involved in neuronal death in chronic neurodegenerative diseases such as the mitochondrial encephalomyopathies, Huntington's disease, spinocerebellar degeneration syndromes, motor neuron diseases such as amyotrophic lateral sclerosis (ALS), and accordingly, CSM.^{28,34} In addition, there is increasing evidence that blocking of AMPA/kainate receptors by compounds such as 2,3-dihydroxy-6-nitro-7-sulfamoyl-benzo(F)quinoxaline may be of therapeutic value in traumatic spinal cord axonal injury.^{3,73,74} This is of particular importance, given the absence of NMDA receptors in spinal cord white matter.³

Free Radical-Mediated Cell Injury

There is considerable evidence to support a role for free radical and lipid peroxidation reactions in the pathophysiology of traumatic and ischemic injury to the CNS.¹³ Moreover, the use of antioxidants and free radical scavengers in the treatment of experimental and clinical CNS trauma and ischemia has provided convincing support for the involvement of oxygen radicals and lipid peroxidation in these conditions.³⁶ The most clinically relevant example of this is the improvement, albeit modest, in neurologic function with high-dose methylprednisolone after traumatic spinal cord injury.^{11,10}

The discovery of mutations in the human *SOD1* gene encoding copper-zinc superoxide dismutase (Cu,Zn SOD) in patients with familial ALS strongly implicates free radical-mediated cell injury in this condition.³⁹ In particular, there is evidence that familial ALS mutations cause a functional enhancement in Cu,Zn SOD that promotes the generation of deleterious oxygen radicals.³⁴

This may render motor neurons sensitive to the excitotoxic effects of glutamate and is further supported by evidence that riluzole, a glutamate antagonist, has therapeutic efficacy in human ALS.⁷ These studies suggest the possibility that the pathophysiology of CSM, which is also characterized by delayed anterior horn cell loss, may partially involve free radical-mediated cell injury.

Cationic-Mediated Cell Injury

Traumatic or ischemic injury to the CNS, including white matter, is associated with rapid energy depletion, failure of the Na^+ - K^+ -adenosine triphosphatase pump, and accumulation of axonal Na^+ through noninactivating Na^+ channels.^{2,26,65} In certain pathologic states characterized by membrane depolarization, in particular ischemia, reverse Na^+ - Ca^{2+} exchange and axonal Ca^{2+} overload occurs.⁶⁵ Some intracellular Ca^{2+} entry may also occur directly through Na^+ channels.⁵⁹ The abnormal increases in intracellular Ca^{2+} activate several Ca^{2+} -dependent enzymes including calpain, phospholipases, and protein kinase C, resulting in cytoskeletal injury.^{43,63} Although glia are relatively resistant to ischemia, oligodendrocytes and the myelin sheath may be damaged by glutamate released by reverse Na^+ -glutamate transport⁶⁵ or alternatively by calcium entry through AMPA/kainate receptors.³ Given that CSM involves both compressive and ischemic injury, it is possible that cation-mediated cell injury plays a role in the pathophysiology of this condition, in particular in the destruction of myelinated tracts.

Apoptosis

Apoptosis or programmed cell death is a distinct form of controlled cellular degeneration that is distinguished from necrosis by the absence of inflammation, internucleosomal cleavage of DNA, and regulation by specific genes.⁴⁶ In the CNS, genes have been identified that promote apoptosis: *Bax*, *Bcl-xS*, *c-fos*, *c-jun*, *p75NGFR*, and ICE-like proteases;^{71,46} or block apoptosis: *Bcl-2* and *Bcl-xL*.³⁰ Apoptosis serves several physiologic functions, such as the control of cell numbers during development, the maintenance of tissue homeostasis, and the deletion of abnormal cells.¹⁶ Apoptosis of neurons and glia has been reported after spinal cord injury^{62,45,21} and ischemia^{41,47} and in certain neurodegenerative conditions associated with anterior horn cell loss, including the hereditary form of infantile spinal muscular atrophy⁶⁰ and ALS.⁵⁰ It is possible that the delayed degeneration of anterior horn cells that occurs in cervical spondylotic myelopathy may reflect the effects of apoptosis. This is of particular relevance, given recent evidence that pharmacologic blockers of the calcium-activated protease calpain⁶⁹ and inhibitors of the c-Jun N-terminal kinase (JNK) signaling pathway can inhibit the development of apoptosis in the CNS.⁴⁹

Conclusion

In conclusion, the pathophysiology of CSM involves the combination of static and dynamic factors and progressive ischemia. Further research is required to elucidate more fundamental mechanisms at a cellular and molecular level including the potential roles of glutamatergic toxicity, free radical- and cation-mediated cell injury and delayed programmed cell death or apoptosis. Improved treatment strategies for CSM may evolve from a more detailed understanding of pathophysiologic mechanisms.

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